

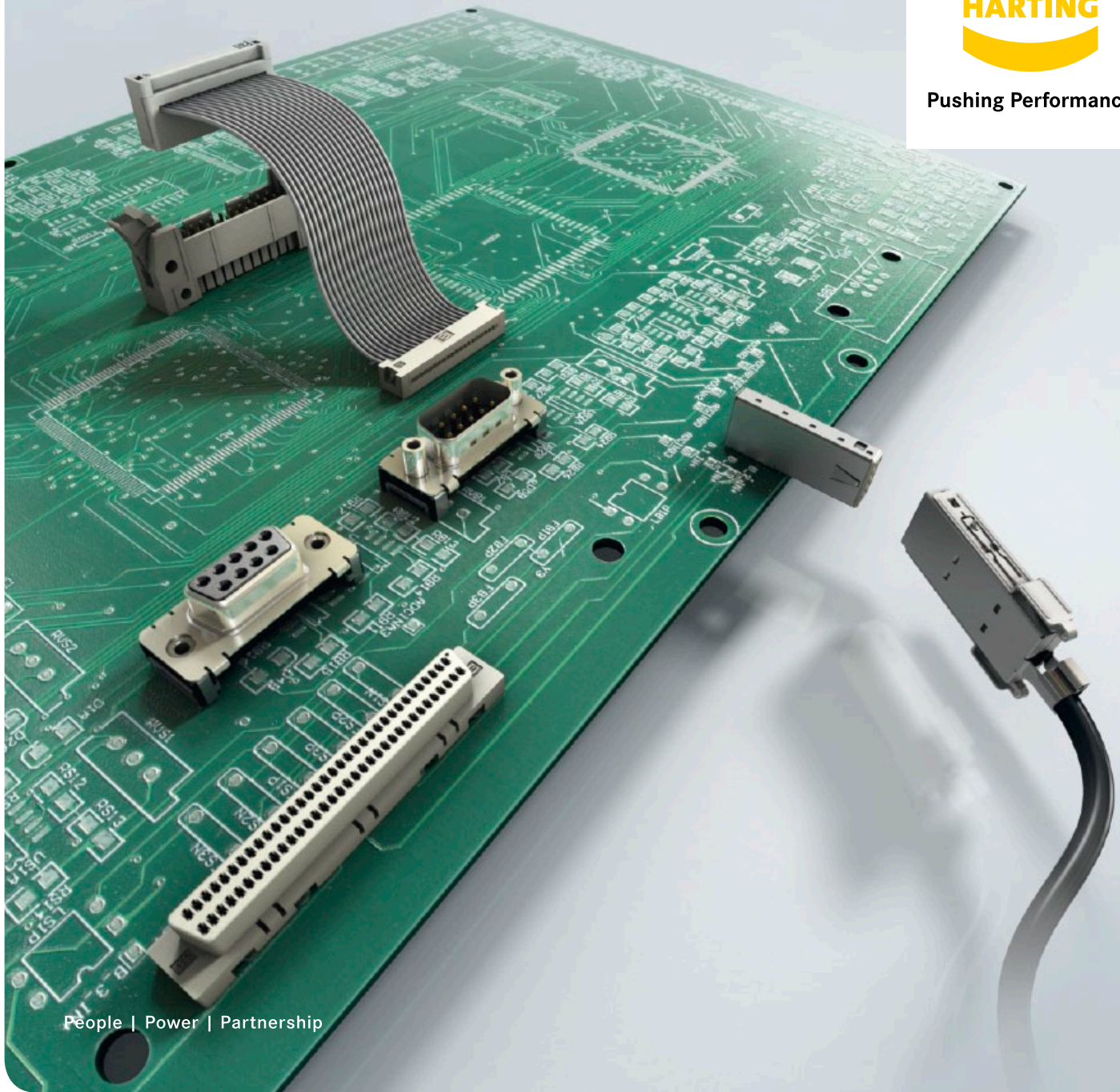


# THE DATASHEET OF

## 09670029078



Pushing Performance



People | Power | Partnership

# HARTING

## Interface Connectors

---

## Transforming customer wishes into concrete solutions



The HARTING Technology Group is skilled in the fields of electrical, electronic and optical connection, transmission and networking, as well as in manufacturing, mechatronics and software creation. The Group uses these skills to develop customized solutions and products such as connectors for energy and data transmission applications including, for example, mechanical engineering, rail technology, wind energy plants, factory automation and the telecommunications sector. In addition, HARTING also produces electro-magnetic components for the automobile industry and offers solutions in the field of Enclosures and Shop Systems. The HARTING Group currently comprises 37 subsidiary companies and worldwide distributors employing a total of more than 3,500 staff.



HARTING Subsidiary company



HARTING Representatives



### **We aspire to top performance.**

Connectors ensure functionality. As core elements of electrical and optical wiring, connection and infrastructure technologies, they are essential in enabling the modular construction of devices, machines and systems across a very wide range of industrial applications. Their reliability is a crucial factor guaranteeing smooth functioning in the manufacturing area, in telecommunications, applications in medical technology – in fact, connectors are at work in virtually every conceivable application area. Thanks to the consistent further development of our technologies, customers enjoy investment security and benefit from durable, long term functionality.

### **Always at hand, wherever our customers may be.**

Increasing industrialization is creating growing markets characterized by widely diverging demands and requirements. The search for perfection, increasingly efficient processes and reliable technologies is a common factor in all sectors across the globe.

**HARTING** is providing these technologies – in Europe, America and Asia. The **HARTING** professionals at our international subsidiaries engage in close, partnership based interaction with our customers, right from the very early product development phases, in order to realize customer demands and requirements in the best possible manner.

Our people on location form the interface to the centrally coordinated development and production departments. In this way, our customers can rely on consistently high, superior product quality – worldwide.

### **Our claim: Pushing Performance.**

**HARTING** provides more than optimally attuned components. In order to serve our customers with the best possible solutions, **HARTING** is able to contribute a great deal more and play a closely integrative role in the value creation process.

From ready assembled cables through to control racks or ready-to-go control desks: Our aim is to generate the maximum benefits for our customers – without compromise!

### **Quality creates reliability – and warrants trust.**

The **HARTING** brand stands for superior quality and reliability – worldwide. The standards we set are the result of consistent, stringent quality management that is subject to regular certifications and audits.

EN ISO 9001, the EU Eco-Audit and ISO 14001:2004 are key elements here. We take a proactive stance to new requirements, which is why **HARTING** ranks among the first companies worldwide to have obtained the new IRIS quality certificate for rail vehicles.



**HARTING technology creates added value for customers.**

Technologies by **HARTING** are at work worldwide. **HARTING's** presence stands for smoothly functioning systems, powered by intelligent connectors, smart infrastructure solutions and mature network systems. In the course of many years of close, trust-based cooperation with its customers, the **HARTING** Technology Group has advanced to one of the worldwide leading specialists for connector technology. Extending beyond the basic functionalities demanded, we offer individual customers specific and innovative solutions. These tailored solutions deliver sustained effects, provide investment security and enable customers to achieve strong added value.

**Opting for HARTING opens up an innovative, complex world of concepts and ideas.**

In order to develop connectivity and network solutions serving an exceptionally wide range of connector applications and task scopes in a professional and cost optimized manner, **HARTING** not only commands the full array of conventional tools and basic technologies. Over and beyond these capabilities, **HARTING** is constantly harnessing and refining its broad base of knowledge and experience to create new solutions that ensure continuity at the same time. In securing this know-how lead, **HARTING** draws on a wealth of sources from both in-house research and the world of applications alike.

Salient examples of these sources of innovative knowledge include microstructure technologies, 3D design and construction technology, as well as high temperature

or ultrahigh frequency applications that are finding use in telecommunications or automation networks, in the automotive industry, or in industrial sensor and actuator applications, RFID and wireless technologies, in addition to packaging and housing made of plastics, aluminum or stainless steel.

**HARTING solutions extend across technology boundaries.**

Drawing on the comprehensive resources of the group's technology pool, **HARTING** devises practical solutions for its customers. Whether this involves industrial networks for manufacturing automation, or hybrid interface solutions for wireless telecommunication infrastructures, 3D circuit carriers with microstructures, or cable assemblies for high-temperature applications in the automotive industry – **HARTING** technologies offer far more than components, and represent mature, comprehensive solutions attuned to individual customer requirements and wishes. The range covers ready-to-use cable configurations, completely assembled backplanes and board system carriers, as well as fully wired and tested control panels.

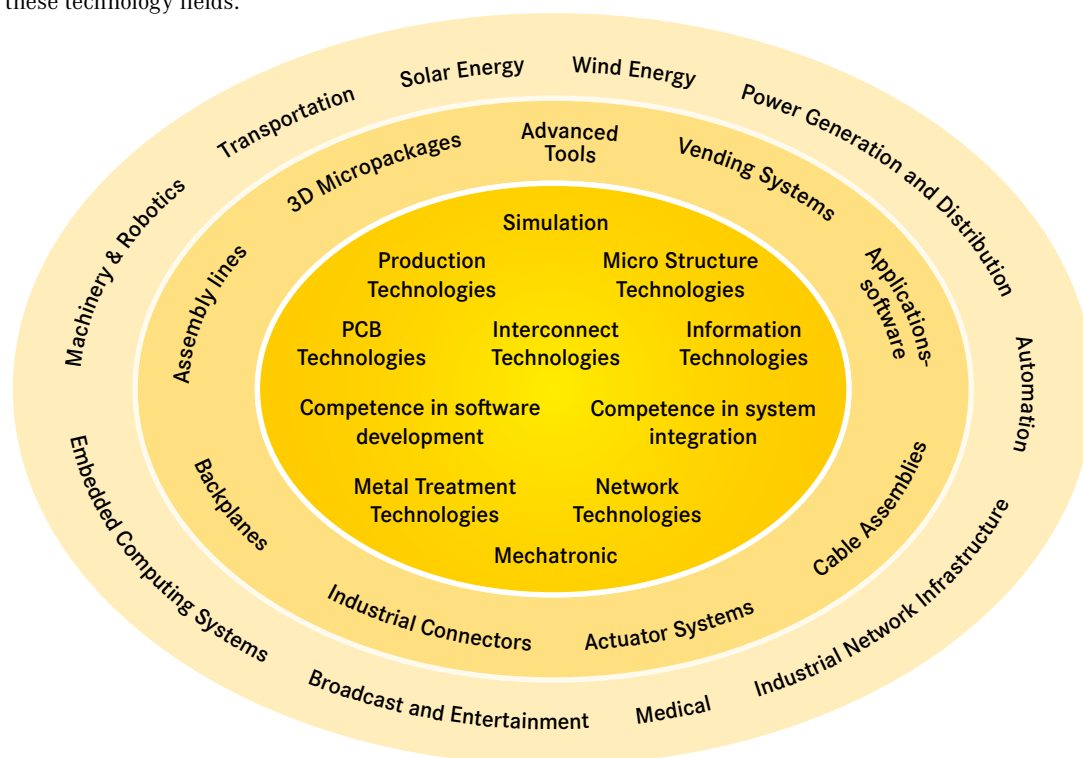
In order to ensure the future proof design of RF- and EMC-compatible interface solutions, the central **HARTING** laboratory (certified to EN 45001) provides simulation tools, as well as experimental, testing and diagnostics facilities all the way through to scanning electron microscopes. In the selection of materials and processes, lifecycle and environmental aspects play a key role, in addition to product and process capability considerations.



**HARTING knowledge is practical know-how generating synergy effects.**

**HARTING** commands decades of experience with regard to the applications conditions of connectors in telecommunications, computer and network technologies and medical technologies, as well as industrial automation technologies, such as the mechanical engineering and plant engineering areas, in addition to the power generation industry or the transportation sector. **HARTING** is highly conversant with the specific application areas in all of these technology fields.

The key focus is on applications in every solution approach. In this context, uncompromising, superior quality is our hallmark. Every new solution found will invariably flow back into the **HARTING** technology pool, thereby enriching our resources. And every new solution we go on to create will draw on this wealth of resources in order to optimize each and every individual solution. In this way, **HARTING** is synergy in action.



### The next generation of D-Sub SMT with straight surface mounts

HARTING has announced the launch of a range of straight D-Sub SMT connectors to complement its established angled product portfolio. Meeting HARTING's high quality standards, this new series of connectors offers an optimized design that ensures a high level of dependability and optimal processing characteristics. It enables surface mounting thus simplifying PCB assembly significantly and broadening its range of applications.

100% co-planarity is achieved through the use of stamped contacts and the specially designed insulator. This robust solution is capable of withstanding all normal handling processes. Two variants are available – a connector for standard applications with flat, solderable pads to withstand plug-in and withdrawal forces and a variant for more demanding requirements with a solderable assembly pin in addition to the flat pads.

The black insulator, which is designed for improved camera detection, includes two positioning pegs for improved pick and place process reliability. Also included is a large removable cover for a 10 mm vacuum pipette. All connectors are available with 9 to 37 contacts and are supplied with the option of M3 and 4-40 UNC threaded inserts and fixed female screw locks. Performance level 2 and 3 are standard. PL1 can be delivered upon request. In addition to 140-piece reels suitable for automatic assembly, these products can be delivered in other special packaging depending on customer requirements.

Details you can find in chapter 21.



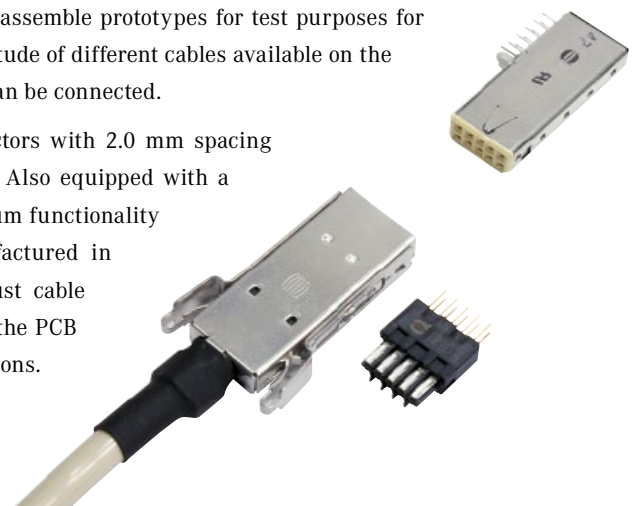
**D-Sub SMT straight**

### HARTING *har-link*®: Now also with solder buckets

HARTING is expanding its space-saving, *har-link*® metric product range with a version with solder buckets. Up to now, connectors were supplied on the cable side only with an insulation displacement termination. The new *har-link*® with solder buckets now enables the customer to assemble prototypes for test purposes for easy and rapid assembly. With these new contacts, the multitude of different cables available on the market with wire gauges ranging from AWG 30 to AWG 24 can be connected.

HARTING's modular and compact *har-link*® interface connectors with 2.0 mm spacing can transmit data of up to 2 GBit/s per twisted conductor. Also equipped with a special screening concept, *har-link*® reliably delivers optimum functionality in areas affected electromagnetically. *har-link*® is manufactured in accordance with IEC 61076-4-107 and is a compact, robust cable connector which guarantees excellent data transmission to the PCB in high frequency networks and telecommunication applications.

Details you can find in chapter 00.

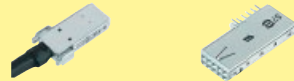


***har-link*® with solder buckets**

## Interface connectors

Chapter

**harlink®** Modular metric high speed connectors  
IEC 61076-4-107, 2.0 mm [0.079"] pitch



00

**harmik®** Miniature D connectors, IEC 61076-3-100,  
IEC 61076-3-101, 1.27 mm [0.050"] pitch



01

**D-Sub – Standard** subminiature D connectors  
CECC 75301-802



02

**D-Sub – High Density** subminiature D connectors



03

**D-Sub – Mixed** subminiature D connectors  
DIN 41652 T1



04

**D-Sub – Filter** subminiature D connectors  
IEC 1000, 2.54 mm [0.100"] pitch



05

**D-Sub – Waterproof** subminiature D IP 67 connectors  
IP 67 housings



06

**D-Sub – Housing** range for subminiature D connectors  
Comprehensive shielded and unshielded range



07

**D-Sub – Accessories** for subminiature D connectors

08

**SEK** Insulation Displacement Connector system (IDC)  
IEC 60603-13, 2.54 mm [0.100"] pitch



09

Press-in technology  
Press-in board connectors



20

Surface Mount Technology (SMT)  
board connectors



21

Surface Mount Compatible (SMC)  
board connectors



22

Tooling for press-in technology



30

Tooling for crimp technology



31

Tooling for IDC technology



32

Cables and cable assemblies



40

List of part numbers

80

Company addresses

90



The **HARTING eCatalogue** is an electronic catalogue with a part configuration and 3D components library.

har-link

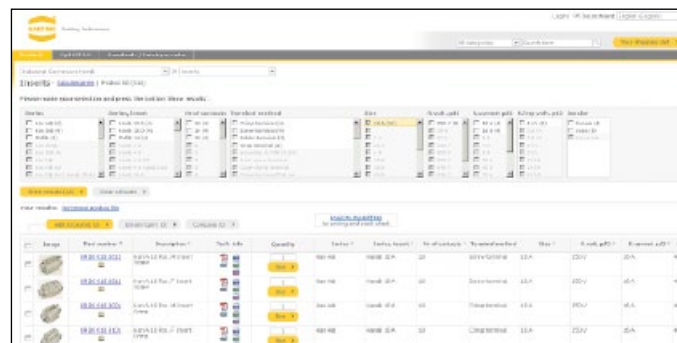
Here you can choose a connector according to your requirements. Afterwards you are able to send your inquiry directly to a HARTING sales partner.

The drawings to every single part are available in PDF-format.

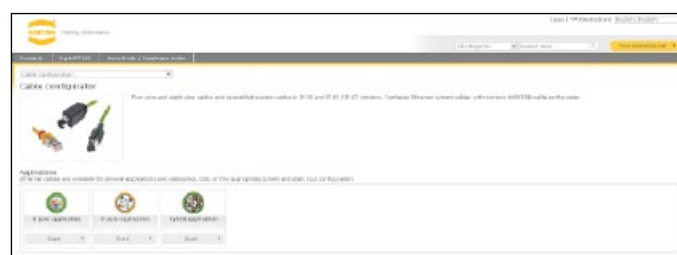
The parts are downloadable in 2D-format (DXF) and 3D-format (IGES, STEP).

The 3D-models can be viewed with a VRML-viewer.

You can find the **HARTING eCatalogue** at **www.HARTING.com**.



Product selection



Product configuration



Product combination



Product overview

## Product samples: Fast-track delivery to your desk, free of charge

The new free express sample service in the HARTING eCatalogue allows customers to order samples immediately, easily and completely free of charge. A broad selection from the device connectivity product portfolio is now available. If a product is unavailable, the system offers alternative products with similar features that can be requested at a mouse click.

The free samples are shipped within 24 hours at no cost to you. This service enables tremendous flexibility, especially in the design phase of projects.

General approvals:



UL-listed E 10 2079 (M)



Interface connectors  
are in conformity with the  
**Directive 2002/95/EG**  
EC Directive on the Restriction and Use  
of Certain Hazardous Substances in  
Electrical and Electronic Devices  
**RoHS**

**har-link®** Modular metric high speed connectors, 2.0 mm pitch

Page

**har-link®** connector system – general information . . . . .

**00.04**

Technical characteristics . . . . .

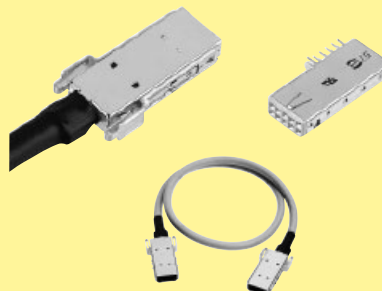
**00.06**

Male and female connectors . . . . .

**00.07**

Accessories and cable assemblies . . . . .

**00.08**



The **har-link®** connector system of HARTING complies with the requirements of IEC 61076-4-107 and is a compact and robust pcb-to-cable interface with excellent data transmission properties for high-speed networking and telecommunications.

All dimensions of the **har-link®** connector are in accordance with IEC 917 and IEEE P 1301 requirements, which allows for easy implementation into both metric and inch-based systems. In addition, **har-link®** supports hot plugging as required by modern bus systems such as CompactPCI, S-bus and VME.

**har-link®** allows data transmission up to 2 Gbit/s per pair and is therefore perfectly suited for modern transmission protocols such as Low Voltage Differential Signals (see Fig. 1). The design of the **har-link®** connector allows differential pairs to be placed horizontally (parallel to the pcb), thus reducing the skew at high frequencies and considering high signal integrity.

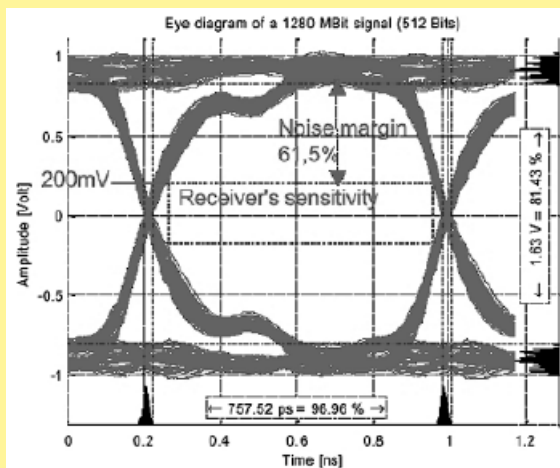


Fig. 1: Eye diagram of a 1280 MBit signal (512 Bits)

The metal shells of the **har-link®** connector are a guarantee for its superior performance in the EMI-polluted environment (see Fig. 2).



Fig. 2: 360° screened-can construction with locking levers

To reach a screening attenuation of more than 50 dB up to 1 GHz, HARTING offers brackets covering each connector in conjunction with a gasket, which is compressed between the bracket and the front panel (see Fig. 3).

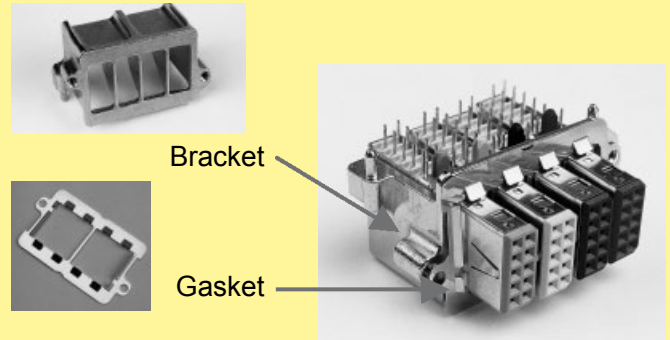


Fig. 3: 4 cavities bracket and gasket

Once plugged, the mated pair shows excellent mating safety. Due to the locking levers on both sides of the male connector, the connection withstands a pulling force of up to 80 N (see Fig. 2).

The high temperature resistant material of the **har-link®** female connector body supports the safe reflow soldering process. For easy identification of female modules, six different colours are available (see Fig. 4).

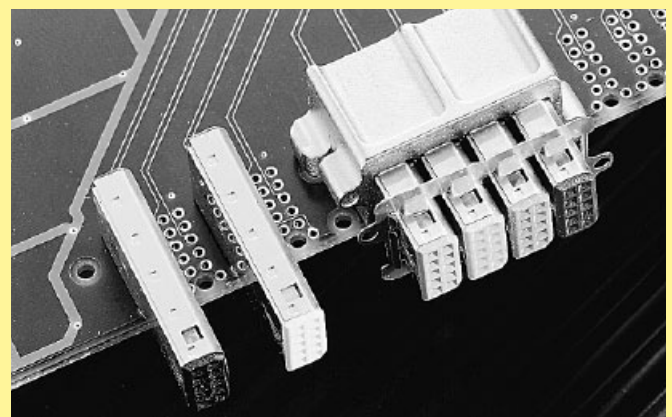


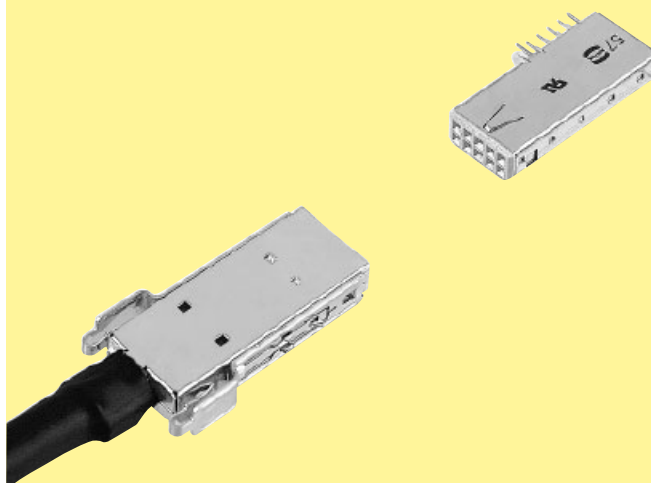
Fig. 4: Female modules

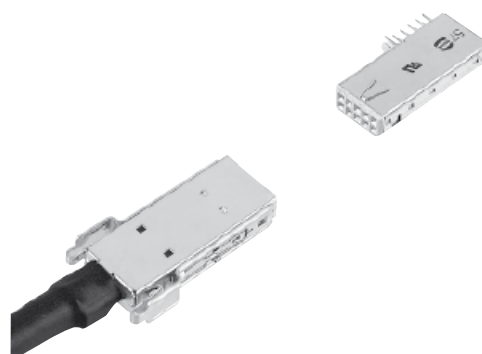
In addition to single connectors, HARTING provides cable assemblies with unshielded twisted pairs or with shielded twisted pairs for high speed applications such as IEEE 1355. A crimping tool range for terminating the male **har-link®** connectors is available.





|                                              |                                                                                                                                       |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Number of contacts                           | 10                                                                                                                                    |
| Approvals                                    | IEC 61 076-4-107<br>UL recognized: E102079                                                                                            |
| Contact pitch<br>Connector pitch             | 2 mm<br>6 mm                                                                                                                          |
| Working current                              | 1.5 A at 70 °C                                                                                                                        |
| Test voltage $U_{r.m.s.}$                    | 750 V                                                                                                                                 |
| Contact resistance<br>Insulation resistance  | $\leq 35 \text{ m}\Omega$<br>$\geq 10^{10} \Omega$                                                                                    |
| Temperature range<br>during reflow soldering | -55 °C ... +125 °C<br>female:<br>max. + 260 °C for 60 s                                                                               |
| Mating cycles                                | 250, performance level 2                                                                                                              |
| Terminations                                 | Solder buckets (male),<br>AWG 24-30,<br>outer insulation Ø<br>$5.33 \pm 0.25 \text{ mm}$<br>Solder pins for Ø 0.6 mm<br>min. (female) |
| Insertion force<br>Withdrawal force          | 10 N max. / module<br>2 N min. / module<br>(without locking levers)                                                                   |
| Latching system                              | Locking levers                                                                                                                        |
| Materials                                    |                                                                                                                                       |
| Mouldings                                    | Male connector: Polyester,<br>UL 94-V0<br>Female connector: High<br>temperature plastic material,<br>UL 94-V0                         |
| Contacts                                     | Copper alloy                                                                                                                          |
| Shells                                       | Male connector:<br>Stainless steel<br>Female connector:<br>Silver nickel                                                              |
| Contact surface<br>Contact zone              | Selectively plated according<br>to performance level                                                                                  |

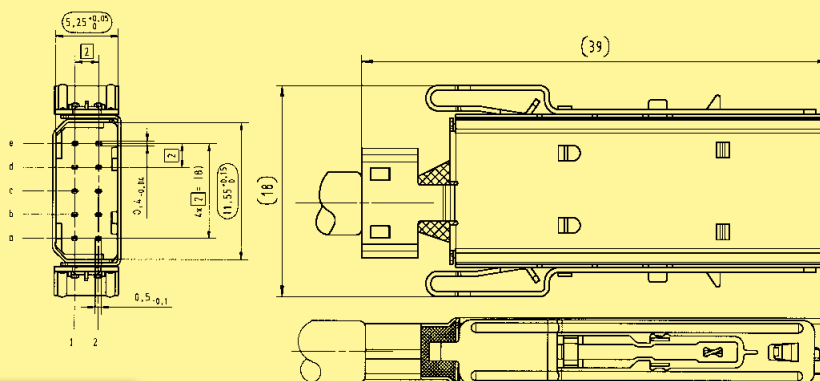




Male connectors, straight  
Female connectors, angled

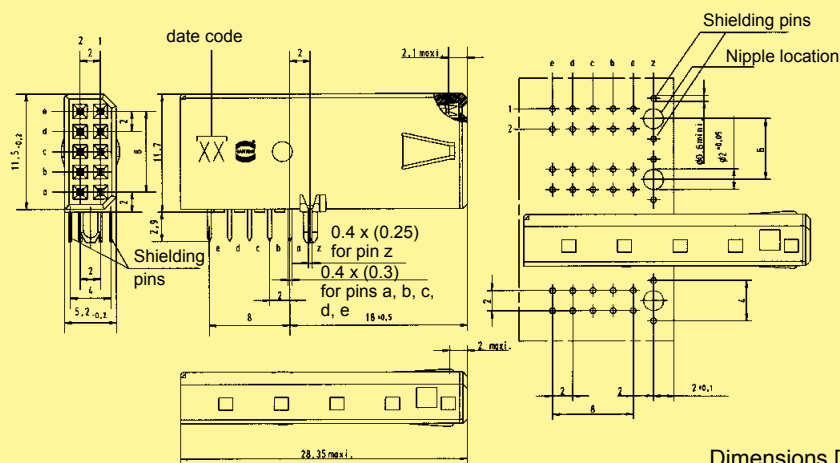
| Identification                        | No. of contacts | Colour           | Part No.       |
|---------------------------------------|-----------------|------------------|----------------|
| Male connector<br>with solder buckets | 10              | Black            | 27 11 122 2001 |
| Female connector<br>with solder pins  | 10              | Beige (standard) | 27 21 121 8000 |
|                                       | 10              | Red              | 27 21 121 8002 |
|                                       | 10              | Yellow           | 27 21 121 8004 |
|                                       | 10              | Green            | 27 21 121 8005 |
|                                       | 10              | Blue             | 27 21 121 8006 |
|                                       | 10              | Black            | 27 21 121 8010 |

Male connector  
(delivered in piece parts)

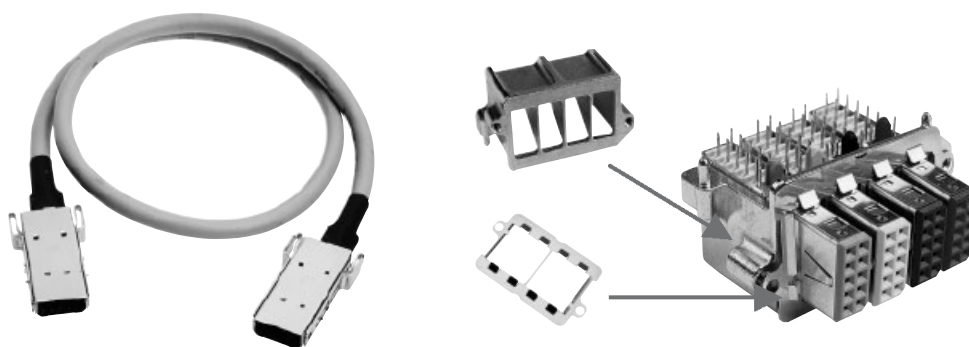


Manuals for the *har-link*® cable free connector assemblies are available in our online catalogue *HARKIS*® or on demand at your local HARTING representative.

Female connector



Dimensions [mm]



| Identification                                                                                                                                                                                          | Part No.                                                       | Drawing                                              | Dimensions in mm                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <div>Bracket</div> <div>with four cavities</div>                                                                                                                                                        | 27 71 040 0001                                                 | <div><p>Board drillings<br/>Component side</p></div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| <div>Gasket</div> <div>with four cavities</div>                                                                                                                                                         | 27 71 040 0002                                                 | <div></div>                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| <div>Standard <i>har-link</i>® cable assembly</div> <div>Cable: 5 twisted pairs,<br/>AWG 28, shielded, PVC</div> <div>Wiring: 1:1</div> <div>Length: L = 0.5 m<br/>L = 1.0 m<br/>L = 2.0 m</div>        | 33 27 243 0500 001<br>33 27 243 1000 002<br>33 27 243 2000 003 | <div></div>                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| <div>High end <i>har-link</i>® cable assembly</div> <div>Cable: 5 twisted pairs,<br/>AWG 30, double shielded, PVC</div> <div>Wiring: 1:1</div> <div>Length: L = 0.5 m<br/>L = 1.0 m<br/>L = 2.0 m</div> | 33 27 243 0500 006<br>33 27 243 1000 007<br>33 27 243 2000 008 |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| <div>Cable: 5 twisted pairs,<br/>AWG 30, double shielded, PVC</div> <div>Wiring: acc. to IEEE 1355</div> <div>Length: L = 0.5 m<br/>L = 1.0 m<br/>L = 2.0 m</div>                                       | 33 27 243 0500 015<br>33 27 243 1000 016<br>33 27 243 2000 017 | IEEE 1355 wiring                                     | <table><tr><th>Connector 1</th><th>Connector 2</th></tr><tr><td>2-e</td><td>1-a</td></tr><tr><td>1-e</td><td>2-a</td></tr><tr><td>2-d</td><td>1-b</td></tr><tr><td>1-d</td><td>2-b</td></tr><tr><td>2-c</td><td>2-c</td></tr></table> <table><tr><th>Connector 1</th><th>Connector 2</th></tr><tr><td>1-c</td><td>1-c</td></tr><tr><td>2-b</td><td>1-d</td></tr><tr><td>1-b</td><td>2-d</td></tr><tr><td>2-a</td><td>1-e</td></tr><tr><td>1-a</td><td>2-e</td></tr></table> | Connector 1 | Connector 2 | 2-e | 1-a | 1-e | 2-a | 2-d | 1-b | 1-d | 2-b | 2-c | 2-c | Connector 1 | Connector 2 | 1-c | 1-c | 2-b | 1-d | 1-b | 2-d | 2-a | 1-e | 1-a | 2-e |
| Connector 1                                                                                                                                                                                             | Connector 2                                                    |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 2-e                                                                                                                                                                                                     | 1-a                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 1-e                                                                                                                                                                                                     | 2-a                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 2-d                                                                                                                                                                                                     | 1-b                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 1-d                                                                                                                                                                                                     | 2-b                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 2-c                                                                                                                                                                                                     | 2-c                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| Connector 1                                                                                                                                                                                             | Connector 2                                                    |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 1-c                                                                                                                                                                                                     | 1-c                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 2-b                                                                                                                                                                                                     | 1-d                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 1-b                                                                                                                                                                                                     | 2-d                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 2-a                                                                                                                                                                                                     | 1-e                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |
| 1-a                                                                                                                                                                                                     | 2-e                                                            |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |             |     |     |     |     |     |     |     |     |     |     |             |             |     |     |     |     |     |     |     |     |     |     |

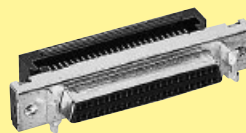
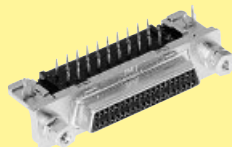
**harmik®** Miniature D connectors, 1.27 mm pitch

Page

**I/O connectors**

**01.02**

**Pin and socket**



Technical characteristics

**01.03**

Connectors with straight solder pins

**01.04**

Connectors with right angled solder pins

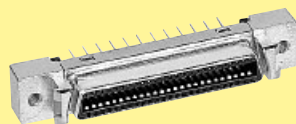
**01.06**

Connectors with IDC flat cable termination

**01.08**

Connectors with IDC discrete wire termination

**01.09**



**Bellows**

Technical characteristics

**01.10**

Connectors with straight solder pins

**01.11**

Connectors with right angled solder pins

**01.13**

Connectors with IDC discrete wire termination

**01.14**



**Hoods**

Technical characteristics

**01.15**

Hoods for pin and socket male connectors

**01.16**

Hoods for bellows male connectors

**01.18**

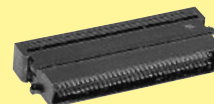
**Accessories**

**01.20**

**Intra cabinet connectors**

**01.21**

**Pin and socket**



Technical characteristics

**01.22**

Connectors with straight solder pins

**01.23**

Connectors with IDC flat cable termination

**01.24**

**Cables and cable assemblies**



see chapter 40

**01  
01**



## for economical and reliable connections

har-mik

A comprehensive range of high density interface connectors based on two mating design concepts:

- Blade and fork contact in the Pin/Socket range.
- Leaf contact in the Bellows range.

Available in a various number of contacts with options for secure locking of mated connectors in accordance with the following international standards:

- Small Computer System Interface  
SCSI-2  
SCSI-2 wide  
SCSI-3
- Intelligent Peripheral Interface  
IPI
- High Performance Peripheral Interface  
HIPPI
- High Speed Serial Interface  
HSSI
- Media Independent Interface  
MII
- Bi-directional Parallel Interface  
IEEE – 1284-C
- EIA – TIA  
232-E
- IEC  
61076-3-100  
for bellows connectors
- IEC  
61076-3-101  
for pin and socket connectors

UL recognised

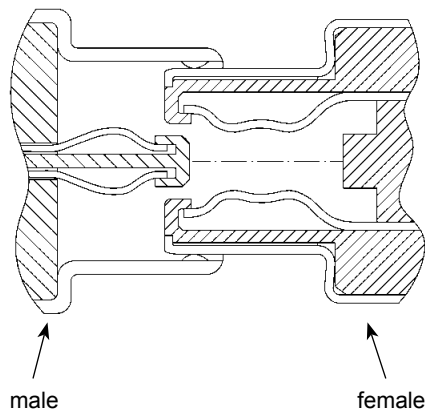
For customer specific applications we can design and manufacture solutions to match your requirement.

Sales department  
HARTING components

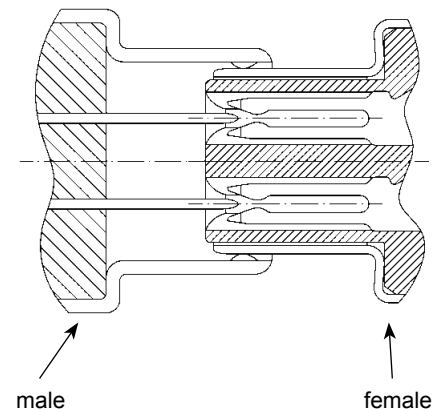


Certified according to EN ISO 9001  
in design/development, production,  
installation and servicing

**Bellows**  
with leaf contact design

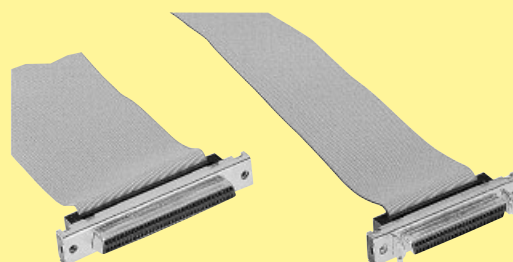
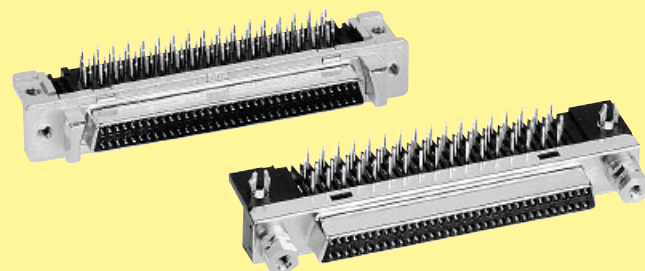


**Pin and socket**  
with blade and fork contact design

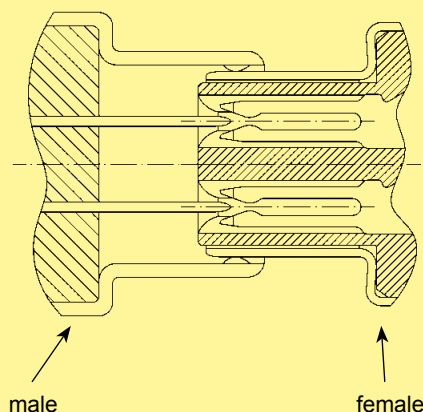


### I/O connectors

|                           |                                                                                                                                                                                                                                                           |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of contacts        | 20, 26, 50, 68, 100                                                                                                                                                                                                                                       |
| Pitch                     | 1.27 mm                                                                                                                                                                                                                                                   |
| Working current           | 1 A                                                                                                                                                                                                                                                       |
| Working voltage           | 240 V ~                                                                                                                                                                                                                                                   |
| Test voltage $U_{r.m.s.}$ | 750 V                                                                                                                                                                                                                                                     |
| Contact resistance        | $\leq 30 \text{ m}\Omega$                                                                                                                                                                                                                                 |
| Insulation resistance     | $\geq 10^3 \text{ M}\Omega$                                                                                                                                                                                                                               |
| Temperature range         | -55 °C ... + 105 °C                                                                                                                                                                                                                                       |
| <b>Terminations</b>       |                                                                                                                                                                                                                                                           |
| Solder pins               | Straight for pcb holes<br>min. $\varnothing 0.74 \text{ mm}$<br>Angled 90° for pcb holes<br>min. $\varnothing 0.74 \text{ mm}$                                                                                                                            |
| Insulation displacement   | Discrete wire<br>AWG 28 to AWG 30<br>max. section: $0.089 \text{ mm}^2$<br>min. section: $0.050 \text{ mm}^2$<br>Insulation $\varnothing$ min. $0.50 \text{ mm}$<br>$\varnothing$ max. $0.90 \text{ mm}$<br>Flat cable<br>AWG 30 pitch $0.635 \text{ mm}$ |
| <b>Materials</b>          |                                                                                                                                                                                                                                                           |
| Moulding                  | Thermoplastic resin<br>glass-fibre filled UL 94-V0                                                                                                                                                                                                        |
| Contacts                  | Copper alloy                                                                                                                                                                                                                                              |
| <b>Contact surface</b>    |                                                                                                                                                                                                                                                           |
| Contact zone              | S4 = $0.76 \mu\text{m}$ (30 $\mu\text{inch}$ ) Au<br>or PdNi equivalent                                                                                                                                                                                   |
| Metal shell               | Die cast zamac or stamped<br>steel, nickel-plated                                                                                                                                                                                                         |

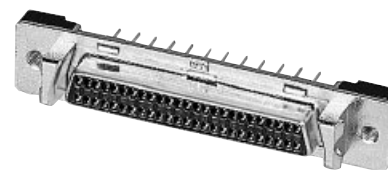


Pin and socket  
with blade and fork contact design



Number of contacts

**20–68**

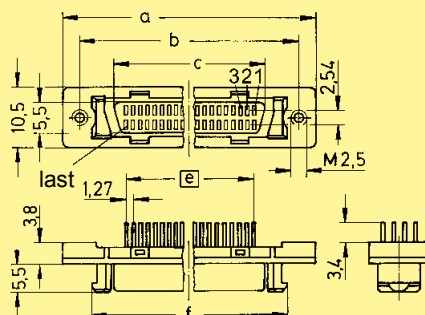


Female connectors, straight

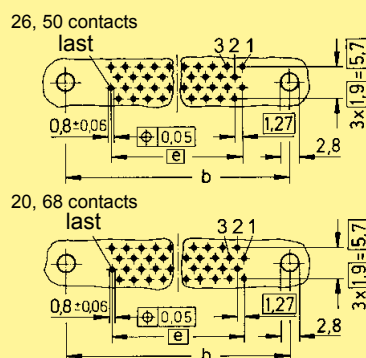
| Identification                              | No. of contacts | Part No.       |
|---------------------------------------------|-----------------|----------------|
| Female connectors with straight solder pins | 20              | 60 01 020 5102 |
|                                             | 26              | 60 01 026 5102 |
|                                             | 50              | 60 01 050 5102 |
|                                             | 68              | 60 01 068 5102 |

Dimensions

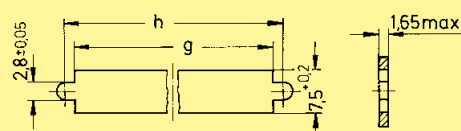
|    | a     | b <sub>±0.1</sub> | c     | e                 | f     | g     | h     |
|----|-------|-------------------|-------|-------------------|-------|-------|-------|
| 20 | 33.40 | 27.43             | 15.60 | 9 x 1.27 = 11.43  | 23.24 | 23.70 | 27.45 |
| 26 | 37.21 | 31.24             | 19.41 | 12 x 1.27 = 15.24 | 27.05 | 27.50 | 31.25 |
| 50 | 52.45 | 46.48             | 34.65 | 24 x 1.27 = 30.48 | 42.29 | 42.80 | 46.50 |
| 68 | 63.88 | 57.91             | 46.08 | 33 x 1.27 = 41.91 | 53.72 | 54.20 | 57.90 |



Board drillings



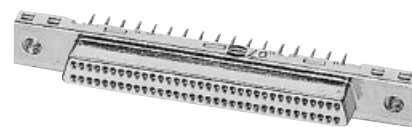
Panel cut out



Dimensions in mm

Number of contacts

**68**

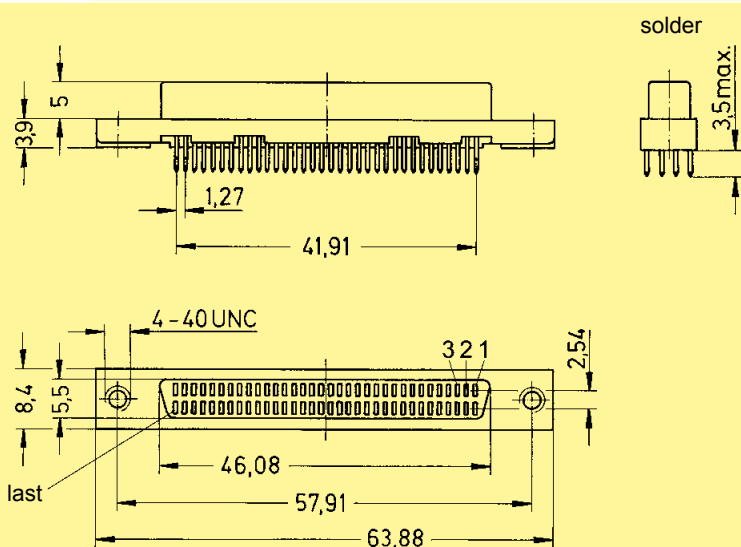


Female connectors, straight

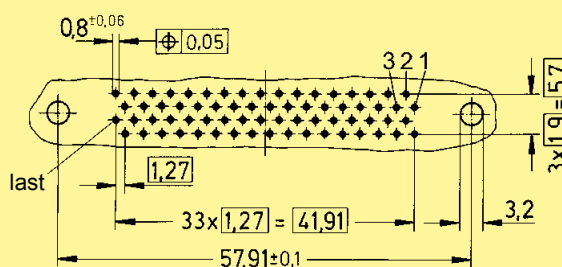
har-mik

| Identification                             | No. of contacts | Part No.       |
|--------------------------------------------|-----------------|----------------|
| Female connector with straight solder pins | 68              | 60 02 068 5120 |

Dimensions



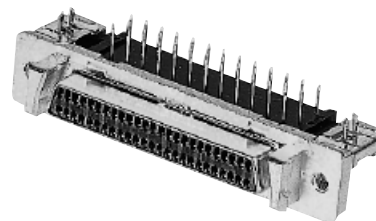
Board drillings  
(Components side)



Dimensions in mm

Number of contacts

## 20–68

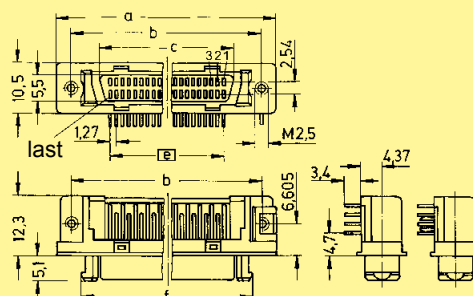


Female connectors, angled

| Identification                            | No. of contacts | Part No.         |
|-------------------------------------------|-----------------|------------------|
| Female connectors with angled solder pins |                 |                  |
|                                           | 20              | 60 01 020 51 ... |
|                                           | 26              | 60 01 026 51 ... |
|                                           | 50              | 60 01 050 51 ... |
|                                           | 68              | 60 01 068 51 ... |
| Panel fixing                              | Board fixing    |                  |
| M 2.5                                     | M 2.5           | 32               |
| M 2.5                                     | Board lock      | 40               |

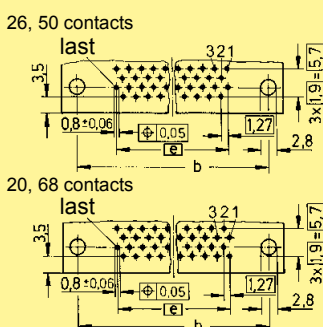
Dimensions

|    | a     | b <sub>±0.1</sub> | c     | e                 | f     | g     | h     |
|----|-------|-------------------|-------|-------------------|-------|-------|-------|
| 20 | 33.40 | 27.40             | 15.60 | 9 x 1.27 = 11.43  | 23.24 | 23.70 | 27.45 |
| 26 | 37.21 | 31.24             | 19.41 | 12 x 1.27 = 15.24 | 27.05 | 27.50 | 31.25 |
| 50 | 52.45 | 46.45             | 34.65 | 24 x 1.27 = 30.48 | 42.29 | 42.80 | 46.50 |
| 68 | 63.88 | 57.88             | 46.08 | 33 x 1.27 = 41.91 | 53.72 | 54.20 | 57.90 |

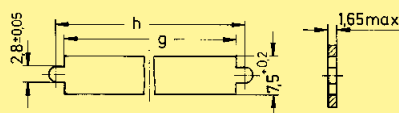


without board lock    with board lock

Board drillings



Panel cut out

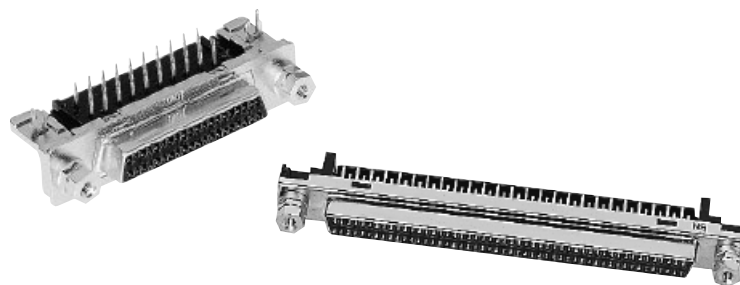


Dimensions in mm



Number of contacts

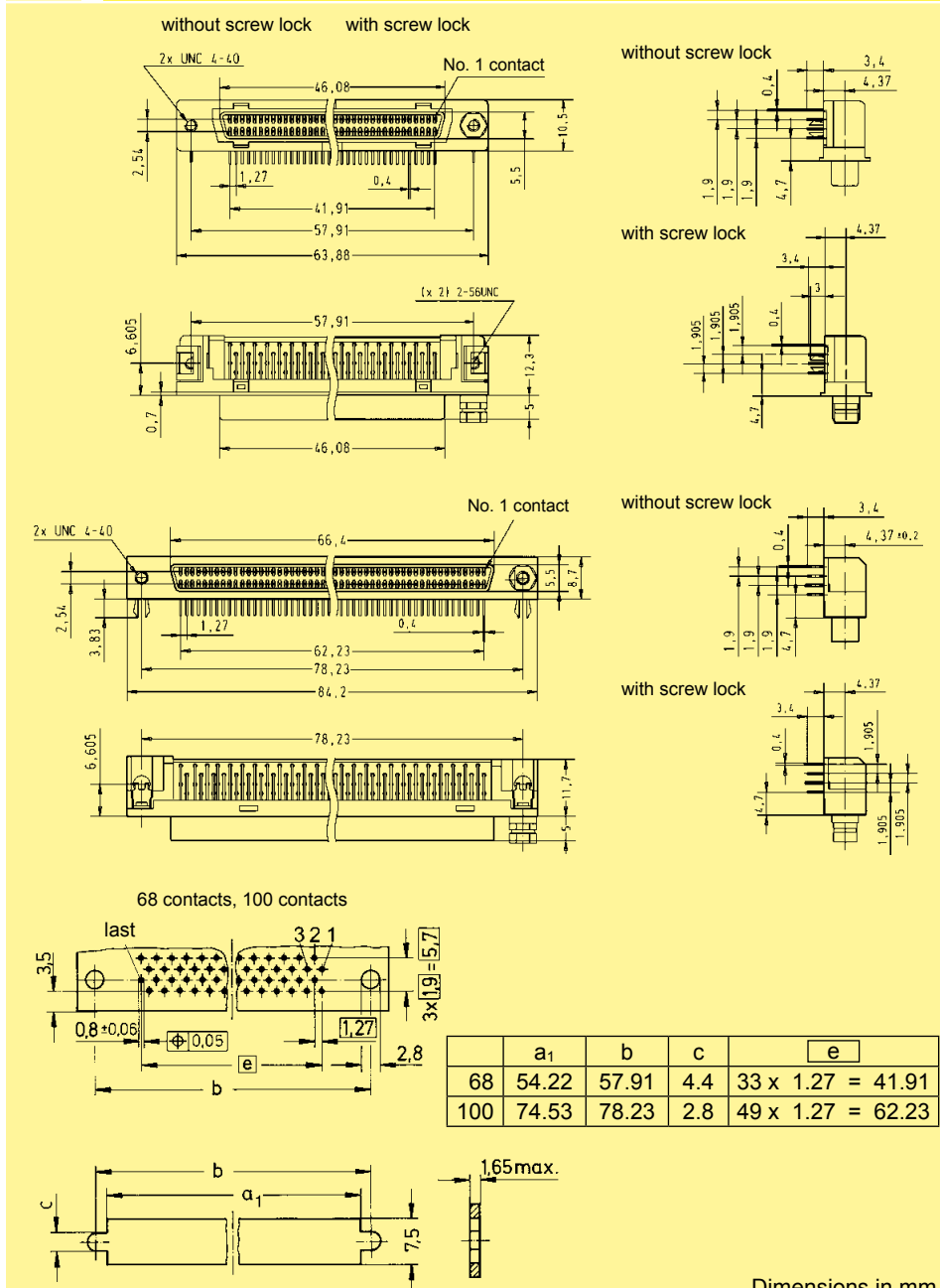
# 68–100



Female connectors, angled

| Identification                            | No. of contacts | Part No.                             |
|-------------------------------------------|-----------------|--------------------------------------|
| Female connectors with angled solder pins | 68<br>100       | 60 02 068 51 ...<br>60 02 100 51 ... |
| With female screw lock                    | 41              |                                      |
| Without female screw lock                 | 50              |                                      |

## Dimensions



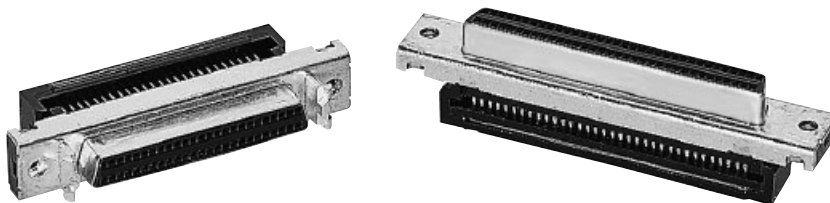
Board drillings  
(Components side)

Panel cut out

Dimensions in mm

Number of contacts

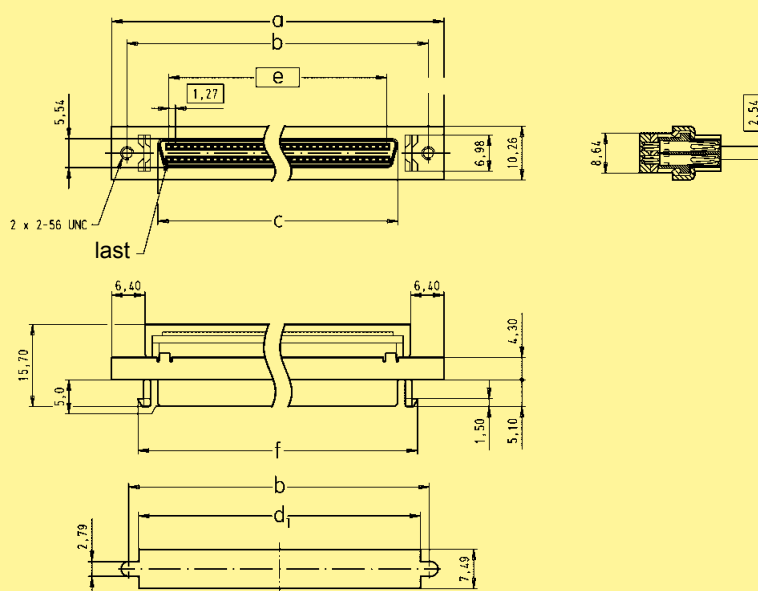
**50–68**



Female connectors for IDC flat cable, straight

| Identification                                                                                                  | No. of contacts | Part No.          |                        |
|-----------------------------------------------------------------------------------------------------------------|-----------------|-------------------|------------------------|
| Female panel connectors with insulation displacement termination<br>for IDC flat cable pitch 0.635 mm<br>AWG 30 |                 | with latch system | with screw lock system |
|                                                                                                                 | 50              | 60 04 050 5343    | 60 04 050 5344         |
|                                                                                                                 | 68              | 60 04 068 5343    | 60 04 068 5344         |

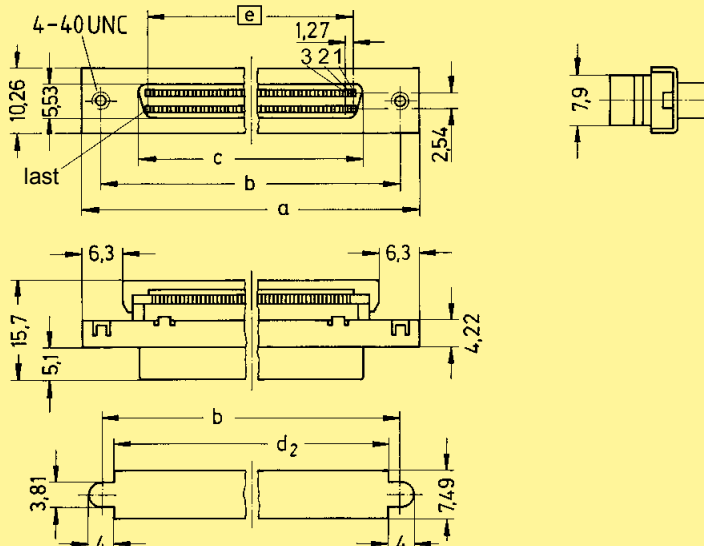
Dimensions for connectors with latch system



Panel cut out

|    | a     | b     | c     | d <sub>1</sub> | d <sub>2</sub> | e     | f     |
|----|-------|-------|-------|----------------|----------------|-------|-------|
| 50 | 52.45 | 46.48 | 34.70 | 42.80          | 42.30          | 30.48 | 42.30 |
| 68 | 63.88 | 57.91 | 46.13 | 54.23          | 53.72          | 41.91 | 53.72 |

Dimensions for connectors with screw lock system



Panel cut out

Dimensions in mm

Number of contacts

## 20–100

Male connectors for IDC discrete wire, straight



har-mik

Identification

No. of contacts

Part No.

Male connectors with insulation displacement termination

for discrete wire  
AWG 28/30

Insulation diameter (mm)

$\varnothing = 0.50-0.65$   
 $\varnothing = 0.50-0.75$   
 $\varnothing = 0.65-0.80$   
 $\varnothing = 0.75-0.90$   
 $\varnothing = 0.80-0.88$

00  
 05  
 10  
 15  
 20

20 60 03 020 52  
 26 60 03 026 52  
 50 60 03 050 52  
 68 60 03 068 52  
 100 60 03 100 52

A manual for the *har-mik*® connector and cable assembly is available in our online catalogue *HARKIS*® or on demand at your local HARTING representative.



Available sizes

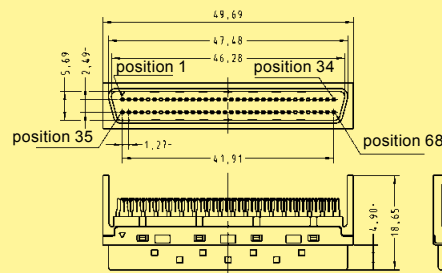
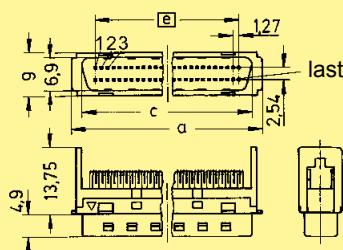
|      | Part No.       | $\varnothing$ | 20 | 26 | 50 | 68 | 100 |
|------|----------------|---------------|----|----|----|----|-----|
| Male | 60 03 ... 5200 | 0.50–0.65     | ●  | ●  | ●  |    |     |
|      | 60 03 ... 5205 | 0.50–0.75     |    |    |    | ●  |     |
|      | 60 03 ... 5210 | 0.65–0.80     | ●  |    | ●  |    | ●   |
|      | 60 03 ... 5215 | 0.75–0.90     |    |    |    | ●  |     |
|      | 60 03 ... 5220 | 0.80–0.88     | ●  | ●  | ●  |    |     |

● = Available sizes

Dimensions

20 / 26 / 50 / 100 contacts

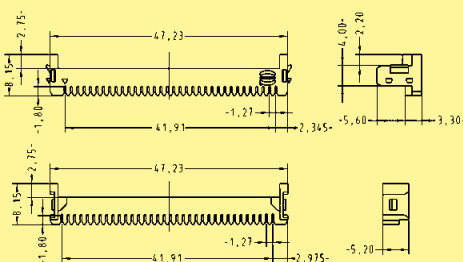
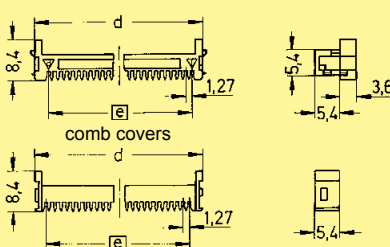
68 contacts



|     | a     | c     | d     | e     |
|-----|-------|-------|-------|-------|
| 20  | 21.25 | 17.00 | 16.75 | 11.43 |
| 26  | 25.06 | 20.81 | 20.56 | 15.24 |
| 50  | 40.30 | 36.05 | 35.80 | 30.48 |
| 100 | 72.05 | 67.80 | 67.55 | 62.23 |

Comb cover

(delivered with connectors)



Dimensions in mm

Number of contacts 14, 20, 26, 36, 50, 68

Pitch 1.27 mm

Working current 1 A

Working voltage 240 V ~

Test voltage  $U_{r.m.s.}$  750 V (standard)  
500 V (light weight)

Contact resistance  $\leq 40 \text{ m}\Omega$  (standard)  
 $\leq 45 \text{ m}\Omega$  (light weight)

Insulation resistance  $\geq 10^3 \text{ M}\Omega$

Temperature range -55 °C ... +105 °C  
during SMC reflow soldering max. 240 °C for 60 s

### Terminations

Solder pins Straight for pcb holes  
min.  $\varnothing 0.74 \text{ mm}$   
Angled 90° for pcb holes  
min.  $\varnothing 0.74 \text{ mm}$  (wave soldering)  
min.  $\varnothing 0.62 \text{ mm}$  (light weight)

Insulation displacement AWG 28 to AWG 30  
max. section:  $0.089 \text{ mm}^2$   
min. section:  $0.050 \text{ mm}^2$   
Insulation  $\varnothing$  min. 0.50 mm  
 $\varnothing$  max. 0.90 mm

### Materials

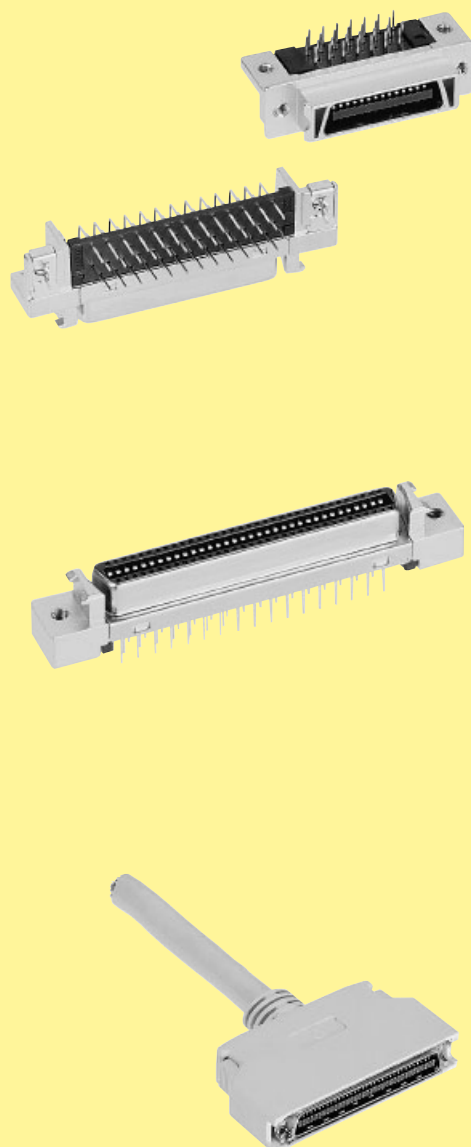
Moulding Thermoplastic resin  
glass-fibre filled UL 94-V0

Contacts Copper alloy

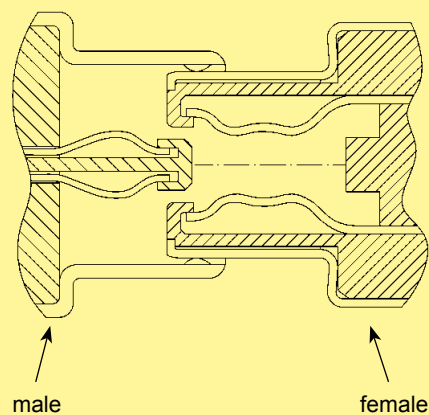
### Contact surface

Contact zone  $S_4 = 0.76 \text{ }\mu\text{m}$  (30  $\mu\text{inch}$ ) Au  
or PdNi equivalent

Metal shell Die cast zamac or stamped  
steel, nickel-plated

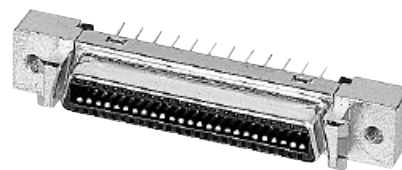


**Bellows**  
with leaf contact design



Number of contacts

**26–68**

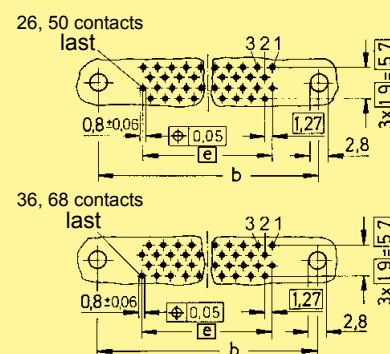
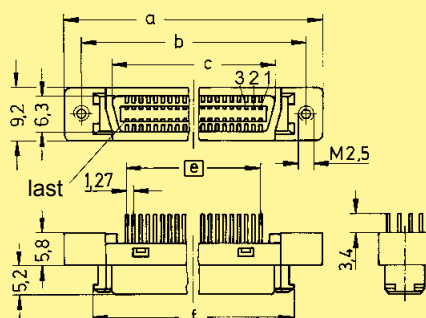


Female connectors, straight

| Identification                              | No. of contacts | Part No.       |
|---------------------------------------------|-----------------|----------------|
| Female connectors with straight solder pins |                 |                |
|                                             | 26              | 60 11 026 5102 |
|                                             | 36              | 60 11 036 5102 |
|                                             | 50              | 60 11 050 5102 |
|                                             | 68              | 60 11 068 5102 |

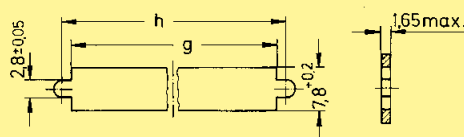
Dimensions

Board drillings



|    | a     | b $\pm 0.1$ | c     | e                 | f     | g     | h     |
|----|-------|-------------|-------|-------------------|-------|-------|-------|
| 26 | 37.16 | 31.26       | 20.26 | 12 x 1.27 = 15.24 | 27.11 | 27.50 | 31.25 |
| 36 | 43.51 | 37.61       | 26.61 | 17 x 1.27 = 21.59 | 33.46 | 33.90 | 37.60 |
| 50 | 52.40 | 46.50       | 35.50 | 24 x 1.27 = 30.48 | 42.35 | 42.80 | 46.50 |
| 68 | 63.83 | 57.93       | 46.93 | 33 x 1.27 = 41.91 | 53.78 | 54.20 | 57.90 |

Panel cut out



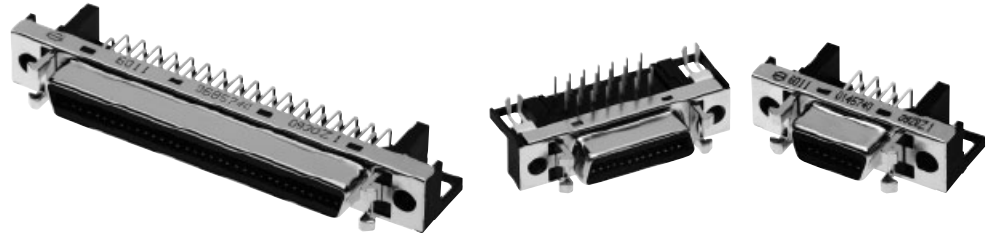
Dimensions in mm





Number of contacts

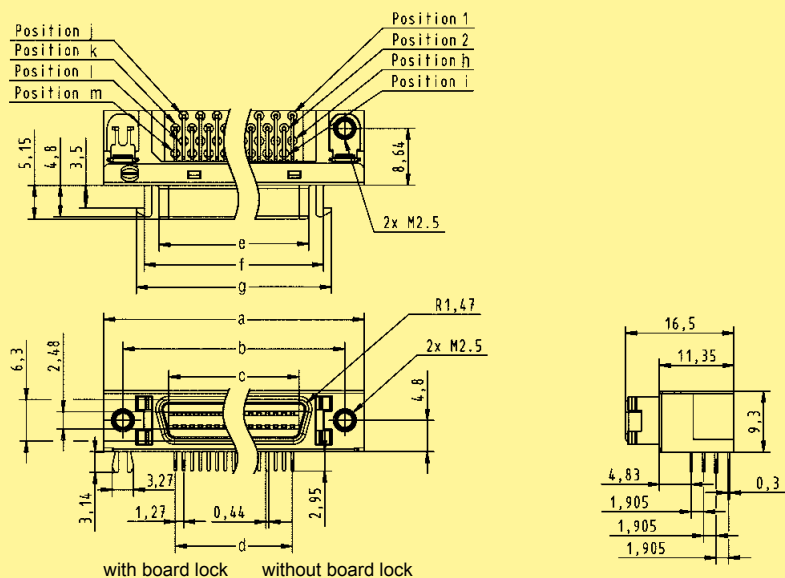
# 14–68



Light weight female connectors, angled

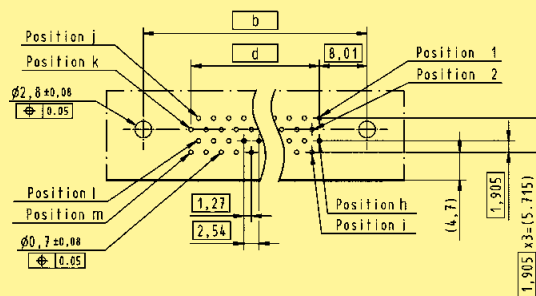
| Identification                                                                      | No. of contacts    | for one reel (300 pieces) |     | Part No.     | standard tray packaging |
|-------------------------------------------------------------------------------------|--------------------|---------------------------|-----|--------------|-------------------------|
| Light weight female connectors with angled solder pins, for pick and place assembly | 14                 | 60 11 014 57              | 710 | 60 11 014 57 |                         |
|                                                                                     | 20                 | 60 11 020 57              | 710 | 60 11 020 57 |                         |
|                                                                                     | 26                 | 60 11 026 57              | 710 | 60 11 026 57 |                         |
|                                                                                     | 36                 | 60 11 036 57              | 710 | 60 11 036 57 |                         |
|                                                                                     | 50                 | 60 11 050 57              | 710 | 60 11 050 57 |                         |
|                                                                                     | 68                 | 60 11 068 57              | 710 | 60 11 068 57 |                         |
|                                                                                     | Without board lock | 32                        |     |              |                         |
|                                                                                     | With board lock    | 40                        |     |              |                         |

## Dimensions



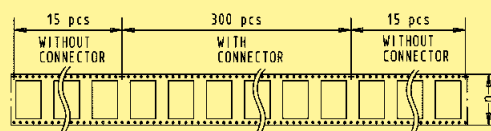
|    | a     | b     | c     | d     | e     | f     | g     | h  | i  | j  | k  | l  | m  | n    |
|----|-------|-------|-------|-------|-------|-------|-------|----|----|----|----|----|----|------|
| 14 | 29.54 | 23.64 | 9.62  | 7.62  | 12.62 | 17.14 | 19.54 | 8  | 9  | 7  | 6  | 14 | 13 | 44.0 |
| 20 | 33.35 | 27.45 | 13.43 | 11.43 | 16.43 | 20.95 | 23.35 | 11 | 12 | 9  | 10 | 19 | 20 | 56.5 |
| 26 | 37.16 | 31.26 | 17.24 | 15.24 | 20.24 | 24.76 | 27.16 | 14 | 15 | 13 | 12 | 26 | 25 | 56.0 |
| 36 | 43.51 | 37.61 | 23.59 | 21.59 | 26.59 | 31.11 | 33.51 | 19 | 20 | 17 | 18 | 35 | 36 | 56.0 |
| 50 | 52.40 | 46.50 | 32.48 | 30.48 | 35.48 | 40.00 | 42.40 | 26 | 27 | 25 | 24 | 50 | 49 | 72.5 |
| 68 | 63.83 | 57.93 | 43.91 | 41.91 | 46.91 | 51.43 | 53.83 | 35 | 36 | 33 | 34 | 67 | 68 | 88.5 |

## Board drillings (Components side)



## Packaging

(1 reel = 300 pieces)  
Reel diameter = 380 mm



Dimensions in mm

Number of contacts

# 14–68



Male connectors for IDC discrete wire, straight

| Identification                                                                       | No. of contacts | Part No.       |
|--------------------------------------------------------------------------------------|-----------------|----------------|
| Male connectors with insulation displacement termination for discrete wire AWG 28/30 |                 | Male connector |
| Insulation diameter (mm)                                                             | 14              | 60 13 014 52   |
| Ø = 0.50–0.65                                                                        | 20              | 60 13 020 52   |
| Ø = 0.50–0.75                                                                        | 26              | 60 13 026 52   |
| Ø = 0.75–0.90                                                                        | 36              | 60 13 036 52   |
|                                                                                      | 50              | 60 13 050 52   |
|                                                                                      | 68              | 60 13 068 52   |

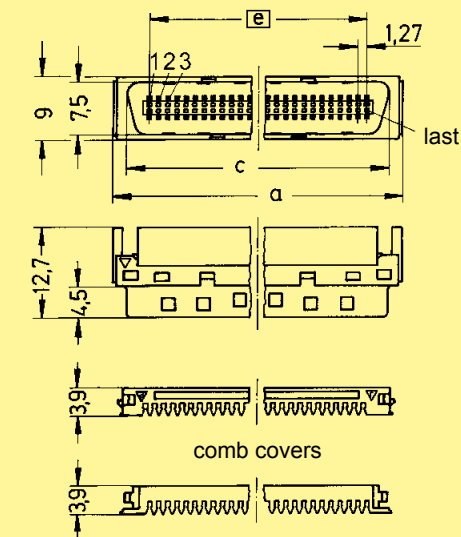
Available sizes

|      | Part No.       | Ø         | 14 | 20 | 26 | 36 | 50 | 68 |
|------|----------------|-----------|----|----|----|----|----|----|
| Male | 60 13 ... 5200 | 0.50–0.65 |    | ●  |    |    | ●  | ●  |
|      | 60 13 ... 5205 | 0.50–0.75 | ●  |    | ●  | ●  |    |    |
|      | 60 13 ... 5215 | 0.75–0.90 | ●  |    | ●  | ●  |    |    |

● = Available sizes

Dimensions for male connectors

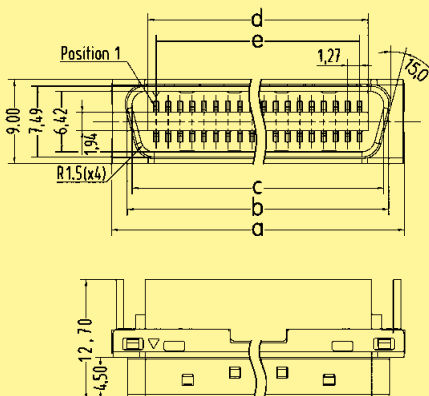
20 / 50 / 68 poles



|    | a     | c     | e     |
|----|-------|-------|-------|
| 20 | 21.24 | 17.55 | 11.43 |
| 50 | 40.29 | 36.60 | 30.48 |
| 68 | 51.72 | 48.03 | 41.91 |



14 / 26 / 36 poles

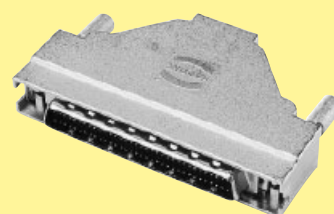
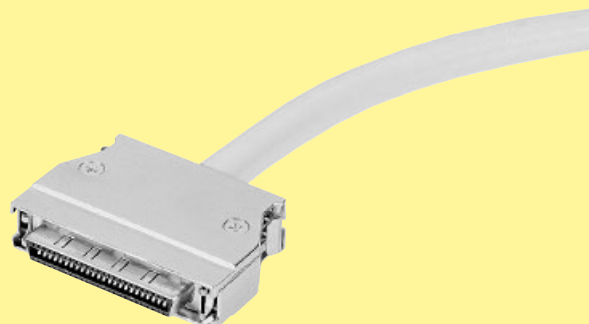


|    | a     | b     | c     | d     | e     |
|----|-------|-------|-------|-------|-------|
| 14 | 17.10 | 13.84 | 12.78 | 9.42  | 7.62  |
| 26 | 24.95 | 21.46 | 20.40 | 17.00 | 15.24 |
| 36 | 31.35 | 27.81 | 26.75 | 23.39 | 21.59 |

Dimensions in mm

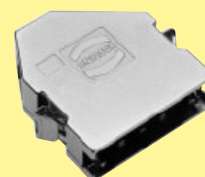
### Hoods for pin and socket male connectors

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| Number of contacts | 20, 26, 36, 50, 68, 100                             |
| Surface            | Die cast zamac,<br>nickel-plated                    |
|                    | Thermoplastic resin,<br>nickel-plated, steel insert |

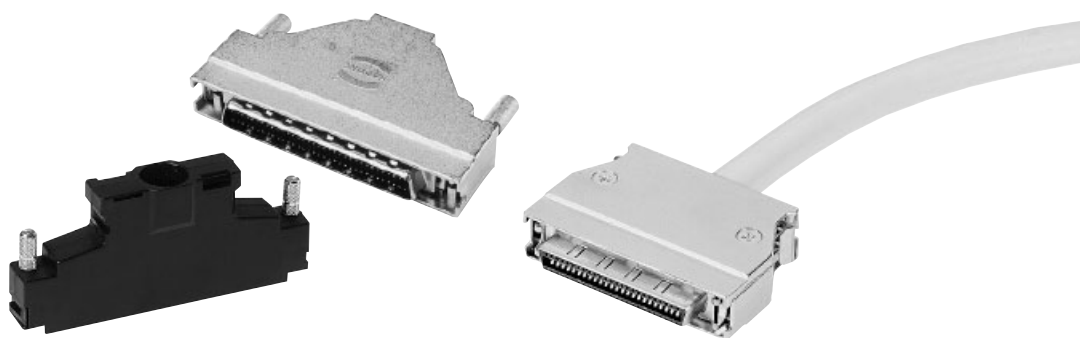


### Hoods for bellows male connectors

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| Number of contacts | 14, 20, 26, 36, 50, 68                              |
| Surface            | Die cast zamac,<br>nickel-plated                    |
|                    | Thermoplastic resin,<br>nickel-plated, steel insert |



## Top entry hoods



### Identification

### No. of contacts

### Part No.

### Drawing

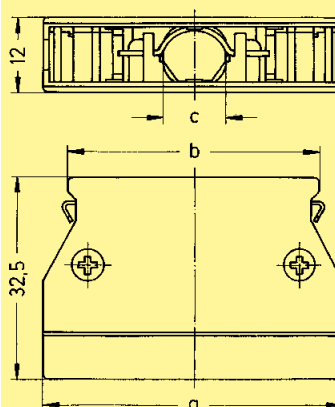
### Dimensions in mm

#### Metal hood

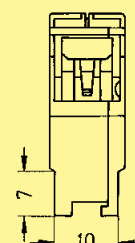
Large cable entry

20  
26  
36  
50  
68

60 03 020 0255  
60 03 026 0255  
60 03 036 0255  
60 03 050 0255  
60 03 068 0255



|    | a     | b     | c            |
|----|-------|-------|--------------|
| 20 | 28.95 | 21.15 | 8.00 x 8.50  |
| 26 | 32.76 | 24.96 | 8.00 x 6.75  |
| 36 | 39.11 | 31.31 | 9.00 x 10.00 |
| 50 | 48.00 | 40.20 | 9.00 x 10.00 |
| 68 | 59.43 | 51.63 | 9.00 x 10.00 |

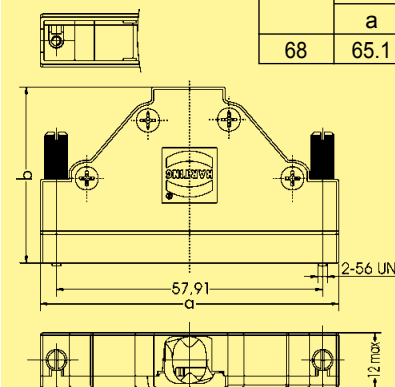


#### Metal hood

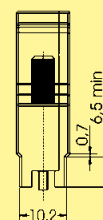
Top cable entry

68

60 03 068 0145



|    | Shell dimensions |      | Cable dimensions |      |
|----|------------------|------|------------------|------|
|    | a                | b    | min.             | max. |
| 68 | 65.1             | 38.2 | 8.7              | 10.7 |

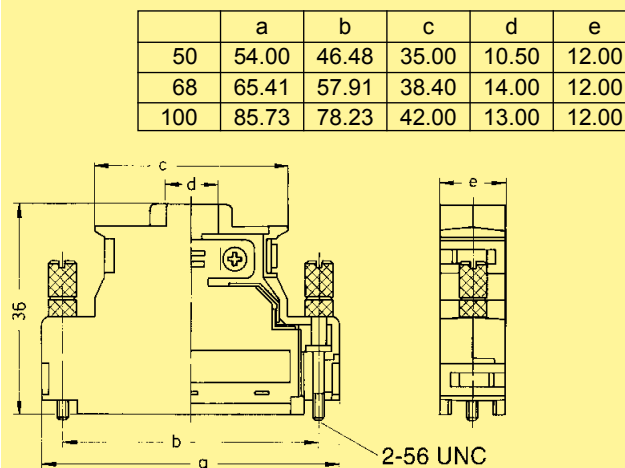


#### Plastic hood

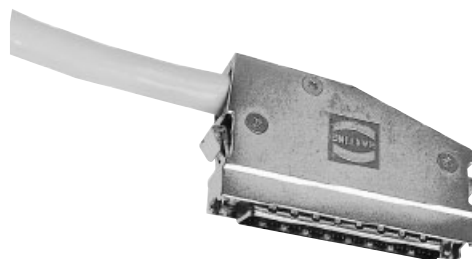
with internal screen<sup>1)</sup>

50  
68  
100

60 03 050 0143  
60 03 068 0143  
60 03 100 0143



|     | a     | b     | c     | d     | e     |
|-----|-------|-------|-------|-------|-------|
| 50  | 54.00 | 46.48 | 35.00 | 10.50 | 12.00 |
| 68  | 65.41 | 57.91 | 38.40 | 14.00 | 12.00 |
| 100 | 85.73 | 78.23 | 42.00 | 13.00 | 12.00 |



## Side entry hoods

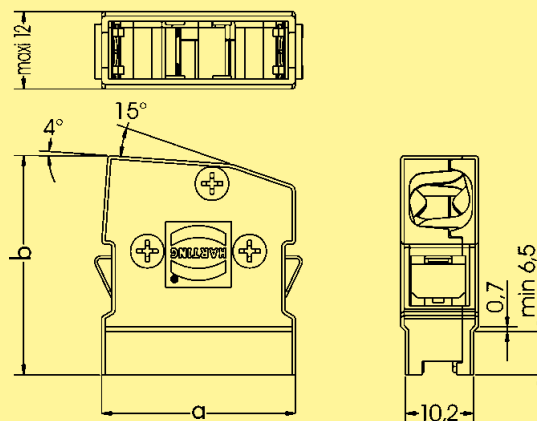
har-mik

| Identification | No. of contacts | Part No. | Drawing | Dimensions in mm |
|----------------|-----------------|----------|---------|------------------|
|----------------|-----------------|----------|---------|------------------|

### Metal hood

Cable side entry

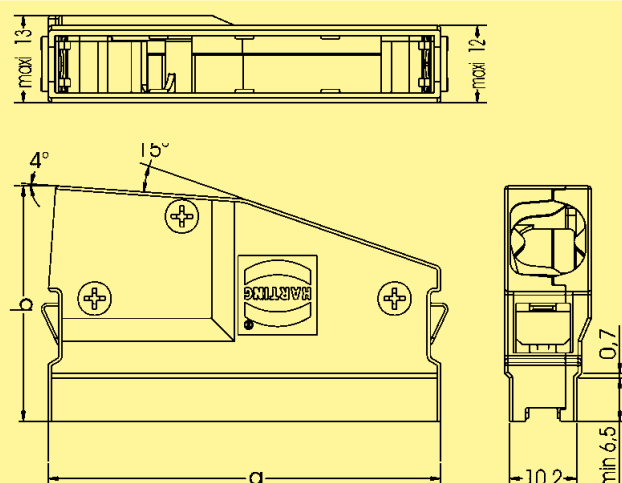
|    |                |
|----|----------------|
| 20 | 60 03 020 0555 |
| 26 | 60 03 026 0555 |
| 50 | 60 03 050 0555 |
| 68 | 60 03 068 0555 |



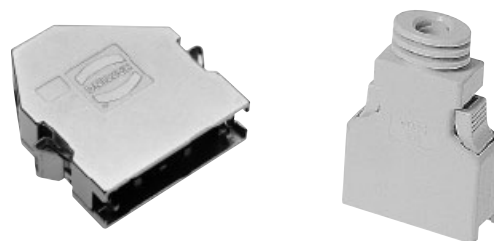
|    | Shell dimensions |      | Cable dimensions |      |
|----|------------------|------|------------------|------|
|    | a                | b    | min.             | max. |
| 20 | 29.0             | 32.9 | 6.2              | 8.0  |
| 26 | 32.8             | 32.9 | 6.5              | 8.5  |
| 50 | 48.0             | 35.6 | 8.3              | 10.3 |
| 68 | 59.4             | 35.6 | 8.7              | 10.7 |

Large cable side entry

|    |                |
|----|----------------|
| 68 | 60 03 068 0655 |
|----|----------------|



|    | Shell dimensions |      | Cable dimensions |      |
|----|------------------|------|------------------|------|
|    | a                | b    | min.             | max. |
| 68 | 59.4             | 35.6 | 10.0             | 12.0 |



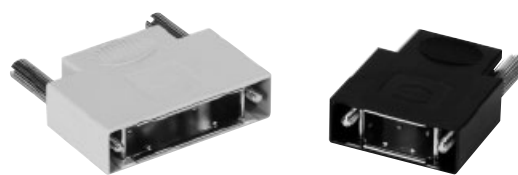
## Top or side entry hoods

| Identification                                                                | No. of contacts | Part No.                         | Drawing | Dimensions in mm   |
|-------------------------------------------------------------------------------|-----------------|----------------------------------|---------|--------------------|
| Plastic hood with internal screen                                             | 14              | 60 13 014 0153 351 <sup>1)</sup> |         | 20 / 50 / 68 poles |
|                                                                               | 20              | 60 13 020 0153 <sup>2)</sup>     |         |                    |
|                                                                               | 26              | 60 13 026 0153 351 <sup>1)</sup> |         |                    |
|                                                                               | 36              | 60 13 036 0153 351 <sup>1)</sup> |         |                    |
|                                                                               | 50              | 60 13 050 0153 <sup>2)</sup>     |         |                    |
|                                                                               | 68              | 60 13 068 0153 <sup>2)</sup>     |         |                    |
| Plastic hood with internal screen                                             | 14              | 60 13 014 0153 351 <sup>1)</sup> |         | 20 / 50 / 68 poles |
|                                                                               | 20              | 60 13 020 0153 <sup>2)</sup>     |         |                    |
|                                                                               | 26              | 60 13 026 0153 351 <sup>1)</sup> |         |                    |
|                                                                               | 36              | 60 13 036 0153 351 <sup>1)</sup> |         |                    |
|                                                                               | 50              | 60 13 050 0153 <sup>2)</sup>     |         |                    |
|                                                                               | 68              | 60 13 068 0153 <sup>2)</sup>     |         |                    |
| Metal hood Cable side entry Only compatible with IDC connector 60 13 026 5200 | 14              | 60 13 026 0555                   |         | 14 / 26 / 36 poles |
|                                                                               | 20              | 60 13 026 0555                   |         |                    |
|                                                                               | 26              | 60 13 026 0555                   |         |                    |
|                                                                               | 36              | 60 13 026 0555                   |         |                    |
|                                                                               | 50              | 60 13 026 0555                   |         |                    |
|                                                                               | 68              | 60 13 026 0555                   |         |                    |
| Metal hood Cable side entry Only compatible with IDC connector 60 13 026 5200 | 14              | 60 13 026 0555                   |         | 11.6 max.          |
|                                                                               | 20              | 60 13 026 0555                   |         |                    |
|                                                                               | 26              | 60 13 026 0555                   |         |                    |
|                                                                               | 36              | 60 13 026 0555                   |         |                    |
|                                                                               | 50              | 60 13 026 0555                   |         |                    |
|                                                                               | 68              | 60 13 026 0555                   |         |                    |

<sup>1)</sup> Temperature range: - 55 °C ... + 85 °C

<sup>2)</sup> Temperature range: - 55 °C ... + 60 °C





## Top entry hoods

har-mik

| Identification | No. of contacts | Part No. | Drawing | Dimensions in mm |
|----------------|-----------------|----------|---------|------------------|
|----------------|-----------------|----------|---------|------------------|

Plastic hood  
with internal screen  
and knurled screws

Colour: Beige

14

60 13 014 0146 351<sup>1)</sup>

26

60 13 026 0146 351<sup>1)</sup>

36

60 13 036 0146 351<sup>1)</sup>

Colour: Black

14

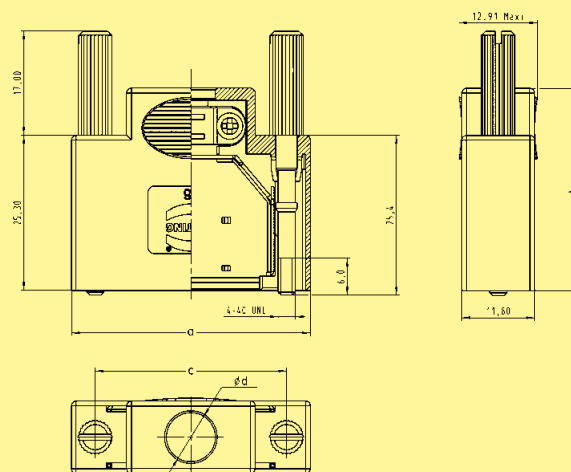
60 13 014 0146 110<sup>1)</sup>

26

60 13 026 0146 110<sup>1)</sup>

36

60 13 036 0146 110<sup>1)</sup>



|    | a     | b     | c     | d   |
|----|-------|-------|-------|-----|
| 14 | 31.40 | 37.00 | 23.64 | 7.2 |
| 26 | 39.00 | 33.00 | 31.26 | 8.0 |
| 36 | 45.40 | 33.00 | 37.61 | 9.2 |

<sup>1)</sup> Temperature range: - 55 °C ... + 85 °C



## har·mik

| Identification                                                      | Part No.       | Drawing | Dimensions in mm |
|---------------------------------------------------------------------|----------------|---------|------------------|
| <b>Screw lock</b><br>Thread: M 2.5 / 4-40 UNC<br>Height: 4.6 mm     | 60 01 000 9030 |         |                  |
| <b>Screw lock</b><br>Thread: M 2.5 / 2-56 UNC<br>Height: 2.9 mm     | 60 01 000 9013 |         |                  |
| <b>Screw lock</b><br>Thread: 4-40 UNC / 4-40 UNC<br>Height: 3.99 mm | 60 01 000 9018 |         |                  |
| <b>Screw lock</b><br>Thread: 4-40 UNC / 2-56 UNC<br>Height: 3.99 mm | 60 01 000 9019 |         |                  |
| <b>Screw lock</b><br>Thread: 4-40 UNC / 2-56 UNC<br>Height: 5.5 mm  | 60 01 000 9020 |         |                  |
| <b>Screw lock</b><br>Thread: 4-40 UNC / 4-40 UNC<br>Height: 5.5 mm  | 60 01 000 9021 |         |                  |

## for economical and reliable connections

A comprehensive range of high density intra cabinet connectors based on blade and fork contacts.

Available in a various number of contacts according to the following international standards and applications:

- Small Computer System Interface  
SCSI-2  
SCSI-2 wide  
SCSI-3
- Internal Bus extension through  
"Daisy chain" inter-linking via  
0.635 mm pitch flat cable.  
The 4-point design of the IDC  
contact provides accurate and  
reliable termination even with  
teflon cable.

UL recognised

For customer specific applications we can design and manufacture solutions to match your requirement.

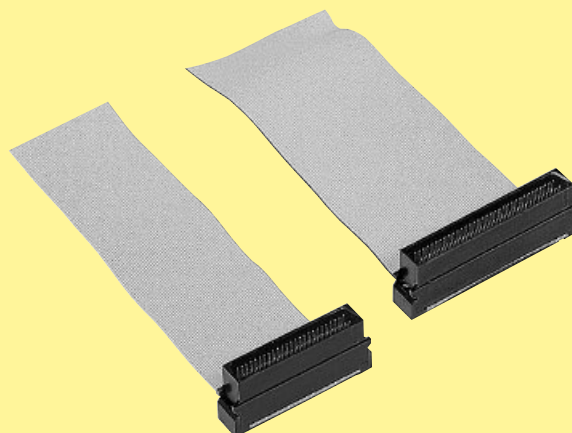
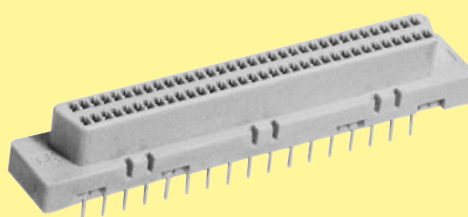
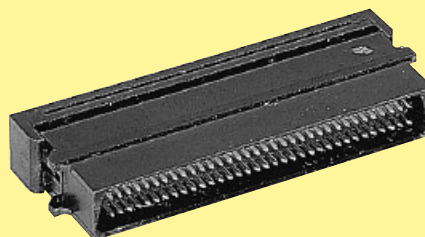
Sales department  
HARTING components



Certified according to EN ISO 9001  
in design/development, production,  
installation and servicing

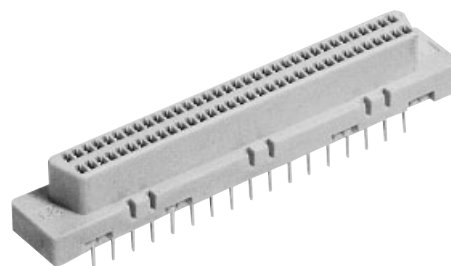
Intra cabinet connectors

|                                                   |                                                                         |
|---------------------------------------------------|-------------------------------------------------------------------------|
| Pitch                                             | 1.27 mm                                                                 |
| Working current                                   |                                                                         |
| pcb connector                                     | 1 A                                                                     |
| Flat cable connector                              | 0.5 A                                                                   |
| Working voltage                                   |                                                                         |
| pcb connector                                     | 240 V ~                                                                 |
| Flat cable connector                              | 100 V ~                                                                 |
| Test voltage $U_{r.m.s.}$                         |                                                                         |
| pcb connector                                     | 750 V                                                                   |
| Flat cable connector                              | 500 V                                                                   |
| Contact resistance                                | $\leq 25 \text{ m}\Omega$                                               |
| Insulation resistance                             | $\geq 10^3 \text{ M}\Omega$                                             |
| Temperature range                                 | -55 °C ... + 105 °C                                                     |
| Terminations                                      |                                                                         |
| Solder pins                                       | Straight for pcb holes<br>min. $\varnothing 0.74 \text{ mm}$            |
| Insulation displacement                           | Flat cable<br>AWG 30 pitch 0.635 mm                                     |
| Materials                                         |                                                                         |
| Moulding                                          | Thermoplastic resin<br>glass-fibre filled UL 94-V0                      |
| Contacts<br>pcb connector<br>Flat cable connector | Copper alloy<br>Nickel                                                  |
| Contact surface                                   |                                                                         |
| Contact zone                                      | S4 = 0.76 $\mu\text{m}$ (30 $\mu\text{inch}$ ) Au<br>or PdNi equivalent |



Number of contacts

**68**

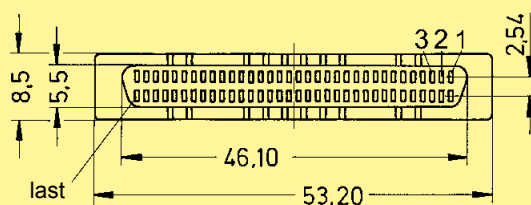
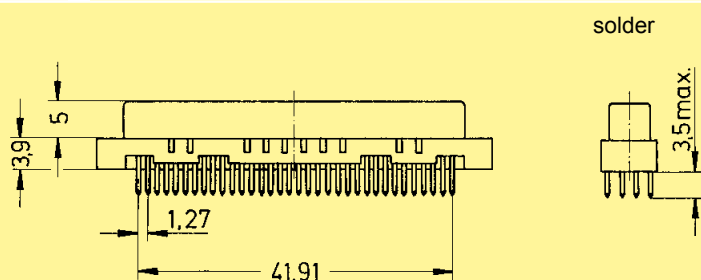


Female connectors, straight

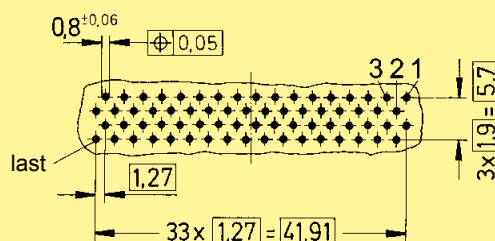
harmik

| Identification                             | No. of contacts | Part No.       |
|--------------------------------------------|-----------------|----------------|
| Female connector with straight solder pins | 68              | 60 05 068 5100 |

Dimensions



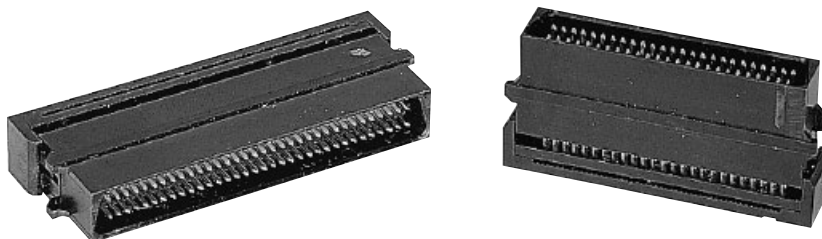
Board drillings  
(Components side)



Dimensions in mm

Number of contacts

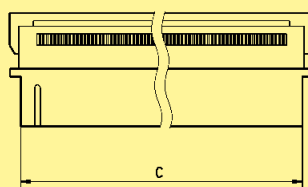
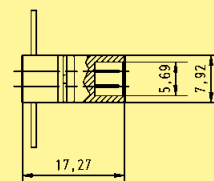
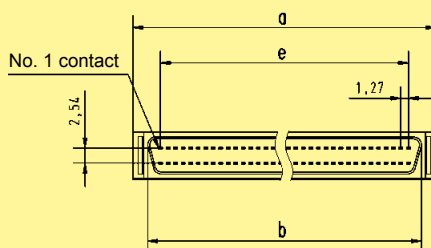
**50–68**



Male connectors for IDC flat cable, straight

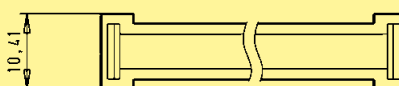
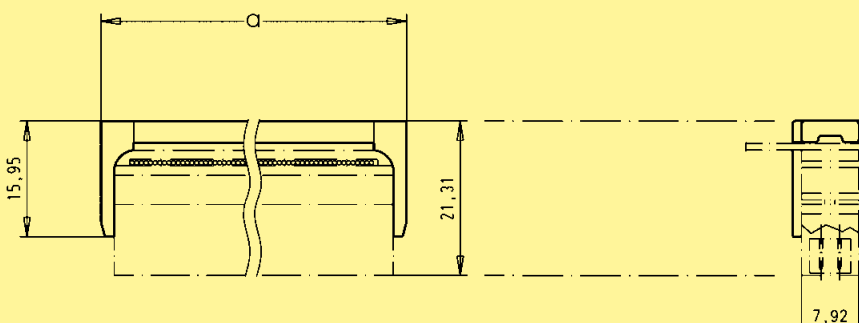
| Identification                                                                                                                            | No. of contacts | Part No.       |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------|
| Male connectors with insulation displacement termination<br>for IDC flat cable pitch 0.635 mm<br>AWG 30<br>Strain relief order separately |                 | Male connector |
|                                                                                                                                           | 50              | 60 06 050 5440 |
|                                                                                                                                           | 68              | 60 06 068 5440 |
|                                                                                                                                           |                 | Strain relief  |
|                                                                                                                                           |                 | 60 06 050 9001 |
|                                                                                                                                           |                 | 60 06 068 9001 |

## Dimensions



|    | a     | b     | c     | e     |
|----|-------|-------|-------|-------|
| 50 | 39.75 | 34.85 | 36.19 | 30.48 |
| 68 | 51.26 | 46.28 | 47.62 | 41.91 |

## Strain relief



|    | a     |
|----|-------|
| 50 | 42.16 |
| 68 | 53.44 |

Dimensions in mm

**D-Sub – Standard subminiature D connectors**

Page

Technical characteristics for solder connectors ..... **02.02**

Versions with straight solder pins ..... **02.04**



Mounting details for angled solder connectors ..... **02.08**

Standard Versions ..... **02.10**

Mounting height 7.3 mm 9-37 way  
8.7 mm 50 way



Low-Profile Versions ..... **02.16**

Mounting height 3.6 mm 9-37 way  
6.2 mm 50 way



U.S. Footprint Versions ..... **02.20**

Mounting height 6.3 mm 9-37 way



Mounting details ..... **02.22**

Technical characteristics for cable connectors ..... **02.24**

Versions with wrap posts ..... **02.25**



Versions with crimp terminal/crimp contacts ..... **02.26**



Versions with insulation displacement termination ..... **02.32**



Versions with solder buckets ..... **02.34**



Cables and cable assemblies ..... **see chapter 40**



D-Sub - S

02  
01



Number of contacts 9, 15, 25, 37, 50  
UL recognized

### Working current

see current carrying capacity chart

Turned contacts 7.5 A max.

Stamped contacts 6.5 A max.

Test voltage  $U_{r.m.s.}$  1 kV

Clearance and creepage  $\geq 1.0$  mm

Contact resistance  $\leq 10$  m $\Omega$

Insulation resistance  $\geq 10^{10}$   $\Omega$

### Temperature range

-55 °C ... + 125 °C

The higher temperature limit includes the local ambient and heating effect of the contacts under load

### Terminations

- Solder pins  $\varnothing$  0.6 mm for P.C.B. holes  $\varnothing$  0.8/1 mm
- Solder pins, angled 90°  $\varnothing$  0.6 mm for P.C.B. holes  $\varnothing$  1 mm

### Materials

Mouldings and hoods Thermoplastic resin, glass-fibre filled (PBTP), UL 94-V0

Contacts Copper alloy

### Contact surface

Contact zone selectively plated according to performance level<sup>1)</sup>

Metal shell Plated steel

### Insertion and withdrawal force

Connector on P.C.B.

Solder, straight with clips

– insertion max. per connector: 60 N

– withdrawal min. per connector: 10 N

### Mating force

9 way  $\leq 30$  N

15 way  $\leq 50$  N

25 way  $\leq 83$  N

37 way  $\leq 123$  N

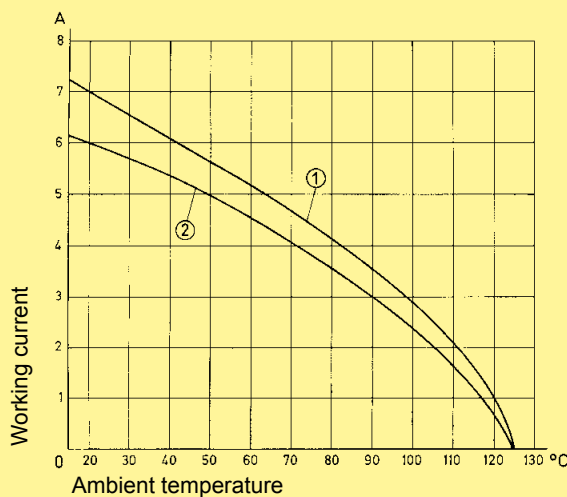
50 way  $\leq 167$  N

### Current carrying capacity

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals.

The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60 512.

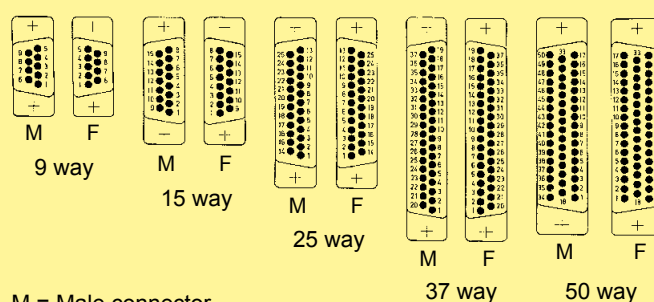


Example: 25 way connector

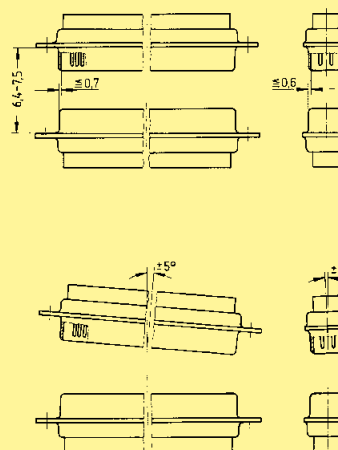
① Turned contacts

② Stamped contacts

### Contact arrangement View from termination side



### Mating conditions as per DIN 41 652



<sup>1)</sup> Performance level 3, 50 mating cycles, no gas test

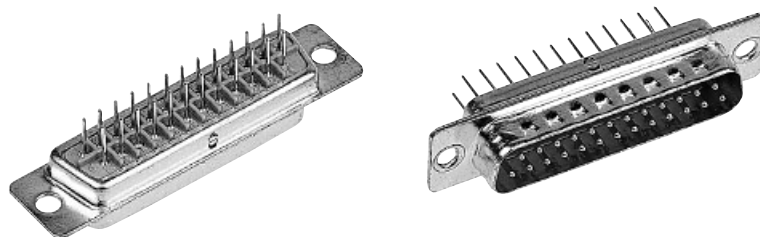
Performance level 2 as per CECC 75 301-802, 250 mating cycles, 4 days 4 mixed gas test – IEC 60 512

Performance level 1 as per CECC 75 301-802, 500 mating cycles, 10 days 4 mixed gas test – IEC 60 512



Number of contacts

9–50

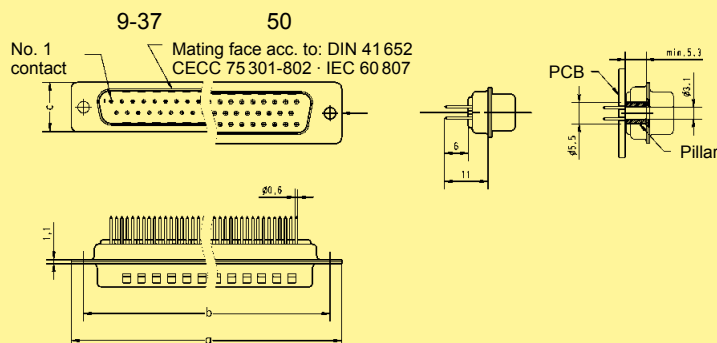


Turned solder pins, straight

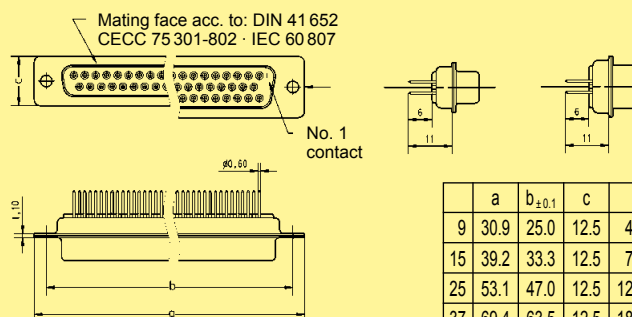
D-Sub - S

| Identification                                                                                  | No. of contacts           | Part No.                                                                                             |                                                                                                      |
|-------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 02.02<br>Other performance levels on request |                           | Performance level 3                                                                                  | Performance level 2                                                                                  |
| <b>Male connector</b><br>metal shell with dimples                                               | 9<br>15<br>25<br>37<br>50 | 09 67 009 5654<br>09 67 015 5654<br>09 67 025 5654<br>09 67 037 5654<br>09 67 050 5654 <sup>1)</sup> | 09 67 009 5655<br>09 67 015 5655<br>09 67 025 5655<br>09 67 037 5655<br>09 67 050 5655 <sup>1)</sup> |
| <b>Female connector</b><br>metal shell                                                          | 9<br>15<br>25<br>37<br>50 | 09 67 009 4754<br>09 67 015 4754<br>09 67 025 4754<br>09 67 037 4754<br>09 67 050 4754 <sup>1)</sup> | 09 67 009 4755<br>09 67 015 4755<br>09 67 025 4755<br>09 67 037 4755<br>09 67 050 4755 <sup>1)</sup> |

Male connector

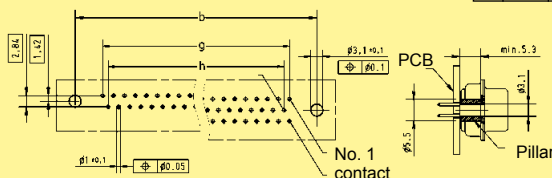


Female connector



|    | a    | b <sub>±0.1</sub> | c    | g                     | h                     |
|----|------|-------------------|------|-----------------------|-----------------------|
| 9  | 30.9 | 25.0              | 12.5 | 4 x [2.74] = [10.96]  | 3 x [2.74] = [8.22]   |
| 15 | 39.2 | 33.3              | 12.5 | 7 x [2.74] = [19.18]  | 6 x [2.74] = [16.44]  |
| 25 | 53.1 | 47.0              | 12.5 | 12 x [2.76] = [33.12] | 11 x [2.76] = [30.36] |
| 37 | 69.4 | 63.5              | 12.5 | 18 x [2.76] = [49.68] | 17 x [2.76] = [46.92] |
| 50 | 67.0 | 61.1              | 15.4 | 16 x [2.76] = [44.16] | 15 x [2.76] = [41.40] |

Board drillings



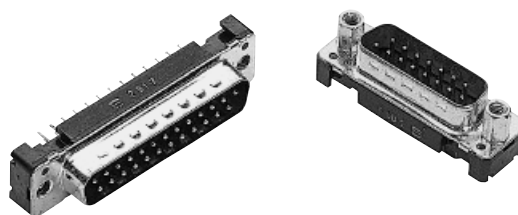
Dimensions in mm

<sup>1)</sup> Not normally kept in stock

Mating conditions see page 02.02

Number of contacts

9–50

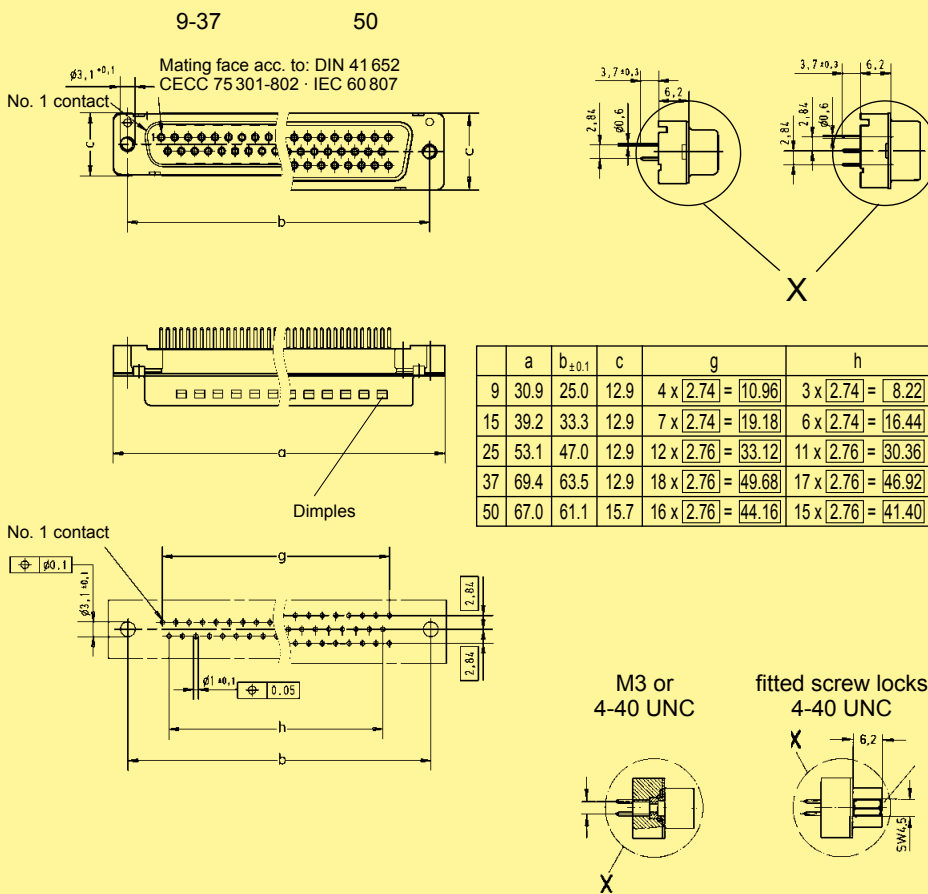


Turned solder pins, straight without grounding-pins

| Identification                                                                                  | No. of contacts                                           | Part No.                                                                          |                                                                                   |
|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 02.02<br>Other performance levels on request |                                                           | Performance level 3                                                               | Performance level 2                                                               |
| <b>Male connector</b><br>metal shell with dimples<br><br><div>available on request</div>        | 9<br>15<br>25<br>37<br>50                                 | 09 66 121 770<br>09 66 221 770<br>09 66 321 770<br>09 66 421 770<br>09 66 521 770 | 09 66 121 670<br>09 66 221 670<br>09 66 321 670<br>09 66 421 670<br>09 66 521 670 |
| Please insert digit for<br>flange thread or fitted<br>female screw locks                        | M3 ▶ 1<br>4-40 UNC ▶ 2<br>fitted screw locks 4-40 UNC ▶ 3 |                                                                                   |                                                                                   |

Male connector

Board drillings

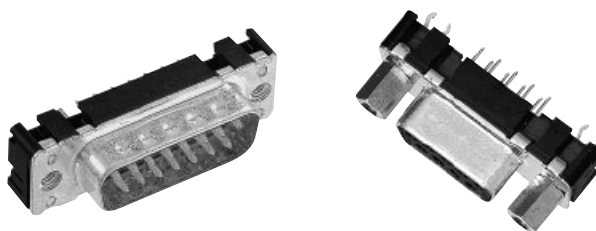


Dimensions in mm

Mating conditions see page 02.02

Number of contacts

9–50



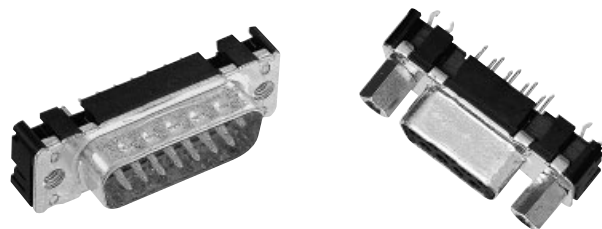
Stamped solder pins, straight with/without grounding board locks

D-Sub - S

| Identification                                                                                  | No. of contacts | Part No.            |                     |
|-------------------------------------------------------------------------------------------------|-----------------|---------------------|---------------------|
| <b>Performance levels</b><br>Explanations see page 02.02<br>Other performance levels on request |                 | Performance level 3 | Performance level 2 |
| <b>Male connector</b><br>metal shell with dimples                                               |                 |                     |                     |
| Without grounding board locks                                                                   | 9               | 09 65 121 770 .     | 09 65 121 670 .     |
|                                                                                                 | 15              | 09 65 221 770 .     | 09 65 221 670 .     |
|                                                                                                 | 25              | 09 65 321 770 .     | 09 65 321 670 .     |
|                                                                                                 | 37              | 09 65 421 770 .     | 09 65 421 670 .     |
| With grounding board locks                                                                      | 9               | 09 65 161 771 .     | 09 65 161 671 .     |
|                                                                                                 | 15              | 09 65 261 771 .     | 09 65 261 671 .     |
|                                                                                                 | 25              | 09 65 361 771 .     | 09 65 361 671 .     |
|                                                                                                 | 37              | 09 65 461 771 .     | 09 65 461 671 .     |
| <b>Female connector</b><br>metal shell                                                          |                 |                     |                     |
| Without grounding board locks                                                                   | 9               | 09 66 111 750 .     | 09 66 111 650 .     |
|                                                                                                 | 15              | 09 66 211 750 .     | 09 66 211 650 .     |
|                                                                                                 | 25              | 09 66 311 750 .     | 09 66 311 650 .     |
|                                                                                                 | 37              | 09 66 411 750 .     | 09 66 411 650 .     |
|                                                                                                 | 50              | 09 66 511 750 .     | 09 66 511 650 .     |
| With grounding board locks                                                                      | 9               | 09 66 151 751 .     | 09 66 151 651 .     |
|                                                                                                 | 15              | 09 66 251 751 .     | 09 66 251 651 .     |
|                                                                                                 | 25              | 09 66 351 751 .     | 09 66 351 651 .     |
|                                                                                                 | 37              | 09 66 451 751 .     | 09 66 451 651 .     |
| Please insert digit for flange thread<br>or fitted female screw locks                           |                 |                     |                     |
| M3 ▶ 1                                                                                          |                 |                     |                     |
| 4-40 UNC ▶ 2                                                                                    |                 |                     |                     |
| fitted screw locks 4-40 UNC ▶ 3 <sup>1)</sup>                                                   |                 |                     |                     |

Number of contacts

9–50

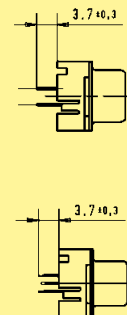
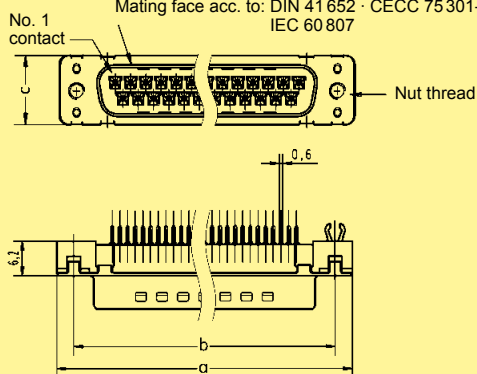


Stamped solder pins, straight with/without grounding board locks

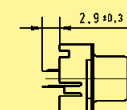
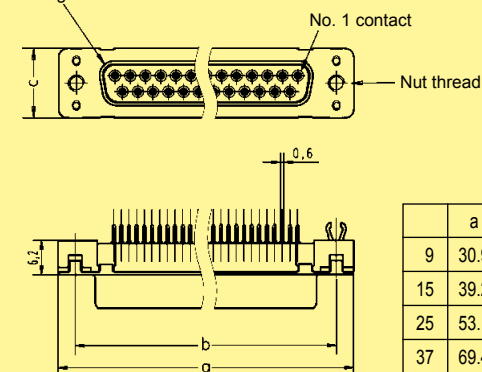
## Identification

## Drawing

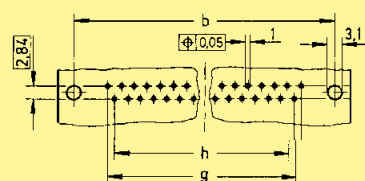
## Dimensions in mm

Male connector  
9 – 37 contactsMating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807Female connector  
9 – 37 contacts

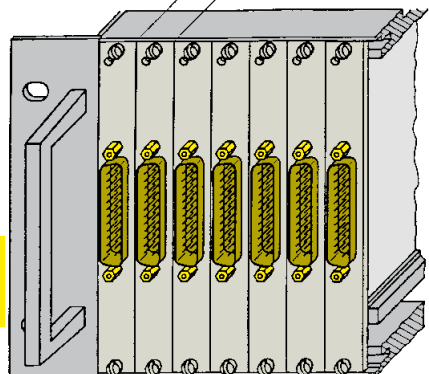
Mating face acc. to: DIN 41 652 · CECC 75 301-802 · IEC 60 807



|    | a    | b <sub>±0.1</sub> | c    | g                 | h                 |
|----|------|-------------------|------|-------------------|-------------------|
| 9  | 30.9 | 25.0              | 12.5 | 4 x 2.74 = 10.96  | 3 x 2.74 = 8.22   |
| 15 | 39.2 | 33.3              | 12.5 | 7 x 2.74 = 19.18  | 6 x 2.74 = 16.44  |
| 25 | 53.1 | 47.0              | 12.5 | 12 x 2.76 = 33.12 | 11 x 2.76 = 30.36 |
| 37 | 69.4 | 63.5              | 12.5 | 18 x 2.76 = 49.68 | 17 x 2.76 = 46.92 |

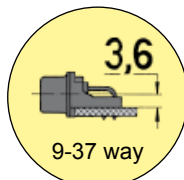
Board drillings  
9 – 37 contacts

Front panel width 3 TE  
3 x 5.08 mm

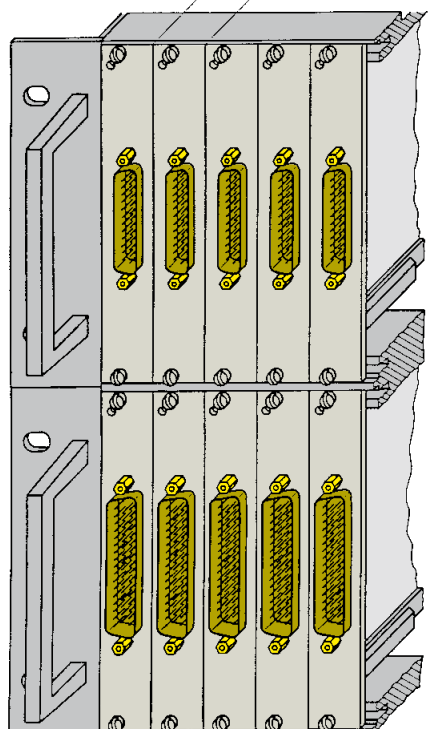


D-Sub - S

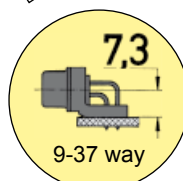
**Low-Profile Versions**  
pages 02.16 – 02.19



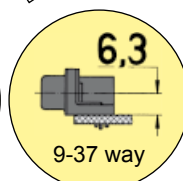
Front panel width 4 TE  
4 x 5.08 mm



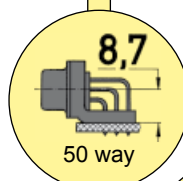
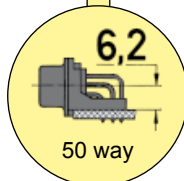
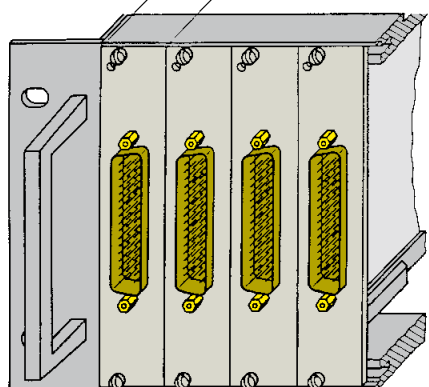
**Standard Versions**  
pages 02.10 – 02.15



**U.S. Footprint Versions**  
pages 02.20 – 02.21



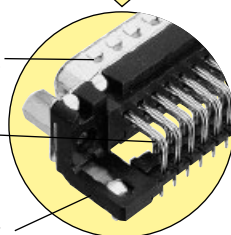
Front panel width 5 TE  
5 x 5.08 mm



Metal shell  
mating face

Fixed contacts

Integrated mounting bracket





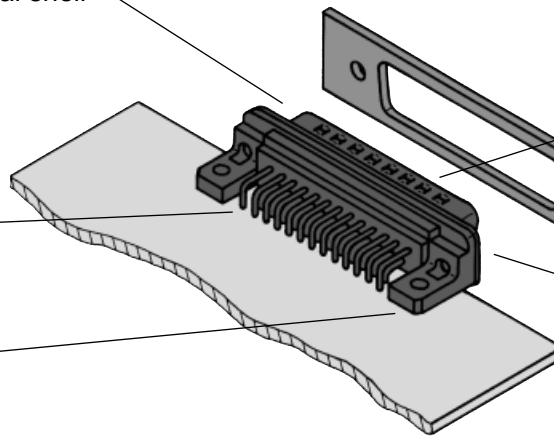
## Advantages

All-round protective metal shell

- Polarisation
- Contact protection
- Plated shell
- Male connector with dimples

Plated terminations for increased solderability

Grounding contact riveted to metal shell



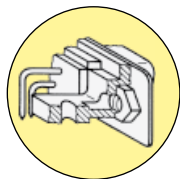
Contact surface finish to different performance levels

Panel

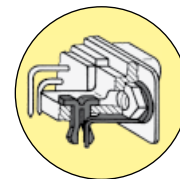
Different metal threads possible in flange area

- M3
- 4-40 UNC
- fitted female screw locks 4-40 UNC
- max. torque  $\leq 0.8$  Nm

Integrated plastic mounting bracket



Mounting bracket



Mounting bracket with snap-in-clips and grounding pin

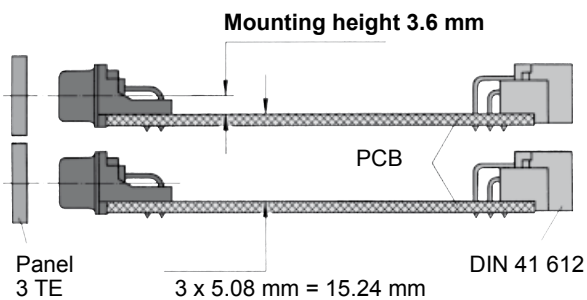
## Mounting height

### Low-Profile Versions

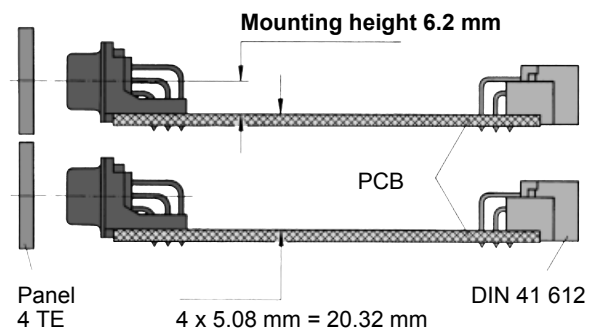
The reduced mounting height of these connectors allow them to be used on the same PCB as DIN 41 612

types with no loss of packaging density when card frames to DIN 41 494 are used.

9-37 way connectors with 3.6 mm mounting height can be fitted to front panels of 3 TE (15.24 mm) width.

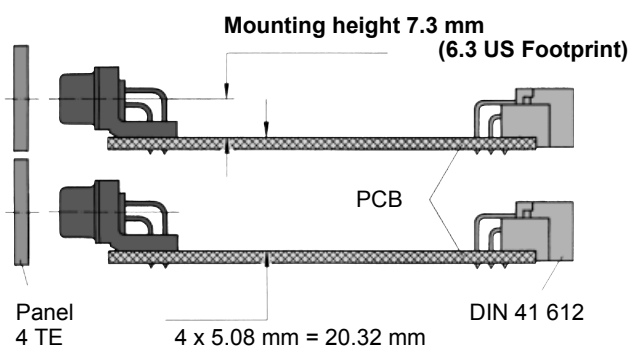


50 way connectors with 6.2 mm mounting height can be fitted to front panels of 4 TE (20.32 mm) width.

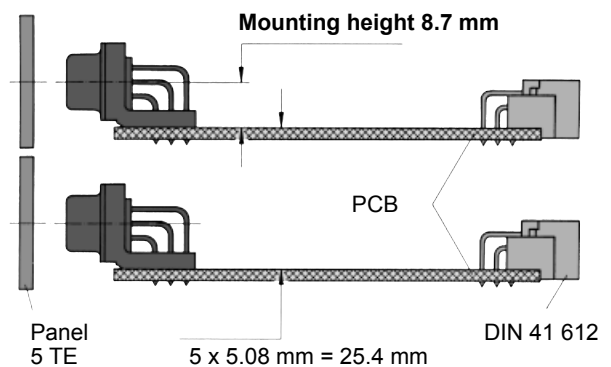


### Standard Versions US Footprint

9-37 way connectors with 7.3 mm mounting height can be fitted to front panels of 4 TE (20.32 mm) width.



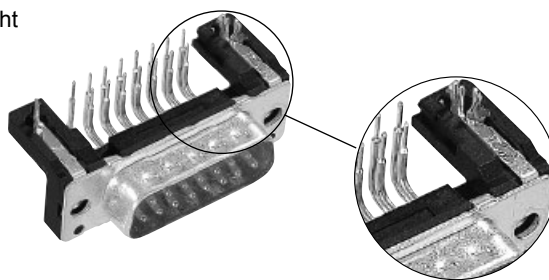
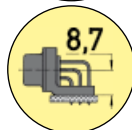
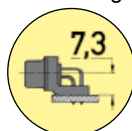
50 way connectors with 8.7 mm mounting height can be fitted to front panels of 5 TE (25.4 mm) width.



Number of contacts

Mounting height

9–37  
50



Standard Versions



Turned solder pins, angled with/without snap-in-clips and grounding board locks

D-Sub - S

| Identification                                                                                  | No. of contacts | Part No.            |                     |
|-------------------------------------------------------------------------------------------------|-----------------|---------------------|---------------------|
| <b>Performance levels</b><br>Explanations see page 02.02<br>Other performance levels on request |                 | Performance level 3 | Performance level 2 |
| <b>Male connector</b><br>metal shell with dimples                                               |                 | 2.84 mm pitch       | 2.84 mm pitch       |
| With snap-in clips<br>and grounding board locks                                                 | 9               | 09 66 163 781       | 09 66 163 681       |
|                                                                                                 | 15              | 09 66 263 781       | 09 66 263 681       |
|                                                                                                 | 25              | 09 66 363 781       | 09 66 363 681       |
|                                                                                                 | 37              | 09 66 463 781       | 09 66 463 681       |
|                                                                                                 | 50              | 09 66 563 781       | 09 66 563 681       |
|                                                                                                 |                 | 2.54 mm pitch       | 2.54 mm pitch       |
|                                                                                                 | 9               | 09 66 162 781       | 09 66 162 681       |
|                                                                                                 | 15              | 09 66 262 781       | 09 66 262 681       |
|                                                                                                 | 25              | 09 66 362 781       | 09 66 362 681       |
|                                                                                                 | 37              | 09 66 462 781       | 09 66 462 681       |
|                                                                                                 | 50              | 09 66 562 781       | 09 66 562 681       |
| Without snap-in clips<br>and grounding board locks                                              |                 | 2.84 mm pitch       | 2.84 mm pitch       |
|                                                                                                 | 9               | 09 66 123 780       | 09 66 123 680       |
|                                                                                                 | 15              | 09 66 223 780       | 09 66 223 680       |
|                                                                                                 | 25              | 09 66 323 780       | 09 66 323 680       |
|                                                                                                 | 37              | 09 66 423 780       | 09 66 423 680       |
|                                                                                                 | 50              | 09 66 523 780       | 09 66 523 680       |
|                                                                                                 |                 | 2.54 mm pitch       | 2.54 mm pitch       |
|                                                                                                 | 9               | 09 66 122 780       | 09 66 122 680       |
|                                                                                                 | 15              | 09 66 222 780       | 09 66 222 680       |
|                                                                                                 | 25              | 09 66 322 780       | 09 66 322 680       |
|                                                                                                 | 37              | 09 66 422 780       | 09 66 422 680       |
|                                                                                                 | 50              | 09 66 522 780       | 09 66 522 680       |
| Please insert digit for flange thread<br>or fitted female screw locks                           |                 |                     |                     |
| M3 ▶                                                                                            | 1               |                     |                     |
| 4-40 UNC ▶                                                                                      | 2               |                     |                     |
| fitted screw locks 4-40 UNC ▶                                                                   | 3               |                     |                     |

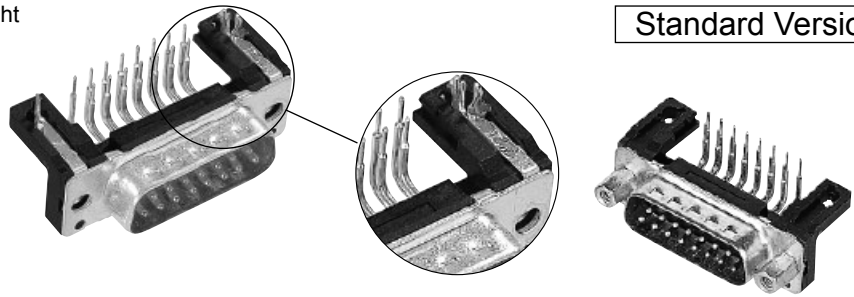
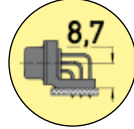
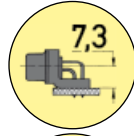
available  
on requestavailable  
on request

Number of contacts

### Mounting height

## Standard Versions

9-37  
50



## Identification

## Drawing

Dimensions in mm

## Male connector

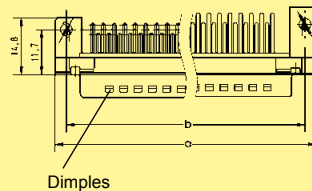
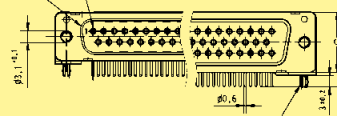
With snap-in clips  
and grounding board locks

Without snap-in clips  
and grounding board locks

## Board drillings

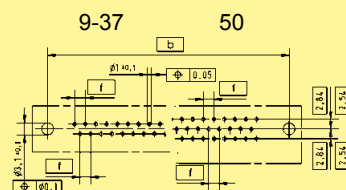
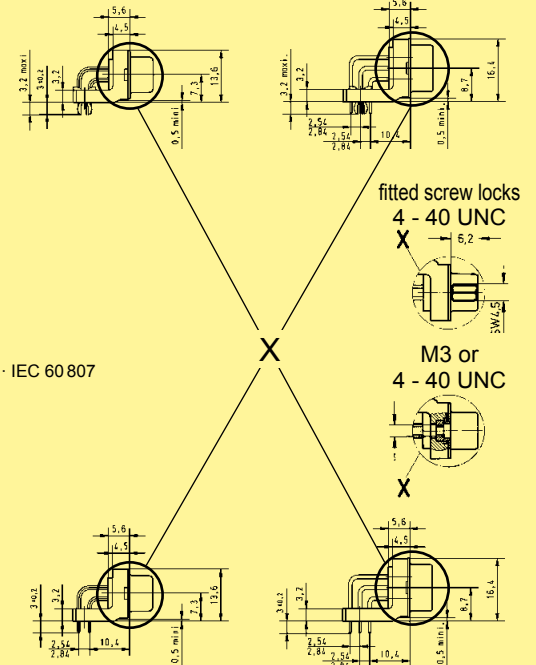
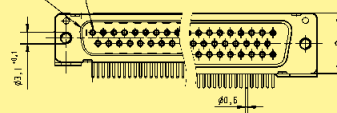
9-37 50

Mating face acc. to: DIN 41 652 · CECC 75 301-802 · IEC 60 807  
No. 1 contact



9-37                      50

Mating face acc. to: DIN 41 652 · CECC 75 301-802 · IEC 60 807  
No. 1 contact

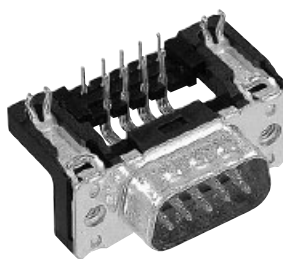
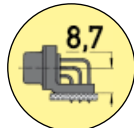
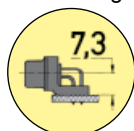


|    | a     | b <sub>±0.1</sub> | c     | f    |
|----|-------|-------------------|-------|------|
| 9  | 30.90 | 25.00             | 12.90 | 2.74 |
| 15 | 39.20 | 33.30             | 12.90 | 2.74 |
| 25 | 53.10 | 47.00             | 12.90 | 2.76 |
| 37 | 69.40 | 63.50             | 12.90 | 2.76 |
| 50 | 67.00 | 61.10             | 15.70 | 2.76 |

Number of contacts

Mounting height

9–37  
50



Standard Versions

Stamped solder pins, angled with grounding board locks

D-Sub - S

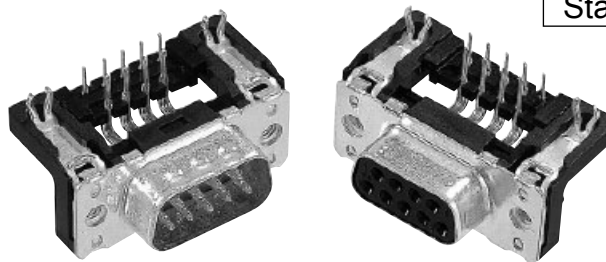
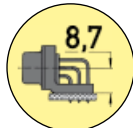
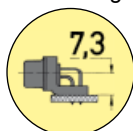
| Identification                                                                                  | No. of contacts | Part No.            |                     |
|-------------------------------------------------------------------------------------------------|-----------------|---------------------|---------------------|
| <b>Performance levels</b><br>Explanations see page 02.02<br>Other performance levels on request |                 | Performance level 3 | Performance level 2 |
| <b>Male connector</b><br>metal shell with dimples                                               |                 | 2.84 mm pitch       | 2.84 mm pitch       |
|                                                                                                 | 9               | 09 65 163 781 . 1)  | 09 65 163 681 . 1)  |
|                                                                                                 | 15              | 09 65 263 781 . 1)  | 09 65 263 681 . 1)  |
|                                                                                                 | 25              | 09 65 363 781 . 1)  | 09 65 363 681 . 1)  |
|                                                                                                 | 37              | 09 65 463 781 . 1)  | 09 65 463 681 . 1)  |
|                                                                                                 |                 | 2.54 mm pitch       | 2.54 mm pitch       |
|                                                                                                 | 9               | 09 65 162 781 .     | 09 65 162 681 .     |
|                                                                                                 | 15              | 09 65 262 781 .     | 09 65 262 681 .     |
|                                                                                                 | 25              | 09 65 362 781 .     | 09 65 362 681 .     |
|                                                                                                 | 37              | 09 65 462 781 .     | 09 65 462 681 .     |
| <b>Female connector</b><br>metal shell                                                          |                 | 2.84 mm pitch       | 2.84 mm pitch       |
|                                                                                                 | 9               | 09 66 153 761 . 1)  | 09 66 153 661 . 1)  |
|                                                                                                 | 15              | 09 66 253 761 . 1)  | 09 66 253 661 . 1)  |
|                                                                                                 | 25              | 09 66 353 761 . 1)  | 09 66 353 661 . 1)  |
|                                                                                                 | 37              | 09 66 453 761 . 1)  | 09 66 453 661 . 1)  |
|                                                                                                 |                 | 2.54 mm pitch       | 2.54 mm pitch       |
|                                                                                                 | 9               | 09 66 152 761 .     | 09 66 152 661 .     |
|                                                                                                 | 15              | 09 66 252 761 .     | 09 66 252 661 .     |
|                                                                                                 | 25              | 09 66 352 761 .     | 09 66 352 661 .     |
|                                                                                                 | 37              | 09 66 452 761 .     | 09 66 452 661 .     |
|                                                                                                 | 50              | 09 66 552 761 . 1)  | 09 66 552 661 . 1)  |
| Please insert digit for flange thread or fitted female screw locks                              |                 |                     |                     |
| Ø 3.1 mm hole ▶ 0 <sup>1)</sup>                                                                 |                 |                     |                     |
| M3 ▶ 1                                                                                          |                 |                     |                     |
| 4-40 UNC ▶ 2                                                                                    |                 |                     |                     |
| fitted screw locks 4-40 UNC ▶ 3                                                                 |                 |                     |                     |

<sup>1)</sup> Not normally kept in stock

Number of contacts

Mounting height

Standard Versions

9-37  
50


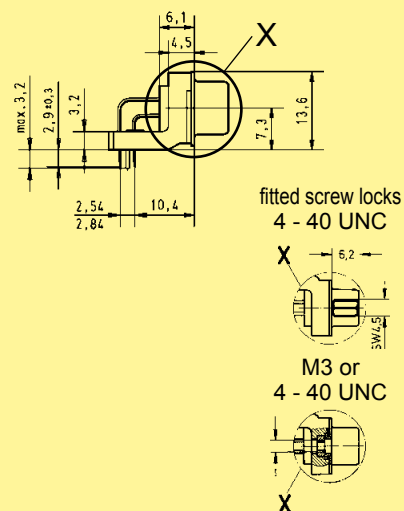
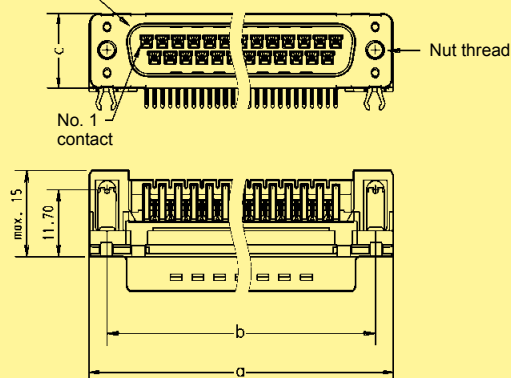
Stamped solder pins, angled with grounding board locks

Identification

Drawing

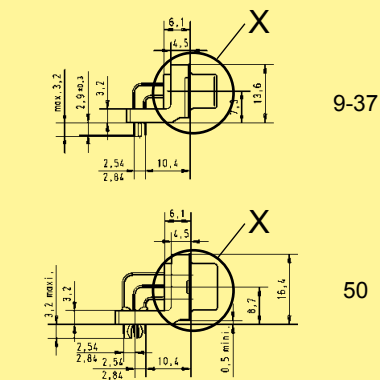
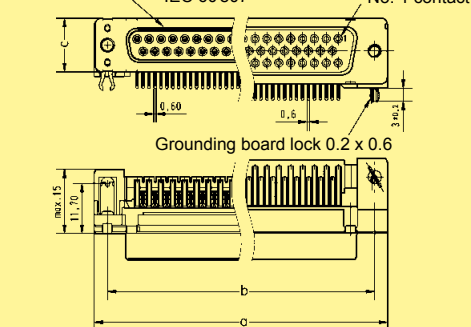
Dimensions in mm

Male connector

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807


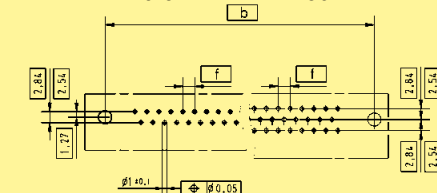
Female connector

9-37 50

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807


Board drillings

9-37 50

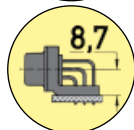
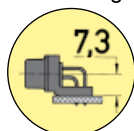


|    | a     | b±0.1 | c     | f    |
|----|-------|-------|-------|------|
| 9  | 30.90 | 25.00 | 12.50 | 2.74 |
| 15 | 39.20 | 33.30 | 12.50 | 2.74 |
| 25 | 53.10 | 47.00 | 12.50 | 2.76 |
| 37 | 69.40 | 63.50 | 12.50 | 2.76 |
| 50 | 67.00 | 61.10 | 15.40 | 2.76 |

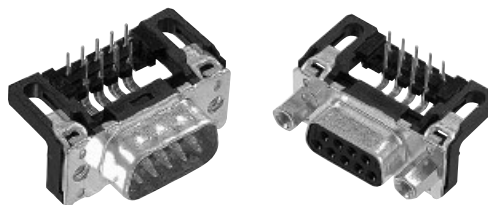
Number of contacts

Mounting height

9–37  
50

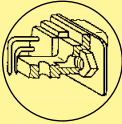
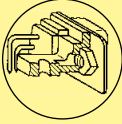


Standard Versions



Stamped solder pins, angled without grounding board locks

D-Sub - S

| Identification                                                                                                                                                     | No. of contacts     | Part No.                                                                                                                                                                                                                 |                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 02.02<br>Other performance levels on request                                                                    |                     | Performance level 3                                                                                                                                                                                                      | Performance level 2                                                                                                                                                                                                      |
| <b>Male connector</b><br>metal shell with dimples<br>                            | 9<br>15<br>25<br>37 | 2.84 mm pitch<br>09 65 123 780 . 1)<br>09 65 223 780 . 1)<br>09 65 323 780 . 1)<br>09 65 423 780 . 1)<br>2.54 mm pitch<br>09 65 122 780 .<br>09 65 222 780 .<br>09 65 322 780 .<br>09 65 422 780 .                       | 2.84 mm pitch<br>09 65 123 680 . 1)<br>09 65 223 680 . 1)<br>09 65 323 680 . 1)<br>09 65 423 680 . 1)<br>2.54 mm pitch<br>09 65 122 680 .<br>09 65 222 680 .<br>09 65 322 680 .<br>09 65 422 680 .                       |
| <b>Female connector</b><br>metal shell<br>                                      | 9<br>15<br>25<br>37 | 2.84 mm pitch<br>09 66 113 760 . 1)<br>09 66 213 760 . 1)<br>09 66 313 760 . 1)<br>09 66 413 760 . 1)<br>2.54 mm pitch<br>09 66 112 760 .<br>09 66 212 760 .<br>09 66 312 760 .<br>09 66 412 760 .<br>09 66 512 760 . 1) | 2.84 mm pitch<br>09 66 113 660 . 1)<br>09 66 213 660 . 1)<br>09 66 313 660 . 1)<br>09 66 413 660 . 1)<br>2.54 mm pitch<br>09 66 112 660 .<br>09 66 212 660 .<br>09 66 312 660 .<br>09 66 412 660 .<br>09 66 512 660 . 1) |
| Please insert digit for flange thread or fitted female screw locks<br>Ø 3.1 mm hole ▶ 0 <sup>1)</sup><br>M3 ▶ 1<br>4-40 UNC ▶ 2<br>fitted screw locks 4-40 UNC ▶ 3 |                     |                                                                                                                                                                                                                          |                                                                                                                                                                                                                          |





### Mounting height

## Low-Profile Versions

Turned solder pins, angled with snap-in-clips and grounding board locks

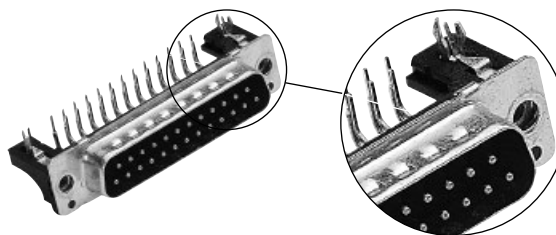
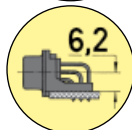
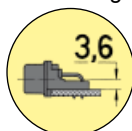
**D-Sub - S**

02  
16

Number of contacts

Mounting height

Low-Profile Versions

9-37  
50


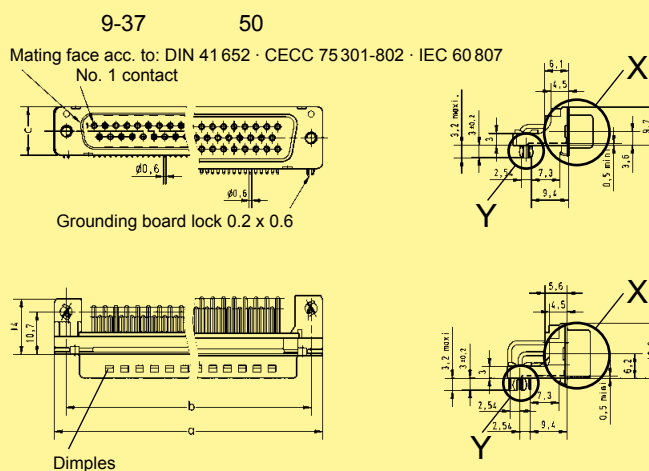
Turned solder pins, angled with snap-in-clips and grounding board locks

Identification

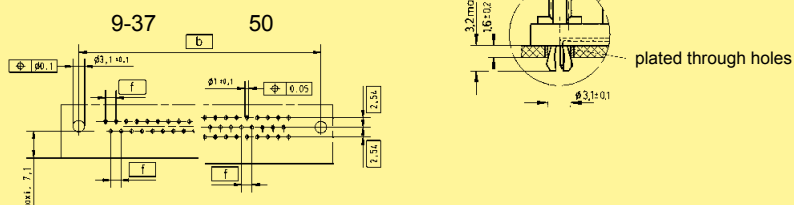
Drawing

Dimensions in mm

Male connector



Board drillings

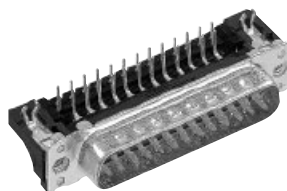
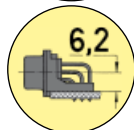
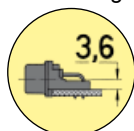


|    | a     | b $\pm 0.1$ | c     | f    |
|----|-------|-------------|-------|------|
| 9  | 30.90 | 25.00       | 12.50 | 2.74 |
| 15 | 39.20 | 33.30       | 12.50 | 2.74 |
| 25 | 53.10 | 47.00       | 12.50 | 2.76 |
| 37 | 69.40 | 63.50       | 12.50 | 2.76 |
| 50 | 67.00 | 61.10       | 15.70 | 2.76 |

Number of contacts

Mounting height

9–37  
50



Low-Profile Versions

Stamped solder pins, angled with grounding board locks

D-Sub - S

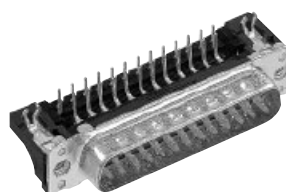
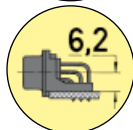
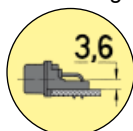
| Identification                                                                                                                      | No. of contacts           | Part No.                                                                          |                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 02.02<br>Other contact surfaces on request                                       |                           | Performance level 3                                                               | Performance level 2                                                               |
| <b>Male connector</b><br>metal shell with dimples                                                                                   | 9<br>15<br>25<br>37       | 09 65 162 781<br>09 65 262 781<br>09 65 362 781<br>09 65 462 781                  | 09 65 162 681<br>09 65 262 681<br>09 65 362 681<br>09 65 462 681                  |
| <b>Female connector</b><br>metal shell                                                                                              | 9<br>15<br>25<br>37<br>50 | 09 66 152 761<br>09 66 252 761<br>09 66 352 761<br>09 66 452 761<br>09 66 552 761 | 09 66 152 661<br>09 66 252 661<br>09 66 352 661<br>09 66 452 661<br>09 66 552 661 |
| Please insert digit for flange thread or fitted female screw locks<br><br>M3 ▶ 5<br>4-40 UNC ▶ 6<br>fitted screw locks 4-40 UNC ▶ 7 |                           |                                                                                   |                                                                                   |

Number of contacts

Mounting height

Low-Profile Versions

9-37  
50



Stamped solder pins, angled with grounding board locks

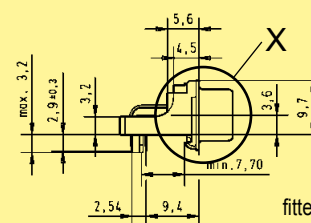
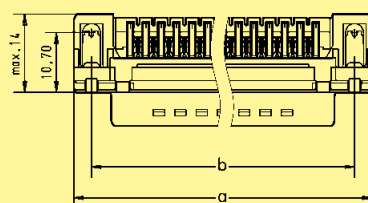
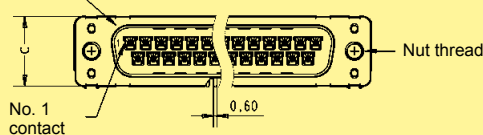
Identification

Drawing

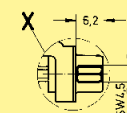
Dimensions in mm

Male connector

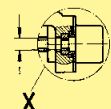
Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807



fitted screw locks  
4 - 40 UNC



M3 or  
4 - 40 UNC

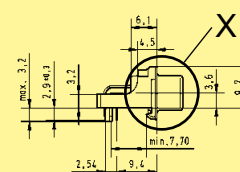
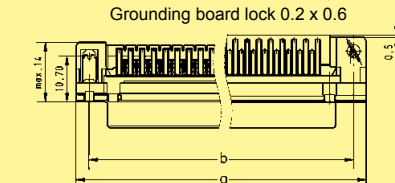
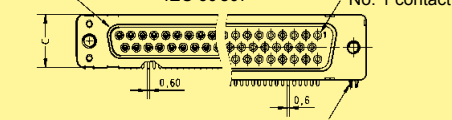


Female connector

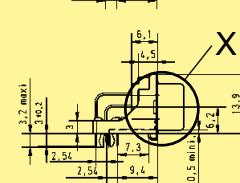
9-37

50

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807



9-37

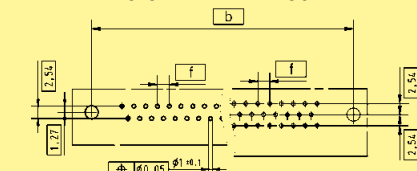


50

Board drillings

9-37

50



|    | a     | b $\pm 0.1$ | c     | f    |
|----|-------|-------------|-------|------|
| 9  | 30.90 | 25.00       | 12.50 | 2.74 |
| 15 | 39.20 | 33.30       | 12.50 | 2.74 |
| 25 | 53.10 | 47.00       | 12.50 | 2.76 |
| 37 | 69.40 | 63.50       | 12.50 | 2.76 |
| 50 | 67.00 | 61.10       | 15.40 | 2.76 |

Number of contacts

9–37

Mounting height

U.S. Footprint

Stamped solder pins, angled with snap-in-clips and grounding board locks

| Identification                                                                                                      | No. of contacts      | Part No.            |  |                  |  |
|---------------------------------------------------------------------------------------------------------------------|----------------------|---------------------|--|------------------|--|
| <div>Performance levels</div> <div>Explanations see page 02.02</div> <div>Other performance levels on request</div> |                      | Performance level 3 |  | S4 <sup>1)</sup> |  |
| Male connector<br>metal shell with dimples                                                                          |                      | 2.84 mm pitch       |  | 2.84 mm pitch    |  |
|                                                                                                                     | 9                    | 09 68 163 781       |  | 09 68 163 581    |  |
|                                                                                                                     | 15                   | 09 68 263 781       |  | 09 68 263 581    |  |
|                                                                                                                     | 25                   | 09 68 363 781       |  | 09 68 363 581    |  |
|                                                                                                                     | 37                   | 09 68 463 781       |  | 09 68 463 581    |  |
| Female connector<br>metal shell                                                                                     |                      | 2.84 mm pitch       |  | 2.84 mm pitch    |  |
|                                                                                                                     | 9                    | 09 68 153 761       |  | 09 68 153 561    |  |
|                                                                                                                     | 15                   | 09 68 253 761       |  | 09 68 253 561    |  |
|                                                                                                                     | 25                   | 09 68 353 761       |  | 09 68 353 561    |  |
|                                                                                                                     | 37                   | 09 68 453 761       |  | 09 68 453 561    |  |
| Please insert digit for flange thread or fitted female screw locks                                                  |                      |                     |  |                  |  |
|                                                                                                                     | M3 ▶ 1 <sup>2)</sup> |                     |  |                  |  |
|                                                                                                                     | 4-40 UNC ▶ 2         |                     |  |                  |  |
| fitted screw locks 4-40 UNC ▶ 3                                                                                     |                      |                     |  |                  |  |

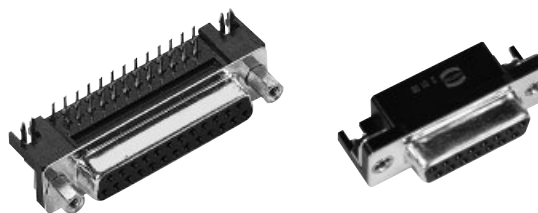
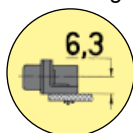
<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

<sup>2)</sup> Not normally kept in stock

Number of contacts

Mounting height

9–37



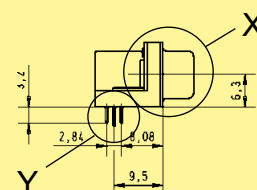
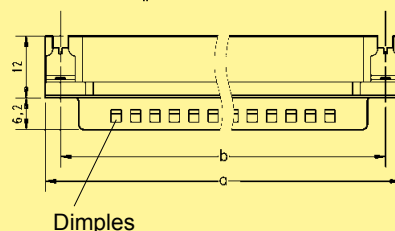
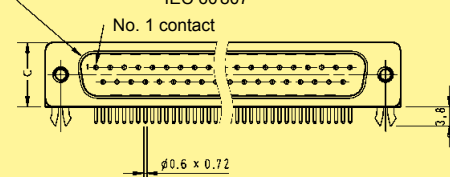
Stamped solder pins, angled with snap-in-clips and grounding board locks

Identification

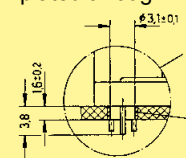
Drawing

Dimensions in mm

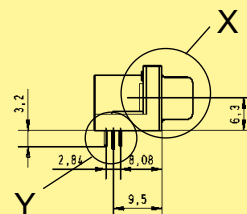
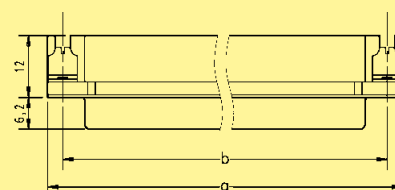
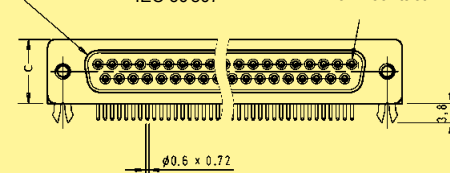
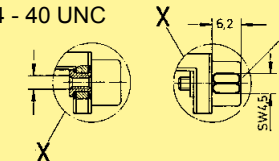
Male connector

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807


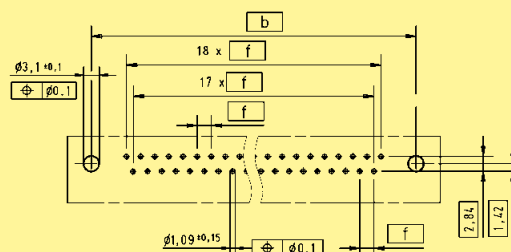
plated through holes



Female connector

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807

M3 or  
4 - 40 UNC


Board drillings



|    | a     | b $\pm 0.1$ | c     | f    |
|----|-------|-------------|-------|------|
| 9  | 30.90 | 25.00       | 12.55 | 2.77 |
| 15 | 39.20 | 33.30       | 12.55 | 2.77 |
| 25 | 53.10 | 47.00       | 12.55 | 2.77 |
| 37 | 69.40 | 63.50       | 12.55 | 2.77 |

## Identification

## Drawing

## Dimensions in mm

**Standard Versions**

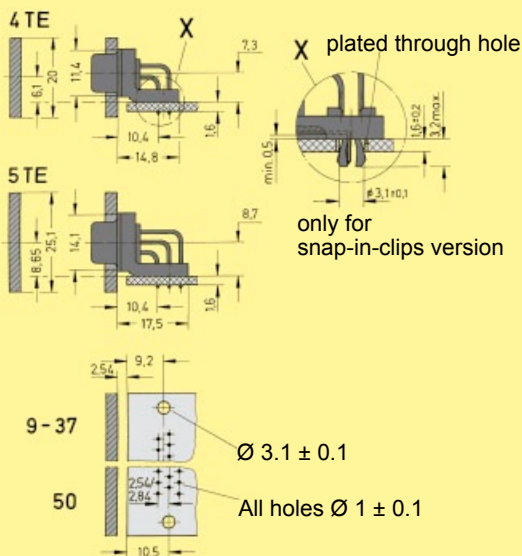
Mounting height 7.3 mm

9-37 way  
for front panel  
4 units of width (TE)

Mounting height 8.7 mm

50 way  
for front panel  
5 units of width (TE)

for connectors see pages 02.10 – 02.15

**Low-Profile Versions**

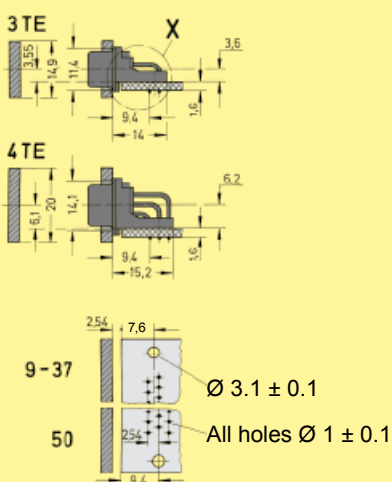
Mounting height 3.6 mm

9-37 way  
for front panel  
3 units of width (TE)

Mounting height 6.2 mm

50 way  
for front panel  
4 units of width (TE)

for connectors see pages 02.16 – 02.19



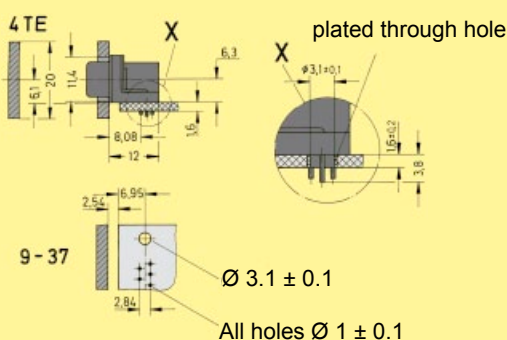
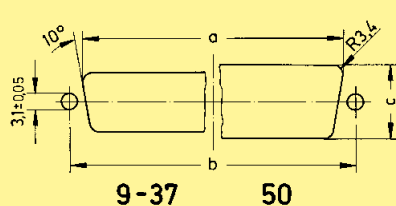
When used in a wave soldering process the mating face of the connector must be protected with adhesive tape.

**U.S. Footprint Versions**

Mounting height 6.3 mm

9-37 way  
for front panel  
4 units of width (TE)

for connectors see pages 02.20 – 02.21

Panel cut out  
for front/rear mountValues are taken from the  
CECC 75301-802

## Front mount

|    | $a_{\pm 0.2}$ | $b_{\pm 0.13}$ | $c_{\pm 0.2}$ |
|----|---------------|----------------|---------------|
| 9  | 22.2          | 25.0           | 12.3          |
| 15 | 30.5          | 33.3           | 12.3          |
| 25 | 44.3          | 47.0           | 12.3          |
| 37 | 60.7          | 63.5           | 12.3          |
| 50 | 58.3          | 61.1           | 15.1          |

## Rear mount

|    | $a_{\pm 0.2}$ | $b_{\pm 0.13}$ | $c_{\pm 0.2}$ |
|----|---------------|----------------|---------------|
| 9  | 20.5          | 25.0           | 11.4          |
| 15 | 28.8          | 33.3           | 11.4          |
| 25 | 42.5          | 47.0           | 11.4          |
| 37 | 59.1          | 63.5           | 11.4          |
| 50 | 56.3          | 61.1           | 14.1          |





Number of contacts 9, 15, 25, 37, 50  
UL recognized

### Working current

see current carrying capacity chart

Turned contacts 7.5 A max.

Stamped contacts 6.5 A max.

Insulation displacement 2 A max.

Test voltage  $U_{r.m.s.}$  1 kV

Clearance and creepage  $\geq 1.0$  mm  
 $\geq 0.7$  mm (insulation displacement)

Contact resistance  $\leq 10$  m $\Omega$

Insulation resistance  $\geq 10^{10}$   $\Omega$

### Temperature range

turned version -55 °C ... + 125 °C

stamped solder -40 °C ... + 85 °C  
bucket version

### Terminations

- Solder buckets  
AWG 20
- Stamped crimp contacts  
AWG 28-24  
0.09-0.25 mm<sup>2</sup>  
max. insulation  $\varnothing$  1.02 mm  
AWG 24-20  
0.25-0.56 mm<sup>2</sup>  
max. insulation  $\varnothing$  1.52 mm
- Turned crimp contacts  
AWG 22-18  
0.33-0.82 mm<sup>2</sup>  
AWG 24-20  
0.25-0.52 mm<sup>2</sup>  
AWG 26-22  
0.13-0.33 mm<sup>2</sup>  
AWG 28-24  
0.09-0.25 mm<sup>2</sup>  
max. insulation  $\varnothing$  2.15 mm
- Insulation displacement  
AWG 28/7 and AWG 26/7
- Wrap posts 0.6 x 0.6 mm  
diagonal 0.8-0.86 mm  
length 13 mm

### Materials

Mouldings and hoods Thermoplastic resin, glass-fibre filled (PBTP),  
UL 94-V0

Contacts Copper alloy

### Contact surface

Contact zone selectively plated according to performance level<sup>1)</sup>

Metal shell Plated steel

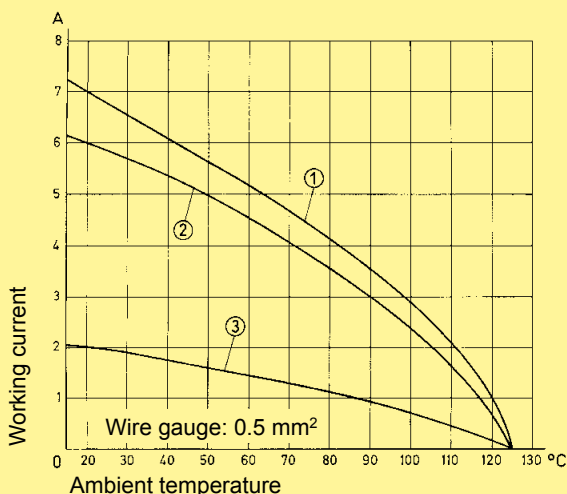
### Mating force

9 way  $\leq 30$  N  
15 way  $\leq 50$  N  
25 way  $\leq 83$  N  
37 way  $\leq 123$  N  
50 way  $\leq 167$  N

### Current carrying capacity

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals. The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60 512.



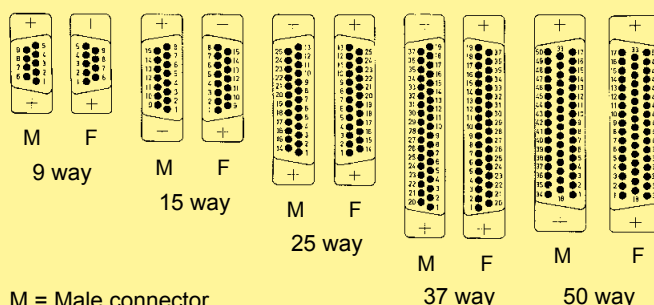
Example: 25 way connector

① Turned contacts

② Stamped contacts

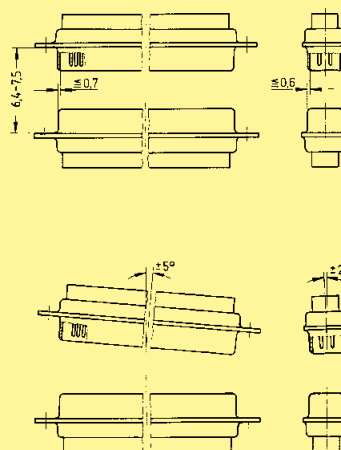
③ Insulation displacement contacts

### Contact arrangement View from termination side



M = Male connector  
F = Female connector

### Mating conditions as per DIN 41 652



<sup>1)</sup> Performance level 3, 50 mating cycles, no gas test

Performance level 2 as per CECC 75 301-802, 250 mating cycles, 4 days 4 mixed gas test – IEC 60 512

Performance level 1 as per CECC 75 301-802, 500 mating cycles, 10 days 4 mixed gas test – IEC 60 512

9-50

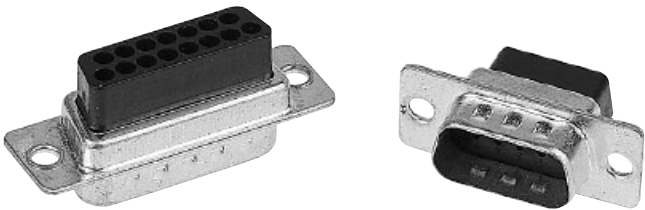


D-Sub - S

02  
25

Number of contacts

9–50



Crimp terminal

| Identification                                                              | No. of contacts | Part No.       |
|-----------------------------------------------------------------------------|-----------------|----------------|
| Male connector<br>Order contacts separately<br><br>metal shell with dimples | 9               | 09 67 009 5601 |
|                                                                             | 15              | 09 67 015 5601 |
|                                                                             | 25              | 09 67 025 5601 |
|                                                                             | 37              | 09 67 037 5601 |
|                                                                             | 50              | 09 67 050 5601 |
| Female connector<br>Order contacts separately<br><br>metal shell            | 9               | 09 67 009 4701 |
|                                                                             | 15              | 09 67 015 4701 |
|                                                                             | 25              | 09 67 025 4701 |
|                                                                             | 37              | 09 67 037 4701 |
|                                                                             | 50              | 09 67 050 4701 |

Male connector

9-37      50

Female connector

9-37      50

|    |      |                   |      |
|----|------|-------------------|------|
|    | a    | b <sub>±0.1</sub> | c    |
| 9  | 30.9 | 25.0              | 12.5 |
| 15 | 39.2 | 33.3              | 12.5 |
| 25 | 53.1 | 47.0              | 12.5 |
| 37 | 69.4 | 63.5              | 12.5 |
| 50 | 67.0 | 61.1              | 15.4 |

Panel cut out  
for front/rear mount  
Values are taken from the  
CECC 75 301-802

see page 02.22

Dimensions in mm

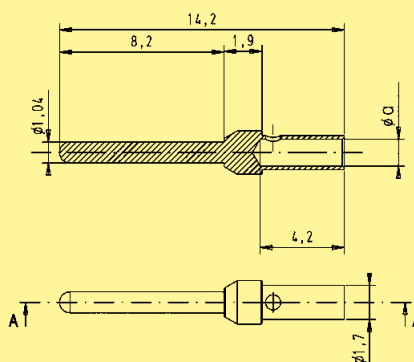
Crimp contacts see pages 02.27 ff  
Mating conditions see page 02.24



## Turned crimp contacts

| Identification                                                | Wire gauge<br>(mm <sup>2</sup> ) | Part No.                |                         |                          |
|---------------------------------------------------------------|----------------------------------|-------------------------|-------------------------|--------------------------|
|                                                               |                                  | Male contacts           | Female contacts         | High-end female contacts |
| Individual contacts <sup>1)</sup>                             |                                  | Performance level<br>1* | Performance level<br>1* | Performance level<br>1*  |
|                                                               | AWG<br>22-18<br>0.33-0.82        | 09 67 000 3576          | 09 67 000 3476          | 09 67 000 3676           |
|                                                               | AWG<br>24-20<br>0.25-0.52        | 09 67 000 8576          | 09 67 000 8476          | 09 67 000 8676           |
|                                                               | AWG<br>26-22<br>0.13-0.33        | 09 67 000 5576          | 09 67 000 5476          | 09 67 000 5676           |
| <sup>1)</sup> Minimum order 100 pieces<br>or multiples of 100 | AWG<br>28-24<br>0.09-0.25        | 09 67 000 7576          | 09 67 000 7476          | 09 67 000 7676           |

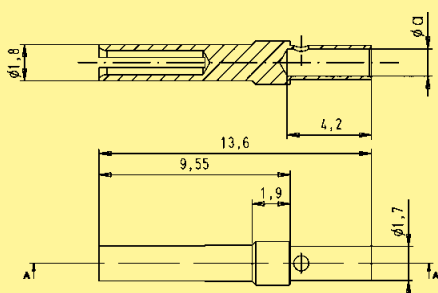
## Male contacts



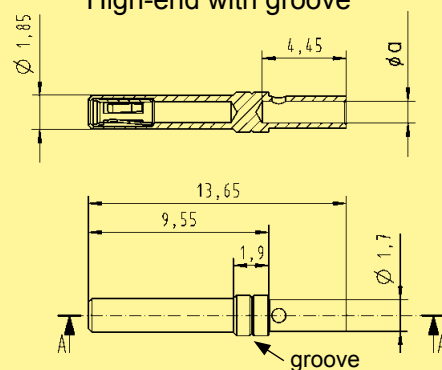
|           | a    | groove |
|-----------|------|--------|
| AWG 22-18 | 1.34 | none   |
| AWG 24-20 | 1.13 | 1      |
| AWG 26-22 | 0.88 | 2      |
| AWG 28-24 | 0.64 | 3      |

## Female contacts

## Standard

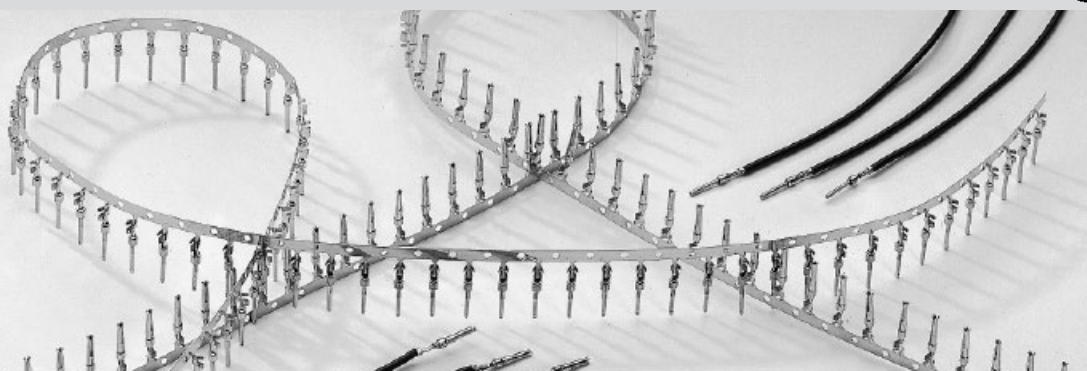


## High-end with groove



\* Performance level 1 as per CECC 75 301-802, 500 mating cycles, 10 days 4 mixed gas test – IEC 60 512  
Use crimp tool with the part no. 09 99 000 0501 and the locator with the part no. 09 99 000 0531. Details see chapter 31

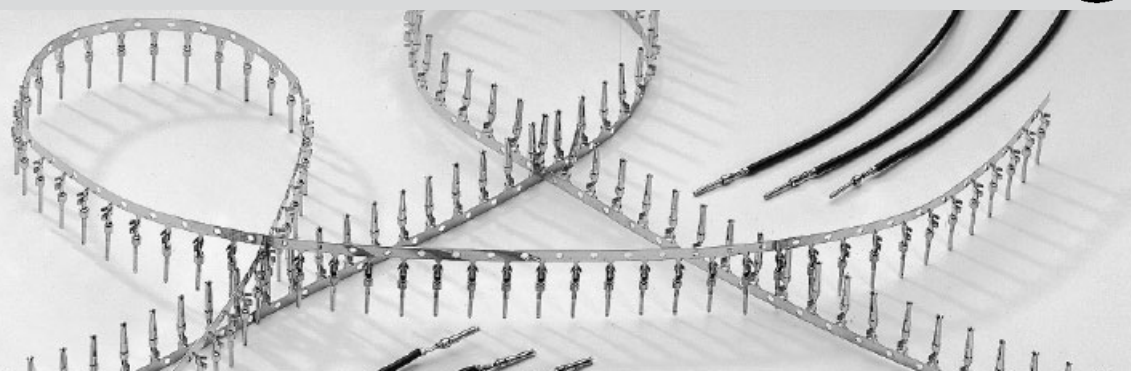
## Stamped crimp contacts



| Identification                                                                              | Wire gauge<br>(mm <sup>2</sup> ) | Part No.                                           |                                                    |                                                    |
|---------------------------------------------------------------------------------------------|----------------------------------|----------------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| Performance levels<br>Explanations see page 02.24<br>Other performance levels<br>on request |                                  | stamped male contacts                              |                                                    |                                                    |
|                                                                                             |                                  | Performance level<br>3                             | Performance level<br>2                             | Performance level<br>1                             |
| Individual contacts                                                                         | AWG<br>28-24                     | 09 67 000 7177 <sup>1)</sup>                       | 09 67 000 7178 <sup>1)</sup>                       | 09 67 000 7176 <sup>1)</sup>                       |
| 500 pieces/reel<br>Unrolling left                                                           | 0.09-0.25<br>stranded            | 09 67 000 7167                                     | 09 67 000 7168                                     | 09 67 000 7166                                     |
| 10 000 pieces/reel<br>Unrolling left<br>Unrolling left reversed<br>Unrolling right reversed |                                  | 09 67 000 7157<br>09 67 000 7147<br>09 67 000 7137 | 09 67 000 7158<br>09 67 000 7148<br>09 67 000 7138 | 09 67 000 7156<br>09 67 000 7146<br>09 67 000 7136 |
| Individual contacts                                                                         | AWG<br>24-20                     | 09 67 000 8177 <sup>1)</sup>                       | 09 67 000 8178 <sup>1)</sup>                       | 09 67 000 8176 <sup>1)</sup>                       |
| 500 pieces/reel<br>Unrolling left                                                           | 0.25-0.56<br>stranded            | 09 67 000 8167                                     | 09 67 000 8168                                     | 09 67 000 8166                                     |
| 10 000 pieces/reel<br>Unrolling left<br>Unrolling left reversed<br>Unrolling right reversed |                                  | 09 67 000 8157<br>09 67 000 8147<br>09 67 000 8137 | 09 67 000 8158<br>09 67 000 8148<br>09 67 000 8138 | 09 67 000 8156<br>09 67 000 8146<br>09 67 000 8136 |
| Unrolling direction                                                                         |                                  |                                                    |                                                    |                                                    |
|                                                                                             |                                  | for HARTING tools                                  |                                                    |                                                    |

<sup>1)</sup> Minimum order 500 pieces or multiples of 500  
Insertion and removal tool see chapter 31  
Contact dimensions see page 02.29

# Stamped crimp contacts



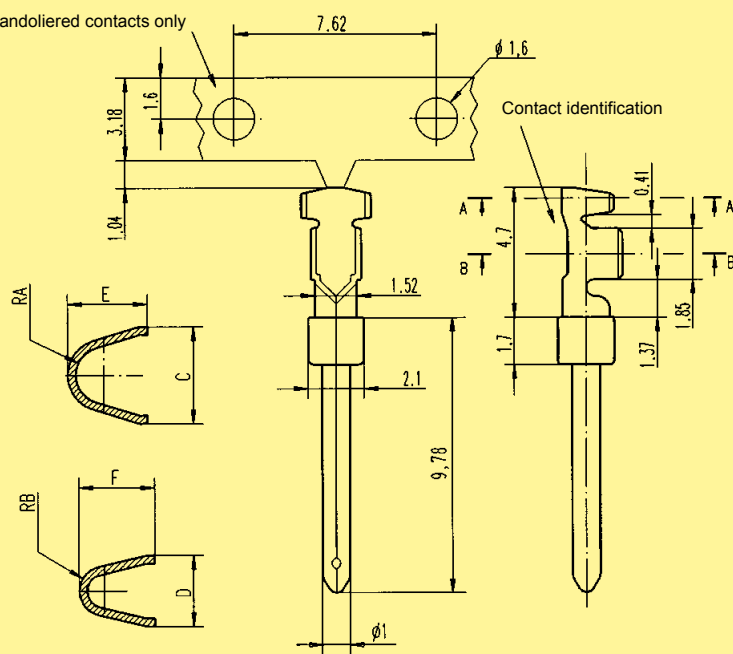
Identification

Drawing

Dimensions in mm

## Male contacts

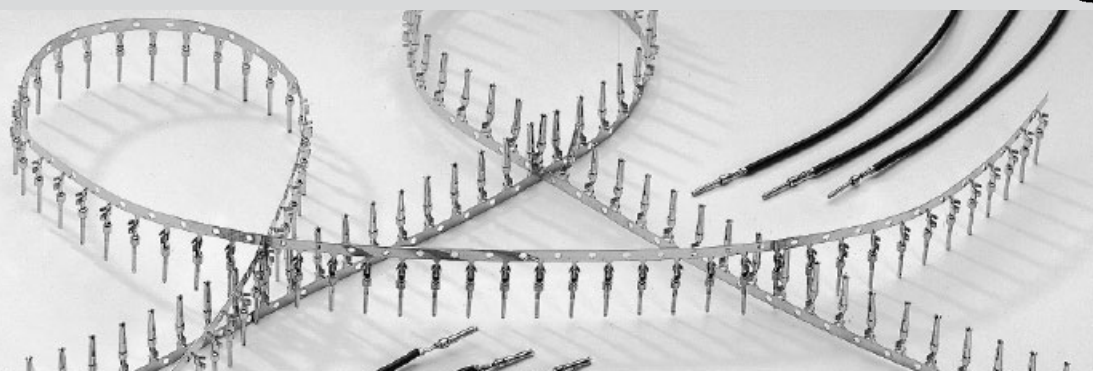
For bandoliered contacts only



| AWG   | C    | D    | E    | F    | RA   | RB   | Contact identification |
|-------|------|------|------|------|------|------|------------------------|
| 20-24 | 2.46 | 1.78 | 1.98 | 1.90 | 0.71 | 0.43 | —                      |
| 24-28 | 1.65 | 1.47 | 1.52 | 1.52 | 0.50 | 0.33 | ====                   |



## Stamped crimp contacts

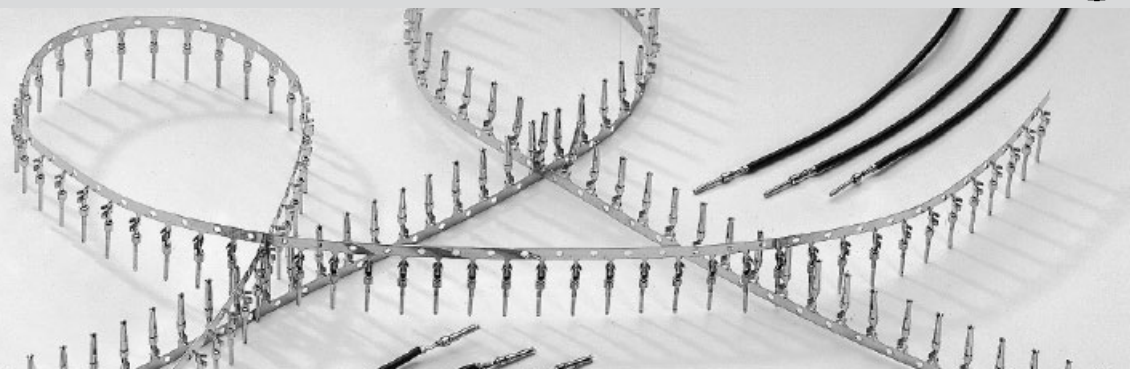


D-Sub - S

| Identification                                                                                     | Wire gauge<br>(mm <sup>2</sup> )          | Part No.                                                                                                                                                                                  |                                                    |                                                    |
|----------------------------------------------------------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 02.24<br>Other performance levels<br>on request |                                           | stamped female contacts                                                                                                                                                                   |                                                    |                                                    |
|                                                                                                    |                                           | Performance level<br>3                                                                                                                                                                    | Performance level<br>2                             | Performance level<br>1                             |
| Individual contacts                                                                                | AWG<br>28-24<br>0.09-0.25<br><br>stranded | 09 67 000 7277 <sup>1)</sup>                                                                                                                                                              | 09 67 000 7278 <sup>1)</sup>                       | 09 67 000 7276 <sup>1)</sup>                       |
| 500 pieces/reel<br>Unrolling left                                                                  |                                           | 09 67 000 7267                                                                                                                                                                            | 09 67 000 7268                                     | 09 67 000 7266                                     |
| 10 000 pieces/reel<br>Unrolling left<br>Unrolling left reversed<br>Unrolling right reversed        |                                           | 09 67 000 7257<br>09 67 000 7247<br>09 67 000 7237                                                                                                                                        | 09 67 000 7258<br>09 67 000 7248<br>09 67 000 7238 | 09 67 000 7256<br>09 67 000 7246<br>09 67 000 7236 |
| Individual contacts                                                                                | AWG<br>24-20<br>0.25-0.56<br><br>stranded | 09 67 000 8277 <sup>1)</sup>                                                                                                                                                              | 09 67 000 8278 <sup>1)</sup>                       | 09 67 000 8276 <sup>1)</sup>                       |
| 500 pieces/reel<br>Unrolling left                                                                  |                                           | 09 67 000 8267                                                                                                                                                                            | 09 67 000 8268                                     | 09 67 000 8266                                     |
| 10 000 pieces/reel<br>Unrolling left<br>Unrolling left reversed<br>Unrolling right reversed        |                                           | 09 67 000 8257<br>09 67 000 8247<br>09 67 000 8237                                                                                                                                        | 09 67 000 8258<br>09 67 000 8248<br>09 67 000 8238 | 09 67 000 8256<br>09 67 000 8246<br>09 67 000 8236 |
| Unrolling direction                                                                                |                                           | <br>500 pieces/reel Unrolling left    10 000 pieces/reel Unrolling left    10 000 pieces/reel Unrolling left reversed    10 000 pieces/reel Unrolling right reversed<br>for HARTING tools |                                                    |                                                    |

<sup>1)</sup> Minimum order 500 pieces or multiples of 500  
 Insertion and removal tool see chapter 31  
 Contact dimensions see page 02.31

# Stamped crimp contacts



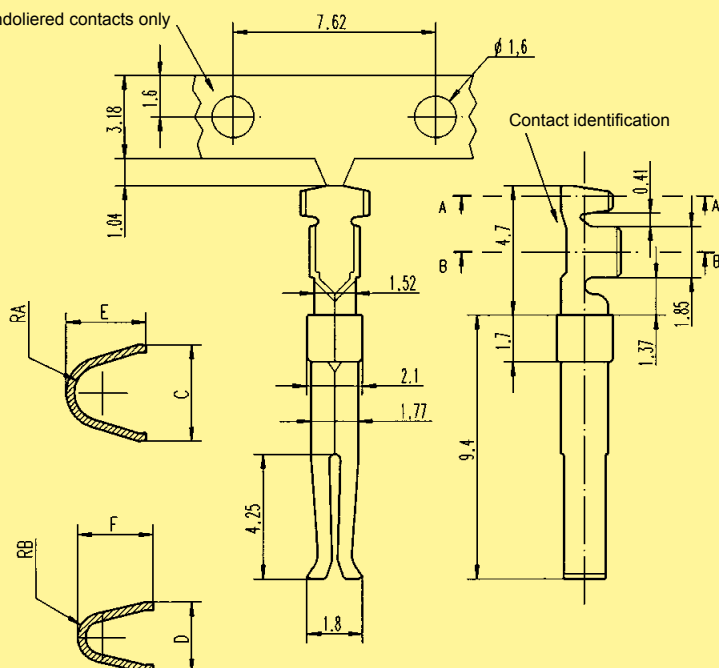
Identification

Drawing

Dimensions in mm

## Female contacts

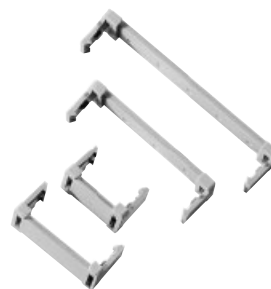
For bandoliered contacts only



| AWG   | C    | D    | E    | F    | RA   | RB   | Contact identification |
|-------|------|------|------|------|------|------|------------------------|
| 20-24 | 2.46 | 1.78 | 1.98 | 1.90 | 0.71 | 0.43 | —                      |
| 24-28 | 1.65 | 1.47 | 1.52 | 1.52 | 0.50 | 0.33 | ====                   |

Number of contacts

9–37



Insulation displacement termination

D-Sub - S

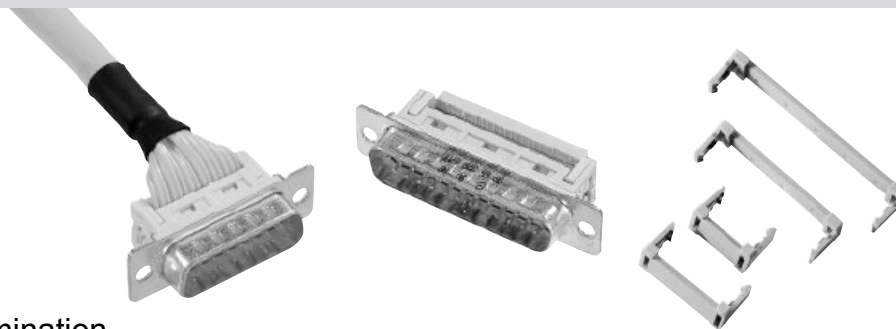
| Identification                                                                                            | No. of contacts     | Part No.                                                             |                                                                      |
|-----------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 02.24<br>Other performance levels on request           |                     | Performance level 3                                                  | Performance level 2                                                  |
| <b>Male connector<sup>2)</sup></b><br>pitch 1.27 mm<br>metal shell with dimples                           | 9<br>15<br>25<br>37 | 09 66 128 770<br>09 66 228 770<br>09 66 328 770<br>09 66 428 770     | 09 66 128 670<br>09 66 228 670<br>09 66 328 670<br>09 66 428 670     |
| <b>Female connector<sup>2)</sup></b><br>pitch 1.27 mm<br>metal shell                                      | 9<br>15<br>25<br>37 | 09 66 118 750<br>09 66 218 750<br>09 66 318 750<br>09 66 418 750     | 09 66 118 650<br>09 66 218 650<br>09 66 318 650<br>09 66 418 650     |
| <b>Please insert digit for flange thread</b><br>ø 3.1 mm hole ▶ 0<br>M3 ▶ 1 <sup>1)</sup><br>4-40 UNC ▶ 2 |                     |                                                                      |                                                                      |
| <b>Strain relief clamp</b><br>plastic for male<br>and female connector                                    | 9<br>15<br>25<br>37 | 09 66 108 0001<br>09 66 208 0001<br>09 66 308 0001<br>09 66 408 0001 | 09 66 108 0001<br>09 66 208 0001<br>09 66 308 0001<br>09 66 408 0001 |

<sup>1)</sup> Not normally kept in stock<sup>2)</sup> Not released for halogen free flat cables

Number of contacts

# 9–37

Insulation displacement termination

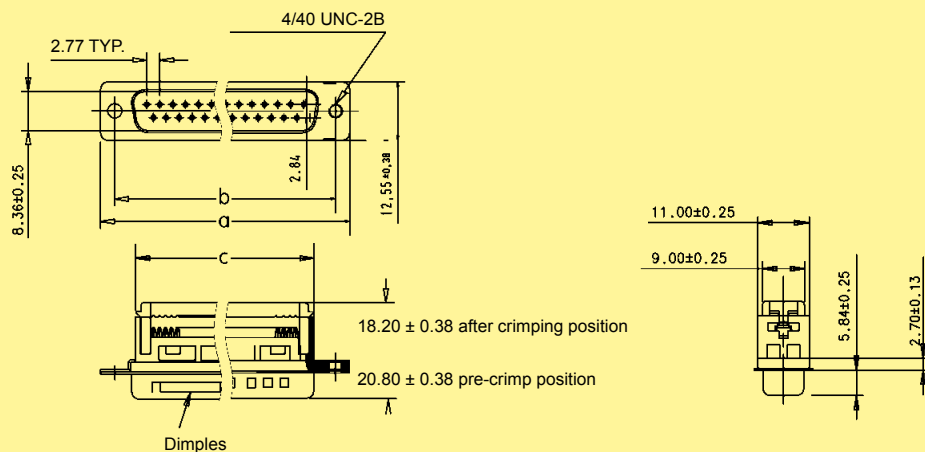


Identification

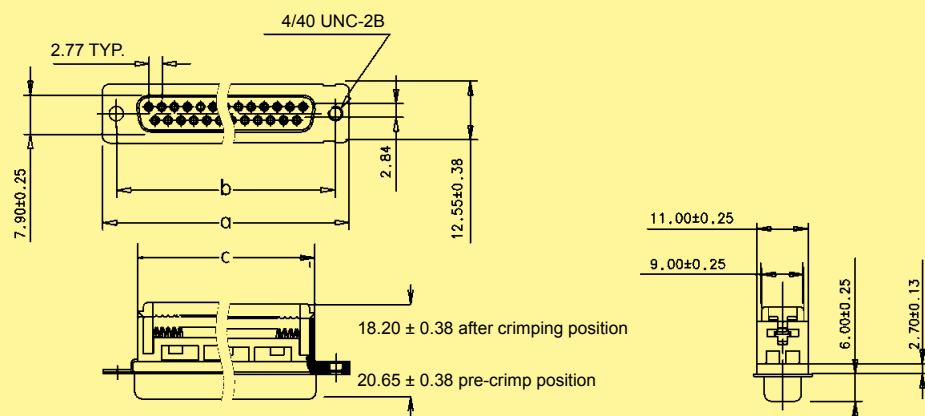
Drawing

Dimensions in mm

Male connector



Female connector

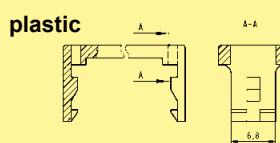


Male and female connectors

|    | a     | b±0.1 | c     |
|----|-------|-------|-------|
| 9  | 30.80 | 24.99 | 16.10 |
| 15 | 39.10 | 33.32 | 24.00 |
| 25 | 53.09 | 47.04 | 38.14 |
| 37 | 69.40 | 63.50 | 54.60 |

Specified conductors  
stranded wires – AWG 28/7  
– AWG 26/7

Strain relief clamps



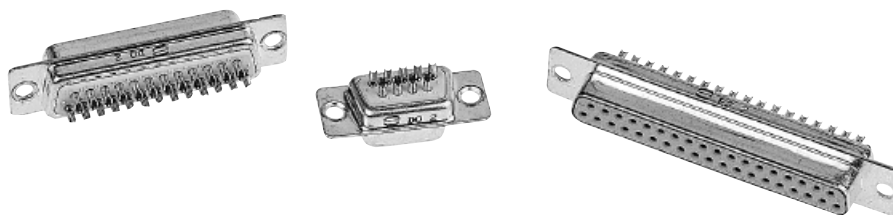
Panel cut out  
for front/rear mount

Values are taken from the  
CECC 75 301-802

see page 02.22

Number of contacts

9–50



Solder buckets

D-Sub - S

| Identification                                                                                  | No. of contacts | Part No.                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 02.24<br>Other performance levels on request |                 | Performance level<br>3                                                                                                                                                                                                                                          | Performance level<br>2                                                                                                                                                                                                              |
| <b>Male connector</b><br>metal shell with dimples                                               |                 | turned contacts<br><br>9 09 67 009 5604<br>15 09 67 015 5604<br>25 09 67 025 5604<br>37 09 67 037 5604<br>50 09 67 050 5604<br><br>stamped contacts<br><br>9 09 67 209 5604<br>15 09 67 215 5604<br>25 09 67 225 5604<br>37 09 67 237 5604<br>50 09 67 250 5604 | turned contacts<br><br>09 67 009 5615<br>09 67 015 5615<br>09 67 025 5615<br>09 67 037 5615<br>09 67 050 5615<br><br>stamped contacts<br><br>09 67 209 5615<br>09 67 215 5615<br>09 67 225 5615<br>09 67 237 5615<br>09 67 250 5615 |
| <b>Female connector</b><br>metal shell                                                          |                 | turned contacts<br><br>9 09 67 009 4704<br>15 09 67 015 4704<br>25 09 67 025 4704<br>37 09 67 037 4704<br>50 09 67 050 4704<br><br>stamped contacts<br><br>9 09 67 209 4704<br>15 09 67 215 4704<br>25 09 67 225 4704<br>37 09 67 237 4704<br>50 09 67 250 4704 | turned contacts<br><br>09 67 009 4715<br>09 67 015 4715<br>09 67 025 4715<br>09 67 037 4715<br>09 67 050 4715<br><br>stamped contacts<br><br>09 67 209 4715<br>09 67 215 4715<br>09 67 225 4715<br>09 67 237 4715<br>09 67 250 4715 |

Number of contacts

9–50



Solder buckets

Identification

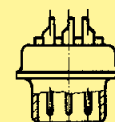
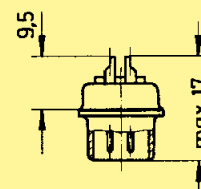
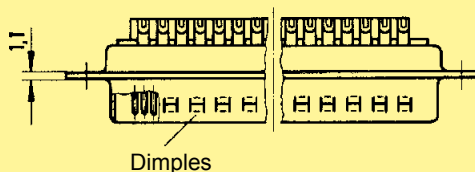
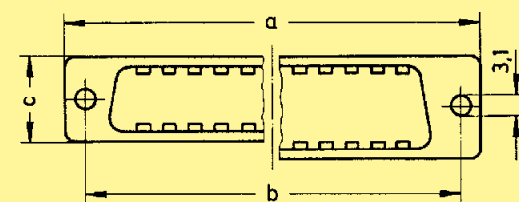
Drawing

Dimensions in mm

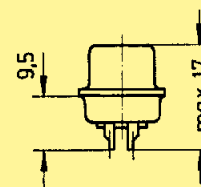
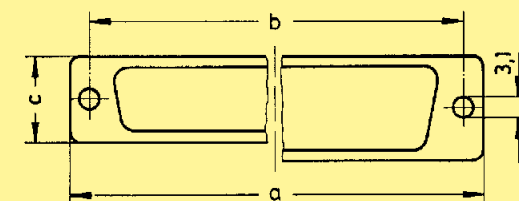
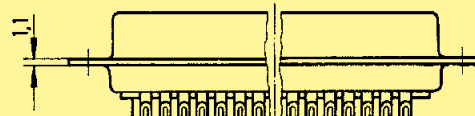
Male connector

9-37

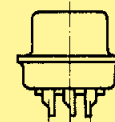
50



Female connector



9-37



50

|    | a    | b $\pm 0.1$ | c    |
|----|------|-------------|------|
| 9  | 30.9 | 25.0        | 12.5 |
| 15 | 39.2 | 33.3        | 12.5 |
| 25 | 53.1 | 47.0        | 12.5 |
| 37 | 69.4 | 63.5        | 12.5 |
| 50 | 67.0 | 61.1        | 15.4 |

Panel cut out  
for front/rear mount

Values are taken from the  
CECC 75 301-802

see page 02.22

Mating conditions see page 02.24

D-Sub - S





## D-Sub – High Density subminiature D connectors

Page

Technical characteristics . . . . .

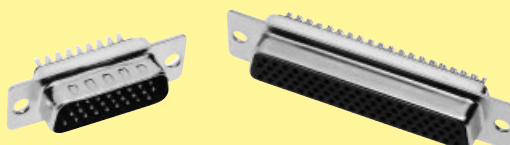
**03.02**

Connectors  
with crimp terminal / crimp contacts . . . . .



**03.03**

Connectors  
with straight solder cups . . . . .



**03.06**

Connectors  
with angled solder pins . . . . .



**03.08**

Connectors  
with straight solder pins . . . . .



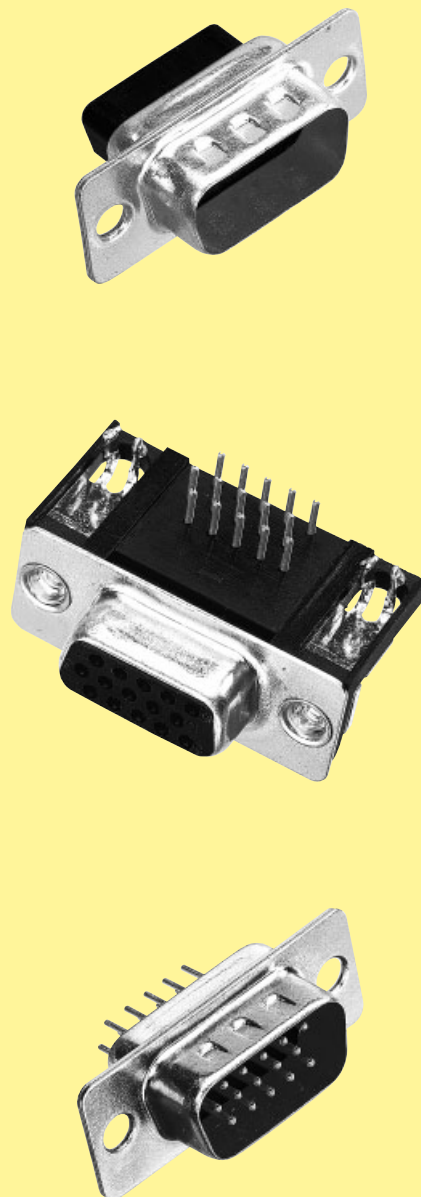
**03.11**

Cables  
and cable assemblies . . . . .



**see chapter 40**

|                                     |                                                                                                                                                                                                                    |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of contacts                  | 15, 26, 44, 62, 78                                                                                                                                                                                                 |
| Working current<br>Stamped contacts | 2 A max.                                                                                                                                                                                                           |
| Test voltage $U_{r.m.s.}$           | 1 kV                                                                                                                                                                                                               |
| Clearance and creepage              | $\geq 1.0$ mm                                                                                                                                                                                                      |
| Contact resistance                  | $< 20$ m $\Omega$                                                                                                                                                                                                  |
| Insulation resistance               | $< 25$ m $\Omega$ (for right angled versions)<br>$\geq 5 \times 10^9$ $\Omega$                                                                                                                                     |
| Temperature range                   | -40 °C ... + 85 °C<br>The higher temperature limit includes the local ambient and heating effect of the contacts under load                                                                                        |
| Terminations                        | a) Solder pins $\varnothing$ 0.65 mm for P.C.B. holes $\varnothing$ 1.0 mm<br>b) Crimp contacts<br>AWG 26 - 24<br>0.14 - 0.22 mm <sup>2</sup><br>max. insulation $\varnothing$ 1.38 mm<br>c) Solder cups<br>AWG 24 |
| Materials                           |                                                                                                                                                                                                                    |
| Mouldings and hoods                 | Thermoplastic resin, glass-fibre filled (PBTP), UL 94-V0                                                                                                                                                           |
| Contacts                            | Copper alloy                                                                                                                                                                                                       |
| Contact surface                     |                                                                                                                                                                                                                    |
| Contact zone                        | selectively plated according to performance level <sup>1)</sup>                                                                                                                                                    |
| Metal shell                         | Plated steel                                                                                                                                                                                                       |
| Mating force                        |                                                                                                                                                                                                                    |
|                                     | 15 way $\leq 46$ N                                                                                                                                                                                                 |
|                                     | 26 way $\leq 77$ N                                                                                                                                                                                                 |
|                                     | 44 way $\leq 127$ N                                                                                                                                                                                                |
|                                     | 62 way $\leq 177$ N                                                                                                                                                                                                |
|                                     | 78 way $\leq 222$ N                                                                                                                                                                                                |



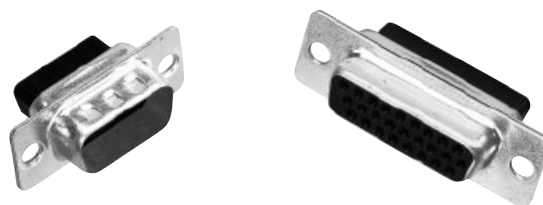
Number of contacts in the D-Sub standard/D-Sub high density range related to the shell size.

| Shell size | D-Sub standard | D-Sub high density |
|------------|----------------|--------------------|
| 1          | 9              | 15                 |
| 2          | 15             | 26                 |
| 3          | 25             | 44                 |
| 4          | 37             | 62                 |
| 5          | 50             | 78                 |

<sup>1)</sup> Performance level 3, 50 mating cycles, no gas test  
S4, plating = 0.76  $\mu$ m (30 pinch) Au or PdNi equivalent

Number of contacts

15–78

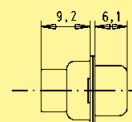
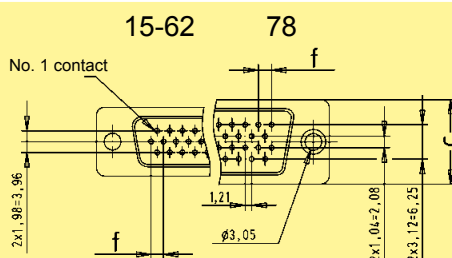


High density crimp terminal

| Identification                                                          | No. of contacts | Part No.       |
|-------------------------------------------------------------------------|-----------------|----------------|
| Male connector<br>Order contacts separately<br>metal shell with dimples | 15              | 09 56 100 5601 |
|                                                                         | 26              | 09 56 200 5601 |
|                                                                         | 44              | 09 56 300 5601 |
|                                                                         | 62              | 09 56 400 5601 |
|                                                                         | 78              | 09 56 500 5601 |
| Female connector<br>Order contacts separately<br>metal shell            | 15              | 09 56 100 4701 |
|                                                                         | 26              | 09 56 200 4701 |
|                                                                         | 44              | 09 56 300 4701 |
|                                                                         | 62              | 09 56 400 4701 |
|                                                                         | 78              | 09 56 500 4701 |

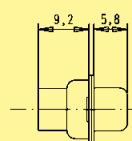
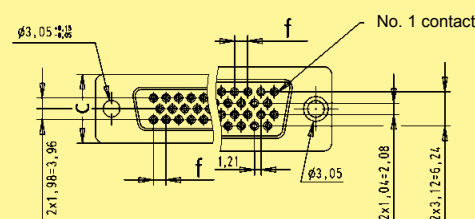
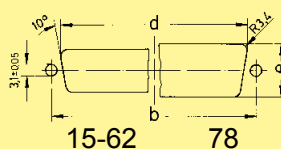
D-Sub-HD

Male connector



|    | a    | b    | c    | f    |
|----|------|------|------|------|
| 15 | 30.9 | 25.0 | 12.5 | 2.29 |
| 26 | 39.2 | 33.3 | 12.5 | 2.29 |
| 44 | 53.1 | 47.0 | 12.5 | 2.29 |
| 62 | 69.4 | 63.5 | 12.5 | 2.41 |
| 78 | 67.0 | 61.1 | 15.4 | 2.41 |

Female connector

Panel cut out  
for front/rear mountValues are taken from the  
CECC 75301-802

Front mount

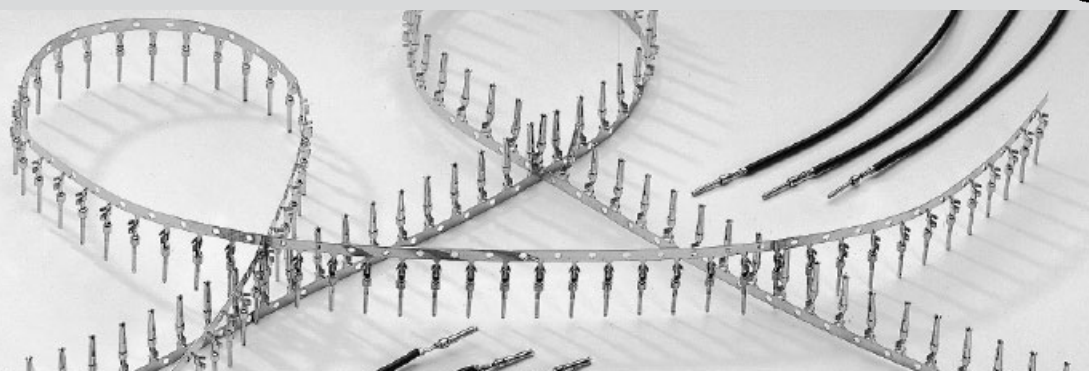
|    | b $\pm 0.13$ | d $\pm 0.2$ | e $\pm 0.2$ |
|----|--------------|-------------|-------------|
| 15 | 25.0         | 22.2        | 12.3        |
| 26 | 33.3         | 30.5        | 12.3        |
| 44 | 47.0         | 44.3        | 12.3        |
| 62 | 63.5         | 60.7        | 12.3        |
| 78 | 61.1         | 58.3        | 15.1        |

Rear mount

|    | b $\pm 0.13$ | d $\pm 0.2$ | e $\pm 0.2$ |
|----|--------------|-------------|-------------|
| 15 | 25.0         | 20.5        | 11.4        |
| 26 | 33.3         | 28.8        | 11.4        |
| 44 | 47.0         | 42.5        | 11.4        |
| 62 | 63.5         | 59.1        | 11.4        |
| 78 | 61.1         | 56.3        | 14.1        |

Dimensions in mm

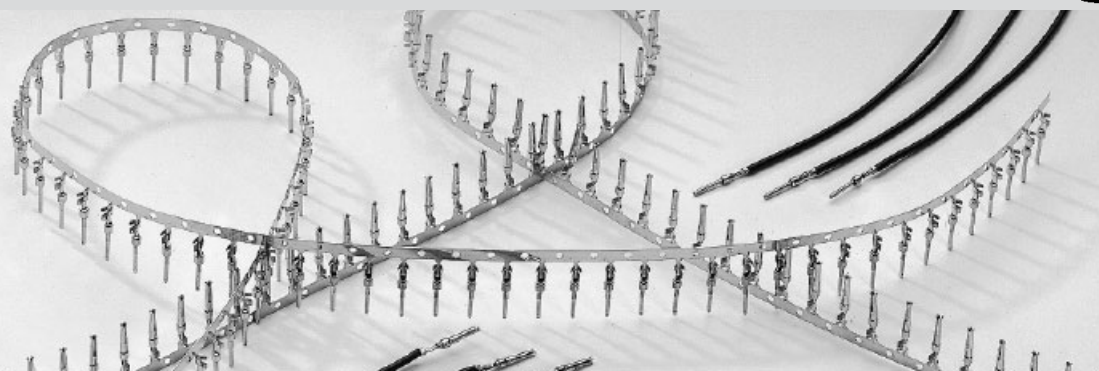
Crimp contacts  
for high density  
connectors



| Identification                                                                              | Wire gauge<br>(mm <sup>2</sup> )      | Part No.                                                                                                                |                  |                         |                  |
|---------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------|------------------|
| Performance levels<br>Explanations see page 03.02<br>Other performance levels<br>on request |                                       | stamped male contacts                                                                                                   |                  | stamped female contacts |                  |
|                                                                                             |                                       | Performance level<br>3                                                                                                  | S4 <sup>1)</sup> | Performance level<br>3  | S4 <sup>1)</sup> |
| 500 pieces/box                                                                              | AWG<br>26-24<br>0.14-0.22<br>stranded | 09 56 000 8177                                                                                                          | 09 56 000 8175   | 09 56 000 8277          | 09 56 000 8275   |
| 500 pieces/reel<br>Unrolling left                                                           |                                       | 09 56 000 8167                                                                                                          | 09 56 000 8165   | 09 56 000 8267          | 09 56 000 8265   |
| 10 000 pieces/reel<br>Unrolling left                                                        |                                       | 09 56 000 8157                                                                                                          | 09 56 000 8155   | 09 56 000 8257          | 09 56 000 8255   |
| Unrolling direction                                                                         |                                       | <p>500 pieces/reel<br/>Unrolling<br/>left</p> <p>10 000 pieces/reel<br/>Unrolling<br/>left</p> <p>for HARTING tools</p> |                  |                         |                  |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent  
Contact dimensions see page 03.05

Crimp contacts for high density connectors



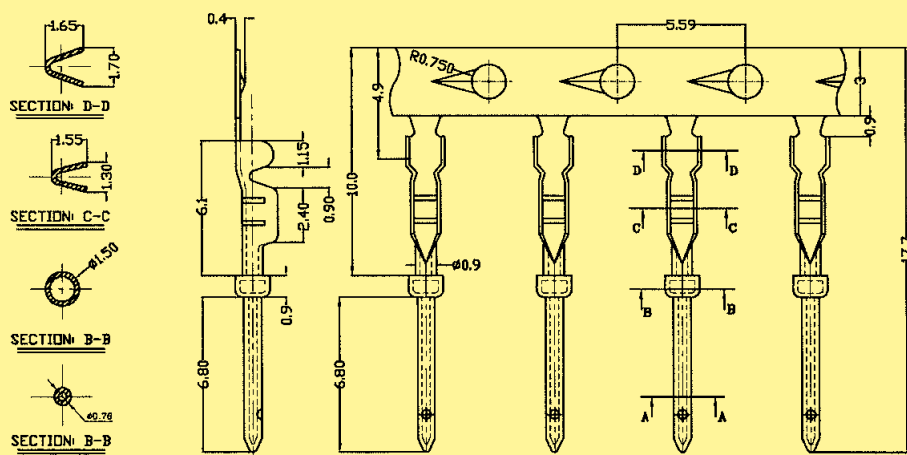
Identification

Drawing

Dimensions in mm

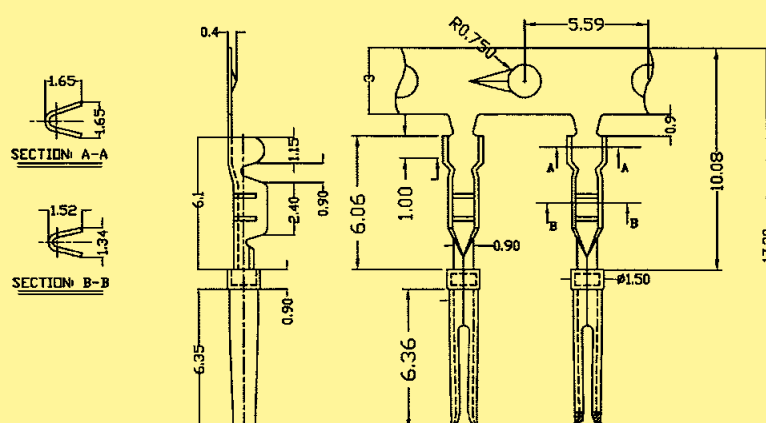
Male contacts

wire gauge AWG 26-24



Female contacts

wire gauge AWG 26-24



Number of contacts

15–78



High density with stamped solder cups, straight

| Identification                                                                                  | No. of contacts            | Part No.                                                                               |                                                                                                            |
|-------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 03.02<br>Other performance levels on request |                            | Performance level<br>3                                                                 | S4 <sup>1)</sup>                                                                                           |
| <b>Male connector</b><br>metal shell with dimples                                               |                            |                                                                                        |                                                                                                            |
| <b>Female connector</b><br>metal shell                                                          |                            |                                                                                        |                                                                                                            |
|                                                                                                 | 15<br>26<br>44<br>62<br>78 | 09 56 100 5604<br>09 56 200 5604<br>09 56 300 5604<br>09 56 400 5604<br>09 56 500 5604 | 09 56 100 5615 050<br>09 56 200 5615 050<br>09 56 300 5615 050<br>09 56 400 5615 050<br>09 56 500 5615 050 |
|                                                                                                 | 15<br>26<br>44<br>62<br>78 | 09 56 100 4704<br>09 56 200 4704<br>09 56 300 4704<br>09 56 400 4704<br>09 56 500 4704 | 09 56 100 4715 050<br>09 56 200 4715 050<br>09 56 300 4715 050<br>09 56 400 4715 050<br>09 56 500 4715 050 |

Number of contacts

15–78



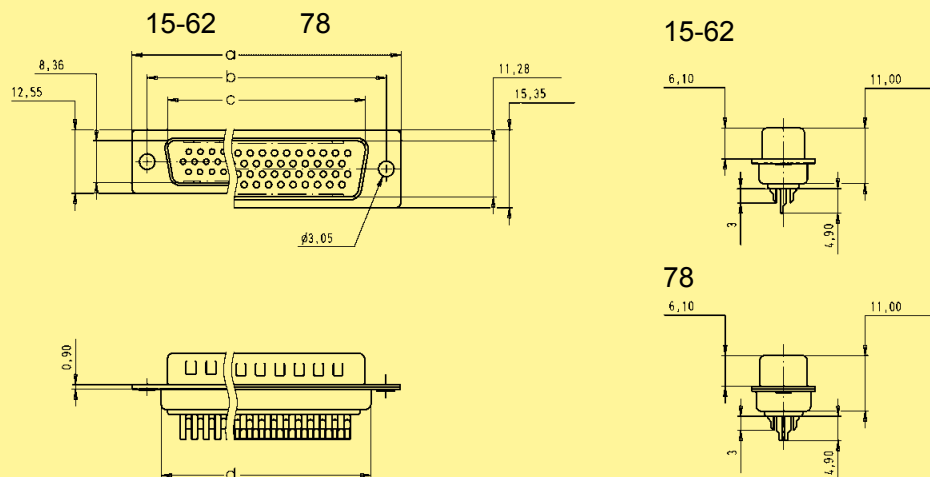
High density with stamped solder cups, straight

## Identification

## Drawing

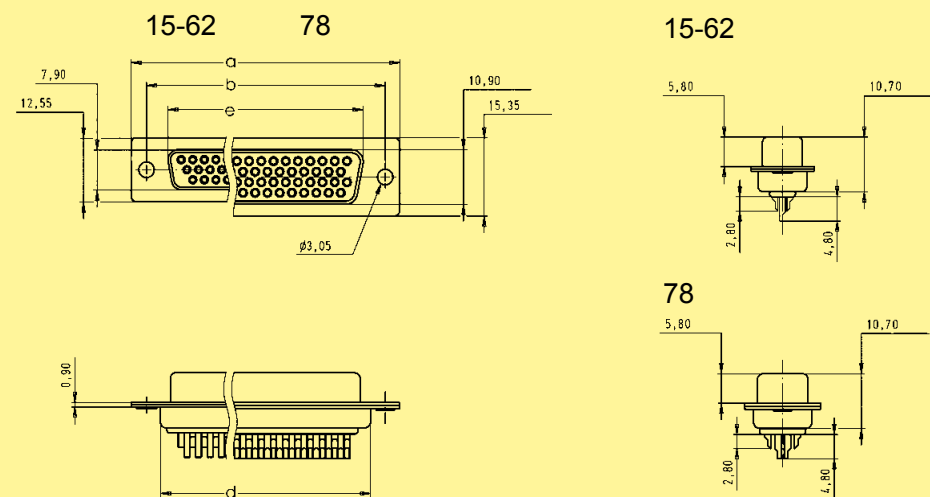
## Dimensions in mm

## Male connector



|    | a     | b     | c     | d     | e     |
|----|-------|-------|-------|-------|-------|
| 15 | 30.81 | 25.00 | 16.92 | 19.20 | 16.33 |
| 26 | 39.20 | 33.30 | 25.25 | 27.70 | 24.70 |
| 44 | 53.05 | 47.00 | 38.96 | 41.10 | 38.40 |
| 62 | 69.40 | 63.50 | 55.42 | 57.30 | 54.80 |
| 78 | 67.00 | 61.00 | 52.81 | 55.10 | 52.20 |

## Female connector





Number of contacts

15–78



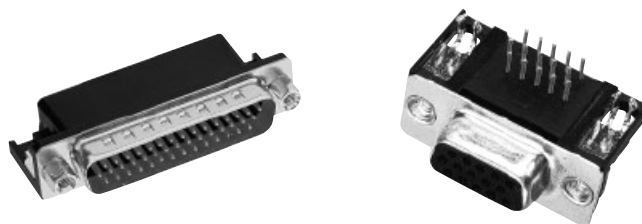
High density with stamped solder pins, angled with grounding board locks

| Identification                                                                                                            | No. of contacts | Part No.                   |  |
|---------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------|--|
| <b>Performance levels</b><br>Explanations see page 03.02<br>Other performance levels on request                           |                 | <b>Performance level 3</b> |  |
| <b>Male connector</b><br>metal shell with dimples                                                                         |                 | <b>S4<sup>1)</sup></b>     |  |
| <b>Female connector</b><br>metal shell                                                                                    |                 |                            |  |
| Please insert digit for flange thread or fitted female screw locks<br><br>4-40 UNC ► 2<br>fitted screw locks 4-40 UNC ► 3 |                 |                            |  |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

Number of contacts

15–78



High density with stamped solder pins, angled with grounding board locks

Identification

Drawing

Dimensions in mm

Male connector

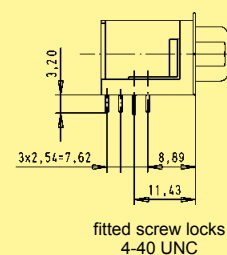
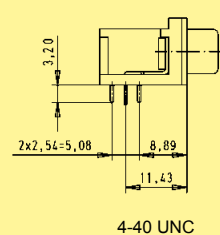
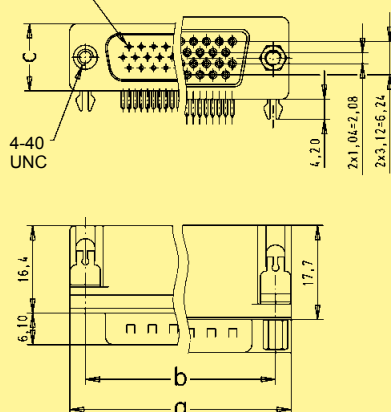
15-62

78

15-62

78

No. 1 contact



|    | a     | b $\pm 0.1$ | c     |
|----|-------|-------------|-------|
| 15 | 30.81 | 24.99       | 12.55 |
| 26 | 39.20 | 33.30       | 12.55 |
| 44 | 53.05 | 47.04       | 12.55 |
| 62 | 69.40 | 63.50       | 12.55 |
| 78 | 67.00 | 61.00       | 15.37 |

Female connector

15-62

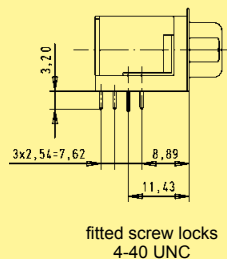
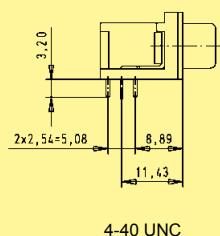
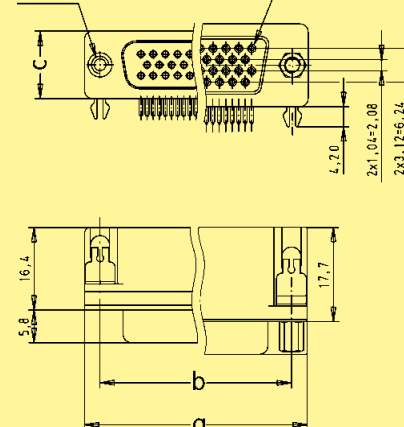
78

15-62

78

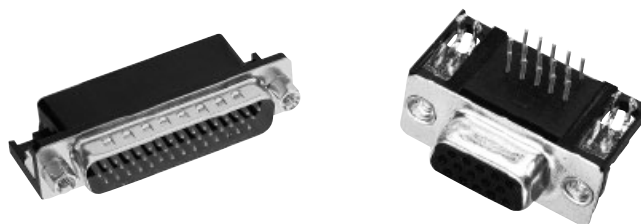
4-40 UNC

No. 1 contact



Number of contacts

# 15–78



High density with stamped solder pins, angled with grounding board locks

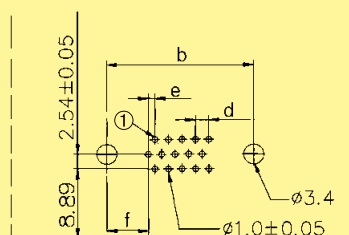
Identification

Drawing

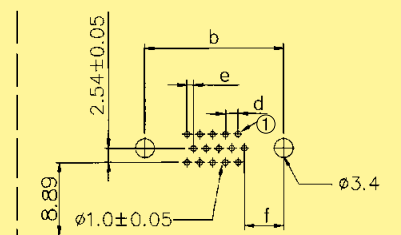
Dimensions in mm

Board drillings

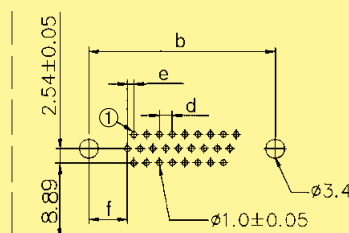
male 15



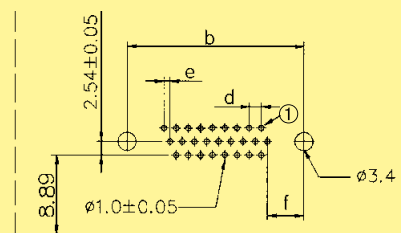
female 15



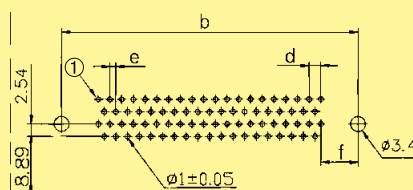
male 26-62



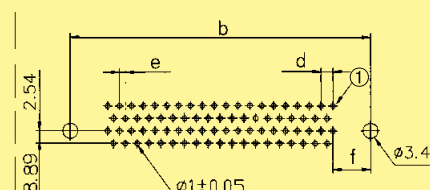
female 26-62



male 78



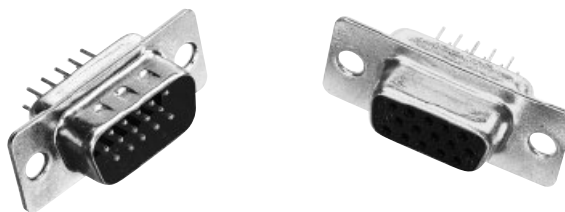
female 78



① = No. 1 contact

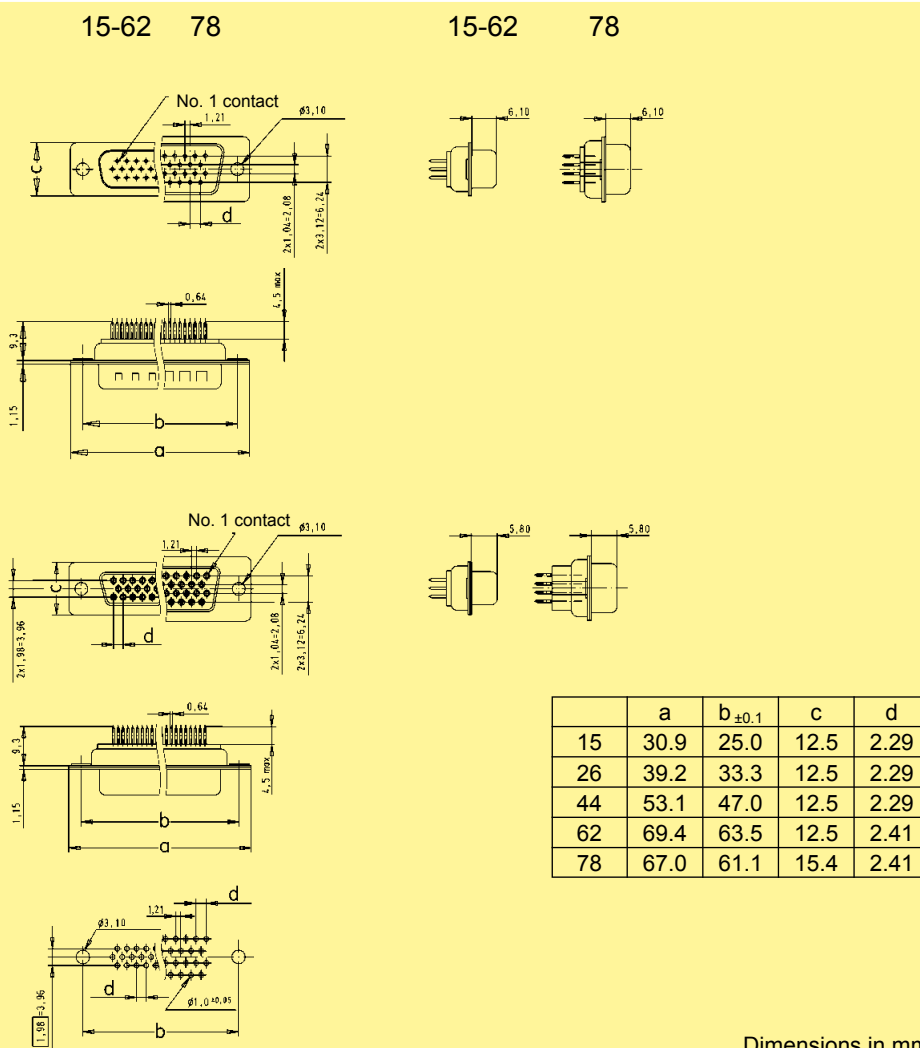
|    | $b_{\pm 0.1}$ | d    | e     | f    |
|----|---------------|------|-------|------|
| 15 | 24.99         | 2.29 | 1.145 | 7.04 |
| 26 | 33.30         | 2.29 | 1.145 | 6.88 |
| 44 | 47.04         | 2.29 | 1.145 | 6.88 |
| 62 | 63.50         | 2.41 | 1.205 | 7.00 |
| 78 | 61.00         | 2.41 | 1.205 | 7.65 |

15-78



| Identification                                                                                  | No. of contacts | Part No.               |                  |
|-------------------------------------------------------------------------------------------------|-----------------|------------------------|------------------|
| <b>Performance levels</b><br>Explanations see page 03.02<br>Other performance levels on request |                 | Performance level<br>3 | S4 <sup>1)</sup> |
| <b>Male connector</b><br>metal shell with dimples                                               | 15              | 09 56 161 7700         | 09 56 161 5700   |
|                                                                                                 | 26              | 09 56 261 7700         | 09 56 261 5700   |
|                                                                                                 | 44              | 09 56 361 7700         | 09 56 361 5700   |
|                                                                                                 | 62              | 09 56 461 7700         | 09 56 461 5700   |
|                                                                                                 | 78              | 09 56 561 7700         | 09 56 561 5700   |
| <b>Female connector</b><br>metal shell                                                          | 15              | 09 56 151 7500         | 09 56 151 5500   |
|                                                                                                 | 26              | 09 56 251 7500         | 09 56 251 5500   |
|                                                                                                 | 44              | 09 56 351 7500         | 09 56 351 5500   |
|                                                                                                 | 62              | 09 56 451 7500         | 09 56 451 5500   |
|                                                                                                 | 78              | 09 56 551 7500         | 09 56 551 5500   |

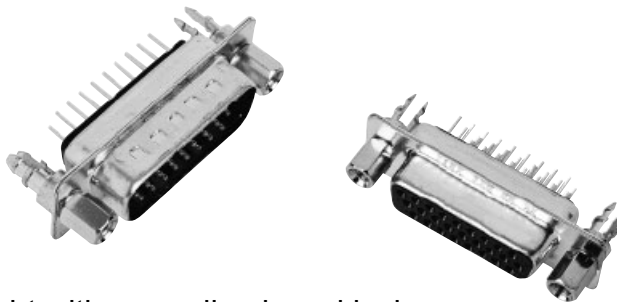
## Board drillings



Dimensions in mm

Number of contacts

15–78



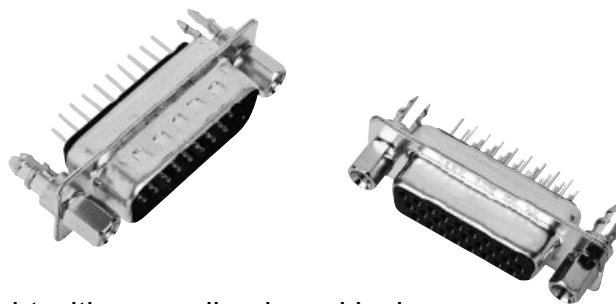
High density with stamped solder pins, straight with grounding board locks

| Identification                                                                                                            | No. of contacts | Part No.                      |  |
|---------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------------|--|
| <b>Performance levels</b><br>Explanations see page 03.02<br>Other performance levels on request                           |                 | Performance level<br><b>3</b> |  |
| <b>Male connector</b><br>metal shell with dimples                                                                         |                 | <b>S4<sup>1)</sup></b>        |  |
| <b>Female connector</b><br>metal shell                                                                                    |                 |                               |  |
| Please insert digit for flange thread or fitted female screw locks<br><br>4-40 UNC ► 2<br>fitted screw locks 4-40 UNC ► 3 |                 |                               |  |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

Number of contacts

15–78



High density with stamped solder pins, straight with grounding board locks

Identification

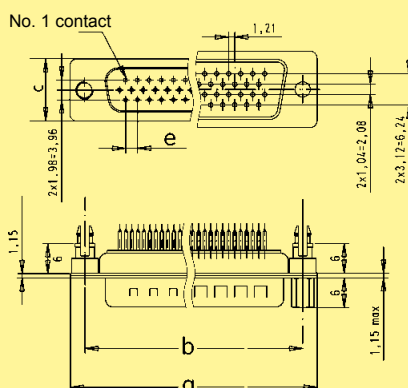
Drawing

Dimensions in mm

Male connector

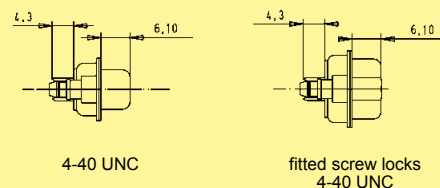
15-62

78



15-62

78

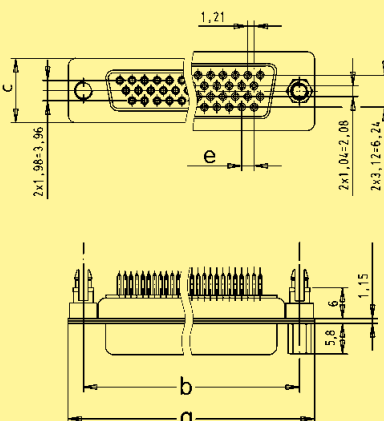


|    | a    | b±0.1 | c    | e    |
|----|------|-------|------|------|
| 15 | 30.9 | 25.0  | 12.5 | 2.29 |
| 26 | 39.2 | 33.3  | 12.5 | 2.29 |
| 44 | 53.1 | 47.0  | 12.5 | 2.29 |
| 62 | 69.4 | 63.5  | 12.5 | 2.41 |
| 78 | 67.0 | 61.1  | 15.4 | 2.41 |

Female connector

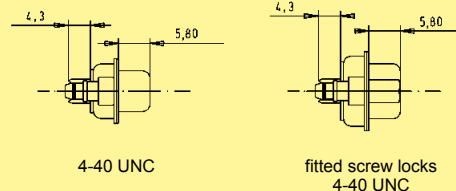
15-62

78



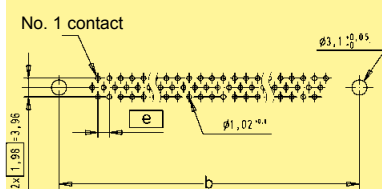
15-62

78

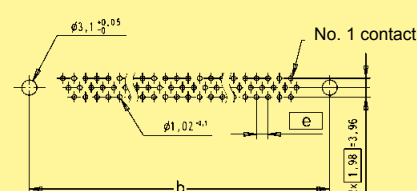


Board drillings

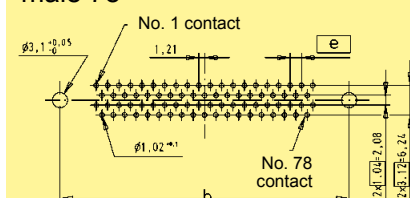
male 15-62



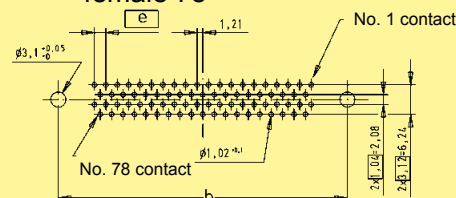
female 15-62



male 78



female 78



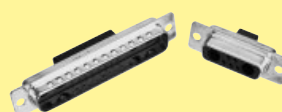




**D-Sub – Mixed subminiature D connectors**

Page

|                                                                     |              |
|---------------------------------------------------------------------|--------------|
| D-Sub mixed connector system – general information .....            | <b>04.02</b> |
| Contact arrangements .....                                          | <b>04.03</b> |
| Connectors for pcb applications – general information .....         | <b>04.04</b> |
| Connectors for cable applications – general information .....       | <b>04.05</b> |
| Technical characteristics for shells .....                          | <b>04.06</b> |
| Mixed shells<br>with pre-mounted signal solder cup contacts .....   | <b>04.07</b> |
| Shells without signal contacts for cable applications ..            | <b>04.14</b> |
| Coded shells without signal contacts for cable applications.....    | <b>04.15</b> |
| Mixed shells for signal crimp contacts .....                        | <b>04.17</b> |
| Technical characteristics for special contacts .....                | <b>04.21</b> |
| Turned crimp contacts for cable applications .....                  | <b>04.22</b> |
| High voltage contacts for cable applications .....                  | <b>04.23</b> |
| Straight power contacts for cable applications .....                | <b>04.24</b> |
| Coaxial contacts for cable applications .....                       | <b>04.26</b> |
| Pneumatic contacts for cable applications .....                     | <b>04.29</b> |
| Pcb hole patterns .....                                             | <b>04.30</b> |
| Board drillings for connectors with straight pcb contacts .....     | <b>04.30</b> |
| Board drillings for connectors with right angled pcb contacts ..... | <b>04.35</b> |
| Customer request form for pcb connectors .....                      | <b>04.40</b> |
| Customer request form for cable connectors .....                    | <b>04.42</b> |





HARTINGs' mixed D-Sub range brings the advantage of an industry standard I/O interconnect product with the possibility to customise for any application.

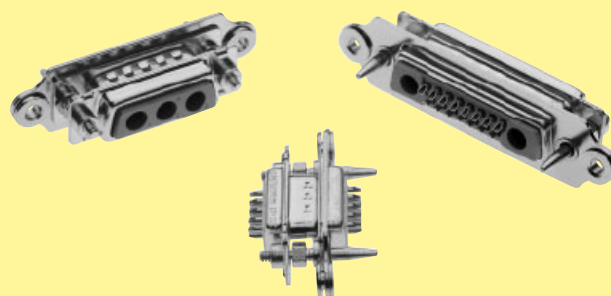
The range is designed around **the standard D-Sub shell sizes** with **the possibility to have a blend of contacts** such as signals with coaxial, power, high voltage or pneumatic contacts. Due to its construction, the product is **fully shielded** and helps reducing the EMI/RFI leakage.

All contacts are machined with two different platings.

When hot plug-in is required, **first mate last break** contacts can also be supplied.

For connectors to be fitted on a board with SMT components, they can be supplied in an **SMC (PiHIR) version** which is assembled in the reflow solder process, thus reducing assembly cost.

In addition, a complete range of accessories such as clinch nut, spacers, board locks, female screw lock, etc. are available. For **blind mating feature**, a specific high performance solution has been developed based on the combination of a floating plate and guiding pins providing up to 2.2 mm realignment capability. With all these accessories, the requirements of most applications are achievable and it makes this product range very attractive thanks to its versatility, reliability and cost effectiveness.



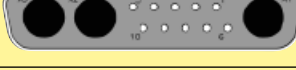
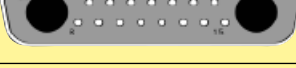
This blind mating concept is also achievable on the standard D as shown on the photo.

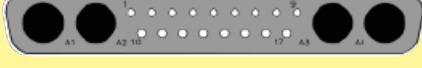
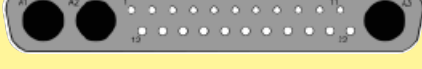
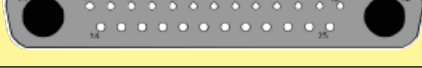
## Contact arrangements

The table shows the standard range supported by HARTING. Two versions are special since they allow to mix in the same shell male and female contacts: 2W2C and 3W3C. The purpose of these versions is to have a 100 % mating proof feature (the insulator shape prevents a 180° reversed mating).

The structure of the connectors' identification is so that the left side digits give the total number of contacts and the right side digits the number of special contacts which can be either power, coaxial or high voltage style.

Example: 13W3 stands for 13 contacts in total with 10 signal contacts and 3 special contacts.

|      | Shell size |                                                                                     |
|------|------------|-------------------------------------------------------------------------------------|
| 2W2  | 1          |    |
| 2W2C | 1          |  |
| 5W1  | 1          |  |
| 3W3  | 2          |  |
| 3W3C | 2          |  |
| 7W2  | 2          |  |
| 11W1 | 2          |  |
| 5W5  | 3          |  |
| 9W4  | 3          |  |
| 13W3 | 3          |  |
| 17W2 | 3          |  |
| 21W1 | 3          |  |

|       | Shell size |                                                                                       |
|-------|------------|---------------------------------------------------------------------------------------|
| 7W7   | 4          |    |
| 8W8   | 4          |    |
| 13W6  | 4          |    |
| 21WA4 | 4          |    |
| 25W3  | 4          |    |
| 27W2  | 4          |    |
| 24W7  | 5          |    |
| 36W4  | 5          |  |
| 43W2  | 5          |  |

Note:  
for any other layout please consult your HARTING representative.

## Connectors for pcb applications – general information

The range of pcb connectors available at HARTING is summarised in the table under. For each of the basic connector versions, the available contact styles are documented with termination process, pitch, plating, rating for power contacts and impedance for coaxial contact etc..., as well as the accessory configuration.

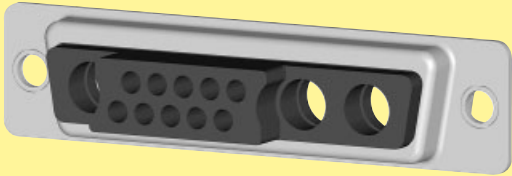
**Pcb connectors are delivered fully loaded** thus providing a very good positioning of the contacts in their cavities for an easy and safe insertion of the pins in the pcb holes particularly crucial in the right angled versions.

Due to the numerous possibilities offered with the pcb connectors, suggested method is to contact your local HARTING representative to determine the part number to order; see customer request form on pages 04.40 and 04.41.

|                         | Straight                                                                                                                                                                                                                                                                      |  | Right angled                                                                                                                                                                     |  |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>Insulator body</b>   | <ul style="list-style-type: none"> <li>• Standard</li> <li>• SMC: Solder Reflow Compatible</li> </ul>                                                                                                                                                                         |  | <ul style="list-style-type: none"> <li>• Standard</li> <li>• SMC: Solder Reflow Compatible</li> </ul>                                                                            |  |
| <b>Signal contacts</b>  | <b>Solder termination</b> <ul style="list-style-type: none"> <li>• Pitch: 2.84 mm</li> <li>• Plating: 0.76 µm Au over Ni</li> <li>• Pcb thickness from 1.6 to 3.2 mm</li> </ul>                                                                                               |  | <b>Solder termination</b> <ul style="list-style-type: none"> <li>• Pitch: 2.54 mm</li> <li>• Plating: 0.76 µm Au over Ni</li> <li>• Pcb thickness from 1.6 to 3.2 mm</li> </ul>  |  |
| <b>Power contacts</b>   | <b>Solder termination</b> <ul style="list-style-type: none"> <li>• Rating: 20, 30, 40 A</li> <li>• Plating: 0.76 µm Au over Ni</li> </ul> <b>Press-in termination</b> <ul style="list-style-type: none"> <li>• Rating: 30 A</li> <li>• Plating: 0.76 µm Au over Ni</li> </ul> |  | <b>Solder termination</b> <ul style="list-style-type: none"> <li>• Rating: 20, 30, 40 A</li> <li>• Plating: 0.76 µm Au over Ni</li> </ul>                                        |  |
| <b>Coaxial contacts</b> | <b>Solder termination</b> <ul style="list-style-type: none"> <li>• 50 or 75 Ω</li> <li>• Plating: 1.3 µm Au over Ni inner conductor<br/>0.76 µm Au over Ni outer ring</li> </ul>                                                                                              |  | <b>Solder termination</b> <ul style="list-style-type: none"> <li>• 50 or 75 Ω</li> <li>• Plating: 1.3 µm Au over Ni inner conductor<br/>0.76 µm Au over Ni outer ring</li> </ul> |  |
| <b>Accessories</b>      | Through hole                                                                                                                                                                                                                                                                  |  | Metal bracket with board lock and through hole                                                                                                                                   |  |
|                         | Nut:<br>M3 or UNC 4-40                                                                                                                                                                                                                                                        |  | Metal bracket with board lock and clinch nut M3 or UNC 4-40                                                                                                                      |  |
|                         | Spacer:<br>M3 or UNC 4-40                                                                                                                                                                                                                                                     |  | Metal bracket with board lock and female screw lock UNC 4-40                                                                                                                     |  |
|                         | Spacer<br>(M3 or UNC 4-40)<br>with board lock                                                                                                                                                                                                                                 |  |                                                                                                                                                                                  |  |
|                         | Spacer<br>+ board lock<br>+ female screw lock<br>M3 or UNC 4-40                                                                                                                                                                                                               |  |                                                                                                                                                                                  |  |

## Connectors for cable applications – general information

Two termination processes are available: crimp or solder

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Shell</b>                         |                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Signal contacts</b>               | <b>Crimp termination</b> <ul style="list-style-type: none"> <li>For wire gauge: AWG 20-24 or 26-28</li> <li>Plating: 0.76 µm or 0.2 µm Au over Ni</li> </ul>                                                                                                                                                                                                                                                                                                                        | <b>Pre-mounted solder cup contacts</b> <ul style="list-style-type: none"> <li>Plating: 0.76 µm or 0.1 µm Au over Ni</li> </ul>                                                                                                                                                                                                                                                                                                                                                      |
| <b>Power contacts</b>                | <b>Crimp</b> <ul style="list-style-type: none"> <li>Rating: 10, 20, 30, 40 A</li> <li>Plating: <ul style="list-style-type: none"> <li>Mating side 0.76 µm or 0.2 µm Au</li> <li>Terminating side 0.2 µm Au</li> </ul> </li> </ul> <b>Solder cup</b> <ul style="list-style-type: none"> <li>Rating: 10, 20, 30, 40 A</li> <li>Plating: <ul style="list-style-type: none"> <li>Mating side 0.76 µm or 0.2 µm Au</li> <li>Terminating side 0.2 µm Au or 5 µm Sn</li> </ul> </li> </ul> | <b>Crimp</b> <ul style="list-style-type: none"> <li>Rating: 10, 20, 30, 40 A</li> <li>Plating: <ul style="list-style-type: none"> <li>Mating side 0.76 µm or 0.2 µm Au</li> <li>Terminating side 0.2 µm Au</li> </ul> </li> </ul> <b>Solder cup</b> <ul style="list-style-type: none"> <li>Rating: 10, 20, 30, 40 A</li> <li>Plating: <ul style="list-style-type: none"> <li>Mating side 0.76 µm or 0.2 µm Au</li> <li>Terminating side 0.2 µm Au or 5 µm Sn</li> </ul> </li> </ul> |
| <b>Coaxial contacts<sup>1)</sup></b> | <b>Solder/crimp termination resp. Crimp/crimp termination</b> <ul style="list-style-type: none"> <li>50 or 75 Ω</li> <li>Plating: <ul style="list-style-type: none"> <li>Mating side 1.3 µm or 0.2 µm Au inner conductor<br/>0.76 µm or 0.2 µm Au outer ring</li> <li>Terminating side 1.3 µm or 0.2 µm Au inner conductor<br/>0.2 µm Au or 5 µm Sn outer ring</li> <li>Ferrule 0.2 µm Au or 5 µm Sn</li> </ul> </li> <li>Cables: RG 178, 179 ...</li> </ul>                        | <b>Solder/crimp termination resp. Crimp/crimp termination</b> <ul style="list-style-type: none"> <li>50 or 75 Ω</li> <li>Plating: <ul style="list-style-type: none"> <li>Mating side 1.3 µm or 0.2 µm Au inner conductor<br/>0.76 µm or 0.2 µm Au outer ring</li> <li>Terminating side 1.3 µm or 0.2 µm Au inner conductor<br/>0.2 µm Au or 5 µm Sn outer ring</li> <li>Ferrule 0.2 µm Au or 5 µm Sn</li> </ul> </li> <li>Cables: RG 178, 179 ...</li> </ul>                        |
| <b>High voltage contacts</b>         | <b>Solder termination</b> <ul style="list-style-type: none"> <li>Plating: 1.3 µm Au over Ni terminating and mating side</li> </ul>                                                                                                                                                                                                                                                                                                                                                  | <b>Solder termination</b> <ul style="list-style-type: none"> <li>Plating: 1.3 µm Au over Ni terminating and mating side</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |

<sup>1)</sup> Coaxial contacts are provided in two versions:

- Inner conductor soldered and outer part crimped (solder/crimp termination)
- Both inner and outer part crimped (crimp/crimp termination); this version is recommended for medium or large size volume since crimping is faster than soldering.

Number of contacts 2, 3, 5, 7, 8, 9, 11, 13, 17, 21, 24, 25, 27, 36, 43

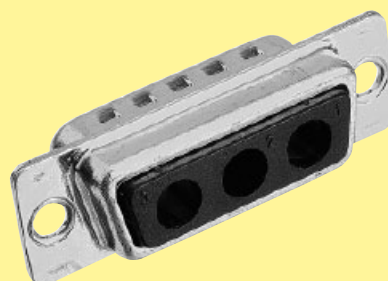
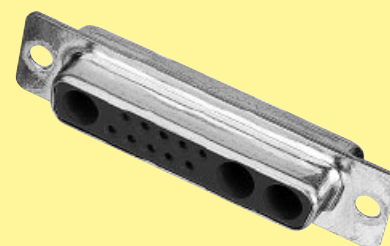
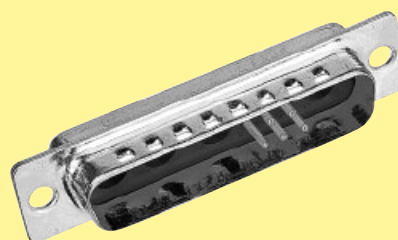
Approvals DIN 41 652, part 1

Working current 5 A for signal contacts

Temperature range -55 °C ... + 125 °C  
The higher temperature limit includes the ambient and heating effect of the contacts under load

Materials  
Mouldings Thermoplastic resin, glass-fibre filled (Polyester)  
UL 94-V0  
color: green for standard  
black for crimp

Metal shell Plated steel





Number of contacts

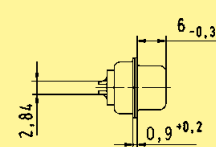
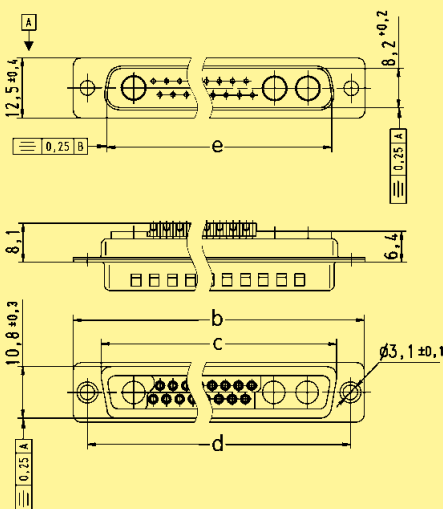
7-27



Mixed shells with pre-mounted signal solder cup contacts

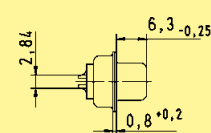
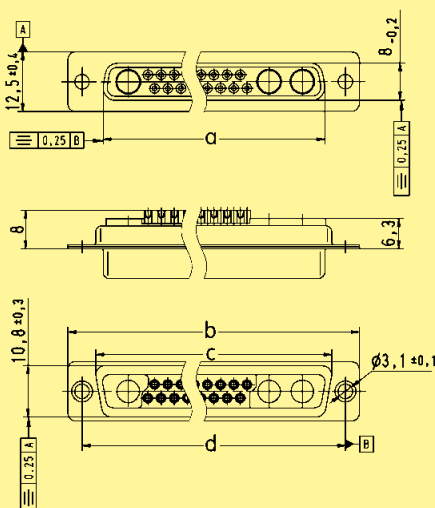
| Identification | No. of contacts <sup>1)</sup> | Part No.            |                  |                     |                  |
|----------------|-------------------------------|---------------------|------------------|---------------------|------------------|
|                |                               | male connectors     |                  | female connectors   |                  |
|                |                               | Performance level 3 | S4 <sup>2)</sup> | Performance level 3 | S4 <sup>2)</sup> |
|                | 7W2                           | 09 69 211 7072      | 09 69 211 5072   | 09 69 201 7072      | 09 69 201 5072   |
|                | 17W2                          | 09 69 311 7172      | 09 69 311 5172   | 09 69 301 7172      | 09 69 301 5172   |
|                | 21WA4                         | 09 69 411 7214      | 09 69 411 5214   | 09 69 401 7214      | 09 69 401 5214   |
|                | 27W2                          | 09 69 411 7272      | 09 69 411 5272   | 09 69 401 7272      | 09 69 401 5272   |

## Male connectors

Solder cup termination for AWG 20 (0.5 mm<sup>2</sup>)

|       | a    | b    | c    | d     | e    |
|-------|------|------|------|-------|------|
| 7W2   | 24.6 | 39.1 | 27.5 | 33.30 | 25.2 |
| 17W2  | 38.3 | 53.0 | 41.3 | 47.04 | 38.9 |
| 21WA4 | 54.8 | 69.3 | 57.7 | 63.50 | 55.3 |
| 27W2  | 54.9 | 69.3 | 57.7 | 63.50 | 55.3 |

## Female connectors

Solder cup termination for AWG 20 (0.5 mm<sup>2</sup>)

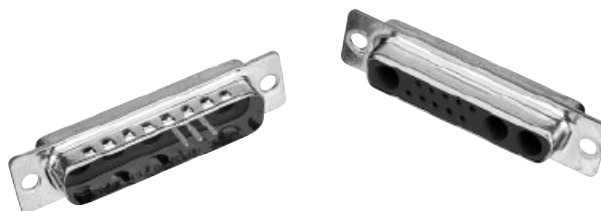
Dimensions in mm

<sup>1)</sup> Explanations see page 04.03<sup>2)</sup> S4 = 0.76 µm Au or PdNi equivalent

Board drillings see pages 04.30 ff

Order special contacts separately. See pages 04.21 ff

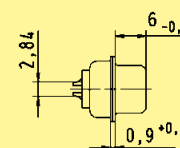
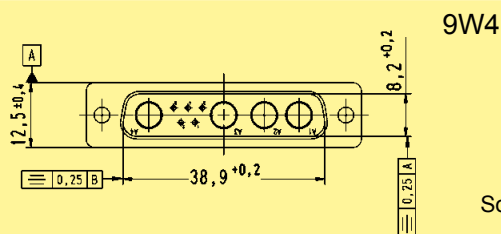
9-25



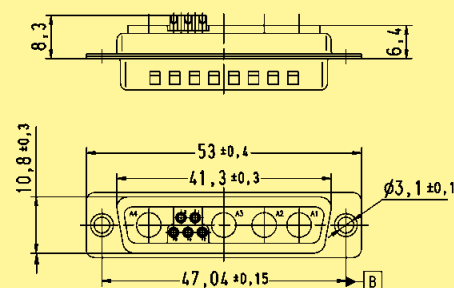
Mixed shells with pre-mounted signal solder cup contacts

| Identification                                                                    | No. of contacts <sup>1)</sup> | Part No.            |                  |                     |                  |
|-----------------------------------------------------------------------------------|-------------------------------|---------------------|------------------|---------------------|------------------|
|                                                                                   |                               | male connectors     |                  | female connectors   |                  |
|                                                                                   |                               | Performance level 3 | S4 <sup>2)</sup> | Performance level 3 | S4 <sup>2)</sup> |
|  | 9W4                           | 09 69 311 7094      | 09 69 311 5094   | 09 69 301 7094      | 09 69 301 5094   |
|  | 13W3                          | 09 69 311 7133      | 09 69 311 5133   | 09 69 301 7133      | 09 69 301 5133   |
|  | 25W3                          | 09 69 411 7253      | 09 69 411 5253   | 09 69 401 7253      | 09 69 401 5253   |

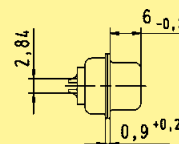
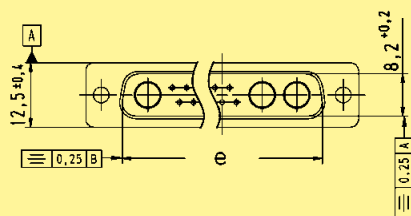
## Male connectors



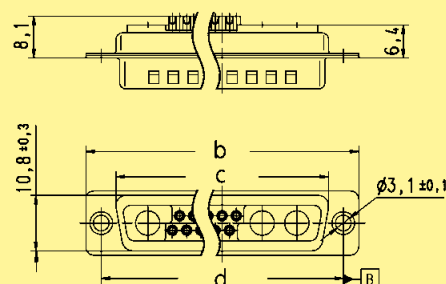
Solder cup termination for AWG 20 (0.5 mm<sup>2</sup>)



13W3, 25W3



Solder cup termination for AWG 20 (0.5 mm<sup>2</sup>)



|      | b    | c    | d     | e     |
|------|------|------|-------|-------|
| 13W3 | 53.0 | 41.3 | 47.04 | 38.90 |
| 25W3 | 69.3 | 57.7 | 63.50 | 49.84 |

Dimensions in mm



Number of contacts

9–25



Mixed shells with pre-mounted solder cup contacts

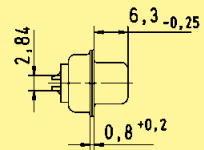
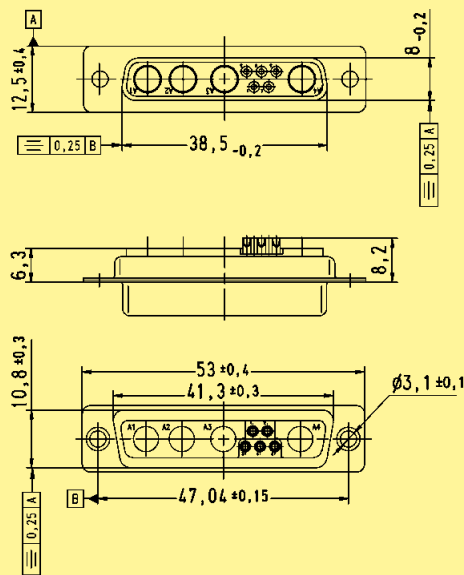
Identification

Drawing

Dimensions in mm

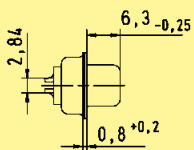
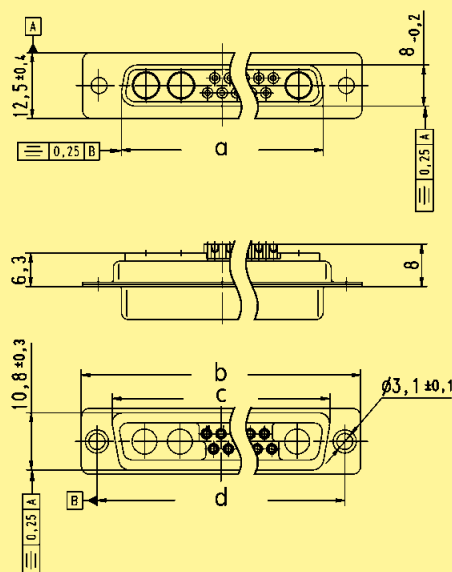
Female connectors

9W4



Solder cup termination for AWG 20 (0.5 mm²)

13W3, 25W3



Solder cup termination for AWG 20 (0.5 mm²)

|      | a    | b    | c    | d     |
|------|------|------|------|-------|
| 13W3 | 38.3 | 53.0 | 41.3 | 47.04 |
| 25W3 | 54.9 | 69.3 | 57.7 | 63.50 |

Number of contacts

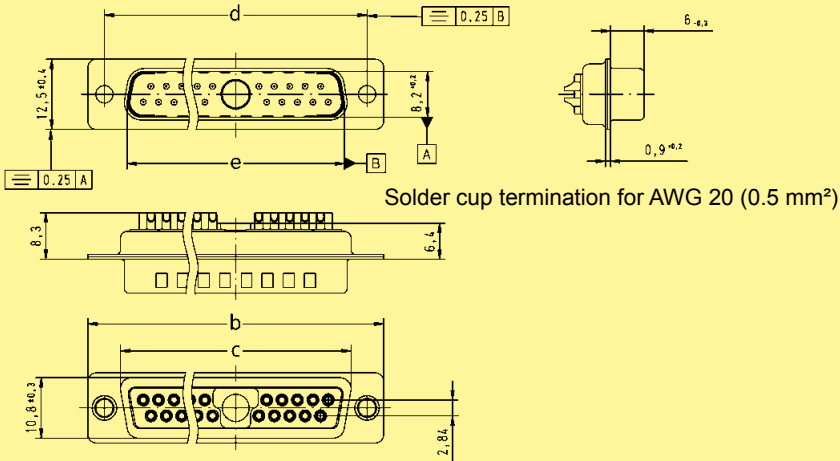
5–21



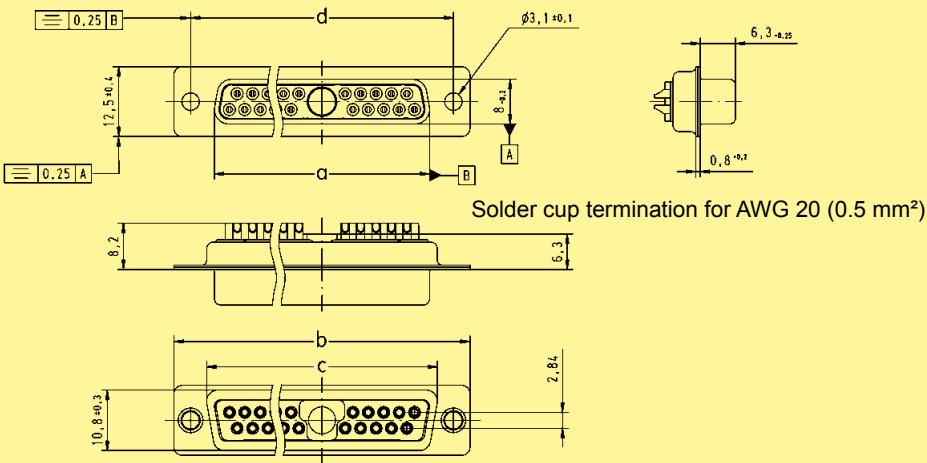
Mixed shells with pre-mounted signal solder cup contacts

| Identification | No. of contacts <sup>1)</sup> | Part No.            |                  |                     |                  |
|----------------|-------------------------------|---------------------|------------------|---------------------|------------------|
|                |                               | male connectors     |                  | female connectors   |                  |
|                |                               | Performance level 3 | S4 <sup>2)</sup> | Performance level 3 | S4 <sup>2)</sup> |
|                | 5W1                           | 09 69 111 7051      | 09 69 111 5051   | 09 69 101 7051      | 09 69 101 5051   |
|                | 11W1                          | 09 69 211 7111      | 09 69 211 5111   | 09 69 201 7111      | 09 69 201 5111   |
|                | 21W1                          | 09 69 311 7211      | 09 69 311 5211   | 09 69 301 7211      | 09 69 301 5211   |

Male connectors



Female connectors



|      | a    | b    | c    | d     | e    |
|------|------|------|------|-------|------|
| 5W1  | 16.4 | 30.8 | 19.3 | 25.00 | 16.9 |
| 11W1 | 24.7 | 39.1 | 27.5 | 33.30 | 25.2 |
| 21W1 | 38.5 | 53.0 | 41.3 | 47.04 | 38.9 |

Dimensions in mm

<sup>1)</sup> Explanations see page 04.03  
<sup>2)</sup> S4 = 0.76 µm Au or PdNi equivalent  
Board drillings see pages 04.30 ff

Order special contacts separately. See pages 04.21 ff

Number of contacts

13

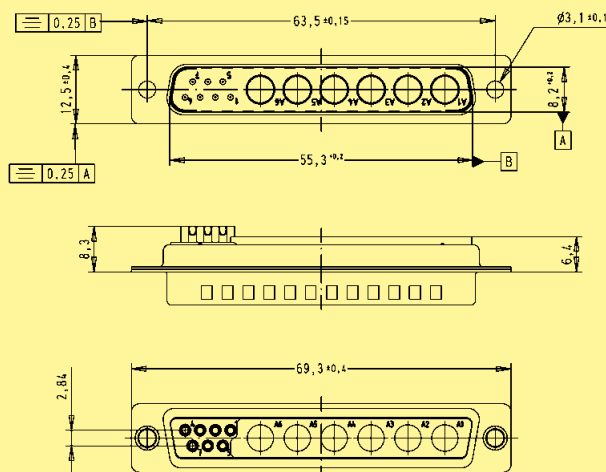
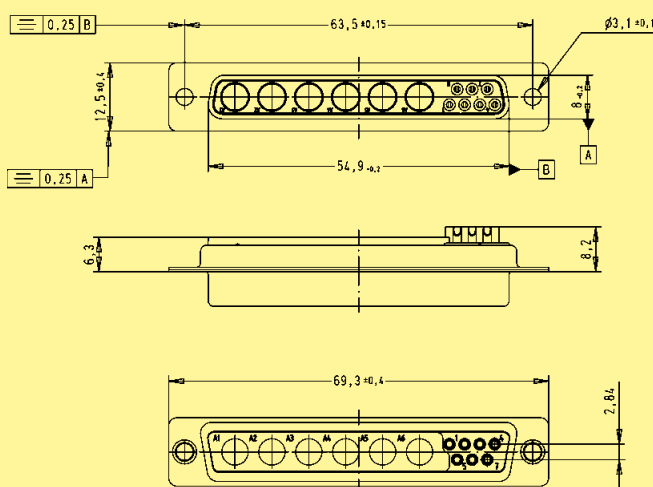


Mixed shells with pre-mounted signal solder cup contacts

| Identification | No. of contacts <sup>1)</sup> | Part No.            |                  |                     |                  |
|----------------|-------------------------------|---------------------|------------------|---------------------|------------------|
|                |                               | male connectors     |                  | female connectors   |                  |
|                |                               | Performance level 3 | S4 <sup>2)</sup> | Performance level 3 | S4 <sup>2)</sup> |
| 13W6           |                               | 09 69 411 7136      | 09 69 411 5136   | 09 69 401 7136      | 09 69 401 5136   |

## Male connectors

## Female connectors

Solder cup termination for AWG 20 (0.5 mm<sup>2</sup>)Solder cup termination for AWG 20 (0.5 mm<sup>2</sup>)

Dimensions in mm

<sup>1)</sup> Explanations see page 04.03  
<sup>2)</sup> S4 = 0.76 µm Au or PdNi equivalent  
 Board drillings see pages 04.30 ff

Order special contacts separately. See pages 04.21 ff

Number of contacts

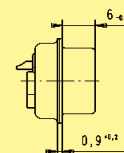
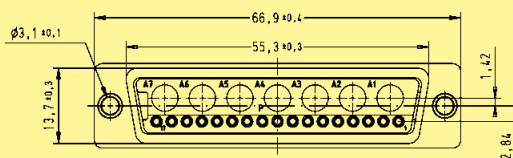
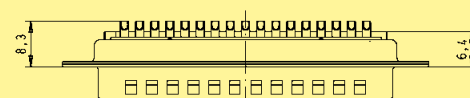
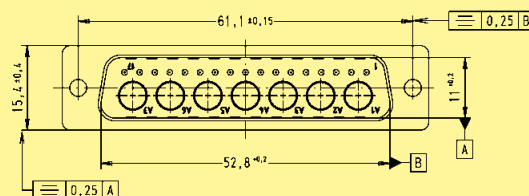
24



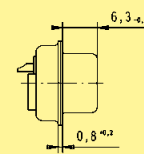
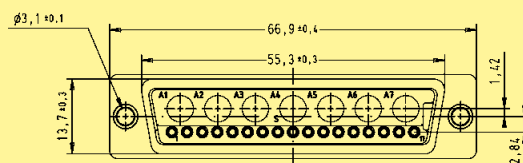
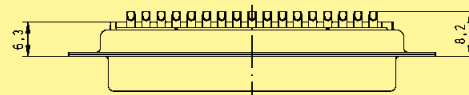
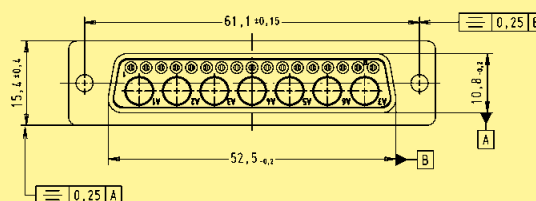
Mixed shells with pre-mounted signal solder cup contacts

| Identification                                                                   | No. of contacts <sup>1)</sup> | Part No.            |                  |                     |                  |
|----------------------------------------------------------------------------------|-------------------------------|---------------------|------------------|---------------------|------------------|
|                                                                                  |                               | male connectors     |                  | female connectors   |                  |
|                                                                                  |                               | Performance level 3 | S4 <sup>2)</sup> | Performance level 3 | S4 <sup>2)</sup> |
|  | 24W7                          | 09 69 511 7247      | 09 69 511 5247   | 09 69 501 7247      | 09 69 501 5247   |

## Male connectors

Solder cup termination  
for AWG 20 (0.5 mm<sup>2</sup>)

## Female connectors

Solder cup termination  
for AWG 20 (0.5 mm<sup>2</sup>)

Dimensions in mm

<sup>1)</sup> Explanations see page 04.03  
<sup>2)</sup> S4 = 0.76 µm Au or PdNi equivalent  
 Board drillings see pages 04.30 ff

Order special contacts separately. See pages 04.21 ff

Number of contacts

36–43



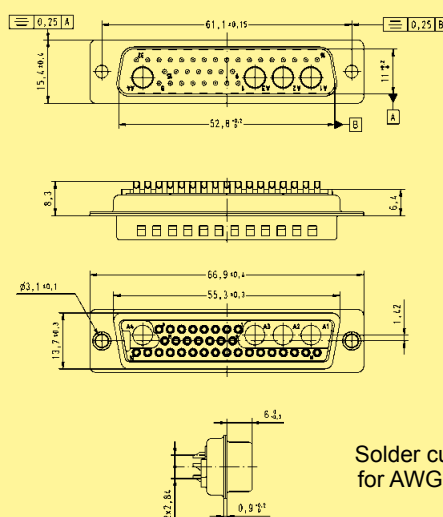
Mixed shells with pre-mounted signal solder cup contacts

| Identification | No. of contacts <sup>1)</sup> | Part No.            |                  |                     |                  |
|----------------|-------------------------------|---------------------|------------------|---------------------|------------------|
|                |                               | male connectors     |                  | female connectors   |                  |
|                |                               | Performance level 3 | S4 <sup>2)</sup> | Performance level 3 | S4 <sup>2)</sup> |
|                | 36W4                          | 09 69 511 7364      | 09 69 511 5364   | 09 69 501 7364      | 09 69 501 5364   |
|                | 43W2                          | 09 69 511 7432      | 09 69 511 5432   | 09 69 501 7432      | 09 69 501 5432   |

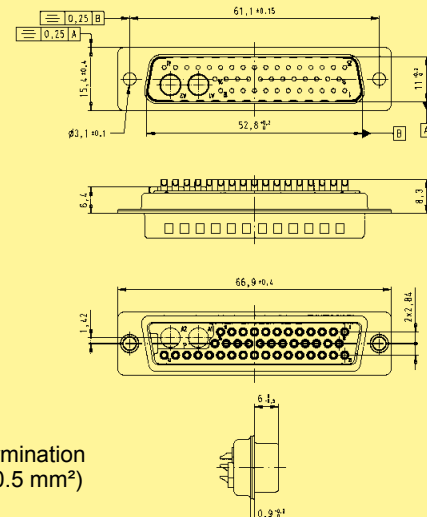
D-Sub - M

## Male connectors

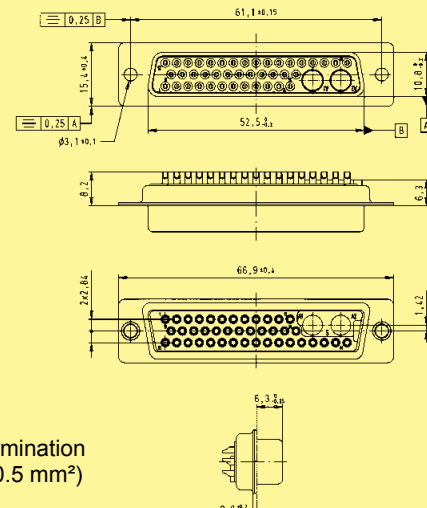
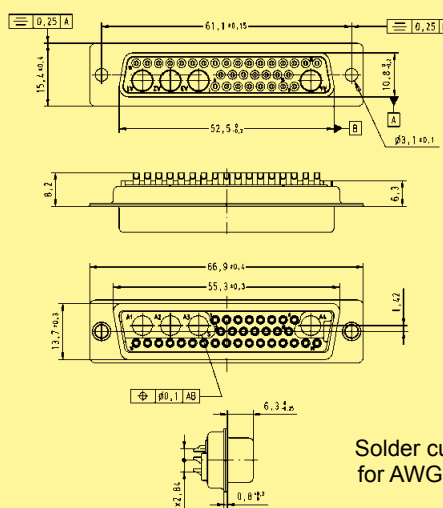
## 36W4



## 43W2

Solder cup termination  
for AWG 20 (0.5 mm²)

## Female connectors

Solder cup termination  
for AWG 20 (0.5 mm²)

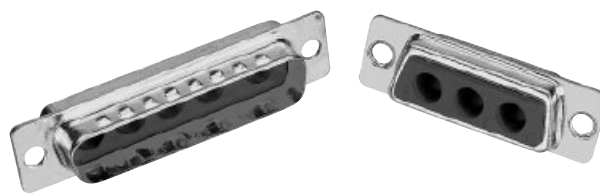
Dimensions in mm

<sup>1)</sup> Explanations see page 04.03<sup>2)</sup> S4 = 0.76 µm Au or PdNi equivalent  
Board drillings see pages 04.30 ff

Order special contacts separately. See pages 04.21 ff

Number of contacts

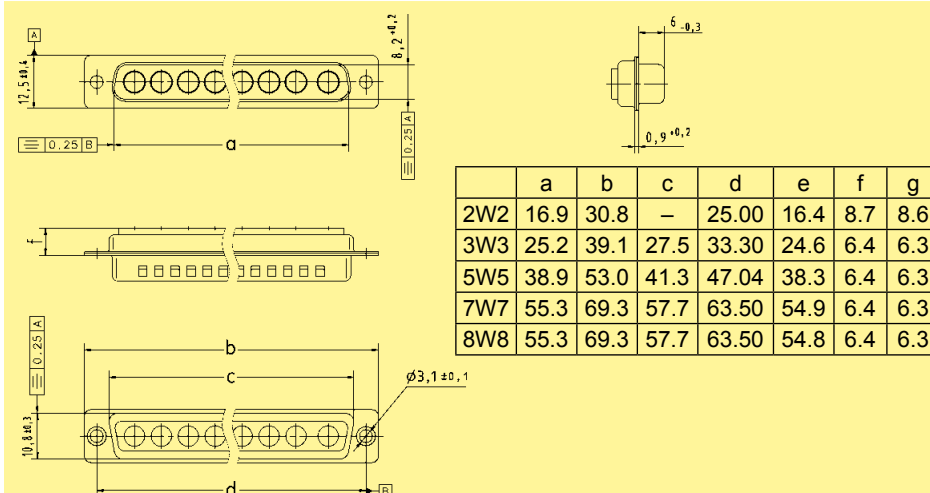
2–8



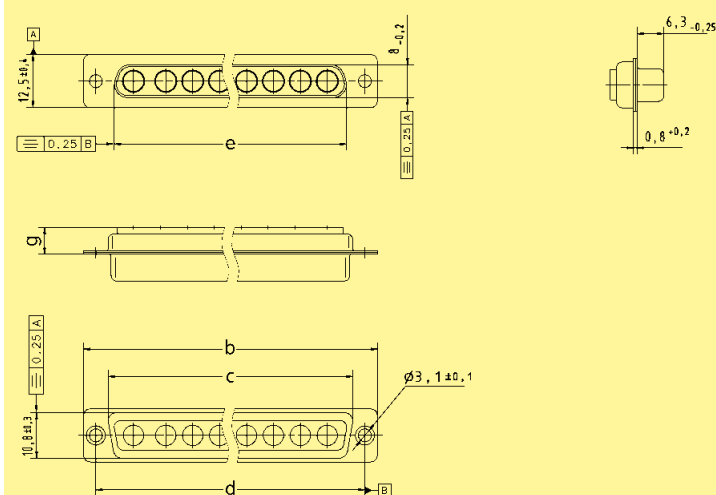
Shells without signal contacts for cable applications

| Identification | No. of contacts <sup>1)</sup> | Part No.        |                   |
|----------------|-------------------------------|-----------------|-------------------|
|                |                               | male connectors | female connectors |
|                | 2W2                           | 09 69 110 0522  | 09 69 100 0522    |
|                | 3W3                           | 09 69 210 0033  | 09 69 200 0033    |
|                | 5W5                           | 09 69 310 0055  | 09 69 300 0055    |
|                | 7W7                           | 09 69 410 0077  | 09 69 400 0077    |
|                | 8W8                           | 09 69 410 0088  | 09 69 400 0088    |

Male connectors



Female connectors

<sup>1)</sup> Explanations see page 04.03

Board drillings see pages 04.30 ff

Order special contacts separately. See pages 04.21 ff

Number of contacts

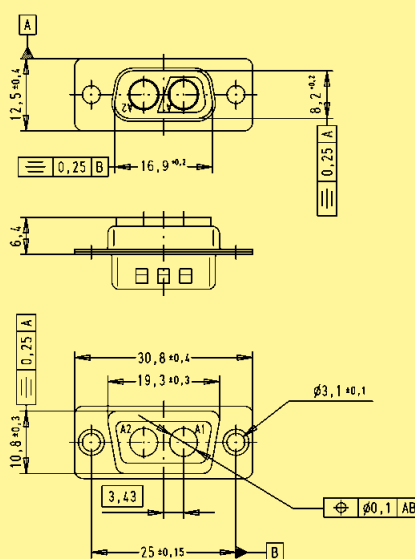
# 2



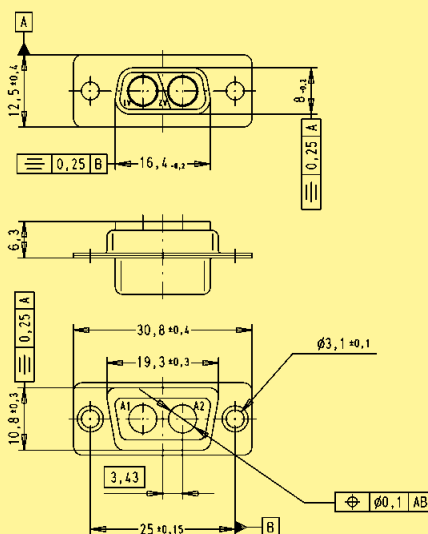
Coded shells without signal contacts for cable applications

| Identification | No. of contacts <sup>1)</sup> | Part No.         |
|----------------|-------------------------------|------------------|
|                |                               | male connector   |
|                | 2W2C                          | 09 69 110 0022   |
|                |                               | female connector |
|                |                               | 09 69 100 0022   |

Male connectors



Female connectors



Dimensions in mm

<sup>1)</sup> Explanations see page 04.03  
Board drillings see pages 04.30 ff  
Order special contacts separately. See pages 04.21 ff

Number of contacts

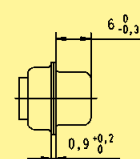
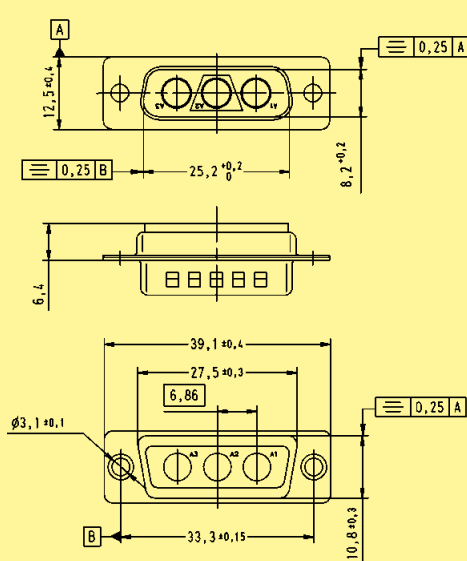
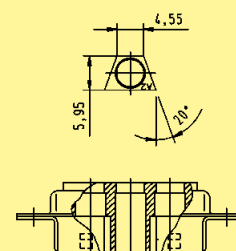
3



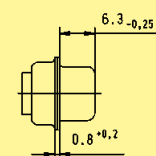
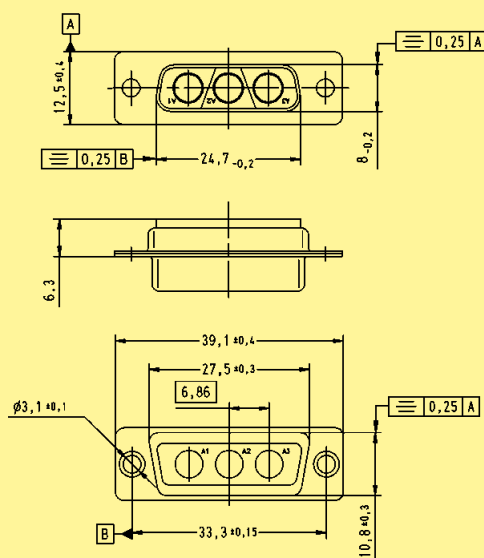
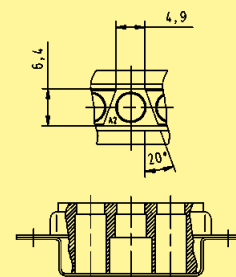
Coded shells without signal contacts for cable applications

| Identification | No. of contacts <sup>1)</sup> | Part No.         |
|----------------|-------------------------------|------------------|
|                |                               | male connector   |
|                | 3W3C                          | 09 69 210 0633   |
|                |                               | female connector |
|                |                               | 09 69 200 0633   |

## Male connectors

detail:  
polarization feature

## Female connectors

detail:  
polarization feature

Dimensions in mm

<sup>1)</sup> Explanations see page 04.03  
 Board drillings see pages 04.30 ff  
 Order special contacts separately. See pages 04.21 ff



7-27



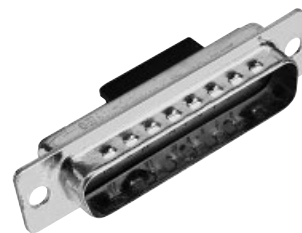
**O-Sub - M**

| Identification                                                                    | No. of contacts <sup>1)</sup> | Part No.        |                   |
|-----------------------------------------------------------------------------------|-------------------------------|-----------------|-------------------|
|  | 7W2                           | male connectors | female connectors |
|                                                                                   |                               | 09 69 212 0072  | 09 69 202 0072    |
|  | 17W2                          | 09 69 312 0172  | 09 69 302 0172    |
|  | 21WA4                         | 09 69 412 0214  | 09 69 402 0214    |
|  | 27W2                          | 09 69 412 0272  | 09 69 402 0272    |

|       | a    | b    | c    | d     | e    |
|-------|------|------|------|-------|------|
| 7W2   | 25.2 | 39.1 | 27.5 | 33.30 | 24.7 |
| 17W2  | 38.9 | 53.0 | 41.3 | 47.04 | 38.5 |
| 21WA4 | 55.3 | 69.3 | 57.7 | 63.50 | 54.9 |
| 27W2  | 56.3 | 69.3 | —    | 63.50 | 54.9 |

Dimensions in mm

13-25



**D-Sub - M**

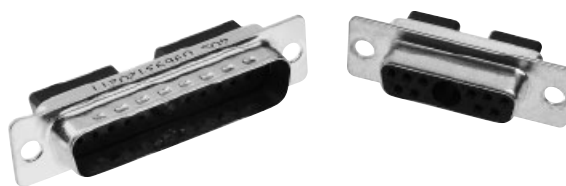
| Identification                                                                    | No. of contacts <sup>1)</sup> | Part No.        |                   |
|-----------------------------------------------------------------------------------|-------------------------------|-----------------|-------------------|
|  |                               | male connectors | female connectors |
|                                                                                   | 13W3                          | 09 69 312 0133  | 09 69 302 0133    |
|  | 25W3                          | 09 69 412 0253  | 09 69 402 0253    |

|      | a    | b    | d     | e    |
|------|------|------|-------|------|
| 13W3 | 38.9 | 53.0 | 47.04 | 38.5 |
| 25W3 | 55.3 | 69.3 | 63.50 | 54.9 |

Dimensions in mm

Number of contacts

11-21

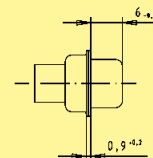
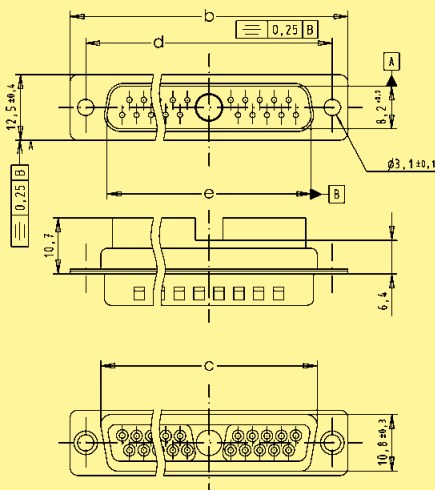


Mixed shells for signal crimp contacts

| Identification | No. of contacts <sup>1)</sup> | Part No.          |
|----------------|-------------------------------|-------------------|
|                |                               | male connectors   |
|                |                               | female connectors |
|                | 11W1                          | 09 69 212 0111    |
|                | 21W1                          | 09 69 312 0211    |
|                |                               | 09 69 202 0111    |
|                |                               | 09 69 302 0211    |

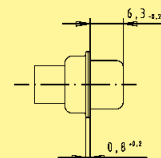
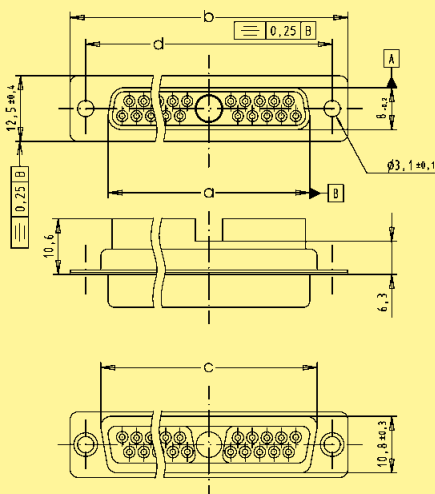
D-Sub - M

## Male connectors



|      | a    | b    | c    | d     | e    |
|------|------|------|------|-------|------|
| 11W1 | 24.7 | 39.1 | 27.5 | 33.30 | 25.2 |
| 21W1 | 38.5 | 53.0 | 41.3 | 47.04 | 38.9 |

## Female connectors



Dimensions in mm

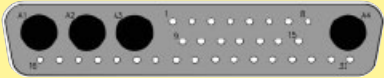
<sup>1)</sup> Explanations see page 04.03  
 Order special contacts separately. See pages 04.21 ff  
 Board drillings see pages 04.30 ff

Number of contacts

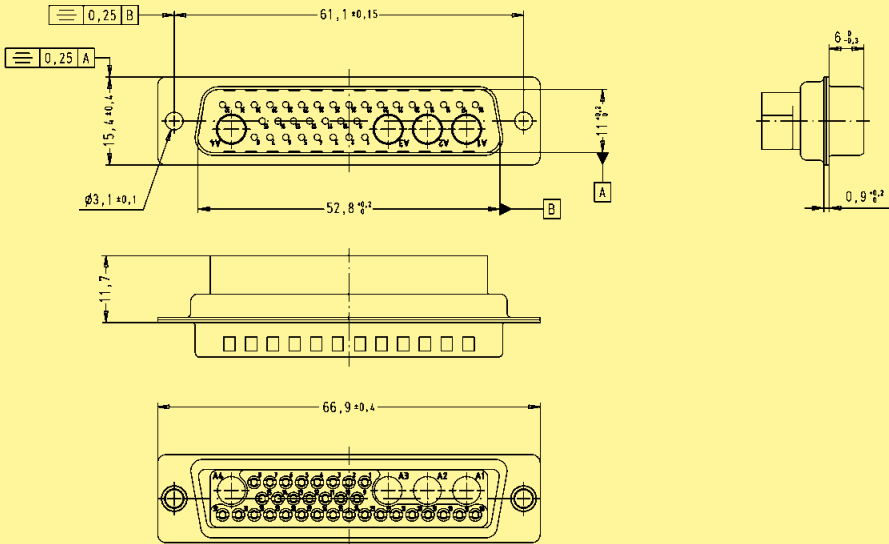
36



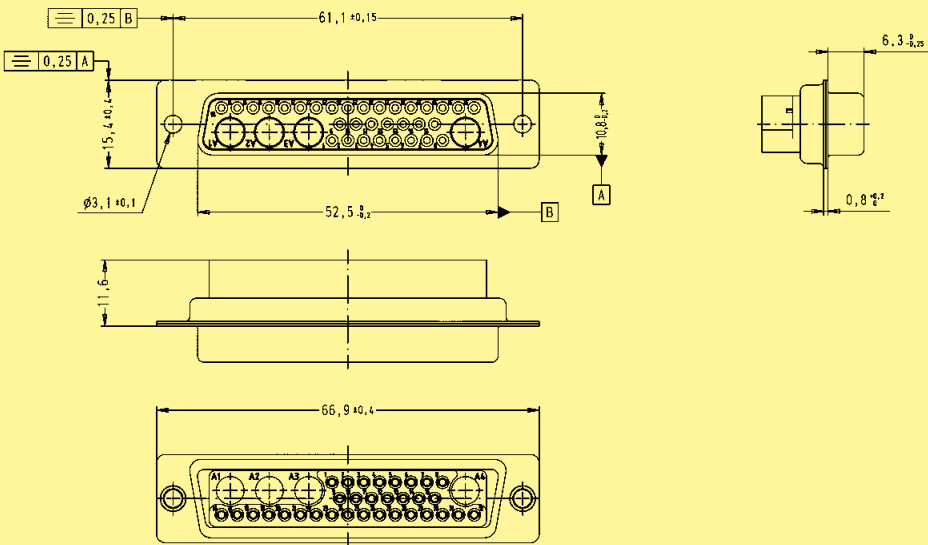
Mixed shells for signal crimp contacts

| Identification                                                                   | No. of contacts <sup>1)</sup> | Part No.       |                  |
|----------------------------------------------------------------------------------|-------------------------------|----------------|------------------|
|                                                                                  |                               | male connector | female connector |
|  | 36W4                          | 09 69 512 0364 | 09 69 502 0364   |

Male connectors



Female connectors



Dimensions in mm

<sup>1)</sup> Explanations see page 04.03  
Board drillings see pages 04.30 ff  
Order special contacts separately. See pages 04.21 ff

|                                                      | Signal contacts<br>see page<br>04.22 | Coaxial contacts<br>see pages<br>04.26 – 04.28    | Power contacts<br>see pages<br>04.24 + 04.25   | High voltage contacts<br>see page<br>04.23 | Pneumatic contacts<br>see page<br>04.29 |
|------------------------------------------------------|--------------------------------------|---------------------------------------------------|------------------------------------------------|--------------------------------------------|-----------------------------------------|
| Working current                                      | 5 A                                  | 2 A                                               | 10 A, 20 A, 30 A<br>or 40 A                    | 6 A DC                                     | –                                       |
| Test voltage $U_{r.m.s.}$                            | –                                    | 750 V / 50 Hz                                     | –                                              | 4 kV / 50 Hz                               | –                                       |
| Operating voltage                                    | –                                    | –                                                 | –                                              | ≤ 3 kV                                     | –                                       |
| Contact resistance                                   | –                                    | ≤ 10 mΩ<br>(inner and outer<br>conductor)         | ≤ 1 mΩ                                         | ≤ 3 mΩ<br>(outer<br>conductor)             | –                                       |
| Impedance                                            | –                                    | 50 / 75 Ω                                         | –                                              | –                                          | –                                       |
| Frequency range                                      | –                                    | 0 - 2 GHz                                         | –                                              | –                                          | –                                       |
| Temperature range                                    | –                                    | -55 °C ... + 135 °C                               | -55 °C ... + 155 °C                            | -55 °C ... + 125 °C                        | -10 °C ... + 60 °C                      |
| Mating cycles                                        |                                      |                                                   |                                                |                                            |                                         |
| high performance level                               | ≥ 500                                | ≥ 500                                             | ≥ 500                                          | –                                          | –                                       |
| standard performance<br>level                        | –                                    | ≥ 200                                             | ≥ 200                                          | ≥ 500                                      | –                                       |
| Mating force                                         | ≤ 3.4 N                              | ≤ 7 N/mated pair                                  | ≤ 7 N/mated pair                               | ≤ 5 N                                      | –                                       |
| Unmating force                                       | ≥ 0.2 N                              | ≤ 7 N/mated pair                                  | appr. 5 N                                      | appr. 2.5 N                                | –                                       |
| Max. pressure                                        | –                                    | –                                                 | –                                              | –                                          | 7 bars at 20 °C                         |
| Materials                                            |                                      |                                                   |                                                |                                            |                                         |
| Contacts                                             | Copper alloy                         | Copper alloy                                      | Copper alloy                                   | Copper alloy                               | German silver                           |
| Plating<br>for PCB applications*                     |                                      |                                                   |                                                |                                            |                                         |
| Mating side /<br>terminating side                    | 0.76 μm Au / 0.76 μm Au              |                                                   | 0.76 μm Au / 5 μm Sn<br>or 0.2 μm Au / 5 μm Sn | 1.3 μm Au / 1.3 μm Au                      | –                                       |
| Inner conductor<br>mating side /<br>terminating side | –                                    | 1.3 μm Au / 1.3 μm Au<br>or 0.2 μm Au / 0.2 μm Au | –                                              | –                                          | –                                       |
| Outer conductor<br>mating side /<br>terminating side | –                                    | 0.76 μm Au / 0.2 μm Au<br>or 0.2 μm Au / 5 μm Sn  | –                                              | –                                          | –                                       |
| Retaining clip                                       | –                                    | Copper alloy                                      | Copper alloy                                   | PI                                         | –                                       |
| Insulator                                            | –                                    | PBFE/PBTP/PI                                      | –                                              | PTFE                                       | –                                       |
| O-ring                                               | –                                    | –                                                 | –                                              | –                                          | Vitton                                  |

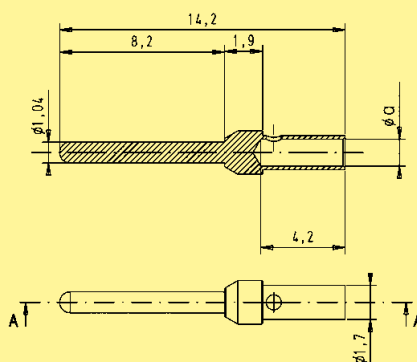


## Turned crimp contacts

| Identification                    | Wire gauge<br>(mm <sup>2</sup> ) | Part No.             |                      |                          |
|-----------------------------------|----------------------------------|----------------------|----------------------|--------------------------|
|                                   |                                  | Male contacts        | Female contacts      | High-end female contacts |
|                                   |                                  | Performance level 1* | Performance level 1* | Performance level 1*     |
| Individual contacts <sup>1)</sup> | AWG 22-18<br>0.33-0.82           | 09 67 000 3576       | 09 67 000 3476       | 09 67 000 3676           |
|                                   | AWG 24-20<br>0.25-0.52           | 09 67 000 8576       | 09 67 000 8476       | 09 67 000 8676           |
|                                   | AWG 26-22<br>0.13-0.33           | 09 67 000 5576       | 09 67 000 5476       | 09 67 000 5676           |
|                                   | AWG 28-24<br>0.09-0.25           | 09 67 000 7576       | 09 67 000 7476       | 09 67 000 7676           |

<sup>1)</sup> Minimum order 100 pieces or multiples of 100

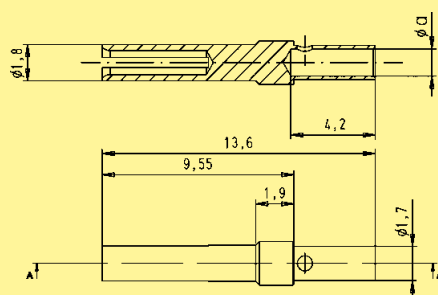
## Male contacts



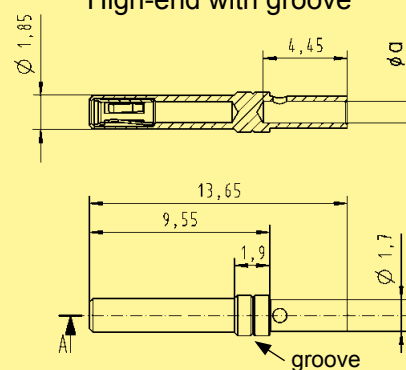
|           | a    | groove |
|-----------|------|--------|
| AWG 22-18 | 1.34 | none   |
| AWG 24-20 | 1.13 | 1      |
| AWG 26-22 | 0.88 | 2      |
| AWG 28-24 | 0.64 | 3      |

## Female contacts

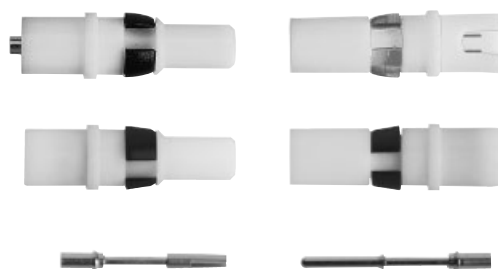
## Standard



## High-end with groove



\* Performance level 1 as per CECC 75 301-802, 500 mating cycles, 10 days 4 mixed gas test – IEC 60 512  
Use crimp tool with the part no. 09 99 000 0501 and the locator with the part no. 09 99 000 0531. Details see chapter 31



## High voltage contacts for cable applications

| Identification                       | Wire gauge<br>(mm <sup>2</sup> ) | Part No.                                          |                                                     |
|--------------------------------------|----------------------------------|---------------------------------------------------|-----------------------------------------------------|
| Straight versions                    |                                  | Male contacts<br>Plating: 1.3 µm Au <sup>1)</sup> | Female contacts<br>Plating: 1.3 µm Au <sup>1)</sup> |
|                                      | with solder termination          | AWG<br>24 - 20<br>0.25 - 0.56                     | 09 69 281 2550                                      |
| with crimp termination <sup>2)</sup> | AWG<br>30 - 24<br>0.05 - 0.25    | 09 69 282 2550                                    | 09 69 182 2550                                      |
| Right angled versions                |                                  |                                                   |                                                     |
| with solder termination              | AWG<br>24 - 20<br>0.25 - 0.56    | 09 69 681 2550                                    | 09 69 581 2550                                      |

|                                      |                                      |                                      |
|--------------------------------------|--------------------------------------|--------------------------------------|
| Straight versions                    | Male contacts                        | Female contacts                      |
|                                      | with solder termination              | with solder termination              |
| with crimp termination <sup>2)</sup> | with crimp termination <sup>2)</sup> | with crimp termination <sup>2)</sup> |
| Right angled versions                |                                      |                                      |
| with solder termination              | with solder termination              | with solder termination              |

stripping dimensions

stripping dimensions

stripping dimensions

Dimensions in mm



## Straight power contacts for cable applications

| Identification               |                                                                                   | Rating<br>(A) | Part No.               |                  |
|------------------------------|-----------------------------------------------------------------------------------|---------------|------------------------|------------------|
| Performance levels           |  |               | Performance level<br>3 | S4 <sup>1)</sup> |
| Solder version               |                                                                                   |               |                        |                  |
| Male contacts                | 10                                                                                |               | 09 69 281 7420         | 09 69 281 5420   |
|                              | 20                                                                                |               | 09 69 281 7421         | 09 69 281 5421   |
|                              | 30                                                                                |               | 09 69 281 7422         | 09 69 281 5422   |
|                              | 40                                                                                |               | 09 69 281 7423         | 09 69 281 5423   |
| <b>Short</b> male contacts   | 20                                                                                |               | 09 69 281 7821         | 09 69 281 5821   |
|                              | 40                                                                                |               | 09 69 281 7823         | 09 69 281 5823   |
| Female contacts              | 10                                                                                |               | 09 69 181 7420         | 09 69 181 5420   |
|                              | 20                                                                                |               | 09 69 181 7421         | 09 69 181 5421   |
|                              | 30                                                                                |               | 09 69 181 7422         | 09 69 181 5422   |
|                              | 40                                                                                |               | 09 69 181 7423         | 09 69 181 5423   |
| <b>Short</b> female contacts | 20                                                                                |               | 09 69 181 7821         | 09 69 181 5821   |
|                              | 40                                                                                |               | 09 69 181 7823         | 09 69 181 5823   |
| Crimp version <sup>2)</sup>  |                                                                                   |               |                        |                  |
| Male contacts                | 10                                                                                |               | 09 69 282 7420         | 09 69 282 5420   |
|                              | 20                                                                                |               | 09 69 282 7421         | 09 69 282 5421   |
|                              | 30                                                                                |               | 09 69 282 7422         | 09 69 282 5422   |
|                              | 40                                                                                |               | 09 69 282 7423         | 09 69 282 5423   |
| <b>Short</b> male contacts   | 20                                                                                |               | 09 69 282 7821         | 09 69 282 5821   |
|                              | 40                                                                                |               | 09 69 282 7823         | 09 69 282 5823   |
| Female contacts              | 10                                                                                |               | 09 69 182 7420         | 09 69 182 5420   |
|                              | 20                                                                                |               | 09 69 182 7421         | 09 69 182 5421   |
|                              | 30                                                                                |               | 09 69 182 7422         | 09 69 182 5422   |
|                              | 40                                                                                |               | 09 69 182 7423         | 09 69 182 5423   |
| <b>Short</b> female contacts | 20                                                                                |               | 09 69 182 7821         | 09 69 182 5821   |
|                              | 40                                                                                |               | 09 69 182 7823         | 09 69 182 5823   |

<sup>1)</sup> S4 = 0.76 µm Au or PdNi equivalent

<sup>2)</sup> Tooling see chapter 31

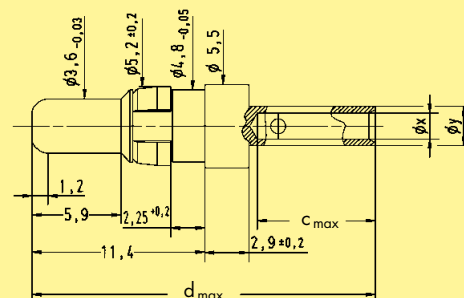
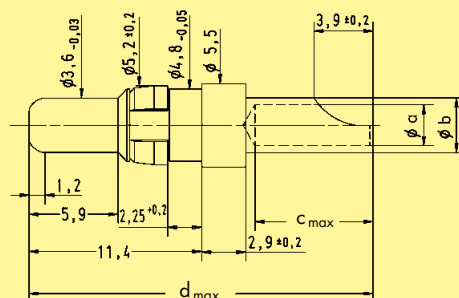




## D-Sub - M

Dimensions in mm

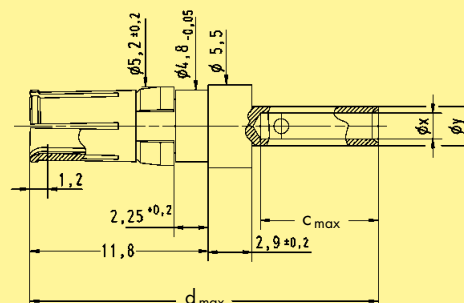
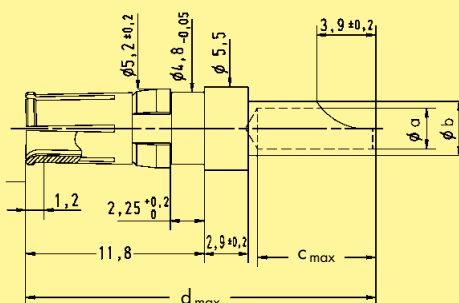
crimp



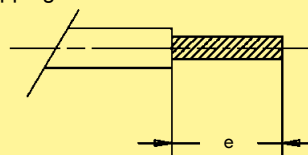
|               | Rating<br>(A) | $\sigma$ a -0.1 | $\sigma$ b $\pm 0.05$ | $c_{\max}$ | $d_{\max}$ | e   | $\sigma$ x -0.1 | $\sigma$ y $\pm 0.05$ | AWG     |
|---------------|---------------|-----------------|-----------------------|------------|------------|-----|-----------------|-----------------------|---------|
|               | 10            | 1.8             | 2.54                  | 7.8        | 23         | 7.5 | 1.7             | 2.6                   | 16 - 20 |
|               | 20            | 2.7             | 3.63                  | 7.8        | 23         | 7.5 | 2.6             | 3.6                   | 12 - 14 |
| short version | 20            | 2.7             | 3.63                  | 4.7        | 19.2       | 4.5 | 2.6             | 3.6                   | 12 - 14 |
|               | 30            | 3.5             | 4.40                  | 7.8        | 23         | 7.5 | 3.7             | 4.7                   | 10 - 12 |
|               | 40            | 4.8             | 5.50                  | 7.8        | 23         | 7.5 | 4.6             | 5.8                   | 8 - 10  |
| short version | 40            | 4.8             | 5.50                  | 6.4        | 20         | 6.1 | 4.6             | 5.8                   | 8 - 10  |

|               | Rating<br>(A) | min./max. conductor ø | min./max. conductor cross<br>section [mm²] |
|---------------|---------------|-----------------------|--------------------------------------------|
|               | 10            | 0.9 to 1.7            | 0.64 to 2.27                               |
|               | 20            | 1.8 to 2.6            | 2.54 to 5.31                               |
| short version | 20            | 1.8 to 2.6            | 2.54 to 5.31                               |
|               | 30            | 2.2 to 3.7            | 3.80 to 10.75                              |
|               | 40            | 2.9 to 4.6            | 6.61 to 16.62                              |
| short version | 40            | 2.9 to 4.6            | 6.61 to 16.62                              |

crimp



stripping dimensions for male and female contacts

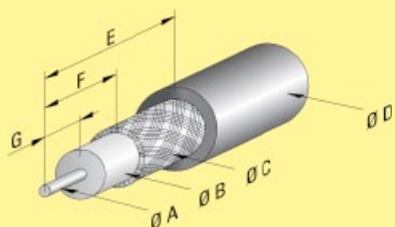




## Coaxial contacts for cable applications

| Identification                         | Impedance<br>(Ω) | Part No.               |                  |                          |                  |
|----------------------------------------|------------------|------------------------|------------------|--------------------------|------------------|
|                                        |                  | Straight male contacts |                  | Straight female contacts |                  |
|                                        |                  | Performance level<br>3 | S4 <sup>1)</sup> | Performance level<br>3   | S4 <sup>1)</sup> |
| <b>Solder / crimp contact</b>          |                  |                        |                  |                          |                  |
| for cables<br>RG 174 U, 188 AU, 316 U  | 50               | 09 69 281 7140         | 09 69 281 5140   | 09 69 181 7140           | 09 69 181 5140   |
| for cables<br>RG 178 BU, 196 AU, 404 U | 50               | 09 69 281 7141         | 09 69 281 5141   | 09 69 181 7141           | 09 69 181 5141   |
| for cables<br>RG 58 CU, 141 AU         | 50               | 09 69 281 7143         | 09 69 281 5143   | 09 69 181 7143           | 09 69 181 5143   |
| for cables<br>RG 179 BU, 187 AU        | 75               | 09 69 281 7230         | 09 69 281 5230   | 09 69 181 7230           | 09 69 181 5230   |
| for cables<br>RGD 179                  | 75               | 09 69 281 7233         | 09 69 281 5233   | 09 69 181 7233           | 09 69 181 5233   |
| <b>Crimp / crimp contact</b>           |                  |                        |                  |                          |                  |
| for cables<br>RG 174 U, 188 AU, 316 U  | 50               | 09 69 282 7140         | 09 69 282 5140   | 09 69 182 7140           | 09 69 182 5140   |
| for cables<br>RG 179 BU, 187 AU        | 75               | 09 69 282 7230         | 09 69 282 5230   | 09 69 182 7230           | 09 69 182 5230   |
| for cables<br>RG 59                    | 75               | 09 69 282 7232         | 09 69 282 5232   | 09 69 182 7232           | 09 69 182 5232   |
| for cables<br>RGD 179                  | 75               | 09 69 282 7233         | 09 69 282 5233   | 09 69 182 7233           | 09 69 182 5233   |

## Harnessing dimensions (mm)



| Part No.                                       | Ø A  | Ø B | Ø C | Ø D | E   | F   | G   |
|------------------------------------------------|------|-----|-----|-----|-----|-----|-----|
| <b>09 69 181 x140</b><br><b>09 69 281 x140</b> | 0.85 | 1.9 | 2.3 | 3.2 | 9.5 | 5.0 | 3.0 |
| <b>09 69 181 x141</b><br><b>09 69 281 x141</b> | 0.85 | 1.2 | 1.4 | 2.3 | 9.5 | 5.0 | 3.0 |
| <b>09 69 181 x143</b><br><b>09 69 281 x143</b> | 1.00 | 3.0 | 4.4 | 5.2 | 9.5 | 5.0 | 3.0 |
| <b>09 69 181 x230</b><br><b>09 69 281 x230</b> | 0.50 | 1.9 | 2.3 | 3.2 | 9.5 | 5.0 | 3.0 |
| <b>09 69 182 x140</b><br><b>09 69 282 x140</b> | 0.60 | 1.9 | 2.4 | 3.2 | 9.0 | 5.0 | 3.0 |
| <b>09 69 182 x230</b><br><b>09 69 282 x230</b> | 0.60 | 1.9 | 2.4 | 3.2 | 9.0 | 5.0 | 3.0 |
| <b>09 69 182 x232</b><br><b>09 69 282 x232</b> | 0.95 | 3.8 | 5.1 | 6.2 | 9.0 | 4.3 | 3.7 |
| <b>09 69 181 x233</b><br><b>09 69 281 x233</b> | 0.50 | 1.9 | 2.6 | 3.5 | 9.5 | 5.0 | 3.0 |
| <b>09 69 182 x233</b><br><b>09 69 282 x233</b> | 0.60 | 1.9 | 2.6 | 3.5 | 9.3 | 4.3 | 3.0 |

<sup>1)</sup> S4 = 0.76 µm Au or PdNi equivalent  
Dimensions see pages 04.27 and 04.28  
Tooling see chapter 31



## Coaxial contacts for cable applications

## Identification

## Drawing

## Dimensions in mm

## Male contacts

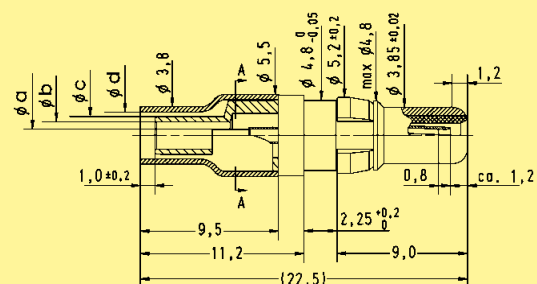
| Part No.       | $\varnothing a$ | $\varnothing b$ | $\varnothing c$ | $\varnothing d$ |
|----------------|-----------------|-----------------|-----------------|-----------------|
| 09 69 281 x140 | 0.85            | 1.9             | 2.6             | 3.2             |
| 09 69 281 x141 | 0.85            | 1.2             | 1.7             | 2.3             |
| 09 69 281 x230 | 0.50            | 1.9             | 2.6             | 3.2             |

| Part No.       | $\varnothing a$ | $\varnothing b$ | $\varnothing c$ | $\varnothing d$ |
|----------------|-----------------|-----------------|-----------------|-----------------|
| 09 69 281 x143 | 1.0             | 3.0             | 4.4             | 5.2             |

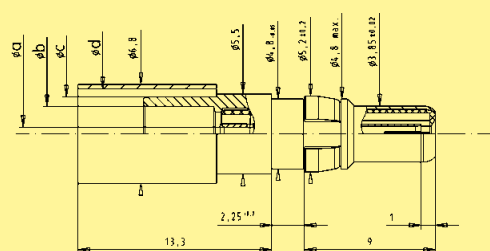
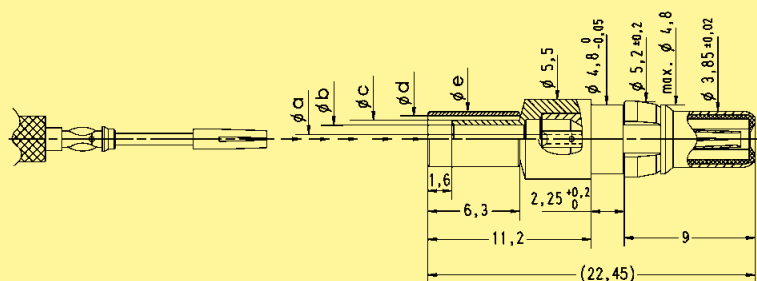
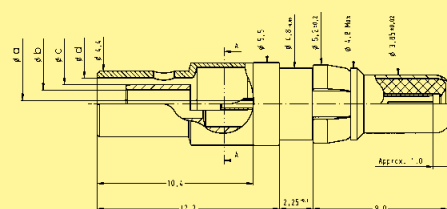
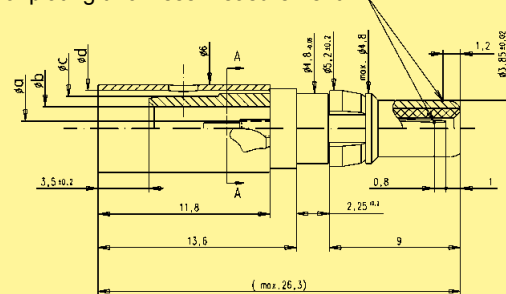
| Part No.       | $\varnothing a$ | $\varnothing b$ | $\varnothing c$ | $\varnothing d$ |
|----------------|-----------------|-----------------|-----------------|-----------------|
| 09 69 281 x233 | 0.5             | 1.9             | 2.6             | 3.5             |

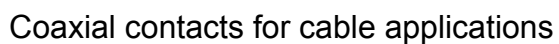
| Part No.       | $\varnothing a$ | $\varnothing b$ | $\varnothing c$ | $\varnothing d$ | $\varnothing e$ |
|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 09 69 282 x140 | 0.6             | 1.9             | 2.6             | 3.2             | 3.8             |
| 09 69 282 x230 | 0.6             | 1.9             | 2.6             | 3.2             | 3.8             |
| 09 69 282 x233 | 0.6             | 1.9             | 2.6             | 3.5             | 4.4             |

| Part No.       | $\varnothing a$ | $\varnothing b$ | $\varnothing c$ | $\varnothing d$ |
|----------------|-----------------|-----------------|-----------------|-----------------|
| 09 69 282 x232 | 0.95            | 3.8             | 5.1             | 6.2             |



## Points of plating thickness measurement





Dimensions in mm

### Points of plating thickness measurement

Technical drawing of a mechanical assembly (Fig. 10.10) showing a cross-section of a shaft with a key and a pulley. The drawing includes dimensions for diameters, lengths, and tolerances.

Dimensions and Tolerances:

- Shaft diameters:  $\phi 4$ ,  $\phi 6$ ,  $\phi 8$ ,  $\phi 4,4$
- Key width:  $10,4$
- Key length:  $12,1$
- Key height:  $5,5$
- Key fit:  $\phi 4,8_{+0,05}^{+0,02}$
- Key fit:  $\phi 5,2_{+0,2}^{+0,02}$
- Key fit:  $\phi 1,00_{+0,02}^{+0,02}$
- Key fit:  $0,3_{+0,2}^{+0,02}$
- Key fit:  $2,25_{+0,2}^{+0,02}$
- Key fit:  $9,5$

Technical drawing of a shaft assembly. The drawing shows a shaft with various diameters and tolerances. The dimensions are as follows:

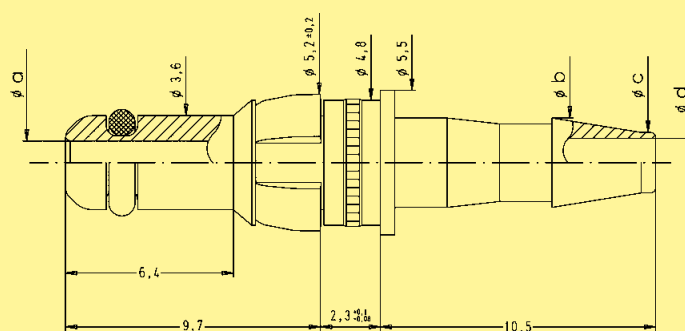
- Overall length: 133
- Distance from left end to first step: 225<sup>+0.2</sup>
- Distance from left end to second step: 94
- Distance from left end to third step: 0.3<sup>+0.2</sup>
- Distance from left end to fourth step: 133
- Distance from left end to fifth step: 133
- Distance from left end to sixth step: 133
- Distance from left end to seventh step: 133
- Distance from left end to eighth step: 133
- Distance from left end to ninth step: 133
- Distance from left end to tenth step: 133
- Distance from left end to eleventh step: 133
- Distance from left end to twelfth step: 133
- Distance from left end to thirteenth step: 133
- Distance from left end to fourteenth step: 133
- Distance from left end to fifteenth step: 133
- Distance from left end to sixteenth step: 133
- Distance from left end to seventeenth step: 133
- Distance from left end to eighteenth step: 133
- Distance from left end to nineteenth step: 133
- Distance from left end to twentieth step: 133
- Distance from left end to twenty-first step: 133
- Distance from left end to twenty-second step: 133
- Distance from left end to twenty-third step: 133
- Distance from left end to twenty-fourth step: 133
- Distance from left end to twenty-fifth step: 133
- Distance from left end to twenty-sixth step: 133
- Distance from left end to twenty-seventh step: 133
- Distance from left end to twenty-eighth step: 133
- Distance from left end to twenty-ninth step: 133
- Distance from left end to thirtieth step: 133
- Distance from left end to thirty-first step: 133
- Distance from left end to thirty-second step: 133
- Distance from left end to thirty-third step: 133
- Distance from left end to thirty-fourth step: 133
- Distance from left end to thirty-fifth step: 133
- Distance from left end to thirty-sixth step: 133
- Distance from left end to thirty-seventh step: 133
- Distance from left end to thirty-eighth step: 133
- Distance from left end to thirty-ninth step: 133
- Distance from left end to fortieth step: 133
- Distance from left end to forty-first step: 133
- Distance from left end to forty-second step: 133
- Distance from left end to forty-third step: 133
- Distance from left end to forty-fourth step: 133
- Distance from left end to forty-fifth step: 133
- Distance from left end to forty-sixth step: 133
- Distance from left end to forty-seventh step: 133
- Distance from left end to forty-eighth step: 133
- Distance from left end to forty-ninth step: 133
- Distance from left end to fiftieth step: 133
- Distance from left end to fifty-first step: 133
- Distance from left end to fifty-second step: 133
- Distance from left end to fifty-third step: 133
- Distance from left end to fifty-fourth step: 133
- Distance from left end to fifty-fifth step: 133
- Distance from left end to fifty-sixth step: 133
- Distance from left end to fifty-seventh step: 133
- Distance from left end to fifty-eighth step: 133
- Distance from left end to fifty-ninth step: 133
- Distance from left end to sixtieth step: 133
- Distance from left end to sixty-first step: 133
- Distance from left end to sixty-second step: 133
- Distance from left end to sixty-third step: 133
- Distance from left end to sixty-fourth step: 133
- Distance from left end to sixty-fifth step: 133
- Distance from left end to sixty-sixth step: 133
- Distance from left end to sixty-seventh step: 133
- Distance from left end to sixty-eighth step: 133
- Distance from left end to sixty-ninth step: 133
- Distance from left end to seventieth step: 133
- Distance from left end to seventy-first step: 133
- Distance from left end to seventy-second step: 133
- Distance from left end to seventy-third step: 133
- Distance from left end to seventy-fourth step: 133
- Distance from left end to seventy-fifth step: 133
- Distance from left end to seventy-sixth step: 133
- Distance from left end to seventy-seventh step: 133
- Distance from left end to seventy-eighth step: 133
- Distance from left end to seventy-ninth step: 133
- Distance from left end to eightieth step: 133
- Distance from left end to eighty-first step: 133
- Distance from left end to eighty-second step: 133
- Distance from left end to eighty-third step: 133
- Distance from left end to eighty-fourth step: 133
- Distance from left end to eighty-fifth step: 133
- Distance from left end to eighty-sixth step: 133
- Distance from left end to eighty-seventh step: 133
- Distance from left end to eighty-eighth step: 133
- Distance from left end to eighty-ninth step: 133
- Distance from left end to ninetieth step: 133
- Distance from left end to ninety-first step: 133
- Distance from left end to ninety-second step: 133
- Distance from left end to ninety-third step: 133
- Distance from left end to ninety-fourth step: 133
- Distance from left end to ninety-fifth step: 133
- Distance from left end to ninety-sixth step: 133
- Distance from left end to ninety-seventh step: 133
- Distance from left end to ninety-eighth step: 133
- Distance from left end to ninety-ninth step: 133
- Distance from left end to one hundredth step: 133



## Pneumatic contacts for cable applications

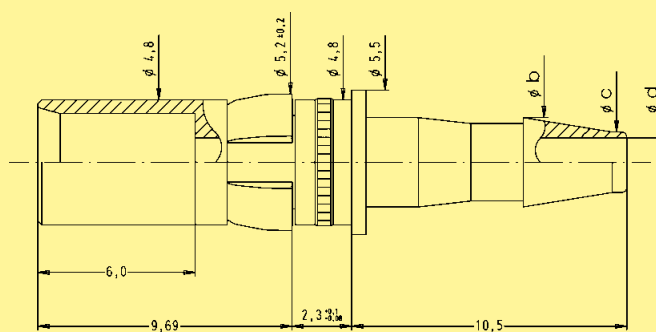
| Identification  | Inner diameter<br>air tube (mm) | Part No.                                                             |
|-----------------|---------------------------------|----------------------------------------------------------------------|
| Male contacts   | 2<br>2.6<br>3<br>4              | 09 69 287 0060<br>09 69 287 0061<br>09 69 287 0062<br>09 69 287 0063 |
| Female contacts | 2<br>2.6<br>3<br>4              | 09 69 187 0060<br>09 69 187 0061<br>09 69 187 0062<br>09 69 187 0063 |

## Male contacts



| Part No.       | $\phi a$ | $\phi b$ | $\phi c$ | $\phi d$ |
|----------------|----------|----------|----------|----------|
| 09 69 x87 0060 | 1.45     | 2.6      | 1.5      | 0.95     |
| 09 69 x87 0061 | 1.65     | 3.1      | 2.0      | 1.65     |
| 09 69 x87 0062 | 1.65     | 3.4      | 2.3      | 1.85     |
| 09 69 x87 0063 | 1.65     | 4.8      | 3.7      | 2.95     |

## Female contacts



Dimensions in mm

## Board drillings for connectors with straight pcb contacts

## Pcb hole patterns

In the next pages, the pcb hole pattern is given for the power and the coaxial contact per connector layout. In the case of the power contact, the drilling hole dimension is not mentioned; the table here under provides relevant information according to the current rating of the contact and its version.

## Power contact diameter and pcb related drilling diameter

| Rating | Straight connectors |                     | Right angled connectors |                     |
|--------|---------------------|---------------------|-------------------------|---------------------|
|        | Pin Ø (mm)          | Pcb drilling Ø (mm) | Pin Ø (mm)              | Pcb drilling Ø (mm) |
| 20 A   | 2.60                | 2.9                 | 2.85                    | 3.15                |
| 30 A   | —                   | —                   | 3.20                    | 3.50                |
| 40 A   | 3.75                | 4.0                 | 3.75                    | 4.05                |

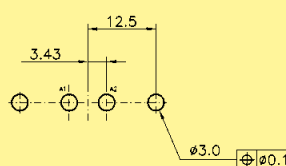
Identification

Drawing

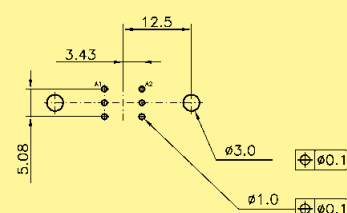
Dimensions in mm

## Male connector\*

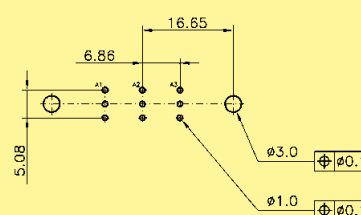
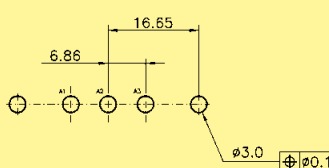
2W2 / 2W2C



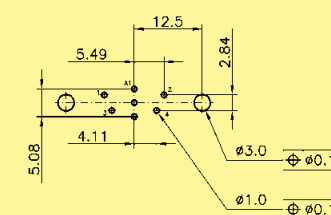
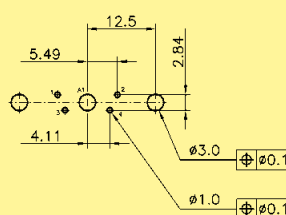
## Coaxial contact



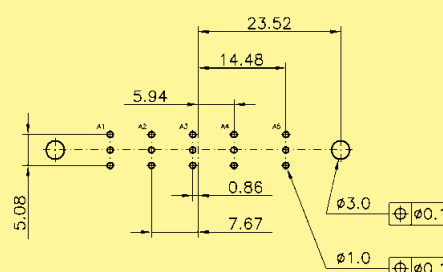
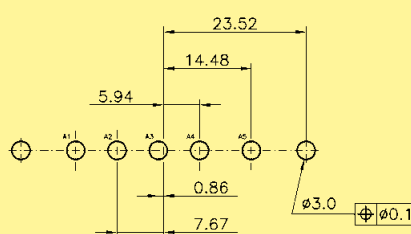
3W3 / 3W3C



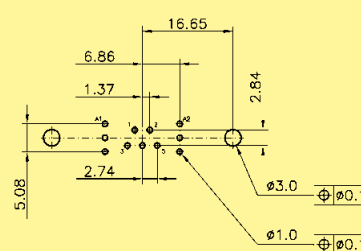
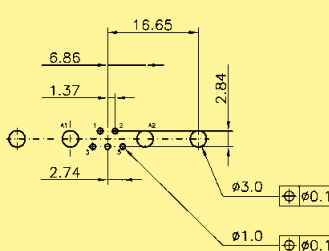
5W1



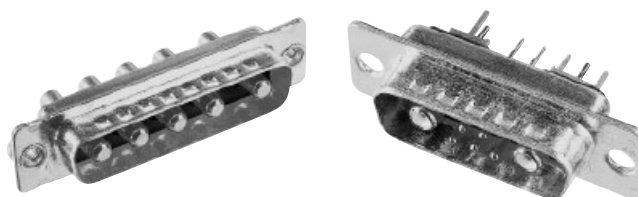
5W5



7W2



\* When using a female connector with straight pcb contacts the board drilling pattern must be mirrored in the Y axis.



## Board drillings for connectors with straight pcb contacts

Identification

Drawing

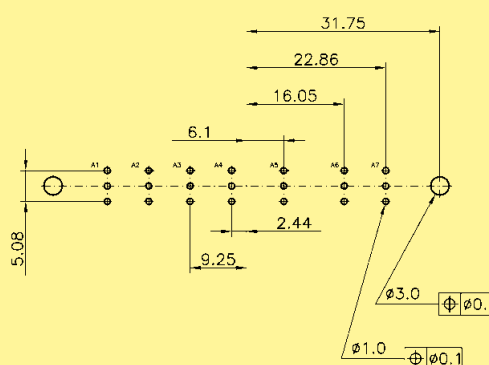
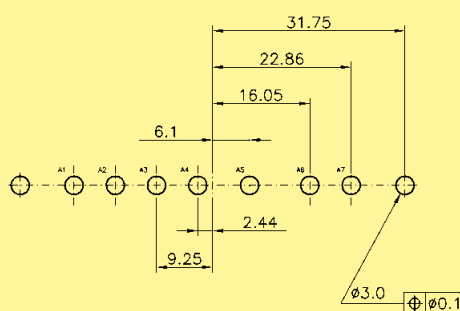
Dimensions in mm

Male connector\*

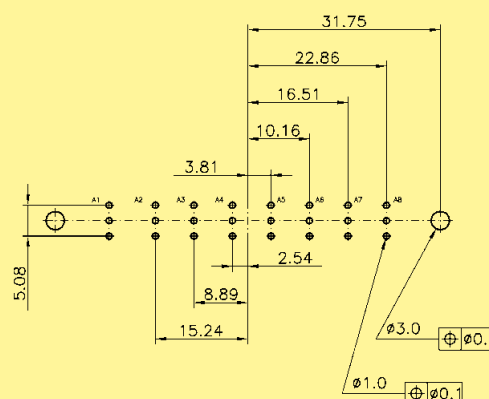
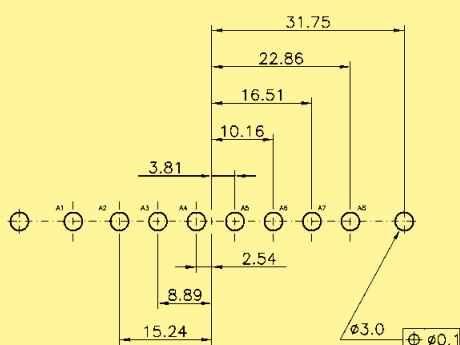
7W7

Power contact

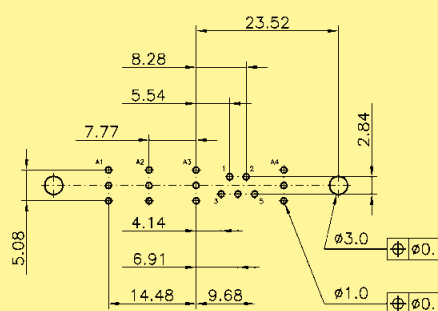
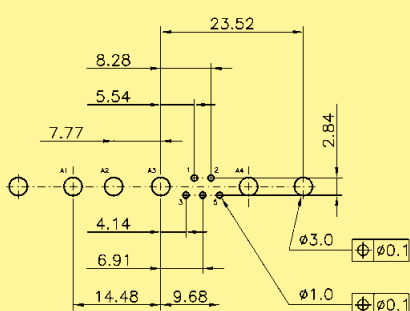
Coaxial contact



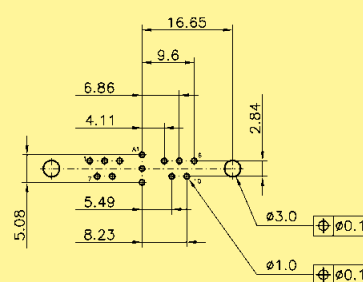
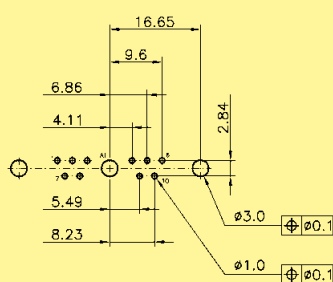
8W8



9W4



11W1



\* When using a female connector with straight pcb contacts the board drilling pattern must be mirrored in the Y axis.

## Board drillings for connectors with straight pcb contacts

Identification

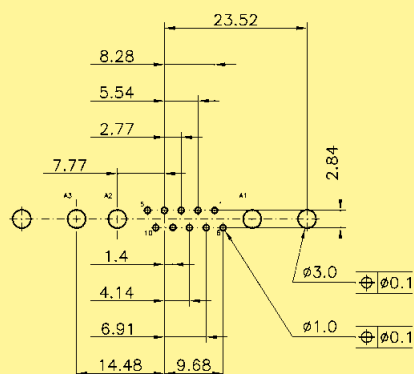
Drawing

Dimensions in mm

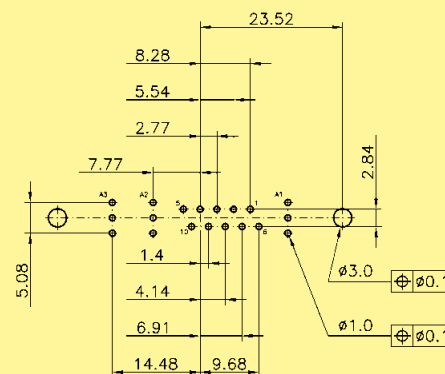
Male connector\*

13W3

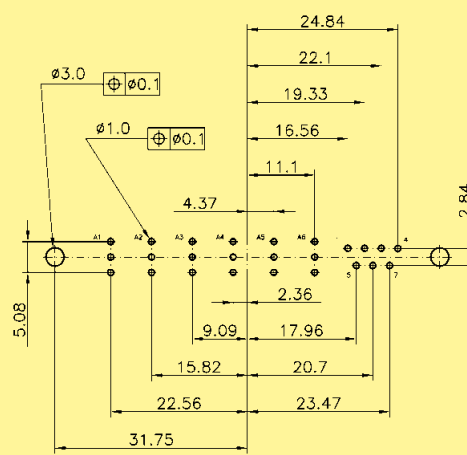
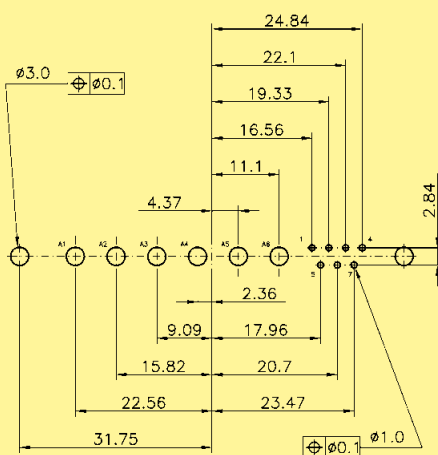
Power contact



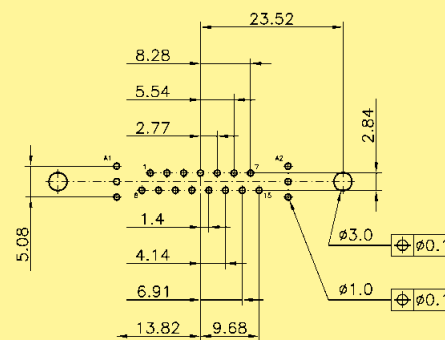
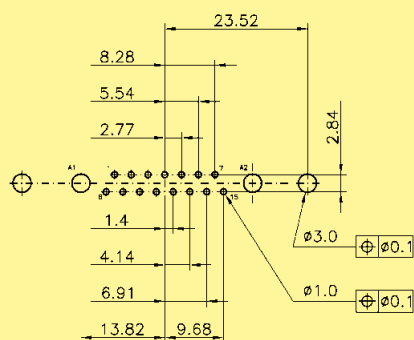
Coaxial contact



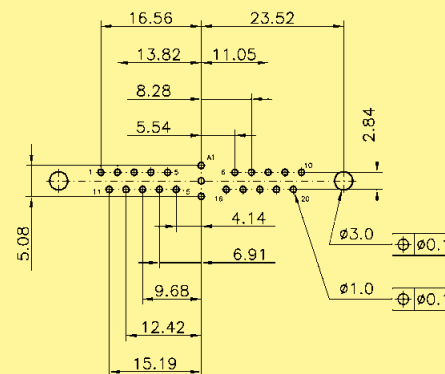
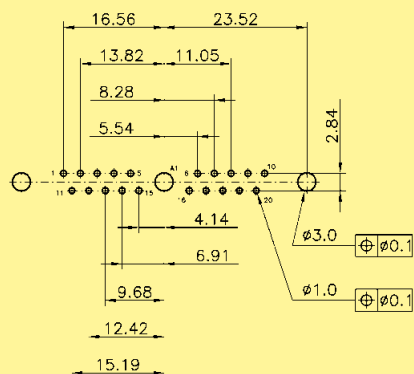
13W6



17W2



21W1



\* When using a female connector with straight pcb contacts the board drilling pattern must be mirrored in the Y axis.



## Board drillings for connectors with straight pcb contacts

Identification

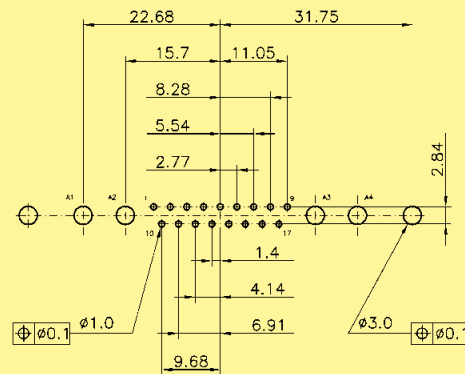
Drawing

Dimensions in mm

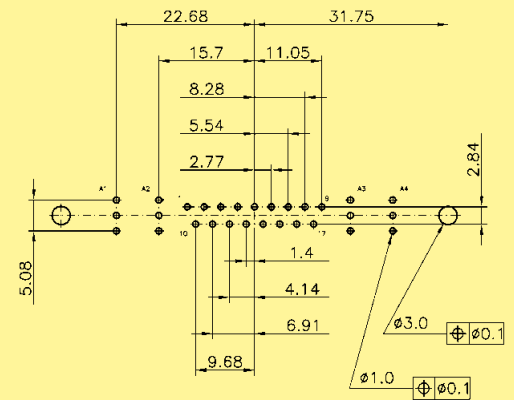
Male connector\*

21WA4

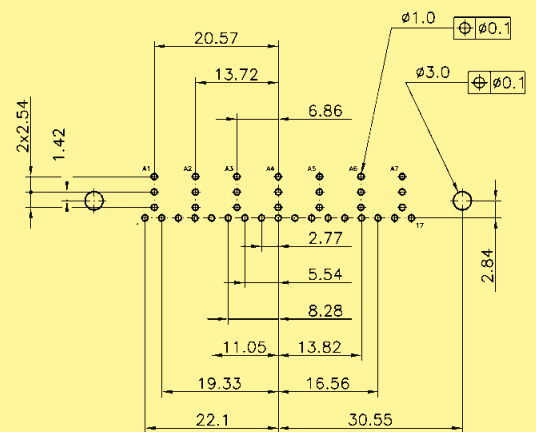
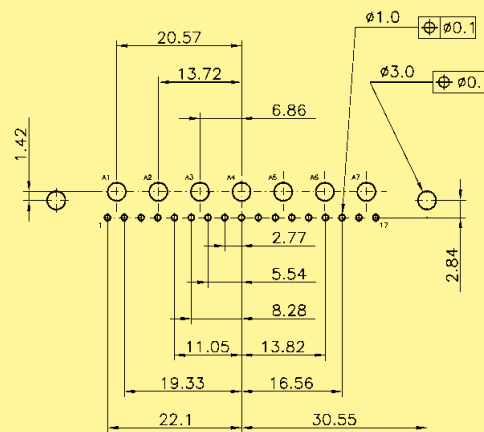
Power contact



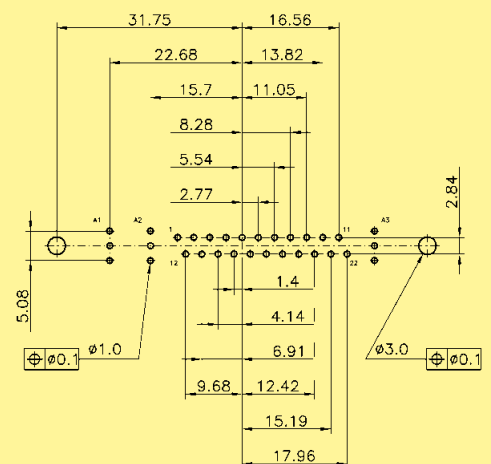
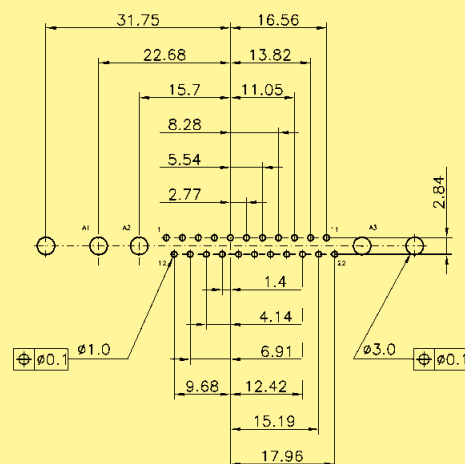
Coaxial contact



24W7



25W3



\* When using a female connector with straight pcb contacts the board drilling pattern must be mirrored in the Y axis.

## Board drillings for connectors with straight pcb contacts

Identification

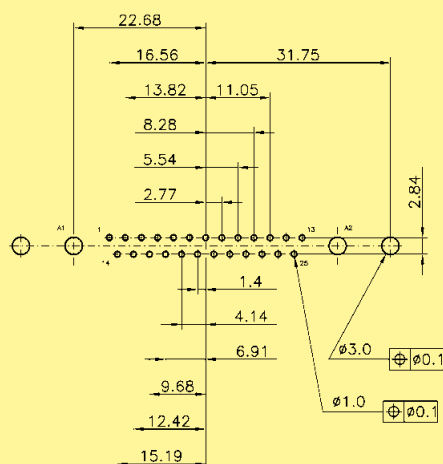
Drawing

Dimensions in mm

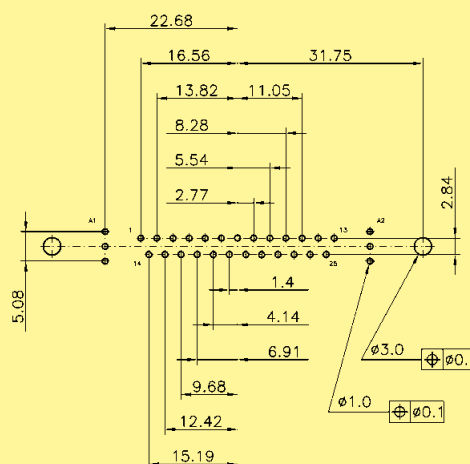
Male connector\*

27W2

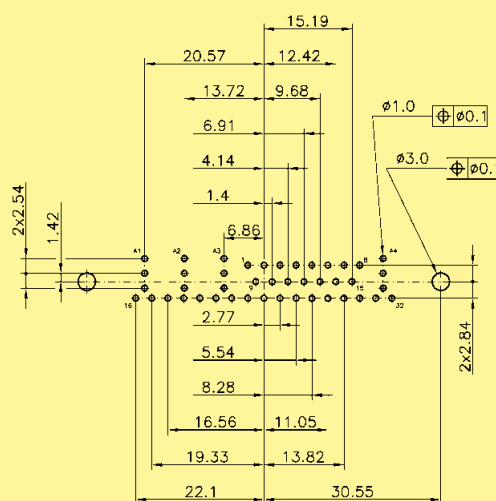
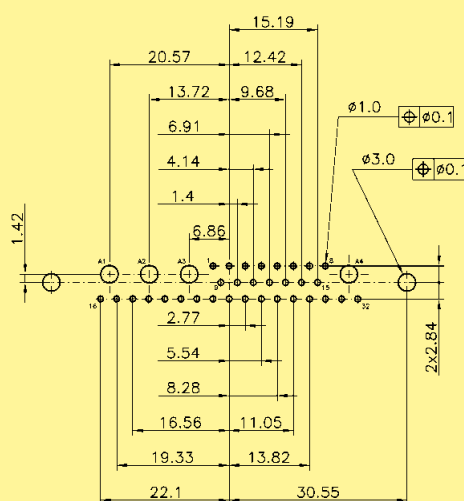
Power contact



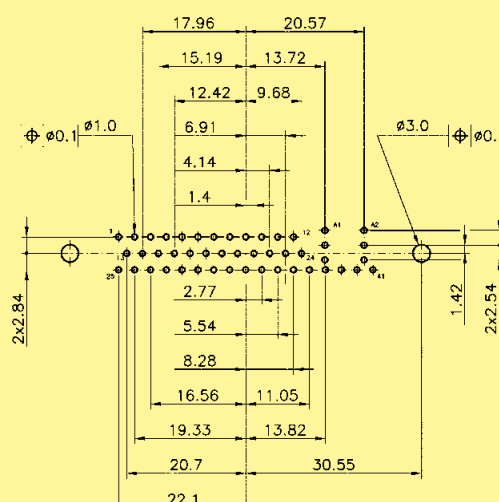
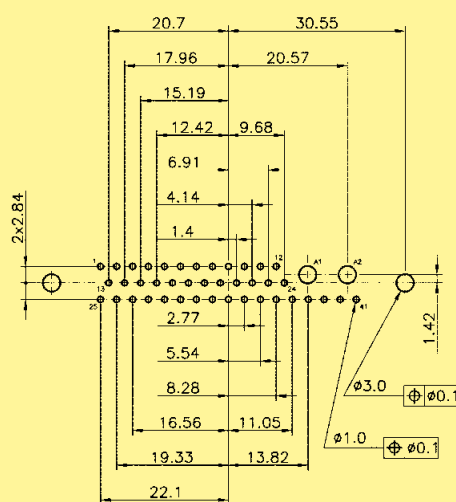
Coaxial contact



36W4



43W2



\* When using a female connector with straight pcb contacts the board drilling pattern must be mirrored in the Y axis.



## Board drillings for connectors with right angled pcb contacts

Identification

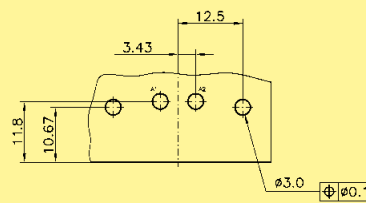
Drawing

Dimensions in mm

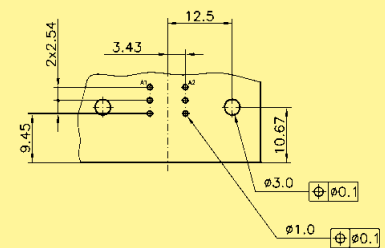
## Male connector\*

2W2 / 2W2C

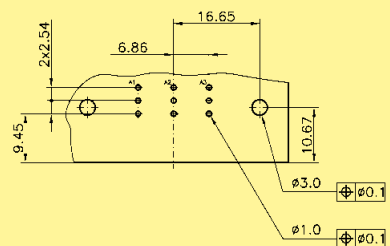
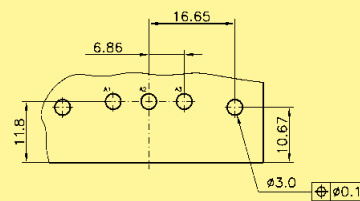
## Power contact



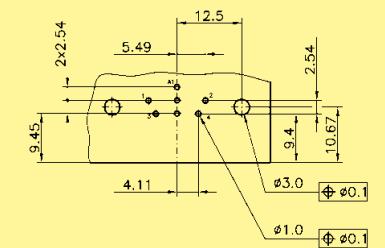
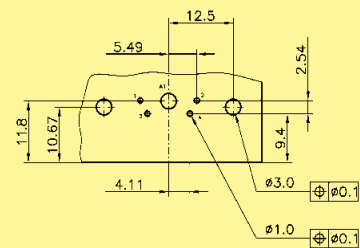
## Coaxial contact



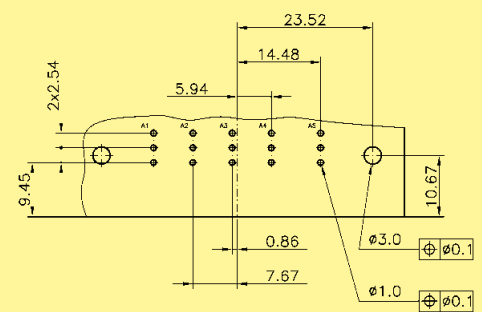
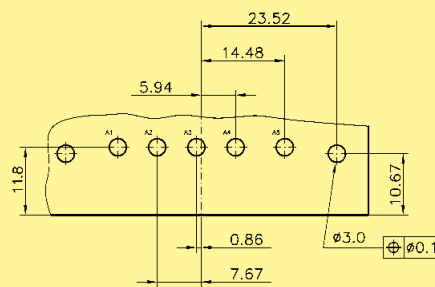
3W3 / 3W3C



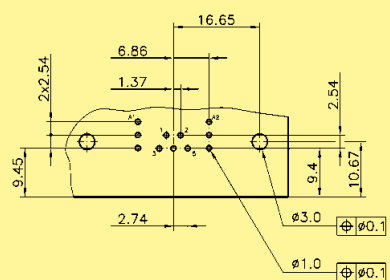
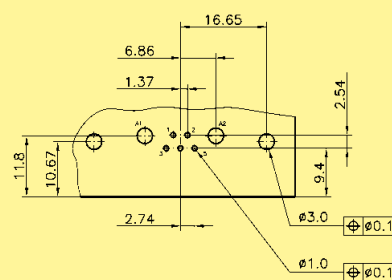
5W1



5W5



7W2



\* When using a female connector with right angled pcb contacts the board drilling pattern must be mirrored in the Y axis.

**D-Sub - M**

04  
36

\* When using a female connector with right angled pcb contacts the board drilling pattern must be mirrored in the Y axis.

## Board drillings for connectors with right angled pcb contacts

| Identification  | Drawing                                                   | Dimensions in mm |
|-----------------|-----------------------------------------------------------|------------------|
| Male connector* |                                                           |                  |
| 13W3            | <p><b>Power contact</b></p> <p><b>Coaxial contact</b></p> |                  |
| 13W6            | <p><b>Power contact</b></p> <p><b>Coaxial contact</b></p> |                  |
| 17W2            | <p><b>Power contact</b></p> <p><b>Coaxial contact</b></p> |                  |
| 21W1            | <p><b>Power contact</b></p> <p><b>Coaxial contact</b></p> |                  |

\* When using a female connector with right angled pcb contacts the board drilling pattern must be mirrored in the Y axis.

## Board drillings for connectors with right angled pcb contacts

Identification

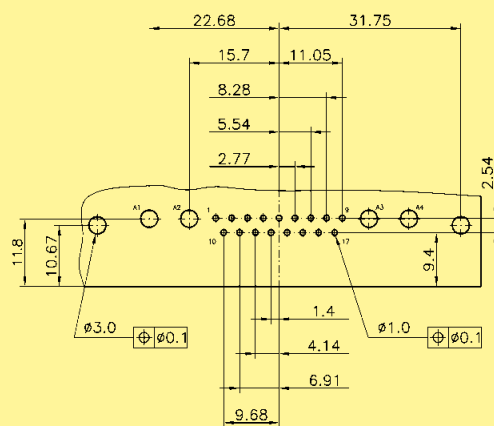
Drawing

Dimensions in mm

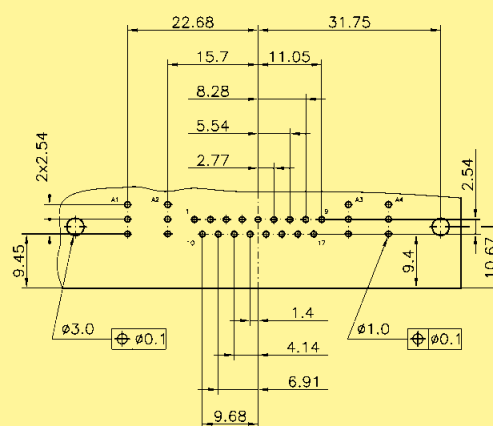
Male connector\*

21WA4

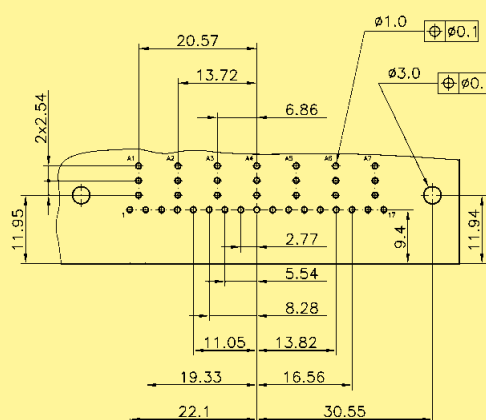
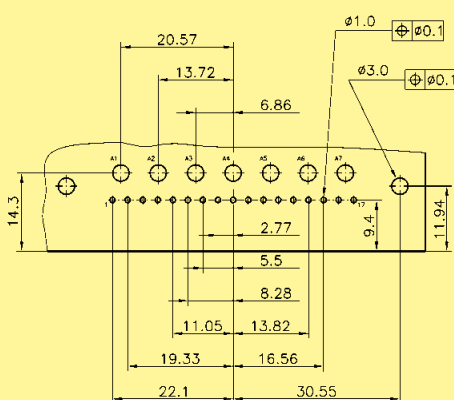
Power contact



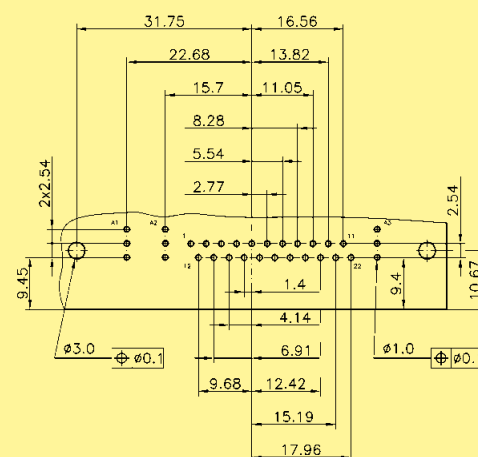
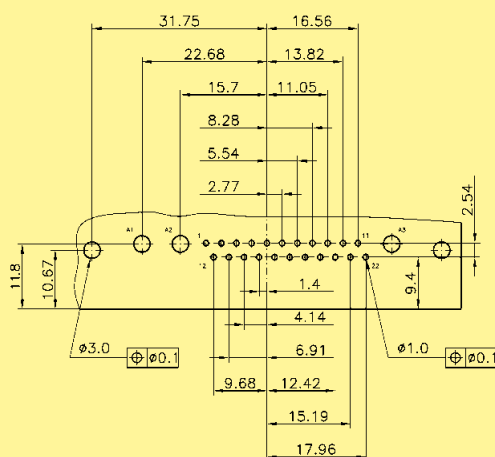
Coaxial contact



24W7



25W3



\* When using a female connector with right angled pcb contacts the board drilling pattern must be mirrored in the Y axis.

## Board drillings for connectors with right angled pcb contacts

Identification

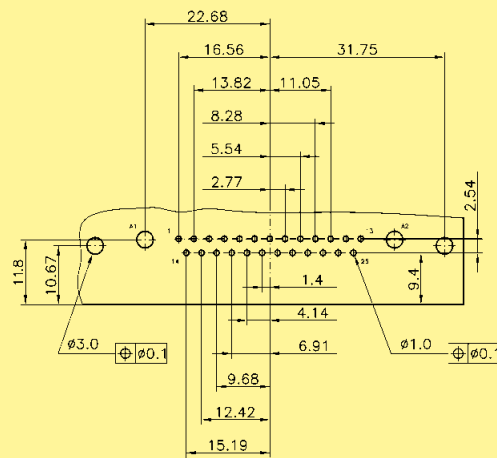
Drawing

Dimensions in mm

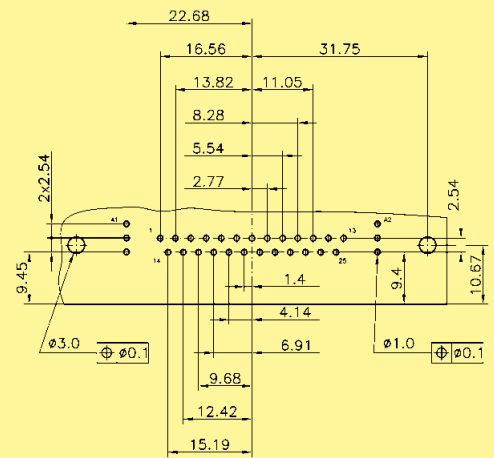
Male connector\*

27W2

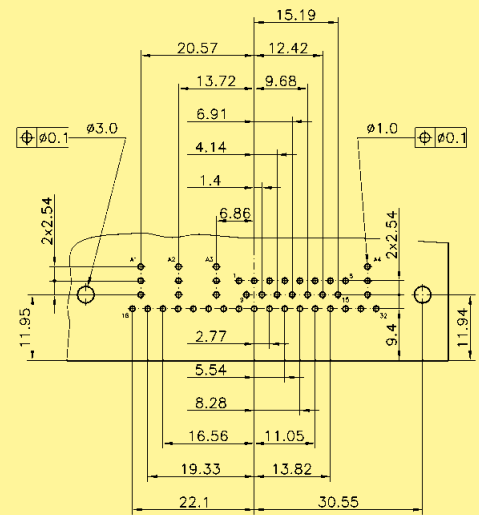
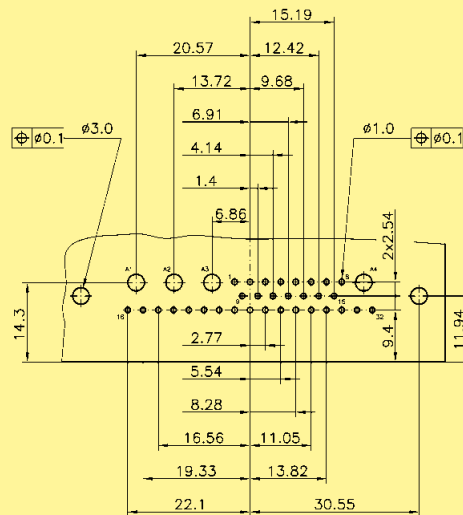
Power contact



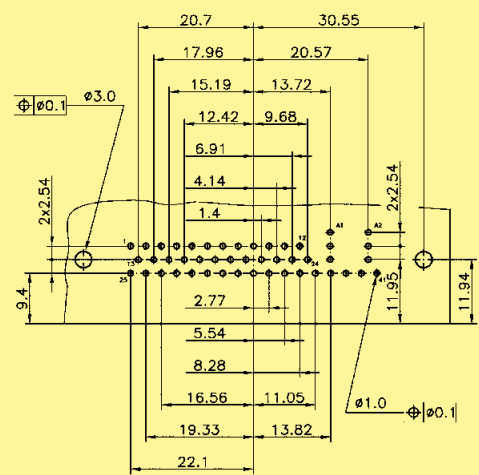
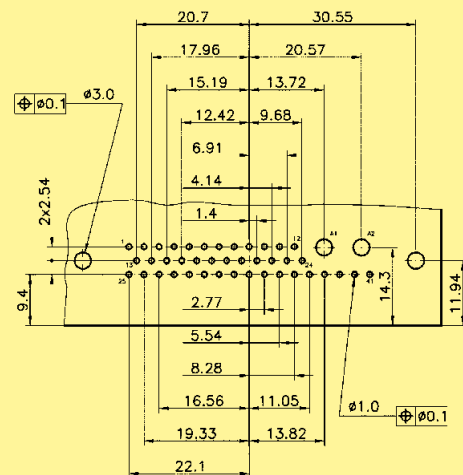
Coaxial contact



36W4



43W2

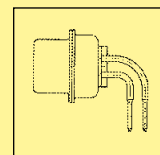
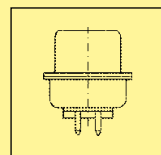


\* When using a female connector with right angled pcb contacts the board drilling pattern must be mirrored in the Y axis.

## HARTING customer request form for pcb connectors

### 1 Connector gender and type

- ☐ Plug (male contacts)  
☐ Receptacle (female contacts)



- ☐ Straight ☐ Right angled

### 2 Contact arrangement

Standard

- |                              |                               |                                |                               |
|------------------------------|-------------------------------|--------------------------------|-------------------------------|
| <input type="checkbox"/> 2W2 | <input type="checkbox"/> 7W7  | <input type="checkbox"/> 13W6  | <input type="checkbox"/> 25W3 |
| <input type="checkbox"/> 3W3 | <input type="checkbox"/> 8W8  | <input type="checkbox"/> 17W2  | <input type="checkbox"/> 27W2 |
| <input type="checkbox"/> 5W1 | <input type="checkbox"/> 9W4  | <input type="checkbox"/> 21W1  | <input type="checkbox"/> 36W4 |
| <input type="checkbox"/> 5W5 | <input type="checkbox"/> 11W1 | <input type="checkbox"/> 21WA4 | <input type="checkbox"/> 43W2 |
| <input type="checkbox"/> 7W2 | <input type="checkbox"/> 13W3 | <input type="checkbox"/> 24W7  |                               |

Special configurations  
(mixed contact genders)

- ☐ 2W2C ☐ 3W3C

#### 2.1 Any signal contacts?

- ☐ Yes (fill in questions below) ☐ No (go directly to item 2.2)  
☐ Right angled 2.54 mm pitch  
☐ Other pitch: \_\_\_\_\_

#### 2.2 Any power contacts?

- ☐ Yes (fill in questions below) ☐ No (go directly to item 2.3)

Current rating

- ☐ 10 A ☐ 30 A  
☐ 20 A ☐ 40 A

Termination type

- ☐ Solder pin for pcb  
☐ Press-in for pcb (30 A, straight version only)

Performance level

[mating side / termination side]

- ☐ S4 [0.76 µm Au / 0.2 µm Au]  
☐ PL 3 [0.2 µm Au / 5.0 µm Sn]

#### 2.3 Any coaxial contacts?

- ☐ Yes (fill in questions below) ☐ No (go directly to item 2.4)

Impedance

- ☐ 50 Ω  
☐ 75 Ω

Performance level

[mating side inner / outer conductor]

- ☐ S4 [1.3 µm Au / 0.76 µm Au]  
☐ PL 3 [0.2 µm Au / 0.2 µm Au]

#### 2.4 Any high voltage contacts?

- ☐ Yes ☐ No (go directly to item 2.5)

#### 2.5 Any pneumatic contacts?

- ☐ Yes (fill in questions below) ☐ No (go directly to item 3)

Tube inner diameter /

suitable compressed air tube

- |                                      |                                              |
|--------------------------------------|----------------------------------------------|
| <input type="checkbox"/> 2 mm / PU-2 | <input type="checkbox"/> 2.6 mm / PU-N4* 2.5 |
| <input type="checkbox"/> 3 mm / PU-3 | <input type="checkbox"/> 4 mm / PU-4         |



## HARTING customer request form for pcb connectors

### 3 Pcb mounting accessories (select appropriate fixing accessories)

#### 3.1 Right angled version

- ☐ Through hole  
☐ Nut 4-40 UNC  
☐ Nut M3  
☐ Metal bracket  
☐ Snap clip  
 Screw lock  
☐ fixed      ☐ removable  
☐ 4-40 UNC      ☐ M3
- 

#### 3.2 Straight version

- ☐ Through hole  
☐ Nut 4-40 UNC  
☐ Nut M3  
☐ Spacer 4-40 UNC  
☐ Spacer M3  
☐ Screw lock 4-40 UNC  
☐ Spacer 4-40 UNC + clip  
☐ Spacer M3 + clip  
 Spacer + clip and screw lock  
☐ M3      ☐ 4-40 UNC
- 

### 4 Additional information

Pcb thickness:

(if possible provide pcb layout with plating specifications)

Operating temperature:

☐ standard

☐ SMC compatible

Is hot plugging required

☐ No

☐ Yes

Short description: \_\_\_\_\_

Is a vacuum pick and place  
process considered?

☐ No

☐ Yes

Is blind mating feature required?

☐ No

☐ Yes (provide precise requirements)

Name: \_\_\_\_\_

Drawing: ☐ no      ☐ yes

Company: \_\_\_\_\_

Samples: ☐ no      ☐ yes, quantity

Address: \_\_\_\_\_

Volume (pcs./year): \_\_\_\_\_

Phone: \_\_\_\_\_

Special requirements: \_\_\_\_\_

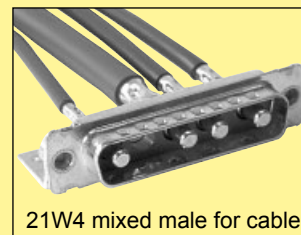
Fax: \_\_\_\_\_

E-Mail: \_\_\_\_\_

## HARTING customer request form for cable connectors

### 1 Connector gender

- ☐ Plug (male contacts)  
☐ Receptacle (female contacts)



21W4 mixed male for cable

### 2 Contact arrangement

Standard

- |                              |                               |                                |                               |
|------------------------------|-------------------------------|--------------------------------|-------------------------------|
| <input type="checkbox"/> 2W2 | <input type="checkbox"/> 7W7  | <input type="checkbox"/> 13W6  | <input type="checkbox"/> 25W3 |
| <input type="checkbox"/> 3W3 | <input type="checkbox"/> 8W8  | <input type="checkbox"/> 17W2  | <input type="checkbox"/> 27W2 |
| <input type="checkbox"/> 5W1 | <input type="checkbox"/> 9W4  | <input type="checkbox"/> 21W1  | <input type="checkbox"/> 36W4 |
| <input type="checkbox"/> 5W5 | <input type="checkbox"/> 11W1 | <input type="checkbox"/> 21WA4 | <input type="checkbox"/> 43W2 |
| <input type="checkbox"/> 7W2 | <input type="checkbox"/> 13W3 | <input type="checkbox"/> 24W7  |                               |

Special configurations  
(mixed contact genders)

- ☐ 2W2C ☐ 3W3C

#### 2.1 Any signal contacts?

- ☐ Yes (fill in questions below) ☐ No (go directly to item 2.2)

Termination type

- ☐ Crimp ☐ Solder cup S4 [0.76 µm Au]

Signal cable size for crimp contact

- ☐ AWG 20-24 ☐ AWG 24-28

Crimp contact performance level

- ☐ S4 [0.76 µm Au / 0.2 µm Au]  
☐ PL3 [0.2 µm Au / 5.0 µm Sn]

#### 2.2 Any power contacts?

- ☐ Yes (fill in questions below) ☐ No (go directly to item 2.3)

Current rating

- ☐ 10 A ☐ 20 A ☐ 30 A ☐ 40 A

Termination type

- ☐ Crimp ☐ Solder cup

Performance level

[mating side / termination side]

- ☐ S4 [0.76 µm Au / 0.2 µm Au]  
☐ PL3 [0.2 µm Au / 5.0 µm Sn]

#### 2.3 Any coaxial contacts?

- ☐ Yes (fill in questions below) ☐ No (go directly to item 2.4)

Impedance

- ☐ 50 Ω ☐ 75 Ω

Termination type

- ☐ Crimp/crimp  
☐ Crimp/solder [inner conductor is soldered, outer crimped]

Performance level

[mating side inner / outer conductor]

- ☐ S4 [1.3 µm Au / 0.76 µm Au]  
☐ PL3 [0.2 µm Au / 0.2 µm Au]

Cable reference (e.g. RG 178): \_\_\_\_\_

## HARTING customer request form for cable connectors

**2.4 Any high voltage contacts?** ☐ Yes ☐ No (go directly to item 2.5)  
Termination type ☐ Crimp ☐ Solder cup

**2.5 Any pneumatic contacts?** ☐ Yes (fill in questions below) ☐ No (go directly to item 3)  
Tube inner diameter /  
suitable compressed air tube ☐ 2 mm / PU-2 ☐ 2.6 mm / PU-N4\* 2.5  
☐ 3 mm / PU-3 ☐ 4 mm / PU-4

**3 Cable accessories**

HARTING has a wide range of hoods including plastic, metallized plastic and full metal versions.

|                         |                                                                                   |
|-------------------------|-----------------------------------------------------------------------------------|
| Name: _____             | Drawing: <input type="checkbox"/> no <input type="checkbox"/> yes _____           |
| Company: _____          | Samples: <input type="checkbox"/> no <input type="checkbox"/> yes, quantity _____ |
| Address: _____<br>_____ | Volume (pcs./year): _____<br>_____                                                |
| Phone: _____            | Special requirements: _____                                                       |
| Fax: _____              | _____                                                                             |
| E-Mail: _____           | _____                                                                             |



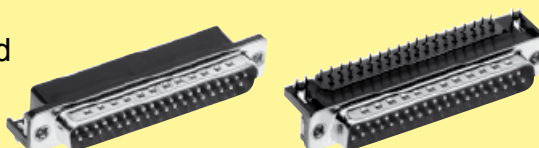
**D-Sub – Filter subminiature D connectors, 2.54 mm pitch**

Page

General information .....

**05.02****Ferrite-filter**

Technical characteristics .....

**05.03**Connectors with solder pins,  
straight .....**05.04**Connectors with solder pins, right angled  
(US footprint 2.84 mm) .....**05.05**

Connectors with solder buckets .....

**05.06****C-filter**

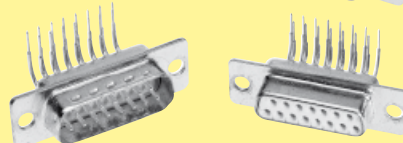
Technical characteristics .....

**05.07**

Attenuation characteristics for standard capacitance values .....

**05.08**

Filter adapters .....

**05.09**Connectors with turned solder pins,  
straight .....**05.10**Connectors with turned solder pins, right angled  
(European footprint 2.54 mm) .....**05.16**

Connectors with solder buckets .....

**05.28**

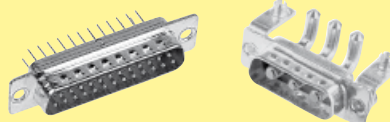
Panel cut outs / panel mountings .....

**05.32****Customized solutions**

General information .....

**05.33**

HARTING customer request form .....

**05.36**

## Interference – Yesterdays problem!

In a fast developing technological environment the management of electromagnetic interference is becoming more challenging.

Therefore HARTING developed a range of filter solutions to help designers of electronic equipments to achieve the demanding goal of electromagnetic compatibility.

HARTING offers a wide range of solutions by the integration of a filter inside one of the most standard I/O ports on the market; the D-Sub.

From standard simple ferrite-filter solution to complex customized high performance filters, you will be able to find in the HARTING filter D-Sub range the adequate solution to protect your application from any introduction or radiation of noise through D-Sub port apertures.

## Advantages

Wide range:

- 9, 15, 25 and 37 contact versions
- Various terminations such as solder buckets, straight and right angled solder pins
- A large range of accessories
- High performance (C-filter) as well as simple, quick and cost effective solutions (ferrite-filter)

Compatible with standard wave and lead-free reflow soldering (C-filter)

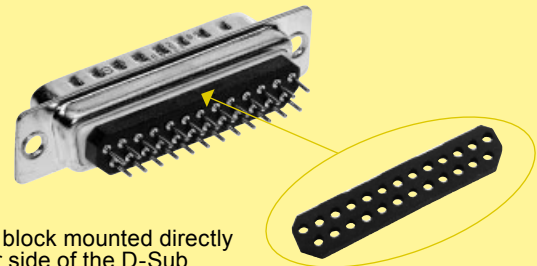
Same layout and shell dimensions as standard D-Sub connectors, no modification of PCB design necessary

Elimination of ringing, crosstalk phenomenon thanks to specific multilayer PCB used in C-filter design.

Flexible filter structure allowing a wide range of customization:

- Filter value (even pin by pin approach)
- Pi-filter
- Dielectric withstanding and working voltage
- Specific ESD / lightning protection

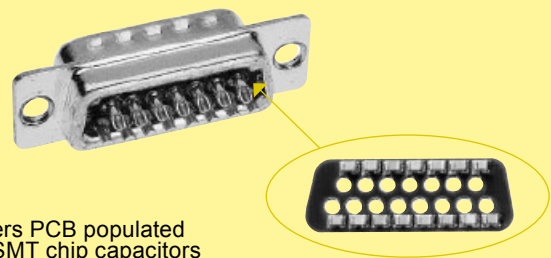
## HARTINGs broad Filter range



Ferrite block mounted directly on rear side of the D-Sub

### Ferrite-filter

Ferrite-filter D-Subs providing a low level of filtering thanks to simple blocks of inductive ferrite attached to the back end of the connectors. Providing a few dB attenuation only at high frequencies HARTING ferrite-filter D-Subs represent a cost effective solution in applications where the emission level is close to the limit.



4 layers PCB populated with SMT chip capacitors

### C-filter

To address higher EMI disturbances HARTING propose a comprehensive range of C-filter D-Sub connectors. HARTING C-filter D-Sub integrates a patented 4 layer printed circuit board equipped with chip capacitors. This patented solution provides complete protection of the I/O port due to the filtering performance of the capacitors and the screening effect of the PCB. Further more the 4 layers PCB also limits the ability of interference to enter the equipment through the D-Sub aperture. Available in 4 standard filter values 47, 470, 1000 and 3900 pF HARTING C-filter D-Subs represent for all designers a smart filtering solution allowing replacement of a "defective" port by a filtered one without any change of the PCB design.

### Filter adapter

To support engineers in the diagnosis of EMI disturbances HARTING has developed, in addition to its filter series a range of male/female filter D-Sub adapters.

These back-to-back adapters can be used as testing tools and replaced later on in production directly by a filtered D-Sub connector.

Number of contacts 9, 15, 25, 37

Working current 7.5 A max.

Working voltage 250 V AC max.

Dielectric withstanding voltage 500 V AC for 1 minute

Contact resistance  $\leq 15 \text{ m}\Omega$   
Insulation resistance  $\geq 1000 \text{ M}\Omega$

Temperature range  $-55^\circ\text{C} \dots +105^\circ\text{C}$

Terminations  
 a) Solder buckets AWG 20  
 b) Solder pins for P.C.B. holes  
 $\varnothing 1 \pm 0.05 \text{ mm}$   
 c) Solder pins, angled  $90^\circ$   
 for P.C.B. holes  
 $\varnothing 1 \pm 0.05 \text{ mm}$

Materials  
 Insulation PBT, flame retardant acc. to UL 94-V0

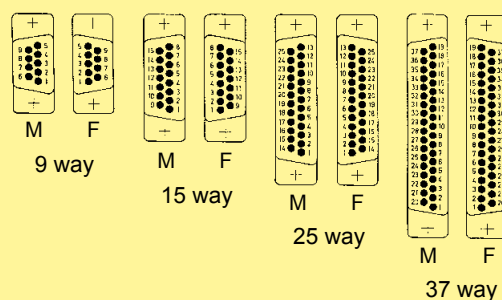
Contacts Copper alloy

Contact surface  
 Performance level Performance level 3,  
 as per IEC 60807-2,  
 IEC 60512-25-2

Metal shell Steel (tin-plated)

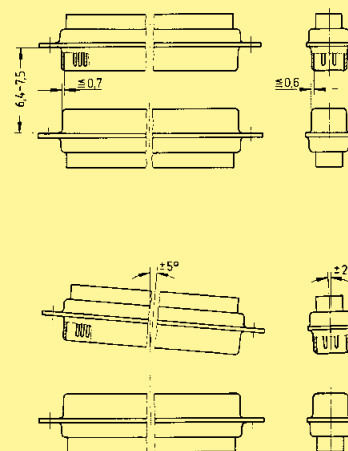
## Contact arrangement

View from termination side



M = Male connector  
 F = Female connector

## Mating conditions as per CECC 75 301

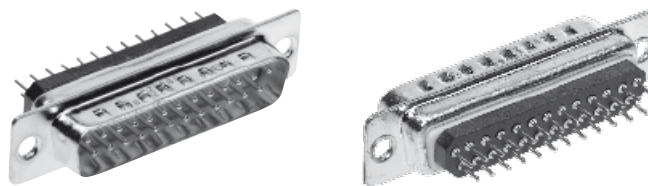


## Minimum insertion loss

| Frequency [MHz] | Attenuation [dB] |
|-----------------|------------------|
| 1               | 0.5              |
| 10              | 1.0              |
| 50              | 2.5              |
| 100             | 3.0              |
| 500             | 3.5              |
| 1000            | 4.0              |

Number of contacts

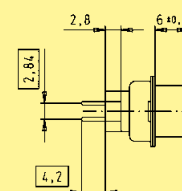
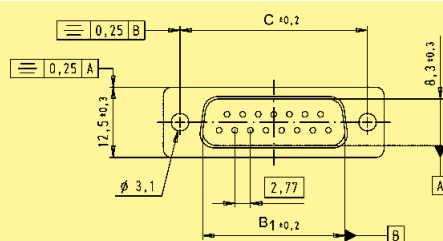
9–25



Solder pins, straight, through hole

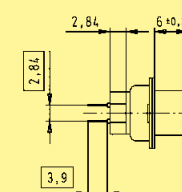
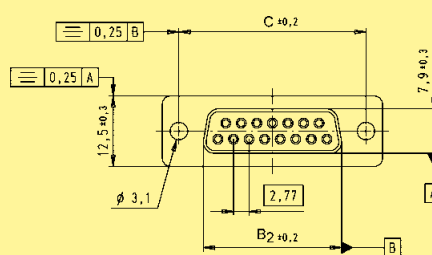
| Identification                 | No. of contacts | Part No.        |                   |
|--------------------------------|-----------------|-----------------|-------------------|
| Connectors with ferrite-filter |                 | male connectors | female connectors |
|                                | 9               | 09 64 122 7800  | 09 64 112 7800    |
|                                | 15              | 09 64 222 7800  | 09 64 212 7800    |
|                                | 25              | 09 64 322 7800  | 09 64 312 7800    |

## Male connector

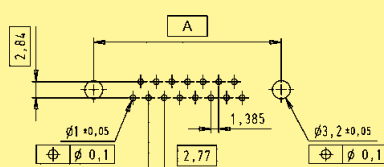


| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C    | D    |
|-----------------|------|----------------|----------------|------|------|
| 9               | 30.8 | 16.92          | 16.3           | 25.0 | 19.2 |
| 15              | 39.2 | 25.25          | 24.6           | 33.3 | 27.7 |
| 25              | 53.1 | 38.96          | 38.3           | 47.1 | 41.1 |

## Female connector



## Board drillings

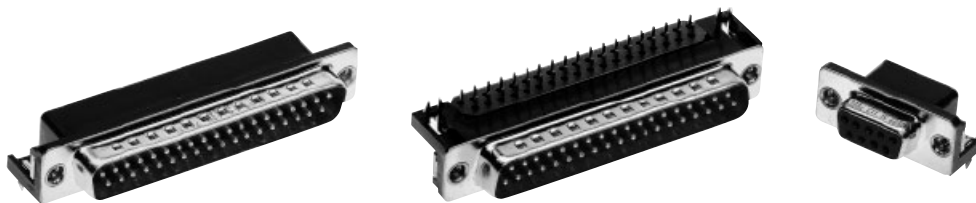


Dimensions in mm



Number of contacts

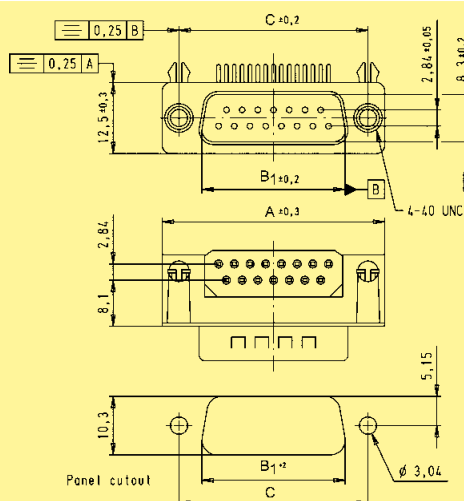
9–37



Solder pins, right angled, board lock and clinch nut

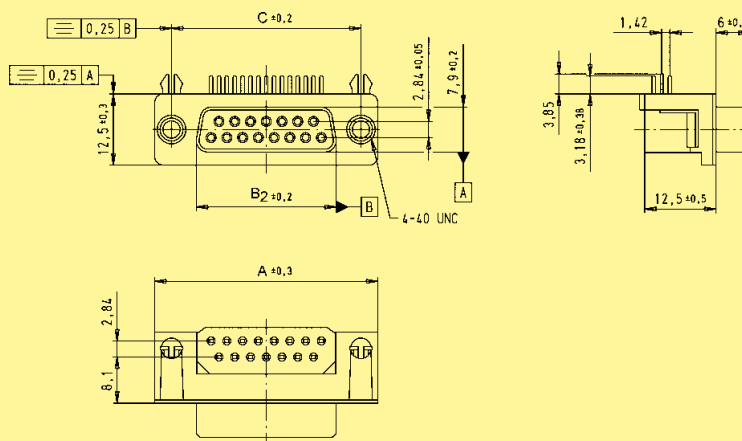
| Identification                 | No. of contacts | Part No.          |
|--------------------------------|-----------------|-------------------|
| Connectors with ferrite-filter |                 | male connectors   |
|                                |                 | female connectors |
|                                | 9               | 09 64 123 7802    |
|                                | 15              | 09 64 223 7802    |
|                                | 25              | 09 64 323 7802    |
|                                | 37              | 09 64 423 7802    |

## Male connector

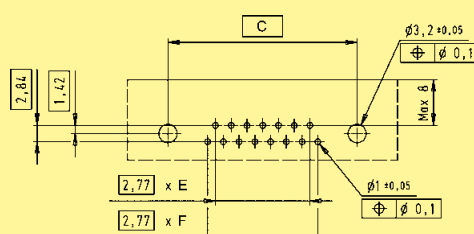


| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C    | E  | F  |
|-----------------|------|----------------|----------------|------|----|----|
| 9               | 30.8 | 16.92          | 16.3           | 25.0 | 3  | 4  |
| 15              | 39.2 | 25.25          | 24.6           | 33.3 | 6  | 7  |
| 25              | 53.1 | 38.96          | 38.3           | 47.1 | 11 | 12 |
| 37              | 69.4 | 55.42          | 54.8           | 63.5 | 17 | 18 |

## Female connector



## Board drillings



Dimensions in mm

Number of contacts

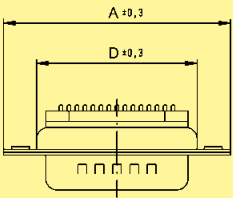
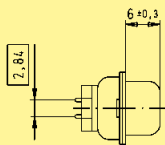
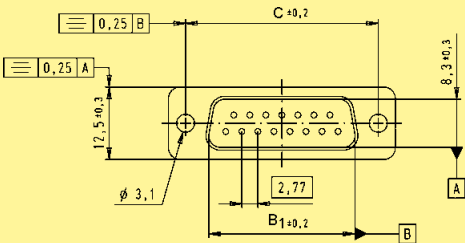
9–37



Solder buckets, through hole

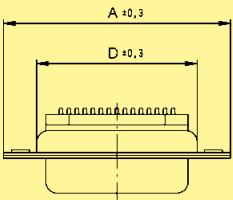
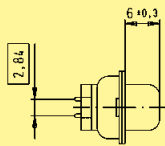
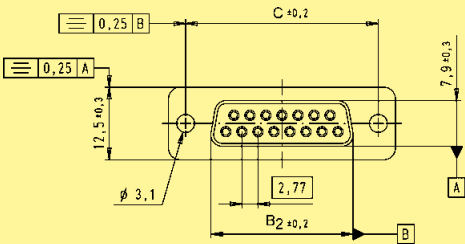
| Identification                 | No. of contacts | Part No.        |                   |
|--------------------------------|-----------------|-----------------|-------------------|
| Connectors with ferrite-filter |                 | male connectors | female connectors |
|                                | 9               | 09 64 121 7800  | 09 64 111 7800    |
|                                | 15              | 09 64 221 7800  | 09 64 211 7800    |
|                                | 25              | 09 64 321 7800  | 09 64 311 7800    |
|                                | 37              | 09 64 421 7800  | 09 64 411 7800    |

Male connector



| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C    | D    |
|-----------------|------|----------------|----------------|------|------|
| 9               | 30.8 | 16.92          | 16.3           | 25.0 | 19.2 |
| 15              | 39.2 | 25.25          | 24.6           | 33.3 | 27.7 |
| 25              | 53.1 | 38.96          | 38.3           | 47.1 | 41.1 |
| 37              | 69.4 | 55.42          | 54.8           | 63.5 | 57.3 |

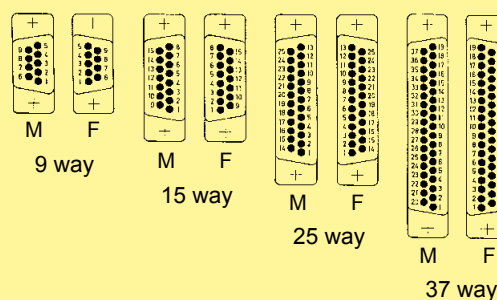
Female connector



|                                             |                                                                                                                                                                      |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of contacts                          | 9, 15, 25, 37                                                                                                                                                        |
| Working current                             | 7.5 A max. (connectors)<br>6.5 A max. (filter adapters)                                                                                                              |
| Working voltage                             | 100 V max. for standard capacitance values – higher working voltages are available as specific.                                                                      |
| Dielectric withstanding voltage             | 250 V DC max. – higher dielectric withstanding voltages are available as specific (see page 05.34)                                                                   |
| Contact resistance<br>Insulation resistance | ≤ 10 mΩ<br>≥ 1000 MΩ                                                                                                                                                 |
| Temperature range                           | -55 °C ... + 125 °C (connectors)<br>Heat deflection temperature limit according to DIN 53 461: + 255 °C<br><br>-20 °C ... + 125 °C (filter adapters)                 |
| Terminations                                | a) Solder buckets max. 0.8 mm <sup>2</sup><br>b) Solder pins Ø 0.6 mm for P.C.B. holes Ø 0.8/1 mm<br>c) Solder pins, angled 90° Ø 0.6 mm for P.C.B. holes Ø 0.8/1 mm |
| Materials                                   |                                                                                                                                                                      |
| Insulation                                  | PCT, glass-fibre filled, flame retardant acc. to UL 94-V0<br>Colour: natural                                                                                         |
| Contacts                                    | Copper alloy<br>Male and female contacts are turned                                                                                                                  |
| Contact surface<br>Contact zone             | Selectively plated according to performance level                                                                                                                    |
| Performance level                           | Performance level 2, as per CECC 75 301-802, 250 mating cycles, 4 days 4 mixed gas test – IEC 60 512                                                                 |
| Metal shell                                 | Steel                                                                                                                                                                |

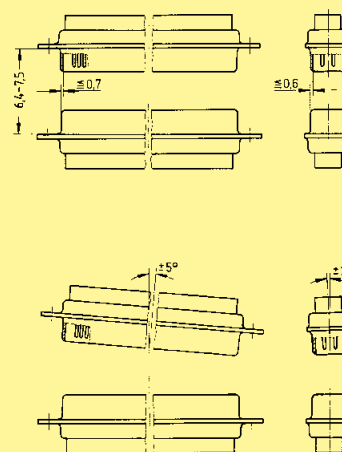
## Contact arrangement

View from termination side



M = Male connector  
F = Female connector

## Mating conditions as per CECC 75 301



## Attenuation characteristics for standard capacitance values

## Min. insertion loss

| Capacitance [pF] <sup>1)</sup> | Attenuation (in dB) vs. frequency [MHz] |   |    |    |     |     |      |
|--------------------------------|-----------------------------------------|---|----|----|-----|-----|------|
|                                | 1                                       | 5 | 10 | 50 | 100 | 500 | 1000 |
| 47                             |                                         |   |    |    |     | 30  | 35   |
| 470                            |                                         |   | 1  | 11 | 16  | 35  | 32   |
| 1000                           |                                         | 1 | 3  | 12 | 24  | 38  | 30   |
| 3900                           | 1                                       | 6 | 11 | 25 | 35  | 38  | 32   |

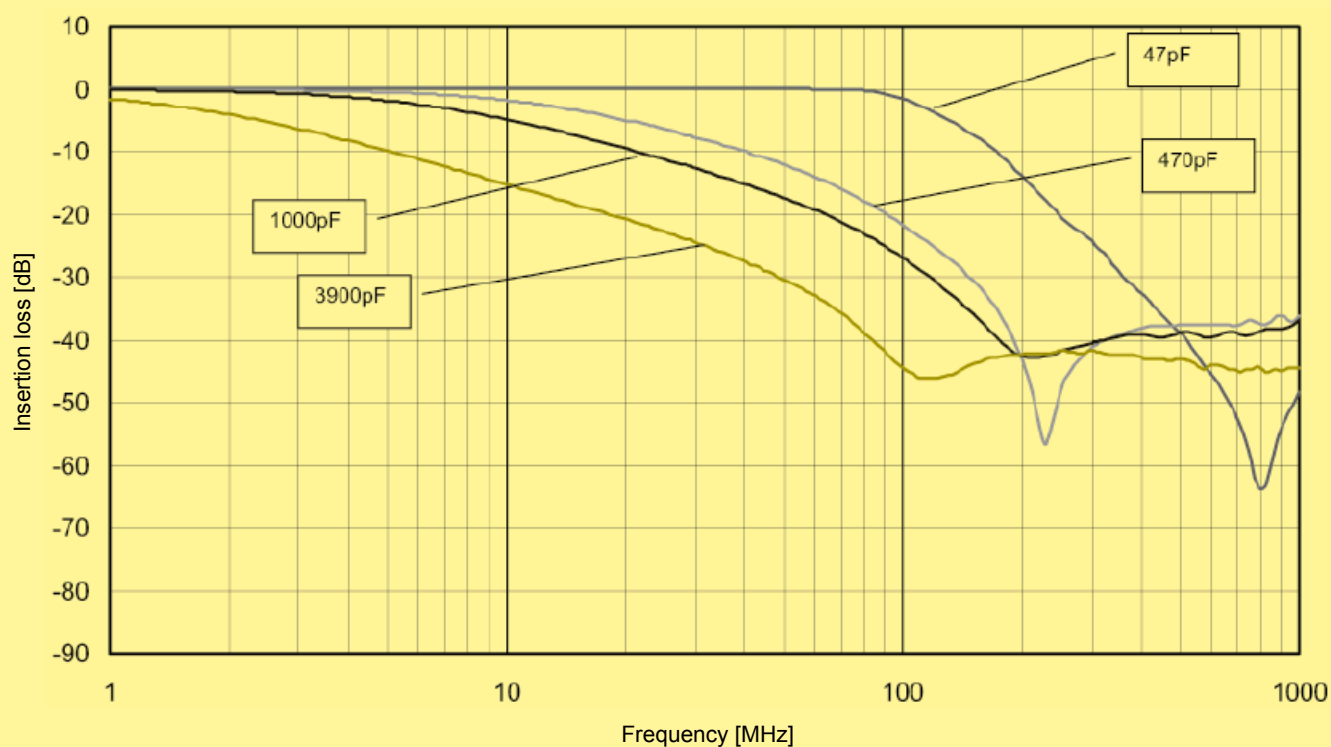
<sup>1)</sup> Capacitance tolerance =  $\pm 20\%$  (For other capacitor values see pages 05.34 ff).

Measured in 50  $\Omega$  system according to MIL-STD-220, no load.

Working voltage: 100 V max. for standard capacitance values – higher working voltages are available as specific.

Dielectric withstanding voltage: 250 V DC max. – higher dielectric withstanding voltages are available as specific (see page 05.34)

## Typical insertion loss for different filters (measured)



Number of contacts

9–37

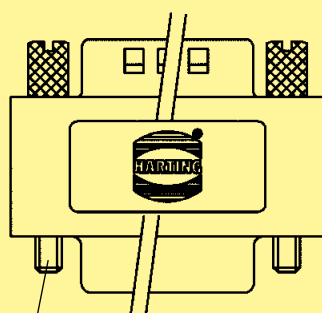
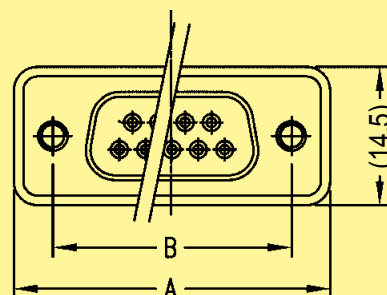


## Filter adapters

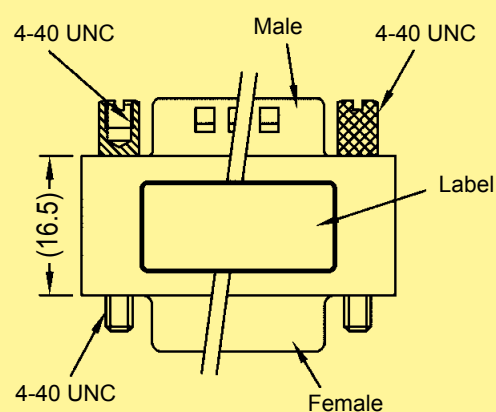
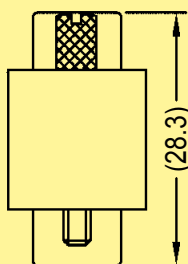
| Identification                              | No. of contacts | Part No.         |
|---------------------------------------------|-----------------|------------------|
| Male / female filter adapters with C-filter | 9               | 09 64 100 72 ... |
|                                             | 15              | 09 64 200 72 ... |
|                                             | 25              | 09 64 300 72 ... |
|                                             | 37              | 09 64 400 72 ... |
|                                             |                 |                  |
| Please insert digit for capacitance         |                 |                  |
|                                             | 47 pF ▶ 10      |                  |
|                                             | 470 pF ▶ 20     |                  |
|                                             | 1000 pF ▶ 30    |                  |
|                                             | 3900 pF ▶ 40    |                  |

## Dimensions

|    | A    | B     |
|----|------|-------|
| 9  | 32.8 | 24.99 |
| 15 | 41.1 | 33.32 |
| 25 | 55.0 | 47.04 |
| 37 | 71.3 | 63.50 |



Screws are not pre-mounted to allow mounting from any ends



Number of contacts

9–37



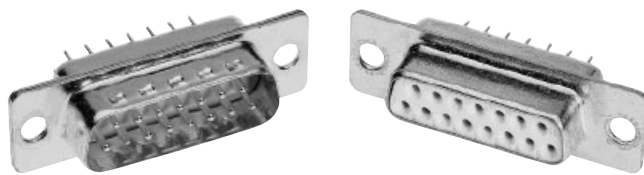
Turned solder pins, straight, through hole

| Identification                             | No. of contacts | Part No.        |                   |
|--------------------------------------------|-----------------|-----------------|-------------------|
|                                            |                 | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   |                 |                 |                   |
|                                            | 9               | 09 64 122 7210  | 09 64 112 7210    |
|                                            | 15              | 09 64 222 7210  | 09 64 212 7210    |
|                                            | 25              | 09 64 322 7210  | 09 64 312 7210    |
|                                            | 37              | 09 64 422 7210  | 09 64 412 7210    |
| Connectors with<br><b>470 pF</b> C-filter  |                 |                 |                   |
|                                            | 9               | 09 64 122 7220  | 09 64 112 7220    |
|                                            | 15              | 09 64 222 7220  | 09 64 212 7220    |
|                                            | 25              | 09 64 322 7220  | 09 64 312 7220    |
|                                            | 37              | 09 64 422 7220  | 09 64 412 7220    |
| Connectors with<br><b>1000 pF</b> C-filter |                 |                 |                   |
|                                            | 9               | 09 64 122 7230  | 09 64 112 7230    |
|                                            | 15              | 09 64 222 7230  | 09 64 212 7230    |
|                                            | 25              | 09 64 322 7230  | 09 64 312 7230    |
|                                            | 37              | 09 64 422 7230  | 09 64 412 7230    |
| Connectors with<br><b>3900 pF</b> C-filter |                 |                 |                   |
|                                            | 9               | 09 64 122 7240  | 09 64 112 7240    |
|                                            | 15              | 09 64 222 7240  | 09 64 212 7240    |
|                                            | 25              | 09 64 322 7240  | 09 64 312 7240    |
|                                            | 37              | 09 64 422 7240  | 09 64 412 7240    |

# D-Sub

Number of contacts

## 9-37



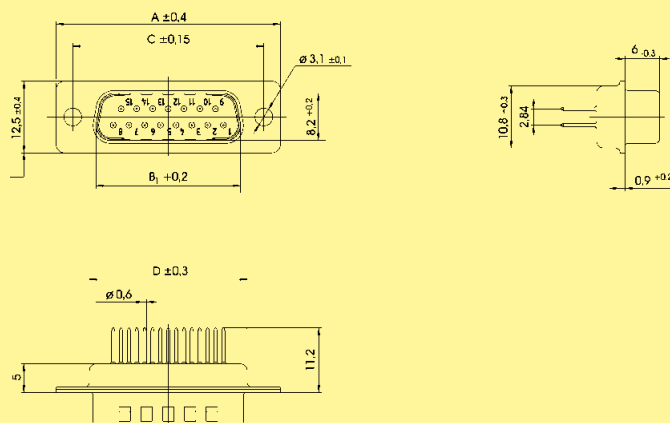
Turned solder pins, straight, through hole

Identification

Drawing

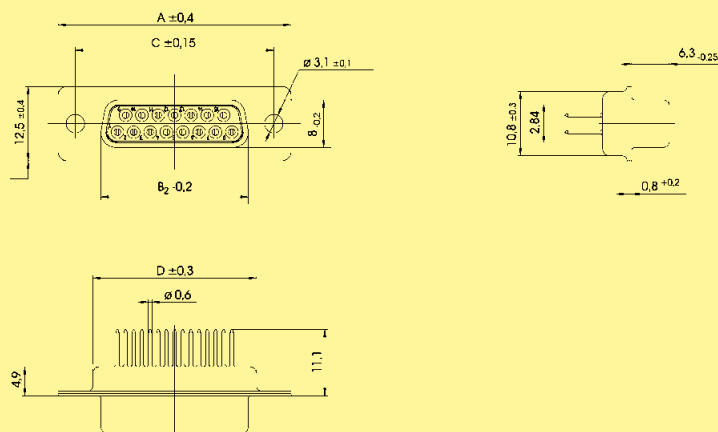
Dimensions in mm

Male connector

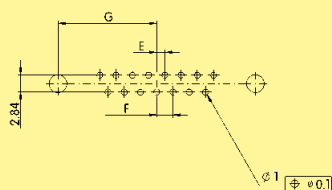


| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | D    | E    | F    | G     |
|-----------------|------|----------------|----------------|-------|------|------|------|-------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 19.3 | 1.37 | 2.74 | 12.50 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 27.5 | 1.37 | 2.74 | 16.65 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 41.3 | 1.40 | 2.77 | 23.52 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 57.7 | 1.40 | 2.77 | 31.75 |

Female connector



Board drillings



Number of contacts

9–37



Turned solder pins, straight, clinch nut

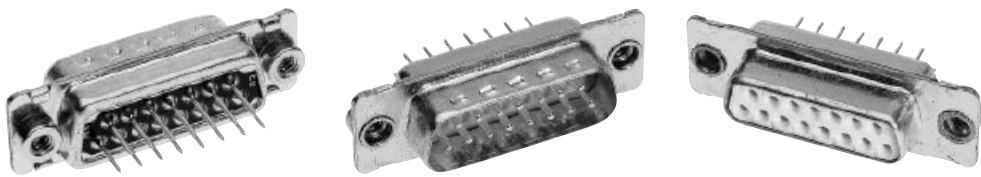
| Identification                             | No. of contacts        | Part No.        |                   |
|--------------------------------------------|------------------------|-----------------|-------------------|
|                                            |                        | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   |                        |                 |                   |
|                                            | 9                      | 09 64 122 721 . | 09 64 112 721 .   |
|                                            | 15                     | 09 64 222 721 . | 09 64 212 721 .   |
|                                            | 25                     | 09 64 322 721 . | 09 64 312 721 .   |
|                                            | 37                     | 09 64 422 721 . | 09 64 412 721 .   |
| Connectors with<br><b>470 pF</b> C-filter  |                        |                 |                   |
|                                            | 9                      | 09 64 122 722 . | 09 64 112 722 .   |
|                                            | 15                     | 09 64 222 722 . | 09 64 212 722 .   |
|                                            | 25                     | 09 64 322 722 . | 09 64 312 722 .   |
|                                            | 37                     | 09 64 422 722 . | 09 64 412 722 .   |
| Connectors with<br><b>1000 pF</b> C-filter |                        |                 |                   |
|                                            | 9                      | 09 64 122 723 . | 09 64 112 723 .   |
|                                            | 15                     | 09 64 222 723 . | 09 64 212 723 .   |
|                                            | 25                     | 09 64 322 723 . | 09 64 312 723 .   |
|                                            | 37                     | 09 64 422 723 . | 09 64 412 723 .   |
| Connectors with<br><b>3900 pF</b> C-filter |                        |                 |                   |
|                                            | 9                      | 09 64 122 724 . | 09 64 112 724 .   |
|                                            | 15                     | 09 64 222 724 . | 09 64 212 724 .   |
|                                            | 25                     | 09 64 322 724 . | 09 64 312 724 .   |
|                                            | 37                     | 09 64 422 724 . | 09 64 412 724 .   |
| Please insert digit<br>for flange thread   |                        |                 |                   |
|                                            | 4-40 UNC ▶ 7<br>M3 ▶ 8 |                 |                   |



# D-Sub

Number of contacts

## 9-37



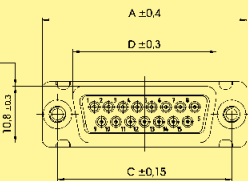
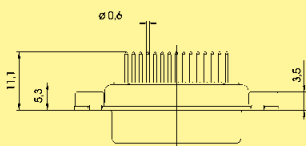
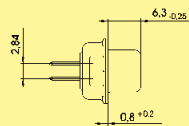
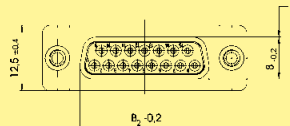
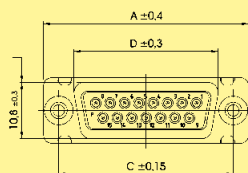
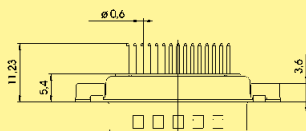
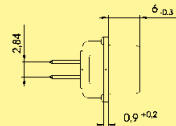
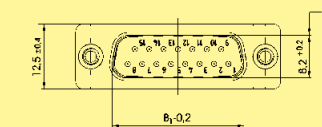
Turned solder pins, straight, clinch nut

Identification

Drawing

Dimensions in mm

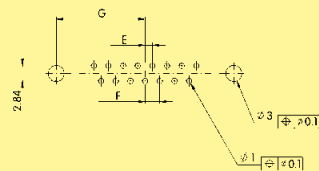
Male connector



| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | D    | E    | F    | G     |
|-----------------|------|----------------|----------------|-------|------|------|------|-------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 19.3 | 1.37 | 2.74 | 12.50 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 27.5 | 1.37 | 2.74 | 16.65 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 41.3 | 1.40 | 2.77 | 23.52 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 57.7 | 1.40 | 2.77 | 31.75 |

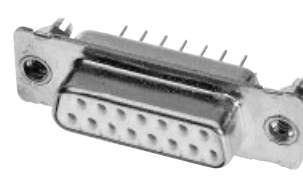
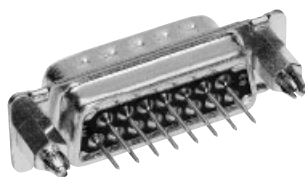
Female connector

Board drillings



Number of contacts

9–37



Turned solder pins, straight, straight board clips

| Identification                             | No. of contacts        | Part No.        |                   |
|--------------------------------------------|------------------------|-----------------|-------------------|
|                                            |                        | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   |                        |                 |                   |
|                                            | 9                      | 09 64 122 721 . | 09 64 112 721 .   |
|                                            | 15                     | 09 64 222 721 . | 09 64 212 721 .   |
|                                            | 25                     | 09 64 322 721 . | 09 64 312 721 .   |
|                                            | 37                     | 09 64 422 721 . | 09 64 412 721 .   |
| Connectors with<br><b>470 pF</b> C-filter  |                        |                 |                   |
|                                            | 9                      | 09 64 122 722 . | 09 64 112 722 .   |
|                                            | 15                     | 09 64 222 722 . | 09 64 212 722 .   |
|                                            | 25                     | 09 64 322 722 . | 09 64 312 722 .   |
|                                            | 37                     | 09 64 422 722 . | 09 64 412 722 .   |
| Connectors with<br><b>1000 pF</b> C-filter |                        |                 |                   |
|                                            | 9                      | 09 64 122 723 . | 09 64 112 723 .   |
|                                            | 15                     | 09 64 222 723 . | 09 64 212 723 .   |
|                                            | 25                     | 09 64 322 723 . | 09 64 312 723 .   |
|                                            | 37                     | 09 64 422 723 . | 09 64 412 723 .   |
| Connectors with<br><b>3900 pF</b> C-filter |                        |                 |                   |
|                                            | 9                      | 09 64 122 724 . | 09 64 112 724 .   |
|                                            | 15                     | 09 64 222 724 . | 09 64 212 724 .   |
|                                            | 25                     | 09 64 322 724 . | 09 64 312 724 .   |
|                                            | 37                     | 09 64 422 724 . | 09 64 412 724 .   |
| Please insert digit<br>for flange thread   |                        |                 |                   |
|                                            | 4-40 UNC ▶ 5<br>M3 ▶ 6 |                 |                   |

# D-Sub

Number of contacts

# 9-37



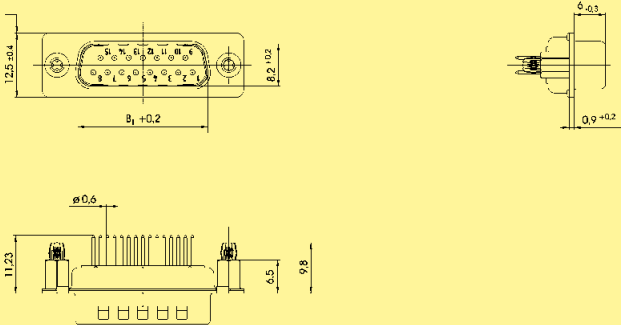
Turned solder pins, straight, straight board clips

Identification

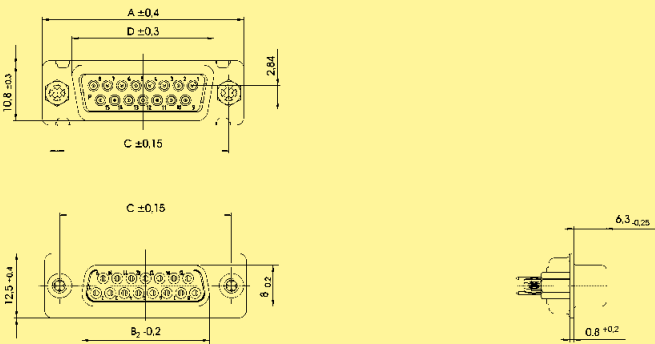
Drawing

Dimensions in mm

Male connector

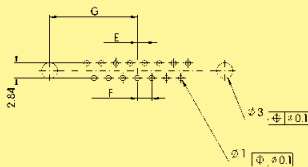


Female connector



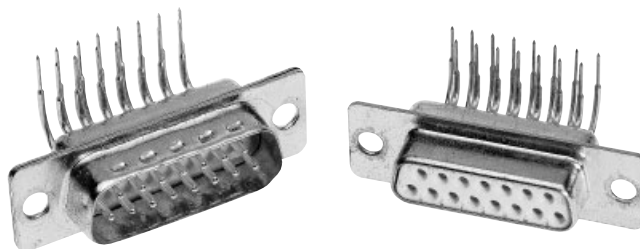
| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | D    | E    | F    | G     |
|-----------------|------|----------------|----------------|-------|------|------|------|-------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 19.3 | 1.37 | 2.74 | 12.50 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 27.5 | 1.37 | 2.74 | 16.65 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 41.3 | 1.40 | 2.77 | 23.52 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 57.7 | 1.40 | 2.77 | 31.75 |

Board drillings



Number of contacts

9–37



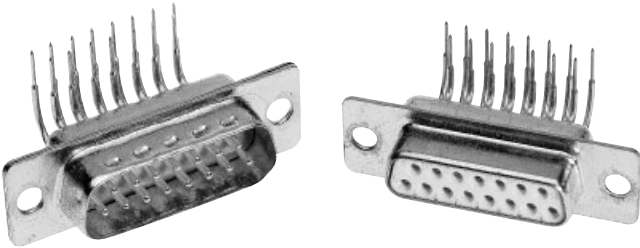
Turned solder pins, right angled, through hole

| Identification                             | No. of contacts | Part No.        |                   |
|--------------------------------------------|-----------------|-----------------|-------------------|
|                                            |                 | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   |                 |                 |                   |
|                                            | 9               | 09 64 124 7210  | 09 64 114 7210    |
|                                            | 15              | 09 64 224 7210  | 09 64 214 7210    |
|                                            | 25              | 09 64 324 7210  | 09 64 314 7210    |
|                                            | 37              | 09 64 424 7210  | 09 64 414 7210    |
| Connectors with<br><b>470 pF</b> C-filter  |                 |                 |                   |
|                                            | 9               | 09 64 124 7220  | 09 64 114 7220    |
|                                            | 15              | 09 64 224 7220  | 09 64 214 7220    |
|                                            | 25              | 09 64 324 7220  | 09 64 314 7220    |
|                                            | 37              | 09 64 424 7220  | 09 64 414 7220    |
| Connectors with<br><b>1000 pF</b> C-filter |                 |                 |                   |
|                                            | 9               | 09 64 124 7230  | 09 64 114 7230    |
|                                            | 15              | 09 64 224 7230  | 09 64 214 7230    |
|                                            | 25              | 09 64 324 7230  | 09 64 314 7230    |
|                                            | 37              | 09 64 424 7230  | 09 64 414 7230    |
| Connectors with<br><b>3900 pF</b> C-filter |                 |                 |                   |
|                                            | 9               | 09 64 124 7240  | 09 64 114 7240    |
|                                            | 15              | 09 64 224 7240  | 09 64 214 7240    |
|                                            | 25              | 09 64 324 7240  | 09 64 314 7240    |
|                                            | 37              | 09 64 424 7240  | 09 64 414 7240    |

# D-Sub

Number of contacts

# 9-37



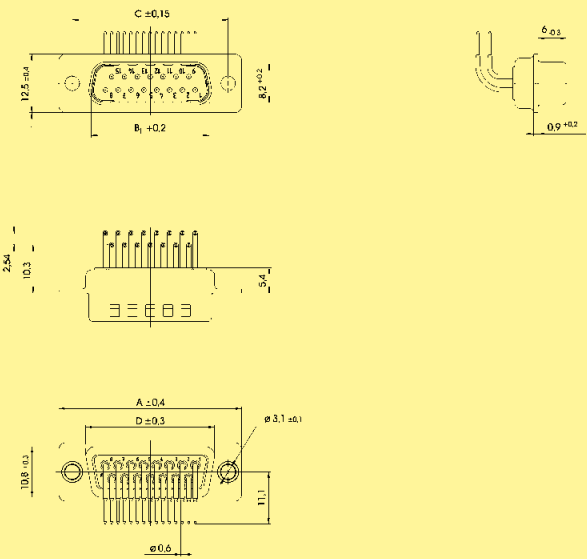
Turned solder pins, right angled, through hole

Identification

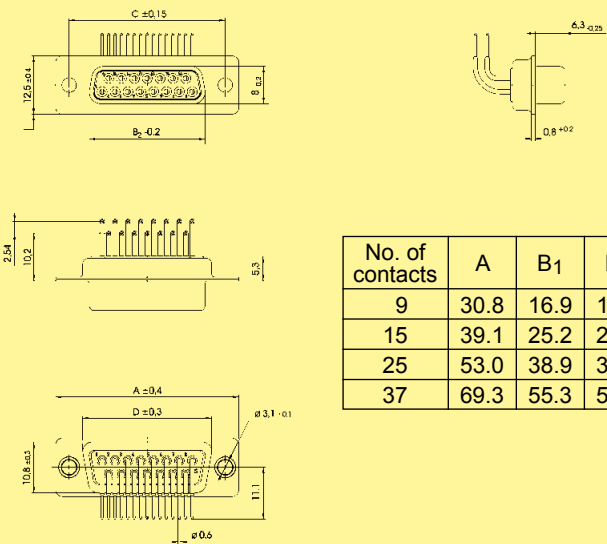
Drawing

Dimensions in mm

Male connector

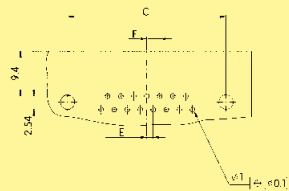


Female connector



| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | D    | E    | F    |
|-----------------|------|----------------|----------------|-------|------|------|------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 19.3 | 1.37 | 2.74 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 27.5 | 1.37 | 2.74 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 41.3 | 1.40 | 2.77 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 57.7 | 1.40 | 2.77 |

Board drillings



Number of contacts

9–37



Turned solder pins, right angled, bracket, board lock and through hole

| Identification                             | No. of contacts | Part No.        |                   |
|--------------------------------------------|-----------------|-----------------|-------------------|
|                                            |                 | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   |                 |                 |                   |
|                                            | 9               | 09 64 124 7211  | 09 64 114 7211    |
|                                            | 15              | 09 64 224 7211  | 09 64 214 7211    |
|                                            | 25              | 09 64 324 7211  | 09 64 314 7211    |
|                                            | 37              | 09 64 424 7211  | 09 64 414 7211    |
| Connectors with<br><b>470 pF</b> C-filter  |                 |                 |                   |
|                                            | 9               | 09 64 124 7221  | 09 64 114 7221    |
|                                            | 15              | 09 64 224 7221  | 09 64 214 7221    |
|                                            | 25              | 09 64 324 7221  | 09 64 314 7221    |
|                                            | 37              | 09 64 424 7221  | 09 64 414 7221    |
| Connectors with<br><b>1000 pF</b> C-filter |                 |                 |                   |
|                                            | 9               | 09 64 124 7231  | 09 64 114 7231    |
|                                            | 15              | 09 64 224 7231  | 09 64 214 7231    |
|                                            | 25              | 09 64 324 7231  | 09 64 314 7231    |
|                                            | 37              | 09 64 424 7231  | 09 64 414 7231    |
| Connectors with<br><b>3900 pF</b> C-filter |                 |                 |                   |
|                                            | 9               | 09 64 124 7241  | 09 64 114 7241    |
|                                            | 15              | 09 64 224 7241  | 09 64 214 7241    |
|                                            | 25              | 09 64 324 7241  | 09 64 314 7241    |
|                                            | 37              | 09 64 424 7241  | 09 64 414 7241    |

Number of contacts

9–37



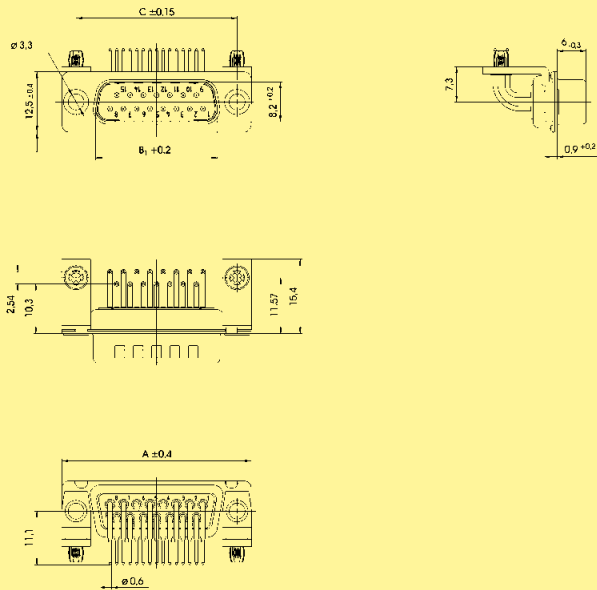
Turned solder pins, right angled, bracket, board lock and through hole

Identification

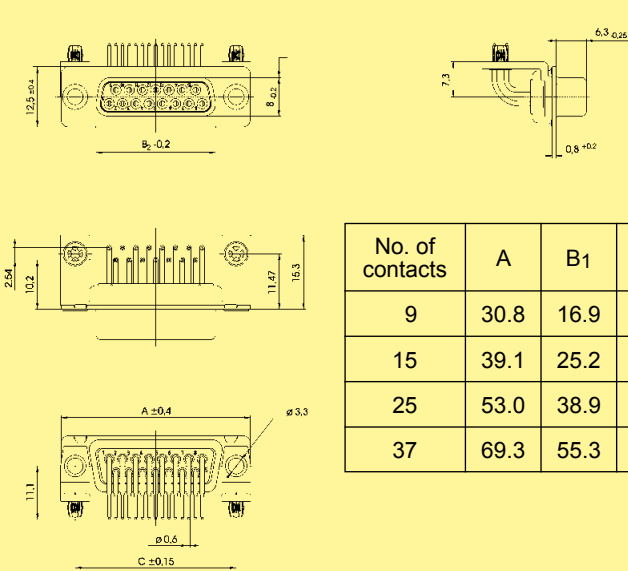
Drawing

Dimensions in mm

Male connector

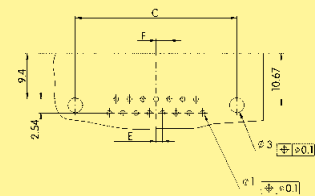


Female connector



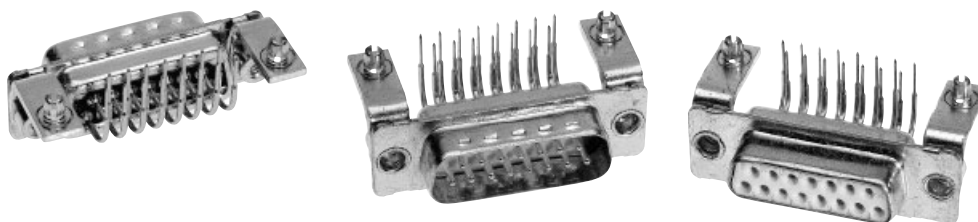
| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | E    | F    |
|-----------------|------|----------------|----------------|-------|------|------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 1.37 | 2.74 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 1.37 | 2.74 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 1.40 | 2.77 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 1.40 | 2.77 |

Board drillings



Number of contacts

9–37



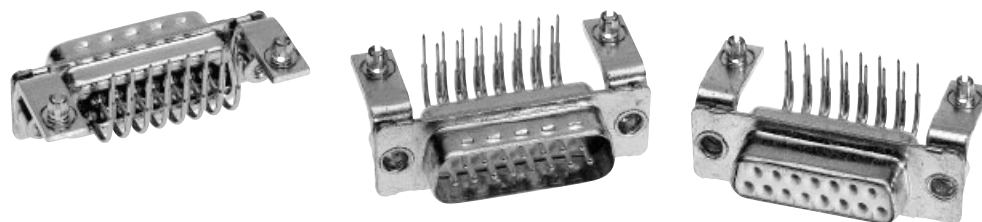
Turned solder pins, right angled, bracket, board lock and clinch nut

| Identification                             | No. of contacts | Part No.        |                   |
|--------------------------------------------|-----------------|-----------------|-------------------|
|                                            |                 | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   | 9               | 09 64 124 721 . | 09 64 114 721 .   |
|                                            | 15              | 09 64 224 721 . | 09 64 214 721 .   |
|                                            | 25              | 09 64 324 721 . | 09 64 314 721 .   |
|                                            | 37              | 09 64 424 721 . | 09 64 414 721 .   |
|                                            |                 |                 |                   |
| Connectors with<br><b>470 pF</b> C-filter  | 9               | 09 64 124 722 . | 09 64 114 722 .   |
|                                            | 15              | 09 64 224 722 . | 09 64 214 722 .   |
|                                            | 25              | 09 64 324 722 . | 09 64 314 722 .   |
|                                            | 37              | 09 64 424 722 . | 09 64 414 722 .   |
|                                            |                 |                 |                   |
| Connectors with<br><b>1000 pF</b> C-filter | 9               | 09 64 124 723 . | 09 64 114 723 .   |
|                                            | 15              | 09 64 224 723 . | 09 64 214 723 .   |
|                                            | 25              | 09 64 324 723 . | 09 64 314 723 .   |
|                                            | 37              | 09 64 424 723 . | 09 64 414 723 .   |
|                                            |                 |                 |                   |
| Connectors with<br><b>3900 pF</b> C-filter | 9               | 09 64 124 724 . | 09 64 114 724 .   |
|                                            | 15              | 09 64 224 724 . | 09 64 214 724 .   |
|                                            | 25              | 09 64 324 724 . | 09 64 314 724 .   |
|                                            | 37              | 09 64 424 724 . | 09 64 414 724 .   |
|                                            |                 |                 |                   |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 2    |                 |                   |
|                                            | M3 ▶ 3          |                 |                   |
|                                            |                 |                 |                   |



Number of contacts

## 9–37



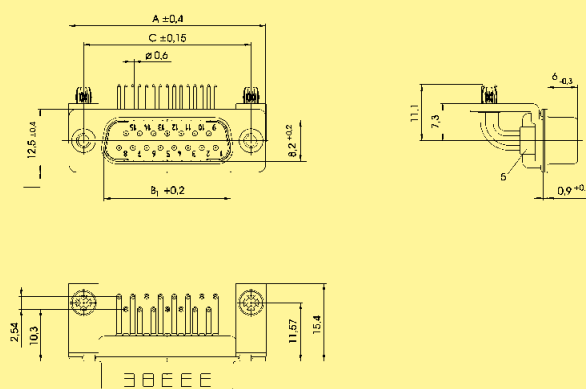
Turned solder pins, right angled, bracket, board lock and clinch nut

Identification

Drawing

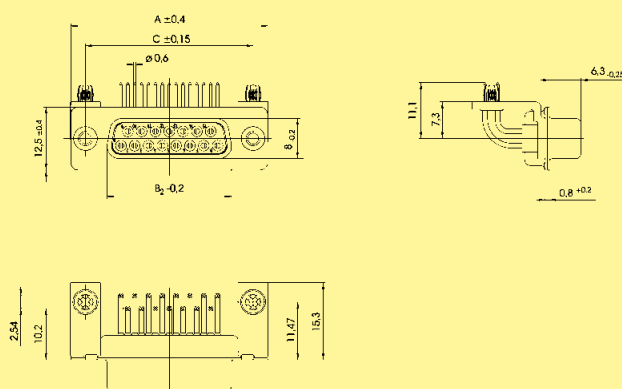
Dimensions in mm

Male connector

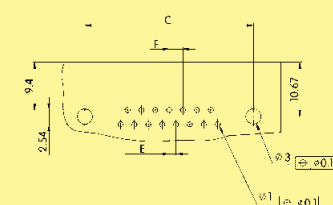


| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | E    | F    |
|-----------------|------|----------------|----------------|-------|------|------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 1.37 | 2.74 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 1.37 | 2.74 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 1.40 | 2.77 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 1.40 | 2.77 |

Female connector



Board drillings

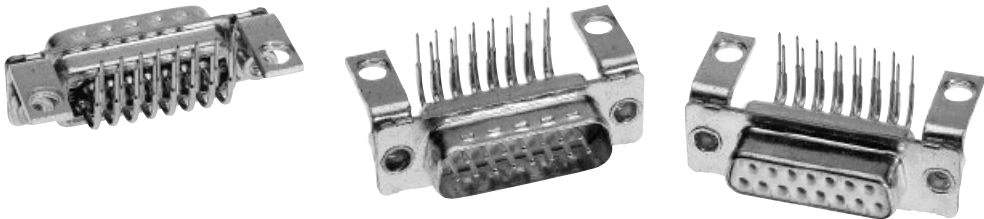


D-Sub



Number of contacts

9–37



Turned solder pins, right angled, bracket and clinch nut

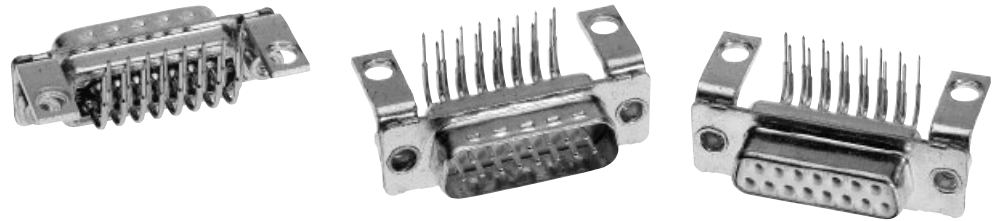
D-Sub - F

| Identification                        | No. of contacts | Part No.        |                   |
|---------------------------------------|-----------------|-----------------|-------------------|
|                                       |                 | male connectors | female connectors |
| Connectors with 47 pF C-filter        | 9               | 09 64 124 721 . | 09 64 114 721 .   |
|                                       | 15              | 09 64 224 721 . | 09 64 214 721 .   |
|                                       | 25              | 09 64 324 721 . | 09 64 314 721 .   |
|                                       | 37              | 09 64 424 721 . | 09 64 414 721 .   |
|                                       |                 |                 |                   |
| Connectors with 470 pF C-filter       | 9               | 09 64 124 722 . | 09 64 114 722 .   |
|                                       | 15              | 09 64 224 722 . | 09 64 214 722 .   |
|                                       | 25              | 09 64 324 722 . | 09 64 314 722 .   |
|                                       | 37              | 09 64 424 722 . | 09 64 414 722 .   |
|                                       |                 |                 |                   |
| Connectors with 1000 pF C-filter      | 9               | 09 64 124 723 . | 09 64 114 723 .   |
|                                       | 15              | 09 64 224 723 . | 09 64 214 723 .   |
|                                       | 25              | 09 64 324 723 . | 09 64 314 723 .   |
|                                       | 37              | 09 64 424 723 . | 09 64 414 723 .   |
|                                       |                 |                 |                   |
| Connectors with 3900 pF C-filter      | 9               | 09 64 124 724 . | 09 64 114 724 .   |
|                                       | 15              | 09 64 224 724 . | 09 64 214 724 .   |
|                                       | 25              | 09 64 324 724 . | 09 64 314 724 .   |
|                                       | 37              | 09 64 424 724 . | 09 64 414 724 .   |
|                                       |                 |                 |                   |
| Please insert digit for flange thread | 4-40 UNC ▶ 6    |                 |                   |
|                                       | M3 ▶ 7          |                 |                   |

# D-Sub

Number of contacts

## 9–37



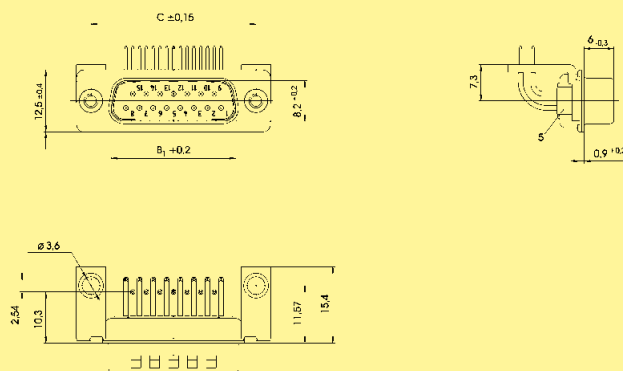
Turned solder pins, right angled, bracket and clinch nut

Identification

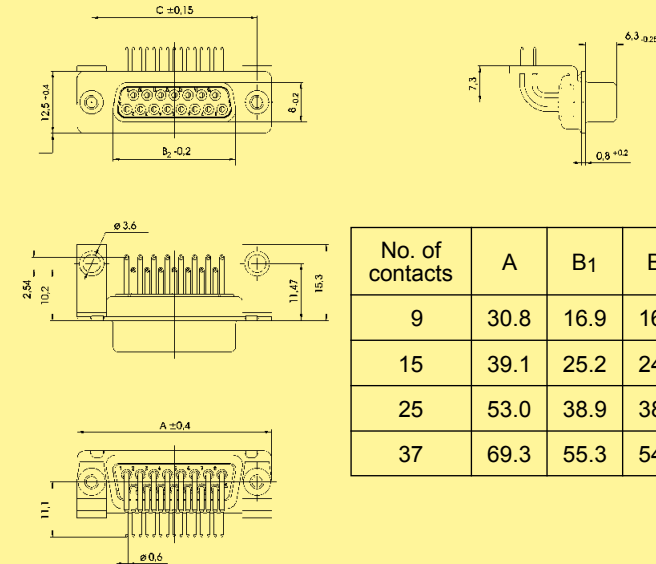
Drawing

Dimensions in mm

Male connector

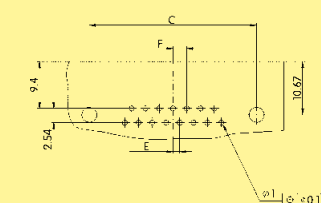


Female connector



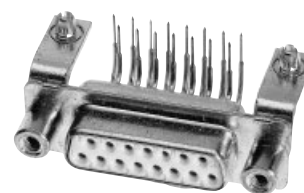
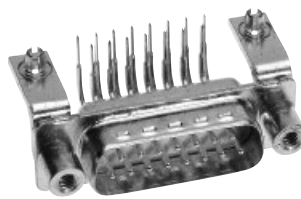
| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | E    | F    |
|-----------------|------|----------------|----------------|-------|------|------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 1.37 | 2.74 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 1.37 | 2.74 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 1.40 | 2.77 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 1.40 | 2.77 |

Board drillings



Number of contacts

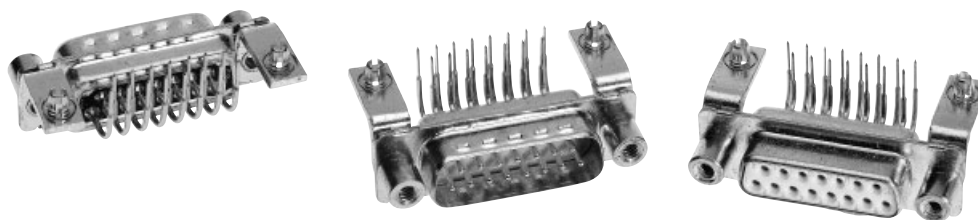
9–37



Turned solder pins, right angled, bracket, board lock and female screw

| Identification                             | No. of contacts | Part No.        |                   |
|--------------------------------------------|-----------------|-----------------|-------------------|
|                                            |                 | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   | 9               | 09 64 124 721 . | 09 64 114 721 .   |
|                                            | 15              | 09 64 224 721 . | 09 64 214 721 .   |
|                                            | 25              | 09 64 324 721 . | 09 64 314 721 .   |
|                                            | 37              | 09 64 424 721 . | 09 64 414 721 .   |
|                                            |                 |                 |                   |
| Connectors with<br><b>470 pF</b> C-filter  | 9               | 09 64 124 722 . | 09 64 114 722 .   |
|                                            | 15              | 09 64 224 722 . | 09 64 214 722 .   |
|                                            | 25              | 09 64 324 722 . | 09 64 314 722 .   |
|                                            | 37              | 09 64 424 722 . | 09 64 414 722 .   |
|                                            |                 |                 |                   |
| Connectors with<br><b>1000 pF</b> C-filter | 9               | 09 64 124 723 . | 09 64 114 723 .   |
|                                            | 15              | 09 64 224 723 . | 09 64 214 723 .   |
|                                            | 25              | 09 64 324 723 . | 09 64 314 723 .   |
|                                            | 37              | 09 64 424 723 . | 09 64 414 723 .   |
|                                            |                 |                 |                   |
| Connectors with<br><b>3900 pF</b> C-filter | 9               | 09 64 124 724 . | 09 64 114 724 .   |
|                                            | 15              | 09 64 224 724 . | 09 64 214 724 .   |
|                                            | 25              | 09 64 324 724 . | 09 64 314 724 .   |
|                                            | 37              | 09 64 424 724 . | 09 64 414 724 .   |
|                                            |                 |                 |                   |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 4    |                 |                   |
|                                            | M3 ▶ 5          |                 |                   |

9-37



Turned solder pins, right angled, bracket, board lock and female screw

Dimensions in mm

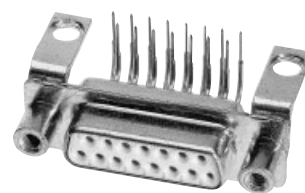
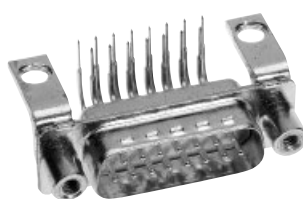
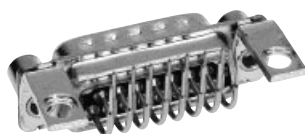
| No. of contacts | A    | B1   |
|-----------------|------|------|
| 9               | 30.8 | 16.9 |
| 15              | 39.1 | 25.2 |
| 25              | 53.0 | 38.9 |

| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | E    | F    |
|-----------------|------|----------------|----------------|-------|------|------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 1.37 | 2.74 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 1.37 | 2.74 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 1.40 | 2.77 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 1.40 | 2.77 |

[illegible][illegible]

Number of contacts

9–37

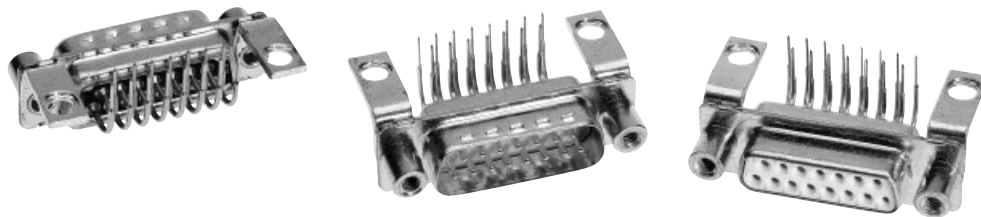


Turned solder pins, right angled, bracket and female screw

| Identification                             | No. of contacts        | Part No.        |                   |
|--------------------------------------------|------------------------|-----------------|-------------------|
|                                            |                        | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   |                        |                 |                   |
|                                            | 9                      | 09 64 124 721 . | 09 64 114 721 .   |
|                                            | 15                     | 09 64 224 721 . | 09 64 214 721 .   |
|                                            | 25                     | 09 64 324 721 . | 09 64 314 721 .   |
|                                            | 37                     | 09 64 424 721 . | 09 64 414 721 .   |
| Connectors with<br><b>470 pF</b> C-filter  |                        |                 |                   |
|                                            | 9                      | 09 64 124 722 . | 09 64 114 722 .   |
|                                            | 15                     | 09 64 224 722 . | 09 64 214 722 .   |
|                                            | 25                     | 09 64 324 722 . | 09 64 314 722 .   |
|                                            | 37                     | 09 64 424 722 . | 09 64 414 722 .   |
| Connectors with<br><b>1000 pF</b> C-filter |                        |                 |                   |
|                                            | 9                      | 09 64 124 723 . | 09 64 114 723 .   |
|                                            | 15                     | 09 64 224 723 . | 09 64 214 723 .   |
|                                            | 25                     | 09 64 324 723 . | 09 64 314 723 .   |
|                                            | 37                     | 09 64 424 723 . | 09 64 414 723 .   |
| Connectors with<br><b>3900 pF</b> C-filter |                        |                 |                   |
|                                            | 9                      | 09 64 124 724 . | 09 64 114 724 .   |
|                                            | 15                     | 09 64 224 724 . | 09 64 214 724 .   |
|                                            | 25                     | 09 64 324 724 . | 09 64 314 724 .   |
|                                            | 37                     | 09 64 424 724 . | 09 64 414 724 .   |
| Please insert digit<br>for flange thread   |                        |                 |                   |
|                                            | 4-40 UNC ▶ 8<br>M3 ▶ 9 |                 |                   |

Number of contacts

9–37



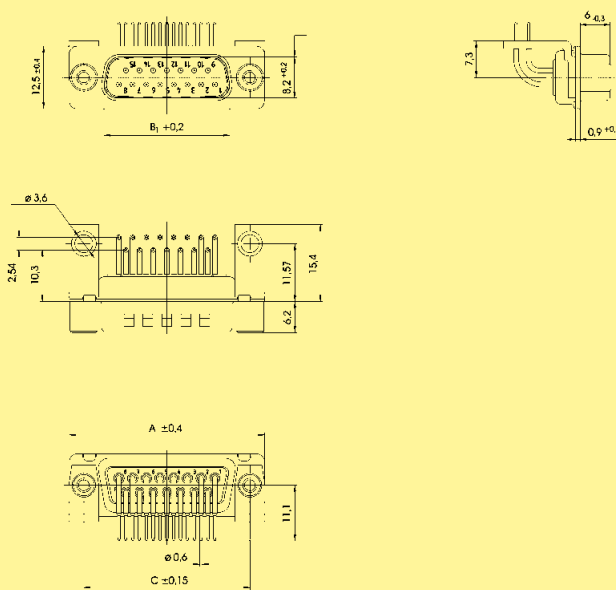
Turned solder pins, right angled, bracket and female screw

Identification

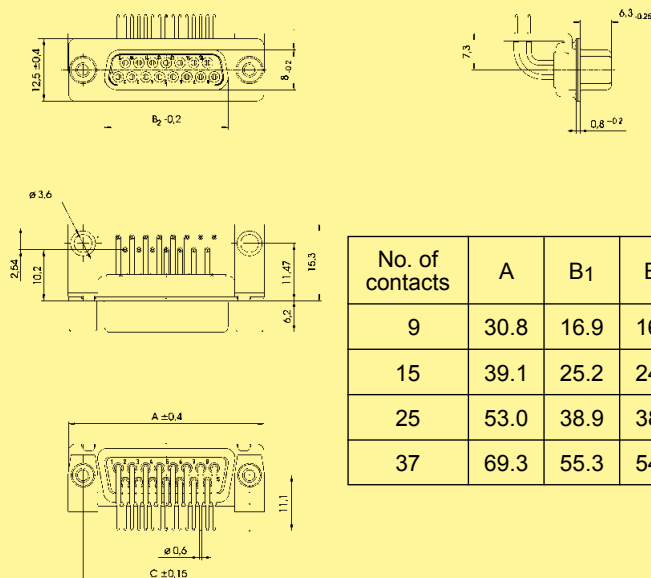
Drawing

Dimensions in mm

Male connector

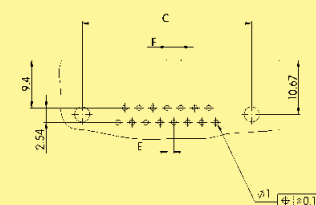


Female connector



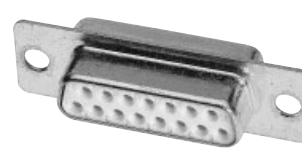
| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | E    | F    |
|-----------------|------|----------------|----------------|-------|------|------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 1.37 | 2.74 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 1.37 | 2.74 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 1.40 | 2.77 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 1.40 | 2.77 |

Board drillings



Number of contacts

9–37



Solder buckets, through hole

| Identification                             | No. of contacts | Part No.        |                   |
|--------------------------------------------|-----------------|-----------------|-------------------|
|                                            |                 | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   |                 |                 |                   |
|                                            | 9               | 09 64 121 7210  | 09 64 111 7210    |
|                                            | 15              | 09 64 221 7210  | 09 64 211 7210    |
|                                            | 25              | 09 64 321 7210  | 09 64 311 7210    |
|                                            | 37              | 09 64 421 7210  | 09 64 411 7210    |
| Connectors with<br><b>470 pF</b> C-filter  |                 |                 |                   |
|                                            | 9               | 09 64 121 7220  | 09 64 111 7220    |
|                                            | 15              | 09 64 221 7220  | 09 64 211 7220    |
|                                            | 25              | 09 64 321 7220  | 09 64 311 7220    |
|                                            | 37              | 09 64 421 7220  | 09 64 411 7220    |
| Connectors with<br><b>1000 pF</b> C-filter |                 |                 |                   |
|                                            | 9               | 09 64 121 7230  | 09 64 111 7230    |
|                                            | 15              | 09 64 221 7230  | 09 64 211 7230    |
|                                            | 25              | 09 64 321 7230  | 09 64 311 7230    |
|                                            | 37              | 09 64 421 7230  | 09 64 411 7230    |
| Connectors with<br><b>3900 pF</b> C-filter |                 |                 |                   |
|                                            | 9               | 09 64 121 7240  | 09 64 111 7240    |
|                                            | 15              | 09 64 221 7240  | 09 64 211 7240    |
|                                            | 25              | 09 64 321 7240  | 09 64 311 7240    |
|                                            | 37              | 09 64 421 7240  | 09 64 411 7240    |



Number of contacts

9–37



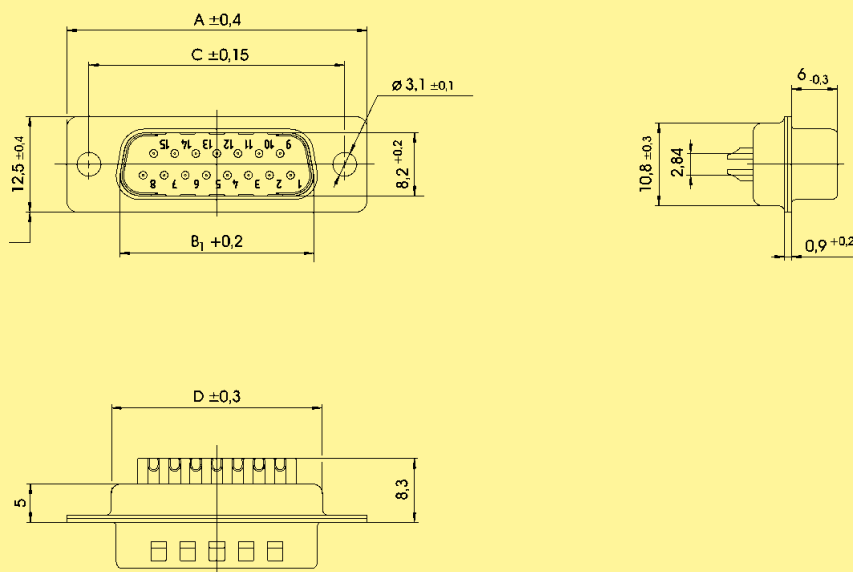
Solder buckets, through hole

## Identification

## Drawing

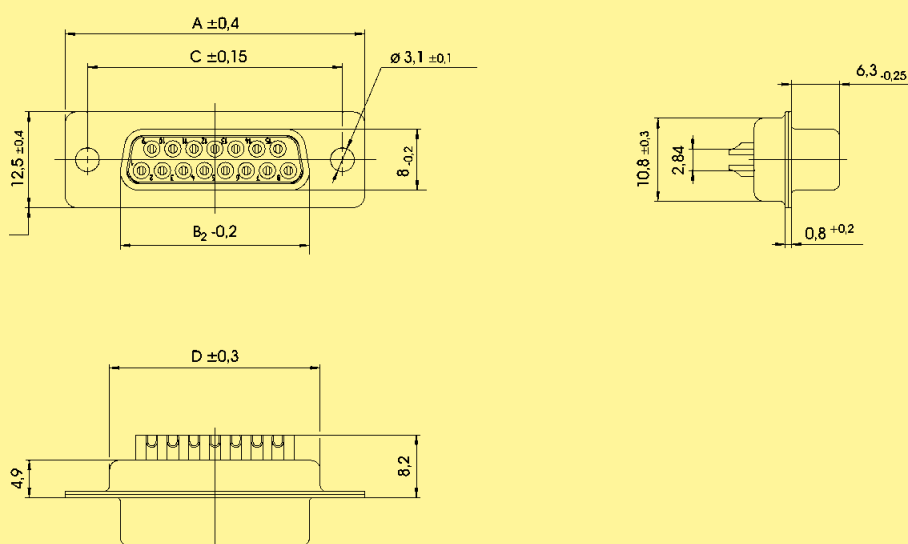
## Dimensions in mm

## Male connector



| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | D    |
|-----------------|------|----------------|----------------|-------|------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 19.3 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 27.5 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 41.3 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 57.7 |

## Female connector



Number of contacts

9–37



Solder buckets, clinch nut

| Identification                             | No. of contacts        | Part No.        |                   |
|--------------------------------------------|------------------------|-----------------|-------------------|
|                                            |                        | male connectors | female connectors |
| Connectors with<br><b>47 pF</b> C-filter   |                        |                 |                   |
|                                            | 9                      | 09 64 121 721 . | 09 64 111 721 .   |
|                                            | 15                     | 09 64 221 721 . | 09 64 211 721 .   |
|                                            | 25                     | 09 64 321 721 . | 09 64 311 721 .   |
|                                            | 37                     | 09 64 421 721 . | 09 64 411 721 .   |
| Connectors with<br><b>470 pF</b> C-filter  |                        |                 |                   |
|                                            | 9                      | 09 64 121 722 . | 09 64 111 722 .   |
|                                            | 15                     | 09 64 221 722 . | 09 64 211 722 .   |
|                                            | 25                     | 09 64 321 722 . | 09 64 311 722 .   |
|                                            | 37                     | 09 64 421 722 . | 09 64 411 722 .   |
| Connectors with<br><b>1000 pF</b> C-filter |                        |                 |                   |
|                                            | 9                      | 09 64 121 723 . | 09 64 111 723 .   |
|                                            | 15                     | 09 64 221 723 . | 09 64 211 723 .   |
|                                            | 25                     | 09 64 321 723 . | 09 64 311 723 .   |
|                                            | 37                     | 09 64 421 723 . | 09 64 411 723 .   |
| Connectors with<br><b>3900 pF</b> C-filter |                        |                 |                   |
|                                            | 9                      | 09 64 121 724 . | 09 64 111 724 .   |
|                                            | 15                     | 09 64 221 724 . | 09 64 211 724 .   |
|                                            | 25                     | 09 64 321 724 . | 09 64 311 724 .   |
|                                            | 37                     | 09 64 421 724 . | 09 64 411 724 .   |
| Please insert digit<br>for flange thread   |                        |                 |                   |
|                                            | 4-40 UNC ▶ 7<br>M3 ▶ 8 |                 |                   |

# D-Sub

Number of contacts

# 9–37



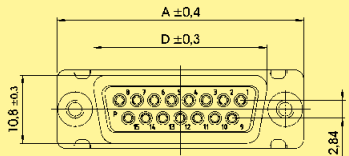
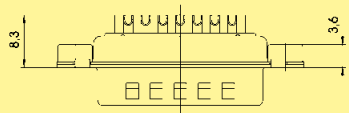
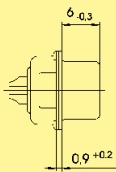
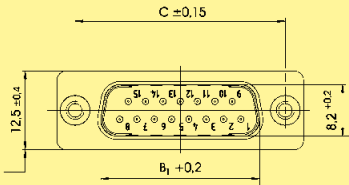
Solder buckets, clinch nut

Identification

Drawing

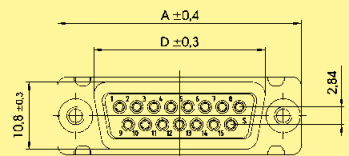
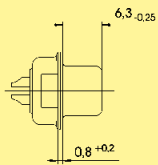
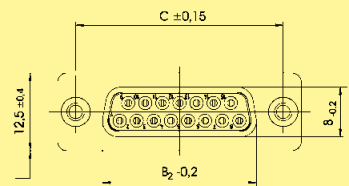
Dimensions in mm

Male connector



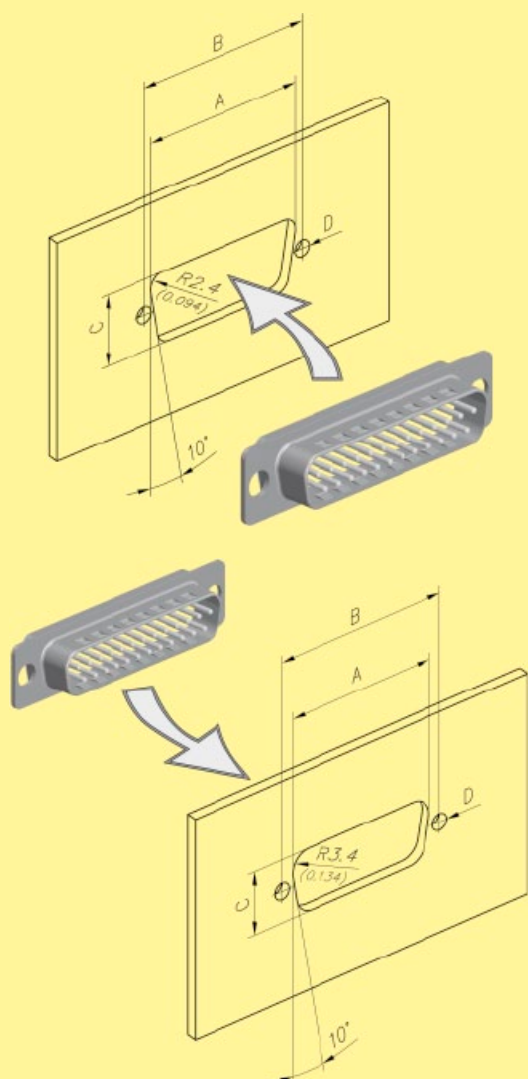
| No. of contacts | A    | B <sub>1</sub> | B <sub>2</sub> | C     | D    |
|-----------------|------|----------------|----------------|-------|------|
| 9               | 30.8 | 16.9           | 16.4           | 25.00 | 19.3 |
| 15              | 39.1 | 25.2           | 24.7           | 33.30 | 27.5 |
| 25              | 53.0 | 38.9           | 38.5           | 47.04 | 41.3 |
| 37              | 69.3 | 55.3           | 54.9           | 63.50 | 57.7 |

Female connector

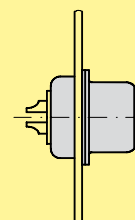


## Panel cut outs / panel mountings

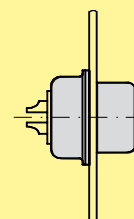
### Panel cut outs



Front mounting

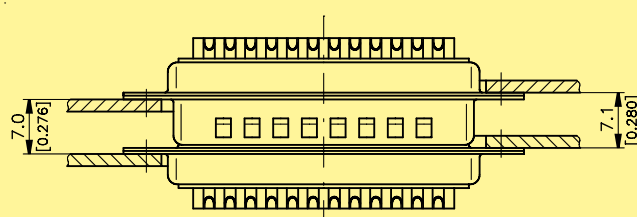
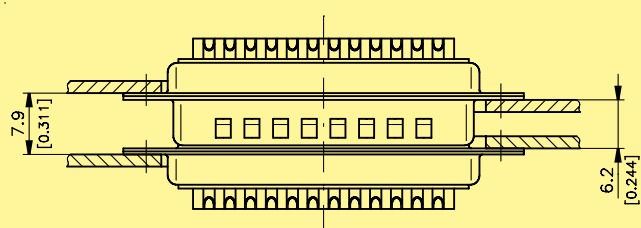


Rear mounting



| No. of contacts | Mounting assembly | A<br>± 0.2 | B<br>± 0.2 | C<br>± 0.2 |
|-----------------|-------------------|------------|------------|------------|
| 9               | Front             | 22.2       | 25.0       | 12.3       |
|                 | Rear              | 20.5       | 25.0       | 11.4       |
| 15              | Front             | 30.5       | 33.3       | 12.3       |
|                 | Rear              | 28.8       | 33.3       | 11.4       |
| 25              | Front             | 44.3       | 47.0       | 12.3       |
|                 | Rear              | 42.5       | 47.0       | 11.4       |
| 37              | Front             | 60.7       | 63.5       | 12.3       |
|                 | Rear              | 59.1       | 63.5       | 11.4       |

### Panel mountings



For float mounting option please contact your local HARTING representative.

Dimensions in mm

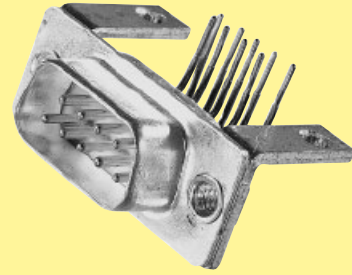
## General information

With the innovative EMC platform approach, this enables customers to select their optimum filter requirements, contact per contact. Allowing not only to segregate the filtering per contact but also to mix the type of filter used. This is then cast in a single competitive product (in a standard D-Sub shell).

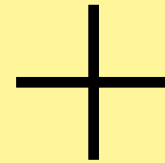
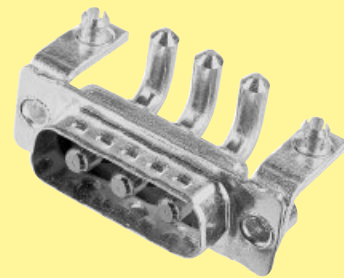
The biggest advantage of the HARTING technology is that multiple filter assemblies can be configured to create different filter designs: C, Pi, L and T types. Since any value of capacitor can be placed on any contact, a wide range of configurations can be built, it is even possible to have an individual pin unfiltered if necessary.

Furthermore, ***Pi-filters can be supplied in a standard connector size shell.*** In addition, protection against lightening and transient voltage can be included upon request.

In the next few pages, you will find all the necessary information plus a selection guide to help you to choose your appropriate solution.



or



- C-filter
- L-filter
- Pi-filter
- ESD protection
- Lightening protection
- Combination



With any capacitance on any pin in a **standard D-Sub shell.**

## General information

### Filter possibilities

#### C-filter:

Non exhaustive list of C-filter values that HARTING can supply (for specials see page 05.36 ff)

| C-filter capacitance in pF | Minimum insertion loss              |    |    |    |    |     |     |      | Max. working voltage | Max. dielectric withstanding |
|----------------------------|-------------------------------------|----|----|----|----|-----|-----|------|----------------------|------------------------------|
|                            | Attenuation [dB] vs frequency [MHz] |    |    |    |    |     |     |      |                      |                              |
|                            | 0.1                                 | 1  | 5  | 10 | 50 | 100 | 500 | 1000 |                      |                              |
| 47                         |                                     |    |    |    |    |     | 30  | 35   | 500 V DC             | 750 V DC                     |
| 100                        |                                     |    |    |    | 1  | 3   | 40  | 35   | 500 V DC             | 750 V DC                     |
| 150                        |                                     |    |    |    | 1  | 6   | 45  | 35   | 500 V DC             | 750 V DC                     |
| 180                        |                                     |    |    |    | 1  | 10  | 40  | 32   | 500 V DC             | 750 V DC                     |
| 270                        |                                     |    |    | 1  | 3  | 12  | 35  | 32   | 500 V DC             | 750 V DC                     |
| 330                        |                                     |    |    | 1  | 7  | 13  | 35  | 32   | 500 V DC             | 750 V DC                     |
| 470                        |                                     |    |    | 1  | 10 | 15  | 35  | 32   | 500 V DC             | 750 V DC                     |
| 820                        |                                     |    |    | 2  | 10 | 18  | 30  | 30   | 500 V DC             | 750 V DC                     |
| 1000                       |                                     |    | 1  | 3  | 12 | 20  | 34  | 30   | 500 V DC             | 750 V DC                     |
| 1800                       |                                     |    | 2  | 6  | 17 | 30  | 35  | 32   | 500 V DC             | 750 V DC                     |
| 3900                       |                                     | 1  | 6  | 11 | 25 | 35  | 35  | 32   | 500 V DC             | 750 V DC                     |
| 4700                       |                                     | 1  | 9  | 13 | 30 | 38  | 35  | 32   | 500 V DC             | 750 V DC                     |
| 5600                       |                                     | 2  | 10 | 14 | 30 | 32  | 32  | 32   | 500 V DC             | 750 V DC                     |
| 10000                      |                                     | 1  | 10 | 15 | 30 | 32  | 30  | 30   | 200 V DC             | 500 V DC                     |
| 33000                      | 1                                   | 9  | 19 | 29 | 32 | 34  | 39  | 32   | 100 V DC             | 150 V DC                     |
| 47000                      | 1                                   | 11 | 23 | 30 | 32 | 32  | 35  | 32   | 100 V DC             | 150 V DC                     |
| 100000                     | 2                                   | 18 | 32 | 40 | 34 | 34  | 36  | 35   | 25 V DC              | 40 V DC                      |

#### Pi filter:

Non exhaustive list of Pi filter values that HARTING can supply (for specials see page 05.36 ff)

| Pi filter capacitance in pF | Minimum insertion loss              |    |    |    |    |     |     |      | Max. working voltage | Max. dielectric withstanding |
|-----------------------------|-------------------------------------|----|----|----|----|-----|-----|------|----------------------|------------------------------|
|                             | Attenuation [dB] vs frequency [MHz] |    |    |    |    |     |     |      |                      |                              |
|                             | 0.1                                 | 1  | 5  | 10 | 50 | 100 | 500 | 1000 |                      |                              |
| 94                          |                                     |    |    |    |    | 2   | 35  | 50   | 200 V DC             | 500 V DC                     |
| 200                         |                                     |    |    |    | 1  | 8   | 50  | 40   | 200 V DC             | 500 V DC                     |
| 440                         |                                     |    |    | 1  | 8  | 16  | 50  | 40   | 200 V DC             | 500 V DC                     |
| 940                         |                                     |    |    | 2  | 12 | 24  | 50  | 40   | 200 V DC             | 500 V DC                     |
| 2000                        |                                     |    | 2  | 7  | 17 | 40  | 45  | 40   | 200 V DC             | 500 V DC                     |
| 4400                        |                                     |    | 5  | 10 | 28 | 60  | 45  | 40   | 200 V DC             | 500 V DC                     |
| 9400                        |                                     | 2  | 10 | 15 | 48 | 50  | 45  | 40   | 200 V DC             | 500 V DC                     |
| 20000                       |                                     | 5  | 14 | 20 | 50 | 60  | 52  | 48   | 100 V DC             | 250 V DC                     |
| 94000                       | 2                                   | 15 | 32 | 50 | 51 | 52  | 48  | 42   | 50 V DC              | 125 V DC                     |
| 200000                      | 7                                   | 21 | 48 | 65 | 55 | 52  | 48  | 42   | 16 V DC              | 25 V DC                      |

## General information

### Other protection possibilities

#### ESD protection

(Electro Static Discharge protection)

For equipment to comply with:

- IEC-1000-4-2; levels 1 to 4 (Contact discharge test)
- RTCA-160 D; section 25

| Typical parasitic capacitance (pF) | Max. clamp voltage (V) | Working voltage (V) |
|------------------------------------|------------------------|---------------------|
| 0.5 V <sub>rms</sub> @ 1 KHz       | @ I = 1 A<br>@ 8/20 μS | @ I = 10 μA         |
| 1750                               | 7.5                    | 3                   |
| 1250                               | 13                     | 5                   |
| 650                                | 22                     | 12                  |
| 430                                | 33                     | 18                  |
| 220                                | 48                     | 26                  |
| 200                                | 51                     | 30                  |

#### EMP protection

(Electro Magnetic Pulse protection)

For equipment to comply with:

- MIL-STD-461 C: requirements CS 06, CS 10, CS 11, RS 05
- IEC-1000-4-4; EFT TESTS
- RTCA-160 D; section 17

| Typical parasitic capacitance (pF) | Max. clamp voltage (V)  | Working voltage (V) |
|------------------------------------|-------------------------|---------------------|
| 0.5 V <sub>rms</sub> @ 1 KHz       | @ I = 10 A<br>@ 8/20 μS | @ I = 10 μA         |
| 5675                               | 9                       | 3                   |
| 3620                               | 15                      | 5                   |
| 1500                               | 26                      | 14                  |
| 820                                | 34                      | 18                  |
| 275                                | 50                      | 26                  |

#### Lightening protection

For equipment to comply with:

- IEC-1000-4-5; levels 1 and 2 (1.2 μ / 50 μS)
- RTCA-160 D; section 22 (pin injection, level 1)

| Typical parasitic capacitance (pF) | Max. clamp voltage (V)  | Working voltage (V) |
|------------------------------------|-------------------------|---------------------|
| 0.5 V <sub>rms</sub> @ 1 KHz       | @ I = 30 A<br>@ 8/20 μS | @ I = 10 μA         |
| 5500                               | 12                      | 3                   |
| 3175                               | 18                      | 5                   |
| 2000                               | 21                      | 9                   |
| 1680                               | 30                      | 14                  |
| 900                                | 38                      | 18                  |
| 720                                | 60                      | 26                  |
| 600                                | 63                      | 30                  |

## HARTING customer request form

Our innovative technology offers all the possibilities you may need.

For customer solutions, please contact your local HARTING representative.

Here is a summary of the information we need to develop a customer solution:

### Connector

#### Standard D-Sub

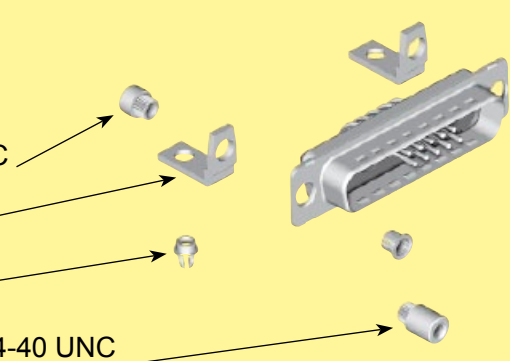
- Gender ☐ Male ☐ Female
- No. of contacts ☐ 9 ☐ 15 ☐ 25 ☐ 37 ☐ 50
- Termination ☐ Solder bucket ☐ Straight pcb
- ☐ R/A Eur, 2.54 mm ☐ R/A US, 2.84 mm

#### Mixed D-Sub

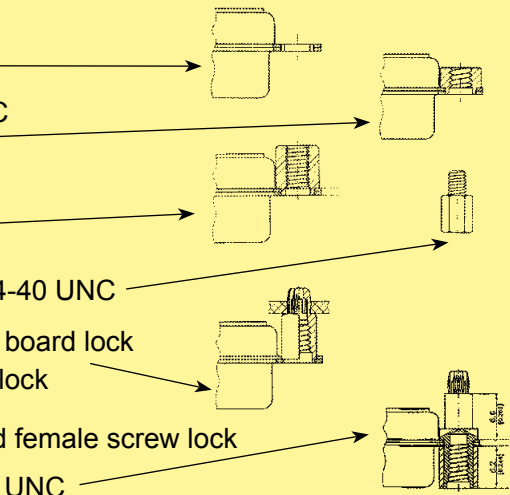
- Gender ☐ Male ☐ Female
- Contact arrangement ☐ 3W3 ☐ 3W3C ☐ Other \_\_\_\_\_
- Power contact rating ☐ 10 A ☐ 20 A ☐ 30 A ☐ 40 A
- Termination ☐ Solder bucket ☐ Straight pcb
- ☐ R/A pcb (please specify the board drillings)

### Flange thread and board locking options

#### Right angled version

- ☐ Through hole
- ☐ Clinch nut 4-40 UNC
- ☐ Clinch nut M3
- ☐ Bracket
- ☐ Board lock
- ☐ Female screw lock 4-40 UNC
- ☐ Female screw lock M3
- 

#### Straight version

- ☐ Through hole
- ☐ Clinch nut 4-40 UNC
- ☐ Clinch nut M3
- ☐ Spacer 4-40 UNC
- ☐ Spacer M3
- ☐ Female screw lock 4-40 UNC
- ☐ Spacer 4-40 UNC + board lock
- ☐ Spacer M3 + board lock
- Spacer + board lock and female screw lock
- ☐ M3 ☐ 4-40 UNC
- 



## HARTING customer request from

## Filter

What working voltage is used? \_\_\_\_\_

What is the maximum dielectric withstanding voltage needed? \_\_\_\_\_

Type of filter \_\_\_\_\_ (C-filter, Pi filter, L filter ...)

Capacitance \_\_\_\_\_

Are there other protections needed?

☐ No

☐ Yes

☐ ESD

☐ Transient

☐ EMP

☐ Lightening

If a pin-to-pin selection has to be done, please state the details

Pin 1: ?, Pin 2: ?, ...

\_\_\_\_\_

Name: \_\_\_\_\_

Drawing: \_\_\_\_\_

☐ no

☐ yes

Company: \_\_\_\_\_

Samples: \_\_\_\_\_

☐ no

☐ yes, quantity

Address: \_\_\_\_\_

Volume (pcs./year): \_\_\_\_\_

Phone: \_\_\_\_\_

Special requirements: \_\_\_\_\_

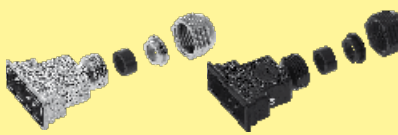
Fax: \_\_\_\_\_

E-Mail: \_\_\_\_\_



**D-Sub – Waterproof subminiature D IP 67 connectors**

Page

|                                                                                                           |                                                                                      |                      |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------|
| Technical characteristics .....                                                                           |                                                                                      | <b>06.02</b>         |
| IP 67 versions with turned solder cups .....                                                              |    | <b>06.04</b>         |
| IP 67 versions with turned solder cups<br>and rear plastic mounting plate .....                           |    | <b>06.06</b>         |
| IP 67 versions with turned solder cups<br>and front plastic mounting plate .....                          |    | <b>06.08</b>         |
| IP 67 versions with turned solder cups<br>and rear metal mounting plate .....                             |    | <b>06.10</b>         |
| IP 67 versions with turned solder cups<br>and front metal mounting plate .....                            |   | <b>06.12</b>         |
| IP 67 versions<br>with straight turned solder pins,<br>rear plastic mounting plate, spacer and board lock |  | <b>06.14</b>         |
| IP 67 versions<br>with straight turned solder pins,<br>rear metal mounting plate, spacer and board lock   |  | <b>06.16</b>         |
| IP 67 versions<br>with angled turned solder pins,<br>rear plastic mounting plate, bracket and board lock  |  | <b>06.18</b>         |
| IP 67 versions<br>with angled turned solder pins,<br>rear metal mounting plate, bracket and board lock    |  | <b>06.20</b>         |
| Accessories for IP 67 connectors .....                                                                    |  | <b>06.23</b>         |
| IP 67 plastic hoods /<br>IP 67 metallized plastic hoods .....                                             |  | <b>06.22 / 06.24</b> |
| Accessories for IP 67 hoods .....                                                                         |  | <b>06.25</b>         |

Number of contacts 9, 15, 25, 37, 50  
UL recognized

Working current 5 A

Test voltage 1200 V for 1 minute  
between 2 contacts / contact and shell

Clearance and creepage  $\geq 1.0$  mm

Contact resistance  
Straight contact  $\leq 10$  m $\Omega$   
Angled contact  $\leq 25$  m $\Omega$   
Angled contact 50 pole  $\leq 35$  m $\Omega$

Insulation resistance  
between contacts  $\geq 5000$  M $\Omega$

Dielectric strength 50 kV/mm

Temperature range -25 °C ... +70 °C

Protection IP 67  
(per DIN 40 050 / IEC 529)

Termination  
Solder cup max. AWG 20  
Solder pin straight 0.6 mm diameter  
Solder pin angled 0.6 mm diameter

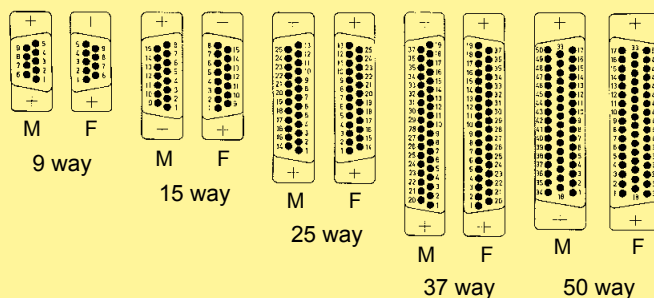
Material  
Shell Brass, tin plated  
Insulator and plastic watertight frame Thermoplastic,  
glass-fibre filled, UL 94-V0  
Metal watertight frame Nickel plated zinc die cast  
Contact material Machined copper alloy

Contact surface  
Contact zone S4 = 0.76  $\mu$ m (30  $\mu$ inch) Au  
or PdNi equivalent

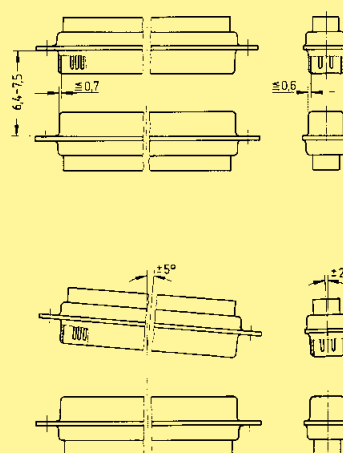
Waterproofing element Silicone

Mechanical  
Mating cycles  $\geq 500$   
Mating force per signal contact  $\leq 3.4$  N  
Unmating force per signal contact  $\geq 0.2$  N

### Contact arrangement View from termination side



### Mating conditions as per DIN 41 652





Number of contacts

9–50



IP 67, turned solder cups

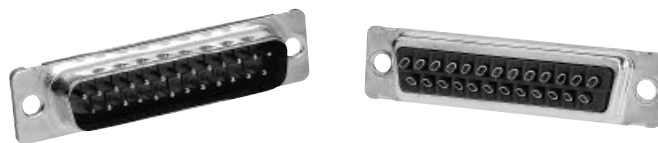
D-Sub - W

| Identification                             | No. of contacts           | Part No.                                                                               |
|--------------------------------------------|---------------------------|----------------------------------------------------------------------------------------|
|                                            |                           | S4 <sup>1)</sup>                                                                       |
| Male connector<br>metal shell with dimples | 9<br>15<br>25<br>37<br>50 | 09 67 409 5615<br>09 67 415 5615<br>09 67 425 5615<br>09 67 437 5615<br>09 67 450 5615 |
| Female connector<br>metal shell            | 9<br>15<br>25<br>37<br>50 | 09 67 409 4715<br>09 67 415 4715<br>09 67 425 4715<br>09 67 437 4715<br>09 67 450 4715 |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

Number of contacts

9–50

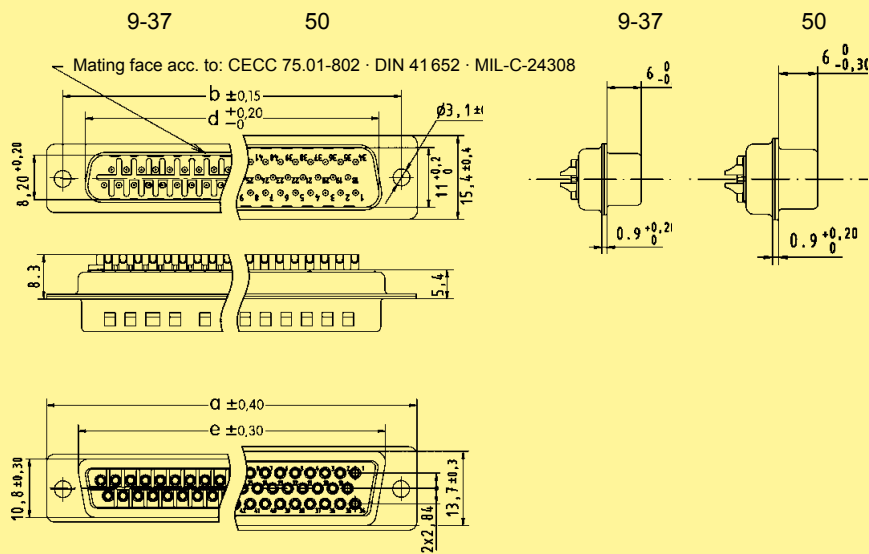
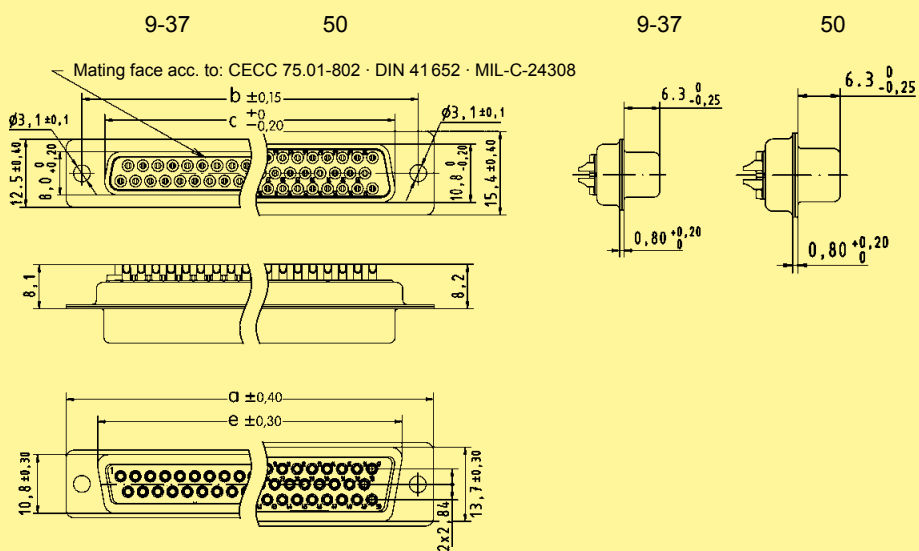


IP 67, turned solder cups

Identification

Drawing

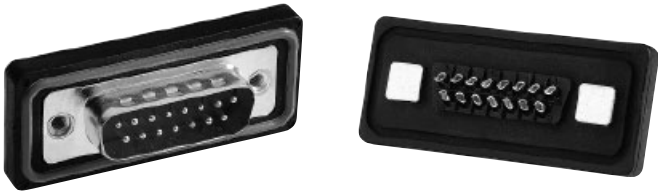
Dimensions in mm

**Male connector**  
 9 – 50 contacts

**Female connector**  
 9 – 50 contacts


|    | a    | b     | c    | d    | e    |
|----|------|-------|------|------|------|
| 9  | 30.8 | 25.00 | 16.4 | 16.9 | 19.3 |
| 15 | 39.1 | 33.30 | 24.7 | 25.2 | 27.5 |
| 25 | 53.0 | 47.04 | 38.5 | 38.9 | 41.3 |
| 37 | 69.3 | 63.50 | 54.9 | 55.3 | 57.7 |
| 50 | 66.9 | 61.10 | 52.5 | 52.8 | 55.3 |

Number of contacts

9–25



IP 67, turned solder cups, with rear plastic mounting plate

D-Sub - W

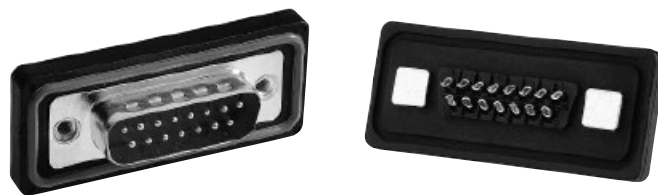
| Identification                             | No. of contacts        | Part No.                            |                   |
|--------------------------------------------|------------------------|-------------------------------------|-------------------|
|                                            |                        | S4 <sup>1)</sup>                    |                   |
| Male connector<br>metal shell with dimples | 9<br>15<br>25          | 09 67 509<br>09 67 515<br>09 67 525 | 615<br>615<br>615 |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 7<br>M3 ▶ 9 |                                     |                   |
| Female connector<br>metal shell            | 9<br>15<br>25          | 09 67 509<br>09 67 515<br>09 67 525 | 715<br>715<br>715 |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 6<br>M3 ▶ 8 |                                     |                   |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent



Number of contacts

9–25

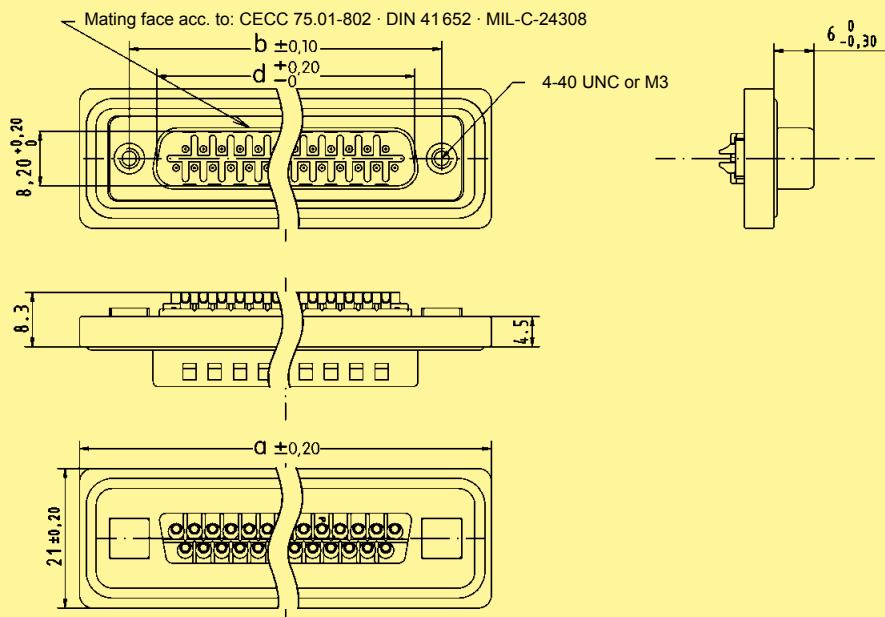
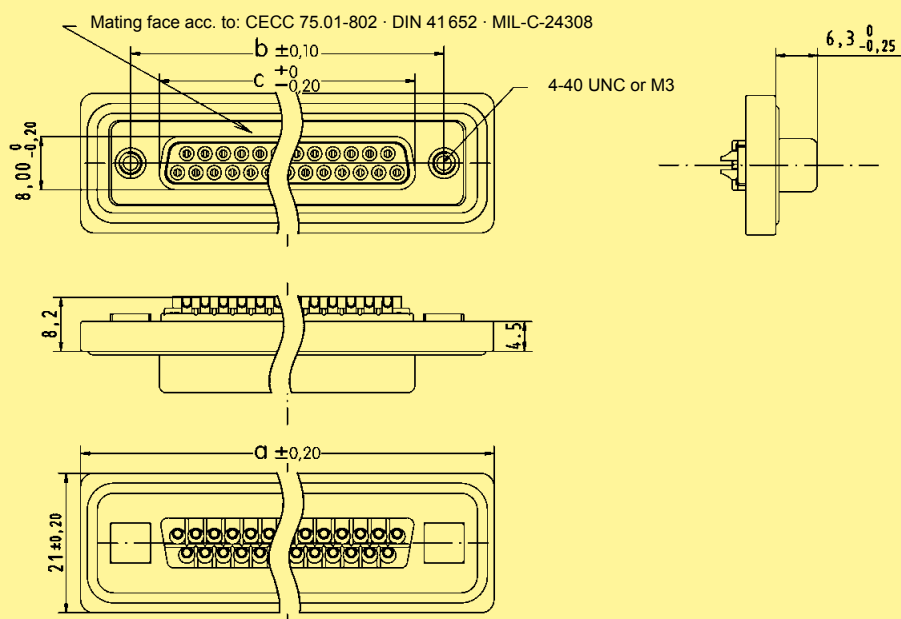


IP 67, turned solder cups, with rear plastic mounting plate

## Identification

## Drawing

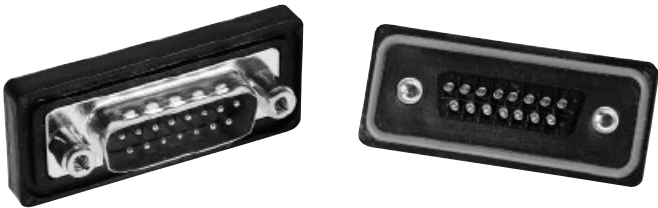
## Dimensions in mm

**Male connector**  
 9 – 25 contacts

**Female connector**  
 9 – 25 contacts


|    | a    | b     | c    | d    |
|----|------|-------|------|------|
| 9  | 40.0 | 25.00 | 16.4 | 16.9 |
| 15 | 48.3 | 33.30 | 24.7 | 25.2 |
| 25 | 62.0 | 47.04 | 38.5 | 38.9 |

Number of contacts

9–25



IP 67, turned solder cups, with front plastic mounting plate

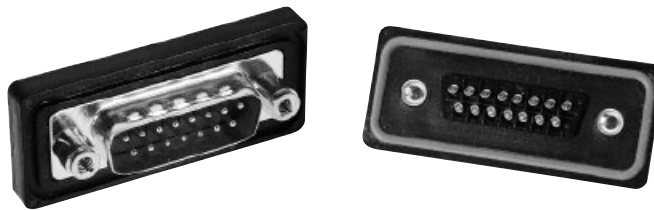
D-Sub - W

| Identification                             | No. of contacts        | Part No.                            |                   |
|--------------------------------------------|------------------------|-------------------------------------|-------------------|
|                                            |                        | S4 <sup>1)</sup>                    |                   |
| Male connector<br>metal shell with dimples | 9<br>15<br>25          | 09 67 709<br>09 67 715<br>09 67 725 | 615<br>615<br>615 |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 7<br>M3 ▶ 9 |                                     |                   |
| Female connector<br>metal shell            | 9<br>15<br>25          | 09 67 709<br>09 67 715<br>09 67 725 | 715<br>715<br>715 |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 6<br>M3 ▶ 8 |                                     |                   |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

Number of contacts

9–25

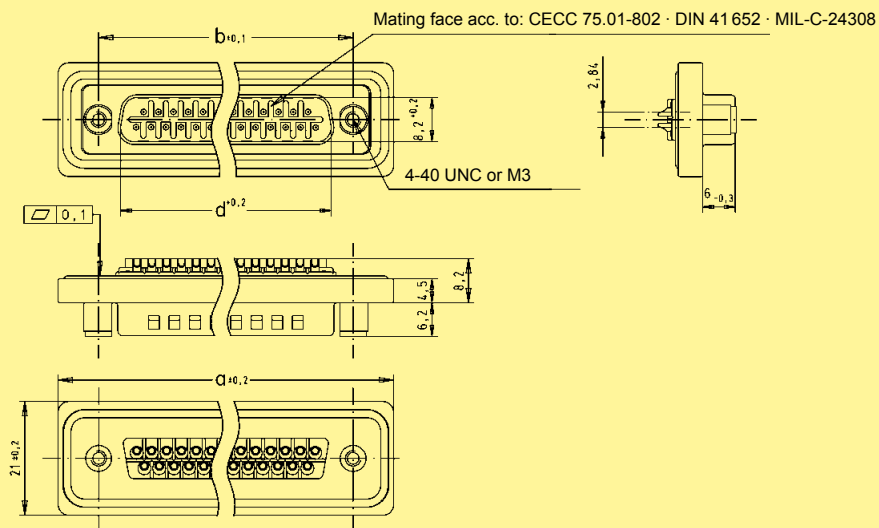
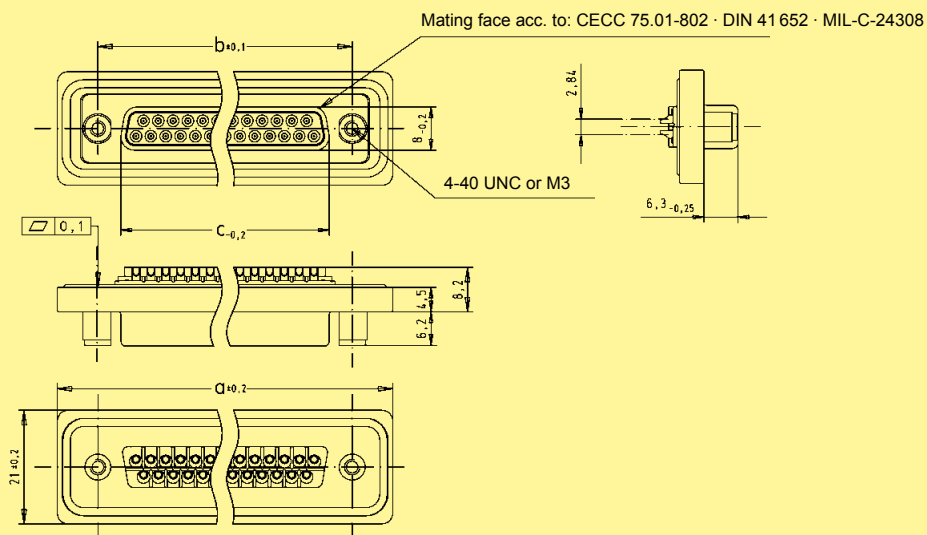


IP 67, turned solder cups, with front plastic mounting plate

Identification

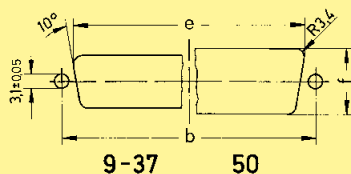
Drawing

Dimensions in mm

**Male connector**  
 9 – 25 contacts

**Female connector**  
 9 – 25 contacts


|    | a    | b     | c    | d    |
|----|------|-------|------|------|
| 9  | 40.0 | 25.00 | 16.4 | 16.9 |
| 15 | 48.3 | 33.30 | 24.7 | 25.2 |
| 25 | 62.0 | 47.04 | 38.5 | 38.9 |

**Panel cut out**  
 for front/rear mount

 Values are taken from the  
 CECC 75 301-802


Front mount

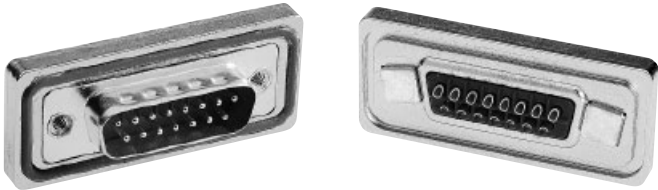
|    | b_{±0,13} | e_{±0,2} | f_{±0,2} |
|----|-----------|----------|----------|
| 9  | 25.0      | 22.2     | 12.3     |
| 15 | 33.3      | 30.5     | 12.3     |
| 25 | 47.0      | 44.3     | 12.3     |

Rear mount

|    | b_{±0,13} | e_{±0,2} | f_{±0,2} |
|----|-----------|----------|----------|
| 9  | 25.0      | 20.5     | 11.4     |
| 15 | 33.3      | 28.8     | 11.4     |
| 25 | 47.0      | 42.5     | 11.4     |

Number of contacts

9–50



IP 67, turned solder cups, with rear metal mounting plate

D-Sub - W

| Identification                             | No. of contacts           | Part No.                                                      |                                           |
|--------------------------------------------|---------------------------|---------------------------------------------------------------|-------------------------------------------|
|                                            |                           | S4 <sup>1)</sup>                                              |                                           |
| Male connector<br>metal shell with dimples | 9<br>15<br>25<br>37<br>50 | 09 67 609<br>09 67 615<br>09 67 625<br>09 67 637<br>09 67 650 | . 615<br>. 615<br>. 615<br>. 615<br>. 615 |
| Please insert digit<br>for flange thread   |                           |                                                               |                                           |
| 4-40 UNC ▶ 7<br>M3 ▶ 9                     |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

Number of contacts

9–50

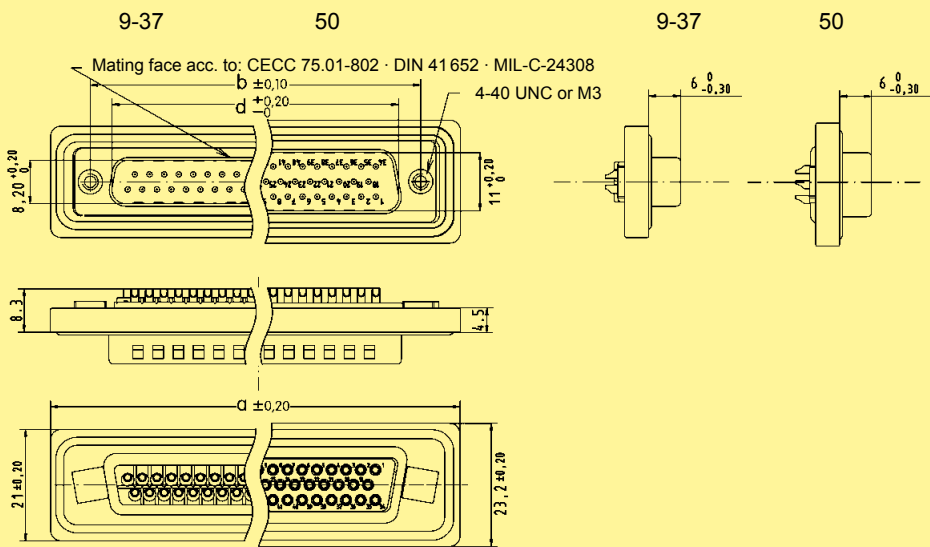
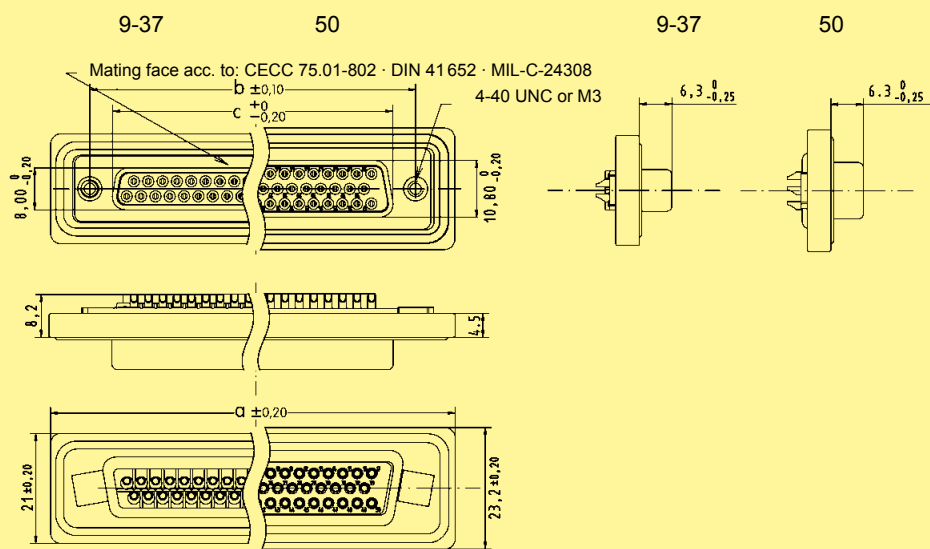


IP 67, turned solder cups, with rear metal mounting plate

## Identification

## Drawing

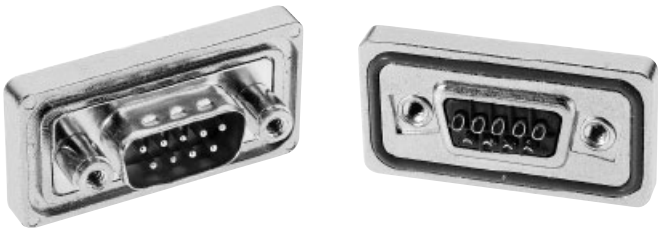
## Dimensions in mm

Male connector  
9 – 50 contactsFemale connector  
9 – 50 contacts

|    | a    | b     | c    | d    |
|----|------|-------|------|------|
| 9  | 40,0 | 25,00 | 16,4 | 16,9 |
| 15 | 48,3 | 33,30 | 24,7 | 25,2 |
| 25 | 62,0 | 47,04 | 38,5 | 38,9 |
| 37 | 78,5 | 63,50 | 54,9 | 55,3 |
| 50 | 76,1 | 61,10 | 52,5 | 52,8 |

Number of contacts

9–50



IP 67, turned solder cups, with front metal mounting plate

D-Sub - W

| Identification                             | No. of contacts           | Part No.                                                      |                                           |
|--------------------------------------------|---------------------------|---------------------------------------------------------------|-------------------------------------------|
|                                            |                           | S4 <sup>1)</sup>                                              |                                           |
| Male connector<br>metal shell with dimples | 9<br>15<br>25<br>37<br>50 | 09 67 809<br>09 67 815<br>09 67 825<br>09 67 837<br>09 67 850 | . 615<br>. 615<br>. 615<br>. 615<br>. 615 |
| Please insert digit<br>for flange thread   |                           |                                                               |                                           |
| 4-40 UNC ▶ 7<br>M3 ▶ 9                     |                           |                                                               |                                           |
|                                            |                           |                                                               |                                           |
| Female connector<br>metal shell            | 9<br>15<br>25<br>37<br>50 | 09 67 809<br>09 67 815<br>09 67 825<br>09 67 837<br>09 67 850 | . 715<br>. 715<br>. 715<br>. 715<br>. 715 |
| Please insert digit<br>for flange thread   |                           |                                                               |                                           |
| 4-40 UNC ▶ 6<br>M3 ▶ 8                     |                           |                                                               |                                           |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

Number of contacts

9–50

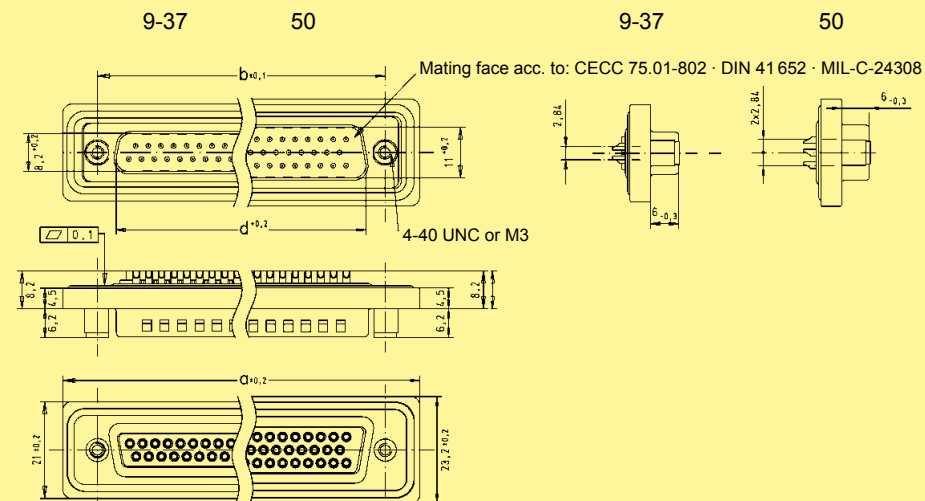
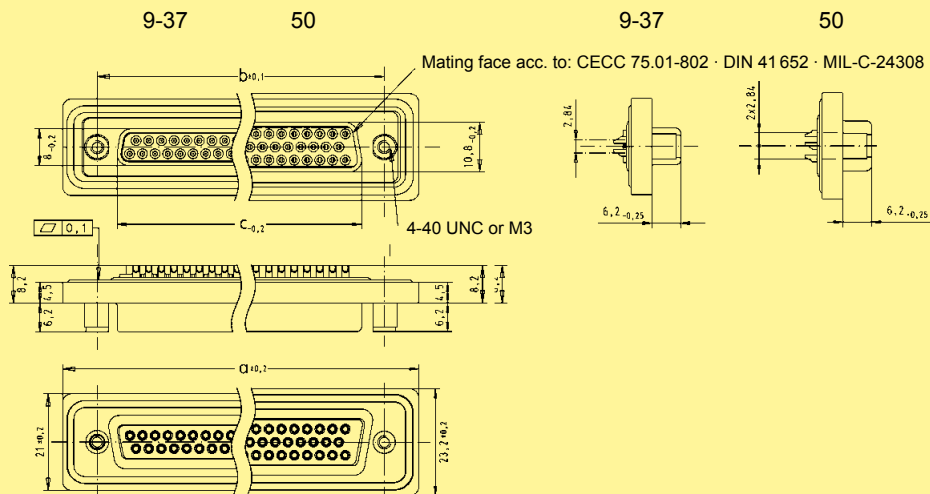


IP 67, turned solder cups, with front metal mounting plate

Identification

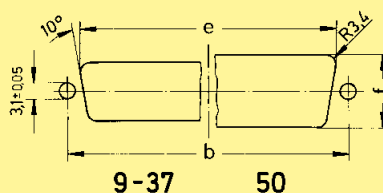
Drawing

Dimensions in mm

**Male connector**  
 9 – 50 contacts

**Female connector**  
 9 – 50 contacts


|    | a    | b     | c    | d    |
|----|------|-------|------|------|
| 9  | 40.0 | 25.00 | 16.4 | 16.9 |
| 15 | 48.3 | 33.30 | 24.7 | 25.2 |
| 25 | 62.0 | 47.04 | 38.5 | 38.9 |
| 37 | 78.5 | 63.50 | 54.9 | 55.3 |
| 50 | 76.1 | 61.10 | 51.3 | 52.8 |

**Panel cut out**  
 for front/rear mount

 Values are taken from the  
 CECC 75 301-802


Front mount

|    | b $\pm 0.13$ | e $\pm 0.2$ | f $\pm 0.2$ |
|----|--------------|-------------|-------------|
| 9  | 25.0         | 22.2        | 12.3        |
| 15 | 33.3         | 30.5        | 12.3        |
| 25 | 47.0         | 44.3        | 12.3        |
| 37 | 63.5         | 60.7        | 12.3        |
| 50 | 61.1         | 58.3        | 15.1        |

Rear mount

|    | b $\pm 0.13$ | e $\pm 0.2$ | f $\pm 0.2$ |
|----|--------------|-------------|-------------|
| 9  | 25.0         | 20.5        | 11.4        |
| 15 | 33.3         | 28.8        | 11.4        |
| 25 | 47.0         | 42.5        | 11.4        |
| 37 | 63.5         | 59.1        | 11.4        |
| 50 | 61.1         | 56.3        | 14.1        |

Number of contacts

9–25



IP 67, straight turned solder pins,  
with rear plastic mounting plate, spacer and board lock

D-Sub - W

| Identification                             | No. of contacts        | Part No.                            |                         |
|--------------------------------------------|------------------------|-------------------------------------|-------------------------|
|                                            |                        | S4 <sup>1)</sup>                    |                         |
| Male connector<br>metal shell with dimples | 9<br>15<br>25          | 09 67 509<br>09 67 515<br>09 67 525 | . 675<br>. 675<br>. 675 |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 7<br>M3 ▶ 9 |                                     |                         |
| Female connector<br>metal shell            | 9<br>15<br>25          | 09 67 509<br>09 67 515<br>09 67 525 | . 775<br>. 775<br>. 775 |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 6<br>M3 ▶ 8 |                                     |                         |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent



Number of contacts

9–25



IP 67, straight turned solder pins,  
with rear plastic mounting plate, spacer and board lock

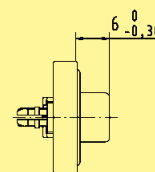
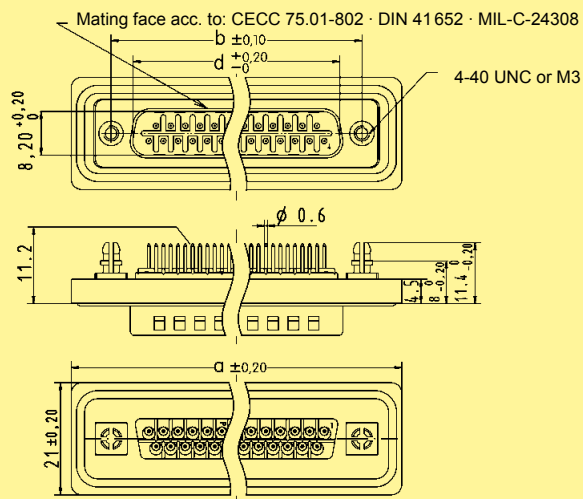
## Identification

## Drawing

## Dimensions in mm

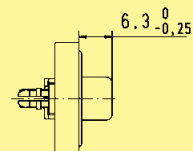
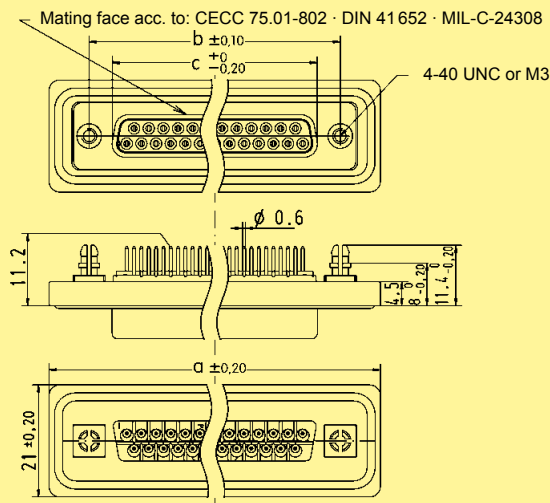
### Male connector

9 – 25 contacts



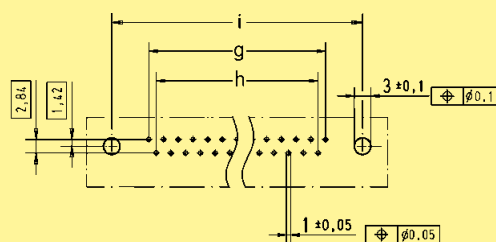
### Female connector

9 – 25 contacts



|    | a    | b     | c    | d    | g                 | h                 | i    |
|----|------|-------|------|------|-------------------|-------------------|------|
| 9  | 40.0 | 25.00 | 16.4 | 16.9 | 4 x 2.74 = 10.96  | 3 x 2.74 = 8.22   | 25.0 |
| 15 | 48.3 | 33.30 | 24.7 | 25.2 | 7 x 2.74 = 19.18  | 6 x 2.74 = 16.44  | 33.3 |
| 25 | 62.0 | 47.04 | 38.5 | 38.9 | 12 x 2.76 = 33.12 | 11 x 2.76 = 30.36 | 47.0 |

## Board drillings



Number of contacts

9–50



IP 67, straight turned solder pins,  
with rear metal mounting plate, spacer and board lock

| Identification                             | No. of contacts | Part No.         |     |
|--------------------------------------------|-----------------|------------------|-----|
|                                            |                 | S4 <sup>1)</sup> |     |
| Male connector<br>metal shell with dimples | 9               | 09 67 609        | 675 |
|                                            | 15              | 09 67 615        | 675 |
|                                            | 25              | 09 67 625        | 675 |
|                                            | 37              | 09 67 637        | 675 |
|                                            | 50              | 09 67 650        | 675 |
|                                            |                 |                  |     |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 7    |                  |     |
|                                            | M3 ▶ 9          |                  |     |
|                                            |                 |                  |     |
|                                            |                 |                  |     |
|                                            |                 |                  |     |
|                                            |                 |                  |     |
| Female connector<br>metal shell            | 9               | 09 67 609        | 775 |
|                                            | 15              | 09 67 615        | 775 |
|                                            | 25              | 09 67 625        | 775 |
|                                            | 37              | 09 67 637        | 775 |
|                                            | 50              | 09 67 650        | 775 |
|                                            |                 |                  |     |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 6    |                  |     |
|                                            | M3 ▶ 8          |                  |     |
|                                            |                 |                  |     |
|                                            |                 |                  |     |
|                                            |                 |                  |     |
|                                            |                 |                  |     |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

Number of contacts

9–50

IP 67, straight turned solder pins,  
with rear metal mounting plate, spacer and board lock



## Identification

## Drawing

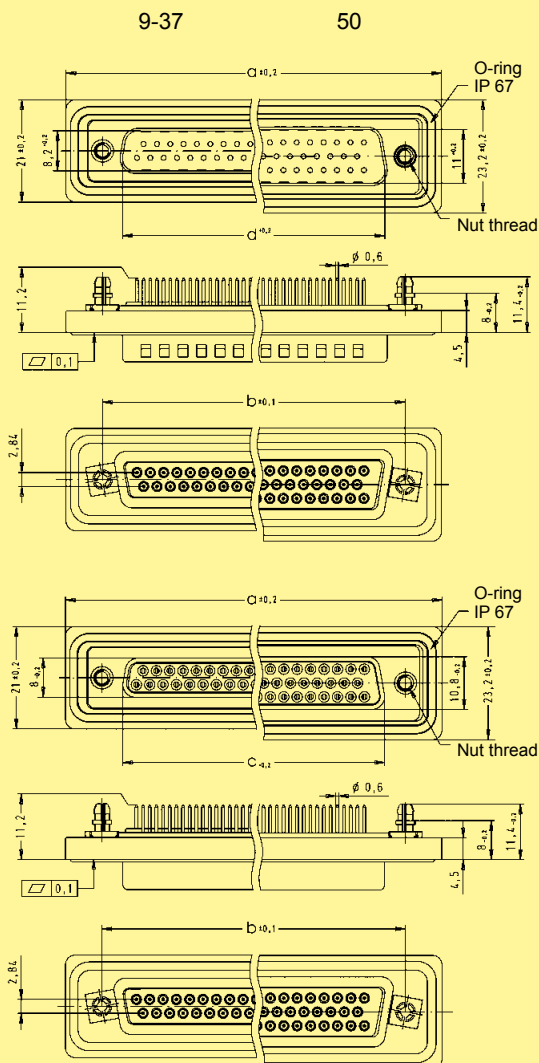
## Dimensions in mm

### Male connector

9 – 50 contacts

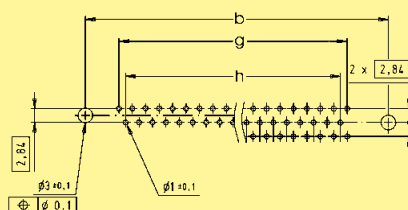
### Female connector

9 – 50 contacts



|    | a    | b     | c    | d    | g                         | h                         |
|----|------|-------|------|------|---------------------------|---------------------------|
| 9  | 40.0 | 25.00 | 16.4 | 16.9 | 4 x $\frac{2.74}{10.96}$  | 3 x $\frac{2.74}{8.22}$   |
| 15 | 48.3 | 33.30 | 24.7 | 25.2 | 7 x $\frac{2.74}{19.18}$  | 6 x $\frac{2.74}{16.44}$  |
| 25 | 62.0 | 47.04 | 38.5 | 38.9 | 12 x $\frac{2.76}{33.12}$ | 11 x $\frac{2.76}{30.36}$ |
| 37 | 78.5 | 63.50 | 54.9 | 55.3 | 18 x $\frac{2.76}{49.68}$ | 17 x $\frac{2.76}{46.92}$ |
| 50 | 76.1 | 61.10 | 52.5 | 52.8 | 16 x $\frac{2.76}{44.16}$ | 15 x $\frac{2.76}{41.40}$ |

## Board drillings



Number of contacts

9–25



IP 67, angled turned solder pins,  
with rear plastic mounting plate, bracket and board lock

D-Sub - W

| Identification                             | No. of contacts        | Part No.                            |                   |
|--------------------------------------------|------------------------|-------------------------------------|-------------------|
|                                            |                        | S4 <sup>1)</sup>                    |                   |
| Male connector<br>metal shell with dimples | 9<br>15<br>25          | 09 67 509<br>09 67 515<br>09 67 525 | 658<br>658<br>658 |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 7<br>M3 ▶ 9 |                                     |                   |
| Female connector<br>metal shell            | 9<br>15<br>25          | 09 67 509<br>09 67 515<br>09 67 525 | 758<br>758<br>758 |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 6<br>M3 ▶ 8 |                                     |                   |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

Number of contacts

9–25

IP 67, angled turned solder pins,  
with rear plastic mounting plate, bracket and board lock

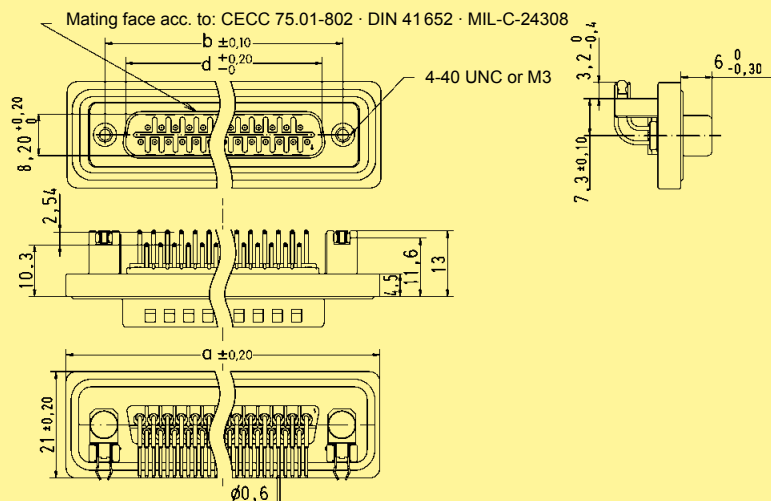


Identification

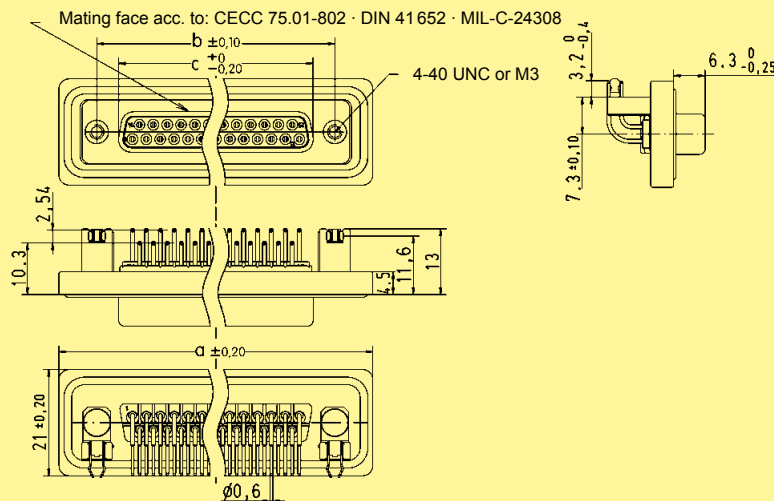
Drawing

Dimensions in mm

Male connector  
9 – 25 contacts

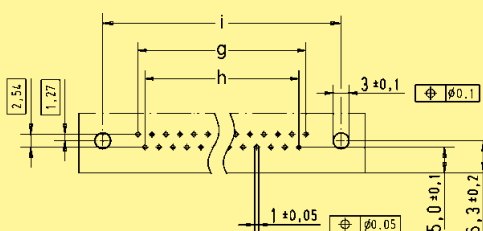


Female connector  
9 – 25 contacts



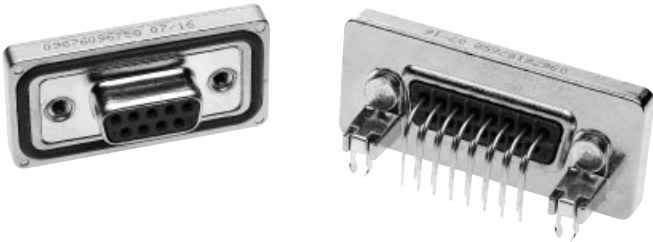
|    | a    | b     | c    | d    | g                 | h                 | i    |
|----|------|-------|------|------|-------------------|-------------------|------|
| 9  | 40.0 | 25.00 | 16.4 | 16.9 | 4 x 2.74 = 10.96  | 3 x 2.74 = 8.22   | 25.0 |
| 15 | 48.3 | 33.30 | 24.7 | 25.2 | 7 x 2.74 = 19.18  | 6 x 2.74 = 16.44  | 33.3 |
| 25 | 62.0 | 47.04 | 38.5 | 38.9 | 12 x 2.76 = 33.12 | 11 x 2.76 = 30.36 | 47.0 |

Board drillings



Number of contacts

9–50



IP 67, angled turned solder pins,  
with rear metal mounting plate, bracket and board lock

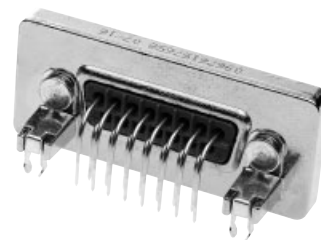
D-Sub - W

| Identification                             | No. of contacts | Part No.         |     |
|--------------------------------------------|-----------------|------------------|-----|
|                                            |                 | S4 <sup>1)</sup> |     |
| Male connector<br>metal shell with dimples | 9               | 09 67 609        | 658 |
|                                            | 15              | 09 67 615        | 658 |
|                                            | 25              | 09 67 625        | 658 |
|                                            | 37              | 09 67 637        | 658 |
|                                            | 50              | 09 67 650        | 658 |
|                                            |                 |                  |     |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 7    |                  |     |
|                                            | M3 ▶ 9          |                  |     |
| Female connector<br>metal shell            | 9               | 09 67 609        | 758 |
|                                            | 15              | 09 67 615        | 758 |
|                                            | 25              | 09 67 625        | 758 |
|                                            | 37              | 09 67 637        | 758 |
|                                            | 50              | 09 67 650        | 758 |
|                                            |                 |                  |     |
| Please insert digit<br>for flange thread   | 4-40 UNC ▶ 6    |                  |     |
|                                            | M3 ▶ 8          |                  |     |

<sup>1)</sup> S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

Number of contacts

# 9–50



IP 67, angled turned solder pins,  
with rear metal mounting plate, bracket and board lock

Identification

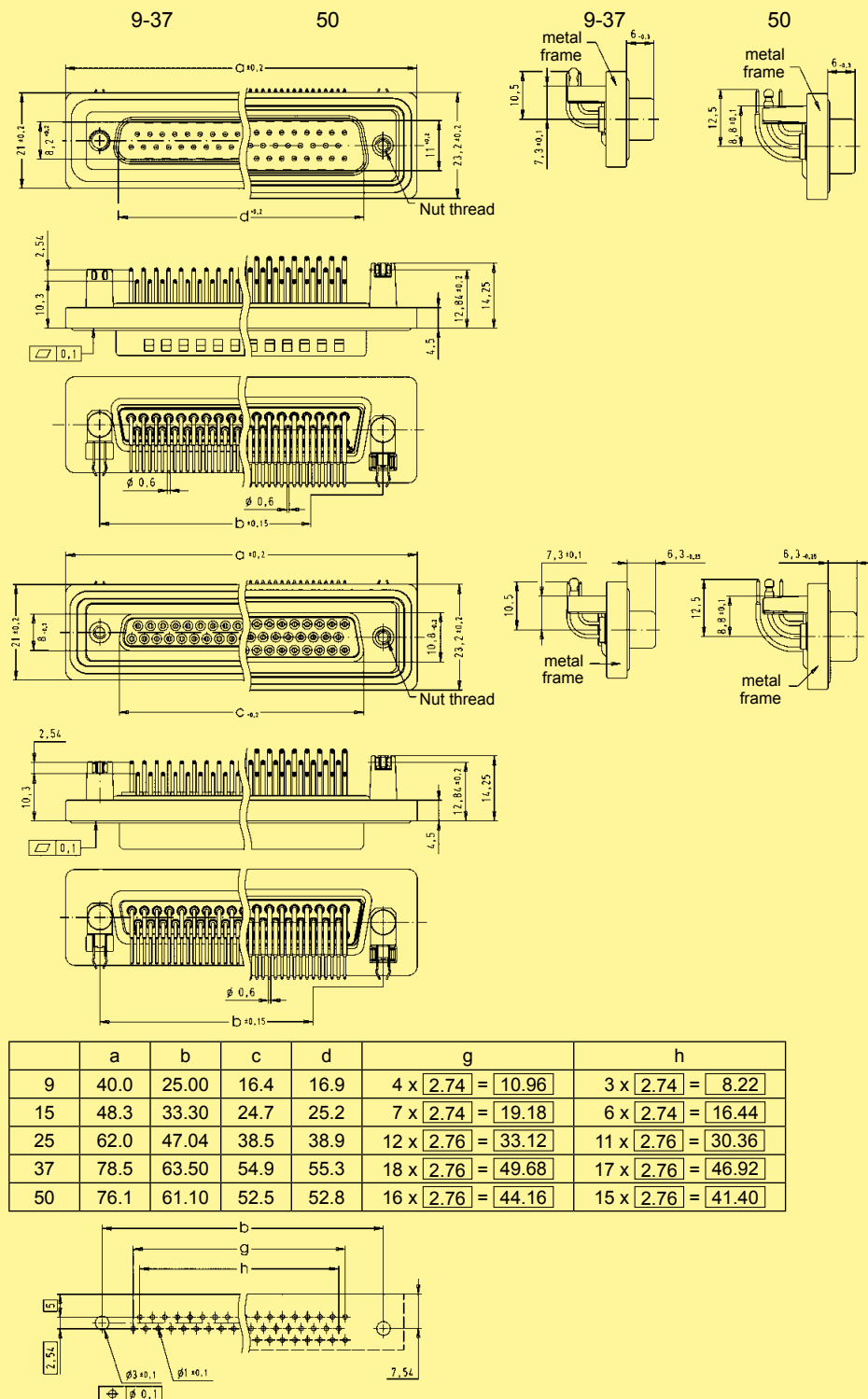
Drawing

Dimensions in mm

**Male connector**  
9 – 50 contacts

**Female connector**  
9 – 50 contacts

Board drillings





IP 67 plastic hoods

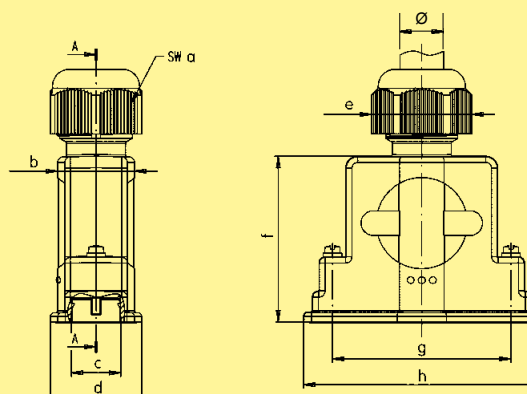
IP 67 metallized plastic hoods

| Identification | No. of contacts | Part No. | Drawing | Dimensions in mm |
|----------------|-----------------|----------|---------|------------------|
|----------------|-----------------|----------|---------|------------------|

Hood<sup>1)</sup>

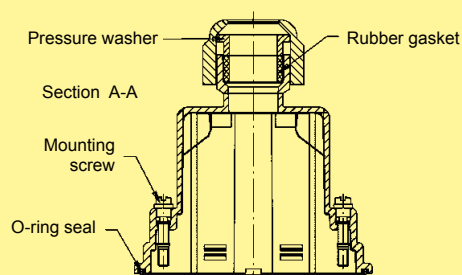
Black thermoplastic

|    |               |
|----|---------------|
| 9  | 09 67 009 043 |
| 15 | 09 67 015 043 |
| 25 | 09 67 025 043 |
| 37 | 09 67 037 043 |
| 50 | 09 67 050 043 |



Metallized thermoplastic

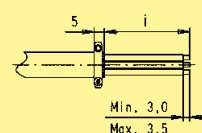
|    |               |
|----|---------------|
| 9  | 09 67 009 053 |
| 15 | 09 67 015 053 |
| 25 | 09 67 025 053 |
| 37 | 09 67 037 053 |
| 50 | 09 67 050 053 |



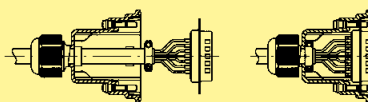
Please insert digit for screw option

Locking screw, thread 4-40 UNC ▶ 8

Locking screw, thread M3 ▶ 9



Stripping dimensions



## Mounting instructions:

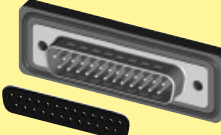
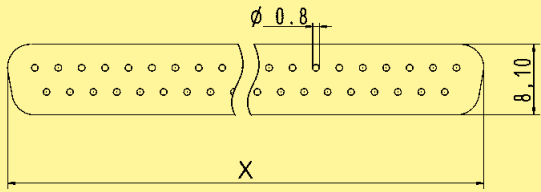
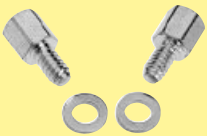
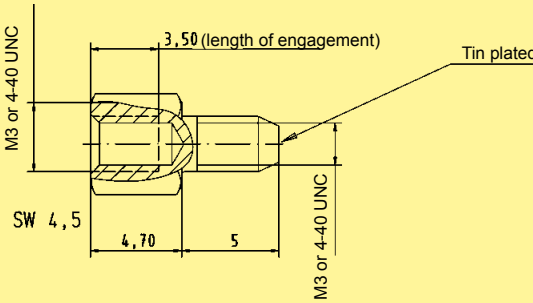
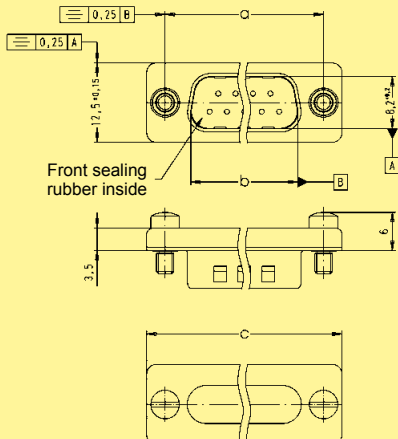
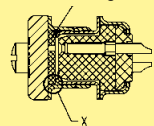
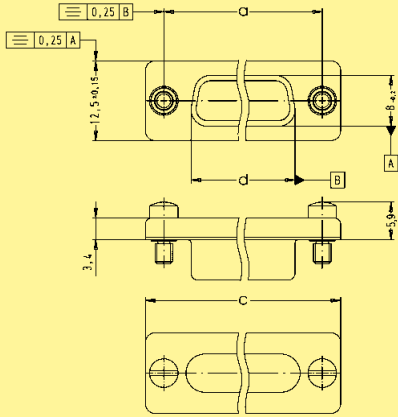
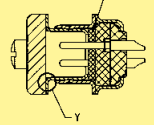
- The peeled back cable braiding must not extend over the cable clamp, in order not to damage the gasket or to impair its performance.
- Pull back cable until cable clamp snaps into shielding plate.
- Snap connector into hood.

|    | a  | b    | c    | d    | e    | f    | g    | h    | i    | Ø    |      |
|----|----|------|------|------|------|------|------|------|------|------|------|
|    |    |      |      |      |      |      |      |      |      | min. | max. |
| 9  | 20 | 16.5 | 13.0 | 20.2 | 22.1 | 36.4 | 25.0 | 39.8 | 18.0 | 6.0  | 8.0  |
| 15 | 24 | 16.5 | 13.0 | 20.2 | 26.6 | 36.4 | 33.3 | 48.5 | 18.0 | 6.0  | 10.5 |
| 25 | 24 | 20.3 | 13.0 | 24.0 | 26.6 | 43.6 | 47.0 | 62.3 | 45.0 | 8.0  | 12.0 |
| 37 | 24 | 20.3 | 13.0 | 24.0 | 26.6 | 52.1 | 63.5 | 78.6 | 60.0 | 8.0  | 12.0 |
| 50 | 29 | 22.0 | 16.0 | 27.6 | 32.1 | 52.1 | 61.1 | 75.7 | 60.0 | 9.0  | 14.0 |

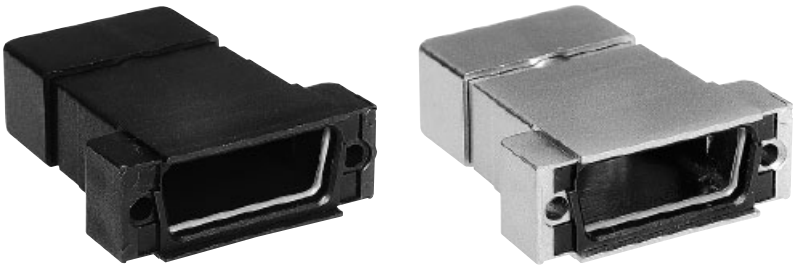
<sup>1)</sup> Not to be used with 9 to 50 pole crimp connectors



## Accessories for IP 67 connectors

| Identification                                                                                                                                                                                                                                      | No. of contacts                    | Part No.                                                                                                     | Drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Dimensions in mm                                                                                                                              |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|------|----|-------|------|------|------|----|-------|------|------|------|----|-------|------|------|------|--|
| <b>Front sealing rubber<sup>1)</sup></b><br>IP 67<br><br><br>Mounting example<br> | 9<br>15<br>25                      | 09 67 002 9001<br>09 67 002 9002<br>09 67 002 9003                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <table><tr><th></th><th>x</th></tr><tr><td>9</td><td>16.7</td></tr><tr><td>15</td><td>24.8</td></tr><tr><td>25</td><td>38.8</td></tr></table> |   | x | 9 | 16.7 | 15 | 24.8  | 25   | 38.8 |      |    |       |      |      |      |    |       |      |      |      |  |
|                                                                                                                                                                                                                                                     | x                                  |                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                               |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
| 9                                                                                                                                                                                                                                                   | 16.7                               |                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                               |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
| 15                                                                                                                                                                                                                                                  | 24.8                               |                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                               |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
| 25                                                                                                                                                                                                                                                  | 38.8                               |                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                               |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
| <b>Female screw lock and spacing washer<sup>2)</sup></b><br>M3<br><br>4-40 UNC<br>2) Order 2 for each connector                                                   |                                    | 09 67 002 9006<br><br>09 67 002 9007                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                               |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
| <b>Dust cap for female connectors<sup>3)</sup></b><br>M3<br><br>4-40 UNC<br>3) With inside glued front sealing rubber                                            | 9<br>15<br>25<br><br>9<br>15<br>25 | 09 67 002 9055<br>09 67 002 9056<br>09 67 002 9057<br><br>09 67 002 9050<br>09 67 002 9051<br>09 67 002 9052 |  <p>Front sealing rubber inside</p>  <p>IP 67 shielding concept<br/>Front seal glued to shielding dust cap</p> <p>Detail X (Scale 5:1)</p> <table><tr><th></th><th>a</th><th>b</th><th>c</th><th>d</th></tr><tr><td>9</td><td>25.00</td><td>16.9</td><td>30.8</td><td>16.4</td></tr><tr><td>15</td><td>33.30</td><td>25.2</td><td>39.1</td><td>24.7</td></tr><tr><td>25</td><td>47.04</td><td>38.9</td><td>53.0</td><td>38.5</td></tr></table> |                                                                                                                                               | a | b | c | d    | 9  | 25.00 | 16.9 | 30.8 | 16.4 | 15 | 33.30 | 25.2 | 39.1 | 24.7 | 25 | 47.04 | 38.9 | 53.0 | 38.5 |  |
|                                                                                                                                                                                                                                                     | a                                  | b                                                                                                            | c                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | d                                                                                                                                             |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
| 9                                                                                                                                                                                                                                                   | 25.00                              | 16.9                                                                                                         | 30.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 16.4                                                                                                                                          |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
| 15                                                                                                                                                                                                                                                  | 33.30                              | 25.2                                                                                                         | 39.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 24.7                                                                                                                                          |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
| 25                                                                                                                                                                                                                                                  | 47.04                              | 38.9                                                                                                         | 53.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 38.5                                                                                                                                          |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |
| <b>for male connectors<sup>4)</sup></b><br>M3<br><br>4-40 UNC<br>4) Order separately the front sealing rubber for an IP 67 performance                           | 9<br>15<br>25<br><br>9<br>15<br>25 | 09 67 002 9065<br>09 67 002 9066<br>09 67 002 9067<br><br>09 67 002 9060<br>09 67 002 9061<br>09 67 002 9062 |  <p>Front sealing rubber is mounted in male connector</p>  <p>IP 67 shielding concept<br/>Front sealing rubber is mounted in male connector</p> <p>sealed</p> <p>Detail Y (Scale 5:1)</p>                                                                                                                                                                                                                                                      |                                                                                                                                               |   |   |   |      |    |       |      |      |      |    |       |      |      |      |    |       |      |      |      |  |

<sup>1)</sup> The front sealing rubber is to be used with hood 09 67 0xx 0436 and 09 67 0xx 0437 when a mated system needs to have the IP 67 performance; in this case, the front sealing rubber is positioned in the IP 67 male connector prior to the mating operation with the facing IP 67 connector; it provides a full protection of the contacts at the mated area by preventing possible ingress of liquids or dust between the shells.



IP 67 plastic hoods  
IP 67 metallized plastic hoods

D-Sub - W

Identification      No. of contacts      Part No.      Drawing      Dimensions in mm

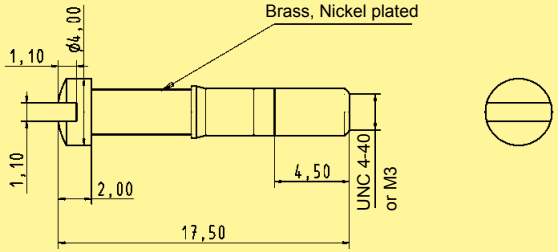
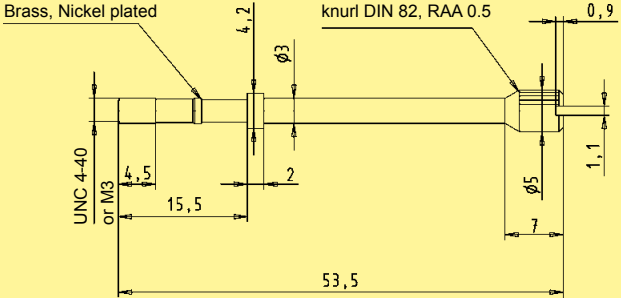
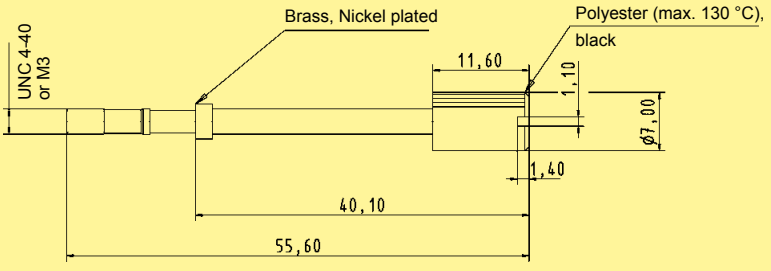
|                             |    |                |
|-----------------------------|----|----------------|
| Hood<br>Black thermoplastic | 9  | 09 67 009 0436 |
|                             | 15 | 09 67 015 0436 |
|                             | 25 | 09 67 025 0436 |
| Metallized thermoplastic    | 9  | 09 67 009 0437 |
|                             | 15 | 09 67 015 0437 |
|                             | 25 | 09 67 025 0437 |

Technical drawing of the hood assembly showing dimensions and components. Dimensions include  $a \pm 0,3$ ,  $b \pm 0,3$ ,  $c \pm 0,3$ ,  $d \pm 0,1$ ,  $e \pm 0,3$ ,  $f \pm 0,3$ ,  $g \pm 0,3$ , and  $h \pm 0,3$ . Components labeled include shell screw, Hood cap, Hood, Holding caps, cable clamp, cable clamp screw, Rubber gasket, O-ring seal, and Holding frame.

**Mounting instructions**  
The stripped braid should not be fold back to avoid damaging the cable clamp and reducing its performance.

|    | a    | b    | c    | d     | e    | f    | g    | h    |
|----|------|------|------|-------|------|------|------|------|
| 9  | 15.6 | 15.6 | 41.0 | 25.00 | 33.6 | 23.0 | 25.0 | 17.0 |
| 15 | 15.6 | 15.6 | 46.8 | 33.30 | 42.0 | 27.5 | 30.8 | 25.1 |
| 25 | 18.8 | 19.1 | 52.0 | 47.04 | 55.7 | 31.5 | 33.8 | 38.8 |

## Accessories for IP 67 hoods

| Identification                                                                                                                            | No. of contacts | Part No.       | Drawing                                                                              | Dimensions in mm |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------|--------------------------------------------------------------------------------------|------------------|
| Short locking screw<br>4-40 UNC                          |                 | 09 67 002 9008 |    |                  |
| Short locking screw<br>M3                                |                 | 09 67 002 9009 |                                                                                      |                  |
| Knurled locking screw<br>4-40 UNC                      |                 | 09 67 002 9010 |  |                  |
| Knurled locking screw<br>M3                            |                 | 09 67 002 9011 |                                                                                      |                  |
| Knurled locking screw<br>4-40 UNC<br>with plastic cap  |                 | 09 67 002 9012 |  |                  |
| Knurled locking screw<br>M3<br>with plastic cap        |                 | 09 67 002 9013 |                                                                                      |                  |



**D-Sub – Housing range for subminiature D connectors**

Page

General information – hoods for screw locking ..... **07.02**

Thermoplastic top and side entry hoods  
with knurled or short screws ..... **07.04**

Thermoplastic side entry hoods  
with knurled screws ..... **07.06**

Thermoplastic top entry hoods  
with knurled or locking screws ..... **07.07**

Full metal top and side entry hoods  
with knurled screws ..... **07.08**

Full metal top and side entry hoods  
with short screws ..... **07.09**

Full metal top entry hoods  
with premounted threaded inserts ..... **07.10**

Full metal top and side entry hoods  
with different screw options ..... **07.11**

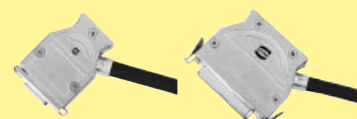
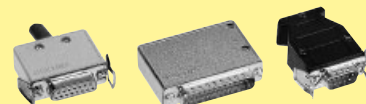
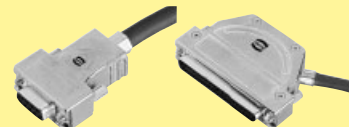
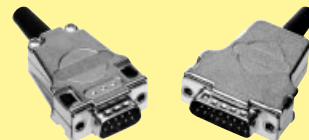
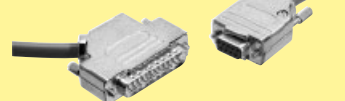
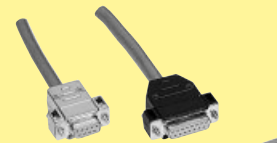
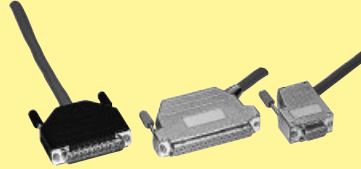
General information – hoods for spring or slide locking ..... **07.14**

Thermoplastic top and side entry hoods  
for spring or slide locking ..... **07.15**

Full metal top and side entry hoods  
for spring or slide locking ..... **07.16**

Accessories ..... **07.17**

InduCom 9 –  
Industrial bus interface system ..... **07.22**



# HARTING – Guarantee a secure connection

Modern electronic applications demand a high degree of mechanical and electrical security.

To meet these requirements, continuous screening from the cable to the PCB via the connector is achieved by using state of the art components to DIN 41 652.

HARTING offer many solutions. These

utilise various combinations of male and female connectors with hoods, featuring either screw locking or latching facilities.

Only 2 examples are shown:

- Continuous security screening and grounding with screw locking and metallized hood.
- Continuous grounding and vibration proof latching system with metallized hood.

Male connector with dimples

Screw lock

Cable with protective screen

Strain relief

Metallized hood

Female connector with protective metal shell

Grounding contact between protective metal shell and PCB

Female connector with protective metal shell

Spring latch

Strain relief

Cable with protective screen

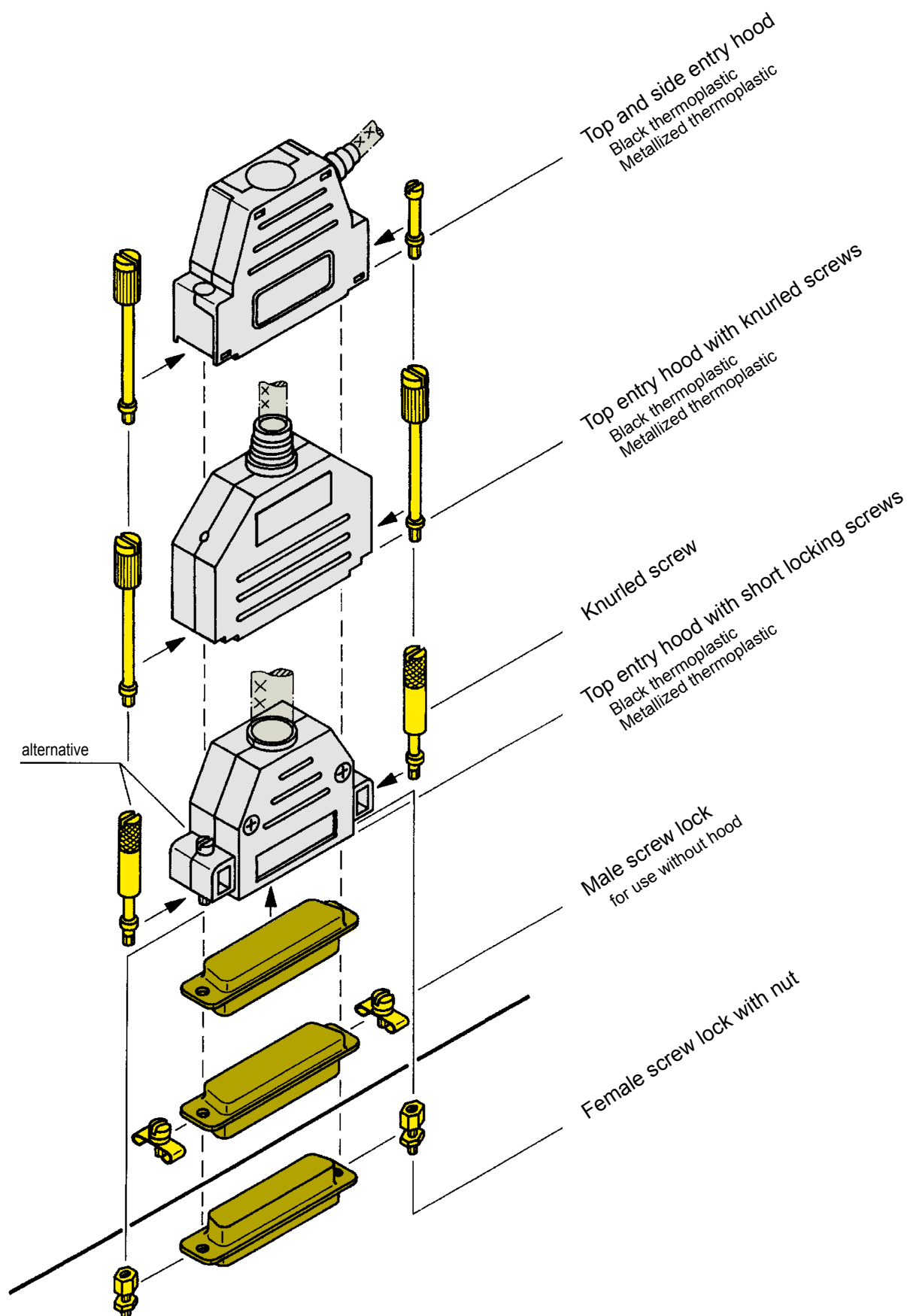
Metallized hood

Male connector with dimples

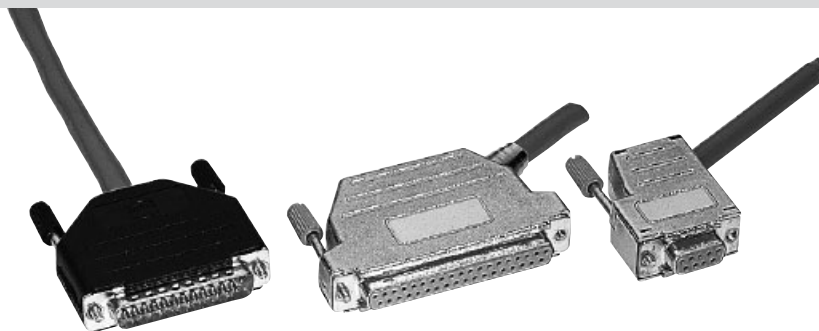
Number of contacts in the D-Sub standard/D-Sub high density range related to the shell size.

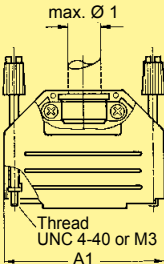
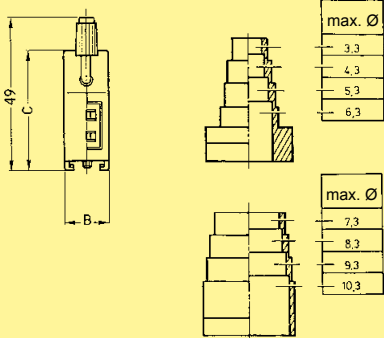
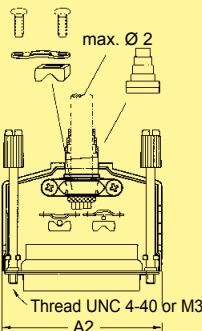
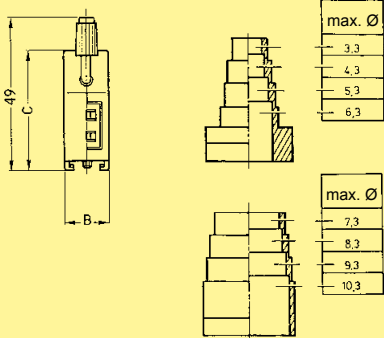
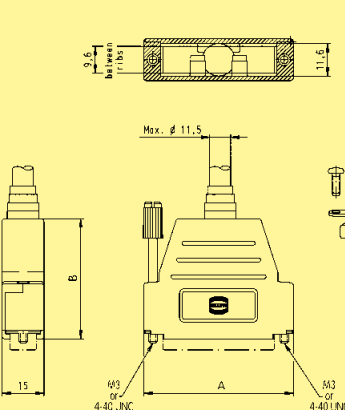
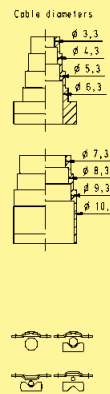
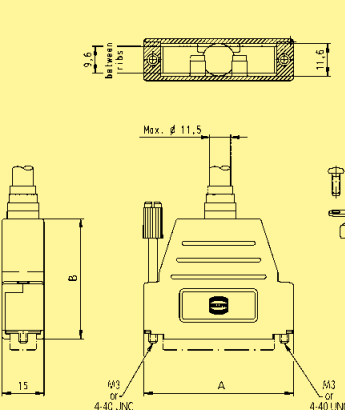
| Shell size | D-Sub standard | D-Sub high density |
|------------|----------------|--------------------|
| 1          | 9              | 15                 |
| 2          | 15             | 26                 |
| 3          | 25             | 44                 |
| 4          | 37             | 62                 |
| 5          | 50             | 78                 |

## Connector hoods for screw locking



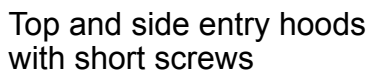
## Top and side entry hoods with knurled screws



| Identification                                             | No. of contacts                                               | Part No.                                                                          | Drawing                                                                              | Dimensions in mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
|------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----------|----------|---|------|----|----------|----------|----|------|------|----|----|------|-----|------|----|------|------|----|----|----|------|------|----|------|------|----|----|----|------|------|----|------|------|----|----|----|------|------|----|------|--|----|----|--|------|--|
| <b>Top entry hood</b><br>Black thermoplastic               | 9<br>15<br>25<br>37<br>50                                     | 09 67 009 042<br>09 67 015 042<br>09 67 025 042<br>09 67 037 042<br>09 67 050 042 |     | <table><tr><th></th><th>A1</th><th>A2</th><th>B</th><th>C1</th><th>C2</th><th>max. Ø 1</th><th>max. Ø 2</th></tr><tr><td>9</td><td>31.5</td><td>32.5</td><td>15</td><td>34</td><td>38</td><td>8.0</td><td>11.5</td></tr><tr><td>15</td><td>40.0</td><td>41.0</td><td>15</td><td>34</td><td>38</td><td>11.5</td><td>11.5</td></tr><tr><td>25</td><td>53.5</td><td>54.5</td><td>15</td><td>40</td><td>40</td><td>11.5</td><td>11.5</td></tr><tr><td>37</td><td>71.0</td><td>71.0</td><td>15</td><td>40</td><td>40</td><td>11.5</td><td>11.5</td></tr><tr><td>50</td><td>67.5</td><td></td><td>19</td><td>40</td><td></td><td>14.0</td><td></td></tr></table> <p>C1: non-metallized C2: metallized</p>  |    | A1       | A2       | B | C1   | C2 | max. Ø 1 | max. Ø 2 | 9  | 31.5 | 32.5 | 15 | 34 | 38   | 8.0 | 11.5 | 15 | 40.0 | 41.0 | 15 | 34 | 38 | 11.5 | 11.5 | 25 | 53.5 | 54.5 | 15 | 40 | 40 | 11.5 | 11.5 | 37 | 71.0 | 71.0 | 15 | 40 | 40 | 11.5 | 11.5 | 50 | 67.5 |  | 19 | 40 |  | 14.0 |  |
|                                                            | A1                                                            | A2                                                                                | B                                                                                    | C1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | C2 | max. Ø 1 | max. Ø 2 |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| 9                                                          | 31.5                                                          | 32.5                                                                              | 15                                                                                   | 34                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 38 | 8.0      | 11.5     |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| 15                                                         | 40.0                                                          | 41.0                                                                              | 15                                                                                   | 34                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 38 | 11.5     | 11.5     |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| 25                                                         | 53.5                                                          | 54.5                                                                              | 15                                                                                   | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 40 | 11.5     | 11.5     |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| 37                                                         | 71.0                                                          | 71.0                                                                              | 15                                                                                   | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 40 | 11.5     | 11.5     |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| 50                                                         | 67.5                                                          |                                                                                   | 19                                                                                   | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    | 14.0     |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Please insert digit for screw option                       |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Knurled screw, thread 4-40 UNC ▶ 4                         |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Knurled screw, thread M3 ▶ 6                               |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| <b>Top entry hood</b><br>Metallized thermoplastic          | 9<br>15<br>25<br>37                                           | 09 67 009 042<br>09 67 015 042<br>09 67 025 042<br>09 67 037 042                  |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Please insert digit for screw option                       |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Knurled screw, thread 4-40 UNC ▶ 5                         |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Knurled screw, thread M3 ▶ 7                               |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| <b>Top and side entry hood</b><br>Black thermoplastic      | 9 <sup>3)</sup><br>15<br>25<br>37 <sup>1)</sup>               | 09 67 009 043<br>09 67 015 043<br>09 67 025 043<br>09 67 037 043                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Please insert digit for screw option                       |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Knurled screw, thread 4-40 UNC ▶ 4                         |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Knurled screw, thread M3 ▶ 0                               |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| <b>Top and side entry hood</b><br>Metallized thermoplastic | 9 <sup>3)</sup><br>15<br>25 <sup>2)</sup><br>37 <sup>1)</sup> | 09 67 009 043<br>09 67 015 043<br>09 67 025 043<br>09 67 037 043                  |  | <table><tr><th></th><th>A</th><th>B</th></tr><tr><td>9</td><td>31.5</td><td>40</td></tr><tr><td>15</td><td>40.0</td><td>40</td></tr><tr><td>25</td><td>53.5</td><td>43</td></tr><tr><td>37</td><td>71.3</td><td>40</td></tr></table> <p>1) 37 pole is only available with side entry and with knurled screw, thread 4-40 UNC<br/>2) Cable clamp kit for two outputs is available as accessories (it includes: screw, metal clamp, plastic insert and grommet). With Part No. 09 67 001 9988 ten of these kits are delivered.<br/>3) 9 pole hood provided with only one screw on the opposite side of the cable entry.</p>                                                                                                                                                               |    | A        | B        | 9 | 31.5 | 40 | 15       | 40.0     | 40 | 25   | 53.5 | 43 | 37 | 71.3 | 40  |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
|                                                            | A                                                             | B                                                                                 |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| 9                                                          | 31.5                                                          | 40                                                                                |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| 15                                                         | 40.0                                                          | 40                                                                                |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| 25                                                         | 53.5                                                          | 43                                                                                |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| 37                                                         | 71.3                                                          | 40                                                                                |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Please insert digit for screw option                       |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Knurled screw, thread 4-40 UNC ▶ 5                         |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |
| Knurled screw, thread M3 ▶ 1                               |                                                               |                                                                                   |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |          |          |   |      |    |          |          |    |      |      |    |    |      |     |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |      |    |    |    |      |      |    |      |  |    |    |  |      |  |

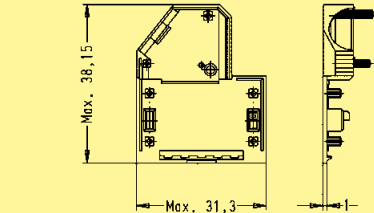
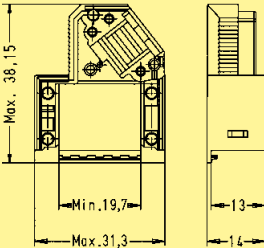
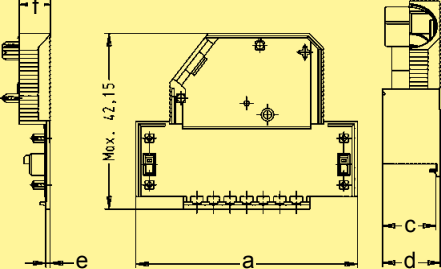
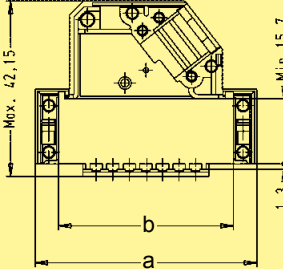
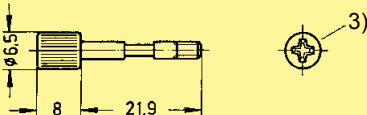
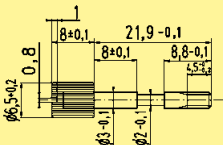
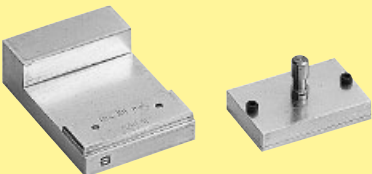
Operating temperature for all hoods on this page: -55 °C ... +110 °C



H-Sub-C



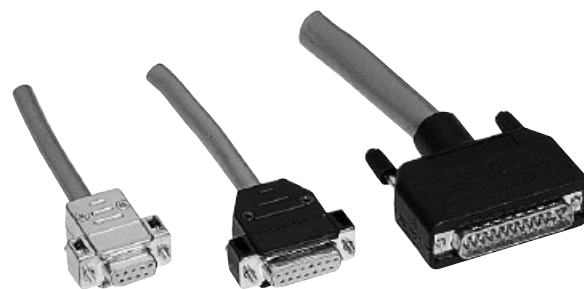
## Side entry hoods with knurled screws

| Identification                                                                         | No. of contacts           | Part No.                                                                               | Drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Dimensions in mm                                                                                              |      |           |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
|----------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------|-----------|-----------|---|---|---|---|----|-------|-------|-------|-------|------|------|----|-------|-------|-------|-------|------|------|----|-------|-------|-------|-------|------|------|----|-------|-------|-------|-------|------|------|
| <b>Hood<sup>1)</sup></b><br>grey thermoplastic<br>RAL 7032                             | 9<br>15<br>25<br>37<br>50 | 09 67 009 0571<br>09 67 015 0571<br>09 67 025 0571<br>09 67 037 0571<br>09 67 050 0571 | <b>Upper hood part</b><br><br>9 contacts<br>                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Lower hood part</b><br> |      |           |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
| grey thermoplastic<br>with internal<br>tin-plate screening                             | 9<br>15<br>25<br>37<br>50 | 09 67 009 0573<br>09 67 015 0573<br>09 67 025 0573<br>09 67 037 0573<br>09 67 050 0573 | <b>15 – 50 contacts</b><br>                                                                                                                                                                                                                                                                                                                                                                                                                          |                           |      |           |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
|                                                                                        |                           |                                                                                        | <table><tr><th></th><th>a<br/>max.</th><th>b<br/>min.</th><th>c</th><th>d</th><th>e</th><th>f</th></tr><tr><td>15</td><td>39.62</td><td>28.40</td><td>13.00</td><td>14.00</td><td>1.00</td><td>7.50</td></tr><tr><td>25</td><td>53.52</td><td>42.20</td><td>13.00</td><td>14.00</td><td>1.00</td><td>7.50</td></tr><tr><td>37</td><td>69.80</td><td>58.65</td><td>13.00</td><td>14.00</td><td>1.00</td><td>7.50</td></tr><tr><td>50</td><td>67.41</td><td>56.18</td><td>16.00</td><td>17.50</td><td>1.50</td><td>9.50</td></tr></table> |                                                                                                               |      | a<br>max. | b<br>min. | c | d | e | f | 15 | 39.62 | 28.40 | 13.00 | 14.00 | 1.00 | 7.50 | 25 | 53.52 | 42.20 | 13.00 | 14.00 | 1.00 | 7.50 | 37 | 69.80 | 58.65 | 13.00 | 14.00 | 1.00 | 7.50 | 50 | 67.41 | 56.18 | 16.00 | 17.50 | 1.50 | 9.50 |
|                                                                                        | a<br>max.                 | b<br>min.                                                                              | c                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | d                                                                                                             | e    | f         |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
| 15                                                                                     | 39.62                     | 28.40                                                                                  | 13.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 14.00                                                                                                         | 1.00 | 7.50      |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
| 25                                                                                     | 53.52                     | 42.20                                                                                  | 13.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 14.00                                                                                                         | 1.00 | 7.50      |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
| 37                                                                                     | 69.80                     | 58.65                                                                                  | 13.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 14.00                                                                                                         | 1.00 | 7.50      |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
| 50                                                                                     | 67.41                     | 56.18                                                                                  | 16.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 17.50                                                                                                         | 1.50 | 9.50      |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
| <b>Knurled screw</b><br><br>Thread UNC<br>Thread M3                                    | 9-50                      | 09 67 000 9971 <sup>2)</sup><br>09 67 001 9965*                                        | <br><b>Grey head / Nickel plated steel</b>                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                               |      |           |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
| Thread UNC<br>Thread M3                                                                | 9-50                      | 09 67 001 9978<br>09 67 001 9977                                                       | <br><b>Full metal part</b>                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                               |      |           |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |
| <b>Tooling<sup>4)</sup></b><br>for assembly<br>of hoods<br><br>Top part<br>Bottom part |                           | 09 99 000 0215*<br>09 99 000 0216*                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                               |      |           |           |   |   |   |   |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |    |       |       |       |       |      |      |

\* Not normally kept in stock

<sup>1)</sup> Order knurled screw separately<sup>2)</sup> 9 way 1 per hood – 15-50 way 2 per hood<sup>3)</sup> Screw driver type ISO PH 1 for philips screw No 1 ISO norm 4757<sup>4)</sup> Additional tooling (bench press) see chapter 32

Operating temperature for all hoods on this page: -30 °C ... +100 °C



## Top entry hoods with knurled or locking screws

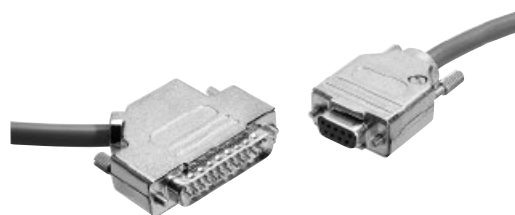
| Identification                                                                             | No. of contacts           | Part No.                                                                               | Drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Dimensions in mm                                                                                                                                                                                                                                                                                                                                         |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
|--------------------------------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------|---|---|------|--------|------|------|------|------|------|------|-----|------|------|------|------|------|------|------|----|------|------|------|------|-----|------|----|------|------|------|------|-----|------|--|
| <b>Hood<sup>3)</sup></b><br>Black thermoplastic with short locking screws                  | 9<br>15<br>25<br>37<br>50 | 09 67 009 0442<br>09 67 015 0442<br>09 67 025 0442<br>09 67 037 0442<br>09 67 050 0442 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| <b>Hood<sup>3)</sup></b><br>Metallized thermoplastic with short locking screws             | 9<br>15<br>25<br>37<br>50 | 09 67 009 04<br>09 67 015 04<br>09 67 025 04<br>09 67 037 04<br>09 67 050 04           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| Please insert digit for screw option<br>Thread 4-40 UNC ▶ 4<br>Thread M3 ▶ 2               |                           |                                                                                        | <table><tr><th></th><th>a</th><th>b</th><th>c</th><th>d</th><th>min.</th><th>e max.</th></tr><tr><td>15</td><td>40.0</td><td>34.7</td><td>15.2</td><td>33.3</td><td>3.3</td><td>8.5</td></tr><tr><td>25</td><td>53.2</td><td>39.7</td><td>15.2</td><td>47.0</td><td>3.5</td><td>11.0</td></tr><tr><td>37</td><td>70.0</td><td>39.7</td><td>15.2</td><td>63.5</td><td>3.5</td><td>11.0</td></tr><tr><td>50</td><td>67.5</td><td>39.7</td><td>18.2</td><td>61.1</td><td>9.3</td><td>12.0</td></tr></table> |                                                                                                                                                                                                                                                                                                                                                          | a    | b            | c | d | min. | e max. | 15   | 40.0 | 34.7 | 15.2 | 33.3 | 3.3  | 8.5 | 25   | 53.2 | 39.7 | 15.2 | 47.0 | 3.5  | 11.0 | 37 | 70.0 | 39.7 | 15.2 | 63.5 | 3.5 | 11.0 | 50 | 67.5 | 39.7 | 18.2 | 61.1 | 9.3 | 12.0 |  |
|                                                                                            | a                         | b                                                                                      | c                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | d                                                                                                                                                                                                                                                                                                                                                        | min. | e max.       |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 15                                                                                         | 40.0                      | 34.7                                                                                   | 15.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 33.3                                                                                                                                                                                                                                                                                                                                                     | 3.3  | 8.5          |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 25                                                                                         | 53.2                      | 39.7                                                                                   | 15.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 47.0                                                                                                                                                                                                                                                                                                                                                     | 3.5  | 11.0         |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 37                                                                                         | 70.0                      | 39.7                                                                                   | 15.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 63.5                                                                                                                                                                                                                                                                                                                                                     | 3.5  | 11.0         |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 50                                                                                         | 67.5                      | 39.7                                                                                   | 18.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 61.1                                                                                                                                                                                                                                                                                                                                                     | 9.3  | 12.0         |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| <b>Knurled screw</b><br>for metallized hood<br>Thread UNC<br>Thread M3                     | 9-50<br>9-50              | 09 67 000 9925 <sup>2)</sup><br>09 67 000 9930 <sup>2)</sup>                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| <b>Screened hood</b><br>Order cover and internal metal screen separately                   |                           |                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <table><tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>9</td><td>35.0</td><td>54</td><td>19.1</td><td>34</td></tr><tr><td>15</td><td>43.0</td><td>54</td><td>19.1</td><td>34</td></tr><tr><td>25</td><td>57.5</td><td>54</td><td>19.1</td><td>34</td></tr><tr><td>37</td><td>74.0</td><td>54</td><td>19.1</td><td>34</td></tr></table> |      | A            | B | C | D    | 9      | 35.0 | 54   | 19.1 | 34   | 15   | 43.0 | 54  | 19.1 | 34   | 25   | 57.5 | 54   | 19.1 | 34   | 37 | 74.0 | 54   | 19.1 | 34   |     |      |    |      |      |      |      |     |      |  |
|                                                                                            | A                         | B                                                                                      | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | D                                                                                                                                                                                                                                                                                                                                                        |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 9                                                                                          | 35.0                      | 54                                                                                     | 19.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 34                                                                                                                                                                                                                                                                                                                                                       |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 15                                                                                         | 43.0                      | 54                                                                                     | 19.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 34                                                                                                                                                                                                                                                                                                                                                       |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 25                                                                                         | 57.5                      | 54                                                                                     | 19.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 34                                                                                                                                                                                                                                                                                                                                                       |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 37                                                                                         | 74.0                      | 54                                                                                     | 19.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 34                                                                                                                                                                                                                                                                                                                                                       |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| <b>Cover<sup>4)</sup></b><br>Black thermoplastic with knurled screws                       | 9<br>15<br>25<br>37       | 09 67 009 0422<br>09 67 015 0422<br>09 67 025 0422<br>09 67 037 0422                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <table><tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>9</td><td>35.0</td><td>54</td><td>19.1</td><td>34</td></tr><tr><td>15</td><td>43.0</td><td>54</td><td>19.1</td><td>34</td></tr><tr><td>25</td><td>57.5</td><td>54</td><td>19.1</td><td>34</td></tr><tr><td>37</td><td>74.0</td><td>54</td><td>19.1</td><td>34</td></tr></table> |      | A            | B | C | D    | 9      | 35.0 | 54   | 19.1 | 34   | 15   | 43.0 | 54  | 19.1 | 34   | 25   | 57.5 | 54   | 19.1 | 34   | 37 | 74.0 | 54   | 19.1 | 34   |     |      |    |      |      |      |      |     |      |  |
|                                                                                            | A                         | B                                                                                      | C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | D                                                                                                                                                                                                                                                                                                                                                        |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 9                                                                                          | 35.0                      | 54                                                                                     | 19.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 34                                                                                                                                                                                                                                                                                                                                                       |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 15                                                                                         | 43.0                      | 54                                                                                     | 19.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 34                                                                                                                                                                                                                                                                                                                                                       |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 25                                                                                         | 57.5                      | 54                                                                                     | 19.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 34                                                                                                                                                                                                                                                                                                                                                       |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 37                                                                                         | 74.0                      | 54                                                                                     | 19.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 34                                                                                                                                                                                                                                                                                                                                                       |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| <b>Internal metal screen<sup>4)</sup></b><br>metallized<br><br>(Crimp tool see chapter 31) | 9<br>15<br>25<br>37       | 09 67 009 0421<br>09 67 015 0421<br>09 67 025 0421<br>09 67 037 0421                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <table><tr><th></th><th colspan="2">Cable Ø (mm)</th></tr><tr><th></th><th>min.</th><th>max.</th></tr><tr><td>9</td><td>6.1</td><td>8.8</td></tr><tr><td>15</td><td>6.1</td><td>8.8</td></tr><tr><td>25</td><td>8.0</td><td>10.3</td></tr><tr><td>37</td><td>9.5</td><td>11.5</td></tr></table>                                                          |      | Cable Ø (mm) |   |   | min. | max.   | 9    | 6.1  | 8.8  | 15   | 6.1  | 8.8  | 25  | 8.0  | 10.3 | 37   | 9.5  | 11.5 |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
|                                                                                            | Cable Ø (mm)              |                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
|                                                                                            | min.                      | max.                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 9                                                                                          | 6.1                       | 8.8                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 15                                                                                         | 6.1                       | 8.8                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 25                                                                                         | 8.0                       | 10.3                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |
| 37                                                                                         | 9.5                       | 11.5                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                          |      |              |   |   |      |        |      |      |      |      |      |      |     |      |      |      |      |      |      |      |    |      |      |      |      |     |      |    |      |      |      |      |     |      |  |

1) Use of knurled screws is possible. Please order separately

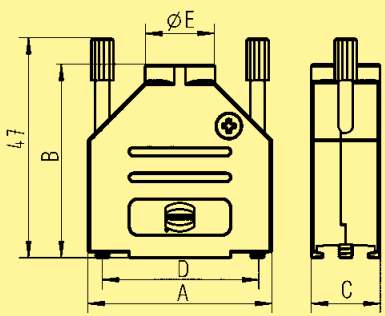
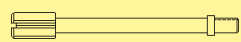
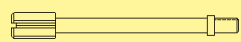
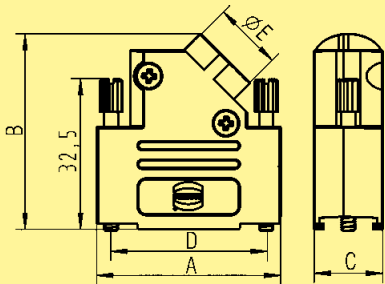
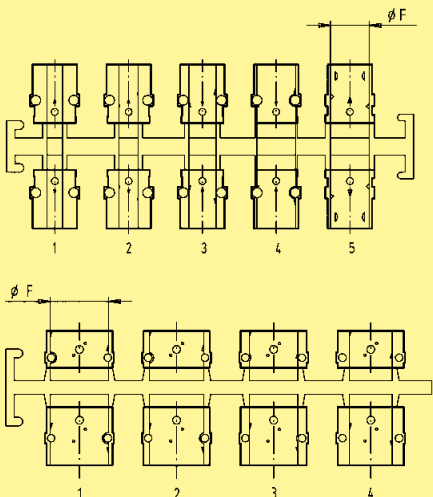
2) Order 2 for each hood

3) Operating temperature: -20 °C ... +90 °C

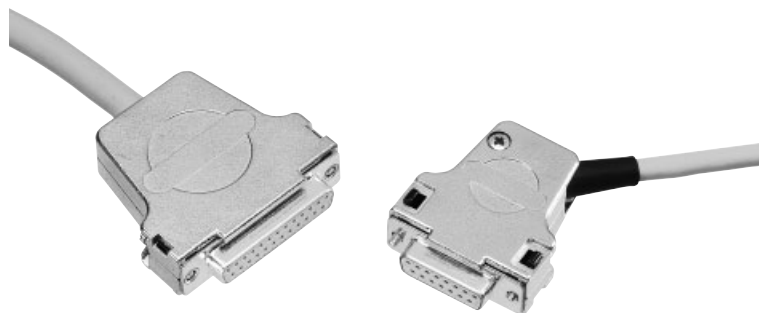
4) Operating temperature: -55 °C ... +110 °C



## Full metal top and side entry hoods with knurled screws

| Identification                                                                                                                                                                                                    | No. of contacts                                                                   | Part No.                                                                                                                               | Drawing                                                                                                                                                                                         | Dimensions in mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---|---|--------|------------|---|------------|----------|------|------|------|------|-----|------|------|------|------|------|-----|------|------|------|------|------|----|------|------|------|------|------|----|------|------|------|------|------|
| <div>Top entry hood<br/>incl. grommet set<br/>halves</div> <div>Please insert digit for<br/>screw option</div> <div>Knurled screw,<br/>thread<br/>4-40 UNC ▶ 3</div> <div>Knurled screw,<br/>thread M3 ▶ 8</div>  | <div>9</div> <div>15</div> <div>25</div> <div>37</div> <div>50</div>              | <div>09 67 009 034 .</div> <div>09 67 015 034 .</div> <div>09 67 025 034 .</div> <div>09 67 037 034 .</div> <div>09 67 050 034 .</div> | <div></div> <div></div>   | <table><tr><th>Poles</th><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th></tr><tr><td>9</td><td>31.0</td><td>39.5</td><td>14.8</td><td>25.0</td><td>11.7</td></tr><tr><td>15</td><td>39.5</td><td>41.5</td><td>14.8</td><td>33.3</td><td>11.7</td></tr><tr><td>25</td><td>53.5</td><td>48.5</td><td>14.8</td><td>47.0</td><td>11.7</td></tr><tr><td>37</td><td>71.0</td><td>53.0</td><td>14.8</td><td>63.5</td><td>11.7</td></tr><tr><td>50</td><td>67.5</td><td>54.0</td><td>18.7</td><td>61.1</td><td>17.0</td></tr></table> | Poles              | A | B | C      | D          | E | 9          | 31.0     | 39.5 | 14.8 | 25.0 | 11.7 | 15  | 39.5 | 41.5 | 14.8 | 33.3 | 11.7 | 25  | 53.5 | 48.5 | 14.8 | 47.0 | 11.7 | 37 | 71.0 | 53.0 | 14.8 | 63.5 | 11.7 | 50 | 67.5 | 54.0 | 18.7 | 61.1 | 17.0 |
| Poles                                                                                                                                                                                                             | A                                                                                 | B                                                                                                                                      | C                                                                                                                                                                                               | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | E                  |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 9                                                                                                                                                                                                                 | 31.0                                                                              | 39.5                                                                                                                                   | 14.8                                                                                                                                                                                            | 25.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11.7               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 15                                                                                                                                                                                                                | 39.5                                                                              | 41.5                                                                                                                                   | 14.8                                                                                                                                                                                            | 33.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11.7               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 25                                                                                                                                                                                                                | 53.5                                                                              | 48.5                                                                                                                                   | 14.8                                                                                                                                                                                            | 47.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11.7               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 37                                                                                                                                                                                                                | 71.0                                                                              | 53.0                                                                                                                                   | 14.8                                                                                                                                                                                            | 63.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11.7               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 50                                                                                                                                                                                                                | 67.5                                                                              | 54.0                                                                                                                                   | 18.7                                                                                                                                                                                            | 61.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 17.0               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| <div>Spare knurled screw<br/>thread 4-40 UNC<br/>thread M3</div>                                                                                                                                                  |                                                                                   | <div>09 67 002 9029</div> <div>09 67 002 9101</div>                                                                                    | <div></div>                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| <div>Side entry hood<br/>incl. grommet set<br/>halves</div> <div>Please insert digit for<br/>screw option</div> <div>Knurled screw,<br/>thread<br/>4-40 UNC ▶ 3</div> <div>Knurled screw,<br/>thread M3 ▶ 6</div> | <div>9<sup>1)</sup></div> <div>15</div> <div>25</div> <div>37</div> <div>50</div> | <div>09 67 009 033 .</div> <div>09 67 015 033 .</div> <div>09 67 025 033 .</div> <div>09 67 037 033 .</div> <div>09 67 050 033 .</div> | <div></div> <div></div> | <table><tr><th>Poles</th><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th></tr><tr><td>9</td><td>31.0</td><td>37.7</td><td>14.7</td><td>—</td><td>11.7</td></tr><tr><td>15</td><td>39.5</td><td>42.0</td><td>14.7</td><td>33.3</td><td>11.7</td></tr><tr><td>25</td><td>53.2</td><td>41.3</td><td>14.7</td><td>47.0</td><td>11.7</td></tr><tr><td>37</td><td>69.7</td><td>41.8</td><td>14.7</td><td>63.7</td><td>11.7</td></tr><tr><td>50</td><td>67.4</td><td>44.9</td><td>17.4</td><td>61.1</td><td>17.0</td></tr></table>    | Poles              | A | B | C      | D          | E | 9          | 31.0     | 37.7 | 14.7 | —    | 11.7 | 15  | 39.5 | 42.0 | 14.7 | 33.3 | 11.7 | 25  | 53.2 | 41.3 | 14.7 | 47.0 | 11.7 | 37 | 69.7 | 41.8 | 14.7 | 63.7 | 11.7 | 50 | 67.4 | 44.9 | 17.4 | 61.1 | 17.0 |
| Poles                                                                                                                                                                                                             | A                                                                                 | B                                                                                                                                      | C                                                                                                                                                                                               | D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | E                  |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 9                                                                                                                                                                                                                 | 31.0                                                                              | 37.7                                                                                                                                   | 14.7                                                                                                                                                                                            | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 11.7               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 15                                                                                                                                                                                                                | 39.5                                                                              | 42.0                                                                                                                                   | 14.7                                                                                                                                                                                            | 33.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11.7               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 25                                                                                                                                                                                                                | 53.2                                                                              | 41.3                                                                                                                                   | 14.7                                                                                                                                                                                            | 47.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11.7               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 37                                                                                                                                                                                                                | 69.7                                                                              | 41.8                                                                                                                                   | 14.7                                                                                                                                                                                            | 63.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 11.7               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 50                                                                                                                                                                                                                | 67.4                                                                              | 44.9                                                                                                                                   | 17.4                                                                                                                                                                                            | 61.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 17.0               |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| <div>Spare knurled screw<br/>thread 4-40 UNC<br/>thread M3</div>                                                                                                                                                  |                                                                                   | <div>09 67 002 9028</div> <div>09 67 001 9997</div>                                                                                    | <div></div>                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| <div>Spare grommet set<br/>halves</div> <div>9-37 poles</div> <div>50 poles</div>                                                                                                                                 |                                                                                   | <div>09 67 002 9092</div> <div>09 67 002 9094</div>                                                                                    | <div></div>                                                                                                 | <table><tr><th colspan="3">Grommet dimensions</th></tr><tr><th rowspan="2">Number</th><th colspan="2">Diameter F</th></tr><tr><th>9-37 poles</th><th>50 poles</th></tr><tr><td>1</td><td>4.0</td><td>15.0</td></tr><tr><td>2</td><td>5.0</td><td>14.0</td></tr><tr><td>3</td><td>7.0</td><td>12.5</td></tr><tr><td>4</td><td>9.0</td><td>11.0</td></tr><tr><td>5</td><td>10.2</td><td>—</td></tr></table>                                                                                                                        | Grommet dimensions |   |   | Number | Diameter F |   | 9-37 poles | 50 poles | 1    | 4.0  | 15.0 | 2    | 5.0 | 14.0 | 3    | 7.0  | 12.5 | 4    | 9.0 | 11.0 | 5    | 10.2 | —    |      |    |      |      |      |      |      |    |      |      |      |      |      |
| Grommet dimensions                                                                                                                                                                                                |                                                                                   |                                                                                                                                        |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| Number                                                                                                                                                                                                            | Diameter F                                                                        |                                                                                                                                        |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
|                                                                                                                                                                                                                   | 9-37 poles                                                                        | 50 poles                                                                                                                               |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 1                                                                                                                                                                                                                 | 4.0                                                                               | 15.0                                                                                                                                   |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 2                                                                                                                                                                                                                 | 5.0                                                                               | 14.0                                                                                                                                   |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 3                                                                                                                                                                                                                 | 7.0                                                                               | 12.5                                                                                                                                   |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 4                                                                                                                                                                                                                 | 9.0                                                                               | 11.0                                                                                                                                   |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |
| 5                                                                                                                                                                                                                 | 10.2                                                                              | —                                                                                                                                      |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |   |   |        |            |   |            |          |      |      |      |      |     |      |      |      |      |      |     |      |      |      |      |      |    |      |      |      |      |      |    |      |      |      |      |      |

<sup>1)</sup> 9 pole hood provided with only one screw on the opposite side of the cable entry.  
 Operating temperature for all hoods on this page: -40 °C ... +120 °C



Full metal top and side entry hoods  
with short screws

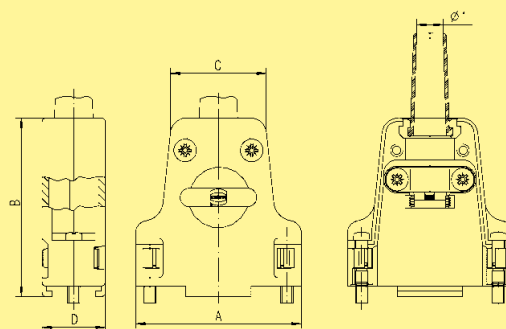
Identification No. of contacts Part No. Drawing Dimensions in mm

### Top entry hood

|    |               |
|----|---------------|
| 9  | 09 67 009 034 |
| 15 | 09 67 015 034 |
| 25 | 09 67 025 034 |
| 37 | 09 67 037 034 |
| 50 | 09 67 050 034 |

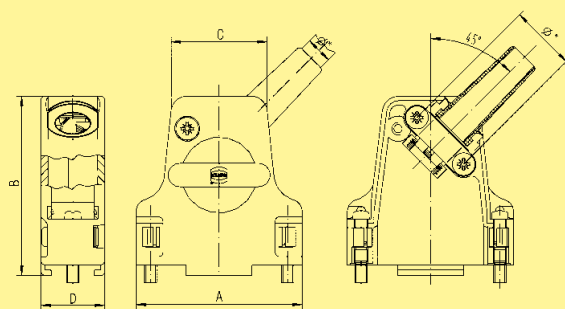
Please insert digit for screw option

|                                     |   |
|-------------------------------------|---|
| Locking screw,<br>thread 4-40 UNC ▶ | 4 |
| Locking screw, thread M3 ▶          | 9 |



| Poles | A    | B    | C    | D    | Ø F1 |      | Ø F2 | Ø F3 |
|-------|------|------|------|------|------|------|------|------|
|       |      |      |      |      | Min. | Max. |      |      |
| 9     | 31.8 | 42.4 | 20.8 | 15.4 | 3.0  | 9.5  | 6.5  | —    |
| 15    | 40.3 | 43.5 | 23.3 | 15.4 | 3.0  | 8.5  | 6.5  | 12.5 |
| 25    | 54.0 | 47.7 | 31.7 | 15.4 | 3.0  | 8.5  | 8.0  | 12.5 |
| 37    | 70.2 | 50.4 | 48.2 | 18.4 | 3.0  | 12.0 | 9.0  | 15.0 |
| 50    | 67.8 | 50.5 | 45.8 | 18.2 | 3.0  | 12.0 | 9.7  | 15.0 |

\* Cable diameter without rubber bushing = Ø F1  
Cable diameter with rubber bushing = Ø F2  
Cable diameter without rubber bushing  
and without cable reduction plate = Ø F3



### Side entry hood

|    |               |
|----|---------------|
| 9  | 09 67 009 033 |
| 15 | 09 67 015 033 |
| 25 | 09 67 025 033 |
| 37 | 09 67 037 033 |
| 50 | 09 67 050 033 |

Please insert digit for screw option

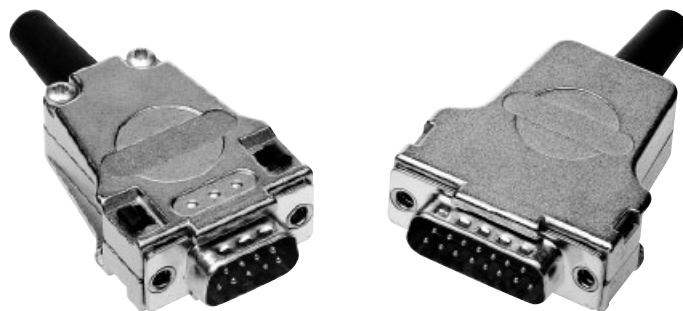
|                                     |   |
|-------------------------------------|---|
| Locking screw,<br>thread 4-40 UNC ▶ | 4 |
| Locking screw, thread M3 ▶          | 5 |

### Spare short locking screw

thread 4-40 UNC  
thread M3

09 67 002 9090  
09 67 002 9091





Full metal top entry hoods  
with premounted threaded inserts

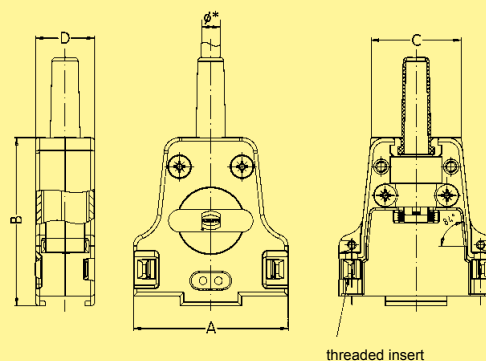
| Identification | No. of contacts | Part No. | Drawing | Dimensions in mm |
|----------------|-----------------|----------|---------|------------------|
|----------------|-----------------|----------|---------|------------------|

### Top entry hood

Please insert digit  
for premounted insert

thread 4-40 UNC ▶ 2  
thread M3 ▶ 3

|    |               |
|----|---------------|
| 9  | 09 67 009 032 |
| 15 | 09 67 015 032 |
| 25 | 09 67 025 032 |
| 37 | 09 67 037 032 |
| 50 | 09 67 050 032 |



| Poles | A    | B    | C    | D    | Ø F1 |      | Ø F2 | Ø F3 |
|-------|------|------|------|------|------|------|------|------|
|       |      |      |      |      | Min. | Max. |      |      |
| 9     | 31.6 | 42.0 | 20.8 | 15.2 | 3.0  | 9.5  | 6.5  | —    |
| 15    | 40.0 | 43.5 | 23.3 | 15.2 | 3.0  | 8.5  | 6.5  | 12.5 |
| 25    | 53.7 | 47.5 | 31.7 | 15.2 | 3.0  | 8.5  | 8.0  | 12.5 |
| 37    | 70.2 | 50.5 | 48.2 | 18.2 | 3.0  | 12.0 | 9.0  | 15.0 |
| 50    | 67.8 | 50.5 | 45.8 | 18.2 | 3.0  | 12.0 | 9.7  | 15.0 |

\* Cable diameter without rubber bushing = Ø F1  
Cable diameter with rubber bushing = Ø F2  
Cable diameter without rubber bushing  
and without cable reduction plate = Ø F3

### Locking hook

09 67 002 9031<sup>1)</sup>

### Latch lock bolt

Front mount

thread 4-40 UNC  
thread M3

09 67 002 9041<sup>1)</sup>  
09 67 002 9042<sup>1)</sup>

Rear mount

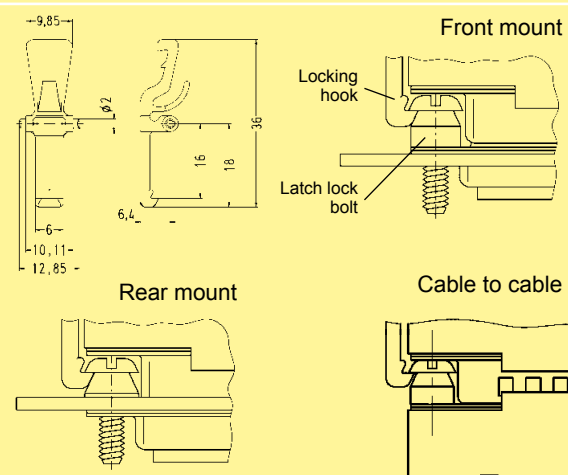
thread 4-40 UNC  
thread M3

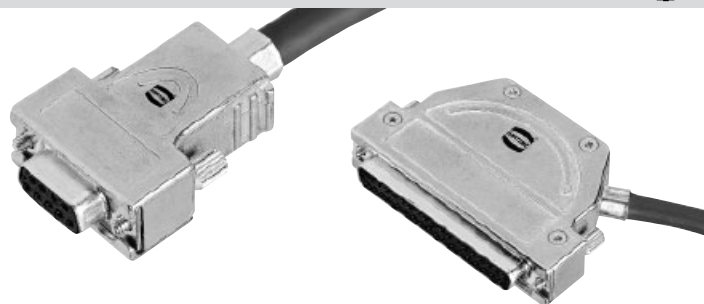
09 67 002 9032<sup>1)</sup>  
09 67 002 9040<sup>1)</sup>

Cable to cable

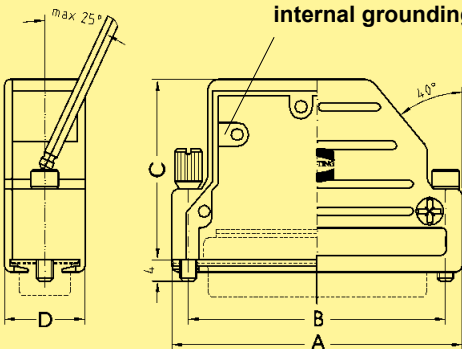
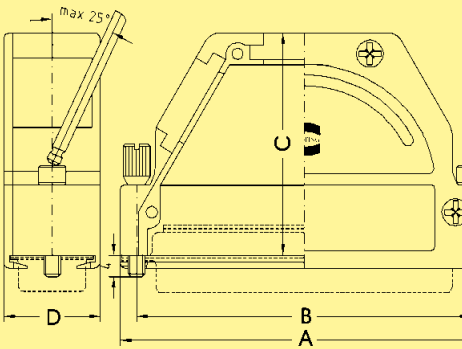
thread 4-40 UNC  
thread M3

09 67 002 9044<sup>1)</sup>  
09 67 002 9045<sup>1)</sup>





Full metal top and side entry hoods  
with different screw options

| Identification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | No. of contacts      | Part No.  |                   | Drawing                                                                              | Dimensions in mm |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|-------------------|--------------------------------------------------------------------------------------|------------------|-----------------|----------------------|---|---|---|---|------|---------|------|------|------|------|------|---------|------|------|------|------|------|------|------|------|------|------|----|---|------|------|------|------|----|---|------|------|------|------|
| 40° side entry hood<br>with internal grounding block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 9                    | 61 03 001 | 013               |    |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15                   | 61 03 001 | 014               |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 25                   | 61 03 001 | 015               |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |           |                   |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |           |                   |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| without internal grounding block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 9                    | 61 03 001 | 013 010           |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| <table><tr><th>No. of contacts</th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>9</td><td>31.0</td><td>25.0</td><td>35.0</td><td>15.0</td></tr><tr><td>15</td><td>39.3</td><td>33.3</td><td>35.0</td><td>15.0</td></tr><tr><td>25</td><td>53.0</td><td>47.0</td><td>35.0</td><td>15.0</td></tr></table>                                                                                                                                                                                                                                            |                      |           |                   |                                                                                      |                  | No. of contacts | A                    | B | C | D | 9 | 31.0 | 25.0    | 35.0 | 15.0 | 15   | 39.3 | 33.3 | 35.0    | 15.0 | 25   | 53.0 | 47.0 | 35.0 | 15.0 |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| No. of contacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A                    | B         | C                 | D                                                                                    |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 31.0                 | 25.0      | 35.0              | 15.0                                                                                 |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 39.3                 | 33.3      | 35.0              | 15.0                                                                                 |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 53.0                 | 47.0      | 35.0              | 15.0                                                                                 |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| Top/side entry hood<br>with internal grounding block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 9                    | 61 03 001 | 010               |  |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15                   | 61 03 001 | 016               |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 25                   | 61 03 001 | 017 <sup>1)</sup> |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 37                   | 61 03 001 | 018 <sup>1)</sup> |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 50                   | 61 03 001 | 019 <sup>1)</sup> |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |           |                   |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |           |                   |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| without internal grounding block                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 9                    | 61 03 001 | 010 010           |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| Please insert digit for screw option                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                      |           |                   |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| Knurled screw, thread 4-40 UNC ▶ 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |           |                   |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| Hexagonal screw, thread M3 with captive washer ▶ 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |           |                   |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| Hexagonal screw, thread 4-40 UNC with captive washer ▶ 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                      |           |                   |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| Knurled screw, thread M3 ▶ 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                      |           |                   |                                                                                      |                  |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| <table><tr><th>No. of contacts</th><th>No. of cable entries</th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>9</td><td>1 (top)</td><td>31.0</td><td>25.0</td><td>38.0</td><td>15.0</td></tr><tr><td>15</td><td>1 (top)</td><td>39.5</td><td>33.3</td><td>35.0</td><td>15.0</td></tr><tr><td>25</td><td>3</td><td>53.0</td><td>47.0</td><td>43.0</td><td>15.0</td></tr><tr><td>37</td><td>3</td><td>69.5</td><td>63.5</td><td>43.0</td><td>15.0</td></tr><tr><td>50</td><td>3</td><td>67.2</td><td>61.6</td><td>43.0</td><td>17.8</td></tr></table> |                      |           |                   |                                                                                      |                  | No. of contacts | No. of cable entries | A | B | C | D | 9    | 1 (top) | 31.0 | 25.0 | 38.0 | 15.0 | 15   | 1 (top) | 39.5 | 33.3 | 35.0 | 15.0 | 25   | 3    | 53.0 | 47.0 | 43.0 | 15.0 | 37 | 3 | 69.5 | 63.5 | 43.0 | 15.0 | 50 | 3 | 67.2 | 61.6 | 43.0 | 17.8 |
| No. of contacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | No. of cable entries | A         | B                 | C                                                                                    | D                |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1 (top)              | 31.0      | 25.0              | 38.0                                                                                 | 15.0             |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1 (top)              | 39.5      | 33.3              | 35.0                                                                                 | 15.0             |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3                    | 53.0      | 47.0              | 43.0                                                                                 | 15.0             |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| 37                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3                    | 69.5      | 63.5              | 43.0                                                                                 | 15.0             |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |
| 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3                    | 67.2      | 61.6              | 43.0                                                                                 | 17.8             |                 |                      |   |   |   |   |      |         |      |      |      |      |      |         |      |      |      |      |      |      |      |      |      |      |    |   |      |      |      |      |    |   |      |      |      |      |

<sup>1)</sup> Part No. contains two blanking pieces  
Operating temperature for all hoods on this page: -20 °C ... +90 °C



Full metal top and side entry hoods  
with different screw options

| Identification | No. of contacts | Part No. | Drawing | Dimensions in mm |
|----------------|-----------------|----------|---------|------------------|
|----------------|-----------------|----------|---------|------------------|

5° top entry hood with 3 cable entries

**with** internal grounding block

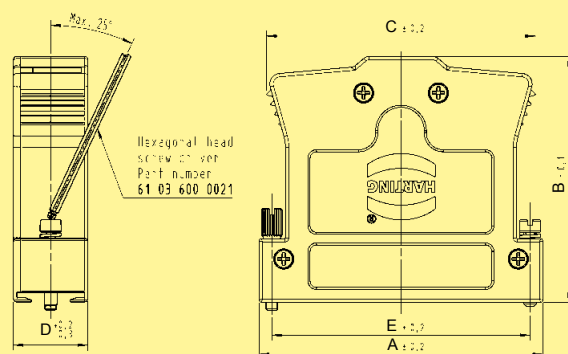
37  
50

61 03 001 118  
61 03 001 119

**without** internal grounding block

37  
50

61 03 001 118 010  
61 03 001 119 010



| No. of contacts | A    | B    | C    | D    | E    |
|-----------------|------|------|------|------|------|
| 37              | 69.5 | 52.0 | 58.2 | 14.8 | 63.5 |
| 50              | 67.1 | 58.0 | 63.6 | 17.6 | 61.1 |

Please insert digit for screw option

- Knurled screw, thread 4-40 UNC ▶ 0
- Hexagonal screw, thread M3 with captive washer ▶ 1
- Hexagonal screw, thread 4-40 UNC with captive washer ▶ 2
- Knurled screw, thread M3 ▶ 3

Top entry hood  
for InduCom 9

Hexagonal screw, thread 4-40 UNC

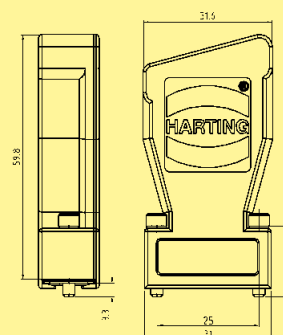
9

66 67 009 0346

Hexagonal screw, thread M3

9

66 67 009 0347

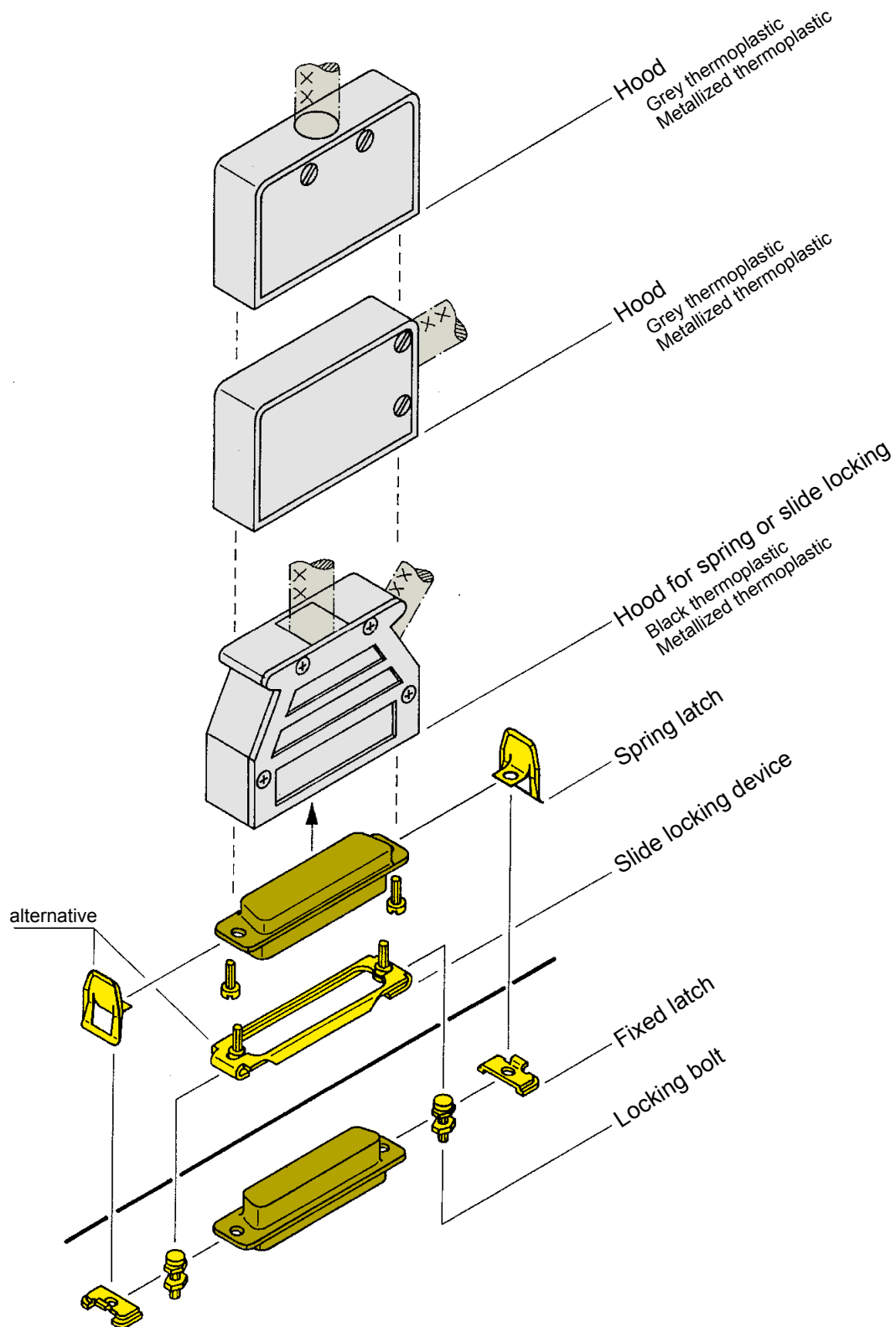


2 cable entries





## Connector hoods for spring or slide locking



Thermoplastic top  
and side entry hoods  
for spring or slide locking



## Identification

No. of  
contacts

## Part No.

## Drawing

## Dimensions in mm

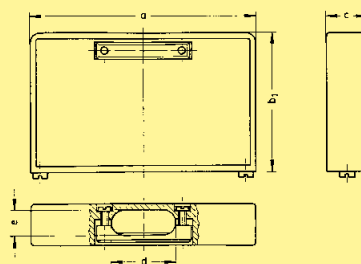
## Top entry hood

9-37 way  
for packaging density  
of 3 TE (15.24 mm)

9  
15  
25  
37  
50

Thermoplastic  
grey<sup>2)</sup>  
09 67 009 0411  
09 67 015 0411  
09 67 025 0411  
09 67 037 0411  
09 67 050 0411

Thermoplastic  
metallized<sup>3)</sup>  
09 67 009 0413  
09 67 015 0413  
09 67 025 0413  
09 67 037 0413  
09 67 050 0413



|    | a    | b <sub>1</sub> | b <sub>2</sub> | c    | d  | e    |      |
|----|------|----------------|----------------|------|----|------|------|
|    |      |                |                |      |    | min. | max. |
| 9  | 31.0 | 23             | 28             | 12.8 | 10 | 5.75 | 9.0  |
| 15 | 39.4 | 28             | 28             | 12.8 | 10 | 5.75 | 9.0  |
| 25 | 53.3 | 34             | 34             | 12.8 | 14 | 5.75 | 9.0  |
| 37 | 69.7 | 43             | 43             | 12.8 | 20 | 5.75 | 9.0  |
| 50 | 67.1 | 41             | 41             | 15.8 | 20 | 5.75 | 11.6 |

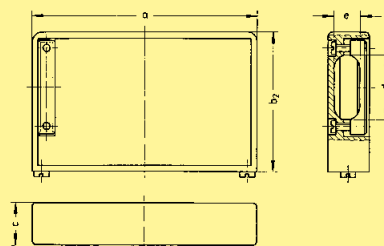
## Side entry hood

9-37 way  
for packaging density  
of 3 TE (15.24 mm)

9  
15  
25  
37  
50

Thermoplastic  
grey<sup>2)</sup>  
09 67 009 0511  
09 67 015 0511  
09 67 025 0511  
09 67 037 0511  
09 67 050 0511

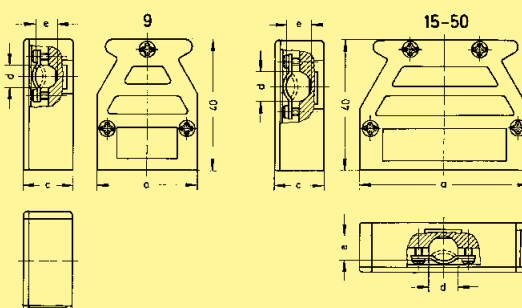
Thermoplastic  
metallized<sup>3)</sup>  
09 67 009 0513  
09 67 015 0513  
09 67 025 0513  
09 67 037 0513  
09 67 050 0513

Top and side entry  
hood <sup>1)</sup>

9  
15  
25  
37  
50

Thermoplastic  
black<sup>4)</sup>  
09 67 009 0452  
09 67 015 0452  
09 67 025 0452  
09 67 037 0452  
09 67 050 0452

Thermoplastic  
metallized<sup>4)</sup>  
09 67 009 0453  
09 67 015 0453  
09 67 025 0453  
09 67 037 0453  
09 67 050 0453



|    | a    | c    | d | e    |      |
|----|------|------|---|------|------|
|    |      |      |   | min. | max. |
| 9  | 31.0 | 15.4 | 7 | 1.7  | 7.5  |
| 15 | 39.4 | 15.4 | 7 | 1.7  | 8.0  |
| 25 | 53.2 | 15.4 | 9 | 1.5  | 8.0  |
| 37 | 69.5 | 15.4 | 9 | 1.5  | 8.0  |
| 50 | 67.0 | 17.9 | 9 | 1.5  | 8.0  |

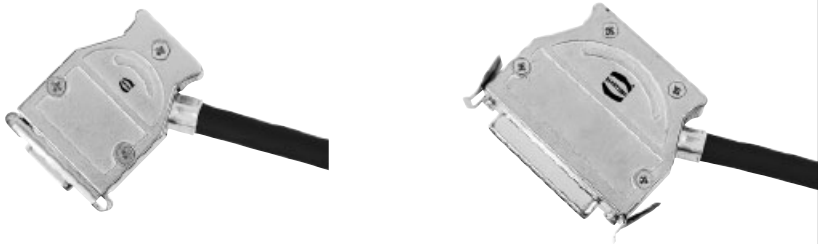
<sup>1)</sup> 9 poles is only side  
entry

<sup>2)</sup> Operating temperature: -55 °C ... +120 °C

<sup>3)</sup> Operating temperature: -35 °C ... +60 °C

<sup>4)</sup> Operating temperature: -20 °C ... +90 °C

Accessories see page 07.17

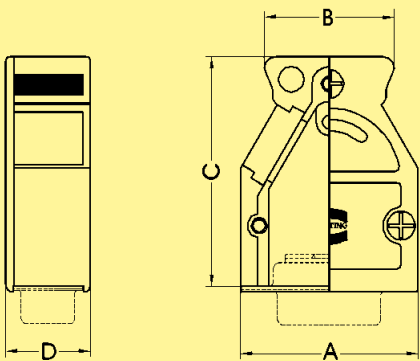


Full metal top and side entry hoods for spring or slide locking

| Identification | No. of contacts | Part No. | Drawing | Dimensions in mm |
|----------------|-----------------|----------|---------|------------------|
|----------------|-----------------|----------|---------|------------------|

Top/side entry hood with spring/slide locking

|    |                              |
|----|------------------------------|
| 9  | 61 03 001 0022 <sup>1)</sup> |
| 15 | 61 03 001 0011 <sup>2)</sup> |
| 25 | 61 03 001 0012 <sup>2)</sup> |
| 37 | 61 03 001 0021 <sup>2)</sup> |
| 50 | 61 03 001 0020 <sup>2)</sup> |



| No. of contacts | No. of cable entries | A    | B    | C    | D    |
|-----------------|----------------------|------|------|------|------|
| 9               | 2                    | 31.0 | 22.6 | 40.0 | 14.8 |
| 15              | 3                    | 39.0 | 30.6 | 40.0 | 14.8 |
| 25              | 3                    | 53.0 | 42.6 | 40.0 | 14.8 |
| 37              | 3                    | 69.5 | 59.2 | 40.0 | 14.8 |
| 50              | 3                    | 67.0 | 55.0 | 40.0 | 17.6 |

D-Sub - H

<sup>1)</sup> Part No. contains one blanking piece  
<sup>2)</sup> Part No. contains two blanking pieces

## Accessories for spring or slide locking hoods

| Identification            | No. of contacts           | Part No.                                                                                                                | Drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Dimensions in mm |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |
|---------------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---|---|---|---|---|------|------|------|-----|----|------|------|------|-----|----|------|------|------|-----|----|------|------|------|-----|----|------|------|------|------|--|
| Spring latch              | 9-50                      | corrosion resistant steel<br>09 67 000 9907 <sup>1)</sup>                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |
| Fixed latch <sup>2)</sup> | 9-37<br>50                | corrosion resistant steel<br>09 67 001 9971 <sup>1)</sup><br>09 67 001 9972 <sup>1)</sup>                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |
| Slide locking device      | 9<br>15<br>25<br>37<br>50 | corrosion resistant steel<br><br>09 67 000 9914<br>09 67 000 9915<br>09 67 000 9916<br>09 67 000 9917<br>09 67 000 9918 | <br><table border="1"> <thead> <tr> <th></th><th>a</th><th>b</th><th>c</th><th>d</th></tr> </thead> <tbody> <tr> <td>9</td><td>35.0</td><td>25.0</td><td>11.7</td><td>8.6</td></tr> <tr> <td>15</td><td>43.3</td><td>33.3</td><td>11.5</td><td>8.6</td></tr> <tr> <td>25</td><td>57.0</td><td>47.0</td><td>11.7</td><td>8.6</td></tr> <tr> <td>37</td><td>74.3</td><td>63.5</td><td>11.7</td><td>8.6</td></tr> <tr> <td>50</td><td>72.0</td><td>61.1</td><td>14.7</td><td>11.2</td></tr> </tbody> </table> |                  | a | b | c | d | 9 | 35.0 | 25.0 | 11.7 | 8.6 | 15 | 43.3 | 33.3 | 11.5 | 8.6 | 25 | 57.0 | 47.0 | 11.7 | 8.6 | 37 | 74.3 | 63.5 | 11.7 | 8.6 | 50 | 72.0 | 61.1 | 14.7 | 11.2 |  |
|                           | a                         | b                                                                                                                       | c                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | d                |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |
| 9                         | 35.0                      | 25.0                                                                                                                    | 11.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 8.6              |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |
| 15                        | 43.3                      | 33.3                                                                                                                    | 11.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 8.6              |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |
| 25                        | 57.0                      | 47.0                                                                                                                    | 11.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 8.6              |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |
| 37                        | 74.3                      | 63.5                                                                                                                    | 11.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 8.6              |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |
| 50                        | 72.0                      | 61.1                                                                                                                    | 14.7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 11.2             |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |
| Locking bolt              | 9-50                      | tinned<br>09 67 001 9973 <sup>1)</sup>                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |  |

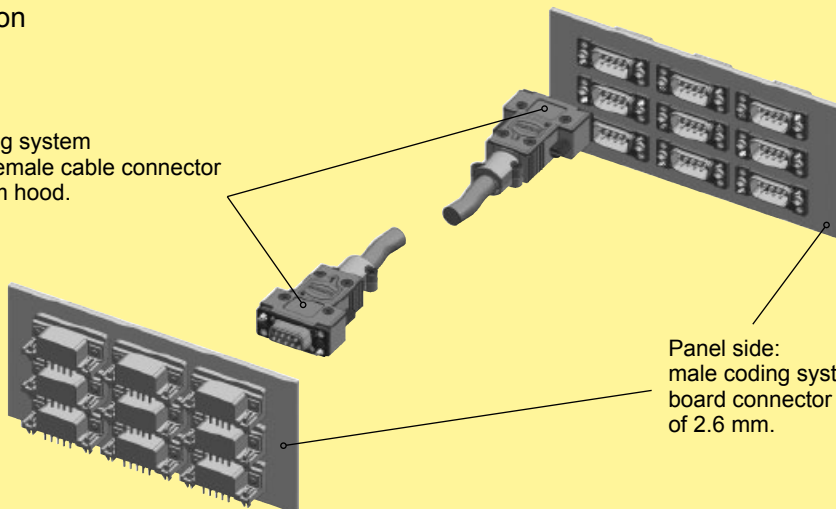
<sup>1)</sup> Order 2 for each connector

<sup>2)</sup> Screws are not supplied with a fixed latch

### Coding system

#### Example of application

Cable side:  
female coding system  
with 9 pole female cable connector  
and InduCom hood.



Panel side:  
male coding system with 9 pole male  
board connector and a board thickness  
of 2.6 mm.

#### Exploded view panel side

Panel frame

9 pole male  
board connector

Male coding system

Female  
screw lock

#### Exploded view cable side

InduCom hood

Female coding  
system

9 pole female  
cable connector

#### Coding key details



Before mating



Fully mated

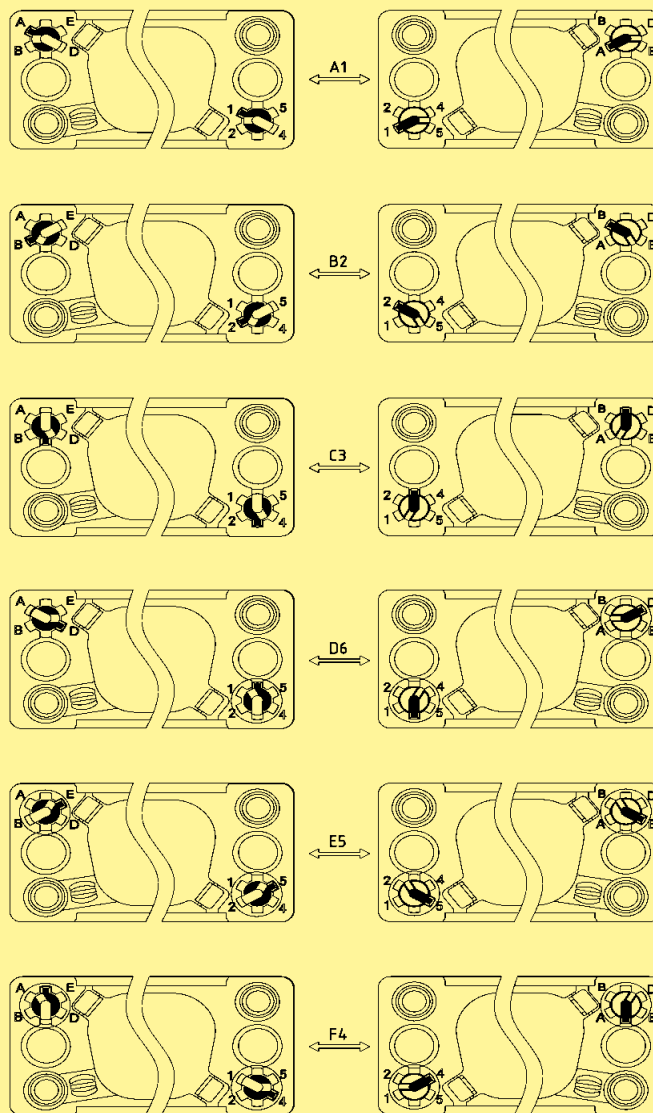


Polarization case

#### Standard coding combination

Female

Male



## Accessories – coding system

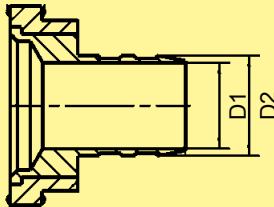
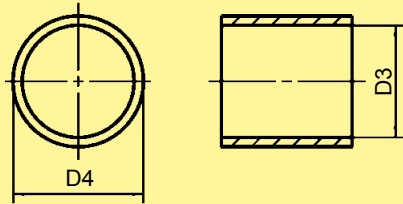
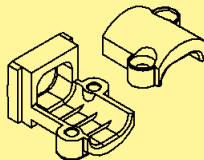
| Identification                                                                                                                                                                                                                                       | Part No.            | Panel thickness                        | Dimensions in mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|------------|------------|----|----------------------------------------------------------------------|----------------|-----------|----|------------------------------------------------------------------------------------|----------------|----|----|----|-----------|----|----|----|----|----|----|----|----|-----------|----|----|----|----|-----------|----|----|----|----|-----------|----|----|
| Coding <sup>1)</sup>                                                                                                                                                                                                                                 |                     |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| Female                                                                                                                                                                                                                                               | 09 67 002 9121 xx 1 | 2.40 - 2.60 mm <sup>3)</sup>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
|                                                                                                                                                                                                                                                      | 09 67 002 9121 xx 2 | 2.00 - 2.40 mm                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
|                                                                                                                                                                                                                                                      | 09 67 002 9121 xx 3 | 1.20 - 2.00 mm                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
|                                                                                                                                                                                                                                                      | 09 67 002 9121 xx 4 | 0.80 - 1.20 mm                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| Male                                                                                                                                                                                                                                                 | 09 67 002 9122 xx 1 | 2.40 - 2.60 mm <sup>3)</sup>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
|                                                                                                                                                                                                                                                      | 09 67 002 9122 xx 2 | 2.00 - 2.40 mm                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
|                                                                                                                                                                                                                                                      | 09 67 002 9122 xx 3 | 1.20 - 2.00 mm                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
|                                                                                                                                                                                                                                                      | 09 67 002 9122 xx 4 | 0.80 - 1.20 mm                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| Insert digits for coding configuration, e. g. "C3"                                                                                                                                                                                                   |                     | 36 coding configurations <sup>2)</sup> | <table><tr><td><b>A1</b></td><td>B1</td><td>C1</td><td>D1</td><td>E1</td><td>F1</td></tr><tr><td>A2</td><td><b>B2</b></td><td>C2</td><td>D2</td><td>E2</td><td>F2</td></tr><tr><td>A3</td><td>B3</td><td><b>C3</b></td><td>D3</td><td>E3</td><td>F3</td></tr><tr><td>A4</td><td>B4</td><td>C4</td><td>D4</td><td>E4</td><td><b>F4</b></td></tr><tr><td>A5</td><td>B5</td><td>C5</td><td>D5</td><td><b>E5</b></td><td>F5</td></tr><tr><td>A6</td><td>B6</td><td>C6</td><td><b>D6</b></td><td>E6</td><td>F6</td></tr></table> | <b>A1</b> | B1         | C1         | D1         | E1 | F1                                                                   | A2             | <b>B2</b> | C2 | D2                                                                                 | E2             | F2 | A3 | B3 | <b>C3</b> | D3 | E3 | F3 | A4 | B4 | C4 | D4 | E4 | <b>F4</b> | A5 | B5 | C5 | D5 | <b>E5</b> | F5 | A6 | B6 | C6 | <b>D6</b> | E6 | F6 |
| <b>A1</b>                                                                                                                                                                                                                                            | B1                  | C1                                     | D1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | E1        | F1         |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| A2                                                                                                                                                                                                                                                   | <b>B2</b>           | C2                                     | D2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | E2        | F2         |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| A3                                                                                                                                                                                                                                                   | B3                  | <b>C3</b>                              | D3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | E3        | F3         |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| A4                                                                                                                                                                                                                                                   | B4                  | C4                                     | D4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | E4        | <b>F4</b>  |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| A5                                                                                                                                                                                                                                                   | B5                  | C5                                     | D5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>E5</b> | F5         |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| A6                                                                                                                                                                                                                                                   | B6                  | C6                                     | <b>D6</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | E6        | F6         |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| Female screw lock                                                                                                                                                                                                                                    |                     |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| <table><tr><th colspan="2">Thread</th></tr><tr><th>inner</th><th>outer</th></tr><tr><td>4 - 40 UNC</td><td>4 - 40 UNC</td></tr><tr><td>4 - 40 UNC</td><td>M3</td></tr><tr><td>M3</td><td>4 - 40 UNC</td></tr><tr><td>M3</td><td>M3</td></tr></table> | Thread              |                                        | inner                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | outer     | 4 - 40 UNC | 4 - 40 UNC | 4 - 40 UNC | M3 | M3                                                                   | 4 - 40 UNC     | M3        | M3 | 09 67 002 9123 <sup>3)</sup><br>09 67 002 9124<br>09 67 002 9125<br>09 67 002 9126 | 2.00 - 2.60 mm |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| Thread                                                                                                                                                                                                                                               |                     |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| inner                                                                                                                                                                                                                                                | outer               |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| 4 - 40 UNC                                                                                                                                                                                                                                           | 4 - 40 UNC          |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| 4 - 40 UNC                                                                                                                                                                                                                                           | M3                  |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| M3                                                                                                                                                                                                                                                   | 4 - 40 UNC          |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| M3                                                                                                                                                                                                                                                   | M3                  |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| <table><tr><td>4 - 40 UNC</td><td>4 - 40 UNC</td></tr><tr><td>4 - 40 UNC</td><td>M3</td></tr><tr><td>M3</td><td>4 - 40 UNC</td></tr><tr><td>M3</td><td>M3</td></tr></table>                                                                          | 4 - 40 UNC          | 4 - 40 UNC                             | 4 - 40 UNC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | M3        | M3         | 4 - 40 UNC | M3         | M3 | 09 67 002 9129<br>09 67 002 9130<br>09 67 002 9131<br>09 67 002 9132 | 1.20 - 2.00 mm |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| 4 - 40 UNC                                                                                                                                                                                                                                           | 4 - 40 UNC          |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| 4 - 40 UNC                                                                                                                                                                                                                                           | M3                  |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| M3                                                                                                                                                                                                                                                   | 4 - 40 UNC          |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| M3                                                                                                                                                                                                                                                   | M3                  |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| <table><tr><td>4 - 40 UNC</td><td>4 - 40 UNC</td></tr><tr><td>4 - 40 UNC</td><td>M3</td></tr><tr><td>M3</td><td>4 - 40 UNC</td></tr><tr><td>M3</td><td>M3</td></tr></table>                                                                          | 4 - 40 UNC          | 4 - 40 UNC                             | 4 - 40 UNC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | M3        | M3         | 4 - 40 UNC | M3         | M3 | 09 67 002 9133<br>09 67 002 9134<br>09 67 002 9135<br>09 67 002 9136 | 0.80 - 1.20 mm |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| 4 - 40 UNC                                                                                                                                                                                                                                           | 4 - 40 UNC          |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| 4 - 40 UNC                                                                                                                                                                                                                                           | M3                  |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| M3                                                                                                                                                                                                                                                   | 4 - 40 UNC          |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| M3                                                                                                                                                                                                                                                   | M3                  |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| 9 pole top entry hood for coding                                                                                                                                                                                                                     |                     |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
|                                                                                                                                                                                                                                                      | 61 03 001 . 010 123 |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| Please insert digit for screw option                                                                                                                                                                                                                 |                     |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| Hexagonal screw, thread M3 with captive washer                                                                                                                                                                                                       | 1                   |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |
| Hexagonal screw, thread 4-40 UNC with captive washer                                                                                                                                                                                                 | 2                   |                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |            |            |            |    |                                                                      |                |           |    |                                                                                    |                |    |    |    |           |    |    |    |    |    |    |    |    |           |    |    |    |    |           |    |    |    |    |           |    |    |

1) MOQ = 50 pieces

2) Stock items (standard versions) in bold type

3) Standard versions

## Accessories for full metal hoods

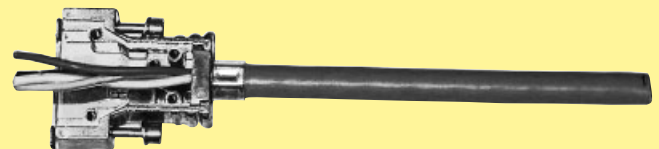
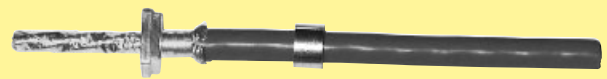
| Identification                                                        | Part No.                        |                               | Drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Dimensions in mm |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|-----------------------------------------------------------------------|---------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| Crimp flange                                                          | Hoods for<br>9-37 pole<br>D-Sub | Hoods for<br>50 pole<br>D-Sub | <table><tr><th>D1</th><th>D2</th></tr><tr><td>3.0</td><td>4.0</td></tr><tr><td>3.5</td><td>4.5</td></tr><tr><td>4.0</td><td>5.0</td></tr><tr><td>4.5</td><td>5.5</td></tr><tr><td>5.0</td><td>6.0</td></tr><tr><td>5.5</td><td>6.5</td></tr><tr><td>6.0</td><td>7.0</td></tr><tr><td>6.5</td><td>7.5</td></tr><tr><td>7.0</td><td>8.0</td></tr><tr><td>7.5</td><td>8.5</td></tr><tr><td>8.0</td><td>9.0</td></tr><tr><td>8.5</td><td>9.5</td></tr><tr><td>9.0</td><td>10.0</td></tr></table>                                                                                                                                                                                                                             | D1               | D2 | 3.0 | 4.0 | 3.5 | 4.5 | 4.0 | 5.0 | 4.5 | 5.5 | 5.0 | 6.0 | 5.5 | 6.5 | 6.0 | 7.0 | 6.5 | 7.5 | 7.0 | 8.0  | 7.5 | 8.5  | 8.0  | 9.0  | 8.5  | 9.5  | 9.0  | 10.0 |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | D1                              | D2                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 3.0                             | 4.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 3.5                             | 4.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 4.0                             | 5.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 4.5                             | 5.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 5.0                             | 6.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 5.5                             | 6.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 6.0                             | 7.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 6.5                             | 7.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 7.0                             | 8.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 7.5                             | 8.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 8.0                             | 9.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 8.5                             | 9.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 9.0                             | 10.0                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0062                                                        | 61 03 000 5062                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0063                                                        | 61 03 000 5063                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0064                                                        | 61 03 000 5064                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0065                                                        | 61 03 000 5065                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0066                                                        | 61 03 000 5066                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0166                                                        | 61 03 000 5166                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0067                                                        | 61 03 000 5067                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0068                                                        | 61 03 000 5068                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0069                                                        | 61 03 000 5069                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0070                                                        | 61 03 000 5070                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0071                                                        | 61 03 000 5071                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0165                                                        | 61 03 000 5165                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0072                                                        | 61 03 000 5072                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| Crimp ferrule                                                         | 61 03 000 0045                  |                               | <table><tr><th>D3</th><th>D4</th></tr><tr><td>5.0</td><td>6.0</td></tr><tr><td>5.5</td><td>6.5</td></tr><tr><td>6.0</td><td>7.0</td></tr><tr><td>6.5</td><td>7.5</td></tr><tr><td>7.0</td><td>8.0</td></tr><tr><td>7.5</td><td>8.5</td></tr><tr><td>8.0</td><td>9.0</td></tr><tr><td>8.5</td><td>9.5</td></tr><tr><td>9.0</td><td>10.0</td></tr><tr><td>9.5</td><td>10.5</td></tr><tr><td>10.0</td><td>11.0</td></tr><tr><td>10.5</td><td>11.5</td></tr><tr><td>11.0</td><td>12.0</td></tr><tr><td>11.5</td><td>12.5</td></tr><tr><td>12.0</td><td>13.0</td></tr><tr><td>12.5</td><td>13.5</td></tr><tr><td>13.0</td><td>14.0</td></tr><tr><td>13.7</td><td>15.0</td></tr><tr><td>14.0</td><td>15.0</td></tr></table>  | D3               | D4 | 5.0 | 6.0 | 5.5 | 6.5 | 6.0 | 7.0 | 6.5 | 7.5 | 7.0 | 8.0 | 7.5 | 8.5 | 8.0 | 9.0 | 8.5 | 9.5 | 9.0 | 10.0 | 9.5 | 10.5 | 10.0 | 11.0 | 10.5 | 11.5 | 11.0 | 12.0 | 11.5 | 12.5 | 12.0 | 13.0 | 12.5 | 13.5 | 13.0 | 14.0 | 13.7 | 15.0 | 14.0 | 15.0 |  |
|                                                                       | D3                              | D4                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 5.0                             | 6.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 5.5                             | 6.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 6.0                             | 7.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 6.5                             | 7.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 7.0                             | 8.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 7.5                             | 8.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 8.0                             | 9.0                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 8.5                             | 9.5                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 9.0                             | 10.0                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 9.5                             | 10.5                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 10.0                            | 11.0                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 10.5                            | 11.5                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 11.0                            | 12.0                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 11.5                            | 12.5                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 12.0                            | 13.0                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 12.5                            | 13.5                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 13.0                            | 14.0                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 13.7                            | 15.0                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 14.0                            | 15.0                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 61 03 000 0046                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 61 03 000 0047                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 61 03 000 0048                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 61 03 000 0049                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0050                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0051                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0052                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0053                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0054                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0055                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0056                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0057                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0058                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0142                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0059                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0127                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0060                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 61 03 000 0061                                                        |                                 |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| Cable clamp                                                           | cable-Ø appr. 5- 7 mm           | 61 03 000 0141                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | cable-Ø appr. 7-10 mm           | 61 03 000 0044                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | cable-Ø appr. 9-12 mm           | 61 03 000 0143                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | cable-Ø appr. 11-14 mm          |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 61 03 000 0145   |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| Blanking piece<br>for hoods                                           | 61 03 000 0042                  | 61 03 000 0041                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| Hexagonal screw<br>thread 4-40 UNC x 17.5-<br>8.8 with captive washer | 09 67 002 9020                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 09 67 002 9019                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| Knurled screw<br>thread 4-40 UNC                                      | 09 67 002 9018                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
|                                                                       | 09 67 002 9017                  |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |

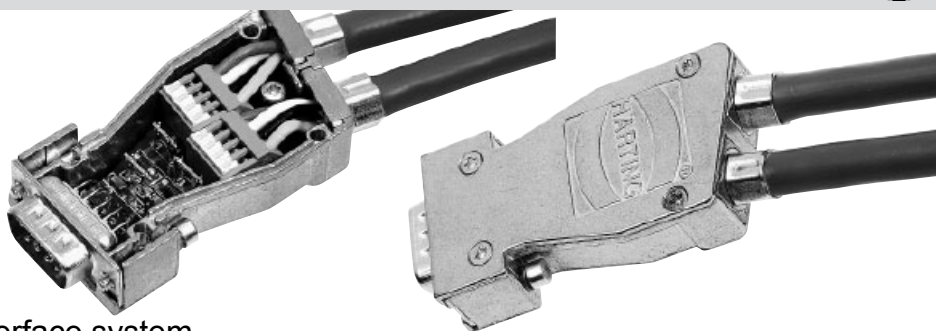


### Crimp flange termination instruction

1. Strip the cable sheath to the correct length (approx. 35 to 40 mm, depending on interface type).
2. Place the crimp ferrule over the cable sheath. Bend the outer screen backwards over the cable sheath. Cut screen approx. 2 mm from the end of the cable sheath.
3. Place the crimp flange over the wires covered by the remaining foil shield. Push and twist the crimp flange under the outer screen and cable sheath until the end of the cable sheath touches the crimp flange. HARTING has developed a special tool for optimised installation of the shielding over the crimp flange, part number 61 03 600 0017.
4. Move the crimp ferrule back onto the crimp flange and crimp the two parts together with the special service crimp tool part number 61 03 600 0020. For an optimised crimp process the tool should be positioned as close as possible to the crimp flange shoulder.
5. Cut off the internal screen foil and push the crimp flange inside the metal hood.

**HARTING offers to test and define the best crimp flange and ferrule combination for customer specific cables.**





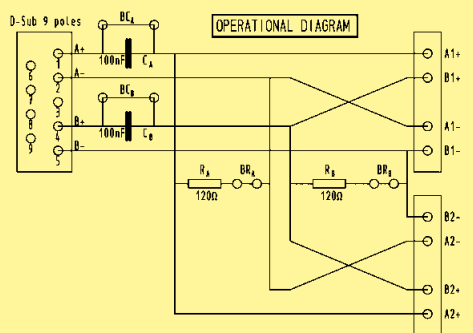
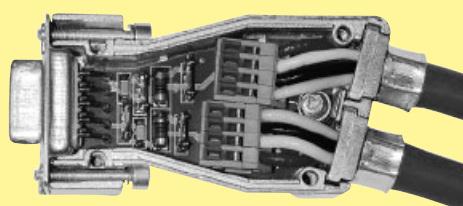
## InduCom 9 – Industrial bus interface system

### Identification

### Part No.

### General information

#### MVB Interface



66 63 009 5013

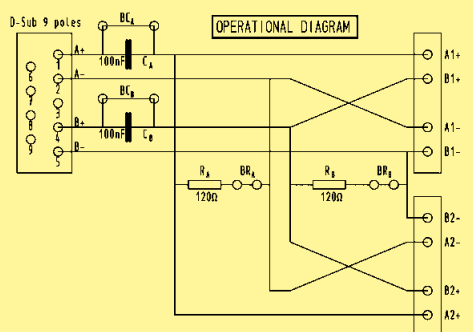
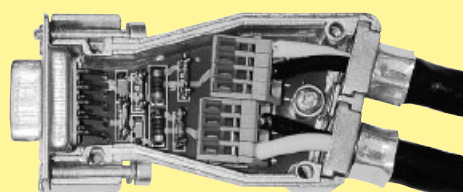
#### MVB backbone interface set

The Multifunctional Vehicle Bus (MVB) backbone interface is specially designed for communication cables in Train Control Networks (TCN). With this interface it is possible to realise a T-bus structure with MVB-cable with which you can disconnect the bus interface from the control unit without any interruption of the complete bus communication. On the PCB you will have load resistors and test capacitors which can be activated with solder bridges. The wires are terminated with the proven vibration resistant cage clamp technology.\*

#### Components of the MVB interface set:

- 1 metal housing with 2 cable entries
- 2 hexagonal screws with UNC 4-40 threads
- 1 PCB with 9 way D-Sub male connector and cage clamps
- 2 crimp flanges for the MVB cable
- 2 crimp ferrules for the MVB cable
- 1 blanking piece

#### WTB Interface



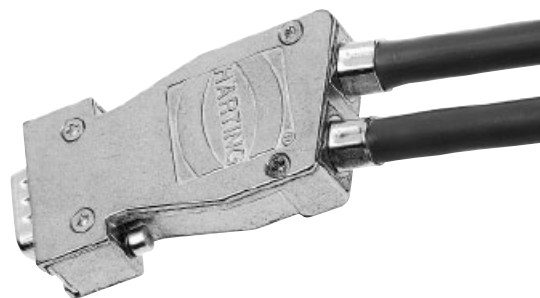
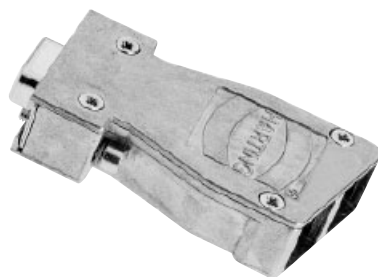
66 63 009 5014

#### WTB backbone interface set

The Wired Train Bus (WTB) backbone interface is specially designed for backbone cables in Train Control Networks (TCN). With this interface it is possible to realise a T-bus structure with WTB-cable with which you can disconnect the bus interface from the control unit without any interruption of the complete bus communication. On the PCB you will have load resistors and test capacitors which can be activated with solder bridges. The wires are terminated with the proven vibration resistant cage clamp technology.\*

#### Components of the MVB interface set:

- 1 metal housing with 2 cable entries
- 2 hexagonal screws with UNC 4-40 threads
- 1 PCB with 9 way D-Sub male connector and cage clamps
- 2 crimp flanges for the WTB cable
- 2 crimp ferrules for the WTB cable
- 1 blanking piece



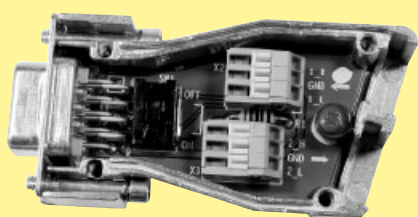
## InduCom 9 – Industrial bus interface system

### Identification

### Part No.

### General information

#### CAN Interface

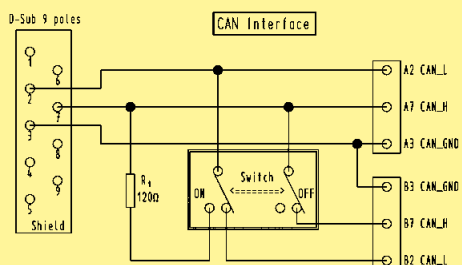


66 63 009 6016

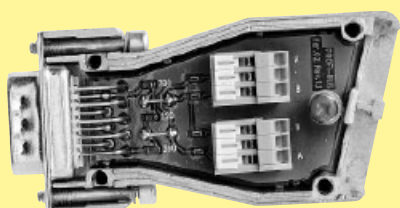
The Controller Area Network (CAN)-Interface is specially designed for usage in trains. With this interface it is possible to realise a T-bus structure with which you can disconnect the bus interface from the control unit without any interruption of the complete bus communication. On the PCB you will have a load resistor which can be activated with the switch.\*

#### Components of the interface set:

- 1 metal housing with 2 cable entries
- 2 hexagonal screws with UNC 4-40 threads
- 1 PCB with 9 way D-Sub female connector and 2 cage clamps
- 1 blanking piece
- 2 crimp flanges
- 2 crimp ferrules



#### Profibus Interface



66 63 009 6004

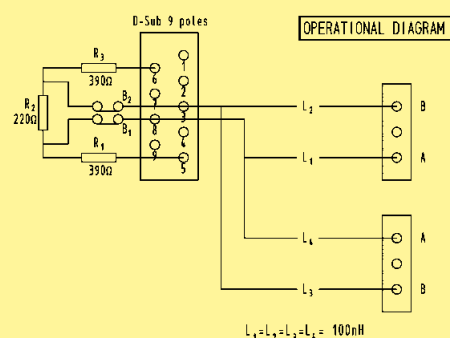
The Profibus Interface is specially designed for usage in trains and in challenging engineering applications.

On the PCB you will have SMD parts which can be activated with solder bridges.

The wires are assembled with the proven vibration resistant cage clamp technology.\*

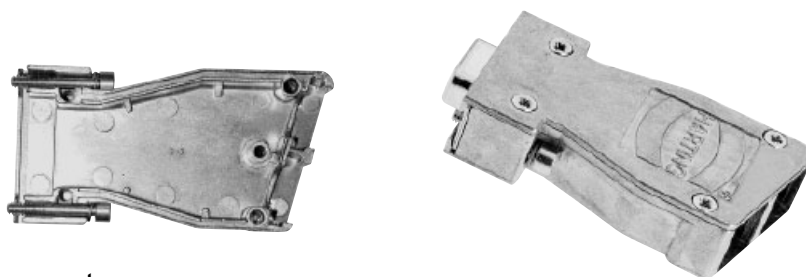
#### Components of the interface set:

- 1 metal housing with 2 cable entries
- 2 hexagonal screws with UNC 4-40 threads
- 1 PCB with 9 way D-Sub female connector and 2 cage clamps
- 1 blanking piece



Further bus PCBs on request

\* To check compatibility with cable types and manufacturers, please contact your local HARTING representative.



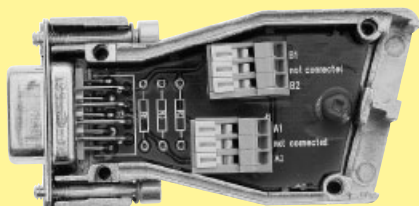
## InduCom 9 – Industrial bus interface system

## Identification

## Part No.

## General information

## FIP Interface middle of the line



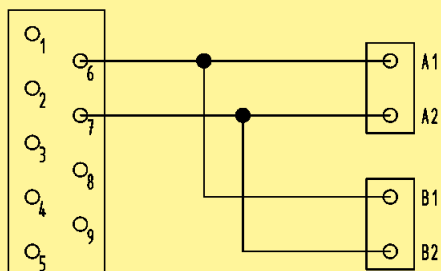
66 63 009 5017

The FIP (Factory Installation Protocol) Interface is specially designed for applications in trains. It is connected via the D-Sub. The wires are assembled with the proven vibration resistant cage clamp technology.\*

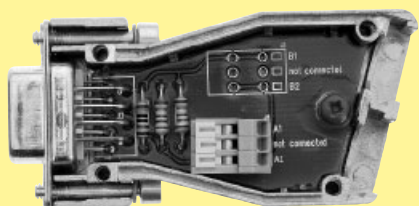
**Components of the interface set:**

- 1 metal housing with 2 cable entries
- 2 hexagonal screws with UNC 4-40 threads
- 1 pcb with 9 way D-Sub female connector and cage clamps

FIP interface



## FIP Interface end of the line



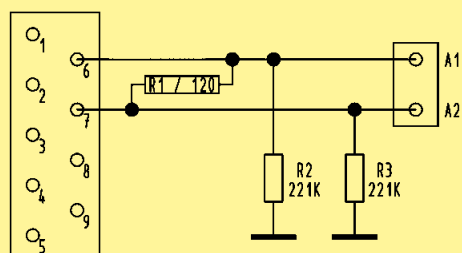
66 63 009 5018

The FIP (Factory Installation Protocol) Interface is specially designed for applications in trains. It is connected via the D-Sub. On the pcb you will have load resistors. The wires are assembled with the proven vibration resistant cage clamp technology.\*

**Components of the interface set:**

- 1 metal housing with 2 cable entries
- 2 hexagonal screws with UNC 4-40 threads
- 1 pcb with 9 way D-Sub female connector and cage clamps
- 1 blanking piece

FIP interface



Further bus PCBs on request

\* To check compatibility with cable types and manufacturers, please contact your local HARTING representative.

**D-Sub – Accessories for subminiature D connectors**

Page

Accessories .....

**08.02**

## Accessories

| Identification                                                                                                              | No. of contacts | Part No.                                                       | Drawing | Dimensions in mm |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------------------------------------|---------|------------------|
| <b>Female screw locks without nut</b><br><br>Thread UNC/UNC<br>Thread UNC/M3                                                | 9-50<br>9-50    | 09 67 000 9972 <sup>1)</sup><br>09 67 000 9974 <sup>1)</sup>   |         |                  |
| Thread M3/UNC<br>Thread M3/M3                                                                                               | 9-50<br>9-50    | 09 67 001 9976 <sup>1)</sup><br>09 67 001 9974 <sup>1)</sup>   |         |                  |
| Thread UNC/UNC<br>Thread UNC/M3                                                                                             | 9-50<br>9-50    | 09 67 001 9941 <sup>1)</sup><br>09 67 001 9954 <sup>1)</sup>   |         |                  |
| for press-in connectors with grounding-pins or straight solder with grounding-clips.<br><br>Thread UNC/UNC<br>Thread UNC/M3 | 9-50<br>9-50    | 09 66 000 9972 <sup>1)</sup><br>09 66 000 9974 <sup>1)2)</sup> |         |                  |
| with captive washer<br>Thread UNC/UNC                                                                                       | 9-50            | 09 67 001 9957 <sup>1)</sup>                                   |         |                  |

D-Sub - A

<sup>1)</sup> Order 2 for each connector

<sup>2)</sup> M3 inner thread available on request

## Accessories

| Identification                                                                                  | No. of contacts          | Part No.                                                                                         | Drawing | Dimensions in mm |
|-------------------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------|---------|------------------|
| <b>Female screw locks with nut</b><br><br>Thread UNC/UNC<br>Thread UNC/M3<br><br>Thread UNC/UNC | 9-50<br>9-50<br><br>9-50 | 09 67 000 9922 <sup>1)</sup><br>09 67 000 9924 <sup>1)</sup><br><br>09 67 000 9973 <sup>1)</sup> |         |                  |
| <b>Male screw locks for use without hood</b>                                                    | 9-37<br>50               | 09 67 001 9969 <sup>1)</sup><br>09 67 001 9970 <sup>1)</sup>                                     |         |                  |
| <b>Hex extender</b><br><br>Thread 4-40 UNC<br>Thread M3                                         | 9-50<br>9-50             | 09 67 001 9985<br>09 67 002 9120                                                                 |         |                  |
| <b>U-Clip with thread 4-40 UNC</b>                                                              | 9-50                     | 09 67 001 9928 <sup>1)</sup>                                                                     |         |                  |
| <b>with thread 4-40 UNC and screw-lock</b>                                                      | 9-50                     | 09 67 002 9030 <sup>1)</sup>                                                                     |         |                  |

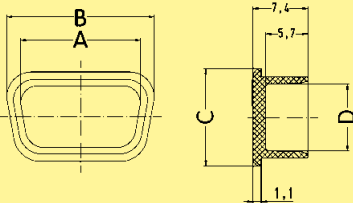
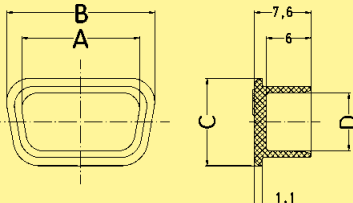
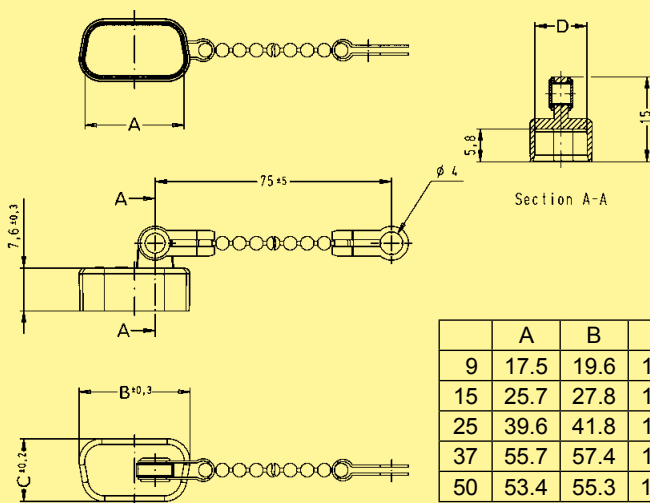
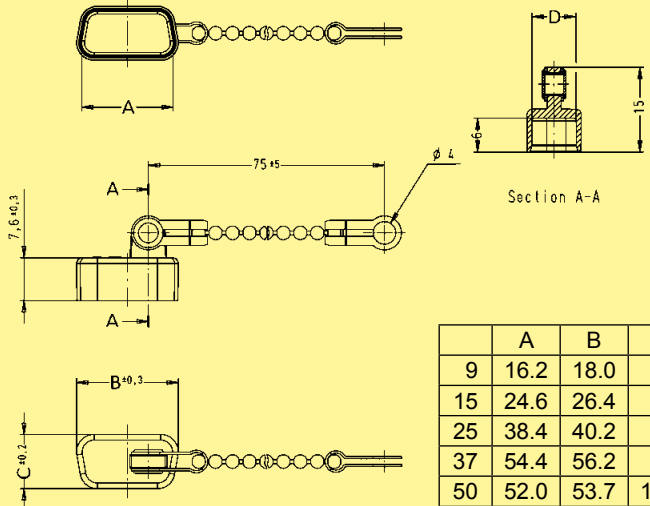
<sup>1)</sup> Order 2 for each connector

## Accessories

| Identification                                                        | No. of contacts           | Part No.                                                                               | Drawing | Dimensions in mm                                                                                                                                                                                                                                                                                                                                                                                                                             |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
|-----------------------------------------------------------------------|---------------------------|----------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|---|---|------|-------|------|------|-------|-----|------|-------|------|------|-------|----|------|------|------|-----|----|------|------|------|-----|----|------|------|------|------|
| <b>Dust cap</b><br>black<br>thermoplastic<br><br>for male connector   | 9<br>15<br>25<br>37       | 09 67 009 0611<br>09 67 015 0611<br>09 67 025 0611<br>09 67 037 0611                   |         | <table><tr><th></th><th>A</th><th>B</th></tr><tr><td>9</td><td>17.0</td><td>22.40</td></tr><tr><td>15</td><td>25.3</td><td>30.80</td></tr><tr><td>25</td><td>38.9</td><td>44.40</td></tr><tr><td>37</td><td>55.4</td><td>60.75</td></tr></table>                                                                                                                                                                                             |  | A | B | 9 | 17.0 | 22.40 | 15   | 25.3 | 30.80 | 25  | 38.9 | 44.40 | 37   | 55.4 | 60.75 |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
|                                                                       | A                         | B                                                                                      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                                                     | 17.0                      | 22.40                                                                                  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                                                    | 25.3                      | 30.80                                                                                  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                                                    | 38.9                      | 44.40                                                                                  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                                                    | 55.4                      | 60.75                                                                                  |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| for female connector                                                  | 9<br>15<br>25<br>37       | 09 67 009 0711<br>09 67 015 0711<br>09 67 025 0711<br>09 67 037 0711                   |         | <table><tr><th></th><th>A</th><th>B</th></tr><tr><td>9</td><td>16.0</td><td>22.5</td></tr><tr><td>15</td><td>24.4</td><td>31.0</td></tr><tr><td>25</td><td>37.8</td><td>44.3</td></tr><tr><td>37</td><td>54.3</td><td>60.8</td></tr></table>                                                                                                                                                                                                 |  | A | B | 9 | 16.0 | 22.5  | 15   | 24.4 | 31.0  | 25  | 37.8 | 44.3  | 37   | 54.3 | 60.8  |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
|                                                                       | A                         | B                                                                                      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                                                     | 16.0                      | 22.5                                                                                   |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                                                    | 24.4                      | 31.0                                                                                   |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                                                    | 37.8                      | 44.3                                                                                   |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                                                    | 54.3                      | 60.8                                                                                   |         |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| <b>antistatic</b><br>black<br>thermoplastic<br><br>for male connector | 9<br>15<br>25<br>37<br>50 | 09 67 009 0612<br>09 67 015 0612<br>09 67 025 0612<br>09 67 037 0612<br>09 67 050 0612 |         | <table><tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>9</td><td>17.7</td><td>21.8</td><td>13.2</td><td>9.1</td></tr><tr><td>15</td><td>26.0</td><td>30.0</td><td>13.2</td><td>9.1</td></tr><tr><td>25</td><td>40.0</td><td>44.2</td><td>13.2</td><td>9.1</td></tr><tr><td>37</td><td>56.4</td><td>59.8</td><td>13.2</td><td>9.1</td></tr><tr><td>50</td><td>53.9</td><td>57.8</td><td>15.9</td><td>11.7</td></tr></table> |  | A | B | C | D    | 9     | 17.7 | 21.8 | 13.2  | 9.1 | 15   | 26.0  | 30.0 | 13.2 | 9.1   | 25 | 40.0 | 44.2 | 13.2 | 9.1 | 37 | 56.4 | 59.8 | 13.2 | 9.1 | 50 | 53.9 | 57.8 | 15.9 | 11.7 |
|                                                                       | A                         | B                                                                                      | C       | D                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                                                     | 17.7                      | 21.8                                                                                   | 13.2    | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                                                    | 26.0                      | 30.0                                                                                   | 13.2    | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                                                    | 40.0                      | 44.2                                                                                   | 13.2    | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                                                    | 56.4                      | 59.8                                                                                   | 13.2    | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 50                                                                    | 53.9                      | 57.8                                                                                   | 15.9    | 11.7                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| for female connector                                                  | 9<br>15<br>25<br>37<br>50 | 09 67 009 0712<br>09 67 015 0712<br>09 67 025 0712<br>09 67 037 0712<br>09 67 050 0712 |         | <table><tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>9</td><td>15.9</td><td>20.0</td><td>11.8</td><td>7.8</td></tr><tr><td>15</td><td>24.4</td><td>28.5</td><td>11.8</td><td>7.8</td></tr><tr><td>25</td><td>38.3</td><td>42.3</td><td>11.8</td><td>7.8</td></tr><tr><td>37</td><td>54.7</td><td>58.8</td><td>11.8</td><td>7.8</td></tr><tr><td>50</td><td>52.6</td><td>56.2</td><td>14.5</td><td>10.5</td></tr></table> |  | A | B | C | D    | 9     | 15.9 | 20.0 | 11.8  | 7.8 | 15   | 24.4  | 28.5 | 11.8 | 7.8   | 25 | 38.3 | 42.3 | 11.8 | 7.8 | 37 | 54.7 | 58.8 | 11.8 | 7.8 | 50 | 52.6 | 56.2 | 14.5 | 10.5 |
|                                                                       | A                         | B                                                                                      | C       | D                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                                                     | 15.9                      | 20.0                                                                                   | 11.8    | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                                                    | 24.4                      | 28.5                                                                                   | 11.8    | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                                                    | 38.3                      | 42.3                                                                                   | 11.8    | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                                                    | 54.7                      | 58.8                                                                                   | 11.8    | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 50                                                                    | 52.6                      | 56.2                                                                                   | 14.5    | 10.5                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| <b>UL 94 V0</b><br>grey<br>thermoplastic<br><br>for male connector    | 9<br>15<br>25<br>37<br>50 | 09 67 009 0613<br>09 67 015 0613<br>09 67 025 0613<br>09 67 037 0613<br>09 67 050 0613 |         | <table><tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>9</td><td>17.7</td><td>21.8</td><td>13.2</td><td>9.1</td></tr><tr><td>15</td><td>26.0</td><td>30.0</td><td>13.2</td><td>9.1</td></tr><tr><td>25</td><td>40.0</td><td>44.2</td><td>13.2</td><td>9.1</td></tr><tr><td>37</td><td>56.4</td><td>59.8</td><td>13.2</td><td>9.1</td></tr><tr><td>50</td><td>53.9</td><td>57.8</td><td>15.9</td><td>11.7</td></tr></table> |  | A | B | C | D    | 9     | 17.7 | 21.8 | 13.2  | 9.1 | 15   | 26.0  | 30.0 | 13.2 | 9.1   | 25 | 40.0 | 44.2 | 13.2 | 9.1 | 37 | 56.4 | 59.8 | 13.2 | 9.1 | 50 | 53.9 | 57.8 | 15.9 | 11.7 |
|                                                                       | A                         | B                                                                                      | C       | D                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                                                     | 17.7                      | 21.8                                                                                   | 13.2    | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                                                    | 26.0                      | 30.0                                                                                   | 13.2    | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                                                    | 40.0                      | 44.2                                                                                   | 13.2    | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                                                    | 56.4                      | 59.8                                                                                   | 13.2    | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 50                                                                    | 53.9                      | 57.8                                                                                   | 15.9    | 11.7                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| for female connector                                                  | 9<br>15<br>25<br>37<br>50 | 09 67 009 0713<br>09 67 015 0713<br>09 67 025 0713<br>09 67 037 0713<br>09 67 050 0713 |         | <table><tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>9</td><td>15.9</td><td>20.0</td><td>11.8</td><td>7.8</td></tr><tr><td>15</td><td>24.4</td><td>28.5</td><td>11.8</td><td>7.8</td></tr><tr><td>25</td><td>38.3</td><td>42.3</td><td>11.8</td><td>7.8</td></tr><tr><td>37</td><td>54.7</td><td>58.8</td><td>11.8</td><td>7.8</td></tr><tr><td>50</td><td>52.6</td><td>56.2</td><td>14.5</td><td>10.5</td></tr></table> |  | A | B | C | D    | 9     | 15.9 | 20.0 | 11.8  | 7.8 | 15   | 24.4  | 28.5 | 11.8 | 7.8   | 25 | 38.3 | 42.3 | 11.8 | 7.8 | 37 | 54.7 | 58.8 | 11.8 | 7.8 | 50 | 52.6 | 56.2 | 14.5 | 10.5 |
|                                                                       | A                         | B                                                                                      | C       | D                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                                                     | 15.9                      | 20.0                                                                                   | 11.8    | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                                                    | 24.4                      | 28.5                                                                                   | 11.8    | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                                                    | 38.3                      | 42.3                                                                                   | 11.8    | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                                                    | 54.7                      | 58.8                                                                                   | 11.8    | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 50                                                                    | 52.6                      | 56.2                                                                                   | 14.5    | 10.5                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |   |   |   |      |       |      |      |       |     |      |       |      |      |       |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |



## Accessories

| Identification                            | No. of contacts           | Part No.                                                                               | Drawing                                                                              | Dimensions in mm                                                                                                                                                                                                                                                                                                                                                                                                                             |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
|-------------------------------------------|---------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|---|---|---|---|------|------|------|-----|----|------|------|------|-----|----|------|------|------|-----|----|------|------|------|-----|----|------|------|------|------|
| Dust cap<br>metallized<br>thermoplastic   |                           |                                                                                        |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| for male connector                        | 9<br>15<br>25<br>37<br>50 | 09 67 009 0614<br>09 67 015 0614<br>09 67 025 0614<br>09 67 037 0614<br>09 67 050 0614 |    | <table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td></tr><tr><td>9</td><td>17.7</td><td>21.8</td><td>13.2</td><td>9.1</td></tr><tr><td>15</td><td>26.0</td><td>30.0</td><td>13.2</td><td>9.1</td></tr><tr><td>25</td><td>40.0</td><td>44.2</td><td>13.2</td><td>9.1</td></tr><tr><td>37</td><td>56.4</td><td>59.8</td><td>13.2</td><td>9.1</td></tr><tr><td>50</td><td>53.9</td><td>57.8</td><td>15.9</td><td>11.7</td></tr></table> |  | A | B | C | D | 9 | 17.7 | 21.8 | 13.2 | 9.1 | 15 | 26.0 | 30.0 | 13.2 | 9.1 | 25 | 40.0 | 44.2 | 13.2 | 9.1 | 37 | 56.4 | 59.8 | 13.2 | 9.1 | 50 | 53.9 | 57.8 | 15.9 | 11.7 |
|                                           | A                         | B                                                                                      | C                                                                                    | D                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                         | 17.7                      | 21.8                                                                                   | 13.2                                                                                 | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                        | 26.0                      | 30.0                                                                                   | 13.2                                                                                 | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                        | 40.0                      | 44.2                                                                                   | 13.2                                                                                 | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                        | 56.4                      | 59.8                                                                                   | 13.2                                                                                 | 9.1                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 50                                        | 53.9                      | 57.8                                                                                   | 15.9                                                                                 | 11.7                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| for female connector                      | 9<br>15<br>25<br>37<br>50 | 09 67 009 0714<br>09 67 015 0714<br>09 67 025 0714<br>09 67 037 0714<br>09 67 050 0714 |    | <table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td></tr><tr><td>9</td><td>15.9</td><td>20.0</td><td>11.8</td><td>7.8</td></tr><tr><td>15</td><td>24.4</td><td>28.5</td><td>11.8</td><td>7.8</td></tr><tr><td>25</td><td>38.3</td><td>42.3</td><td>11.8</td><td>7.8</td></tr><tr><td>37</td><td>54.7</td><td>58.8</td><td>11.8</td><td>7.8</td></tr><tr><td>50</td><td>52.6</td><td>56.2</td><td>14.5</td><td>10.5</td></tr></table> |  | A | B | C | D | 9 | 15.9 | 20.0 | 11.8 | 7.8 | 15 | 24.4 | 28.5 | 11.8 | 7.8 | 25 | 38.3 | 42.3 | 11.8 | 7.8 | 37 | 54.7 | 58.8 | 11.8 | 7.8 | 50 | 52.6 | 56.2 | 14.5 | 10.5 |
|                                           | A                         | B                                                                                      | C                                                                                    | D                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                         | 15.9                      | 20.0                                                                                   | 11.8                                                                                 | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                        | 24.4                      | 28.5                                                                                   | 11.8                                                                                 | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                        | 38.3                      | 42.3                                                                                   | 11.8                                                                                 | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                        | 54.7                      | 58.8                                                                                   | 11.8                                                                                 | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 50                                        | 52.6                      | 56.2                                                                                   | 14.5                                                                                 | 10.5                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| metallized<br>thermoplastic<br>with chain |                           |                                                                                        |                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| for male connector                        | 9<br>15<br>25<br>37<br>50 | 09 67 009 0615<br>09 67 015 0615<br>09 67 025 0615<br>09 67 037 0615<br>09 67 050 0615 |   | <table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td></tr><tr><td>9</td><td>17.5</td><td>19.6</td><td>11.1</td><td>9.2</td></tr><tr><td>15</td><td>25.7</td><td>27.8</td><td>11.1</td><td>9.2</td></tr><tr><td>25</td><td>39.6</td><td>41.8</td><td>11.1</td><td>9.2</td></tr><tr><td>37</td><td>55.7</td><td>57.4</td><td>11.1</td><td>9.2</td></tr><tr><td>50</td><td>53.4</td><td>55.3</td><td>13.8</td><td>11.9</td></tr></table> |  | A | B | C | D | 9 | 17.5 | 19.6 | 11.1 | 9.2 | 15 | 25.7 | 27.8 | 11.1 | 9.2 | 25 | 39.6 | 41.8 | 11.1 | 9.2 | 37 | 55.7 | 57.4 | 11.1 | 9.2 | 50 | 53.4 | 55.3 | 13.8 | 11.9 |
|                                           | A                         | B                                                                                      | C                                                                                    | D                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                         | 17.5                      | 19.6                                                                                   | 11.1                                                                                 | 9.2                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                        | 25.7                      | 27.8                                                                                   | 11.1                                                                                 | 9.2                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                        | 39.6                      | 41.8                                                                                   | 11.1                                                                                 | 9.2                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                        | 55.7                      | 57.4                                                                                   | 11.1                                                                                 | 9.2                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 50                                        | 53.4                      | 55.3                                                                                   | 13.8                                                                                 | 11.9                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| for female connector                      | 9<br>15<br>25<br>37<br>50 | 09 67 009 0715<br>09 67 015 0715<br>09 67 025 0715<br>09 67 037 0715<br>09 67 050 0715 |  | <table><tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td></tr><tr><td>9</td><td>16.2</td><td>18.0</td><td>9.6</td><td>7.8</td></tr><tr><td>15</td><td>24.6</td><td>26.4</td><td>9.6</td><td>7.8</td></tr><tr><td>25</td><td>38.4</td><td>40.2</td><td>9.6</td><td>7.8</td></tr><tr><td>37</td><td>54.4</td><td>56.2</td><td>9.6</td><td>7.8</td></tr><tr><td>50</td><td>52.0</td><td>53.7</td><td>12.2</td><td>10.4</td></tr></table>     |  | A | B | C | D | 9 | 16.2 | 18.0 | 9.6  | 7.8 | 15 | 24.6 | 26.4 | 9.6  | 7.8 | 25 | 38.4 | 40.2 | 9.6  | 7.8 | 37 | 54.4 | 56.2 | 9.6  | 7.8 | 50 | 52.0 | 53.7 | 12.2 | 10.4 |
|                                           | A                         | B                                                                                      | C                                                                                    | D                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 9                                         | 16.2                      | 18.0                                                                                   | 9.6                                                                                  | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 15                                        | 24.6                      | 26.4                                                                                   | 9.6                                                                                  | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 25                                        | 38.4                      | 40.2                                                                                   | 9.6                                                                                  | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 37                                        | 54.4                      | 56.2                                                                                   | 9.6                                                                                  | 7.8                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |
| 50                                        | 52.0                      | 53.7                                                                                   | 12.2                                                                                 | 10.4                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |   |   |   |   |   |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |     |    |      |      |      |      |



**SEK – Insulation Displacement Connector system (IDC), 2.54 mm pitch**

Page

General information ..... **09.02**

**Solder board connectors**

Technical characteristics ..... **09.04**

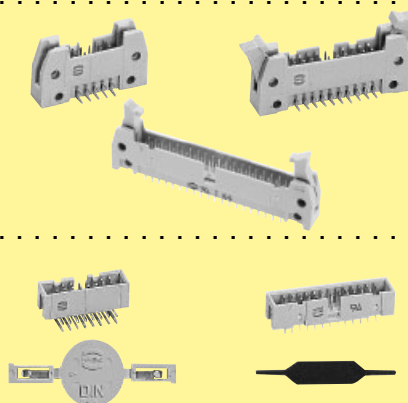
Male standard connectors ..... **09.06**

Male standard connectors, kinked ..... **09.10**

Male standard connectors with board lock ..... **09.12**

Male low-profile connectors ..... **09.14**

Accessories ..... **09.16**

**Wrap post connectors**

Technical characteristics ..... **09.17**

Male standard connectors ..... **09.18**

Accessories ..... **09.20**

**Cable connectors**

Technical characteristics for female connectors ..... **09.21**

Female connectors ..... **09.22**

Technical characteristics for pcb transition connectors, 2 rows ..... **09.24**

Pcb transition connectors, 2 rows ..... **09.25**

Technical characteristics for pcb transition connectors, 4 rows ..... **09.26**

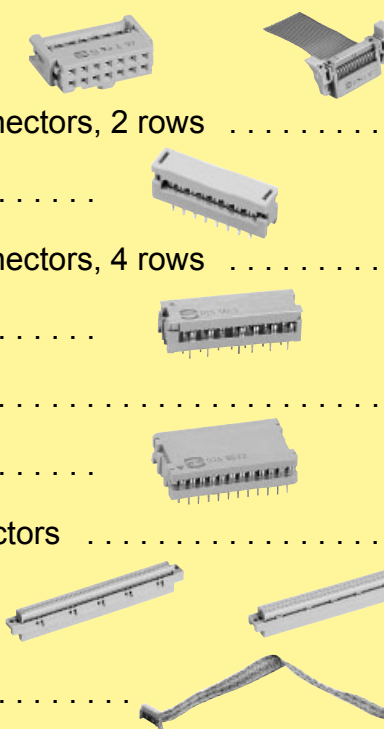
Pcb transition connectors, 4 rows ..... **09.27**

Technical characteristics for DIP connectors ..... **09.28**

DIP connectors ..... **09.29**

Technical characteristics for DIN 41 612 connectors ..... **09.30**

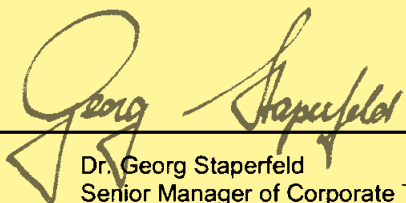
DIN 41 612 connectors ..... **09.31**

**Cables and cable assemblies**

see chapter 40

**09  
01**

## Declaration of conformity

|                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>This Declaration of Conformity is suitable to the European Standard EN 45 014, „General criteria for suppliers declaration of conformity“.</i></p> <p><i>The basis for the criteria has been found in international documentation, particularly in ISO/IEC Guide 22, 1996, „Information on manufacturers declaration of conformity with standards or other technical specifications“.</i></p> | <p>We</p> <p><b>HARTING KGaA</b></p> <p><b>Marienwerder Str. 3</b><br/><b>32339 Espelkamp</b></p> <p><b>HARTING Electronics GmbH &amp; Co KG</b><br/><b>Marienwerder Str.3</b><br/><b>32339 Espelkamp</b></p> <p>declare under our own responsibility that the</p> <p><b>Flat Cable Connector System</b></p> <p>is in conformity with the following standard<br/><b>IEC 60603-13</b><br/><b>Connectors for frequencies below 3MHz</b><br/><b>for use with printed board-Part 13:</b><br/><b>Detail specification for two-part connectors with assessed quality, for printed boards, for basic grid of 2,54 mm (0,1in) with free connectors for non – accessible insulation displacement termination (ID)</b></p> <p>This declaration of conformity refers to the series:</p> <p><b>SEK</b></p> |
|                                                                                                                                                                                                                                                                                                                  | <p>Our testing laboratory is accredited and monitored by the German Accreditation Body Technology/ (DATEch).<br/>Reg.-Nr. DAT-P-041/94-02</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>QUALITY SYSTEM</p>  <p>certified by DQS acc. to<br/>ISO 9001 - Reg.-Nr. 2204</p>                                                                                                                                                                                                                              | <p>Our quality system is certified and monitored by DQS in conformity with the standard DIN EN ISO 9001 : 2000.<br/>Cert.-Nr. 002204 QM</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p><u>Espelkamp, 2004-11-18</u><br/>Place and Date of publication</p>                                                                                                                                                                                                                                                                                                                               |  <p>Dr. Georg Staperfeld<br/>Senior Manager of Corporate Technology Services</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><u>Espelkamp, 2004-11-18</u><br/>Place and Date of publication</p>                                                                                                                                                                                                                                                                                                                               |  <p>Dipl.-Ing. Hartmuth Schmidt<br/>Director Global Product Management HARTING Electronics GmbH &amp; Co KG</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## The HARTING Insulation Displacement Connector system

### Economic and reliable connections

The flat cable and connector can be preassembled and used as a component with predetermined functional characteristics.

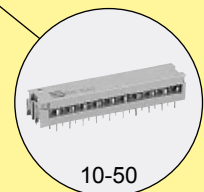
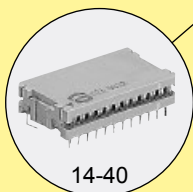
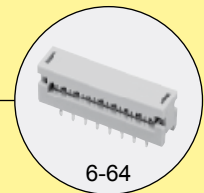
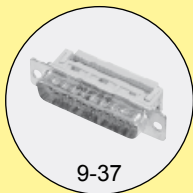
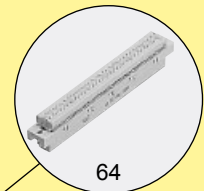
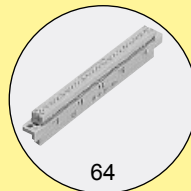
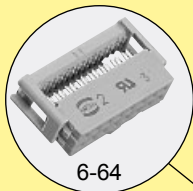
The HARTING insulation displacement contacts pierce the insulation on the flat cable to provide a durable gastight connection with the wire.

The HARTING insulation displacement technique constitutes the ideal solution to your wiring problems.

For "non standard applications" we can manufacture designs to match your requirements.

Please discuss requirements with us.

HARTING SEK connectors incorporate the latest design features and provide the assurance of high quality and reliability with economy.



#### Cable assemblies

- HARTING can supply cable assemblies to customer specifications.
- A wide range of connector types available with various contact arrangements constitute the ideal solution to your wiring problems.
- Cables of all types in economic reel lengths are available.

#### Quality

- Cables professionally assembled on HARTING work stations ensure reliable connections.
- Finished harnesses are subject to 100% quality checks on a HARTING test device.
- Insulation test.
- Contact resistance test.

#### Economy

- The tested assembly of connectors and flat cables from one manufacturer guarantees a high degree of economy and reliability.
- Investment for work stations and test devices are not required.
- Stocks of piece parts are reduced.

Number of contacts 6, 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60, 64

Contact arrangement straight, angled

Contact length 2.9 mm, 4.5 mm

Approvals IEC 60 603-13  
DIN EN 60 603-13  
D 2632  
BT 224  
NFC 93-428 (HE 10)  
UL recognized: E102079



Pitch 2.54 mm [0.100"]

Working current 1 A

Working voltage 500 V  
for pollution degree 1

Test voltage  $U_{r.m.s.}$  1 kV

Contact resistance  $\leq 20 \text{ m}\Omega$   
Insulation resistance  $\geq 10^9 \Omega$

Temperature range -55 °C ... + 125 °C  
The maximum temperature includes heating of contacts and ambient temperature

Terminations For pcb hole  $\varnothing 1 \pm 0.1 \text{ mm}$   
DIN IEC 52 141  
Diagonal: 0.79 mm

Materials Moulding Thermoplastic resin (PBT)  
UL 94-V0

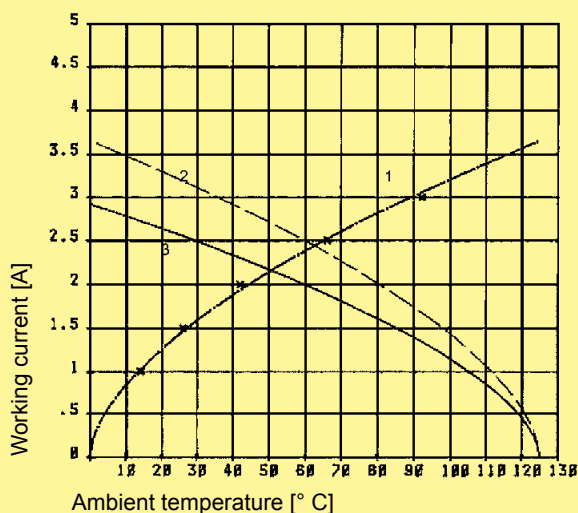
Contact surface Contact zone plated according to performance level<sup>1)</sup>

### Current carrying capacity

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals.

The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60 512.



Example: 50 way connector

- ① Temperature rise
- ② Derating
- ③ Derating curve at  $I_{max} \times 0.8$  (IEC 60 512-2)

### Insertion and withdrawal forces

| Number of contacts | Maximum force [N]         |                     |
|--------------------|---------------------------|---------------------|
|                    | Performance level 1 and 2 | Performance level 3 |
| 6                  | 12                        | 18                  |
| 10                 | 20                        | 30                  |
| 14                 | 28                        | 42                  |
| 16                 | 32                        | 48                  |
| 20                 | 40                        | 60                  |
| 24                 | 48                        | 72                  |
| 26                 | 52                        | 78                  |
| 30                 | 60                        | 90                  |
| 34                 | 68                        | 102                 |
| 40                 | 80                        | 120                 |
| 50                 | 100                       | 150                 |
| 60                 | 120                       | 180                 |
| 64                 | 128                       | 192                 |

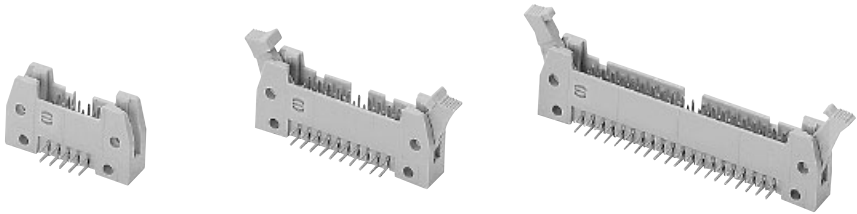
<sup>1)</sup> Performance level 3 as per IEC 60 603-13,  $\geq 50$  mating cycles, no gas test  
Performance level 2 as per IEC 60 603-13,  $\geq 250$  mating cycles, 4 days gas test  
S4, plating = 0.76  $\mu\text{m}$  (30  $\mu\text{inch}$ ) Au or PdNi equivalent





Number of contacts

6-64



Male header with angled solder pins

| Identification                                        | No. of contacts | Part No.       |        |                   |        |                  |        |
|-------------------------------------------------------|-----------------|----------------|--------|-------------------|--------|------------------|--------|
|                                                       |                 | Without levers |        | With short levers |        | With long levers |        |
| Male header with angled solder pins<br>Length: 2.9 mm | 6               | 09 18 506      | └ 923  | 09 18 506         | └ 913  | 09 18 506        | └ 903  |
|                                                       | 10              | 09 18 510      | └ 923  | 09 18 510         | └ 913  | 09 18 510        | └ 903  |
|                                                       | 14              | 09 18 514      | └ 923  | 09 18 514         | └ 913  | 09 18 514        | └ 903  |
|                                                       | 16              | 09 18 516      | └ 923  | 09 18 516         | └ 913  | 09 18 516        | └ 903  |
|                                                       | 20              | 09 18 520      | └ 923  | 09 18 520         | └ 913  | 09 18 520        | └ 903  |
|                                                       | 24              | 09 18 524      | └ 923  | 09 18 524         | └ 913  | 09 18 524        | └ 903  |
|                                                       | 26              | 09 18 526      | └ 923  | 09 18 526         | └ 913  | 09 18 526        | └ 903  |
|                                                       | 30              | 09 18 530      | └ 923  | 09 18 530         | └ 913  | 09 18 530        | └ 903  |
|                                                       | 34              | 09 18 534      | └ 923  | 09 18 534         | └ 913  | 09 18 534        | └ 903  |
|                                                       | 40              | 09 18 540      | └ 923  | 09 18 540         | └ 913  | 09 18 540        | └ 903  |
|                                                       | 50              | 09 18 550      | └ 923  | 09 18 550         | └ 913  | 09 18 550        | └ 903  |
|                                                       | 60              | 09 18 560      | └ 923  | 09 18 560         | └ 913  | 09 18 560        | └ 903  |
|                                                       | 64              | 09 18 564      | └ 923  | 09 18 564         | └ 913  | 09 18 564        | └ 903  |
| Kinked version on request                             |                 |                |        |                   |        |                  |        |
| Male header with angled solder pins<br>Length: 4.5 mm | 6               | 09 18 506      | └ 921* | 09 18 506         | └ 911* | 09 18 506        | └ 901* |
|                                                       | 10              | 09 18 510      | └ 921* | 09 18 510         | └ 911* | 09 18 510        | └ 901* |
|                                                       | 14              | 09 18 514      | └ 921* | 09 18 514         | └ 911* | 09 18 514        | └ 901* |
|                                                       | 16              | 09 18 516      | └ 921* | 09 18 516         | └ 911* | 09 18 516        | └ 901* |
|                                                       | 20              | 09 18 520      | └ 921* | 09 18 520         | └ 911* | 09 18 520        | └ 901* |
|                                                       | 24              | 09 18 524      | └ 921* | 09 18 524         | └ 911* | 09 18 524        | └ 901* |
|                                                       | 26              | 09 18 526      | └ 921* | 09 18 526         | └ 911* | 09 18 526        | └ 901* |
|                                                       | 30              | 09 18 530      | └ 921* | 09 18 530         | └ 911* | 09 18 530        | └ 901* |
|                                                       | 34              | 09 18 534      | └ 921* | 09 18 534         | └ 911* | 09 18 534        | └ 901* |
|                                                       | 40              | 09 18 540      | └ 921* | 09 18 540         | └ 911* | 09 18 540        | └ 901* |
|                                                       | 50              | 09 18 550      | └ 921* | 09 18 550         | └ 911* | 09 18 550        | └ 901* |
|                                                       | 60              | 09 18 560      | └ 921* | 09 18 560         | └ 911* | 09 18 560        | └ 901* |
|                                                       | 64              | 09 18 564      | └ 921* | 09 18 564         | └ 911* | 09 18 564        | └ 901* |
| Kinked version on request                             |                 |                |        |                   |        |                  |        |

SEK

\* Not normally kept in stock  
For accessories see page 09.16  
For dimensions see page 09.07

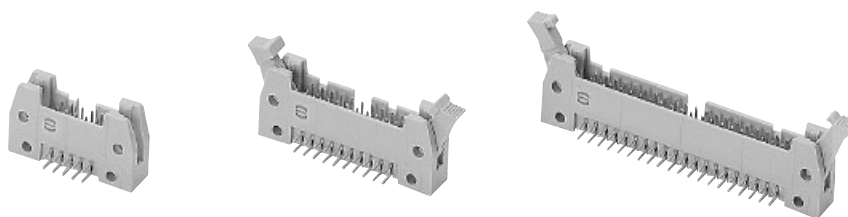
For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent





Number of contacts

6-64



Male header with angled solder pins

Identification

Drawing

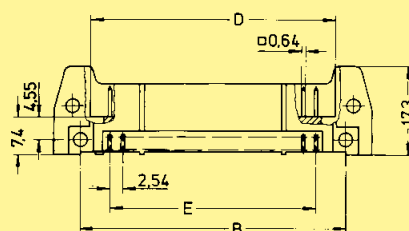
Dimensions in mm

Male header

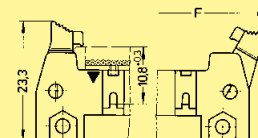
| No. of contacts | A     | B     | D     | E                 | F     | G     |
|-----------------|-------|-------|-------|-------------------|-------|-------|
| 6               | 26.9  | 16.76 | 12.45 | 2.54 x 2 = 5.08   | 36.9  | 40.3  |
| 10              | 32.0  | 21.84 | 17.53 | 2.54 x 4 = 10.16  | 42.0  | 45.4  |
| 14              | 37.1  | 26.92 | 22.61 | 2.54 x 6 = 15.24  | 47.1  | 50.4  |
| 16              | 39.6  | 29.46 | 25.15 | 2.54 x 7 = 17.78  | 49.6  | 53.0  |
| 20              | 44.7  | 34.54 | 30.23 | 2.54 x 9 = 22.86  | 54.7  | 58.1  |
| 24              | 49.8  | 39.62 | 35.91 | 2.54 x 11 = 27.94 | 59.8  | 63.2  |
| 26              | 52.3  | 42.16 | 37.85 | 2.54 x 12 = 30.48 | 62.3  | 65.7  |
| 30              | 57.7  | 47.24 | 43.83 | 2.54 x 14 = 35.56 | 68.2  | 68.6  |
| 34              | 62.5  | 52.32 | 48.01 | 2.54 x 16 = 40.64 | 72.5  | 75.8  |
| 40              | 70.1  | 59.94 | 55.63 | 2.54 x 19 = 48.26 | 80.1  | 83.5  |
| 50              | 82.8  | 72.64 | 68.33 | 2.54 x 24 = 60.96 | 92.8  | 96.2  |
| 60              | 95.5  | 85.34 | 81.03 | 2.54 x 29 = 73.66 | 105.5 | 108.9 |
| 64              | 100.6 | 90.42 | 86.11 | 2.54 x 31 = 78.74 | 110.6 | 113.9 |

Short levers

for use with female connector without strain relief clamp

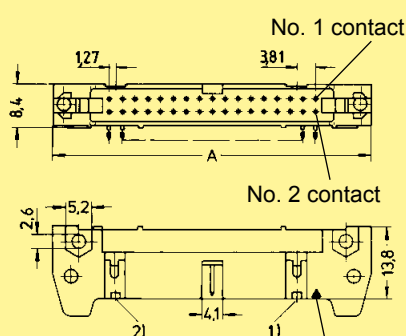


Center of gravity

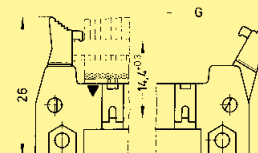


Long levers

for use with female connector with strain relief clamp

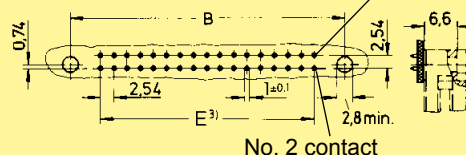


a) Solder pins for 1 ± 0.1 mm dia. hole



Marking No. 1 contact

No. 1 contact

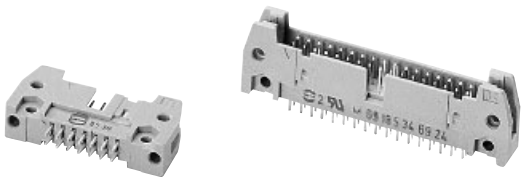


No. 2 contact

Board drillings

Number of contacts

6–64



Male header with straight solder pins

| Identification                                          | No. of contacts | Part No.       |        |                   |        |                  |        |
|---------------------------------------------------------|-----------------|----------------|--------|-------------------|--------|------------------|--------|
|                                                         |                 | Without levers |        | With short levers |        | With long levers |        |
| Male header with straight solder pins<br>Length: 2.9 mm | 6               | 09 18 506      | └ 924  | 09 18 506         | └ 914  | 09 18 506        | └ 904  |
|                                                         | 10              | 09 18 510      | └ 924  | 09 18 510         | └ 914  | 09 18 510        | └ 904  |
|                                                         | 14              | 09 18 514      | └ 924  | 09 18 514         | └ 914  | 09 18 514        | └ 904  |
|                                                         | 16              | 09 18 516      | └ 924  | 09 18 516         | └ 914  | 09 18 516        | └ 904  |
|                                                         | 20              | 09 18 520      | └ 924  | 09 18 520         | └ 914  | 09 18 520        | └ 904  |
|                                                         | 24              | 09 18 524      | └ 924  | 09 18 524         | └ 914  | 09 18 524        | └ 904  |
|                                                         | 26              | 09 18 526      | └ 924  | 09 18 526         | └ 914  | 09 18 526        | └ 904  |
|                                                         | 30              | 09 18 530      | └ 924  | 09 18 530         | └ 914  | 09 18 530        | └ 904  |
|                                                         | 34              | 09 18 534      | └ 924  | 09 18 534         | └ 914  | 09 18 534        | └ 904  |
|                                                         | 40              | 09 18 540      | └ 924  | 09 18 540         | └ 914  | 09 18 540        | └ 904  |
|                                                         | 50              | 09 18 550      | └ 924  | 09 18 550         | └ 914  | 09 18 550        | └ 904  |
|                                                         | 60              | 09 18 560      | └ 924  | 09 18 560         | └ 914  | 09 18 560        | └ 904  |
|                                                         | 64              | 09 18 564      | └ 924  | 09 18 564         | └ 914  | 09 18 564        | └ 904  |
| Male header with straight solder pins<br>Length: 4.5 mm | 6               | 09 18 506      | └ 922* | 09 18 506         | └ 912* | 09 18 506        | └ 902* |
|                                                         | 10              | 09 18 510      | └ 922* | 09 18 510         | └ 912* | 09 18 510        | └ 902* |
|                                                         | 14              | 09 18 514      | └ 922* | 09 18 514         | └ 912* | 09 18 514        | └ 902* |
|                                                         | 16              | 09 18 516      | └ 922* | 09 18 516         | └ 912* | 09 18 516        | └ 902* |
|                                                         | 20              | 09 18 520      | └ 922* | 09 18 520         | └ 912* | 09 18 520        | └ 902* |
|                                                         | 24              | 09 18 524      | └ 922* | 09 18 524         | └ 912* | 09 18 524        | └ 902* |
|                                                         | 26              | 09 18 526      | └ 922* | 09 18 526         | └ 912* | 09 18 526        | └ 902* |
|                                                         | 30              | 09 18 530      | └ 922* | 09 18 530         | └ 912* | 09 18 530        | └ 902* |
|                                                         | 34              | 09 18 534      | └ 922* | 09 18 534         | └ 912* | 09 18 534        | └ 902* |
|                                                         | 40              | 09 18 540      | └ 922* | 09 18 540         | └ 912* | 09 18 540        | └ 902* |
|                                                         | 50              | 09 18 550      | └ 922* | 09 18 550         | └ 912* | 09 18 550        | └ 902* |
|                                                         | 60              | 09 18 560      | └ 922* | 09 18 560         | └ 912* | 09 18 560        | └ 902* |
|                                                         | 64              | 09 18 564      | └ 922* | 09 18 564         | └ 912* | 09 18 564        | └ 902* |
| Kinked version on request                               |                 |                |        |                   |        |                  |        |

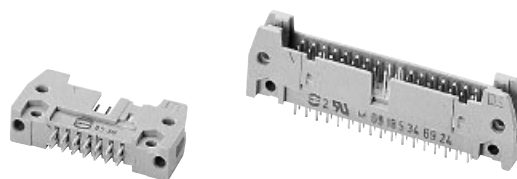
\* Not normally kept in stock  
For accessories see page 09.16  
For dimensions see page 09.09

For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent



Number of contacts

6-64



Male header with straight solder pins

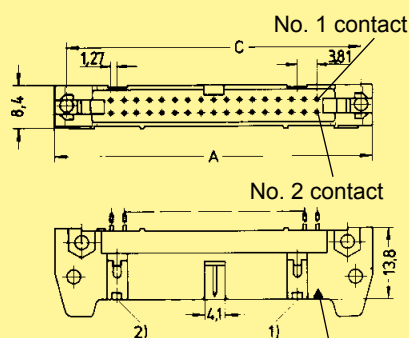
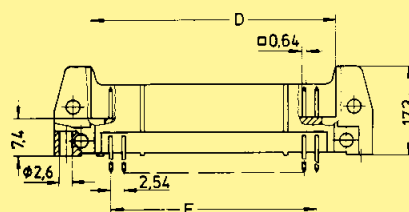
Identification

Drawing

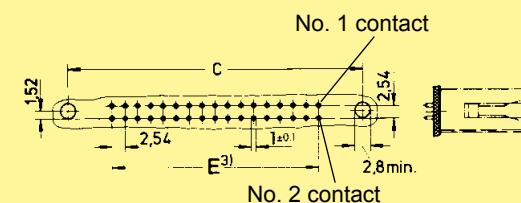
Dimensions in mm

Male header

| No. of contacts | A     | C     | D     | E                 | F     | G     |
|-----------------|-------|-------|-------|-------------------|-------|-------|
| 6               | 26.9  | 22.86 | 12.45 | 2.54 x 2 = 5.08   | 36.9  | 40.3  |
| 10              | 32.0  | 27.94 | 17.53 | 2.54 x 4 = 10.16  | 42.0  | 45.4  |
| 14              | 37.1  | 33.02 | 22.61 | 2.54 x 6 = 15.24  | 47.1  | 50.4  |
| 16              | 39.6  | 35.56 | 25.15 | 2.54 x 7 = 17.78  | 49.6  | 53.0  |
| 20              | 44.7  | 40.64 | 30.23 | 2.54 x 9 = 22.86  | 54.7  | 58.1  |
| 24              | 49.8  | 45.72 | 35.91 | 2.54 x 11 = 27.94 | 59.8  | 63.2  |
| 26              | 52.3  | 48.26 | 37.85 | 2.54 x 12 = 30.48 | 62.3  | 65.7  |
| 30              | 57.7  | 53.34 | 43.83 | 2.54 x 14 = 35.56 | 68.2  | 68.6  |
| 34              | 62.5  | 58.42 | 48.01 | 2.54 x 16 = 40.64 | 72.5  | 75.8  |
| 40              | 70.1  | 66.04 | 55.63 | 2.54 x 19 = 48.26 | 80.1  | 83.5  |
| 50              | 82.8  | 78.74 | 68.33 | 2.54 x 24 = 60.96 | 92.8  | 96.2  |
| 60              | 95.5  | 91.44 | 81.03 | 2.54 x 29 = 73.66 | 105.5 | 108.9 |
| 64              | 100.6 | 96.52 | 86.11 | 2.54 x 31 = 78.74 | 110.6 | 113.9 |



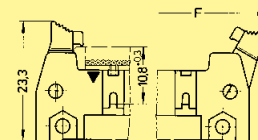
Marking No. 1 contact



Board drillings

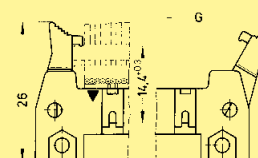
Short levers

for use with female connector without strain relief clamp



Long levers

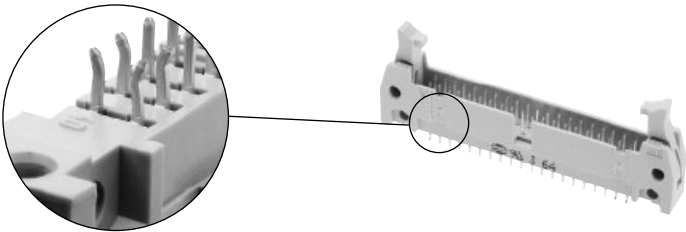
for use with female connector with strain relief clamp



a) Solder pins for 1 ± 0.1 mm dia. hole

Number of contacts

6–64



Male header with straight solder pins, kinked

| Identification                                                  | No. of contacts | Part No.       |       |                   |       |                  |       |
|-----------------------------------------------------------------|-----------------|----------------|-------|-------------------|-------|------------------|-------|
|                                                                 |                 | Without levers |       | With short levers |       | With long levers |       |
| Male header with straight solder pins, kinked<br>Length: 2.9 mm | 6               | 09 18 506      | └ 024 | 09 18 506         | └ 014 | 09 18 506        | └ 004 |
|                                                                 | 10              | 09 18 510      | └ 024 | 09 18 510         | └ 014 | 09 18 510        | └ 004 |
|                                                                 | 14              | 09 18 514      | └ 024 | 09 18 514         | └ 014 | 09 18 514        | └ 004 |
|                                                                 | 16              | 09 18 516      | └ 024 | 09 18 516         | └ 014 | 09 18 516        | └ 004 |
|                                                                 | 20              | 09 18 520      | └ 024 | 09 18 520         | └ 014 | 09 18 520        | └ 004 |
|                                                                 | 24              | 09 18 524      | └ 024 | 09 18 524         | └ 014 | 09 18 524        | └ 004 |
|                                                                 | 26              | 09 18 526      | └ 024 | 09 18 526         | └ 014 | 09 18 526        | └ 004 |
|                                                                 | 30              | 09 18 530      | └ 024 | 09 18 530         | └ 014 | 09 18 530        | └ 004 |
|                                                                 | 34              | 09 18 534      | └ 024 | 09 18 534         | └ 014 | 09 18 534        | └ 004 |
|                                                                 | 40              | 09 18 540      | └ 024 | 09 18 540         | └ 014 | 09 18 540        | └ 004 |
|                                                                 | 50              | 09 18 550      | └ 024 | 09 18 550         | └ 014 | 09 18 550        | └ 004 |
|                                                                 | 60              | 09 18 560      | └ 024 | 09 18 560         | └ 014 | 09 18 560        | └ 004 |
|                                                                 | 64              | 09 18 564      | └ 024 | 09 18 564         | └ 014 | 09 18 564        | └ 004 |
|                                                                 |                 |                |       |                   |       |                  |       |
|                                                                 |                 |                |       |                   |       |                  |       |
|                                                                 |                 |                |       |                   |       |                  |       |

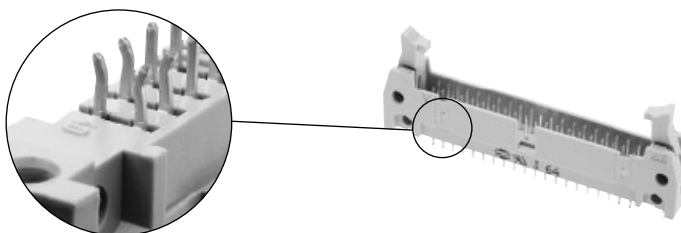
\* Not normally kept in stock  
For accessories see page 09.16  
For dimensions see page 09.11

For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent



Number of contacts

6-64



Male header with straight solder pins, kinked

Identification

Drawing

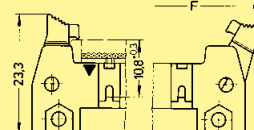
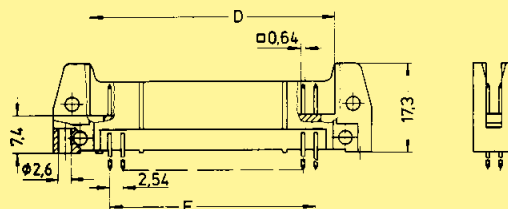
Dimensions in mm

Male header

| No. of contacts | A     | C     | D     | E                 | F     | G     |
|-----------------|-------|-------|-------|-------------------|-------|-------|
| 6               | 26.9  | 22.86 | 12.45 | 2.54 x 2 = 5.08   | 36.9  | 40.3  |
| 10              | 32.0  | 27.94 | 17.53 | 2.54 x 4 = 10.16  | 42.0  | 45.4  |
| 14              | 37.1  | 33.02 | 22.61 | 2.54 x 6 = 15.24  | 47.1  | 50.4  |
| 16              | 39.6  | 35.56 | 25.15 | 2.54 x 7 = 17.78  | 49.6  | 53.0  |
| 20              | 44.7  | 40.64 | 30.23 | 2.54 x 9 = 22.86  | 54.7  | 58.1  |
| 24              | 49.8  | 45.72 | 35.91 | 2.54 x 11 = 27.94 | 59.8  | 63.2  |
| 26              | 52.3  | 48.26 | 37.85 | 2.54 x 12 = 30.48 | 62.3  | 65.7  |
| 30              | 57.7  | 53.34 | 43.83 | 2.54 x 14 = 35.56 | 68.2  | 68.6  |
| 34              | 62.5  | 58.42 | 48.01 | 2.54 x 16 = 40.64 | 72.5  | 75.8  |
| 40              | 70.1  | 66.04 | 55.63 | 2.54 x 19 = 48.26 | 80.1  | 83.5  |
| 50              | 82.8  | 78.74 | 68.33 | 2.54 x 24 = 60.96 | 92.8  | 96.2  |
| 60              | 95.5  | 91.44 | 81.03 | 2.54 x 29 = 73.66 | 105.5 | 108.9 |
| 64              | 100.6 | 96.52 | 86.11 | 2.54 x 31 = 78.74 | 110.6 | 113.9 |

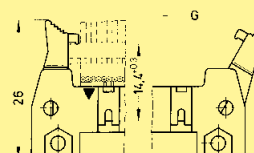
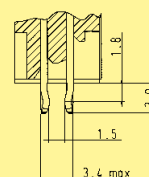
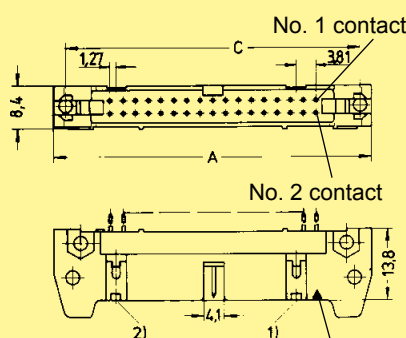
Short levers

for use with female connector without strain relief clamp



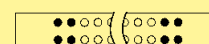
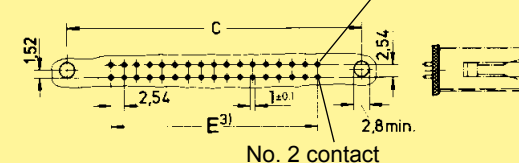
Long levers

for use with female connector with strain relief clamp



Marking No. 1 contact

No. 1 contact



Board drillings

● Kinked contact: pcb thickness from 1.50 to 1.94 mm after Cu + Sn plating with non-remelted through holes  $\varnothing$  0.80 to  $\varnothing$  0.95 mm. Max. insertion force = 125 N. Min. retention force = 3 N.

○ Non-kinked contact: Solder pins for pcb connections  $\varnothing$  1  $\pm$  0.1 mm as per IEC 60603-13.

For accessories see page 09.16

<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header

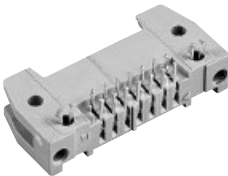
<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance:  $\pm$  0.1

SEK

Number of contacts

6-64



Male header with angled solder pins and board lock

| Identification                                                                                                                                                                                                                                      | No. of contacts | Part No.       |        |                   |        |                  |        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------|--------|-------------------|--------|------------------|--------|
|                                                                                                                                                                                                                                                     |                 | Without levers |        | With short levers |        | With long levers |        |
| Male header with angled solder pins and pcb board lock<br>Length: 2.9 mm for 1.6 mm pcb thickness<br><br>To hold the connector on the pcb before the soldering process, two board locks have been added on the male header with angled solder pins. | 6               | 09 18 506      | └ 973* | 09 18 506         | └ 963* | 09 18 506        | └ 953* |
|                                                                                                                                                                                                                                                     | 10              | 09 18 510      | └ 973* | 09 18 510         | └ 963* | 09 18 510        | └ 953* |
|                                                                                                                                                                                                                                                     | 14              | 09 18 514      | └ 973* | 09 18 514         | └ 963* | 09 18 514        | └ 953* |
|                                                                                                                                                                                                                                                     | 16              | 09 18 516      | └ 973* | 09 18 516         | └ 963* | 09 18 516        | └ 953* |
|                                                                                                                                                                                                                                                     | 20              | 09 18 520      | └ 973* | 09 18 520         | └ 963* | 09 18 520        | └ 953* |
|                                                                                                                                                                                                                                                     | 24              | 09 18 524      | └ 973* | 09 18 524         | └ 963* | 09 18 524        | └ 953* |
|                                                                                                                                                                                                                                                     | 26              | 09 18 526      | └ 973* | 09 18 526         | └ 963* | 09 18 526        | └ 953* |
|                                                                                                                                                                                                                                                     | 30              | 09 18 530      | └ 973* | 09 18 530         | └ 963* | 09 18 530        | └ 953* |
|                                                                                                                                                                                                                                                     | 34              | 09 18 534      | └ 973* | 09 18 534         | └ 963* | 09 18 534        | └ 953* |
|                                                                                                                                                                                                                                                     | 40              | 09 18 540      | └ 973* | 09 18 540         | └ 963* | 09 18 540        | └ 953* |
|                                                                                                                                                                                                                                                     | 50              | 09 18 550      | └ 973* | 09 18 550         | └ 963* | 09 18 550        | └ 953* |
|                                                                                                                                                                                                                                                     | 60              | 09 18 560      | └ 973* | 09 18 560         | └ 963* | 09 18 560        | └ 953* |
|                                                                                                                                                                                                                                                     | 64              | 09 18 564      | └ 973* | 09 18 564         | └ 963* | 09 18 564        | └ 953* |
|                                                                                                                                                                                                                                                     |                 |                |        |                   |        |                  |        |
|                                                                                                                                                                                                                                                     |                 |                |        |                   |        |                  |        |
|                                                                                                                                                                                                                                                     |                 |                |        |                   |        |                  |        |
|                                                                                                                                                                                                                                                     |                 |                |        |                   |        |                  |        |

SEK

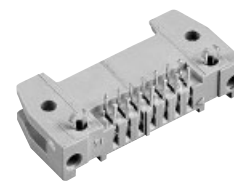
09-12

\* Not normally kept in stock

For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent



# 6-64



## Identification

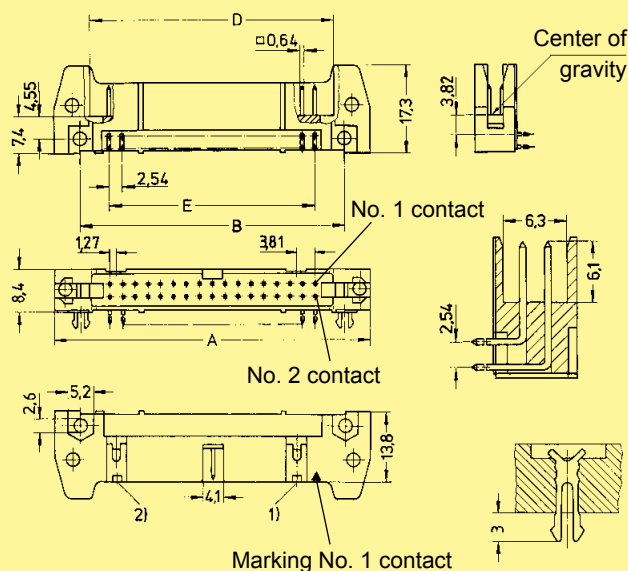
Dimensions in mm

Male header

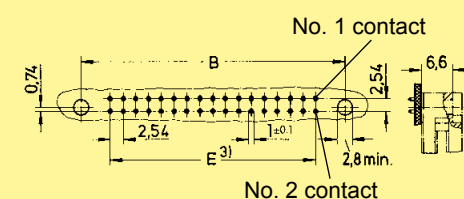
| No. of contacts | A     | B     | D     | E                                    | F     | G     |
|-----------------|-------|-------|-------|--------------------------------------|-------|-------|
| 6               | 26.9  | 16.76 | 12.45 | $\frac{2.54}{100} \times 2 = 5.08$   | 36.9  | 40.3  |
| 10              | 32.0  | 21.84 | 17.53 | $\frac{2.54}{100} \times 4 = 10.16$  | 42.0  | 45.4  |
| 14              | 37.1  | 26.92 | 22.61 | $\frac{2.54}{100} \times 6 = 15.24$  | 47.1  | 50.4  |
| 16              | 39.6  | 29.46 | 25.15 | $\frac{2.54}{100} \times 7 = 17.78$  | 49.6  | 53.0  |
| 20              | 44.7  | 34.54 | 30.23 | $\frac{2.54}{100} \times 9 = 22.86$  | 54.7  | 58.1  |
| 24              | 49.8  | 39.62 | 35.91 | $\frac{2.54}{100} \times 11 = 27.94$ | 59.8  | 63.2  |
| 26              | 52.3  | 42.16 | 37.85 | $\frac{2.54}{100} \times 12 = 30.48$ | 62.3  | 65.7  |
| 30              | 57.7  | 47.24 | 43.83 | $\frac{2.54}{100} \times 14 = 35.56$ | 68.2  | 68.6  |
| 34              | 62.5  | 52.32 | 48.01 | $\frac{2.54}{100} \times 16 = 40.64$ | 72.5  | 75.8  |
| 40              | 70.1  | 59.94 | 55.63 | $\frac{2.54}{100} \times 19 = 48.26$ | 80.1  | 83.5  |
| 50              | 82.8  | 72.64 | 68.33 | $\frac{2.54}{100} \times 24 = 60.96$ | 92.8  | 96.2  |
| 60              | 95.5  | 85.34 | 81.03 | $\frac{2.54}{100} \times 29 = 73.66$ | 105.5 | 108.9 |
| 64              | 100.6 | 90.42 | 86.11 | $\frac{2.54}{100} \times 31 = 78.74$ | 110.6 | 113.9 |

## Board drillings

for use with female  
connector without  
strain relief clamp

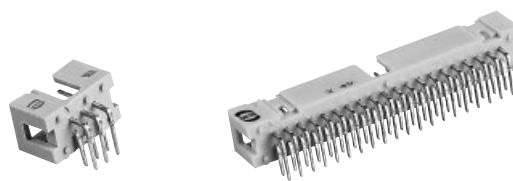


for use with female  
connector with  
strain relief clamp



Number of contacts

6-64


Low-profile male header, angled solder pins

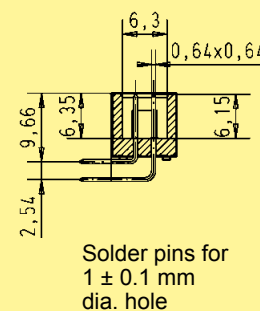
| Identification | No. of contacts | Part No. | Drawing | Dimensions in mm |
|----------------|-----------------|----------|---------|------------------|
|----------------|-----------------|----------|---------|------------------|

Male header with angled solder pins

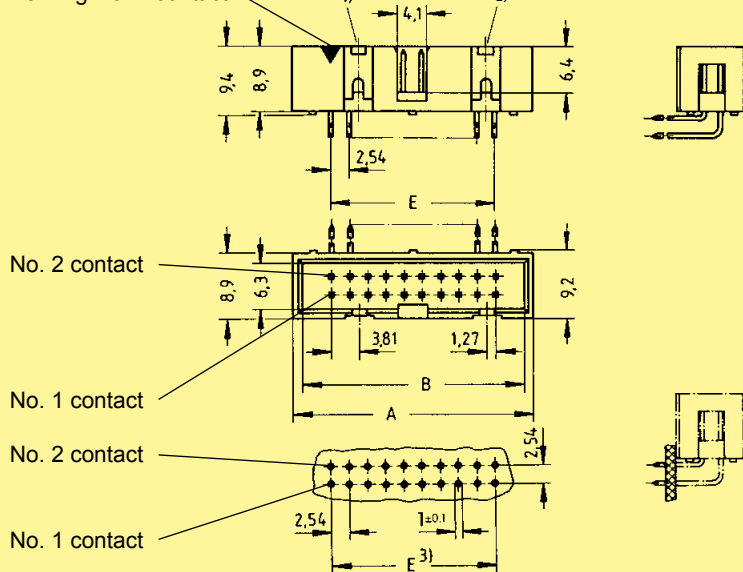
Length: 2.9 mm

|    |           |     |
|----|-----------|-----|
| 6  | 09 18 506 | 323 |
| 10 | 09 18 510 | 323 |
| 14 | 09 18 514 | 323 |
| 16 | 09 18 516 | 323 |
| 20 | 09 18 520 | 323 |
| 26 | 09 18 526 | 323 |
| 30 | 09 18 530 | 323 |
| 34 | 09 18 534 | 323 |
| 40 | 09 18 540 | 323 |
| 50 | 09 18 550 | 323 |
| 60 | 09 18 560 | 323 |
| 64 | 09 18 564 | 323 |

| No. of contacts | A     | B     | E                 |
|-----------------|-------|-------|-------------------|
| 6               | 15.2  | 12.78 | 2.54 x 2 = 5.08   |
| 10              | 20.3  | 17.86 | 2.54 x 4 = 10.16  |
| 14              | 25.4  | 22.94 | 2.54 x 6 = 15.24  |
| 16              | 27.9  | 25.48 | 2.54 x 7 = 17.78  |
| 20              | 33.0  | 30.56 | 2.54 x 9 = 22.86  |
| 26              | 40.6  | 38.18 | 2.54 x 12 = 30.48 |
| 30              | 45.72 | 43.26 | 2.54 x 14 = 35.56 |
| 34              | 50.8  | 48.34 | 2.54 x 16 = 40.64 |
| 40              | 58.4  | 55.96 | 2.54 x 19 = 48.26 |
| 50              | 71.3  | 68.66 | 2.54 x 24 = 60.96 |
| 60              | 84.0  | 81.36 | 2.54 x 29 = 73.66 |
| 64              | 89.1  | 86.44 | 2.54 x 31 = 78.74 |



Marking No. 1 contact


For performance level 3 please specify digit  
For performance level 2 please specify digit  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

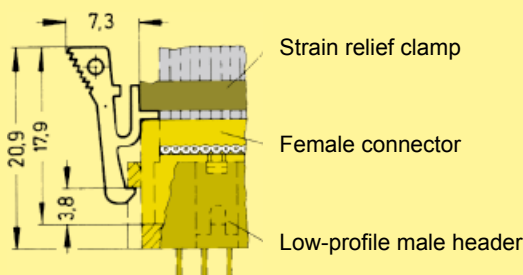
7  
6  
5\*

| Identification | Part No. | Drawing | Dimensions in mm |
|----------------|----------|---------|------------------|
|----------------|----------|---------|------------------|

Locking lever for female connector with strain relief

in conjunction with low-profile male header

When the security of latching is required and space is a premium, these locking levers can be fitted onto the strain relief of the HARTING female connector.

09 18 000 9905<sup>4)</sup>


\* Not normally kept in stock

<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header

<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance: ± 0.1

<sup>4)</sup> Order 2 per female connector



Number of contacts

# 6-64


Low-profile male header, straight solder pins

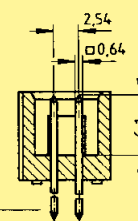
| Identification | No. of contacts | Part No. | Drawing | Dimensions in mm |
|----------------|-----------------|----------|---------|------------------|
|----------------|-----------------|----------|---------|------------------|

Male header with straight solder pins

Length: 2.9 mm

|    |           |     |
|----|-----------|-----|
| 6  | 09 18 506 | 324 |
| 10 | 09 18 510 | 324 |
| 14 | 09 18 514 | 324 |
| 16 | 09 18 516 | 324 |
| 20 | 09 18 520 | 324 |
| 26 | 09 18 526 | 324 |
| 30 | 09 18 530 | 324 |
| 34 | 09 18 534 | 324 |
| 40 | 09 18 540 | 324 |
| 50 | 09 18 550 | 324 |
| 60 | 09 18 560 | 324 |
| 64 | 09 18 564 | 324 |

| No. of contacts | A     | B     | E                 |
|-----------------|-------|-------|-------------------|
| 6               | 15.2  | 12.78 | 2.54 x 2 = 5.08   |
| 10              | 20.3  | 17.86 | 2.54 x 4 = 10.16  |
| 14              | 25.4  | 22.94 | 2.54 x 6 = 15.24  |
| 16              | 27.9  | 25.48 | 2.54 x 7 = 17.78  |
| 20              | 33.0  | 30.56 | 2.54 x 9 = 22.86  |
| 26              | 40.6  | 38.18 | 2.54 x 12 = 30.48 |
| 30              | 45.72 | 43.26 | 2.54 x 14 = 35.56 |
| 34              | 50.8  | 48.34 | 2.54 x 16 = 40.64 |
| 40              | 58.4  | 55.96 | 2.54 x 19 = 48.26 |
| 50              | 71.3  | 68.66 | 2.54 x 24 = 60.96 |
| 60              | 84.0  | 81.36 | 2.54 x 29 = 73.66 |
| 64              | 89.1  | 86.44 | 2.54 x 31 = 78.74 |



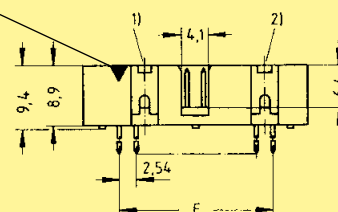
Solder pins for 1 ± 0.1 mm dia. hole

Male header with straight solder pins

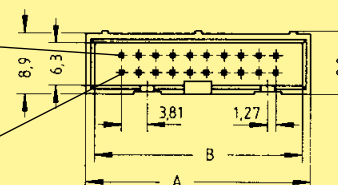
Length: 4.5 mm

|    |           |      |
|----|-----------|------|
| 6  | 09 18 506 | 322* |
| 10 | 09 18 510 | 322* |
| 14 | 09 18 514 | 322* |
| 16 | 09 18 516 | 322* |
| 20 | 09 18 520 | 322* |
| 26 | 09 18 526 | 322* |
| 30 | 09 18 530 | 322* |
| 34 | 09 18 534 | 322* |
| 40 | 09 18 540 | 322* |
| 50 | 09 18 550 | 322* |
| 60 | 09 18 560 | 322* |
| 64 | 09 18 564 | 322* |

Marking No. 1 contact

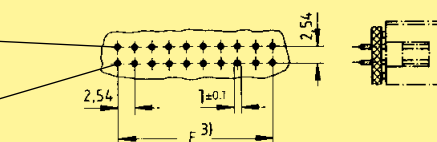


No. 2 contact



No. 1 contact

No. 2 contact



No. 1 contact

For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

7  
6  
5

Identification

Part No.

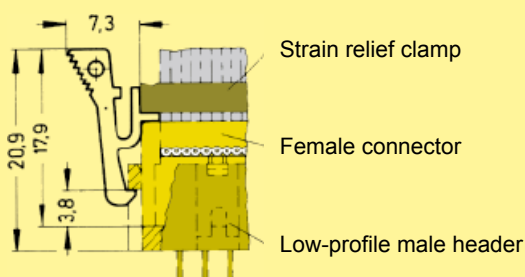
Drawing

Dimensions in mm

Locking lever for female connector with strain relief

in conjunction with low-profile male header

When the security of latching is required and space is a premium, these locking levers can be fitted onto the strain relief of the HARTING female connector.

09 18 000 9905<sup>4)</sup>


\* Not normally kept in stock

<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header  
<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance: ± 0.1  
<sup>4)</sup> Order 2 per female connector

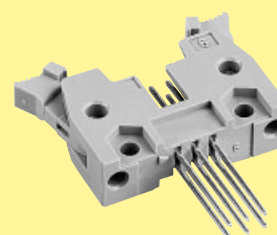
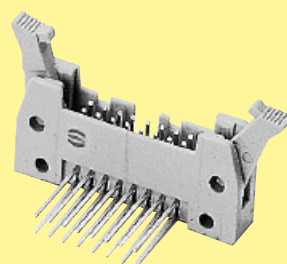
SEK

09  
15

# Accessories

| Identification                                                                                                                                        | Part No.                                                                                    | Drawing                                                                                                                                                                                                                                                                                                       | Dimensions in mm |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Polarization key</b><br><br>1) Part No. comprises 2 keys                                                                                           | 09 18 500 9902 <sup>1)</sup>                                                                |                                                                                                                                                                                                                                                                                                               |                  |
| <b>Locking lever</b><br>(snaps into place, can be fitted whenever required)<br><br>2) Order 2 per male header                                         | Long:<br><br>09 18 000 9903 <sup>2)</sup><br><br>Short:<br><br>09 18 000 9904 <sup>2)</sup> | <div> <b>Long</b><br/> </div> <div> <b>Short</b><br/> </div> <div>                     For use with female connector <u>with</u> strain relief clamp                                                                  For use with female connector <u>without</u> strain relief clamp                 </div> |                  |
| <b>Fixing screws</b><br>for 1.6 mm P.C. board<br><br>3) Part No. comprises 50 pieces                                                                  | 09 18 000 9906 <sup>3)</sup>                                                                |                                                                                                                                                                                                                                                                                                               |                  |
| <b>Coding system with loss of contact</b><br><br>Code pin<br>09 18 000 9901 <sup>4)</sup><br><br>Removal tool for male contacts<br><br>09 99 000 0133 |                                                                                             | <p>To avoid cross-plugging adjacent connectors a coding system is required. A code pin is inserted into the appropriate cavity in the female connector. The corresponding male contact is removed by a special removal tool.</p>                                                                              |                  |

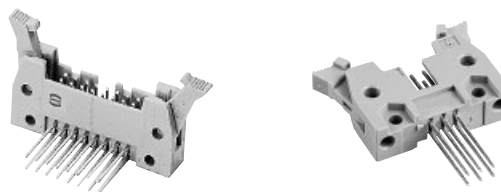
|                                             |                                                                                                     |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Number of contacts                          | 6, 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60, 64                                                   |
| Contact arrangement                         | straight, angled                                                                                    |
| Contact length                              | 15 mm                                                                                               |
| Approvals                                   | IEC 60603-13<br>DIN EN 60603-13<br>D 2632<br>BT 224<br>NFC 93-428 (HE 10)                           |
| Pitch                                       | 2.54 mm [0.100"]                                                                                    |
| Working current                             | 1 A                                                                                                 |
| Working voltage                             | 500 V<br>for pollution degree 1                                                                     |
| Test voltage $U_{r.m.s.}$                   | 1 kV                                                                                                |
| Contact resistance<br>Insulation resistance | $\leq 20 \text{ m}\Omega$<br>$\geq 10^9 \Omega$                                                     |
| Temperature range                           | -55 °C ... + 125 °C<br>The maximum temperature includes heating of contacts and ambient temperature |
| Terminations                                | 0.6 mm x 0.6 mm<br>Diagonal: 0.86 mm                                                                |
| Materials<br>Moulding                       | Thermoplastic resin (PBT)<br>UL 94-V0                                                               |
| Contact surface<br>Contact zone             | plated according to performance level <sup>1)</sup>                                                 |



<sup>1)</sup> Performance level 3 as per IEC 60603-13,  $\geq 50$  mating cycles, no gas test  
Performance level 2 as per IEC 60603-13,  $\geq 250$  mating cycles, 4 days gas test  
S4, plating = 0.76  $\mu\text{m}$  (30  $\mu\text{inch}$ ) Au or PdNi equivalent

Number of contacts

6-64

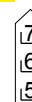
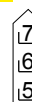
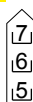


## Male header with wrap posts

| Identification                                                    | No. of contacts | Part No.       |        |                   |        |                  |        |
|-------------------------------------------------------------------|-----------------|----------------|--------|-------------------|--------|------------------|--------|
|                                                                   |                 | Without levers |        | With short levers |        | With long levers |        |
| Male header with angled wrap posts<br>Length: 15 mm<br>□ 0.6 mm   | 6               | 09 18 506      | └ 926* | 09 18 506         | └ 916* | 09 18 506        | └ 906* |
|                                                                   | 10              | 09 18 510      | └ 926* | 09 18 510         | └ 916* | 09 18 510        | └ 906* |
|                                                                   | 14              | 09 18 514      | └ 926* | 09 18 514         | └ 916* | 09 18 514        | └ 906* |
|                                                                   | 16              | 09 18 516      | └ 926* | 09 18 516         | └ 916* | 09 18 516        | └ 906* |
|                                                                   | 20              | 09 18 520      | └ 926* | 09 18 520         | └ 916* | 09 18 520        | └ 906* |
|                                                                   | 24              | 09 18 524      | └ 926* | 09 18 524         | └ 916* | 09 18 524        | └ 906* |
|                                                                   | 26              | 09 18 526      | └ 926* | 09 18 526         | └ 916* | 09 18 526        | └ 906* |
|                                                                   | 30              | 09 18 530      | └ 926* | 09 18 530         | └ 916* | 09 18 530        | └ 906* |
|                                                                   | 34              | 09 18 534      | └ 926* | 09 18 534         | └ 916* | 09 18 534        | └ 906* |
|                                                                   | 40              | 09 18 540      | └ 926* | 09 18 540         | └ 916* | 09 18 540        | └ 906* |
|                                                                   | 50              | 09 18 550      | └ 926* | 09 18 550         | └ 916* | 09 18 550        | └ 906* |
|                                                                   | 60              | 09 18 560      | └ 926* | 09 18 560         | └ 916* | 09 18 560        | └ 906* |
|                                                                   | 64              | 09 18 564      | └ 926* | 09 18 564         | └ 916* | 09 18 564        | └ 906* |
| Male header with straight wrap posts<br>Length: 15 mm<br>□ 0.6 mm | 6               | 09 18 506      | └ 927* | 09 18 506         | └ 917* | 09 18 506        | └ 907* |
|                                                                   | 10              | 09 18 510      | └ 927* | 09 18 510         | └ 917* | 09 18 510        | └ 907* |
|                                                                   | 14              | 09 18 514      | └ 927* | 09 18 514         | └ 917* | 09 18 514        | └ 907* |
|                                                                   | 16              | 09 18 516      | └ 927* | 09 18 516         | └ 917* | 09 18 516        | └ 907* |
|                                                                   | 20              | 09 18 520      | └ 927* | 09 18 520         | └ 917* | 09 18 520        | └ 907* |
|                                                                   | 24              | 09 18 524      | └ 927* | 09 18 524         | └ 917* | 09 18 524        | └ 907* |
|                                                                   | 26              | 09 18 526      | └ 927* | 09 18 526         | └ 917* | 09 18 526        | └ 907* |
|                                                                   | 30              | 09 18 530      | └ 927* | 09 18 530         | └ 917* | 09 18 530        | └ 907* |
|                                                                   | 34              | 09 18 534      | └ 927* | 09 18 534         | └ 917* | 09 18 534        | └ 907* |
|                                                                   | 40              | 09 18 540      | └ 927* | 09 18 540         | └ 917* | 09 18 540        | └ 907* |
|                                                                   | 50              | 09 18 550      | └ 927* | 09 18 550         | └ 917* | 09 18 550        | └ 907* |
|                                                                   | 60              | 09 18 560      | └ 927* | 09 18 560         | └ 917* | 09 18 560        | └ 907* |
|                                                                   | 64              | 09 18 564      | └ 927* | 09 18 564         | └ 917* | 09 18 564        | └ 907* |

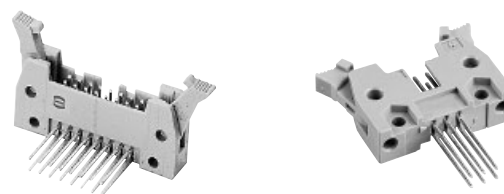
\* Not normally kept in stock  
For accessories see page 09.20  
For dimensions see page 09.19

For performance level 3 please specify digit  
For performance level 2 please specify digit  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent



Number of contacts

6-64



Male header with wrap posts

Identification

Drawing

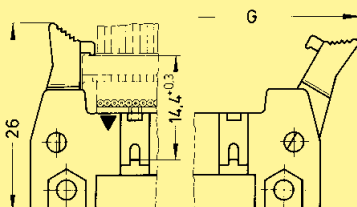
Dimensions in mm

Male header

| No. of contacts | A     | B     | C     | D     | E                        | F     | G     |
|-----------------|-------|-------|-------|-------|--------------------------|-------|-------|
| 6               | 26.9  | 16.76 | 22.86 | 12.45 | $2.54 \times 2 = 5.08$   | 36.9  | 40.3  |
| 10              | 32.0  | 21.84 | 27.94 | 17.53 | $2.54 \times 4 = 10.16$  | 42.0  | 45.4  |
| 14              | 37.1  | 26.92 | 33.02 | 22.61 | $2.54 \times 6 = 15.24$  | 47.1  | 50.4  |
| 16              | 39.6  | 29.46 | 35.56 | 25.15 | $2.54 \times 7 = 17.78$  | 49.6  | 53.0  |
| 20              | 44.7  | 34.54 | 40.64 | 30.23 | $2.54 \times 9 = 22.86$  | 54.7  | 58.1  |
| 24              | 49.8  | 39.62 | 45.72 | 35.91 | $2.54 \times 11 = 27.94$ | 59.8  | 63.2  |
| 26              | 52.3  | 42.16 | 48.26 | 37.85 | $2.54 \times 12 = 30.48$ | 62.3  | 65.7  |
| 30              | 57.7  | 47.24 | 53.43 | 43.83 | $2.54 \times 14 = 35.56$ | 68.2  | 68.6  |
| 34              | 62.5  | 52.32 | 58.42 | 48.01 | $2.54 \times 16 = 40.64$ | 72.5  | 75.8  |
| 40              | 70.1  | 59.94 | 66.04 | 55.63 | $2.54 \times 19 = 48.26$ | 80.1  | 83.5  |
| 50              | 82.8  | 72.64 | 78.74 | 68.33 | $2.54 \times 24 = 60.96$ | 92.8  | 96.2  |
| 60              | 95.5  | 85.34 | 91.44 | 81.03 | $2.54 \times 29 = 73.66$ | 105.5 | 108.9 |
| 64              | 100.6 | 90.42 | 96.52 | 86.11 | $2.54 \times 31 = 78.74$ | 110.6 | 113.9 |

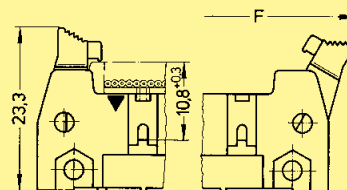
Long levers

for use with female connector  
with strain relief clamp

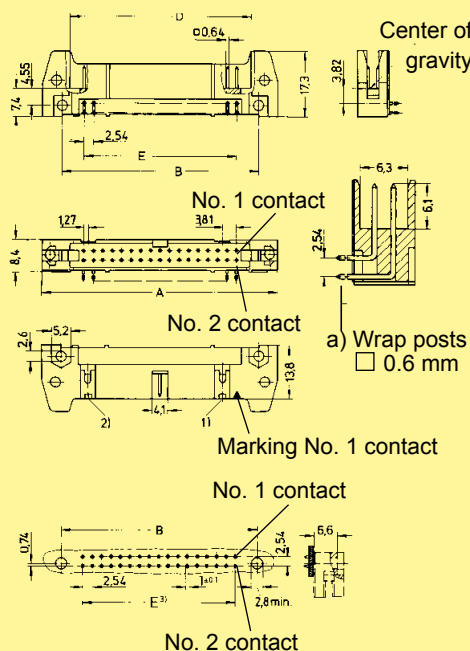


Short levers

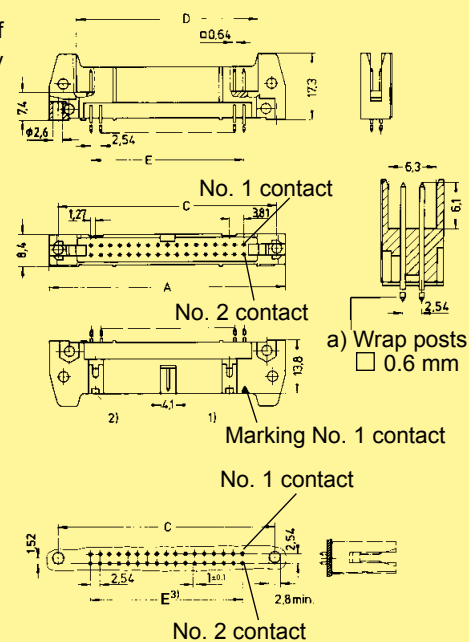
for use with female connector  
without strain relief clamp



Angled versions



Straight versions



Board drillings

## Accessories

| Identification                                                                                                | Part No.                                                                                                 | Drawing                                                                                                                                                                                                                                                                                       | Dimensions in mm |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Polarization key</b><br><br>1) Part No. comprises 2 keys                                                   | 09 18 500 9902 <sup>1)</sup>                                                                             |                                                                                                                                                                                                                                                                                               |                  |
| <b>Locking lever</b><br>(snaps into place, can be fitted whenever required)<br><br>2) Order 2 per male header | Long:<br><br>09 18 000 9903 <sup>2)</sup><br><br>Short:<br><br>09 18 000 9904 <sup>2)</sup>              | <div> <b>Long</b><br/> </div> <div> <b>Short</b><br/> </div> <div>                     For use with female connector <u>with</u> strain relief clamp                 </div> <div>                     For use with female connector <u>without</u> strain relief clamp                 </div> |                  |
| <b>Fixing screws</b><br>for 1.6 mm P.C. board<br><br>3) Part No. comprises 50 pieces                          | 09 18 000 9906 <sup>3)</sup>                                                                             |                                                                                                                                                                                                                                                                                               |                  |
| <b>Coding system with loss of contact</b><br><br>4) Part No. comprises 6 code pins                            | Code pin<br><br>09 18 000 9901 <sup>4)</sup><br><br>Removal tool for male contacts<br><br>09 99 000 0133 | <p>To avoid cross-plugging adjacent connectors a coding system is required. A code pin is inserted into the appropriate cavity in the female connector. The corresponding male contact is removed by a special removal tool.</p>                                                              |                  |

Number of contacts 6, 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60, 64

#### Approvals

IEC 60603-13  
DIN EN 60603-13  
D 2632  
BT 224  
NFC 93-428 (HE 10)



UL recognized: E102079

#### Pitch

2.54 mm [0.100"]

#### Working current

1 A

#### Working voltage

320 V  
for pollution degree 1

#### Test voltage $U_{r.m.s.}$

1 kV

Contact resistance  
Insulation resistance

$\leq 20 \text{ m}\Omega$   
 $\geq 10^9 \Omega$

#### Temperature range

-55 °C ... + 125 °C  
The maximum temperature includes heating of contacts and ambient temperature

#### Terminations

IDC flat cable  
1.27 mm [0.050"] pitch:  
AWG 26/7 – AWG 28/7

#### Materials

Moulding

Thermoplastic resin (PBT)  
UL 94-V0

Contact surface  
Contact zone

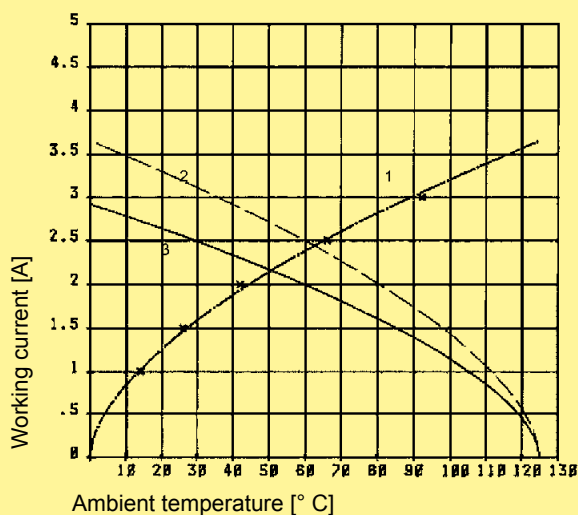
gold-plated according to  
performance level<sup>1)</sup>

#### Current carrying capacity

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals.

The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

Control and test procedures according to DIN IEC 60512.



Example: 50 way connector

- ① Temperature rise
- ② Derating
- ③ Derating curve at  $I_{max} \times 0.8$  (IEC 60512-2)

#### Insertion and withdrawal forces

| Number of contacts | Maximum force [N]         |                     |
|--------------------|---------------------------|---------------------|
|                    | Performance level 1 and 2 | Performance level 3 |
| 6                  | 12                        | 18                  |
| 10                 | 20                        | 30                  |
| 14                 | 28                        | 42                  |
| 16                 | 32                        | 48                  |
| 20                 | 40                        | 60                  |
| 24                 | 48                        | 72                  |
| 26                 | 52                        | 78                  |
| 30                 | 60                        | 90                  |
| 34                 | 68                        | 102                 |
| 40                 | 80                        | 120                 |
| 50                 | 100                       | 150                 |
| 60                 | 120                       | 180                 |
| 64                 | 128                       | 192                 |

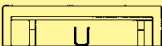
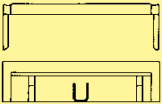
<sup>1)</sup> Performance level 3 as per IEC 60603-13,  $\geq 50$  mating cycles, no gas test  
Performance level 2 as per IEC 60603-13,  $\geq 250$  mating cycles, 4 days gas test  
S4, plating = 0.76  $\mu\text{m}$  (30  $\mu\text{inch}$ ) Au or PdNi equivalent

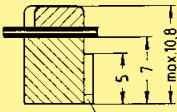
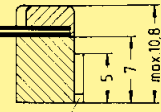
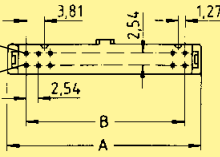
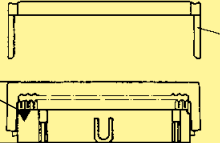
Number of contacts

6-64



Female connector

| Identification                                                                                                                                                                               | No. of contacts                                                                                                            | Part No.       |                         | Drawing                 | Dimensions in mm |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------|-------------------------|------------------|
| Female connector<br><u>with</u> central polarization<br><br><u>without</u> strain relief clamp<br><br>      |                                                                                                                            | open end cover |                         | closed end cover        |                  |
|                                                                                                                                                                                              | 6                                                                                                                          | 09 18 506      | ┐ 803                   | 09 18 506               | ┐ 804            |
|                                                                                                                                                                                              | 10                                                                                                                         | 09 18 510      | ┐ 803                   | 09 18 510               | ┐ 804            |
|                                                                                                                                                                                              | 14                                                                                                                         | 09 18 514      | ┐ 803                   | 09 18 514               | ┐ 804            |
|                                                                                                                                                                                              | 16                                                                                                                         | 09 18 516      | ┐ 803                   | 09 18 516               | ┐ 804            |
|                                                                                                                                                                                              | 20                                                                                                                         | 09 18 520      | ┐ 803                   | 09 18 520               | ┐ 804            |
|                                                                                                                                                                                              | 24                                                                                                                         | 09 18 524      | ┐ 803                   |                         |                  |
|                                                                                                                                                                                              | 26                                                                                                                         | 09 18 526      | ┐ 803                   | 09 18 526               | ┐ 804            |
|                                                                                                                                                                                              | 30                                                                                                                         | 09 18 530      | ┐ 803                   | 09 18 530               | ┐ 804            |
|                                                                                                                                                                                              | 34                                                                                                                         | 09 18 534      | ┐ 803                   | 09 18 534               | ┐ 804            |
|                                                                                                                                                                                              | 40                                                                                                                         | 09 18 540      | ┐ 803                   | 09 18 540               | ┐ 804            |
|                                                                                                                                                                                              | 50                                                                                                                         | 09 18 550      | ┐ 803                   | 09 18 550               | ┐ 804            |
|                                                                                                                                                                                              | 60                                                                                                                         | 09 18 560      | ┐ 803                   | 09 18 560               | ┐ 804            |
|                                                                                                                                                                                              | 64                                                                                                                         | 09 18 564      | ┐ 803                   | 09 18 564               | ┐ 804            |
| <u>without</u> strain relief clamp<br>with bulk packaging<br><br>2) Packaging unit (PU)<br>5,000 pieces<br>3) PU 3,000 pieces                                                                | 6                                                                                                                          | 09 18 506      | ┐ 803 58U <sup>2)</sup> |                         |                  |
|                                                                                                                                                                                              | 10                                                                                                                         | 09 18 510      | ┐ 803 58U <sup>2)</sup> |                         |                  |
|                                                                                                                                                                                              | 14                                                                                                                         | 09 18 514      | ┐ 803 58U <sup>2)</sup> |                         |                  |
|                                                                                                                                                                                              | 16                                                                                                                         | 09 18 516      | ┐ 803 58U <sup>2)</sup> |                         |                  |
|                                                                                                                                                                                              | 20                                                                                                                         | 09 18 520      | ┐ 803 58U <sup>2)</sup> |                         |                  |
|                                                                                                                                                                                              | 26                                                                                                                         | 09 18 526      | ┐ 803 58U <sup>2)</sup> |                         |                  |
|                                                                                                                                                                                              | 30                                                                                                                         | 09 18 530      | ┐ 803 58U <sup>2)</sup> |                         |                  |
|                                                                                                                                                                                              | 34                                                                                                                         | 09 18 534      | ┐ 803 58U <sup>3)</sup> |                         |                  |
|                                                                                                                                                                                              | 40                                                                                                                         | 09 18 540      | ┐ 803 58U <sup>3)</sup> |                         |                  |
|                                                                                                                                                                                              | <u>with</u> strain relief clamp<br><br> | 6              | 09 18 506               | ┐ 813                   | 09 18 506        |
| 10                                                                                                                                                                                           |                                                                                                                            | 09 18 510      | ┐ 813                   | 09 18 510               | ┐ 814*           |
| 14                                                                                                                                                                                           |                                                                                                                            | 09 18 514      | ┐ 813                   | 09 18 514               | ┐ 814*           |
| 16                                                                                                                                                                                           |                                                                                                                            | 09 18 516      | ┐ 813                   | 09 18 516               | ┐ 814*           |
| 20                                                                                                                                                                                           |                                                                                                                            | 09 18 520      | ┐ 813                   | 09 18 520               | ┐ 814*           |
| 24                                                                                                                                                                                           |                                                                                                                            | 09 18 524      | ┐ 813                   |                         |                  |
| 26                                                                                                                                                                                           |                                                                                                                            | 09 18 526      | ┐ 813                   | 09 18 526               | ┐ 814*           |
| 30                                                                                                                                                                                           |                                                                                                                            | 09 18 530      | ┐ 813                   | 09 18 530               | ┐ 814*           |
| 34                                                                                                                                                                                           |                                                                                                                            | 09 18 534      | ┐ 813                   | 09 18 534               | ┐ 814*           |
| 40                                                                                                                                                                                           |                                                                                                                            | 09 18 540      | ┐ 813                   | 09 18 540               | ┐ 814*           |
| 50                                                                                                                                                                                           |                                                                                                                            | 09 18 550      | ┐ 813                   | 09 18 550               | ┐ 814*           |
| 60                                                                                                                                                                                           |                                                                                                                            | 09 18 560      | ┐ 813                   | 09 18 560               | ┐ 814*           |
| 64                                                                                                                                                                                           |                                                                                                                            | 09 18 564      | ┐ 813                   | 09 18 564               | ┐ 814*           |
| <u>with</u> strain relief clamp<br>with bulk packaging<br><br>3) Packaging unit (PU)<br>3,000 pieces<br>4) PU 2,500 pieces<br>5) PU 2,000 pieces<br>6) PU 1,500 pieces<br>7) PU 1,000 pieces |                                                                                                                            | 6              | 09 18 506               | ┐ 813 58U <sup>3)</sup> |                  |
|                                                                                                                                                                                              | 10                                                                                                                         | 09 18 510      | ┐ 813 58U <sup>3)</sup> |                         |                  |
|                                                                                                                                                                                              | 14                                                                                                                         | 09 18 514      | ┐ 813 58U <sup>4)</sup> |                         |                  |
|                                                                                                                                                                                              | 16                                                                                                                         | 09 18 516      | ┐ 813 58U <sup>4)</sup> |                         |                  |
|                                                                                                                                                                                              | 20                                                                                                                         | 09 18 520      | ┐ 813 58U <sup>5)</sup> |                         |                  |
|                                                                                                                                                                                              | 26                                                                                                                         | 09 18 526      | ┐ 813 58U <sup>6)</sup> |                         |                  |
|                                                                                                                                                                                              | 30                                                                                                                         | 09 18 530      | ┐ 813 58U <sup>5)</sup> |                         |                  |
|                                                                                                                                                                                              | 34                                                                                                                         | 09 18 534      | ┐ 813 58U <sup>7)</sup> |                         |                  |
|                                                                                                                                                                                              | 40                                                                                                                         | 09 18 540      | ┐ 813 58U <sup>7)</sup> |                         |                  |

|                                                                                     |  |                                                                                       |  |
|-------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------|--|
| open end cover                                                                      |  | closed end cover                                                                      |  |
|  |  |    |  |
| option                                                                              |  |                                                                                       |  |
| No. 1 contact                                                                       |  |   |  |
| No. 2 contact                                                                       |  |  |  |
| Marking No. 1 contact                                                               |  |  |  |
|                                                                                     |  | Strain relief clamp option                                                            |  |

|                 |       |       |       |       |       |
|-----------------|-------|-------|-------|-------|-------|
| No. of contacts | 6     | 10    | 14    | 16    | 20    |
| A               | 12.20 | 17.30 | 22.40 | 24.90 | 30.00 |
| B               | 5.08  | 10.16 | 15.24 | 17.78 | 22.86 |
|                 |       |       |       |       |       |
| No. of contacts | 24    | 26    | 30    | 34    | 40    |
| A               | 35.18 | 37.60 | 42.70 | 47.80 | 55.40 |
| B               | 27.94 | 30.48 | 35.56 | 40.64 | 48.26 |
|                 |       |       |       |       |       |
| No. of contacts | 50    | 60    | 64    |       |       |
| A               | 68.10 | 80.80 | 85.90 |       |       |
| B               | 60.96 | 73.66 | 78.74 |       |       |

| No. of contacts | 6     | 10    | 14    | 16    | 20    |
|-----------------|-------|-------|-------|-------|-------|
| A               | 12.20 | 17.30 | 22.40 | 24.90 | 30.00 |
| B               | 5.08  | 10.16 | 15.24 | 17.78 | 22.86 |

| No. of contacts | 24    | 26    | 30    | 34    | 40    |
|-----------------|-------|-------|-------|-------|-------|
| A               | 35.18 | 37.60 | 42.70 | 47.80 | 55.40 |
| B               | 27.94 | 30.48 | 35.56 | 40.64 | 48.26 |

| No. of contacts | 50    | 60    | 64    |  |  |
|-----------------|-------|-------|-------|--|--|
| A               | 68.10 | 80.80 | 85.90 |  |  |
| B               | 60.96 | 73.66 | 78.74 |  |  |

For performance level 3 please specify digit  
 For performance level 2 please specify digit  
 S4 = 0.76 µm (30 µinch) Au or PdNi equivalent



<sup>1)</sup> Pitch tolerance: ± 0.1  
 \* Not normally kept in stock



Number of contacts

6-64



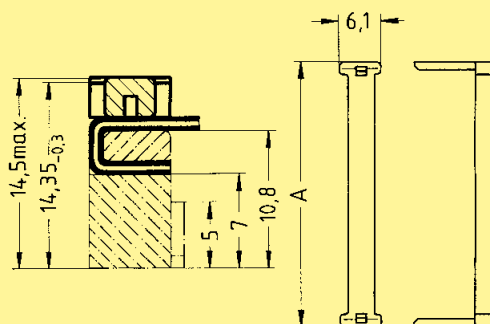
## Strain relief clamp/Locking lever

| Identification | No. of contacts | Part No. | Drawing | Dimensions in mm |
|----------------|-----------------|----------|---------|------------------|
|----------------|-----------------|----------|---------|------------------|

### Strain relief clamp

|    |                |
|----|----------------|
| 6  | 09 18 506 9002 |
| 10 | 09 18 510 9002 |
| 14 | 09 18 514 9002 |
| 16 | 09 18 516 9002 |
| 20 | 09 18 520 9002 |
| 24 | 09 18 524 9002 |
| 26 | 09 18 526 9002 |
| 30 | 09 18 530 9002 |
| 34 | 09 18 534 9002 |
| 40 | 09 18 540 9002 |
| 50 | 09 18 550 9002 |
| 60 | 09 18 560 9002 |
| 64 | 09 18 564 9002 |

| No. of contacts | A     |
|-----------------|-------|
| 6               | 12.2  |
| 10              | 17.3  |
| 14              | 22.4  |
| 16              | 24.9  |
| 20              | 30.0  |
| 24              | 35.18 |
| 26              | 37.6  |
| 30              | 42.7  |
| 34              | 47.8  |
| 40              | 55.4  |
| 50              | 68.1  |
| 60              | 80.8  |
| 64              | 85.9  |
| 6               | 12.2  |
| 10              | 17.3  |
| 14              | 22.4  |
| 16              | 24.9  |
| 20              | 30.0  |
| 26              | 37.6  |
| 30              | 42.7  |
| 34              | 47.8  |
| 40              | 55.4  |



with bulk packaging

|    |                                  |
|----|----------------------------------|
| 6  | 09 18 506 9002 58U <sup>3)</sup> |
| 10 | 09 18 510 9002 58U <sup>3)</sup> |
| 14 | 09 18 514 9002 58U <sup>3)</sup> |
| 16 | 09 18 516 9002 58U <sup>3)</sup> |
| 20 | 09 18 520 9002 58U <sup>3)</sup> |
| 26 | 09 18 526 9002 58U <sup>3)</sup> |
| 30 | 09 18 530 9002 58U <sup>3)</sup> |
| 34 | 09 18 534 9002 58U <sup>4)</sup> |
| 40 | 09 18 540 9002 58U <sup>4)</sup> |

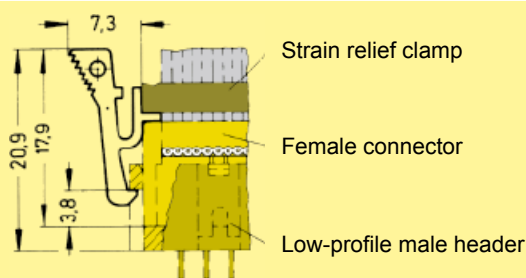
<sup>3)</sup> Packaging unit  
5,000 pieces

<sup>4)</sup> Packaging unit  
3,000 pieces

### Locking lever for female connector

Only in conjunction with low-profile male header and strain relief

09 18 000 9905<sup>1)5)</sup>  
09 18 000 9905 58U<sup>1)6)</sup>
<sup>5)</sup> Packaging unit  
100 pieces

<sup>6)</sup> Packaging unit  
5,000 pieces


When the security of latching is required and space is a premium, these locking levers can be fitted onto the strain relief of the HARTING female connector. This can then be used in conjunction with male low-profile headers (see pages 09.14 and 09.15).

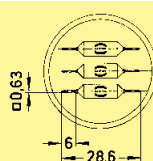
### Coding system with loss of contact

Code pin

09 18 000 9901<sup>2)</sup>

Removal tool for male contacts

09 99 000 0133



To avoid cross-plugging adjacent connectors a coding system is required. A code pin is inserted into the appropriate cavity in the female connector. The corresponding male contact is removed by a special removal tool.



<sup>1)</sup> Order 2 per female connector  
<sup>2)</sup> Part No. comprises 6 code pins

Number of contacts 4, 6, 8, 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60, 64

Pitch  
On pcb side: 2.54 mm [0.100"]  
On cable side: 1.27 mm [0.050"]

Working current 1 A

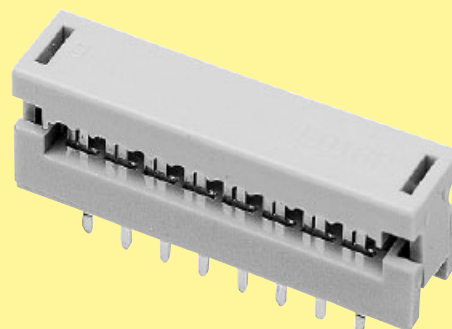
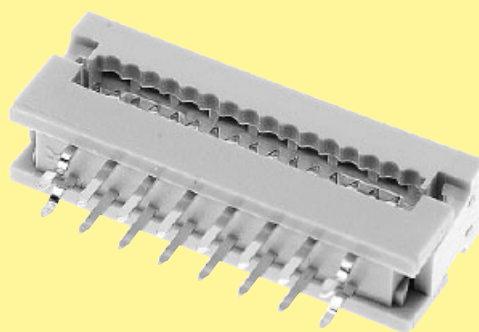
Test voltage  $U_{r.m.s.}$  1 kV AC – 1 minute

Contact resistance 35 m $\Omega$  max.  
Insulation resistance  $\geq 10^9 \Omega$

Temperature range -55 °C ... + 105 °C  
The maximum temperature includes heating of contacts and ambient temperature

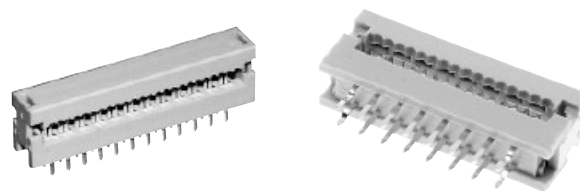
Terminations  
Solder pins:  
0.635 mm x 0.3 mm  
Dimensions for pcb hole:  
Standard version:  $\varnothing 0.9^{\pm 0.10}$  mm  
Kinked version:  $\varnothing 1.0^{\pm 0.05}$  mm  
Diagonal: 0.71 mm  
IDC flat cable  
1.27 mm [0.050"] pitch: AWG 28/7

Materials  
Moulding Thermoplastic resin (PBT)  
UL 94-V0



Number of contacts

4-64



Pcb transition connector, 2 rows, low-profile with 5.5 mm height

Identification      No. of contacts      Part No.      Drawing      Dimensions in mm

Pcb transition connector<sup>2)</sup>

2 rows  
Standard low-profile version

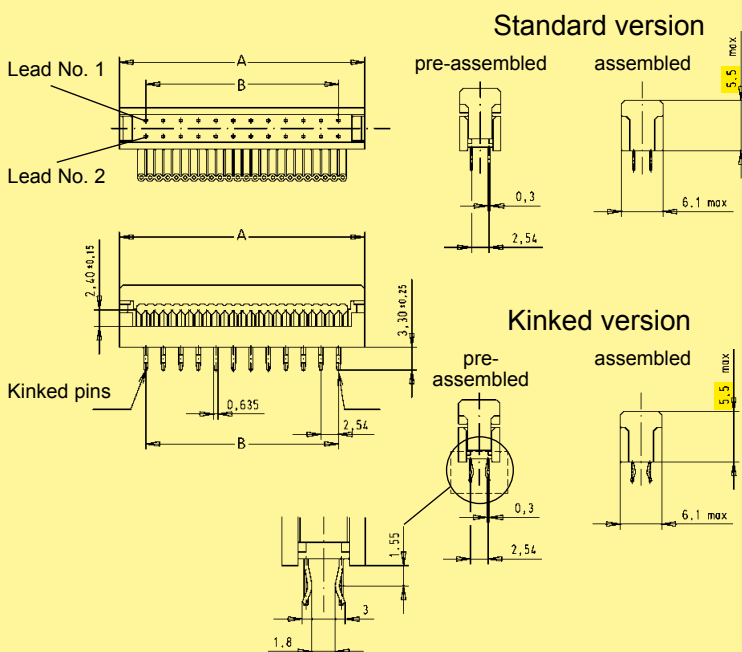
|    |                |
|----|----------------|
| 4  | 09 18 104 9622 |
| 6  | 09 18 106 9622 |
| 8  | 09 18 108 9622 |
| 10 | 09 18 110 9622 |
| 14 | 09 18 114 9622 |
| 16 | 09 18 116 9622 |
| 20 | 09 18 120 9622 |
| 24 | 09 18 124 9622 |
| 26 | 09 18 126 9622 |
| 30 | 09 18 130 9622 |
| 34 | 09 18 134 9622 |
| 40 | 09 18 140 9622 |
| 50 | 09 18 150 9622 |
| 60 | 09 18 160 9622 |
| 64 | 09 18 164 9622 |

| No. of contacts | A $\pm 0.38$ | B $\pm 0.10$      |
|-----------------|--------------|-------------------|
| 4               | 10.38        | 2.54 x 1 = 2.54   |
| 6               | 12.92        | 2.54 x 2 = 5.08   |
| 8               | 15.46        | 2.54 x 3 = 7.62   |
| 10              | 18.00        | 2.54 x 4 = 10.16  |
| 14              | 23.08        | 2.54 x 6 = 15.24  |
| 16              | 25.62        | 2.54 x 7 = 17.78  |
| 20              | 30.74        | 2.54 x 9 = 22.86  |
| 24              | 35.78        | 2.54 x 11 = 27.94 |
| 26              | 38.32        | 2.54 x 12 = 30.48 |
| 30              | 43.40        | 2.54 x 14 = 35.56 |
| 34              | 48.48        | 2.54 x 16 = 40.64 |
| 40              | 56.10        | 2.54 x 19 = 48.26 |
| 50              | 68.80        | 2.54 x 24 = 60.96 |
| 60              | 81.50        | 2.54 x 29 = 73.66 |
| 64              | 86.58        | 2.54 x 31 = 78.74 |

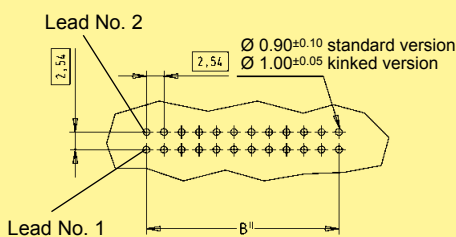
Pcb transition connector<sup>2)</sup>

2 rows  
Kinked low-profile version  
2 kinked pins at each extremity

|    |                |
|----|----------------|
| 4  | 09 18 104 9422 |
| 6  | 09 18 106 9422 |
| 8  | 09 18 108 9422 |
| 10 | 09 18 110 9422 |
| 14 | 09 18 114 9422 |
| 16 | 09 18 116 9422 |
| 20 | 09 18 120 9422 |
| 24 | 09 18 124 9422 |
| 26 | 09 18 126 9422 |
| 30 | 09 18 130 9422 |
| 34 | 09 18 134 9422 |
| 40 | 09 18 140 9422 |
| 50 | 09 18 150 9422 |
| 60 | 09 18 160 9422 |
| 64 | 09 18 164 9422 |



Board drillings



<sup>1)</sup> Pitch tolerance:  $\pm 0.05$

<sup>2)</sup> Not released for halogen free flat cables

Number of contacts\* 10, 16, 20, 26, 34, 40, 50

Pitch  
On pcb side: 2.54 mm [0.100"]  
On cable side: 1.27 mm [0.050"]

Working current 1 A

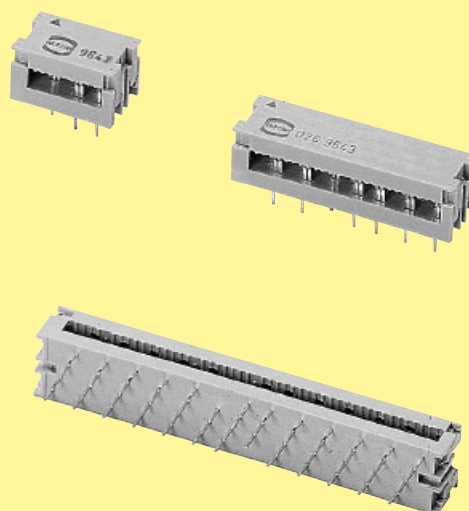
Test voltage  $U_{r.m.s.}$  500 V

Contact resistance  $\leq 20 \text{ m}\Omega$   
Insulation resistance  $\geq 10^{12} \Omega$

Temperature range -40 °C ... + 125 °C  
The maximum temperature includes heating of contacts and ambient temperature

Terminations  
Solder pins  
0.45 mm x 0.35 mm  
for pcb hole  $\varnothing$  0.8 mm  
Diagonal: 0.58 mm  
IDC flat cable  
1.27 mm [0.050"] pitch:  
AWG 26/7 – AWG 28/7 – AWG 30/1

Materials  
Moulding Thermoplastic resin (PC)  
UL 94-V0



Number of contacts

10–50



Pcb transition connector, 4 rows

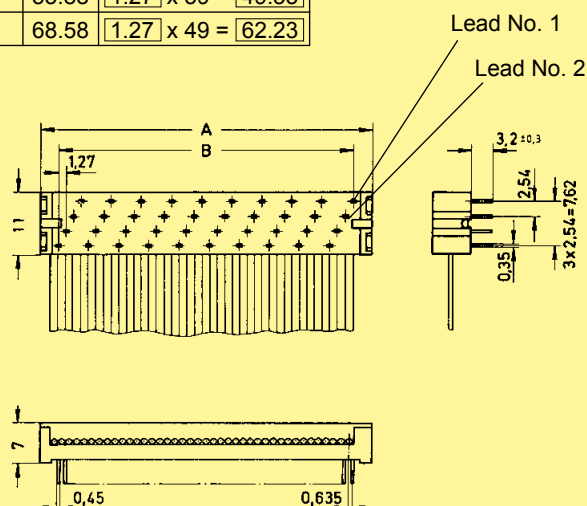
Identification      No. of contacts      Part No.      Drawing      Dimensions in mm

Pcb transition connector<sup>2)</sup>

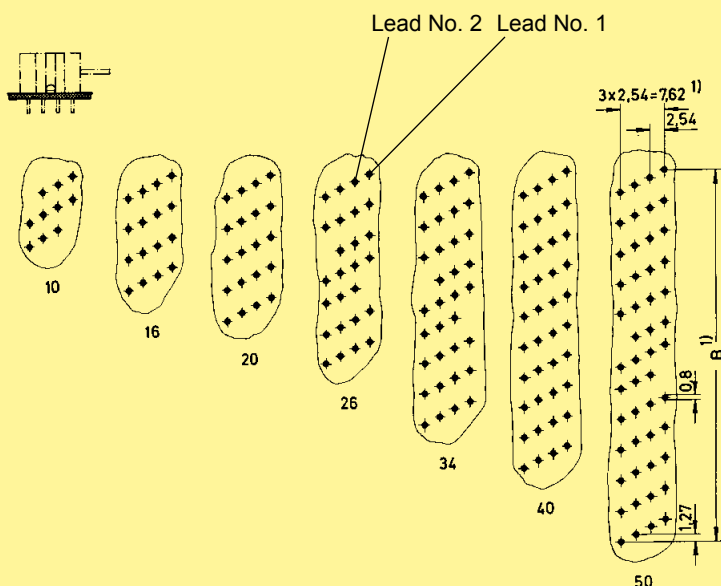
4 rows

|    |                 |
|----|-----------------|
| 10 | 09 19 010 9643* |
| 16 | 09 19 016 9643* |
| 20 | 09 19 020 9643* |
| 26 | 09 19 026 9643* |
| 34 | 09 19 034 9643* |
| 40 | 09 19 040 9643* |
| 50 | 09 19 050 9643* |

| No. of contacts | A     | B                        |
|-----------------|-------|--------------------------|
| 10              | 17.78 | $1.27 \times 9 = 11.43$  |
| 16              | 25.40 | $1.27 \times 15 = 19.05$ |
| 20              | 30.48 | $1.27 \times 19 = 24.13$ |
| 26              | 38.10 | $1.27 \times 25 = 31.75$ |
| 34              | 48.26 | $1.27 \times 33 = 41.91$ |
| 40              | 55.88 | $1.27 \times 39 = 49.53$ |
| 50              | 68.58 | $1.27 \times 49 = 62.23$ |



Board drillings

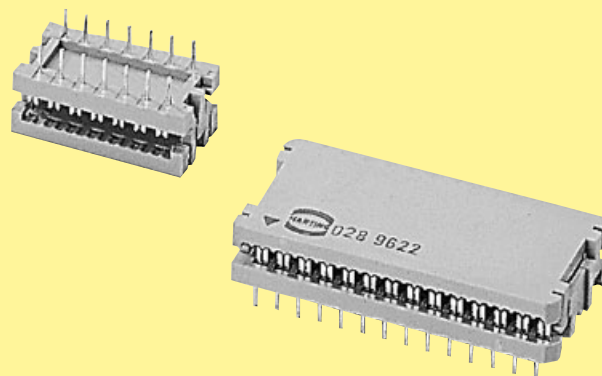


\* Not normally kept in stock

<sup>1)</sup> Pitch tolerance:  $\pm 0.1$

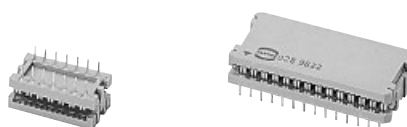
<sup>2)</sup> Not released for halogen free flat cables

|                           |                                                                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of contacts*       | 14, 16, 24, 28, 40                                                                                                                                          |
| Pitch                     | On pcb side: 2.54 mm [0.100"]<br>On cable side: 1.27 mm [0.050"]                                                                                            |
| Working current           | 1 A                                                                                                                                                         |
| Test voltage $U_{r.m.s.}$ | 500 V                                                                                                                                                       |
| Contact resistance        | $\leq 20 \text{ m}\Omega$                                                                                                                                   |
| Insulation resistance     | $\geq 10^{12} \Omega$                                                                                                                                       |
| Temperature range         | -40 °C ... + 125 °C<br>The maximum temperature includes heating of contacts and ambient temperature                                                         |
| Terminations              | Solder pins<br>0.45 mm x 0.35 mm<br>for pcb hole $\varnothing 0.8 \text{ mm}$<br>Diagonal: 0.58 mm<br>IDC flat cable<br>1.27 mm [0.050"] pitch:<br>AWG 28/7 |
| Materials<br>Moulding     | Thermoplastic resin (PC)<br>UL 94-V0                                                                                                                        |



Number of contacts

14-40



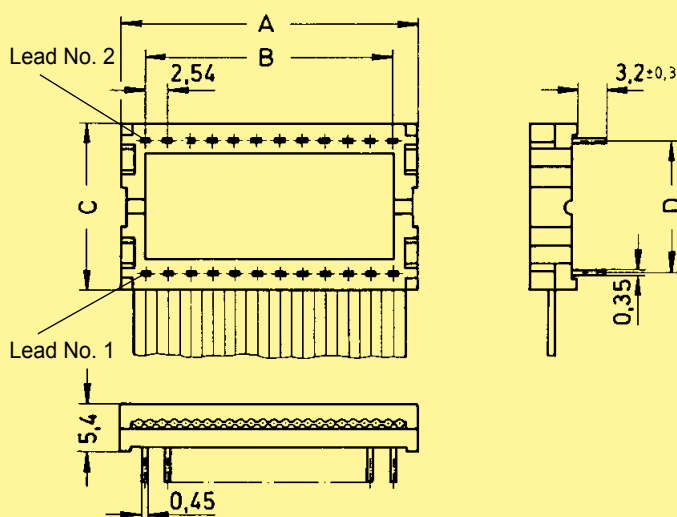
DIP connector for IC base or for soldering into pcb

Identification      No. of contacts      Part No.      Drawing      Dimensions in mm

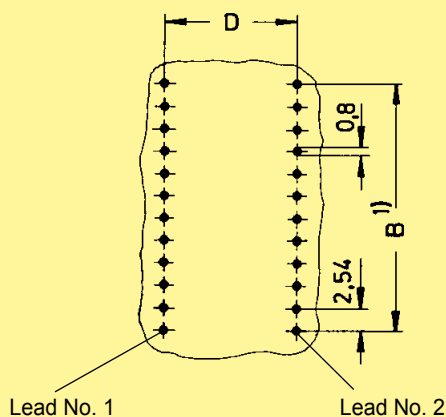
DIP connector<sup>2)</sup>

|    |                 |
|----|-----------------|
| 14 | 09 17 014 9622* |
| 16 | 09 17 016 9622* |
| 24 | 09 17 024 9622* |
| 28 | 09 17 028 9622* |
| 40 | 09 17 040 9622* |

| No. of contacts | A    | B                 | C    | D     |
|-----------------|------|-------------------|------|-------|
| 14              | 20.5 | 2.54 x 6 = 15.24  | 11   | 7.62  |
| 16              | 23.0 | 2.54 x 7 = 17.78  | 11   | 7.62  |
| 24              | 33.0 | 2.54 x 11 = 27.94 | 18.7 | 15.24 |
| 28              | 38.1 | 2.54 x 13 = 33.02 | 18.7 | 15.24 |
| 40              | 53.3 | 2.54 x 19 = 48.26 | 18.7 | 15.24 |



Board drillings



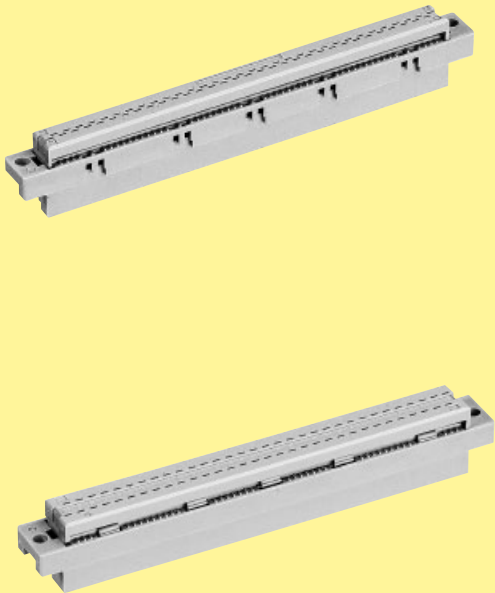
\* Not normally kept in stock

<sup>1)</sup> Pitch tolerance: ± 0.1

<sup>2)</sup> Not released for halogen free flat cables



|                                                                                                                                           |                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Number of contacts                                                                                                                        | 64                                                                                                  |
| Pitch                                                                                                                                     | 2.54 mm [0.100"]                                                                                    |
| Working current                                                                                                                           | 1 A max.                                                                                            |
| Clearance<br>Creepage                                                                                                                     | $\geq 1.2$ mm<br>$\geq 1.2$ mm                                                                      |
| Working voltage<br>The working voltage also depends on the clearance and creepage dimensions of the pcb itself, and the associated wiring | according to the safety regulations of the equipment                                                |
| Test voltage $U_{r.m.s.}$                                                                                                                 | 1 kV                                                                                                |
| Contact resistance<br>Insulation resistance                                                                                               | $\leq 20$ m $\Omega$<br>$\geq 10^{12}$ $\Omega$                                                     |
| Temperature range                                                                                                                         | -55 °C ... + 125 °C<br>The maximum temperature includes heating of contacts and ambient temperature |
| Termination<br>Female connector                                                                                                           | Insulation displacement:<br>AWG 28/7                                                                |
| Insertion and withdrawal force                                                                                                            | $\leq 60$ N                                                                                         |
| Materials<br>Moulding<br>Contacts                                                                                                         | Thermoplastic resin, glass-fibre filled, UL 94-V0<br>Copper alloy                                   |
| Contact surface<br>Contact zone                                                                                                           | selectively plated according to performance level                                                   |

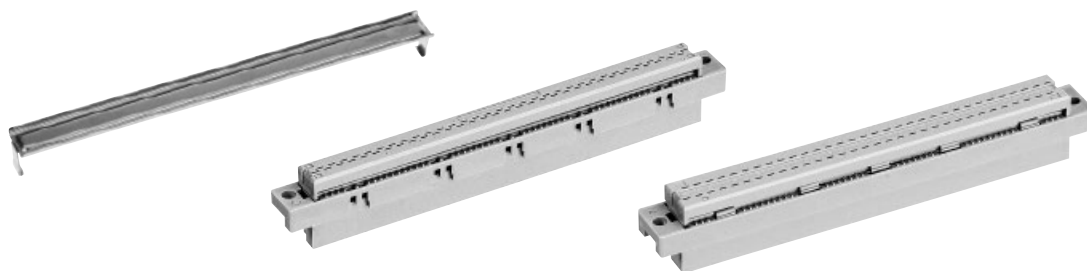


SEK



Number of contacts

64



## Female connectors for insulation displacement

| Identification                               | No. of contacts | Part No.                                                              | Drawing                                                                                                                                                                                                             | Dimensions in mm |
|----------------------------------------------|-----------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Female connector for insulation displacement | 64              | performance level 2<br>09 02 264 6828                                 | <p>Lead number 1 of flat cable on contact 1 b</p> <p>Contact arrangement View from termination side</p>                                                                                                             |                  |
|                                              |                 | performance level 3<br>09 02 264 7828                                 |                                                                                                                                                                                                                     |                  |
| Type C                                       | 64              | performance level 2<br>09 03 264 6828<br>09 03 764 6828 <sup>c)</sup> | <p>Lead number 1 of flat cable on contact 1 c</p> <p>Contact arrangement View from termination side</p> <p>Mateable with 3-row male connector Type C.<br/>No female contact in middle row.</p> <p>Panel cut out</p> |                  |
|                                              |                 | performance level 3<br>09 03 264 7828                                 |                                                                                                                                                                                                                     |                  |
| Strain relief for types B and C              |                 | 09 03 000 9940                                                        |                                                                                                                                                                                                                     |                  |

|        | a    | b     |
|--------|------|-------|
| Type B | 8.3  | 10.16 |
| Type C | 10.8 | 12.7  |

Male connectors see DIN 41 612 catalogue

<sup>c)</sup> Connectors with coding



## Press-in – Technology and board connectors

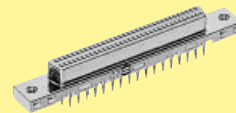
Page

General information ..... **20.02**

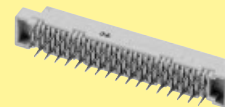
**harmik®**

Technical characteristics ..... **20.05**

I/O connectors, straight ..... **20.06**



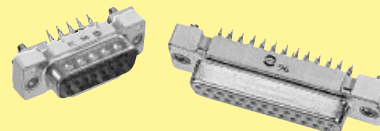
Intra cabinet connectors, straight ..... **20.07**



**D-Sub – S**

Technical characteristics ..... **20.08**

Press-in connectors, straight ..... **20.10**



**SEK**

Technical characteristics for standard connectors ..... **20.14**

Press-in connectors, straight ..... **20.16**



Technical characteristics for low-profile connectors ..... **20.18**

Low-profile press-in connectors, straight ..... **20.19**



Press-in  
technology

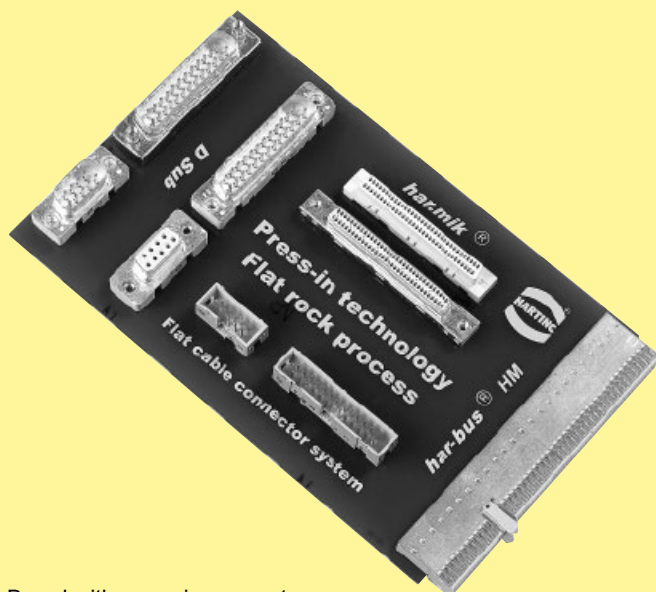
**20  
01**

Solderless termination for connectors has proven to be reliable for decades. Today the use of press-in connectors encompasses all fields of electrical and electronical applications.

Pressing of electrical components, mainly connectors, is characterised through the matching of the connector pin and the plated through hole of the pcb. Whereas the desired electrical characteristics can be attained relatively independant from the design of the press-in zone, the mechanical characteristics of the press-in zone are crucial for the reliable assembly of connectors where pcb's have different surfaces.

Although the scope of requirements at the press-in process is generally defined in time-tested specifications, the novel press-in zones should offer an optimal handling and a reliable termination. Essentially, this is guaranteed through the design of the press-in zone and the meticulous observance of tolerances. HARTING has been using FEM simulations for the calculation and optimisation of press-in zones for a long period of time. This expertise allows us to simulate various pcb configurations very accurate.

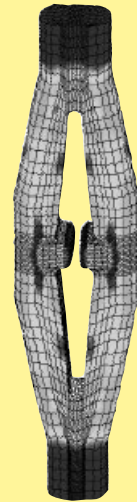
Due to variety of different connector contact designs, the press-in zone has been designed to fit perfectly to the contact metal thickness and the plated through hole dimensions and tolerances.



Board with press-in connectors

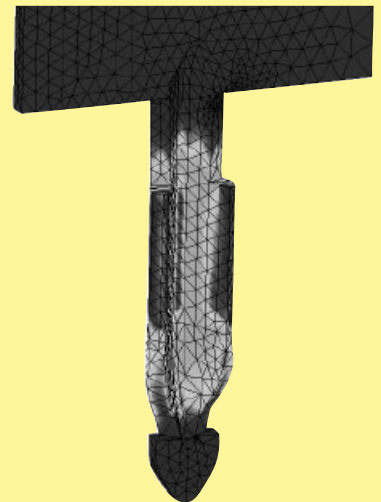
## ***harmik***<sup>®</sup>

The patented contact design allows 20 % more tolerance on the plated through hole of 0.6 mm than the standard tolerance of  $0.6^{+0.07}_{-0.05}$  mm.



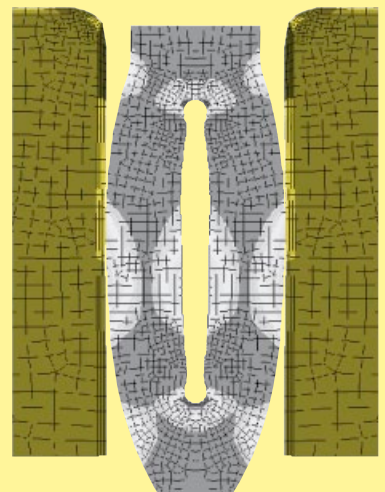
## ***D-Sub***

The terminating spoon shape of the contact provides a reliable vertical position of the connector for better alignment during insertion.



## ***SEK***

The renowned needle eye allows for compensation of tolerances of pcb surface properties. The excessive material is displaced within the plated through hole whereby a gastight connection is assured.



Due to the high deformation resistance and resilience of **harpress** contacts, they can be easily and repeatedly removed in case of repairs without impairment to their functioning.

Today tinned surfaces are widely used as a standard, the pcb technology trends are moving to low tin or tin free surfaces. Cu, Pd, Au and Ag are the important alternatives. Specific parameters and particularly different friction factors of these surfaces make high demands on press-in zones.

**harpress** is extremely versatile and offers a reliable electrical contact, therefore it is especially well suited for applications with these surfaces.

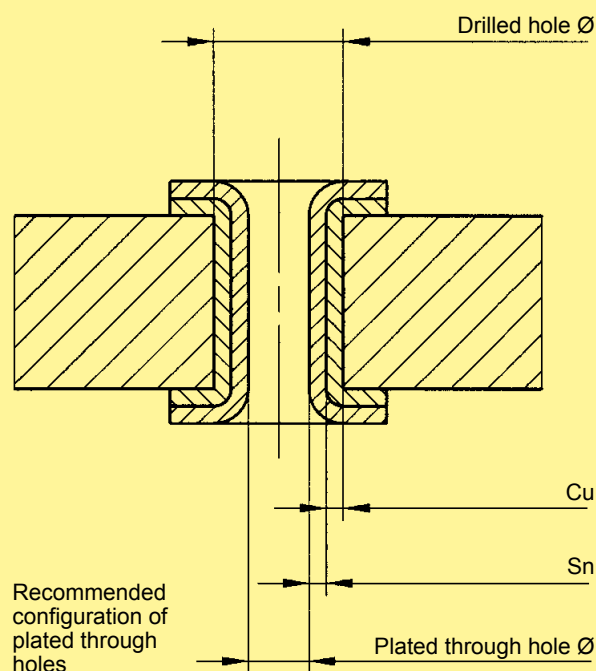
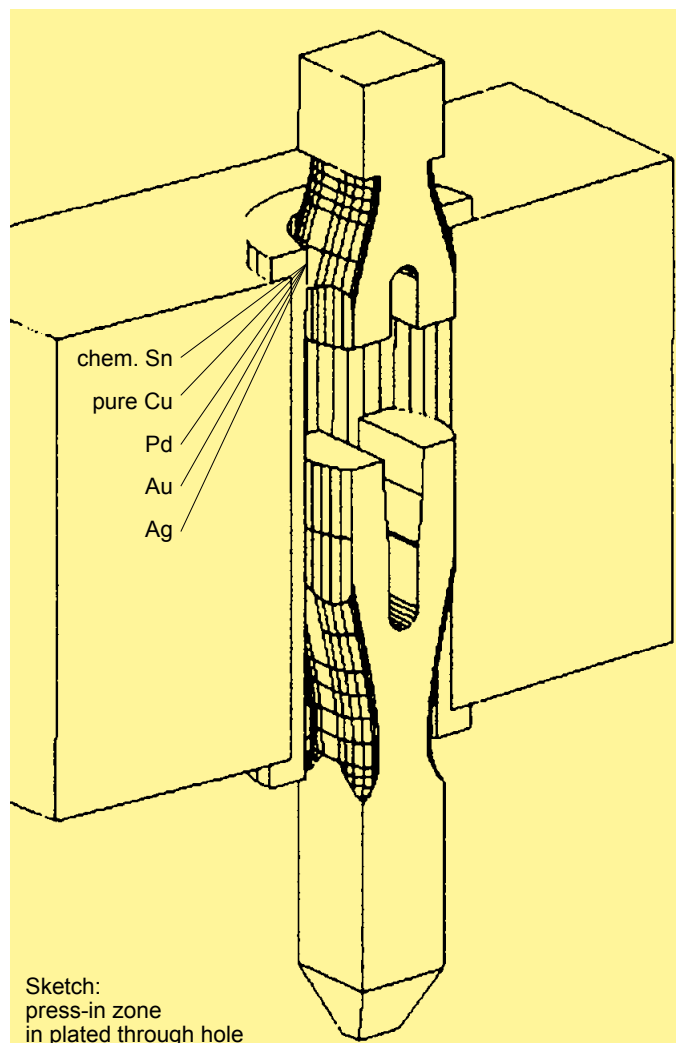
Please contact us for detailed test reports.

## Benefits of the press-in technology

- Thermal shocks associated with the soldering process and the risk of the board malfunction are avoided.
- No need for the subsequent cleaning of the assembled pcb's

## Recommended configuration chart for tinned plated through holes

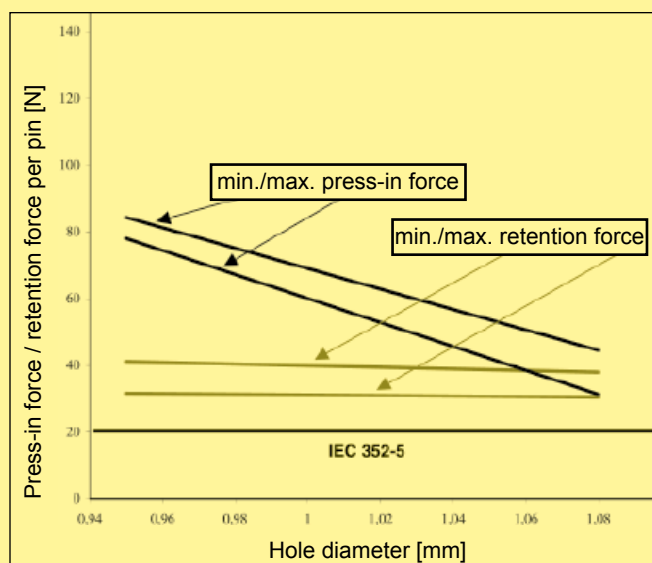
|                      | Plated through hole |               |
|----------------------|---------------------|---------------|
|                      | 0.6 mm              | 1 mm          |
| Drilled hole Ø [mm]  | 0.71 - 0.74         | 1.12 - 1.15   |
| Cu thickness [µm]    | 30 - 60             | 25 - 75       |
| Sn thickness [µm]    | 5 - 20              | 5 - 15        |
| Plated hole Ø [mm]   | 0.55 - 0.67         | 0.94 - 1.09   |
| Board thickness [mm] | 1.6 - 3.2           | 1.6 - 3.2     |
| Connector range      | har-mik             | SEK and D-Sub |



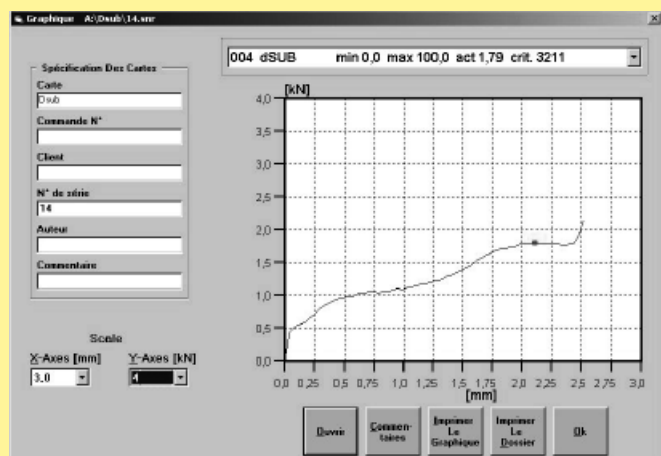
## Quality control of the press-in termination

The press-in force correlates with the diameter of the plated through hole and with the friction coefficient of the surface; therefore it can be used for a continuous monitoring of the process.

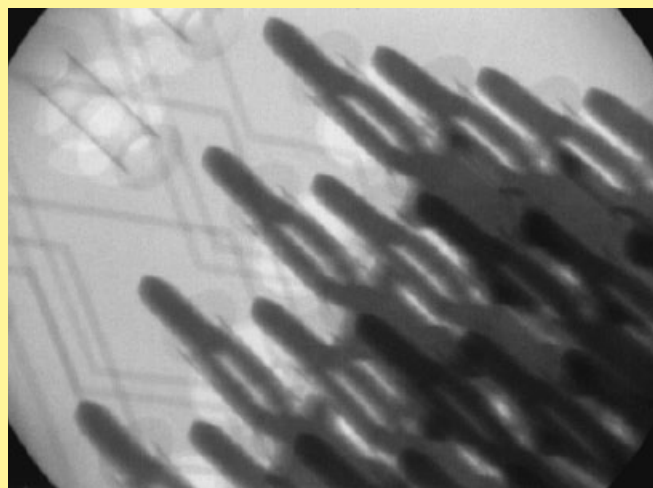
The retention force, as an indirect measure of the normal force, serves to qualify the process or random tests



Typical press-in and retention forces for the D-Sub press-in zone

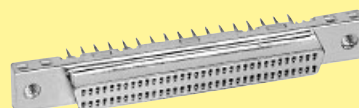
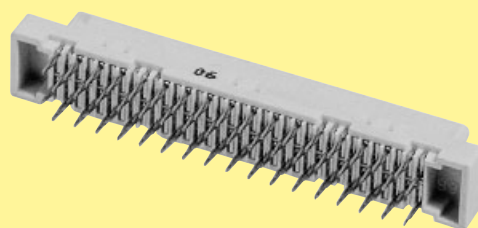


The automatic press-in machines of HARTING feature a graphical user interface for monitoring the process and the quality of the press-in termination (see chapter 30).



X-ray photo of a pressed-in connector

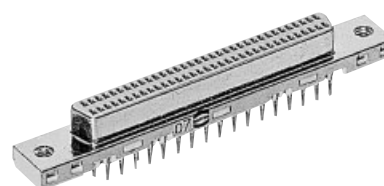
|                                               |                                                                                                        |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Number of contacts                            | 68                                                                                                     |
| Pitch                                         | 1.27 mm                                                                                                |
| Working current                               | 1 A                                                                                                    |
| Working voltage                               | 240 V ~                                                                                                |
| Test voltage $U_{r.m.s.}$                     | 750 V                                                                                                  |
| Contact resistance                            | $\leq 30 \text{ m}\Omega$                                                                              |
| Insulation resistance                         | $\geq 10^3 \text{ M}\Omega$                                                                            |
| Temperature range                             | -55 °C ... + 105 °C                                                                                    |
| <b>Materials</b>                              |                                                                                                        |
| Moulding                                      | Thermoplastic resin<br>glass-fibre filled UL 94-V0                                                     |
| Contacts                                      | Copper alloy                                                                                           |
| <b>Contact surface</b>                        |                                                                                                        |
| Contact zone                                  | selectively gold-plated<br>acc. to performance level                                                   |
| Metal shell                                   | Die cast zamac or stamped<br>steel, nickel-plated                                                      |
| <b>Press-in</b>                               |                                                                                                        |
| Insertion process                             | Flat rock                                                                                              |
| Maximum press-in force<br>per contact         | 100 N                                                                                                  |
| Minimum push out force<br>per contact         | 15 N                                                                                                   |
| Number of repairs                             | 2                                                                                                      |
| Diameter of pcb plated<br>through holes       | $\varnothing 0.6^{+0.07}_{-0.05} \text{ mm}$                                                           |
| Recommended pcb holes<br>for press-in process | Hole : $\varnothing 0.71 - 0.74 \text{ mm}$<br>Cu : 30 – 60 $\mu\text{m}$<br>Sn : 5 – 20 $\mu\text{m}$ |
| Pcb thickness                                 | 1.6 – 3.2 mm                                                                                           |





Number of contacts

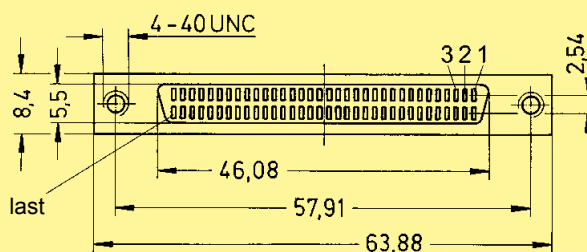
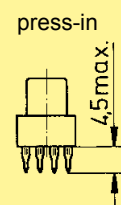
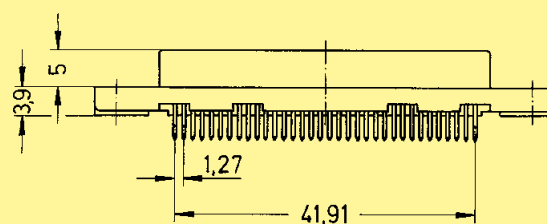
**68**



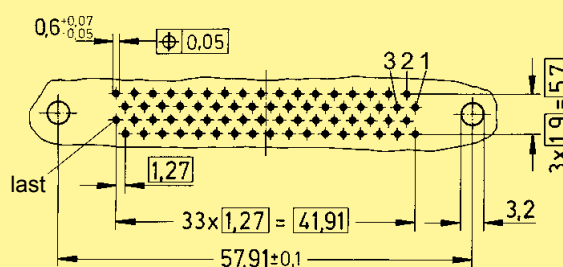
Female connectors, straight

| Identification                               | No. of contacts | Part No.       |
|----------------------------------------------|-----------------|----------------|
| Female connector with straight press-in pins | 68              | 60 02 068 5322 |

Dimensions



Board drillings  
(Components side)

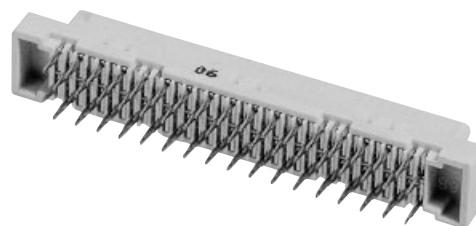


Dimensions in mm



Number of contacts

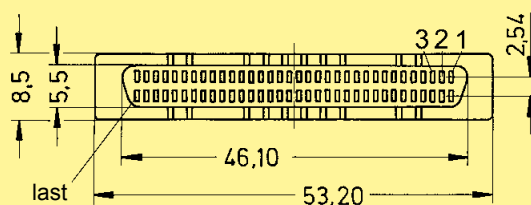
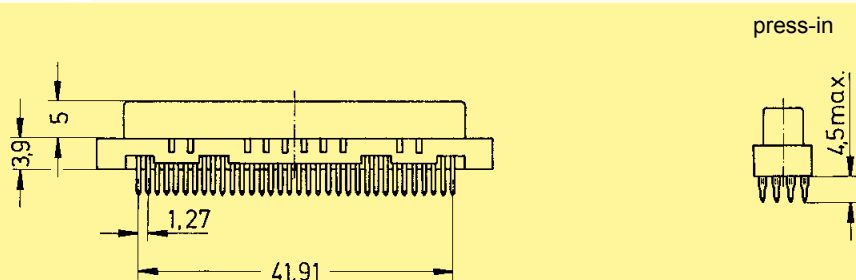
68



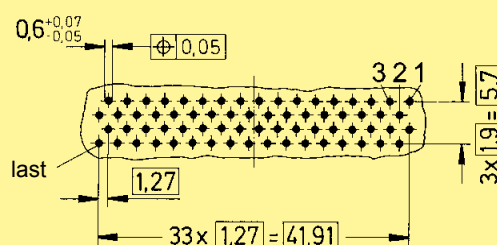
Female connectors, straight

| Identification                               | No. of contacts | Part No.       |
|----------------------------------------------|-----------------|----------------|
| Female connector with straight press-in pins | 68              | 60 05 068 5322 |

Dimensions



Board drillings  
(Components side)



Dimensions in mm

Number of contacts 9, 15, 25, 37, 50  
UL recognized

Working current  
see current carrying capacity chart  
Stamped contacts 6.5 A max.

Test voltage  $U_{r.m.s.}$  1 kV

Clearance and creepage  $\geq 1.0$  mm

Contact resistance  $\leq 10$  m $\Omega$   
Insulation resistance  $\geq 10^{10}$   $\Omega$

Temperature range -55 °C ... + 125 °C  
The higher temperature limit includes the local ambient and heating effect of the contacts under load

| Terminations                   | Recommended PCB through holes |                   |
|--------------------------------|-------------------------------|-------------------|
|                                | Signal pin                    | Grounding pin     |
| <i>Tin-lead plated PCB</i>     | Hole                          | 1.15-0.03         |
|                                | Cu                            | 25-75 $\mu$ m     |
|                                | Sn                            | 5-15 $\mu$ m      |
|                                | Plated hole                   | 0.94-1.09 mm      |
| <i>Chemical tin-plated PCB</i> | Hole                          | 1.05-0.03         |
|                                | Cu                            | 25-50 $\mu$ m     |
|                                | Sn                            | 0.8-1.0 $\mu$ m   |
|                                | Plated hole                   | 1.00-1.10 mm      |
| <i>Au / Ni plated PCB</i>      | Hole                          | 1.15-0.03         |
|                                | Cu                            | 25-50 $\mu$ m     |
|                                | Ni                            | 3-7 $\mu$ m       |
|                                | Au                            | 0.05-0.12 $\mu$ m |
|                                | Plated hole                   | 1.00-1.10 mm      |
| <i>Silver plated PCB</i>       | Hole                          | 1.15-0.03         |
|                                | Cu                            | 25-50 $\mu$ m     |
|                                | Ag                            | 0.1-0.3 $\mu$ m   |
|                                | Plated hole                   | 1.00-1.10 mm      |
| <i>OSP copper plated PCB</i>   | Hole                          | 1.15-0.03         |
|                                | Cu                            | 25-50 $\mu$ m     |
|                                | Plated hole                   | 1.00-1.10 mm      |

PCB board thickness:  $\geq 1.6$  mm

**Materials**  
Mouldings and hoods Liquid Crystal Polymer (LCP)  
UL 94-V0  
Contacts Copper alloy  
**Contact surface**  
Contact zone selectively plated  
acc. to performance level<sup>1)</sup>  
Metal shell Plated steel

#### Insertion and withdrawal force

Connector on P.C.B.

Press-in without grounding pins

– insertion max. per contact: 120 N  
– withdrawal min. per contact: 20 N

Press-in with grounding pins

– insertion max. per grounding pin: 250 N  
– withdrawal min. per grounding pin: 30 N

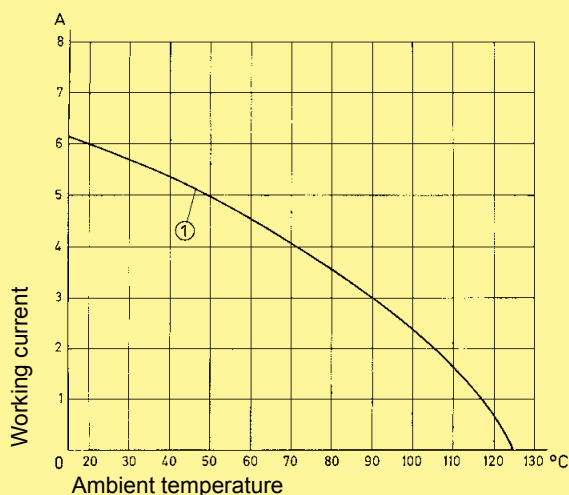
**Mating force**  
9 way  $\leq 30$  N  
15 way  $\leq 50$  N  
25 way  $\leq 83$  N  
37 way  $\leq 123$  N  
50 way  $\leq 167$  N

#### Current carrying capacity

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals.

The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

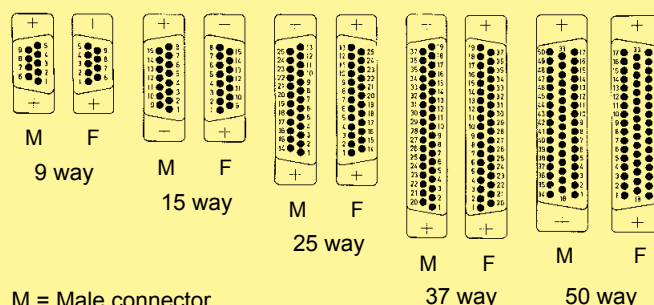
Control and test procedures according to DIN IEC 60 512.



Example: 25 way connector

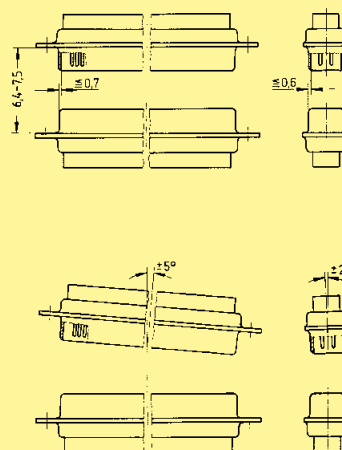
① Stamped contacts

#### Contact arrangement View from termination side



M = Male connector  
F = Female connector

#### Mating conditions as per DIN 41 652



<sup>1)</sup> Performance level 3, 50 mating cycles, no gas test

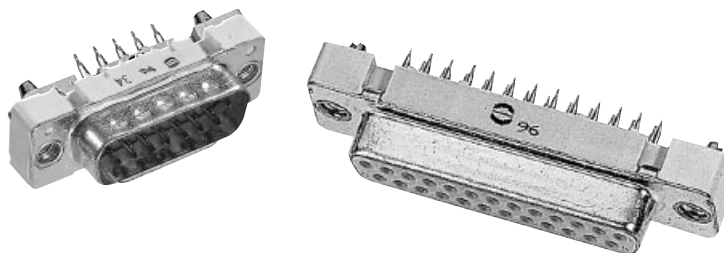
Performance level 2 as per CECC 75 301-802, 250 mating cycles, 4 days 4 mixed gas test – IEC 60 512

Performance level 1 as per CECC 75 301-802, 500 mating cycles, 10 days 4 mixed gas test – IEC 60 512



Number of contacts

9–50

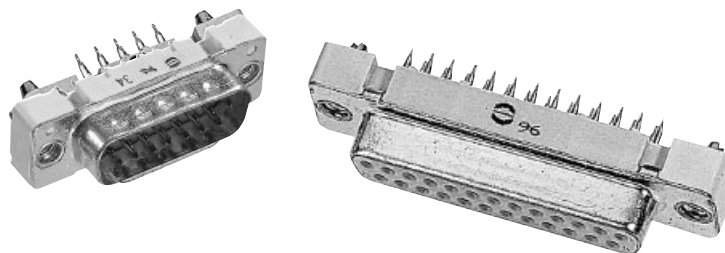


Press-in, straight with grounding press-in board locks

| Identification                                                                                  | No. of contacts | Part No.            |                     |
|-------------------------------------------------------------------------------------------------|-----------------|---------------------|---------------------|
| <b>Performance levels</b><br>Explanations see page 20.08<br>Other performance levels on request |                 | Performance level 3 | Performance level 2 |
| <b>Male connector</b><br>Flange height x = 5.7 mm                                               |                 |                     |                     |
| metal shell with dimples                                                                        | 9               | 09 66 164 771       | 09 66 164 671       |
|                                                                                                 | 15              | 09 66 264 771       | 09 66 264 671       |
|                                                                                                 | 25              | 09 66 364 771       | 09 66 364 671       |
| Please insert digit for flange thread<br>or fitted female screw locks                           |                 |                     |                     |
| M3 ▶ 5                                                                                          |                 |                     |                     |
| 4-40 UNC ▶ 6                                                                                    |                 |                     |                     |
| fitted screw locks 4-40 UNC ▶ 7 <sup>1)</sup>                                                   |                 |                     |                     |
| <b>Female connector</b><br>Flange height x = 5.7 mm                                             |                 |                     |                     |
| metal shell                                                                                     | 9               | 09 66 154 751       | 09 66 154 651       |
|                                                                                                 | 15              | 09 66 254 751       | 09 66 254 651       |
|                                                                                                 | 25              | 09 66 354 751       | 09 66 354 651       |
|                                                                                                 | 37              | 09 66 454 751       | 09 66 454 651       |
| Please insert digit for flange thread<br>or fitted female screw locks                           |                 |                     |                     |
| M3 ▶ 5                                                                                          |                 |                     |                     |
| 4-40 UNC ▶ 6                                                                                    |                 |                     |                     |
| fitted screw locks 4-40 UNC ▶ 7 <sup>1)</sup>                                                   |                 |                     |                     |
| <b>Female connector</b><br>Flange height x = 6 mm                                               |                 |                     |                     |
| metal shell                                                                                     | 9               | 09 66 154 751       | 09 66 154 651       |
|                                                                                                 | 15              | 09 66 254 751       | 09 66 254 651       |
|                                                                                                 | 25              | 09 66 354 751       | 09 66 354 651       |
|                                                                                                 | 37              | 09 66 454 751       | 09 66 454 651       |
|                                                                                                 | 50              | 09 66 554 751       | 09 66 554 651       |
| Please insert digit for flange thread<br>or fitted female screw locks                           |                 |                     |                     |
| M3 ▶ 1                                                                                          |                 |                     |                     |
| 4-40 UNC ▶ 2                                                                                    |                 |                     |                     |
| fitted screw locks 4-40 UNC ▶ 3 <sup>1)</sup>                                                   |                 |                     |                     |

Number of contacts

9–50

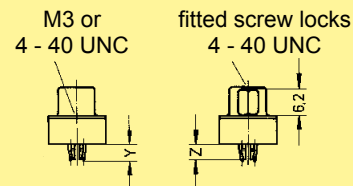
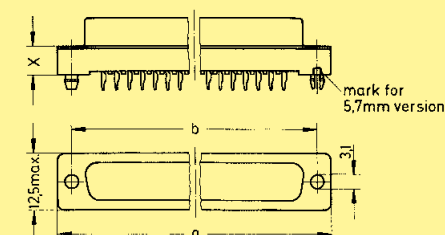


Press-in, straight with grounding press-in board locks

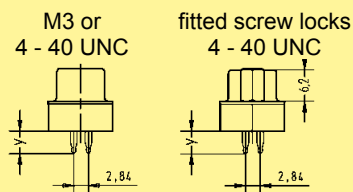
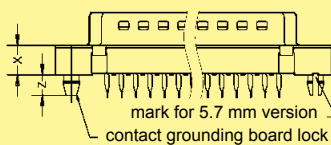
Identification

Drawing

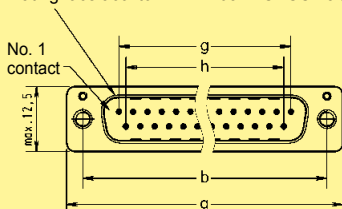
Dimensions in mm

Male connector  
9 – 25 contacts


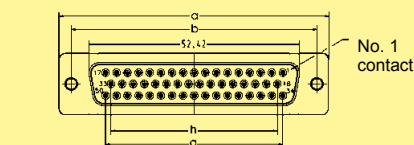
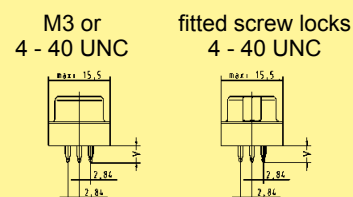
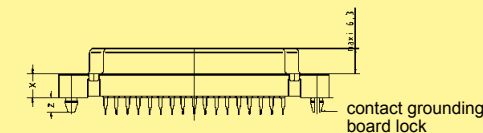
| X         | Y          | Z        |
|-----------|------------|----------|
| 6.0 ± 0.2 | 4.20 ± 0.2 | 3.5 max. |
| 5.7 ± 0.2 | 4.35 ± 0.2 | 3.9 max. |

Female connector  
9 – 37 contacts


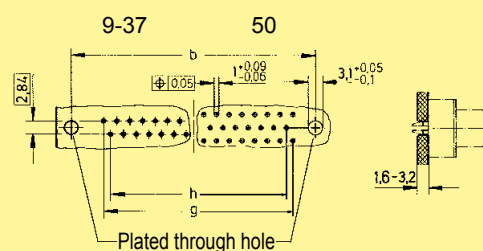
Mating face acc. to: DIN 41 652 · CECC 75 301-802 · IEC 60 807



|    | a     | b     | g                   | h                   |
|----|-------|-------|---------------------|---------------------|
| 9  | 31.00 | 24.90 | 4 x [2.74] = 10.96  | 3 x [2.74] = 8.22   |
| 15 | 39.30 | 33.20 | 7 x [2.74] = 19.18  | 6 x [2.74] = 16.44  |
| 25 | 53.10 | 47.00 | 12 x [2.76] = 33.12 | 11 x [2.76] = 30.36 |
| 37 | 69.65 | 63.55 | 18 x [2.76] = 49.68 | 17 x [2.76] = 46.92 |
| 50 | 67.00 | 61.10 | 16 x [2.76] = 44.16 | 15 x [2.76] = 41.40 |

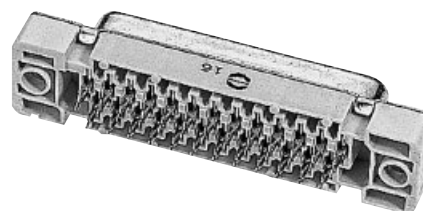
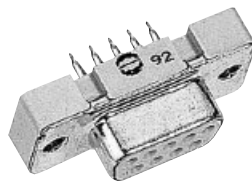
Female connector  
50 contacts


Board drillings



Number of contacts

9–50



Press-in, straight without grounding press-in board locks

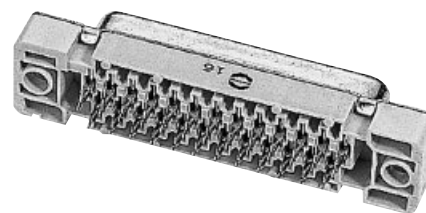
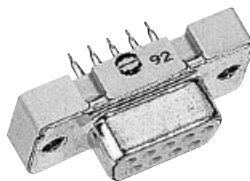
| Identification                                                                                             | No. of contacts | Part No.            |                     |
|------------------------------------------------------------------------------------------------------------|-----------------|---------------------|---------------------|
| <b>Performance levels</b><br>Explanations see page 20.08<br>Other performance levels on request            |                 | Performance level 3 | Performance level 2 |
| <b>Male connector</b><br>Flange height x = 5.7 mm                                                          |                 |                     |                     |
| metal shell with dimples                                                                                   | 9               | 09 66 124 770       | 09 66 124 670       |
|                                                                                                            | 15              | 09 66 224 770       | 09 66 224 670       |
|                                                                                                            | 25              | 09 66 324 770       | 09 66 324 670       |
| Please insert digit for flange thread<br>or fitted female screw locks                                      |                 |                     |                     |
| ø 3.1 mm hole ▶ 4 <sup>1)</sup><br>M3 ▶ 5<br>4-40 UNC ▶ 6<br>fitted screw locks 4-40 UNC ▶ 7 <sup>2)</sup> |                 |                     |                     |
| <b>Female connector</b><br>Flange height x = 5.7 mm                                                        |                 |                     |                     |
| metal shell                                                                                                | 9               | 09 66 114 750       | 09 66 114 650       |
|                                                                                                            | 15              | 09 66 214 750       | 09 66 214 650       |
|                                                                                                            | 25              | 09 66 314 750       | 09 66 314 650       |
|                                                                                                            | 37              | 09 66 414 750       | 09 66 414 650       |
| Please insert digit for flange thread<br>or fitted female screw locks                                      |                 |                     |                     |
| ø 3.1 mm hole ▶ 4 <sup>1)</sup><br>M3 ▶ 5<br>4-40 UNC ▶ 6<br>fitted screw locks 4-40 UNC ▶ 7 <sup>2)</sup> |                 |                     |                     |
| <b>Female connector</b><br>Flange height x = 6 mm                                                          |                 |                     |                     |
| metal shell                                                                                                | 9               | 09 66 114 750       | 09 66 114 650       |
|                                                                                                            | 15              | 09 66 214 750       | 09 66 214 650       |
|                                                                                                            | 25              | 09 66 314 750       | 09 66 314 650       |
|                                                                                                            | 37              | 09 66 414 750       | 09 66 414 650       |
|                                                                                                            | 50              | 09 66 514 750       | 09 66 514 650       |
| Please insert digit for flange thread<br>or fitted female screw locks                                      |                 |                     |                     |
| ø 3.1 mm hole ▶ 0 <sup>1)</sup><br>M3 ▶ 1<br>4-40 UNC ▶ 2<br>fitted screw locks 4-40 UNC ▶ 3 <sup>2)</sup> |                 |                     |                     |

<sup>1)</sup> Not normally kept in stock<sup>2)</sup> Fitted screw locks 4-40 UNC not normally kept in stock for performance level 3

Connector dimensions see page 20.13. Mating conditions see page 20.08.

Number of contacts

9–50

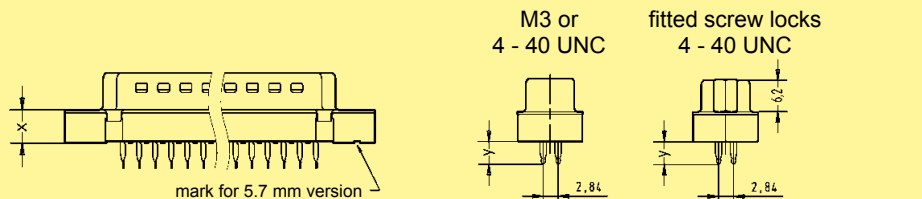


Press-in, straight without grounding press-in board locks

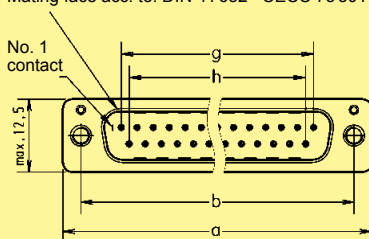
## Identification

## Drawing

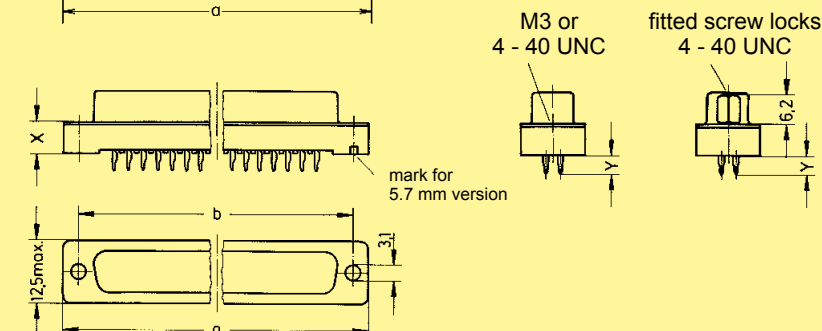
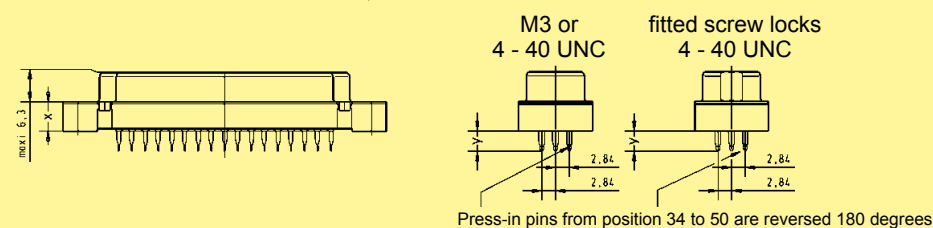
## Dimensions in mm

Male connector  
9 – 25 contacts


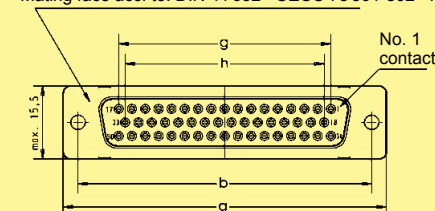
Mating face acc. to: DIN 41 652 · CECC 75 301-802 · IEC 60 807



| X         | Y          |
|-----------|------------|
| 6.0 ± 0.2 | 4.20 ± 0.2 |
| 5.7 ± 0.2 | 4.35 ± 0.2 |

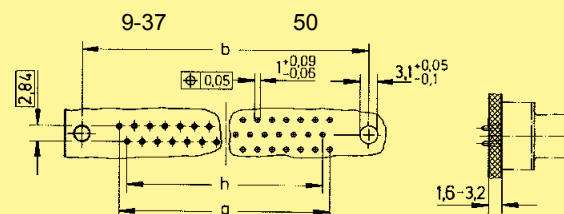
Female connector  
9 – 37 contacts

Female connector  
50 contacts


Mating face acc. to: DIN 41 652 · CECC 75 301-802 · IEC 60 807



|    | a     | b     | g                   | h                   |
|----|-------|-------|---------------------|---------------------|
| 9  | 31.00 | 24.90 | 4 x [2.74] = 10.96  | 3 x [2.74] = 8.22   |
| 15 | 39.30 | 33.20 | 7 x [2.74] = 19.18  | 6 x [2.74] = 16.44  |
| 25 | 53.10 | 47.00 | 12 x [2.76] = 33.12 | 11 x [2.76] = 30.36 |
| 37 | 69.65 | 63.55 | 18 x [2.76] = 49.68 | 17 x [2.76] = 46.92 |
| 50 | 67.00 | 61.10 | 16 x [2.76] = 44.16 | 15 x [2.76] = 41.40 |

Board drillings



Number of contacts 10, 14, 16, 20, 26, 34, 40, 50, 60, 64

Contact arrangement straight

Contact length 4.5 mm

Approvals IEC 60 603-13

Design acc. to D 2632  
BT 224  
BS 9525  
NFC 93-428 (HE 10)

Pitch 2.54 mm [0.100"]

Working current 1 A

Working voltage 350 V DC or AC peak

Test voltage  $U_{r.m.s.}$  1 kV

Contact resistance  $\leq 20 \text{ m}\Omega$   
Insulation resistance  $\geq 10^9 \Omega$

Temperature range  $-55 \text{ }^\circ\text{C} \dots +125 \text{ }^\circ\text{C}$   
The maximum temperature includes heating of contacts and ambient temperature

Materials  
Moulding PBT  
UL 94-V0  
Contacts Phosphor bronze

Contact surface  
Contact zone plated according to performance level<sup>1)</sup>

#### Terminations Recommended PCB through holes

|                            |             |                       |
|----------------------------|-------------|-----------------------|
| <i>Tin-lead plated PCB</i> | Hole        | 1.15 $\pm$ 0.025      |
|                            | Cu          | min. 25 $\mu\text{m}$ |
|                            | Sn          | max. 15 $\mu\text{m}$ |
|                            | Plated hole | 0.94-1.09 mm          |

|                                |             |                        |
|--------------------------------|-------------|------------------------|
| <i>Chemical tin-plated PCB</i> | Hole        | 1.15 $\pm$ 0.025       |
|                                | Cu          | min. 25 $\mu\text{m}$  |
|                                | Sn          | min. 0.8 $\mu\text{m}$ |
|                                | Plated hole | 1.00-1.10 mm           |

|                           |             |                         |
|---------------------------|-------------|-------------------------|
| <i>Au / Ni plated PCB</i> | Hole        | 1.15 $\pm$ 0.025        |
|                           | Cu          | min. 25 $\mu\text{m}$   |
|                           | Ni          | 3-7 $\mu\text{m}$       |
|                           | Au          | 0.05-0.12 $\mu\text{m}$ |
|                           | Plated hole | 1.00-1.10 mm            |

|                          |             |                       |
|--------------------------|-------------|-----------------------|
| <i>Silver plated PCB</i> | Hole        | 1.15 $\pm$ 0.025      |
|                          | Cu          | min. 25 $\mu\text{m}$ |
|                          | Ag          | 0.1-0.3 $\mu\text{m}$ |
|                          | Plated hole | 1.00-1.10 mm          |

|                              |             |                       |
|------------------------------|-------------|-----------------------|
| <i>OSP copper plated PCB</i> | Hole        | 1.15 $\pm$ 0.025      |
|                              | Cu          | min. 25 $\mu\text{m}$ |
|                              | Plated hole | 1.00-1.10 mm          |

PCB board thickness:  $\geq 1.6 \text{ mm}$

#### Insertion and withdrawal forces

| Number of contacts | Maximum force [N]   |
|--------------------|---------------------|
|                    | Performance level 1 |
| 10                 | 20                  |
| 14                 | 28                  |
| 16                 | 32                  |
| 20                 | 40                  |
| 26                 | 52                  |
| 34                 | 68                  |
| 40                 | 80                  |
| 50                 | 100                 |
| 60                 | 120                 |
| 64                 | 128                 |

<sup>1)</sup> Performance level 1 as per IEC 60 603-13,  $\geq 500$  mating cycles, 10 days gas test

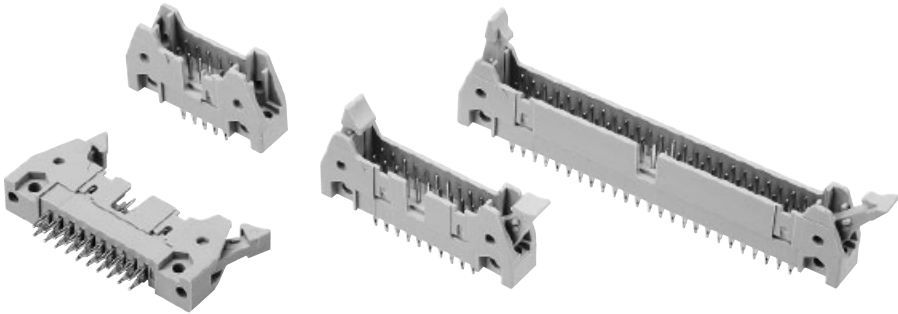




Number of contacts

10–64

Male header,  
straight press-in pins



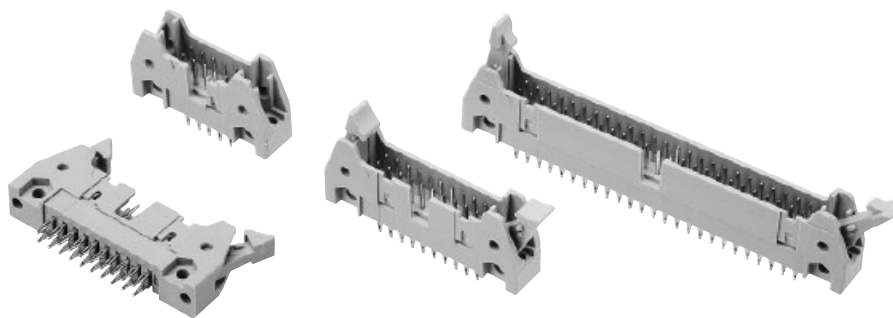
| Identification                                                    | No. of contacts | Part No.       |                   |                  |
|-------------------------------------------------------------------|-----------------|----------------|-------------------|------------------|
|                                                                   |                 | Without levers | With short levers | With long levers |
| Male header with straight press-in terminations<br>Length: 4.5 mm |                 |                |                   |                  |
|                                                                   | 10              | 09 18 510 5929 | 09 18 510 5919    | 09 18 510 5909   |
|                                                                   | 14              | 09 18 514 5929 | 09 18 514 5919    | 09 18 514 5909   |
|                                                                   | 16              | 09 18 516 5929 | 09 18 516 5919    | 09 18 516 5909   |
|                                                                   | 20              | 09 18 520 5929 | 09 18 520 5919    | 09 18 520 5909   |
|                                                                   | 26              | 09 18 526 5929 | 09 18 526 5919    | 09 18 526 5909   |
|                                                                   | 34              | 09 18 534 5929 | 09 18 534 5919    | 09 18 534 5909   |
|                                                                   | 40              | 09 18 540 5929 | 09 18 540 5919    | 09 18 540 5909   |
|                                                                   | 50              | 09 18 550 5929 | 09 18 550 5919    | 09 18 550 5909   |
|                                                                   | 60              | 09 18 560 5929 | 09 18 560 5919    | 09 18 560 5909   |
|                                                                   | 64              | 09 18 564 5929 | 09 18 564 5919    | 09 18 564 5909   |

Press-in  
technology

Number of contacts

10-64

Male header,  
straight press-in pins



Identification

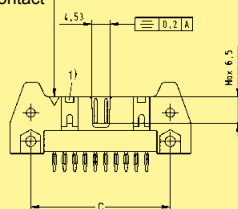
Drawing

Dimensions in mm

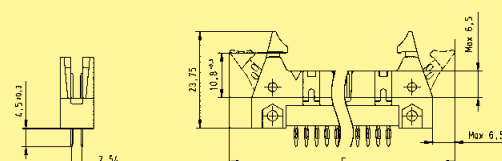
Male header

| No. of contacts | A      | C     | D     | E                 | F      | G      |
|-----------------|--------|-------|-------|-------------------|--------|--------|
| 10              | 32.11  | 21.84 | 17.91 | 2.54 x 4 = 10.16  | 45.11  | 50.11  |
| 14              | 37.19  | 26.92 | 22.99 | 2.54 x 6 = 15.24  | 50.19  | 55.19  |
| 16              | 39.73  | 29.46 | 25.53 | 2.54 x 7 = 17.78  | 52.73  | 57.73  |
| 20              | 44.81  | 34.54 | 30.61 | 2.54 x 9 = 22.86  | 57.81  | 62.81  |
| 26              | 52.43  | 42.16 | 38.23 | 2.54 x 12 = 30.48 | 65.43  | 70.43  |
| 34              | 62.59  | 52.32 | 48.39 | 2.54 x 16 = 40.64 | 75.59  | 80.59  |
| 40              | 70.21  | 59.94 | 56.01 | 2.54 x 19 = 48.26 | 83.21  | 88.21  |
| 50              | 82.91  | 72.64 | 68.71 | 2.54 x 24 = 60.96 | 95.91  | 100.91 |
| 60              | 95.61  | 85.34 | 81.41 | 2.54 x 29 = 73.66 | 108.61 | 113.61 |
| 64              | 100.69 | 90.42 | 86.49 | 2.54 x 31 = 78.74 | 113.69 | 118.69 |

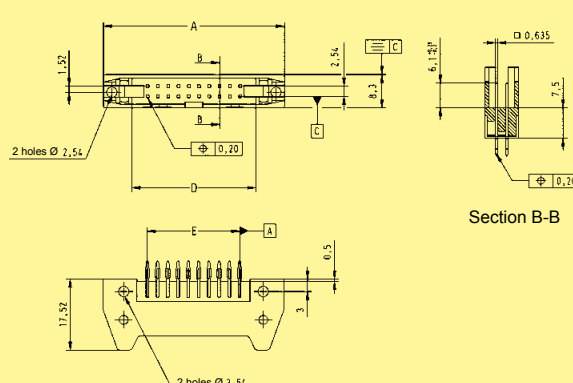
Marking  
No. 1 contact



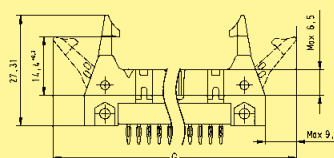
Short levers



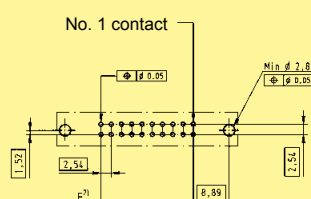
Long levers



Section B-B



Board drillings



<sup>1)</sup> No polarization slot  
for 10 or 14 way male header

<sup>2)</sup> Pitch tolerance:  $\pm 0.1$

Number of contacts 6, 10, 14, 16, 20, 26, 34, 40, 50, 60, 64

Contact arrangement straight

Contact length 5.5 mm

Approvals IEC 60 603-13  
DIN EN 60 603-13  
D 2632  
BT 224  
NFC 93-428 (HE 10)  
UL recognized: E102079



Pitch 2.54 mm [0.100"]

Working current 1 A

Test voltage  $U_{r.m.s.}$  1 kV

Contact resistance  $\leq 20 \text{ m}\Omega$   
Insulation resistance  $\geq 10^9 \Omega$

Temperature range -55 °C ... + 105 °C  
The maximum temperature includes heating of contacts and ambient temperature

#### Press-in

Diameter of pcb plated through holes  $\varnothing 1.0^{+0.09}_{-0.06} \text{ mm}$

Recommended pcb holes for press-in process  
Hole:  $\varnothing 1.12 - 1.15 \text{ mm}$   
Cu : 25 – 75  $\mu\text{m}$   
Sn : 5 – 15  $\mu\text{m}$

Pcb thickness 1.6 – 3.2 mm

Materials Moulding Thermoplastic resin (PBT)  
UL 94-V0

Contact surface Contact zone plated according to performance level<sup>1)</sup>

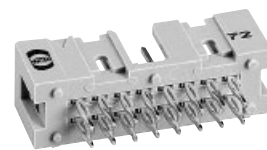
#### Insertion and withdrawal forces

| Number of contacts | Maximum force [N]         |                     |
|--------------------|---------------------------|---------------------|
|                    | Performance level 1 and 2 | Performance level 3 |
| 6                  | 12                        | 18                  |
| 10                 | 20                        | 30                  |
| 14                 | 28                        | 42                  |
| 16                 | 32                        | 48                  |
| 20                 | 40                        | 60                  |
| 26                 | 52                        | 78                  |
| 34                 | 68                        | 102                 |
| 40                 | 80                        | 120                 |
| 50                 | 100                       | 150                 |
| 60                 | 120                       | 180                 |
| 64                 | 128                       | 192                 |

<sup>1)</sup> Performance level 3 as per IEC 60 603-13,  $\geq 50$  mating cycles, no gas test  
Performance level 2 as per IEC 60 603-13,  $\geq 250$  mating cycles, 4 days gas test  
S4, plating = 0.76  $\mu\text{m}$  (30  $\mu\text{inch}$ ) Au or PdNi equivalent

Number of contacts

6-64



Low-profile male header, straight press-in pins

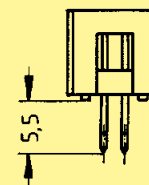
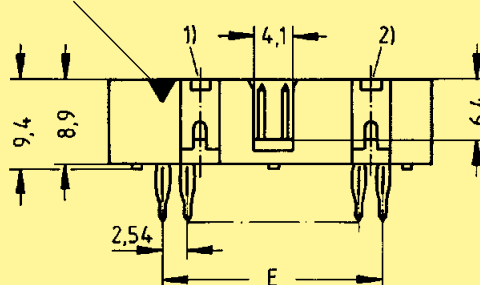
Identification No. of contacts Part No. Drawing Dimensions in mm

Low-profile male header with straight press-in terminations  
Length: 5.5 mm

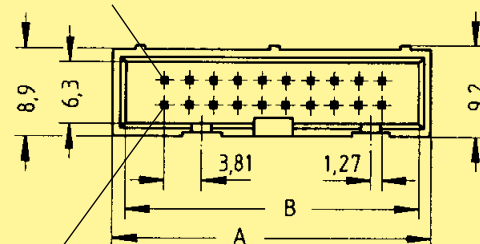
|    |           |       |
|----|-----------|-------|
| 6  | 09 18 506 | □ 329 |
| 10 | 09 18 510 | □ 329 |
| 14 | 09 18 514 | □ 329 |
| 16 | 09 18 516 | □ 329 |
| 20 | 09 18 520 | □ 329 |
| 26 | 09 18 526 | □ 329 |
| 34 | 09 18 534 | □ 329 |
| 40 | 09 18 540 | □ 329 |
| 50 | 09 18 550 | □ 329 |
| 60 | 09 18 560 | □ 329 |
| 64 | 09 18 564 | □ 329 |

| No. of contacts | A    | B     | E                 |
|-----------------|------|-------|-------------------|
| 6               | 15.2 | 12.78 | 2.54 x 2 = 5.08   |
| 10              | 20.3 | 17.86 | 2.54 x 4 = 10.16  |
| 14              | 25.4 | 22.94 | 2.54 x 6 = 15.24  |
| 16              | 27.9 | 25.48 | 2.54 x 7 = 17.78  |
| 20              | 33.0 | 30.56 | 2.54 x 9 = 22.86  |
| 26              | 40.6 | 38.18 | 2.54 x 12 = 30.48 |
| 34              | 50.8 | 48.34 | 2.54 x 16 = 40.64 |
| 40              | 58.4 | 55.96 | 2.54 x 19 = 48.26 |
| 50              | 71.3 | 68.66 | 2.54 x 24 = 60.96 |
| 60              | 84.0 | 81.36 | 2.54 x 29 = 73.66 |
| 64              | 89.1 | 86.44 | 2.54 x 31 = 78.74 |

Marking No. 1 contact

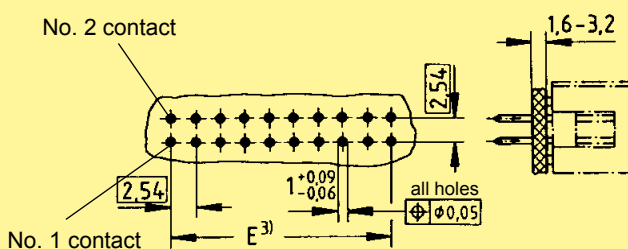


No. 2 contact



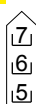
No. 1 contact

No. 2 contact



Board drillings

For Performance Level 3 please specify digit  
For Performance Level 2 please specify digit  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent



Not normally kept in stock

- 1) No polarization slot for 6, 10 or 14 way
- 2) No polarization slot for 6 way
- 3) Pitch tolerance: ± 0.1

Press-in  
technology



## Surface Mount Technology (SMT) board connectors

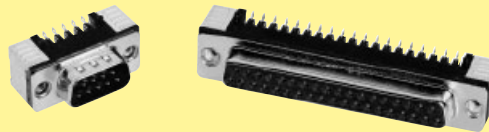
Page

### ***D-Sub – SMT***

Technical characteristics . . . . .

**21.02**

Standard versions, angled . . . . .



**21.04**

Low-profile versions, angled . . . . .



**21.06**

Standard versions, straight . . . . .



**21.08**

Number of contacts 9, 15, 25, 37

Working current 5 A

Test voltage  $U_{r.m.s.}$  1 kV

Clearance and creepage  $\geq 1.0$  mm

Contact resistance  $< 25$  m $\Omega$   
Insulation resistance  $> 5$  G $\Omega$

Temperature range as per profile JEDEC 020 D

Terminations Solder pins for P.C.B. pads

## Materials

Mouldings LCP black  
UL 94-V0

Contacts Phosphorus bronze

Grounding die Zamac

Shell Steel

## Contact surface

Contact zone selectively plated  
acc. to performance level<sup>1)</sup>

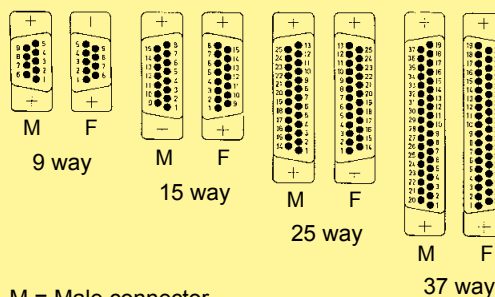
Grounding die Pure tin

Shell Nickel plated

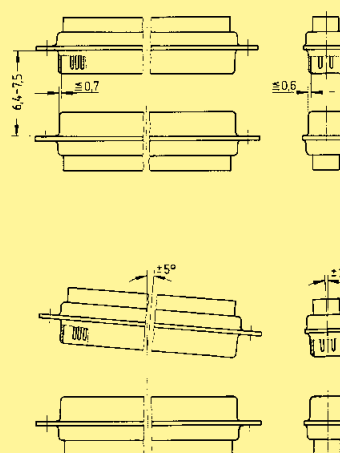
## Mating force

9 way  $\leq 30$  N  
15 way  $\leq 50$  N  
25 way  $\leq 83$  N  
37 way  $\leq 123$  N

## Contact arrangement View from termination side



## Mating conditions as per DIN 41 652



<sup>1)</sup> Performance level 3, 50 mating cycles, no gas test

Performance level 2 as per CECC 75 301-802, 250 mating cycles, 4 days 4 mixed gas test – IEC 60 512





Number of contacts

9–37



SMT stamped solder pins, angled with grounding board locks

SMT  
technology

| Identification                                                                           | No. of contacts     | Part No.                                                                                 |                                                                                          |
|------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Performance levels<br>Explanations see page 21.02<br>Other performance levels on request |                     | Performance level 3                                                                      | Performance level 2                                                                      |
| Male connector<br>metal shell with dimples                                               | 9<br>15<br>25<br>37 | 09 55 166 78 .. 741<br>09 55 266 78 .. 741<br>09 55 366 78 .. 741<br>09 55 466 78 .. 741 | 09 55 166 68 .. 741<br>09 55 266 68 .. 741<br>09 55 366 68 .. 741<br>09 55 466 68 .. 741 |
| Female connector<br>metal shell                                                          | 9<br>15<br>25<br>37 | 09 55 156 76 .. 741<br>09 55 256 76 .. 741<br>09 55 356 76 .. 741<br>09 55 456 76 .. 741 | 09 55 156 66 .. 741<br>09 55 256 66 .. 741<br>09 55 356 66 .. 741<br>09 55 456 66 .. 741 |
| Please insert digit for flange thread<br>or fitted female screw locks                    |                     |                                                                                          |                                                                                          |
| M3 ▶ 11<br>4-40 UNC ▶ 12<br>non-removable                                                |                     |                                                                                          |                                                                                          |
| fitted screw locks M3 ▶ 21<br>non-removable                                              |                     |                                                                                          |                                                                                          |
| fitted screw locks 4-40 UNC ▶ 22                                                         |                     |                                                                                          |                                                                                          |

Number of contacts

9–37



SMT stamped solder pins, angled with grounding board locks

Identification

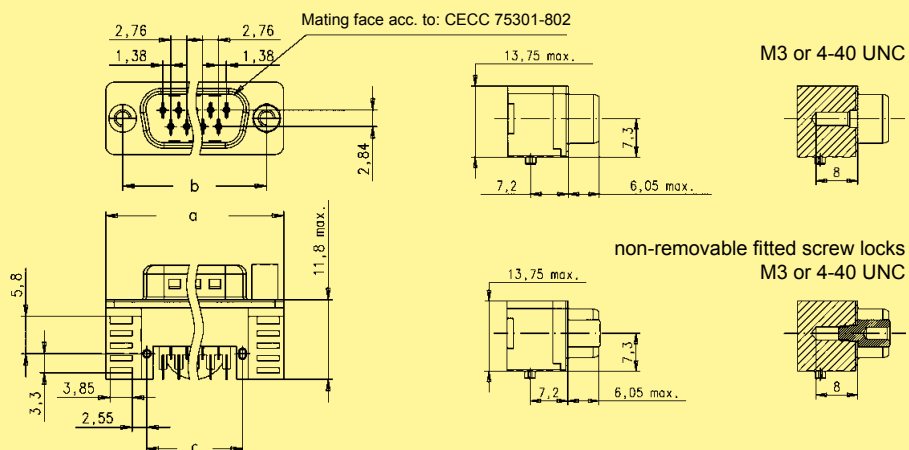
Drawing

Dimensions in mm

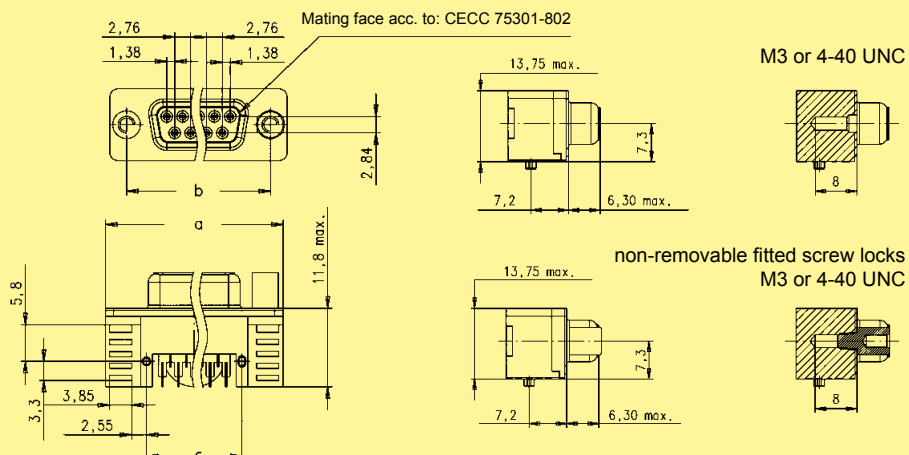
Male connector

M3 or 4-40 UNC

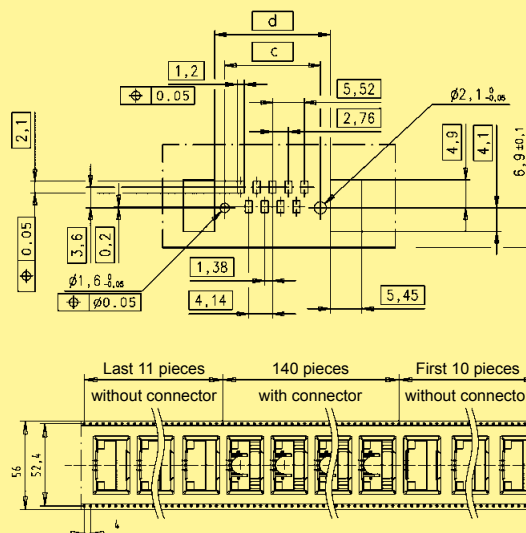
non-removable fitted screw locks M3 or 4-40 UNC



Female connector



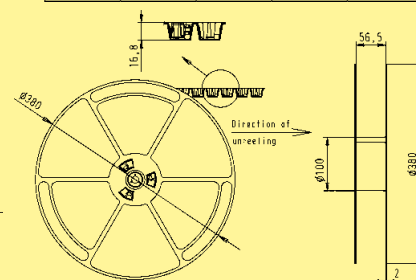
pcb layout



|    | a     | b     | c     | d    |
|----|-------|-------|-------|------|
| 9  | 31.10 | 24.99 | 16.60 | 20.1 |
| 15 | 39.52 | 33.32 | 24.90 | 28.4 |
| 25 | 53.29 | 47.04 | 38.64 | 42.1 |
| 37 | 69.60 | 63.50 | 55.10 | 58.6 |

Packaging

(1 reel = 140 pieces)  
Reel diameter = 380 mm



Number of contacts

9–37



SMT stamped solder pins, angled with grounding board locks

| Identification                                                                                  | No. of contacts | Part No.            |                     |
|-------------------------------------------------------------------------------------------------|-----------------|---------------------|---------------------|
| <b>Performance levels</b><br>Explanations see page 21.02<br>Other performance levels on request |                 | Performance level 3 | Performance level 2 |
| <b>Male connector</b><br>metal shell with dimples                                               |                 |                     |                     |
|                                                                                                 | 9               | 09 55 166 78 .. 741 | 09 55 166 68 .. 741 |
|                                                                                                 | 15              | 09 55 266 78 .. 741 | 09 55 266 68 .. 741 |
|                                                                                                 | 25              | 09 55 366 78 .. 741 | 09 55 366 68 .. 741 |
|                                                                                                 | 37              | 09 55 466 78 .. 741 | 09 55 466 68 .. 741 |
| <b>Female connector</b><br>metal shell                                                          |                 |                     |                     |
|                                                                                                 | 9               | 09 55 156 76 .. 741 | 09 55 156 66 .. 741 |
|                                                                                                 | 15              | 09 55 256 76 .. 741 | 09 55 256 66 .. 741 |
|                                                                                                 | 25              | 09 55 356 76 .. 741 | 09 55 356 66 .. 741 |
|                                                                                                 | 37              | 09 55 456 76 .. 741 | 09 55 456 66 .. 741 |
| Please insert digit for flange thread<br>or fitted female screw locks                           |                 |                     |                     |
| M3 ▶ 15                                                                                         |                 |                     |                     |
| 4-40 UNC ▶ 16                                                                                   |                 |                     |                     |
| non-removable                                                                                   |                 |                     |                     |
| fitted screw locks M3 ▶ 19                                                                      |                 |                     |                     |
| non-removable                                                                                   |                 |                     |                     |
| fitted screw locks 4-40 UNC ▶ 20                                                                |                 |                     |                     |

Number of contacts

9–37



SMT stamped solder pins, angled with grounding board locks

Identification

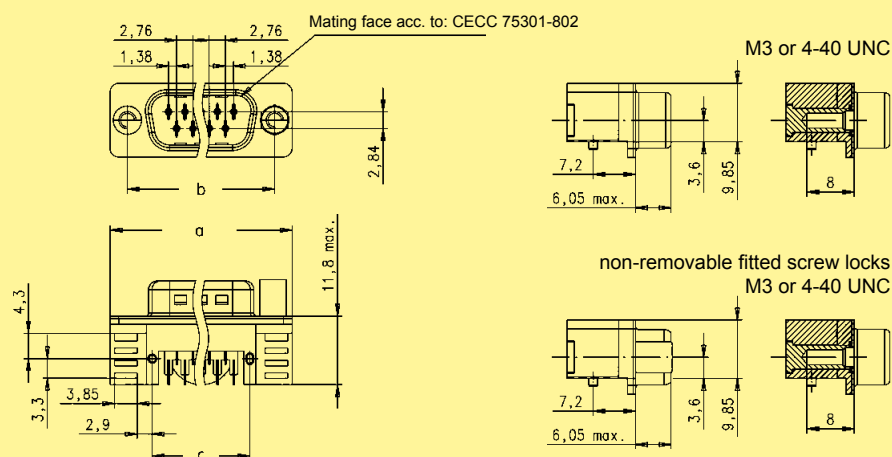
Drawing

Dimensions in mm

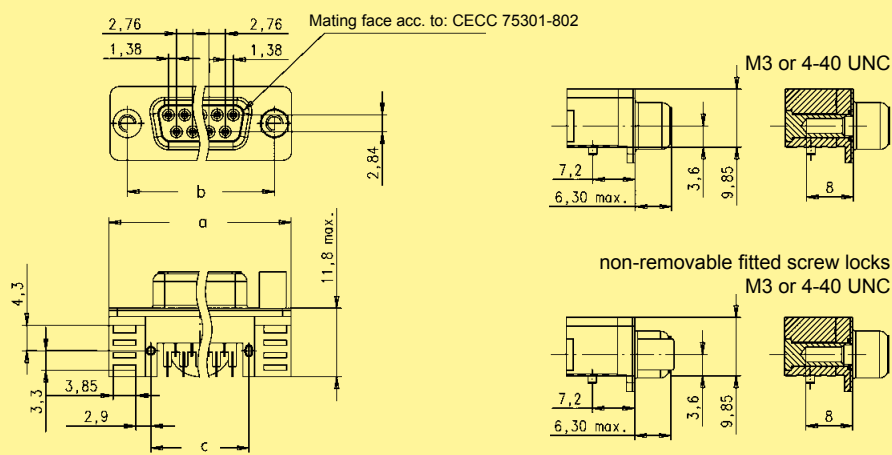
Male connector

M3 or 4-40 UNC

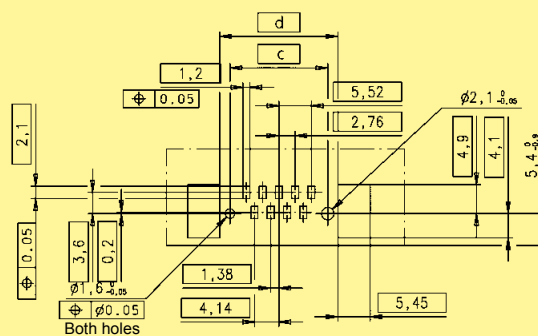
non-removable fitted screw locks M3 or 4-40 UNC



Female connector

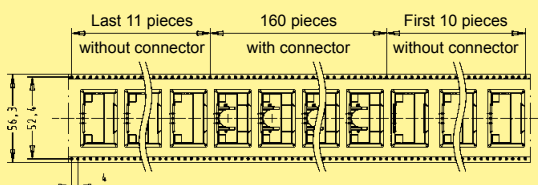


pcb layout



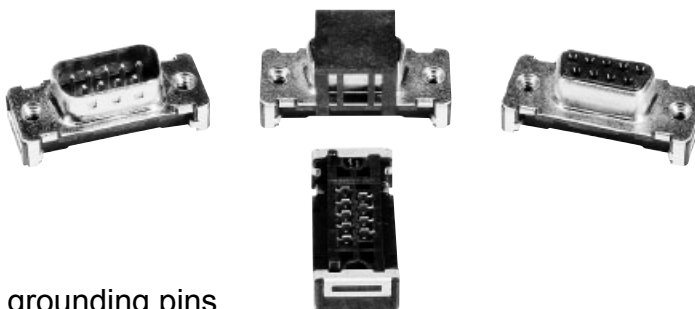
Packaging

(1 reel = 160 pieces)  
Reel diameter = 330 mm



Number of contacts

9–37

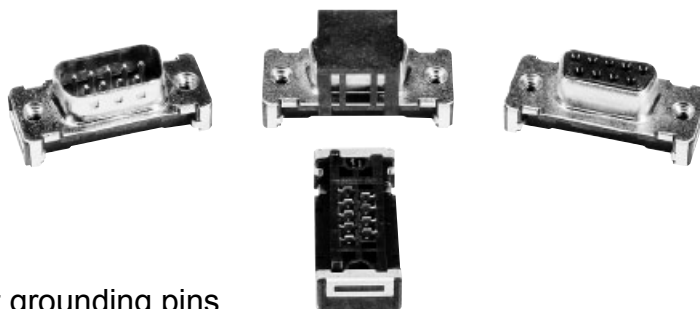


SMT stamped solder pins, straight without grounding pins

| Identification                                                                                  | No. of contacts     | Part No.                                                                                 |                                                                                          |
|-------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 21.02<br>Other performance levels on request |                     | Performance level 3                                                                      | Performance level 2                                                                      |
| <b>Male connector</b><br>metal shell with dimples                                               | 9<br>15<br>25<br>37 | 09 55 129 78 .. 741<br>09 55 229 78 .. 741<br>09 55 329 78 .. 741<br>09 55 429 78 .. 741 | 09 55 129 68 .. 741<br>09 55 229 68 .. 741<br>09 55 329 68 .. 741<br>09 55 429 68 .. 741 |
| <b>Female connector</b><br>metal shell                                                          | 9<br>15<br>25<br>37 | 09 55 115 76 .. 741<br>09 55 215 76 .. 741<br>09 55 315 76 .. 741<br>09 55 415 76 .. 741 | 09 55 115 66 .. 741<br>09 55 215 66 .. 741<br>09 55 315 66 .. 741<br>09 55 415 66 .. 741 |
| Please insert digit for flange thread<br>or fitted female screw locks                           |                     |                                                                                          |                                                                                          |
| M3 ► 11<br>4-40 UNC ► 12<br>fixed screw locks M3 ► 21<br>fixed screw locks 4-40 UNC ► 22        |                     |                                                                                          |                                                                                          |

Number of contacts

## 9–37



SMT stamped solder pins, straight without grounding pins

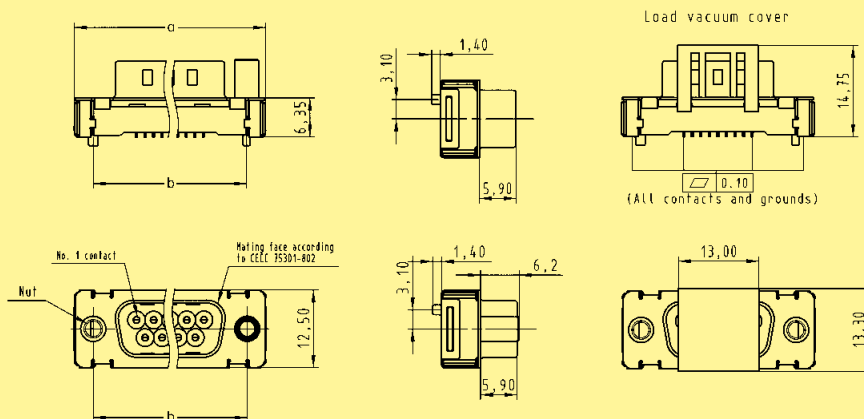
Identification

Drawing

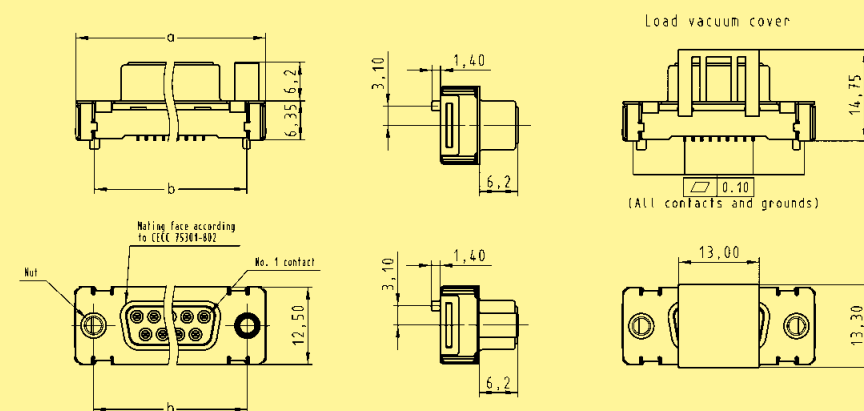
Dimensions in mm

Male connector

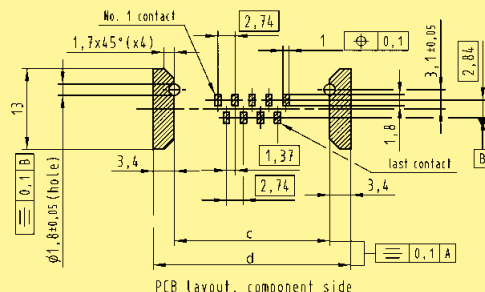
M3 or 4-40 UNC non-removable fitted screw  
locks M3 or 4-40 UNC



Female connector



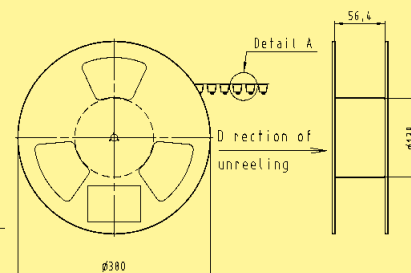
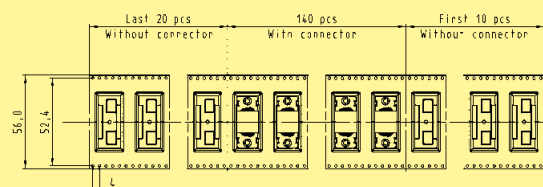
pcb layout



|    | a     | b     | c    | d    |
|----|-------|-------|------|------|
| 9  | 31.12 | 25.00 | 25.0 | 31.8 |
| 15 | 39.45 | 33.33 | 33.3 | 40.1 |
| 25 | 53.35 | 47.04 | 47.0 | 53.8 |
| 37 | 69.62 | 63.50 | 63.5 | 70.3 |

Packaging

(1 reel = 140 pieces)  
Reel diameter = 380 mm



Number of contacts

9–37

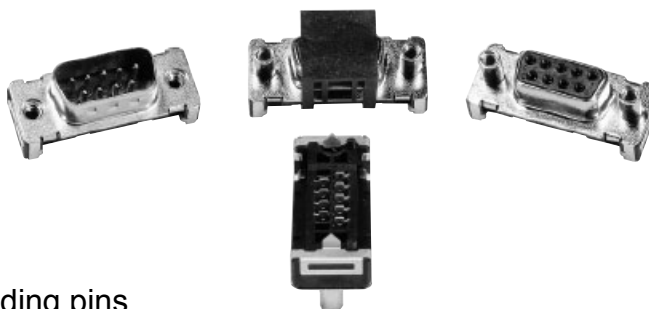


SMT stamped solder pins, straight with grounding pins

| Identification                                                                                  | No. of contacts     | Part No.                                                                                 |                                                                                          |
|-------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 21.02<br>Other performance levels on request |                     | Performance level 3                                                                      | Performance level 2                                                                      |
| <b>Male connector</b><br>metal shell with dimples                                               | 9<br>15<br>25<br>37 | 09 55 169 78 .. 741<br>09 55 269 78 .. 741<br>09 55 369 78 .. 741<br>09 55 469 78 .. 741 | 09 55 169 68 .. 741<br>09 55 269 68 .. 741<br>09 55 369 68 .. 741<br>09 55 469 68 .. 741 |
| <b>Female connector</b><br>metal shell                                                          | 9<br>15<br>25<br>37 | 09 55 155 76 .. 741<br>09 55 255 76 .. 741<br>09 55 355 76 .. 741<br>09 55 455 76 .. 741 | 09 55 155 66 .. 741<br>09 55 255 66 .. 741<br>09 55 355 66 .. 741<br>09 55 455 66 .. 741 |
| Please insert digit for flange thread<br>or fitted female screw locks                           |                     |                                                                                          |                                                                                          |
| M3 ► 11<br>4-40 UNC ► 12<br>fixed screw locks M3 ► 21<br>fixed screw locks 4-40 UNC ► 22        |                     |                                                                                          |                                                                                          |



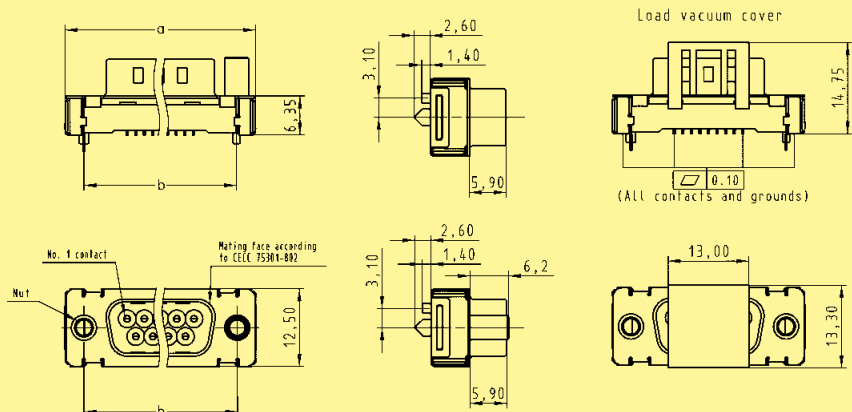
9-37



SMT stamped solder pins, straight with grounding pins

Dimensions in mm

M3 or 4-40 UNC non-removable fitted screw  
locks M3 or 4-40 UNC



Technical drawings of the 75301-802 connector showing dimensions in millimeters (mm).

**Top View (Left):** Dimensions include overall width  $a$ , overall length  $b$ , and contact pitch  $6.35$  and  $6.2$ .

**Side View (Top Middle):** Dimensions include contact height  $2.6$ , contact width  $1.40$ , and mounting hole diameter  $3.10$ . The base width is  $6.2$ .

**Front View (Right):** Dimensions include overall height  $14.75$  and a detail of the contact area with a width of  $0.10$ . A note indicates: (All contacts and grounds).

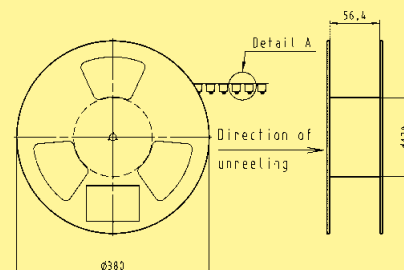
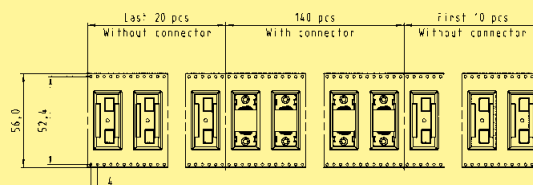
**Bottom View (Left):** Dimensions include overall width  $a$ , overall length  $b$ , and contact pitch  $6.35$  and  $6.2$ . A note indicates: Mating face according to CECC 75301-802. A detail of the contact area shows 12 contacts and 2 grounds, with a note: No. 1 contact. A detail of the mounting hole shows a diameter of  $3.10$ .

**Bottom View (Right):** Dimensions include overall width  $13.00$  and overall height  $13.30$ .

[illegible]

|    | a     | b     | c    | d    |
|----|-------|-------|------|------|
| 9  | 31.12 | 25.00 | 25.0 | 31.8 |
| 15 | 39.45 | 33.33 | 33.3 | 40.1 |
| 25 | 53.35 | 47.04 | 47.0 | 53.8 |
| 37 | 69.62 | 63.50 | 63.5 | 70.3 |

(1 reel = 140 pieces)  
Reel diameter = 380 mm





## SMC\* – Technology and board connectors

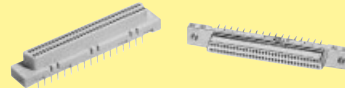
Page

General information ..... 22.02

**harmik®**

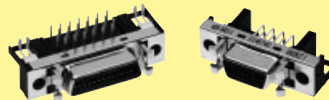
Technical characteristics ..... 22.05

Pin and socket, female connectors ..... 22.06



Technical characteristics ..... 22.08

Bellows, female connectors ..... 22.09



### D-Sub – S

Technical characteristics ..... 22.12

Mounting details ..... 22.13

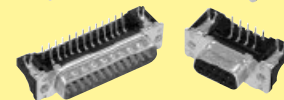
Straight versions ..... 22.14



Standard versions ..... 22.16



Low-profile versions ..... 22.18



### SEK

Technical characteristics ..... 22.20

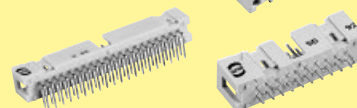
Male standard connectors ..... 22.22



Male standard connectors with board lock ..... 22.28



Male low-profile connectors ..... 22.30

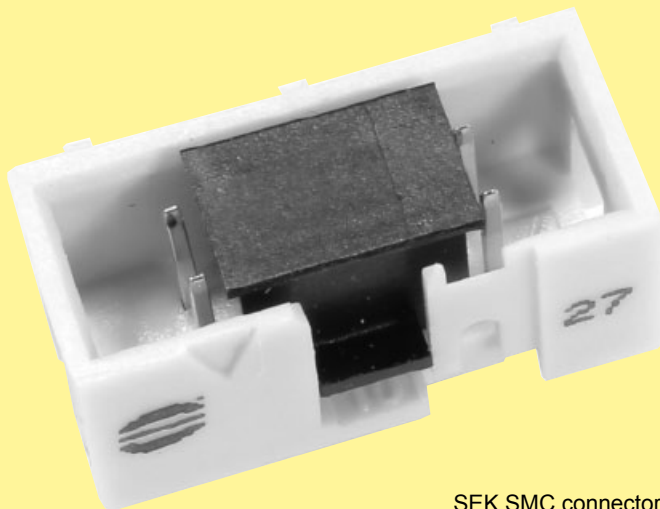


Accessories ..... 22.32

\* Also known as Pin-in-Paste or Through Hole Reflow (THR)

**The continuing trend towards miniaturisation has revolutionised the assembly of electronic components. For the past 15 years, most components have been secured directly to the pcb surface by means of Surface Mount Technology (SMT). By dispensing with drilled holes on the pcb, a space saving of up to 70 percent is achieved.**

Today, typical components such as ICs, resistors, capacitors, inductors, and connectors with straight terminal pins are almost exclusively fitted using SMD (Surface Mount Device) technology in mass production. In contrast, angled SMD connectors at the edge of the board have not been successful because of tolerance problems (co-planarity) and stresses during mating.



SEK SMC connector

## **"Pin in Hole Intrusive Reflow"**

In this process, the connector is inserted into plated through holes in a comparable way to conventional component mounting. All other components can be assembled on the pcb surface.

The components are positioned using pick-and-place machines. These automatic assembly machines differ according to whether the components are small, lightweight or bulky. Connectors, compared to ICs, are considered bulky (odd form). They are more difficult to grip, due to their comparatively heavy weight and larger size. But machines for odd form components, provide the higher insertion power, necessary to fit the components into pcb holes, which are filled with solder paste. Generally modern SMC production lines are equipped with both types of machine. Therefore the "Pin in Hole Intrusive Reflow" process entails no extra investment costs for the user.

### **Conventional assembly process:**

1. Application of solder paste
2. Positioning the components
3. Positioning odd form components
4. Reflow soldering
5. Pressing in or partially dip soldering the connector at the board edge
6. Quality inspection

### **"Pin in Hole Intrusive Reflow" assembly:**

1. Application of solder paste
2. Positioning the components
3. Positioning odd form components
4. Reflow soldering
5. Pressing in or partially dip soldering the connector at the board edge
6. Quality inspection

Interface connectors were designed for Pin in Hole Intrusive Reflow with features like an inspection friendly black colour, tape and reel packaging for automated handling and it is self retaining on pcb via kinked pin. The open design – moulded from high temperature resistant material – ensures good heat distribution, so that current solder temperature profiles can be used. The special material of the insulation body withstands also the higher temperatures of lead free soldering.

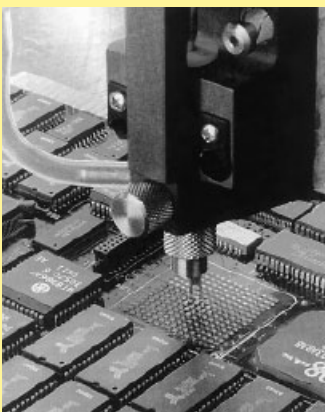
## Advantages for using interface connectors are:

- Partial dip soldering or press-in is no longer required
- High mechanical stability
- Complete compatibility with Surface Mount Technology
- Savings through integration into the automated assembly process
- Reduced floor space in the production plant

## Application of solder paste

Before the components are assembled, solder paste is applied to all the solder pads and the plated through holes. Usually a screen printing process is used for this purpose. A squeegee moves across the pcb, which is masked with screens and presses the solder paste into all unmasked areas. A good solder joint is basically determined by the amount of the applied solder paste. Only a few parameters (illustrated on the right) will lead to the right quantity.

As an alternative to screen printing, the solder paste can be applied by means of a dispenser. A high-precision robot moves the dispenser to all required positions on the pcb. The dispensing method is particularly suitable for small pcb's or applications which demand high precision and flexibility in dispensing volumes.



Dispenser in operation

## Solder paste volume

There are numerous scientific studies dealing with calculation of the required quantity of solder paste. These studies use various parameters, e.g. the shrinking factor of the paste during soldering or the thickness of the screens used for masking the pcb. Since such calculation methods are complicated to apply, the following rule of thumb has proved valuable in practice:

$$V_{\text{Paste}} = 2(V_H - V_P)$$

in which:

$V_{\text{Paste}}$  = Required volume of solder paste

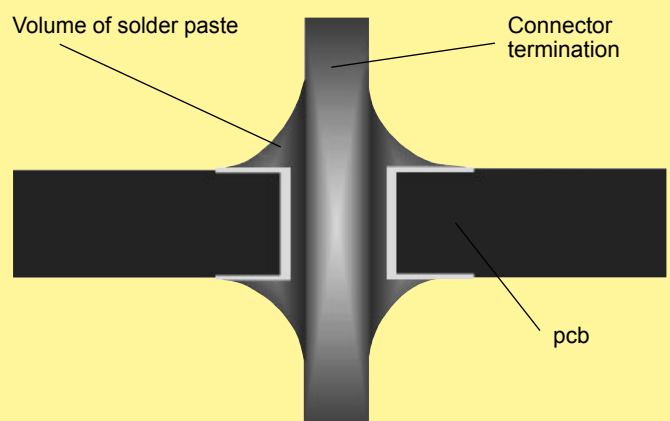
$V_H$  = Volume of the plated through hole

$V_P$  = Volume of the connector termination in the hole

Comment: the multiplier "2" compensates for solder paste shrinkage during soldering. For this purpose, it was assumed that 50 % of the paste consists of the actual solder, the other 50 % being soldering aids.

## Requirements for the solder connection

At the beginning of a new production batch, the process parameters, such as quantity of solder paste and soldering temperature, can be set by interpreting simple cross-sections of the soldered connection. A reliable measure for achieving optimum parameters is the quantity of solder required to fill the hole. In soldered connections of high quality, the holes are filled to between 75 % and 100 %.



Plated through hole with connector termination

## SMC connectors

SMC (Surface Mount Compatible) connectors have to withstand temperatures of up to 225°C in the reflow oven for 10 to 15 seconds. Therefore, the moulding must be made from a dimensionally stable plastic which expands at the same rate as the pcb material when subjected to heat.

The length of the connector contacts should be such that they protrude by no more than 1.5 millimetres after insertion to the pcb. Each contact collects solder on its tip as it penetrates the solder paste in the hole. So if the contact was too long, this solder would no longer be able to reflow back into the plated through hole by capillary action during the soldering process, therefore the quality of the soldered connection would suffer as a result.

Connector design must permit both automatic assembly with pick-and-place machines and manual positioning for test and pre-production batches. It is also important for the packaging of the connectors to be suitable for automated assembly. Experience shows that deep-drawn film and reel packaging fed into the pick-and-place machines with the aid of a conveyor system is particularly suitable.

## HARTING SMC technology

HARTING offers its customers a complete system concept for integrating SMC technology into existing production lines. We manufacture a wide range of SMC connectors (3 and 5 row) in compliance with IEC 60603-2, D-Sub connectors in compliance with CECC 75301-802 and connectors from the har-mik® series with contact spacing of 1.27 millimetres. In addition, HARTING supports the market with packaging and processing concepts, which have been developed in collaboration with renowned manufacturers of SMC soldering and assembly plants.

**You will find more detailed information in our SMC catalogue, as well as in our hard metric connectors catalogue.**

### Advantages of the "Pin in Hole Intrusive Reflow" process:

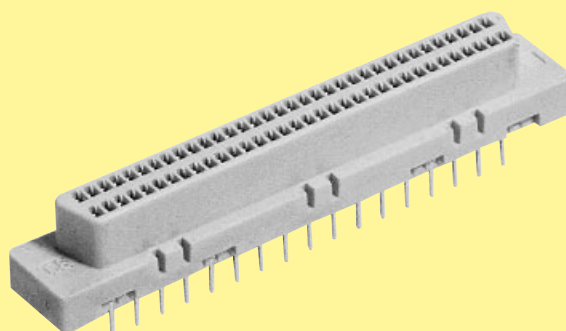
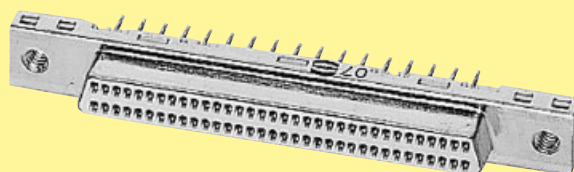
- Partial dip soldering or press-in is no longer required
- Complete compatibility with Surface Mount Technology
- Complete integration into the automated assembly process
- Reduced floor space in the production plant
- As a rule, no additional investment costs



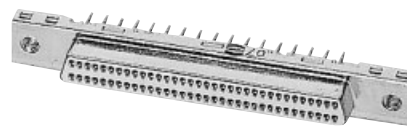
SEK connector mounted in a tape ready for placement using an odd form assembly station.



|                                              |                                                                                          |
|----------------------------------------------|------------------------------------------------------------------------------------------|
| Number of contacts                           | 68                                                                                       |
| Pitch                                        | 1.27 mm                                                                                  |
| Working current                              | 1 A                                                                                      |
| Working voltage                              | 240 V ~                                                                                  |
| Test voltage $U_{r.m.s.}$                    | 750 V                                                                                    |
| Contact resistance                           | $\leq 30 \text{ m}\Omega$                                                                |
| Insulation resistance                        | $\geq 10^3 \text{ M}\Omega$                                                              |
| Temperature range<br>during reflow soldering | -55 °C ... + 105 °C<br>max. + 240 °C for 60 s                                            |
| Terminations                                 |                                                                                          |
| Solder pins                                  | Straight for pcb holes<br>min. $\varnothing 0.74 \text{ mm}$                             |
| Materials                                    |                                                                                          |
| Moulding                                     | Thermoplastic resin<br>glass-fibre filled<br>UL 94-V0<br>Liquid Crystal Polymer<br>(LCP) |
| Contacts                                     | Copper alloy                                                                             |
| Contact surface                              |                                                                                          |
| Contact zone                                 | Selectively gold plated according<br>to performance level                                |
| Metal shell                                  | Die cast zamac or stamped<br>steel, nickel-plated                                        |



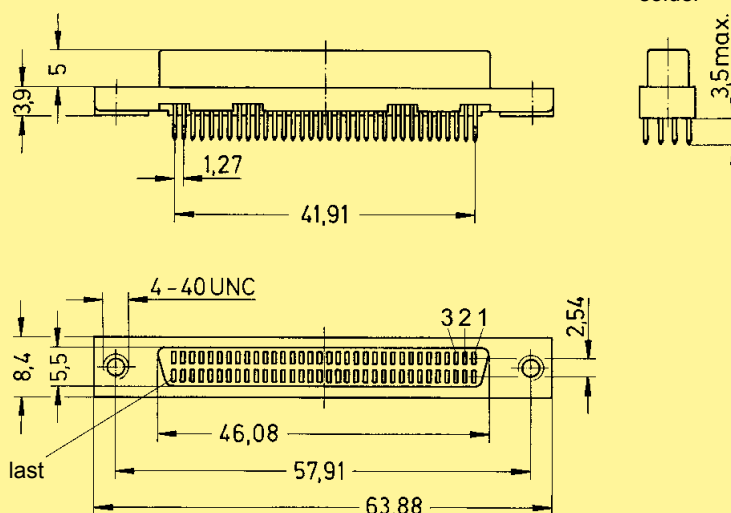
68



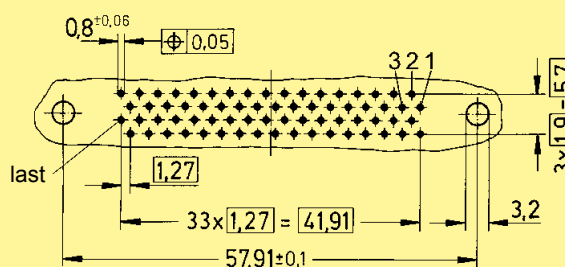
## SMC female connectors, straight

| Identification                                 | No. of contacts | Part No.       |
|------------------------------------------------|-----------------|----------------|
| SMC female connector with straight solder pins | 68              | 60 02 068 5120 |

solder



Board drillings  
(Components side)

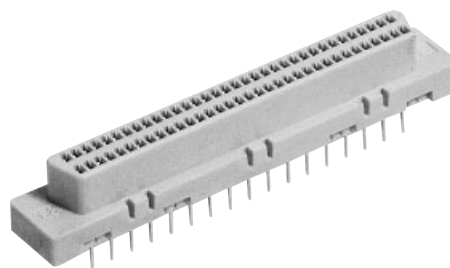


Dimensions in mm



Number of contacts

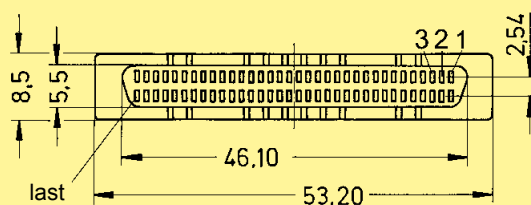
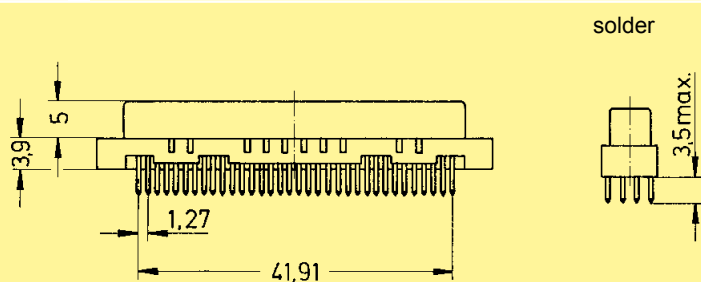
68



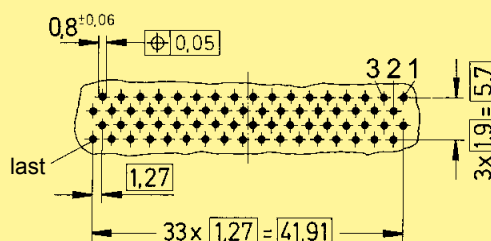
SMC female connectors, straight

| Identification                                 | No. of contacts | Part No.       |
|------------------------------------------------|-----------------|----------------|
| SMC female connector with straight solder pins | 68              | 60 05 068 5100 |

## Dimensions



## Board drillings (Components side)



Dimensions in mm

Number of contacts 14, 20, 26, 36, 50, 68

Pitch 1.27 mm

Working current 1 A

Working voltage 240 V ~

Test voltage  $U_{r.m.s.}$  500 V

Contact resistance  $\leq 45 \text{ m}\Omega$

Insulation resistance  $\geq 10^3 \text{ M}\Omega$

Temperature range  
reflow soldering -55 °C ... + 105 °C  
according to ICP/JEDEC  
J-STD-020 Revision D

### Terminations

Solder pins Angled for pcb holes  
min.  $\varnothing 0.62 \text{ mm}$

### Materials

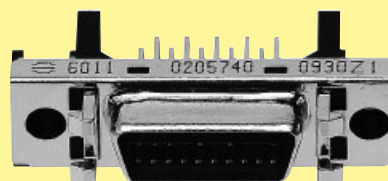
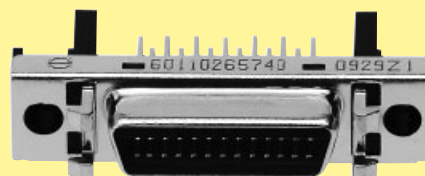
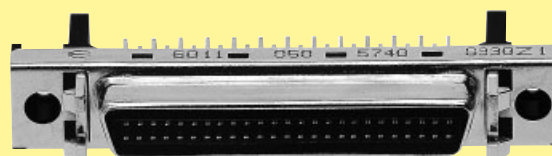
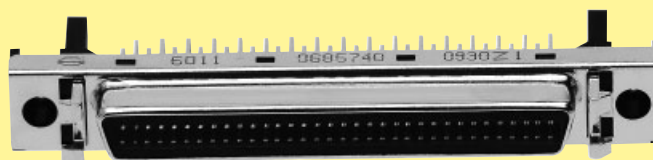
Moulding Thermoplastic resin  
glass-fibre filled UL 94-V0  
Liquid Chrystal Polymer (LCP)

Contacts Copper alloy

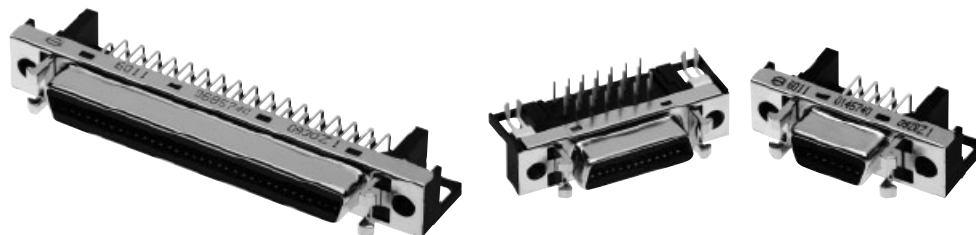
### Contact surface

Contact zone Selectively gold plated  
according to performance level

Metal shell Die cast zamac or stamped  
steel, nickel-plated



14-68



| Identification                                   |    | No. of contacts | for one reel (300 pieces) |     | Part No.     | standard tray packaging |
|--------------------------------------------------|----|-----------------|---------------------------|-----|--------------|-------------------------|
| SMC female connectors<br>with angled solder pins |    | 14              | 60 11 014 57              | 710 | 60 11 014 57 |                         |
|                                                  |    | 20              | 60 11 020 57              | 710 | 60 11 020 57 |                         |
|                                                  |    | 26              | 60 11 026 57              | 710 | 60 11 026 57 |                         |
|                                                  |    | 36              | 60 11 036 57              | 710 | 60 11 036 57 |                         |
|                                                  |    | 50              | 60 11 050 57              | 710 | 60 11 050 57 |                         |
|                                                  |    | 68              | 60 11 068 57              | 710 | 60 11 068 57 |                         |
| Without board lock                               | 32 |                 |                           |     |              |                         |
| With board lock                                  | 40 |                 |                           |     |              |                         |

|    | a     | b     | c     | d     | e     | f     | g     | h  | i  | j  | k  | l  | m  | n    |
|----|-------|-------|-------|-------|-------|-------|-------|----|----|----|----|----|----|------|
| 14 | 29.54 | 23.64 | 9.62  | 7.62  | 12.62 | 17.14 | 19.54 | 8  | 9  | 7  | 6  | 14 | 13 | 44.0 |
| 20 | 33.35 | 27.45 | 13.43 | 11.43 | 16.43 | 20.95 | 23.35 | 11 | 12 | 9  | 10 | 19 | 20 | 56.5 |
| 26 | 37.16 | 31.26 | 17.24 | 15.24 | 20.24 | 24.76 | 27.16 | 14 | 15 | 13 | 12 | 26 | 25 | 56.0 |
| 36 | 43.51 | 37.61 | 23.59 | 21.59 | 26.59 | 31.11 | 33.51 | 19 | 20 | 17 | 18 | 35 | 36 | 56.0 |
| 50 | 52.40 | 46.50 | 32.48 | 30.48 | 35.48 | 40.00 | 42.40 | 26 | 27 | 25 | 24 | 50 | 49 | 72.5 |
| 68 | 63.83 | 57.93 | 43.91 | 41.91 | 46.91 | 51.43 | 53.83 | 35 | 36 | 33 | 34 | 67 | 68 | 88.5 |

Technical drawing of a mechanical part with dimensions and position labels. The drawing shows a cross-section of a part with a central hole and a flange. Dimensions are given in millimeters (mm). The central hole has a diameter of  $\varnothing 2,8 \pm 0,08$  and a tolerance of  $\pm 0,05$ . The flange has a diameter of  $\varnothing 0,7 \pm 0,08$  and a tolerance of  $\pm 0,05$ . The part is divided into two main sections, Position 1 and Position 2, with various sub-positions labeled (j, k, l, m, h, i). Dimensions include 1,27, 2,54, 8,01, 1,905, and 4,71. The drawing also includes a note:  $\varnothing 2,8 \pm 0,08$  and  $\varnothing 0,7 \pm 0,08$ .

Diagram illustrating the connection of three 15-pin connectors. The first and third connectors are labeled "WITHOUT CONNECTOR" and the middle one is labeled "WITH CONNECTOR". Dimensions are given as 15 pcs, 300 pcs, and 15 pcs.

SMC  
technology

Number of contacts

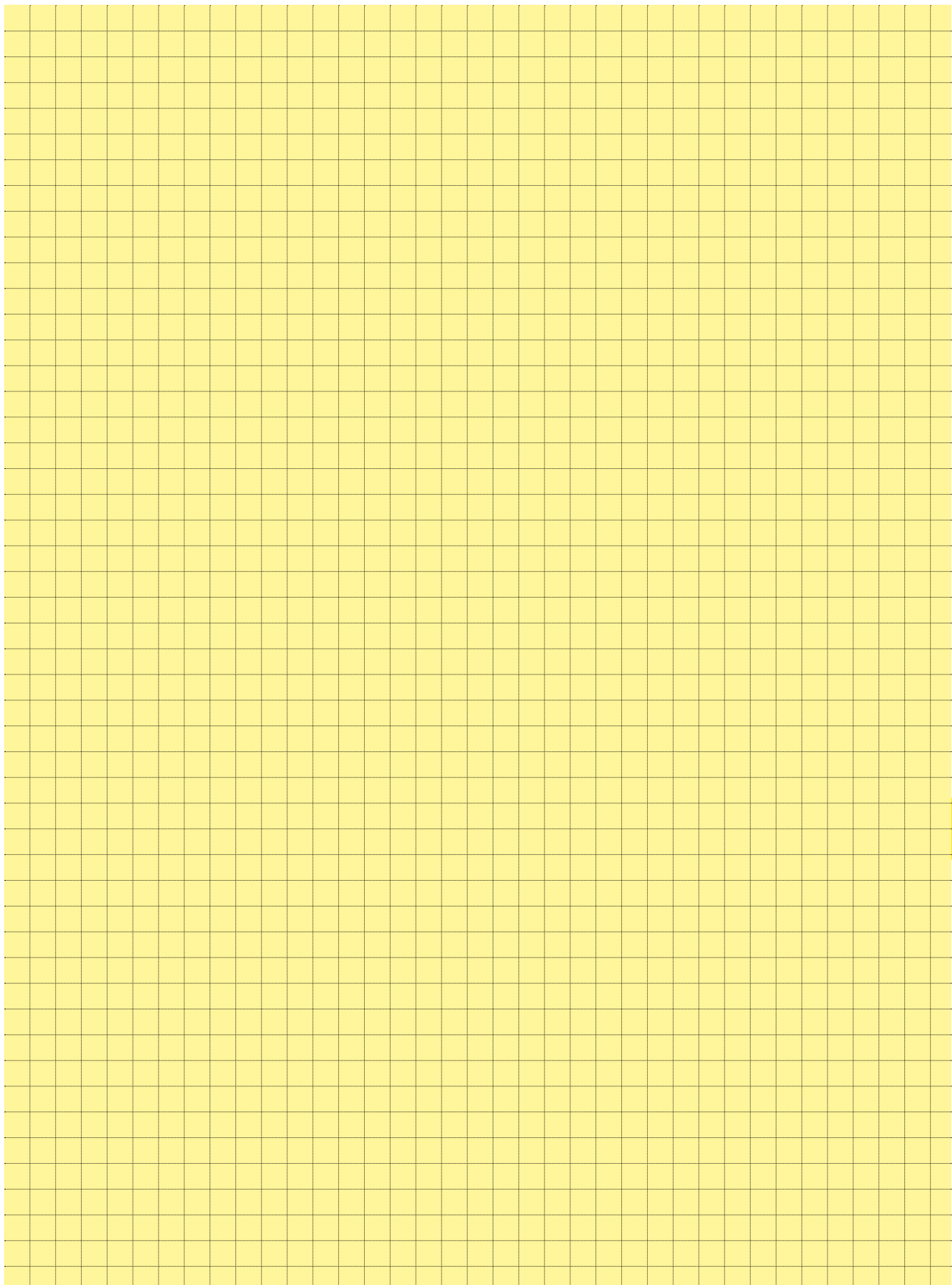
**68**



SMC female connectors, angled

| Identification                                                     | No. of contacts | Part No.       |
|--------------------------------------------------------------------|-----------------|----------------|
| SMC female connectors with angled solder pins and pick & place pad | 68              | 60 11 068 5739 |
|                                                                    | 68              | 60 11 068 5749 |

|                                      |                                              |                 |
|--------------------------------------|----------------------------------------------|-----------------|
| Dimensions                           | <p>with board lock    without board lock</p> |                 |
| Board drillings<br>(Components side) | <p>PCB layout: Component side</p>            |                 |
| Packaging<br>(1 tray = 18 pieces)    | <p>Bottom tray</p>                           | <p>Top tray</p> |
| Dimensions in mm                     |                                              |                 |



Number of contacts 9, 15, 25, 37  
UL recognized

Working current  
see current carrying capacity chart  
Stamped contacts 6.5 A max.

Test voltage  $U_{r.m.s.}$  1 kV

Clearance and creepage  $\geq 1.0$  mm

Contact resistance  $\leq 10$  m $\Omega$   
Insulation resistance  $\geq 10^{10}$   $\Omega$

Temperature range -55 °C ... +125 °C  
during reflow soldering max. +240 °C for 15 s  
The higher temperature limit includes the local ambient and heating effect of the contacts under load. All connectors are suitable for standard reflow processes.

Terminations  
a) Solder pins  $\varnothing$  0.6 mm for P.C.B. holes  $\varnothing$  0.8/1 mm  
b) Solder pins, angled 90°  $\varnothing$  0.6 mm for P.C.B. holes  $\varnothing$  1 mm

Materials  
Mouldings Thermoplastic resin, glass-fibre filled (PCT), UL 94-V0

Contacts Copper alloy

Contact surface  
Contact zone selectively plated according to performance level<sup>1)</sup>

Metal shell Plated steel

Insertion and withdrawal force  
Connector on P.C.B.  
Solder, straight with clips  
– insertion max. per connector: 60 N  
– withdrawal min. per connector: 10 N

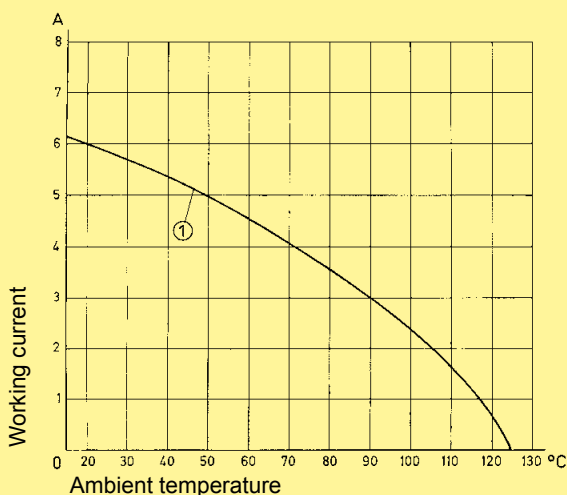
Mating force  
9 way  $\leq 30$  N  
15 way  $\leq 50$  N  
25 way  $\leq 83$  N  
37 way  $\leq 123$  N

## Current carrying capacity

The current carrying capacity is limited by maximum temperature of materials for inserts and contacts including terminals.

The current capacity-curve is valid for continuous, not interrupted current-loaded contacts of connectors when simultaneous power on all contacts is given, without exceeding the maximum temperature.

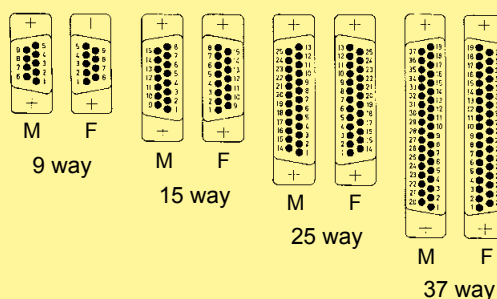
Control and test procedures according to DIN IEC 60 512.



Example: 25 way connector

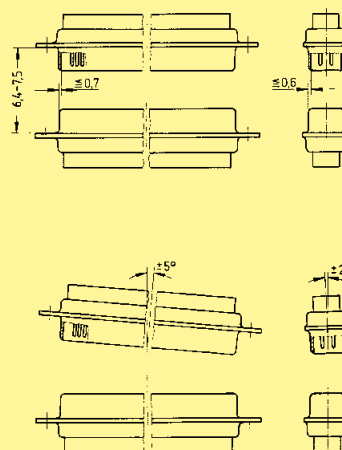
① Stamped contacts

## Contact arrangement View from termination side



M = Male connector  
F = Female connector

## Mating conditions as per DIN 41 652



<sup>1)</sup> Performance level 3, 50 mating cycles, no gas test

Performance level 2 as per CECC 75 301-802, 250 mating cycles, 4 days 4 mixed gas test – IEC 60 512

Performance level 1 as per CECC 75 301-802, 500 mating cycles, 10 days 4 mixed gas test – IEC 60 512

## Identification

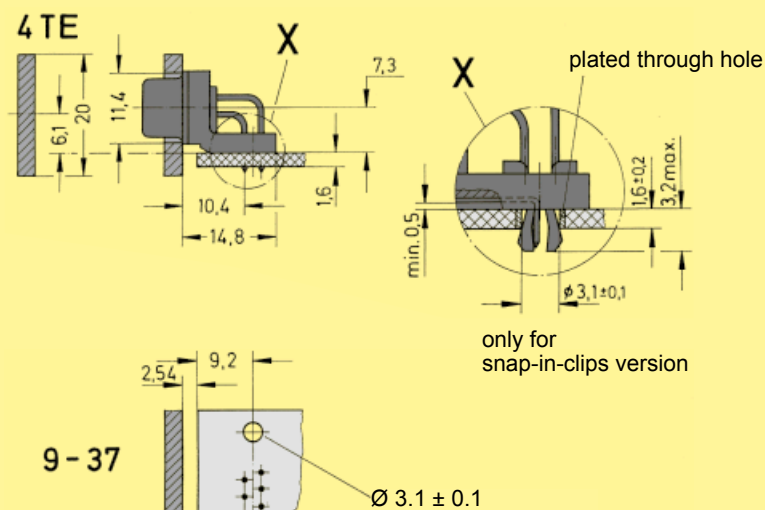
## Drawing

## Dimensions in mm

**Standard Versions**

Mounting height 7.3 mm

9-37 way  
for front panel  
4 units of width (TE)

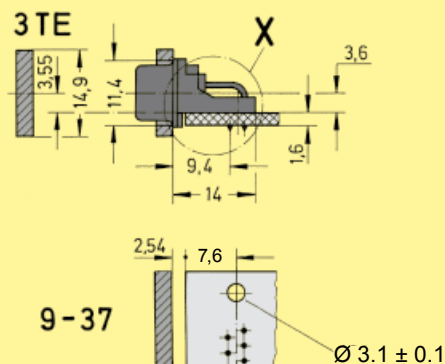


for connectors see pages 22.14 – 22.15

**Low-Profile Versions**

Mounting height 3.6 mm

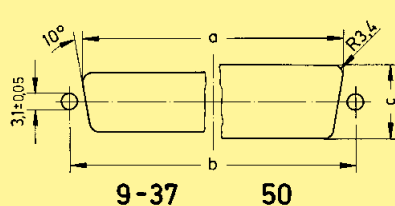
9-37 way  
for front panel  
3 units of width (TE)



for connectors see pages 22.16 – 22.17

**Panel cut out  
for front/rear mount**

Values are taken from the  
CECC 75301-802



## Front mount

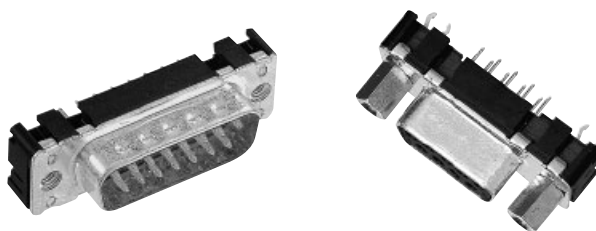
|    | $a_{\pm 0.2}$ | $b_{\pm 0.13}$ | $c_{\pm 0.2}$ |
|----|---------------|----------------|---------------|
| 9  | 22.2          | 25.0           | 12.3          |
| 15 | 30.5          | 33.3           | 12.3          |
| 25 | 44.3          | 47.0           | 12.3          |
| 37 | 60.7          | 63.5           | 12.3          |
| 50 | 58.3          | 61.1           | 15.1          |

## Rear mount

|    | $a_{\pm 0.2}$ | $b_{\pm 0.13}$ | $c_{\pm 0.2}$ |
|----|---------------|----------------|---------------|
| 9  | 20.5          | 25.0           | 11.4          |
| 15 | 28.8          | 33.3           | 11.4          |
| 25 | 42.5          | 47.0           | 11.4          |
| 37 | 59.1          | 63.5           | 11.4          |
| 50 | 56.3          | 61.1           | 14.1          |

Number of contacts

9–37



SMC stamped solder pins, straight with/without grounding board locks

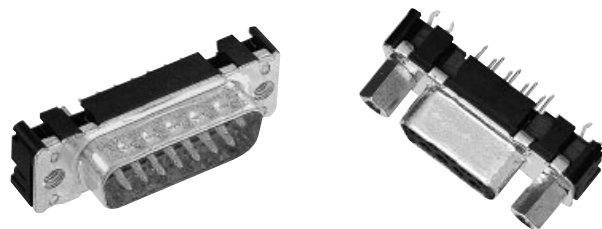
| Identification                                                                                  | No. of contacts     | Part No.                                                         |                                                                  |
|-------------------------------------------------------------------------------------------------|---------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| <b>Performance levels</b><br>Explanations see page 22.10<br>Other performance levels on request |                     | Performance level 3                                              | Performance level 2                                              |
| <b>Male connector</b><br>metal shell with dimples                                               |                     |                                                                  |                                                                  |
| Without grounding board locks                                                                   | 9<br>15<br>25<br>37 | 09 65 129 770<br>09 65 229 770<br>09 65 329 770<br>09 65 429 770 | 09 65 129 670<br>09 65 229 670<br>09 65 329 670<br>09 65 429 670 |
| With grounding board locks                                                                      | 9<br>15<br>25<br>37 | 09 65 169 771<br>09 65 269 771<br>09 65 369 771<br>09 65 469 771 | 09 65 169 671<br>09 65 269 671<br>09 65 369 671<br>09 65 469 671 |
| <b>Female connector</b><br>metal shell                                                          |                     |                                                                  |                                                                  |
| Without grounding board locks                                                                   | 9<br>15<br>25<br>37 | 09 66 115 750<br>09 66 215 750<br>09 66 315 750<br>09 66 415 750 | 09 66 115 650<br>09 66 215 650<br>09 66 315 650<br>09 66 415 650 |
| With grounding board locks                                                                      | 9<br>15<br>25<br>37 | 09 66 155 751<br>09 66 255 751<br>09 66 355 751<br>09 66 455 751 | 09 66 155 651<br>09 66 255 651<br>09 66 355 651<br>09 66 455 651 |
| Please insert digit for flange thread<br>or fitted female screw locks                           |                     |                                                                  |                                                                  |
| M3 ▶ 1<br>4-40 UNC ▶ 2<br>fitted screw locks 4-40 UNC ▶ 3 <sup>1)</sup>                         |                     |                                                                  |                                                                  |

<sup>1)</sup> Fitted screw locks 4-40 UNC not normally kept in stock for performance level 3  
 Connector dimensions see page 22.13. Mating conditions see page 22.10.



Number of contacts

9–37



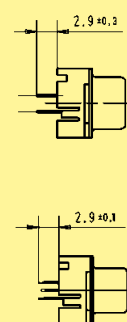
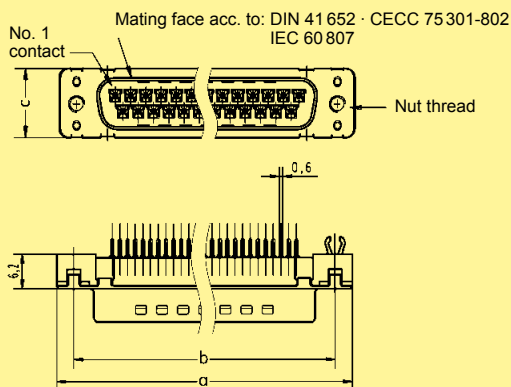
SMC stamped solder pins, straight with/without grounding board locks

## Identification

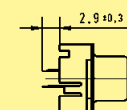
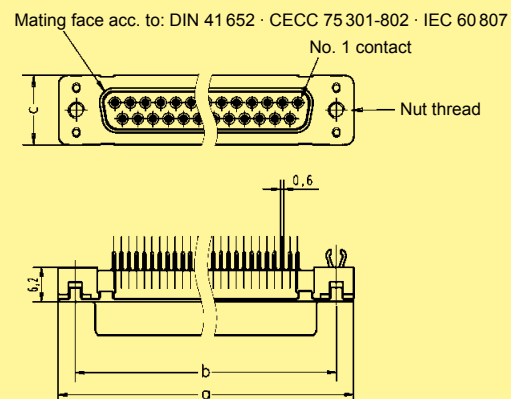
## Drawing

## Dimensions in mm

## Male connector

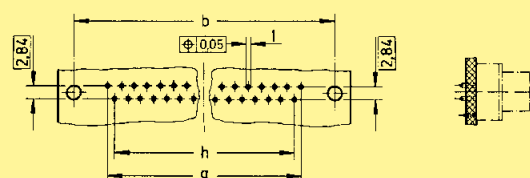


## Female connector



|    | a    | b <sub>±0.1</sub> | c    | g                 | h                 |
|----|------|-------------------|------|-------------------|-------------------|
| 9  | 30.9 | 25.0              | 12.5 | 4 x 2.74 = 10.96  | 3 x 2.74 = 8.22   |
| 15 | 39.2 | 33.3              | 12.5 | 7 x 2.74 = 19.18  | 6 x 2.74 = 16.44  |
| 25 | 53.1 | 47.0              | 12.5 | 12 x 2.76 = 33.12 | 11 x 2.76 = 30.36 |
| 37 | 69.4 | 63.5              | 12.5 | 18 x 2.76 = 49.68 | 17 x 2.76 = 46.92 |

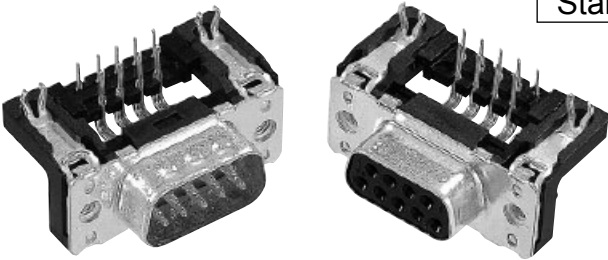
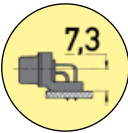
## Board drillings



Number of contacts

9–37

Mounting height



Standard Versions

SMC stamped solder pins, angled with grounding board locks

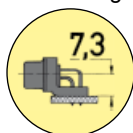
| Identification                                                                                  | No. of contacts                 | Part No.            |                     |
|-------------------------------------------------------------------------------------------------|---------------------------------|---------------------|---------------------|
| <b>Performance levels</b><br>Explanations see page 22.10<br>Other performance levels on request |                                 | Performance level 3 | Performance level 2 |
| <b>Male connector</b><br>metal shell with dimples                                               |                                 | 2.84 mm pitch       | 2.84 mm pitch       |
|                                                                                                 | 9                               | 09 65 167 781 . 1)  | 09 65 167 681 . 1)  |
|                                                                                                 | 15                              | 09 65 267 781 . 1)  | 09 65 267 681 . 1)  |
|                                                                                                 | 25                              | 09 65 367 781 . 1)  | 09 65 367 681 . 1)  |
|                                                                                                 | 37                              | 09 65 467 781 . 1)  | 09 65 467 681 . 1)  |
|                                                                                                 |                                 | 2.54 mm pitch       | 2.54 mm pitch       |
|                                                                                                 | 9                               | 09 65 166 781 .     | 09 65 166 681 .     |
|                                                                                                 | 15                              | 09 65 266 781 .     | 09 65 266 681 .     |
|                                                                                                 | 25                              | 09 65 366 781 .     | 09 65 366 681 .     |
|                                                                                                 | 37                              | 09 65 466 781 .     | 09 65 466 681 .     |
| <b>Female connector</b><br>metal shell                                                          |                                 | 2.84 mm pitch       | 2.84 mm pitch       |
|                                                                                                 | 9                               | 09 66 157 761 . 1)  | 09 66 157 661 . 1)  |
|                                                                                                 | 15                              | 09 66 257 761 . 1)  | 09 66 257 661 . 1)  |
|                                                                                                 | 25                              | 09 66 357 761 . 1)  | 09 66 357 661 . 1)  |
|                                                                                                 | 37                              | 09 66 457 761 . 1)  | 09 66 457 661 . 1)  |
|                                                                                                 |                                 | 2.54 mm pitch       | 2.54 mm pitch       |
|                                                                                                 | 9                               | 09 66 156 761 .     | 09 66 156 661 .     |
|                                                                                                 | 15                              | 09 66 256 761 .     | 09 66 256 661 .     |
|                                                                                                 | 25                              | 09 66 356 761 .     | 09 66 356 661 .     |
|                                                                                                 | 37                              | 09 66 456 761 .     | 09 66 456 661 .     |
| Please insert digit for flange thread or fitted female screw locks                              |                                 |                     |                     |
|                                                                                                 | Ø 3.1 mm hole ▶ 0 <sup>1)</sup> |                     |                     |
|                                                                                                 | M3 ▶ 1                          |                     |                     |
|                                                                                                 | 4-40 UNC ▶ 2                    |                     |                     |
| fitted screw locks 4-40 UNC ▶ 3                                                                 |                                 |                     |                     |

<sup>1)</sup> Not normally kept in stock

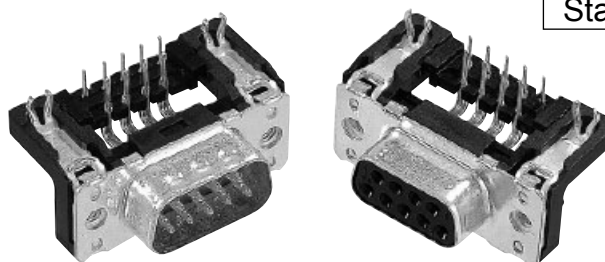
Number of contacts

## 9–37

Mounting height



Standard Versions



SMC stamped solder pins, angled with grounding board locks

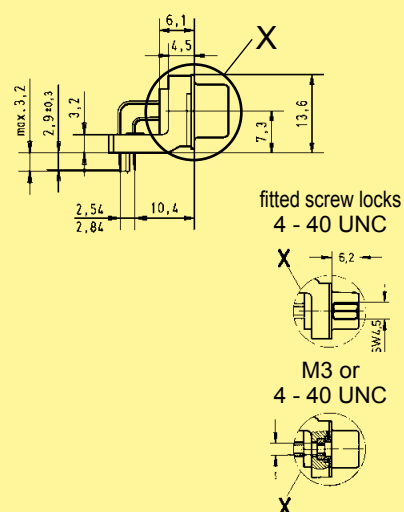
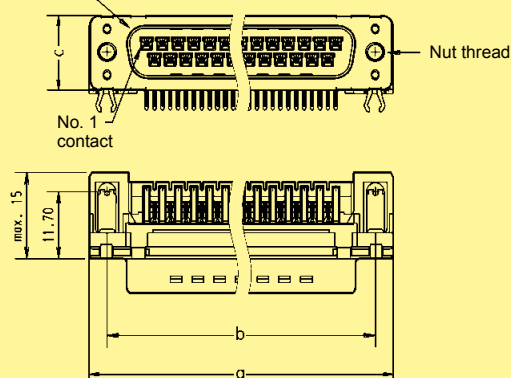
Identification

Drawing

Dimensions in mm

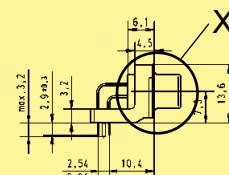
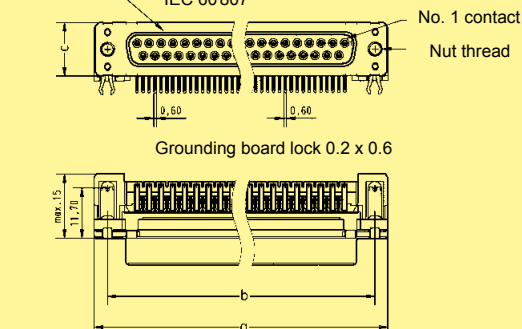
Male connector

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807

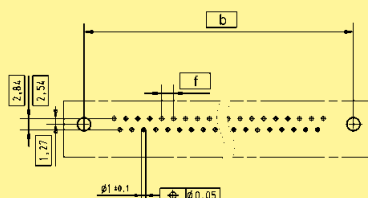


Female connector

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807



Board drillings

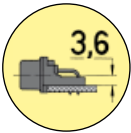


|    | a     | b±0.1 | c     | f    |
|----|-------|-------|-------|------|
| 9  | 30.90 | 25.00 | 12.50 | 2.74 |
| 15 | 39.20 | 33.30 | 12.50 | 2.74 |
| 25 | 53.10 | 47.00 | 12.50 | 2.76 |
| 37 | 69.40 | 63.50 | 12.50 | 2.76 |

Number of contacts

9–37

Mounting height



Low-Profile Versions



SMC stamped solder pins, angled with grounding board locks

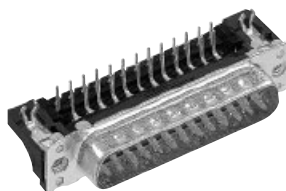
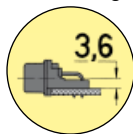
| Identification                                                                                | No. of contacts | Part No.               |                        |
|-----------------------------------------------------------------------------------------------|-----------------|------------------------|------------------------|
| <b>Performance levels</b><br>Explanations see page 22.10<br>Other contact surfaces on request |                 | Performance level<br>3 | Performance level<br>2 |
| <b>Male connector</b><br>metal shell with dimples                                             |                 |                        |                        |
|                                                                                               | 9               | 09 65 166 781 .        | 09 65 166 681 .        |
|                                                                                               | 15              | 09 65 266 781 .        | 09 65 266 681 .        |
|                                                                                               | 25              | 09 65 366 781 .        | 09 65 366 681 .        |
|                                                                                               | 37              | 09 65 466 781 .        | 09 65 466 681 .        |
| <b>Female connector</b><br>metal shell                                                        |                 |                        |                        |
|                                                                                               | 9               | 09 66 156 761 .        | 09 66 156 661 .        |
|                                                                                               | 15              | 09 66 256 761 .        | 09 66 256 661 .        |
|                                                                                               | 25              | 09 66 356 761 .        | 09 66 356 661 .        |
|                                                                                               | 37              | 09 66 456 761 .        | 09 66 456 661 .        |
| Please insert digit for flange thread or fitted female screw locks                            |                 |                        |                        |
| M3 ▶                                                                                          | 5               |                        |                        |
| 4-40 UNC ▶                                                                                    | 6               |                        |                        |
| fitted screw locks 4-40 UNC ▶                                                                 | 7               |                        |                        |

## Low-Profile Versions

Number of contacts

Mounting height

9–37



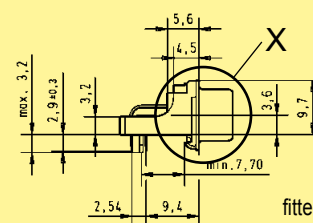
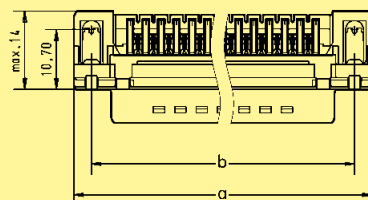
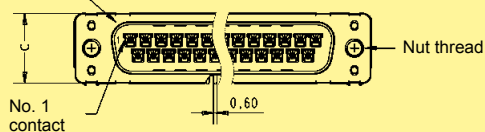
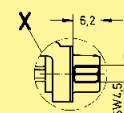
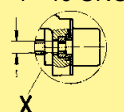
SMC stamped solder pins, angled with grounding board locks

Identification

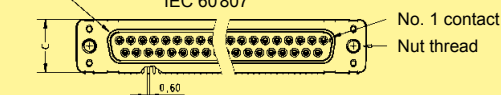
Drawing

Dimensions in mm

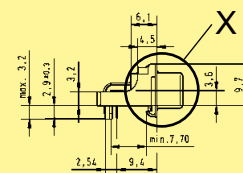
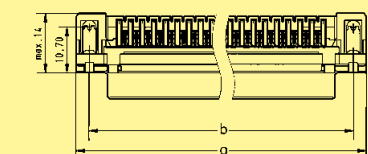
## Male connector

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807

fitted screw locks  
4 - 40 UNC

M3 or  
4 - 40 UNC


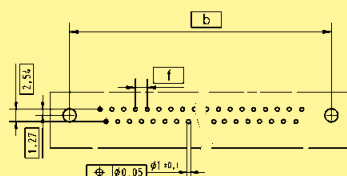
## Female connector

Mating face acc. to: DIN 41 652 · CECC 75 301-802  
IEC 60 807


Grounding board lock 0.2 x 0.6



## Board drillings



|    | a     | b±0.1 | c     | f    |
|----|-------|-------|-------|------|
| 9  | 30.90 | 25.00 | 12.50 | 2.74 |
| 15 | 39.20 | 33.30 | 12.50 | 2.74 |
| 25 | 53.10 | 47.00 | 12.50 | 2.76 |
| 37 | 69.40 | 63.50 | 12.50 | 2.76 |

Number of contacts 6, 10, 14, 16, 20, 24, 26, 30, 34, 40, 50, 60, 64

Contact arrangement straight, angled

Contact length 2.9 mm

Approvals IEC 60 603-13  
DIN EN 60 603-13  
D 2632  
BT 224  
NFC 93-428 (HE 10)

Pitch 2.54 mm [0.100"]

Working current 1 A

Working voltage 500 V  
for pollution degree 1

Test voltage  $U_{r.m.s.}$  1 kV

Contact resistance  $\leq 20 \text{ m}\Omega$

Insulation resistance  $\geq 10^9 \Omega$

Temperature range -55 °C ... + 125 °C  
during reflow soldering max. + 240 °C for 60 s  
The higher temperature limit includes the local ambient and heating effect of the contacts under load

Terminations For pcb hole  $\varnothing 1 \pm 0.1 \text{ mm}$   
DIN IEC 52 141  
Diagonal: 0.79 mm

Materials  
Moulding Thermoplastic resin (PCT)  
UL 94-V0

Contact surface  
Contact zone gold-plated according to performance level<sup>1)</sup>

#### Options on request

Colour of connectors black

For pick & place process Tape & Reel packaging  
with/without vacuum plate  
Tube packaging  
with/without vacuum plate

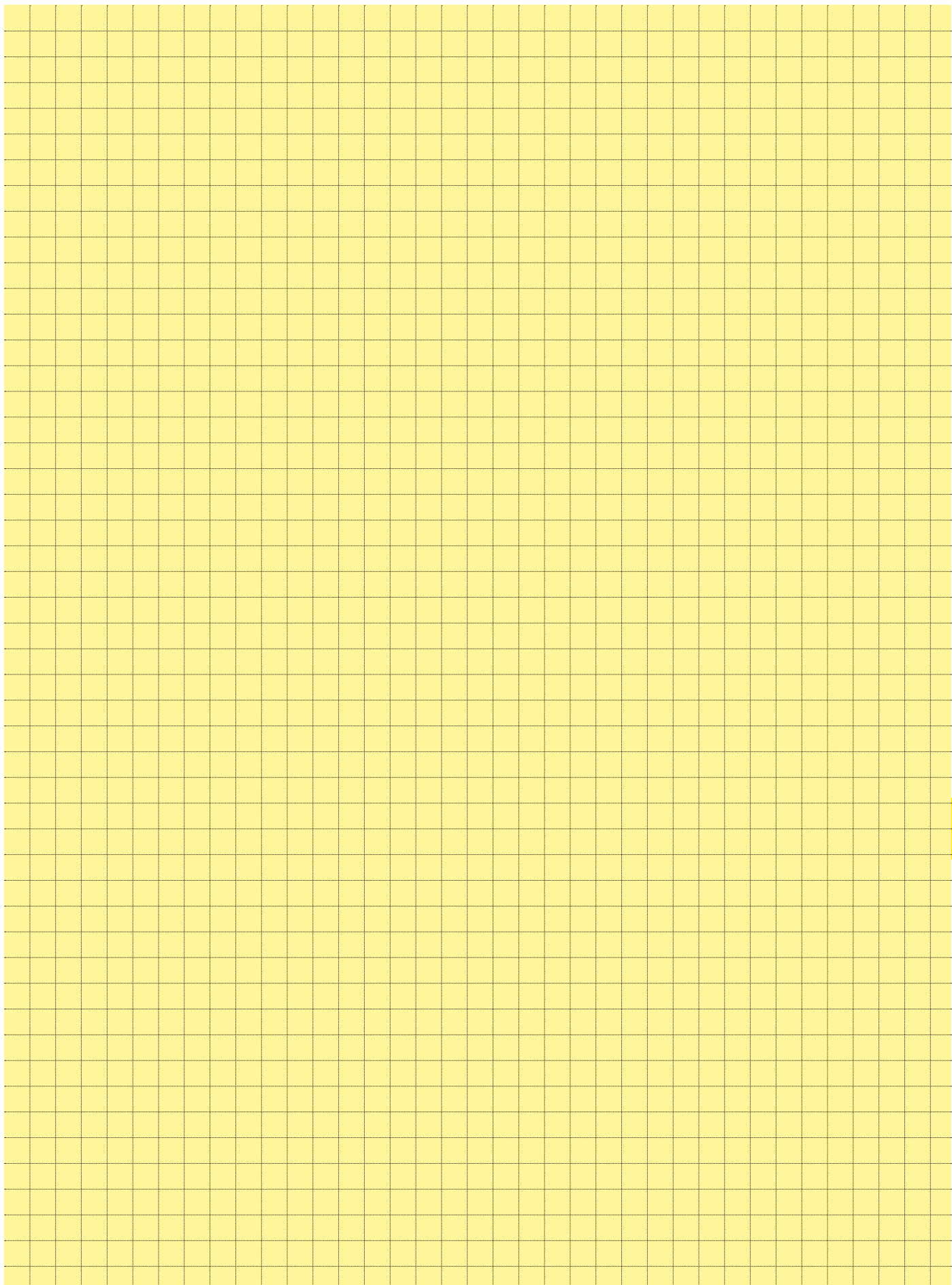
**New**

#### Insertion and withdrawal forces

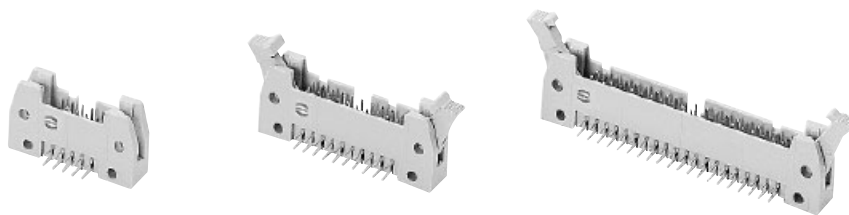
| Number of contacts | Maximum force [N]         |                     |
|--------------------|---------------------------|---------------------|
|                    | Performance level 1 and 2 | Performance level 3 |
| 6                  | 12                        | 18                  |
| 10                 | 20                        | 30                  |
| 14                 | 28                        | 42                  |
| 16                 | 32                        | 48                  |
| 20                 | 40                        | 60                  |
| 24                 | 48                        | 72                  |
| 26                 | 52                        | 78                  |
| 30                 | 60                        | 90                  |
| 34                 | 68                        | 102                 |
| 40                 | 80                        | 120                 |
| 50                 | 100                       | 150                 |
| 60                 | 120                       | 180                 |
| 64                 | 128                       | 192                 |



<sup>1)</sup> Performance level 3 as per IEC 60 603-13,  $\geq 50$  mating cycles, no gas test  
Performance level 2 as per IEC 60 603-13,  $\geq 250$  mating cycles, 4 days gas test  
S4, plating = 0.76  $\mu\text{m}$  (30  $\mu\text{inch}$ ) Au or PdNi equivalent



6-64



## Identification

No. of contacts

Part No.

### Without levers

With short levers

With long levers

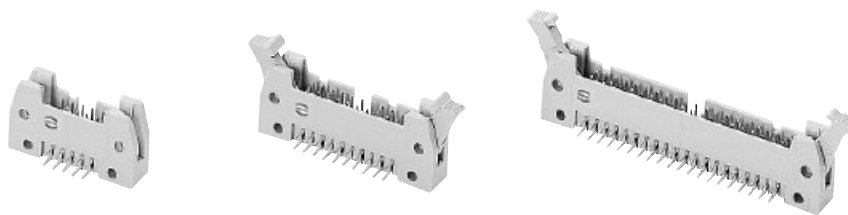
Length: 2.9 mm

|    |           |       |           |       |           |       |
|----|-----------|-------|-----------|-------|-----------|-------|
| 6  | 09 19 506 | └ 923 | 09 19 506 | └ 913 | 09 19 506 | └ 903 |
| 10 | 09 19 510 | └ 923 | 09 19 510 | └ 913 | 09 19 510 | └ 903 |
| 14 | 09 19 514 | └ 923 | 09 19 514 | └ 913 | 09 19 514 | └ 903 |
| 16 | 09 19 516 | └ 923 | 09 19 516 | └ 913 | 09 19 516 | └ 903 |
| 20 | 09 19 520 | └ 923 | 09 19 520 | └ 913 | 09 19 520 | └ 903 |
| 24 | 09 19 524 | └ 923 | 09 19 524 | └ 913 | 09 19 524 | └ 903 |
| 26 | 09 19 526 | └ 923 | 09 19 526 | └ 913 | 09 19 526 | └ 903 |
| 30 | 09 19 530 | └ 923 | 09 19 530 | └ 913 | 09 19 530 | └ 903 |
| 34 | 09 19 534 | └ 923 | 09 19 534 | └ 913 | 09 19 534 | └ 903 |
| 40 | 09 19 540 | └ 923 | 09 19 540 | └ 913 | 09 19 540 | └ 903 |
| 50 | 09 19 550 | └ 923 | 09 19 550 | └ 913 | 09 19 550 | └ 903 |
| 60 | 09 19 560 | └ 923 | 09 19 560 | └ 913 | 09 19 560 | └ 903 |
| 64 | 09 19 564 | └ 923 | 09 19 564 | └ 913 | 09 19 564 | └ 903 |



Number of contacts

6-64



SMC male header with angled solder pins

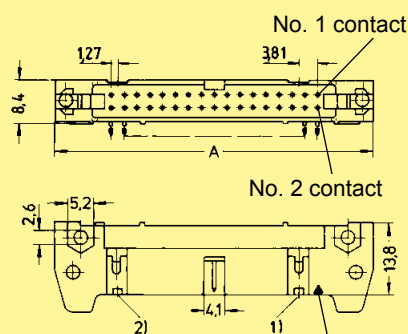
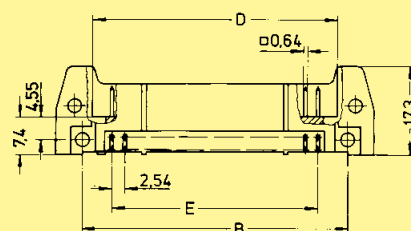
Identification

Drawing

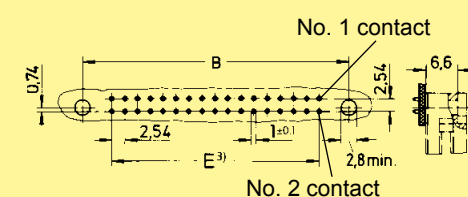
Dimensions in mm

SMC male header

| No. of contacts | A     | B     | D     | E                 | F     | G     |
|-----------------|-------|-------|-------|-------------------|-------|-------|
| 6               | 26.9  | 16.76 | 12.45 | 2.54 x 2 = 5.08   | 36.9  | 40.3  |
| 10              | 32.0  | 21.84 | 17.53 | 2.54 x 4 = 10.16  | 42.0  | 45.4  |
| 14              | 37.1  | 26.92 | 22.61 | 2.54 x 6 = 15.24  | 47.1  | 50.4  |
| 16              | 39.6  | 29.46 | 25.15 | 2.54 x 7 = 17.78  | 49.6  | 53.0  |
| 20              | 44.7  | 34.54 | 30.23 | 2.54 x 9 = 22.86  | 54.7  | 58.1  |
| 24              | 49.8  | 39.62 | 35.91 | 2.54 x 11 = 27.94 | 59.8  | 63.2  |
| 26              | 52.3  | 42.16 | 37.85 | 2.54 x 12 = 30.48 | 62.3  | 65.7  |
| 30              | 57.7  | 47.24 | 43.83 | 2.54 x 14 = 35.56 | 68.2  | 68.6  |
| 34              | 62.5  | 52.32 | 48.01 | 2.54 x 16 = 40.64 | 72.5  | 75.8  |
| 40              | 70.1  | 59.94 | 55.63 | 2.54 x 19 = 48.26 | 80.1  | 83.5  |
| 50              | 82.8  | 72.64 | 68.33 | 2.54 x 24 = 60.96 | 92.8  | 96.2  |
| 60              | 95.5  | 85.34 | 81.03 | 2.54 x 29 = 73.66 | 105.5 | 108.9 |
| 64              | 100.6 | 90.42 | 86.11 | 2.54 x 31 = 78.74 | 110.6 | 113.9 |



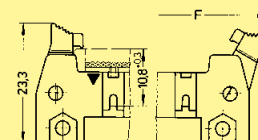
Marking No. 1 contact



Board drillings

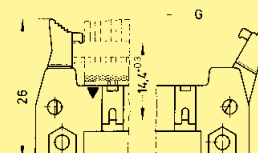
Short levers

for use with female connector without strain relief clamp



Long levers

for use with female connector with strain relief clamp



a) Solder pins for 1 ± 0.1 mm dia. hole

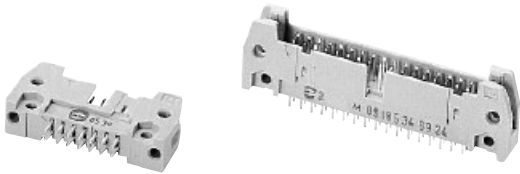
<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header

<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance: ± 0.1

Number of contacts

6–64



SMC male header with straight solder pins

| Identification                                              | No. of contacts | Part No.       |       |                   |       |                  |       |
|-------------------------------------------------------------|-----------------|----------------|-------|-------------------|-------|------------------|-------|
|                                                             |                 | Without levers |       | With short levers |       | With long levers |       |
| SMC male header with straight solder pins<br>Length: 2.9 mm | 6               | 09 19 506      | └ 924 | 09 19 506         | └ 914 | 09 19 506        | └ 904 |
|                                                             | 10              | 09 19 510      | └ 924 | 09 19 510         | └ 914 | 09 19 510        | └ 904 |
|                                                             | 14              | 09 19 514      | └ 924 | 09 19 514         | └ 914 | 09 19 514        | └ 904 |
|                                                             | 16              | 09 19 516      | └ 924 | 09 19 516         | └ 914 | 09 19 516        | └ 904 |
|                                                             | 20              | 09 19 520      | └ 924 | 09 19 520         | └ 914 | 09 19 520        | └ 904 |
|                                                             | 24              | 09 19 524      | └ 924 | 09 19 524         | └ 914 | 09 19 524        | └ 904 |
|                                                             | 26              | 09 19 526      | └ 924 | 09 19 526         | └ 914 | 09 19 526        | └ 904 |
|                                                             | 30              | 09 19 530      | └ 924 | 09 19 530         | └ 914 | 09 19 530        | └ 904 |
|                                                             | 34              | 09 19 534      | └ 924 | 09 19 534         | └ 914 | 09 19 534        | └ 904 |
|                                                             | 40              | 09 19 540      | └ 924 | 09 19 540         | └ 914 | 09 19 540        | └ 904 |
|                                                             | 50              | 09 19 550      | └ 924 | 09 19 550         | └ 914 | 09 19 550        | └ 904 |
|                                                             | 60              | 09 19 560      | └ 924 | 09 19 560         | └ 914 | 09 19 560        | └ 904 |
|                                                             | 64              | 09 19 564      | └ 924 | 09 19 564         | └ 914 | 09 19 564        | └ 904 |
|                                                             |                 |                |       |                   |       |                  |       |
|                                                             |                 |                |       |                   |       |                  |       |
|                                                             |                 |                |       |                   |       |                  |       |
|                                                             |                 |                |       |                   |       |                  |       |
|                                                             |                 |                |       |                   |       |                  |       |

SMC  
technology

\* Not normally kept in stock  
For accessories see page 22.30  
For dimensions see page 22.23

For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

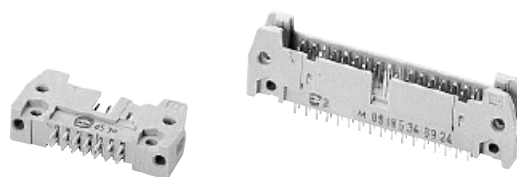
7  
6  
5

7  
6  
5

7  
6  
5

Number of contacts

6-64



SMC male header with straight solder pins

Identification

Drawing

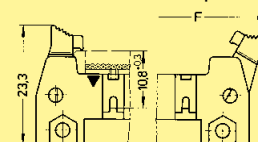
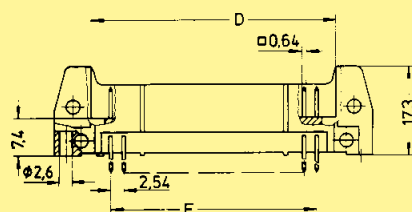
Dimensions in mm

SMC male header

| No. of contacts | A     | C     | D     | E                 | F     | G     |
|-----------------|-------|-------|-------|-------------------|-------|-------|
| 6               | 26.9  | 22.86 | 12.45 | 2.54 x 2 = 5.08   | 36.9  | 40.3  |
| 10              | 32.0  | 27.94 | 17.53 | 2.54 x 4 = 10.16  | 42.0  | 45.4  |
| 14              | 37.1  | 33.02 | 22.61 | 2.54 x 6 = 15.24  | 47.1  | 50.4  |
| 16              | 39.6  | 35.56 | 25.15 | 2.54 x 7 = 17.78  | 49.6  | 53.0  |
| 20              | 44.7  | 40.64 | 30.23 | 2.54 x 9 = 22.86  | 54.7  | 58.1  |
| 24              | 49.8  | 45.72 | 35.31 | 2.54 x 11 = 27.94 | 59.8  | 63.2  |
| 26              | 52.3  | 48.26 | 37.85 | 2.54 x 12 = 30.48 | 62.3  | 65.7  |
| 30              | 57.7  | 53.34 | 43.83 | 2.54 x 14 = 35.56 | 68.2  | 68.6  |
| 34              | 62.5  | 58.42 | 48.01 | 2.54 x 16 = 40.64 | 72.5  | 75.8  |
| 40              | 70.1  | 66.04 | 55.63 | 2.54 x 19 = 48.26 | 80.1  | 83.5  |
| 50              | 82.8  | 78.74 | 68.33 | 2.54 x 24 = 60.96 | 92.8  | 96.2  |
| 60              | 95.5  | 91.44 | 81.03 | 2.54 x 29 = 73.66 | 105.5 | 108.9 |
| 64              | 100.6 | 96.52 | 86.11 | 2.54 x 31 = 78.74 | 110.6 | 113.9 |

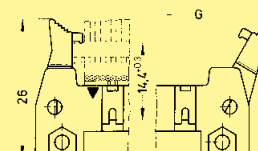
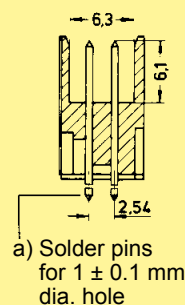
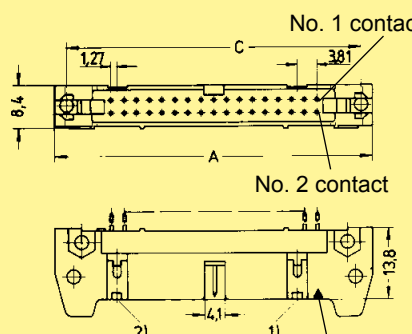
Short levers

for use with female connector without strain relief clamp



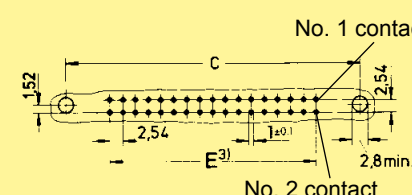
Long levers

for use with female connector with strain relief clamp



a) Solder pins for 1 ± 0.1 mm dia. hole

Marking No. 1 contact



Board drillings

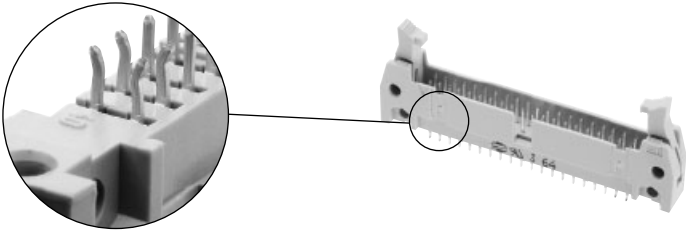
<sup>1)</sup> No polarization slot for 6, 10 or 14 way male header

<sup>2)</sup> No polarization slot for 6 way male header

<sup>3)</sup> Pitch tolerance: ± 0.1

Number of contacts

6–64



SMC male header with straight solder pins, kinked

| Identification                                                      | No. of contacts | Part No.       |       |                   |       |                  |       |
|---------------------------------------------------------------------|-----------------|----------------|-------|-------------------|-------|------------------|-------|
|                                                                     |                 | Without levers |       | With short levers |       | With long levers |       |
| SMC male header with straight solder pins, kinked<br>Length: 2.9 mm | 6               | 09 19 506      | └ 024 | 09 19 506         | └ 014 | 09 19 506        | └ 004 |
|                                                                     | 10              | 09 19 510      | └ 024 | 09 19 510         | └ 014 | 09 19 510        | └ 004 |
|                                                                     | 14              | 09 19 514      | └ 024 | 09 19 514         | └ 014 | 09 19 514        | └ 004 |
|                                                                     | 16              | 09 19 516      | └ 024 | 09 19 516         | └ 014 | 09 19 516        | └ 004 |
|                                                                     | 20              | 09 19 520      | └ 024 | 09 19 520         | └ 014 | 09 19 520        | └ 004 |
|                                                                     | 24              | 09 19 524      | └ 024 | 09 19 524         | └ 014 | 09 19 524        | └ 004 |
|                                                                     | 26              | 09 19 526      | └ 024 | 09 19 526         | └ 014 | 09 19 526        | └ 004 |
|                                                                     | 30              | 09 19 530      | └ 024 | 09 19 530         | └ 014 | 09 19 530        | └ 004 |
|                                                                     | 34              | 09 19 534      | └ 024 | 09 19 534         | └ 014 | 09 19 534        | └ 004 |
|                                                                     | 40              | 09 19 540      | └ 024 | 09 19 540         | └ 014 | 09 19 540        | └ 004 |
|                                                                     | 50              | 09 19 550      | └ 024 | 09 19 550         | └ 014 | 09 19 550        | └ 004 |
|                                                                     | 60              | 09 19 560      | └ 024 | 09 19 560         | └ 014 | 09 19 560        | └ 004 |
|                                                                     | 64              | 09 19 564      | └ 024 | 09 19 564         | └ 014 | 09 19 564        | └ 004 |
|                                                                     |                 |                |       |                   |       |                  |       |
|                                                                     |                 |                |       |                   |       |                  |       |
|                                                                     |                 |                |       |                   |       |                  |       |
|                                                                     |                 |                |       |                   |       |                  |       |

SMC  
technology

\* Not normally kept in stock  
For accessories see page 22.30  
For dimensions see page 22.25

For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

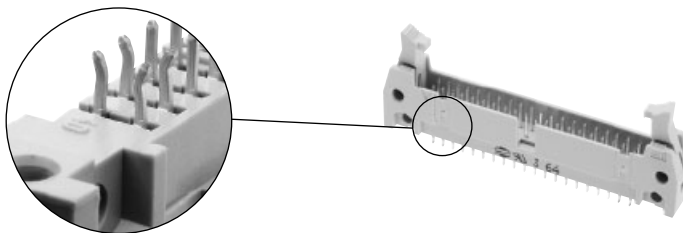
7  
6  
5

7  
6  
5

7  
6  
5

Number of contacts

# 6-64


SMC male header with straight solder pins, kinked

Identification

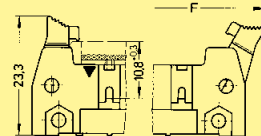
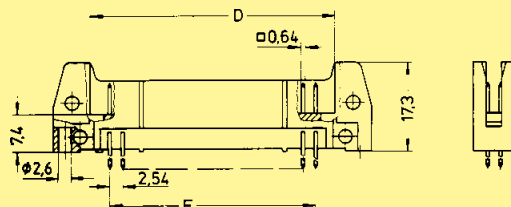
Drawing

Dimensions in mm

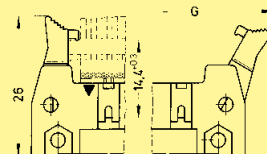
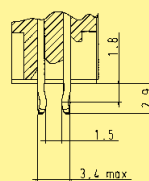
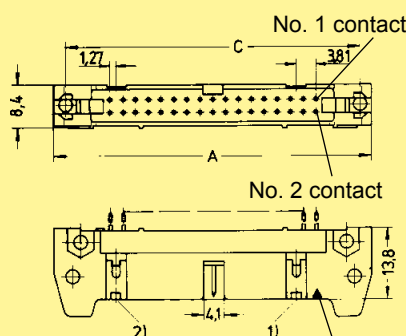
SMC male header

| No. of contacts | A     | C     | D     | E                 | F     | G     |
|-----------------|-------|-------|-------|-------------------|-------|-------|
| 6               | 26.9  | 22.86 | 12.45 | 2.54 x 2 = 5.08   | 36.9  | 40.3  |
| 10              | 32.0  | 27.94 | 17.53 | 2.54 x 4 = 10.16  | 42.0  | 45.4  |
| 14              | 37.1  | 33.02 | 22.61 | 2.54 x 6 = 15.24  | 47.1  | 50.4  |
| 16              | 39.6  | 35.56 | 25.15 | 2.54 x 7 = 17.78  | 49.6  | 53.0  |
| 20              | 44.7  | 40.64 | 30.23 | 2.54 x 9 = 22.86  | 54.7  | 58.1  |
| 24              | 49.8  | 45.72 | 35.91 | 2.54 x 11 = 27.94 | 59.8  | 63.2  |
| 26              | 52.3  | 48.26 | 37.85 | 2.54 x 12 = 30.48 | 62.3  | 65.7  |
| 30              | 57.7  | 53.34 | 43.83 | 2.54 x 14 = 35.56 | 68.2  | 68.6  |
| 34              | 62.5  | 58.42 | 48.01 | 2.54 x 16 = 40.64 | 72.5  | 75.8  |
| 40              | 70.1  | 66.04 | 55.63 | 2.54 x 19 = 48.26 | 80.1  | 83.5  |
| 50              | 82.8  | 78.74 | 68.33 | 2.54 x 24 = 60.96 | 92.8  | 96.2  |
| 60              | 95.5  | 91.44 | 81.03 | 2.54 x 29 = 73.66 | 105.5 | 108.9 |
| 64              | 100.6 | 96.52 | 86.11 | 2.54 x 31 = 78.74 | 110.6 | 113.9 |

Short levers

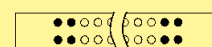
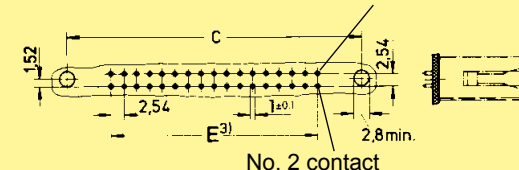
for use with female connector without strain relief clamp


Long levers

for use with female connector with strain relief clamp


Marking No. 1 contact

No. 1 contact



Board drillings

● Kinked contact: pcb thickness from 1.50 to 1.94 mm after Cu + Sn plating with non-remelted through holes  $\varnothing$  0.80 to  $\varnothing$  0.95 mm. Max. insertion force = 125 N. Min. retention force = 6 N.

○ Non-kinked contact: Solder pins for pcb connections  $\varnothing$  1  $\pm$  0.1 mm as per IEC 60603-13.

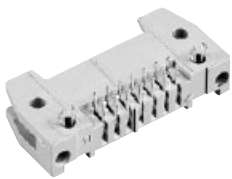
¹) No polarization slot for 6, 10 or 14 way male header

²) No polarization slot for 6 way male header

³) Pitch tolerance:  $\pm$  0.1

Number of contacts

6–64



SMC male header with angled solder pins and board lock

| Identification                                                                                                                                                                                                                                                                 | No. of contacts | Part No.       |        |                   |        |                  |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------|--------|-------------------|--------|------------------|--------|
|                                                                                                                                                                                                                                                                                |                 | Without levers |        | With short levers |        | With long levers |        |
| <div>SMC male header with angled solder pins and pcb board lock</div> <div>Length: 2.9 mm for 1.6 mm pcb thickness</div> <div>To hold the connector on the pcb before the soldering process, two board locks have been added on the male header with angled solder pins.</div> | 6               | 09 19 506      | └ 973* | 09 19 506         | └ 963* | 09 19 506        | └ 953* |
|                                                                                                                                                                                                                                                                                | 10              | 09 19 510      | └ 973* | 09 19 510         | └ 963* | 09 19 510        | └ 953* |
|                                                                                                                                                                                                                                                                                | 14              | 09 19 514      | └ 973* | 09 19 514         | └ 963* | 09 19 514        | └ 953* |
|                                                                                                                                                                                                                                                                                | 16              | 09 19 516      | └ 973* | 09 19 516         | └ 963* | 09 19 516        | └ 953* |
|                                                                                                                                                                                                                                                                                | 20              | 09 19 520      | └ 973* | 09 19 520         | └ 963* | 09 19 520        | └ 953* |
|                                                                                                                                                                                                                                                                                | 24              | 09 19 524      | └ 973* | 09 19 524         | └ 963* | 09 19 524        | └ 953* |
|                                                                                                                                                                                                                                                                                | 26              | 09 19 526      | └ 973* | 09 19 526         | └ 963* | 09 19 526        | └ 953* |
|                                                                                                                                                                                                                                                                                | 30              | 09 19 530      | └ 973* | 09 19 530         | └ 963* | 09 19 530        | └ 953* |
|                                                                                                                                                                                                                                                                                | 34              | 09 19 534      | └ 973* | 09 19 534         | └ 963* | 09 19 534        | └ 953* |
|                                                                                                                                                                                                                                                                                | 40              | 09 19 540      | └ 973* | 09 19 540         | └ 963* | 09 19 540        | └ 953* |
|                                                                                                                                                                                                                                                                                | 50              | 09 19 550      | └ 973* | 09 19 550         | └ 963* | 09 19 550        | └ 953* |
|                                                                                                                                                                                                                                                                                | 60              | 09 19 560      | └ 973* | 09 19 560         | └ 963* | 09 19 560        | └ 953* |
|                                                                                                                                                                                                                                                                                | 64              | 09 19 564      | └ 973* | 09 19 564         | └ 963* | 09 19 564        | └ 953* |
|                                                                                                                                                                                                                                                                                |                 |                |        |                   |        |                  |        |
|                                                                                                                                                                                                                                                                                |                 |                |        |                   |        |                  |        |
|                                                                                                                                                                                                                                                                                |                 |                |        |                   |        |                  |        |
|                                                                                                                                                                                                                                                                                |                 |                |        |                   |        |                  |        |

SMC technology

22-28

\* Not normally kept in stock

For performance level 3 please specify digit 7  
For performance level 2 please specify digit 6  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

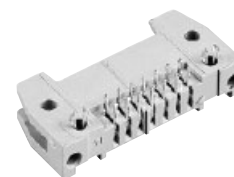
7  
6  
5

7  
6  
5

7  
6  
5

Number of contacts

# 6-64



SMC male header with angled solder pins and board lock

Identification

Drawing

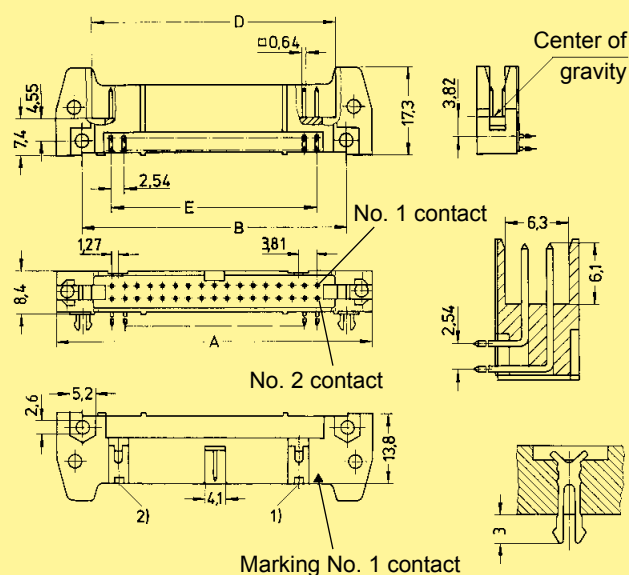
Dimensions in mm

SMC male header

| No. of contacts | A     | B     | D     | E                 | F     | G     |
|-----------------|-------|-------|-------|-------------------|-------|-------|
| 6               | 26.9  | 16.76 | 12.45 | 2.54 x 2 = 5.08   | 36.9  | 40.3  |
| 10              | 32.0  | 21.84 | 17.53 | 2.54 x 4 = 10.16  | 42.0  | 45.4  |
| 14              | 37.1  | 26.92 | 22.61 | 2.54 x 6 = 15.24  | 47.1  | 50.4  |
| 16              | 39.6  | 29.46 | 25.15 | 2.54 x 7 = 17.78  | 49.6  | 53.0  |
| 20              | 44.7  | 34.54 | 30.23 | 2.54 x 9 = 22.86  | 54.7  | 58.1  |
| 24              | 49.8  | 39.62 | 35.91 | 2.54 x 11 = 27.94 | 59.8  | 63.2  |
| 26              | 52.3  | 42.16 | 37.85 | 2.54 x 12 = 30.48 | 62.3  | 65.7  |
| 30              | 57.7  | 47.24 | 43.83 | 2.54 x 14 = 35.56 | 68.2  | 68.6  |
| 34              | 62.5  | 52.32 | 48.01 | 2.54 x 16 = 40.64 | 72.5  | 75.8  |
| 40              | 70.1  | 59.94 | 55.63 | 2.54 x 19 = 48.26 | 80.1  | 83.5  |
| 50              | 82.8  | 72.64 | 68.33 | 2.54 x 24 = 60.96 | 92.8  | 96.2  |
| 60              | 95.5  | 85.34 | 81.03 | 2.54 x 29 = 73.66 | 105.5 | 108.9 |
| 64              | 100.6 | 90.42 | 86.11 | 2.54 x 31 = 78.74 | 110.6 | 113.9 |

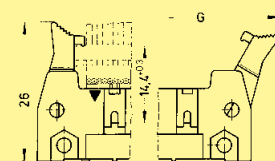
Short levers

for use with female connector without strain relief clamp

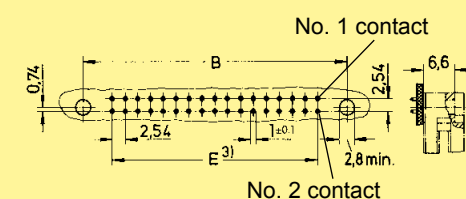


Long levers

for use with female connector with strain relief clamp



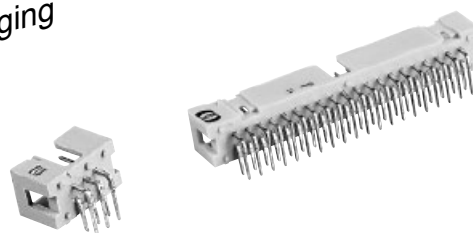
Board drillings



# 6-64



Tape & Reel packaging



| Identification                          | No. of contacts | Part No.            | Drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Dimensions in mm                          |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|-----------------------------------------|-----------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---|---|---|---|------|-------|-----------------|----|------|-------|------------------|----|------|-------|------------------|----|------|-------|------------------|----|------|-------|------------------|----|------|-------|-------------------|----|-------|-------|-------------------|----|------|-------|-------------------|----|------|-------|-------------------|----|------|-------|-------------------|----|------|-------|-------------------|----|------|-------|-------------------|---------------------------------------------|
| SMC male header with angled solder pins |                 |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| Length: 2.9 mm                          | 6               | 09 19 506 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| Colour: Beige                           | 10              | 09 19 510 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| Packaging: Carton                       | 14              | 09 19 514 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 16              | 09 19 516 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 20              | 09 19 520 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 26              | 09 19 526 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 30              | 09 19 530 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 34              | 09 19 534 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 40              | 09 19 540 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 50              | 09 19 550 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 60              | 09 19 560 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 64              | 09 19 564 □ 323     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         |                 |                     | <table border="1"> <thead> <tr> <th>No. of contacts</th><th>A</th><th>B</th><th>E</th></tr> </thead> <tbody> <tr><td>6</td><td>15.2</td><td>12.78</td><td>2.54 x 2 = 5.08</td></tr> <tr><td>10</td><td>20.3</td><td>17.86</td><td>2.54 x 4 = 10.16</td></tr> <tr><td>14</td><td>25.4</td><td>22.94</td><td>2.54 x 6 = 15.24</td></tr> <tr><td>16</td><td>27.9</td><td>25.48</td><td>2.54 x 7 = 17.78</td></tr> <tr><td>20</td><td>33.0</td><td>30.56</td><td>2.54 x 9 = 22.86</td></tr> <tr><td>26</td><td>40.6</td><td>38.18</td><td>2.54 x 12 = 30.48</td></tr> <tr><td>30</td><td>45.72</td><td>43.26</td><td>2.54 x 14 = 35.56</td></tr> <tr><td>34</td><td>50.8</td><td>48.34</td><td>2.54 x 16 = 40.64</td></tr> <tr><td>40</td><td>58.4</td><td>55.96</td><td>2.54 x 19 = 48.26</td></tr> <tr><td>50</td><td>71.3</td><td>68.66</td><td>2.54 x 24 = 60.96</td></tr> <tr><td>60</td><td>84.0</td><td>81.36</td><td>2.54 x 29 = 73.66</td></tr> <tr><td>64</td><td>89.1</td><td>86.44</td><td>2.54 x 31 = 78.74</td></tr> </tbody> </table> | No. of contacts                           | A | B | E | 6 | 15.2 | 12.78 | 2.54 x 2 = 5.08 | 10 | 20.3 | 17.86 | 2.54 x 4 = 10.16 | 14 | 25.4 | 22.94 | 2.54 x 6 = 15.24 | 16 | 27.9 | 25.48 | 2.54 x 7 = 17.78 | 20 | 33.0 | 30.56 | 2.54 x 9 = 22.86 | 26 | 40.6 | 38.18 | 2.54 x 12 = 30.48 | 30 | 45.72 | 43.26 | 2.54 x 14 = 35.56 | 34 | 50.8 | 48.34 | 2.54 x 16 = 40.64 | 40 | 58.4 | 55.96 | 2.54 x 19 = 48.26 | 50 | 71.3 | 68.66 | 2.54 x 24 = 60.96 | 60 | 84.0 | 81.36 | 2.54 x 29 = 73.66 | 64 | 89.1 | 86.44 | 2.54 x 31 = 78.74 | <p>Solder pins for 1 ± 0.1 mm dia. hole</p> |
| No. of contacts                         | A               | B                   | E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 6                                       | 15.2            | 12.78               | 2.54 x 2 = 5.08                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 10                                      | 20.3            | 17.86               | 2.54 x 4 = 10.16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 14                                      | 25.4            | 22.94               | 2.54 x 6 = 15.24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 16                                      | 27.9            | 25.48               | 2.54 x 7 = 17.78                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 20                                      | 33.0            | 30.56               | 2.54 x 9 = 22.86                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 26                                      | 40.6            | 38.18               | 2.54 x 12 = 30.48                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 30                                      | 45.72           | 43.26               | 2.54 x 14 = 35.56                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 34                                      | 50.8            | 48.34               | 2.54 x 16 = 40.64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 40                                      | 58.4            | 55.96               | 2.54 x 19 = 48.26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 50                                      | 71.3            | 68.66               | 2.54 x 24 = 60.96                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 60                                      | 84.0            | 81.36               | 2.54 x 29 = 73.66                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| 64                                      | 89.1            | 86.44               | 2.54 x 31 = 78.74                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| Colour: Beige                           | 6               | 09 19 506 □ 323 740 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| Packaging: Tape & Reel                  | 10              | 09 19 510 □ 323 740 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 14              | 09 19 514 □ 323 740 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 16              | 09 19 516 □ 323 740 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| Vacuum plate for pick & place process   | 20              | 09 19 520 □ 323 740 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 26              | 09 19 526 □ 323 740 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 30              | 09 19 530 □ 323 740 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 34              | 09 19 534 □ 323 740 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 40              | 09 19 540 □ 323 740 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         |                 |                     | <p>Marking No. 1 contact</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>No. 2 contact</p> <p>No. 1 contact</p> |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| Colour: Black                           | 6               | 09 19 506 □ 323 741 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| Packaging: Tape & Reel                  | 10              | 09 19 510 □ 323 741 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 14              | 09 19 514 □ 323 741 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 16              | 09 19 516 □ 323 741 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
| Vacuum plate for pick & place process   | 20              | 09 19 520 □ 323 741 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 26              | 09 19 526 □ 323 741 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 30              | 09 19 530 □ 323 741 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 34              | 09 19 534 □ 323 741 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         | 40              | 09 19 540 □ 323 741 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |
|                                         |                 |                     | <p>No. 2 contact</p> <p>No. 1 contact</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>No. 2 contact</p> <p>No. 1 contact</p> |   |   |   |   |      |       |                 |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                  |    |      |       |                   |    |       |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |    |      |       |                   |                                             |

For performance level 3 please specify digit 7

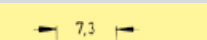
For performance level 2 please specify digit 6

S4 = 0.76 µm (30 µinch) Au or PdNi equivalent

7

6

5

| Identification                                                                                                                     | Part No.                     | Drawing                                                                                                                                                               | Dimensions in mm                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Locking lever<br/>for female connector<br/>with strain relief</p> <p>in conjunction<br/>with <u>low-profile male header</u></p> | 09 18 000 9905 <sup>4)</sup> |  <p>Strain relief clamp</p> <p>Female connector</p> <p>Low-profile male header</p> | <p>When the security of latching is required and space is a premium, these locking levers can be fitted onto the strain relief of the HARTING female connector.</p> |

3) Pitch tolerance:  $\pm 0.1$   
4) Order 2 per female connector

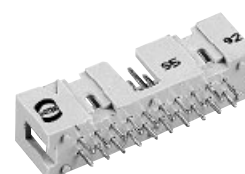


Number of contacts

6-64



Tape & Reel packaging



SMC low-profile male header, straight solder pins

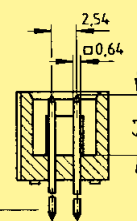
Identification      No. of contacts      Part No.      Drawing      Dimensions in mm

SMC male header with straight solder pins

Length: 2.9 mm  
Colour: Beige  
Packaging: Carton

|    |           |     |
|----|-----------|-----|
| 6  | 09 19 506 | 324 |
| 10 | 09 19 510 | 324 |
| 14 | 09 19 514 | 324 |
| 16 | 09 19 516 | 324 |
| 20 | 09 19 520 | 324 |
| 26 | 09 19 526 | 324 |
| 30 | 09 19 530 | 324 |
| 34 | 09 19 534 | 324 |
| 40 | 09 19 540 | 324 |
| 50 | 09 19 550 | 324 |
| 60 | 09 19 560 | 324 |
| 64 | 09 19 564 | 324 |

| No. of contacts | A     | B     | E                 |
|-----------------|-------|-------|-------------------|
| 6               | 15.2  | 12.78 | 2.54 x 2 = 5.08   |
| 10              | 20.3  | 17.86 | 2.54 x 4 = 10.16  |
| 14              | 25.4  | 22.94 | 2.54 x 6 = 15.24  |
| 16              | 27.9  | 25.48 | 2.54 x 7 = 17.78  |
| 20              | 33.0  | 30.56 | 2.54 x 9 = 22.86  |
| 26              | 40.6  | 38.18 | 2.54 x 12 = 30.48 |
| 30              | 45.72 | 43.26 | 2.54 x 14 = 35.56 |
| 34              | 50.8  | 48.34 | 2.54 x 16 = 40.64 |
| 40              | 58.4  | 55.96 | 2.54 x 19 = 48.26 |
| 50              | 71.3  | 68.66 | 2.54 x 24 = 60.96 |
| 60              | 84.0  | 81.36 | 2.54 x 29 = 73.66 |
| 64              | 89.1  | 86.44 | 2.54 x 31 = 78.74 |



Solder pins for 1 ± 0.1 mm dia. hole

Colour: Beige  
Packaging: Tape & Reel

Vacuum plate for pick & place process

|    |           |         |
|----|-----------|---------|
| 6  | 09 19 506 | 324 740 |
| 10 | 09 19 510 | 324 740 |
| 14 | 09 19 514 | 324 740 |
| 16 | 09 19 516 | 324 740 |
| 20 | 09 19 520 | 324 740 |
| 26 | 09 19 526 | 324 740 |
| 30 | 09 19 530 | 324 740 |
| 34 | 09 19 534 | 324 740 |
| 40 | 09 19 540 | 324 740 |

Colour: Black  
Packaging: Tape & Reel

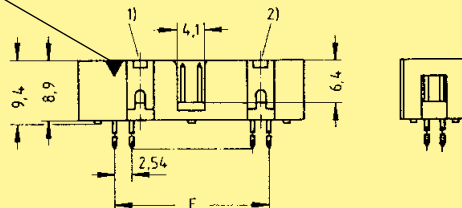
Vacuum plate for pick & place process

|    |           |         |
|----|-----------|---------|
| 6  | 09 19 506 | 324 741 |
| 10 | 09 19 510 | 324 741 |
| 14 | 09 19 514 | 324 741 |
| 16 | 09 19 516 | 324 741 |
| 20 | 09 19 520 | 324 741 |
| 26 | 09 19 526 | 324 741 |
| 30 | 09 19 530 | 324 741 |
| 34 | 09 19 534 | 324 741 |
| 40 | 09 19 540 | 324 741 |

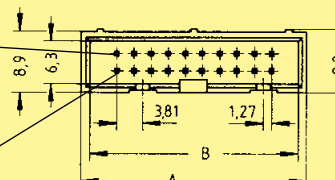
For performance level 3 please specify digit  
For performance level 2 please specify digit  
S4 = 0.76 µm (30 µinch) Au or PdNi equivalent



Marking No. 1 contact

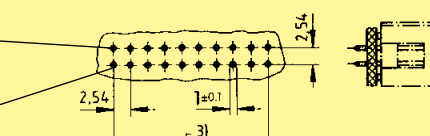


No. 2 contact



No. 1 contact

No. 2 contact



No. 1 contact

Identification

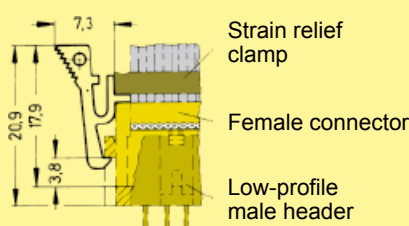
Part No.

Drawing

Dimensions in mm

Locking lever for female connector with strain relief in conjunction with low-profile male header

09 18 000 99054)



When the security of latching is required and space is a premium, these locking levers can be fitted onto the strain relief of the HARTING female connector.

\* Not normally kept in stock

1) No polarization slot for 6, 10 or 14 way male header  
2) No polarization slot for 6 way male header

3) Pitch tolerance: ± 0.1  
4) Order 2 per female connector

## Accessories

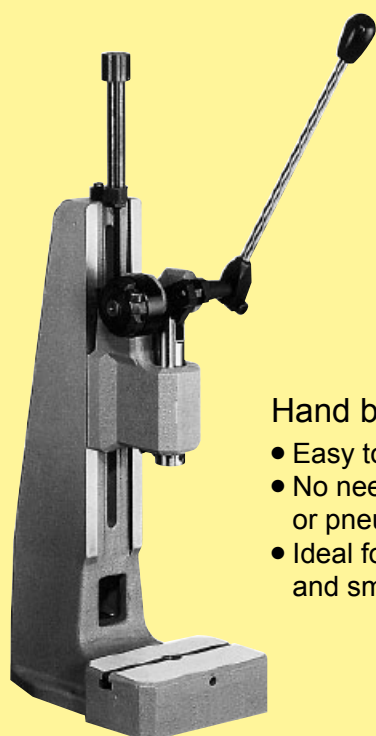
| Identification                                                                                                | Part No.                                                                                                 | Drawing                                                                                                                                                                                                                                                                                                       | Dimensions in mm                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Polarization key</b><br><br>1) Part No. comprises 2 keys                                                   | 09 18 500 9902 <sup>1)</sup>                                                                             |                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                          |
| <b>Locking lever</b><br>(snaps into place, can be fitted whenever required)<br><br>2) Order 2 per male header | Long:<br><br>09 19 000 9903 <sup>2)</sup><br><br>Short:<br><br>09 19 000 9904 <sup>2)</sup>              | <div> <b>Long</b><br/> </div> <div> <b>Short</b><br/> </div> <div>                     For use with female connector <u>with</u> strain relief clamp                                                                  For use with female connector <u>without</u> strain relief clamp                 </div> |                                                                                                                                                                                          |
| <b>Fixing screws</b><br>for 1.6 mm P.C. board<br><br>3) Part No. comprises 50 pieces                          | 09 18 000 9906 <sup>3)</sup>                                                                             |                                                                                                                                                                                                                                                                                                               | For connectors with part numbers<br>09 18 5xx x9xx: screwing torque 0.2 Nm<br>09 19 5xx x9xx: screwing torque 0.4 – 0.5 Nm<br><br>Screw material: Steel (Inox A2)<br><br>Plating: Nickel |
| <b>Coding system with loss of contact</b><br><br>4) Part No. comprises 6 code pins                            | Code pin<br><br>09 18 000 9901 <sup>4)</sup><br><br>Removal tool for male contacts<br><br>09 99 000 0133 | <p>To avoid cross-plugging adjacent connectors a coding system is required. A code pin is inserted into the appropriate cavity in the female connector. The corresponding male contact is removed by a special removal tool.</p>                                                                              |                                                                                                                                                                                          |

## Tooling for press-in technology

Page

|                                                                  |              |
|------------------------------------------------------------------|--------------|
| General information .....                                        | <b>30.02</b> |
| Tooling compatible for complete interface connectors range ..... | <b>30.03</b> |
| <b>Specific tooling</b>                                          |              |
| <b><i>harmik</i></b> ® .....                                     | <b>30.10</b> |
| <b><i>D-Sub – S</i></b> .....                                    | <b>30.10</b> |
| <b><i>SEK</i></b> .....                                          | <b>30.11</b> |

HARTING modular tooling adapted to customer specific needs

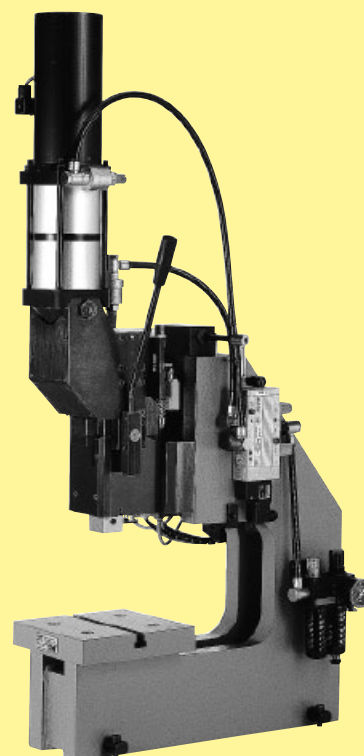


## Hand bench press

- Easy to install
- No need of electrical or pneumatic power
- Ideal for prototyping and small series

## Pneumatic press

- Easy handling
- Limitation of press-in force adjustable
- Ideal for medium series



## CPM prestige



## The state of the art CPM press-in machine

- Fully programmable press-in machine
- Ideal for volume series



Bestseller **CPM prestige** with insertion removal station, adaptable to all HARTING press-in machines

Tooling compatible for complete interface connectors range

## The **CPM prestige** press-in machine with a graphical user interface

The **CPM prestige** is a consequential development of the successful CPM 2001 press-in machines. The excellent design, supported by a wide range of tools presents a convenient, easy and comfortable way of processing backplanes and daughtercards. The machine is fully programmable and is supplied with a graphical user interface for control and visualisation of the complete process. The use of a microprocessor control allows the recognition and storage of different component heights, so that the pressing-in of different components is initiated simultaneously with only one button. The user-friendly touch-screen guides the user through the menu-orientated process controls.

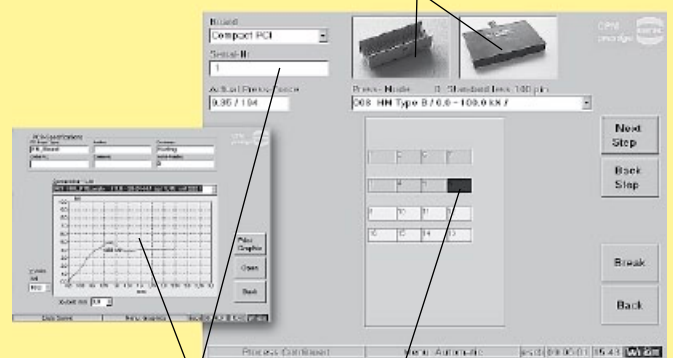
The visualisation of the entire press-in process (the position of the connector, press-in forces etc.) allows the rapid recognition and eradication of the possible error sources. With the addition of a barcode reader (1D and 2D)<sup>1)</sup> the parameters of every pcb layout can be stored, recalled and loaded into the automated press-in programme. The extensive operation monitor functions simplify the service and support of the machine.

The machine employs the automatic switch-off system "autosense", known worldwide for its reliability. The different connector types and the tolerances of the pcb are automatically recognised and taken into consideration at the press-in operation, thus maximising the process security.



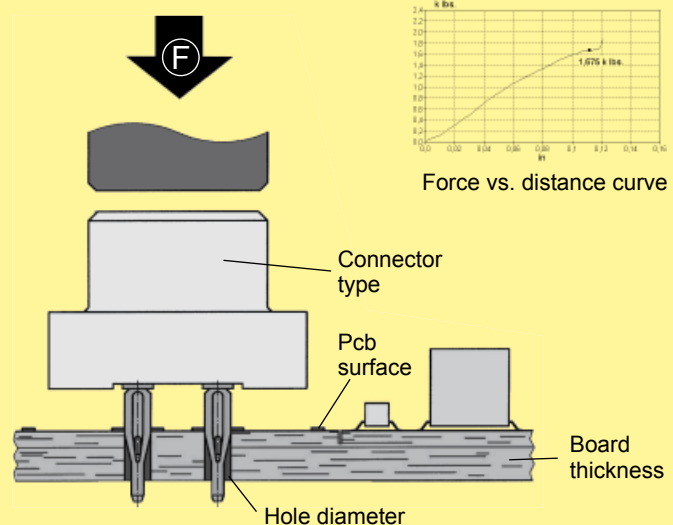
Visual guiding system via touch monitor

Real photos of connectors and tools



Process data

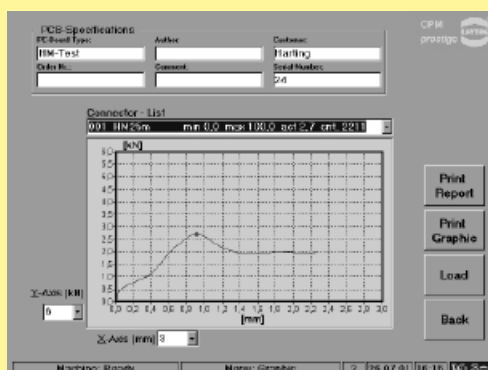
Layout with current position highlighted



Shown are the four most considerable influences of the press-in process.

<sup>1)</sup> optional

Tooling compatible for complete interface connectors range



## Quality control of press-in termination

The press-in force correlates with the diameter of the plated through hole and with the friction coefficient of the surface; therefore it can be used for a continuous monitoring of the process.

The retention force, as an indirect measure of the normal force, serves to qualify the process or random tests.



**Part No.**

**09 89 040 0000**

## Technical characteristics

|                     |                           |
|---------------------|---------------------------|
| Drive               | electro-mechanical, servo |
| Press-in force      | 100 kN                    |
| max. pcb dimensions | 600 x 1000 mm             |
| Floor space         | 1200 x 1150 mm            |
| Weight              | 980 kg                    |
| Power supply        | 208 / 380 / 400 / 415 V   |
| Consumption         | < 1 kW                    |
| Colour              | on request                |

## CPM prestige

(incl. PC, control software, barcode reader, keyboard, touch screen)

## Built-in features:

- Guiding rails (carbon/spring-loaded) for the secure positioning of the pcb
- Touch-screen and Industrial PC with UPS (uninterruptable power supply)
- Barcode reader for management ease of press-in programs
- All dimensions allow an easy integration into production lines

## Process monitoring and quality assurance:

- Touch screen interface with graphical and verbal menus for all machine functions
- Autosense: automated press-in interruption at incorrect press-in forces
- Storage and validation of all press-in parameters via quality assurance software (press-in force tolerances)
- Continuous high-precision measurement and recording of press-in forces and distances
- Remote determination of errors and maintenance
- High flexibility through a modular tool range

## Options:

- Rotatable tool changer
- Insertion removal station



Tooling compatible for complete interface connectors range

## Insertion removal station

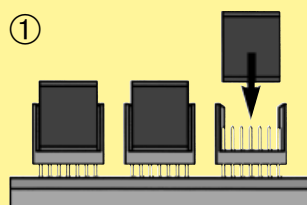


Power supply 220 V / 50 Hz  
Air pressure 6 bar (15-16 l/min.)

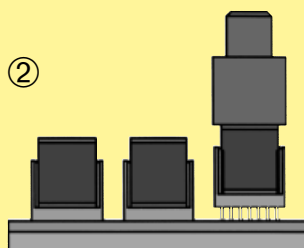
Part No. on request  
for pcb dimensions  
of max.  
710 mm x 540 mm

Bestseller **CPM prestige** with insertion removal station, adaptable to all HARTING press-in machines.

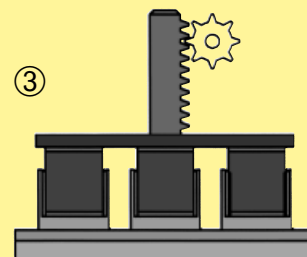
## Principle:



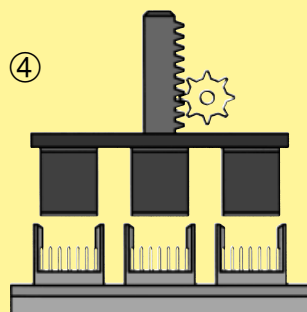
① Load all headers with inserts for **one** press-in cycle



② Press-in all connectors with a flat die

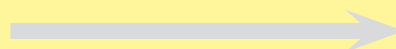


③ Position the magnetic plate

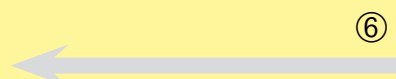


④ Remove all press-in inserts in one operation

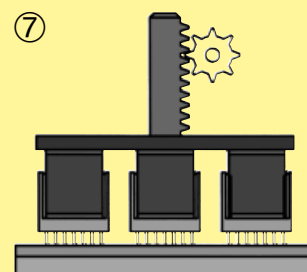
Remove the processed pcb from the machine



⑤



⑥ Move the next pre-assembled pcb to the press-in machine

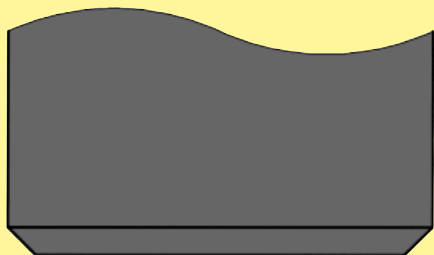


⑦ Load all headers in one operation

The insertion removal station has been developed both for the **CPM prestige** and the CPM 2001/s. It can additionally be used as stand alone equipment.

Tooling compatible for complete interface connectors range

Today nearly all female connectors are designed for flat rock tooling. For every type of male connector specific tooling and a high degree of X-Y-process accuracy is required. Therefore HARTING offers press-in insert blocks that transfer all well known assembling advantages from female connectors to male headers.

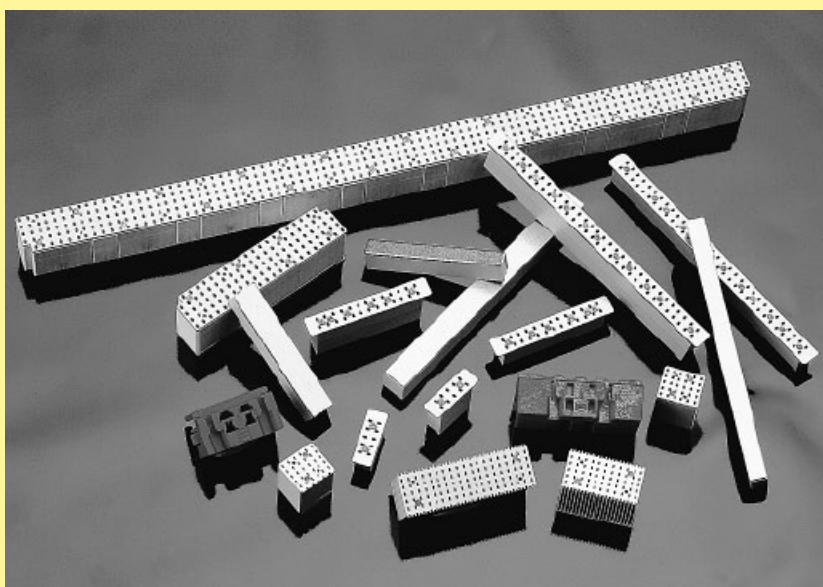
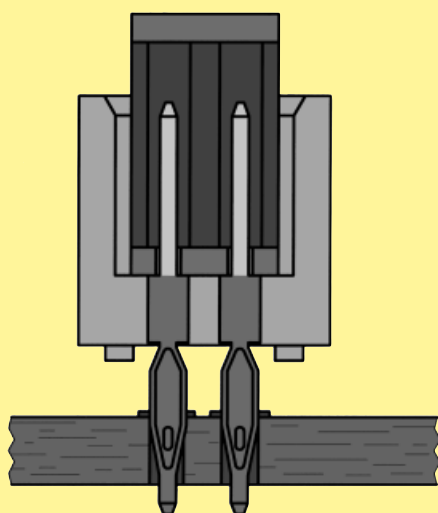


## Advantages of press inserts

Robust tooling

No lateral force to pcb hole

No abrasion of the contact mating surface by the press tool



HARTING has already developed press-in inserts for all major male connector families on 2.54 mm, 2.5 mm and 2 mm pitches.

Inserts for any other special components can be developed on request.

The additional process for inserting and removing the press-in inserts can be efficiently done with the insertion removal station. This station removes all press-in inserts with a magnetic plate in one operation and inserts them into the next pre-assembled pcb with the necessary precision. (Principle see page 30.05).

The cycle time for loading all headers is between 4 and 6 seconds, independent from the amount of press-in inserts.

To load the inserts automatically means also that connectors assembled in a wrong way will be recognised and errors consequently prevented.



Tooling compatible for complete interface connectors range

## Modular tooling system for starting connector press-in

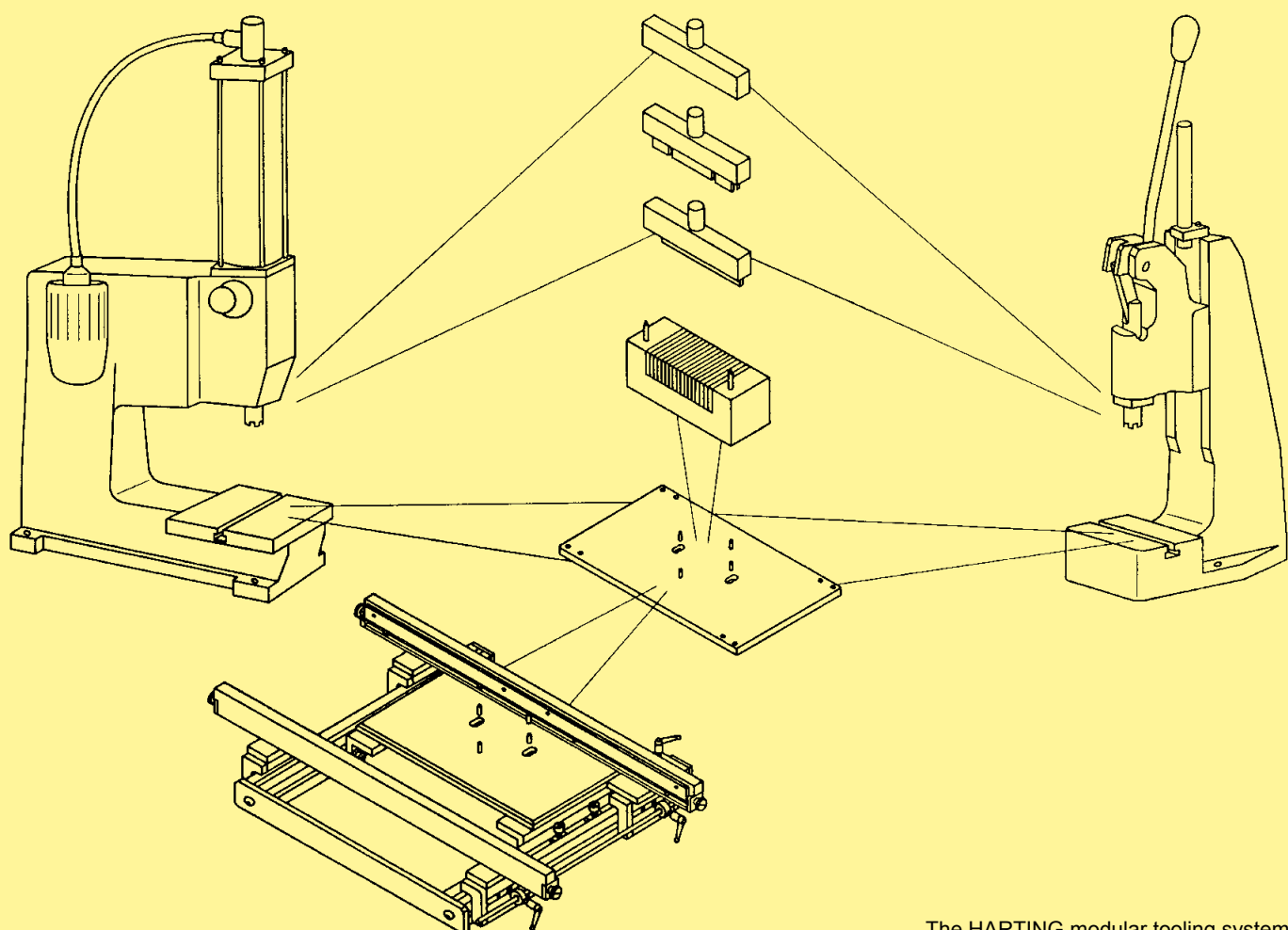
The diversity of connector types with press-in terminations and varying termination styles make it necessary to have a simple, flexible tooling system that can be continuously updated.

The HARTING modular tooling system has significant advantages in terms of economic assembly of the many connector types with press-in terminations. The basic modules of the tooling system which will always be required are:

- Press
- Top tool
- Bottom tool
- Base plate

To increase automation and productivity the following modules may be added to the basic assembly:

- Guide frame with base plate for accurate positioning of the pcb up to a length of 600 mm
- Guide frame "Standard" for hand bench press and pneumatic press and pcb height of 123.5 up to 309.5 mm
- Guide frame "Long" for pneumatic press and pcb height of 123.5 up to 668.5 mm



Tooling  
press-in

The HARTING modular tooling system

Tooling compatible for complete interface connectors range

## Handling indications

When setting up an assembly machine it is not necessary to set the working height of the press and adjust the base plate more than once. There is no need for further adjustments. All the other adaptations for various applications are performed efficiently and are reliant by various combinations of individual modules.

## Positioning the bottom tool in relation to the top tool

The ram of the HARTING press is generally provided with a cross-shaped groove which accurately positions the top tool in steps of 90°.

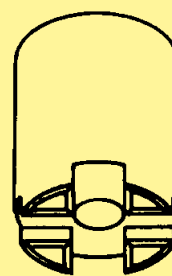
Two guide pins position the bottom tool in relation to the top tool simply and accurately.

These guide pins cannot be used for positioning the pcb or the connector!

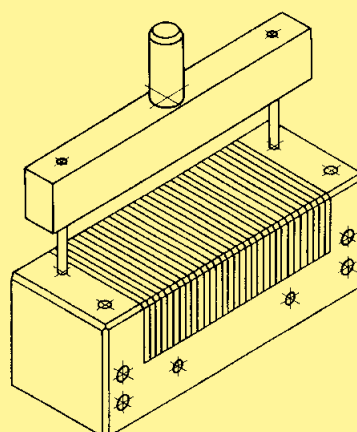
Two pairs of pins on the base plate locate the bottom tool in relation to the top tool in steps of 90°.

## Bottom tool (narrow version)

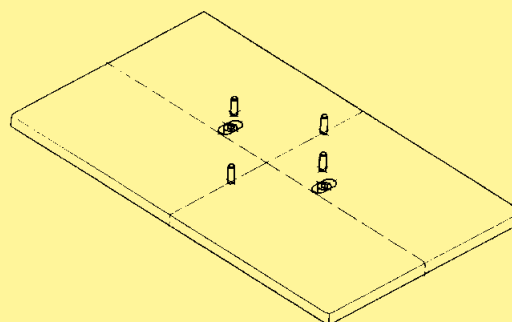
In addition to the square bottom tool with multi-functional properties, HARTING offers the alternative of a narrow bottom tool for assembling connectors with straight press-in terminations. This tool supports the pcb within the press-in connector zone and therefore makes it possible to assemble connectors where electronic components are to be placed in close proximity.



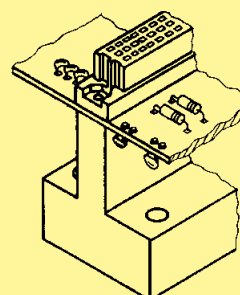
Ram with cross-shaped groove



Positioning the bottom tool in relation to top tool



Base plate with pairs of location pins at 90°

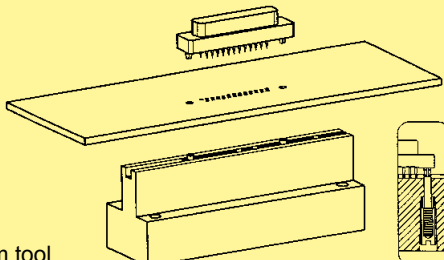
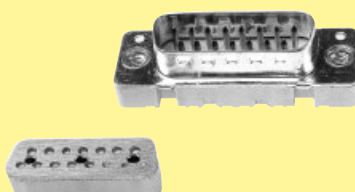


Narrow version of the bottom tool for special applications

Tooling compatible for complete interface connectors range

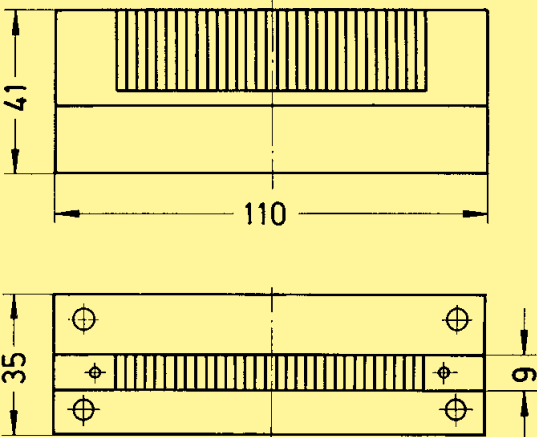
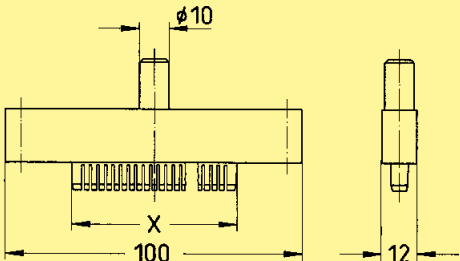
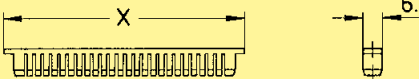
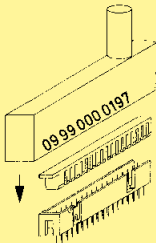
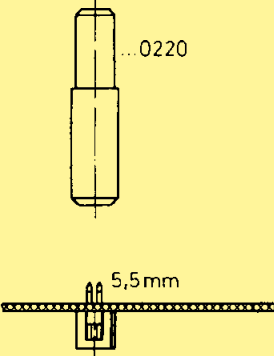
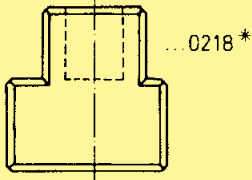
| Identification           | Part No.       | Drawing                                                                                                                                                                                                                                                                                                         | Dimensions in mm |
|--------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Hand bench press         | 09 99 000 0201 | <p>Technical characteristics</p> <ul style="list-style-type: none"> <li>Working stroke: 25 mm</li> <li>Press force: 15 kN max.</li> <li>Hole ø in the ram: ø 10 mm</li> <li>Net weight: approx. 23 kg</li> </ul>                                                                                                |                  |
| Pneumatic press<br>40 kN | 09 99 000 0282 | <p>Technical characteristics</p> <ul style="list-style-type: none"> <li>Total stroke: 48 mm</li> <li>Working stroke: 0-6 mm</li> <li>Press force: 40 kN max.</li> <li>Air pressure: 6 bar</li> <li>Hole ø in the ram: ø 10.01 mm</li> <li>Net weight: 136 kg</li> <li>Power supply: 110 V / 220 V AC</li> </ul> |                  |
| Top tool                 | 09 99 000 0197 | <p>Top tool</p>                                                                                                                                                                                                                                                                                                 |                  |
| Base plate               | 09 99 000 0255 | <p>Base plate</p>                                                                                                                                                                                                                                                                                               |                  |

## Specific tooling for har-mik and D-Sub

| Identification                                                      |  | Part No.                                           |                                                                                                     |
|---------------------------------------------------------------------|--|----------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Bottom tool<br>for har-mik                                          |  | 60 99 000 0031                                     |                                                                                                     |
| Press-out tool<br>for har-mik                                       |  | 60 99 000 0032                                     |                   |
| Bottom tool<br>narrow for D-Sub                                     |  |                                                    |                                                                                                     |
| Only one tool for all polarities,<br>with or without grounding pins |  |                                                    |                                                                                                     |
| 9-37 way<br>50 way                                                  |  | 09 99 000 0600<br>09 99 000 0523                   | <br>Bottom tool |
| Plastic with metal plate<br>insert tool<br>for D-Sub male           |  |                                                    |                                                                                                     |
| 9 way<br>15 way<br>25 way                                           |  | 09 99 600 0709<br>09 99 600 0715<br>09 99 600 0725 |                 |
| Other toolings on request                                           |  |                                                    |                                                                                                     |

| Identification                                 | Part No.       | Drawing | Dimensions in mm |
|------------------------------------------------|----------------|---------|------------------|
| <b>Top tool</b><br>for SEK standard connectors |                |         |                  |
| 10 way                                         | 09 99 000 0710 |         |                  |
| 14 way                                         | 09 99 000 0714 |         |                  |
| 16 way                                         | 09 99 000 0716 |         |                  |
| 20 way                                         | 09 99 000 0720 |         |                  |
| 26 way                                         | 09 99 000 0726 |         |                  |
| 34 way                                         | 09 99 000 0734 |         |                  |
| 40 way                                         | 09 99 000 0740 |         |                  |
| 50 way                                         | 09 99 000 0750 |         |                  |
| 60 way                                         | 09 99 000 0760 |         |                  |
| 64 way                                         | 09 99 000 0764 |         |                  |

## Specific tooling for SEK male low-profile

| Identification                                                                    | Part No.                                                                                                                                                                                                                                                                                                                                                                  | Drawing                                                                                                                                                                                                                                                                                   | Dimensions in mm                                                                      |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Bottom tool<br>narrow for SEK                                                     | 09 99 000 0256                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                         |                                                                                       |
| Top tool<br>for SEK male low-profile connectors                                   | <div>6 way 09 99 000 0 06</div> <div>10 way 09 99 000 0 10</div> <div>14 way 09 99 000 0 14</div> <div>16 way 09 99 000 0 16</div> <div>20 way 09 99 000 0 20</div> <div>26 way 09 99 000 0 26</div> <div>34 way 09 99 000 0 34</div> <div>40 way 09 99 000 0 40</div> <div>50 way 09 99 000 0 50</div> <div>60 way 09 99 000 0 60</div> <div>64 way 09 99 000 0 64</div> | <div>Top tool including insert</div>  <div>X Length depends on number of contacts</div> <div>Modular insert</div>  |  |
| Press-out tool<br>for complete SEK<br>male connectors with<br>5.5 mm terminations | 09 99 000 0220                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                        |                                                                                       |
| Support block                                                                     | 09 99 000 0218                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                        |                                                                                       |

\* Further versions on request

# Tooling for crimp technology

Page

General information ..... **31.02**

## *Specific tooling*

*D-Sub – S* ..... **31.04**

*D-Sub – HD* ..... **31.04**

*D-Sub – M* ..... **31.08**

*D-Sub – InduCom* ..... **31.12**

*D-Sub – Crimp tools for screened hoods* ..... **31.13**

## Crimp connection

A perfect crimp connection is gastight and therefore corrosion free. It is equivalent to a cold weld of the connected parts. For this reason, major features in achieving high quality crimp connections are the design of the crimping areas of the contact and of course the crimping tool itself. Wires to be connected must be carefully matched to the correct size of crimp contacts. If these basic requirements are met, users will be assured of highly reliable connections with a low contact resistance and a high resistance against corrosion.

The economical and technical advantages are:

- Constant contact resistance as a result of an unvariable crimp connection quality
- Corrosion free connections as a result of cold weld action
- Preparation of harnessing with crimp contacts already fitted
- More economic cable connection

Requirements for crimp connections are set out in DIN IEC 60 352-2.

## Pull out force of stranded wire

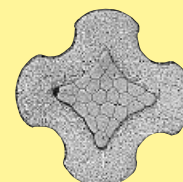
The main criterion by which to judge the quality of a crimp connection is the retention force achieved by the wire conductor in the terminal section of the contact. DIN IEC 60 352, part 2, defines the extraction force in relation to the cross-section of the conductor. When fitted using HARTING crimping tools and subject to their utilization in an approved manner, our crimp connectors comply with the required extraction forces.



B shape cross section stamped contact



H shape cross section turned contact



4 points shape cross section turned contact

## Tensile strength of crimped connections

| Conductor cross-section |     | Tensile strength |
|-------------------------|-----|------------------|
| mm <sup>2</sup>         | AWG | N                |
| 0.05                    | 30  | 6                |
| 0.08                    | 28  | 11               |
| 0.12                    | 26  | 15               |
| 0.14                    |     | 18               |
| 0.22                    | 24  | 28               |
| 0.25                    |     | 32               |
| 0.32                    | 22  | 40               |
| 0.5                     | 20  | 60               |
| 0.75                    |     | 85               |
| 0.82                    | 18  | 90               |
| 1.0                     |     | 108              |
| 1.3                     | 16  | 135              |
| 1.5                     |     | 150              |
| 2.1                     | 14  | 200              |
| 2.5                     |     | 230              |
| 3.3                     | 12  | 275              |
| 4.0                     |     | 310              |
| 5.3                     | 10  | 355              |
| 6.0                     |     | 360              |
| 8.4                     | 8   | 370              |
| 10.0                    |     | 380              |

Extract from DIN IEC 60 352-2, Amend. 2, table IV



## Crimping tools

Crimping tools (hand operated or automatic) are carefully designed to guarantee a symmetrical deformation of the crimping area of the contact and the wire through the high pressure forming parts of the tool. The locator automatically engages the crimp contact and the wire at the correct point in the tool. The wire insulation can also be included as a secondary feature of some crimp contacts to care for additional mechanical strength.

The ratchet in the tool performs 2 functions:

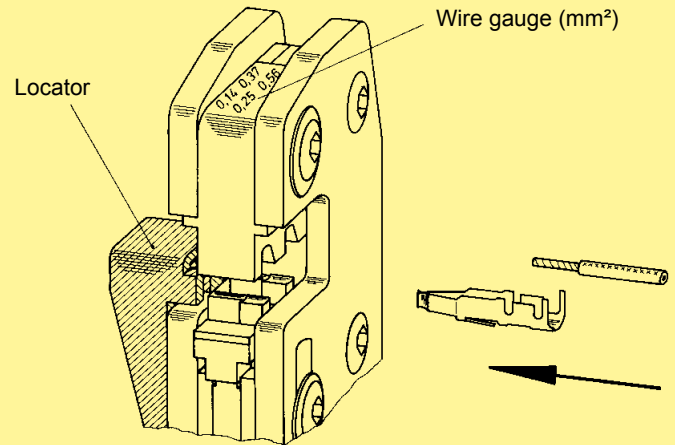
- ① It prevents insertion of the crimp into the tool for crimping before the jaws are fully open
- ② It prevents the tool from being opened before the crimping action is completed

A quality crimp connection can be achieved with this crimping system.

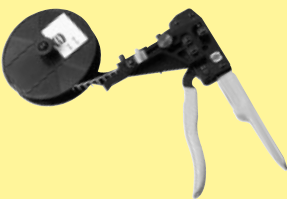
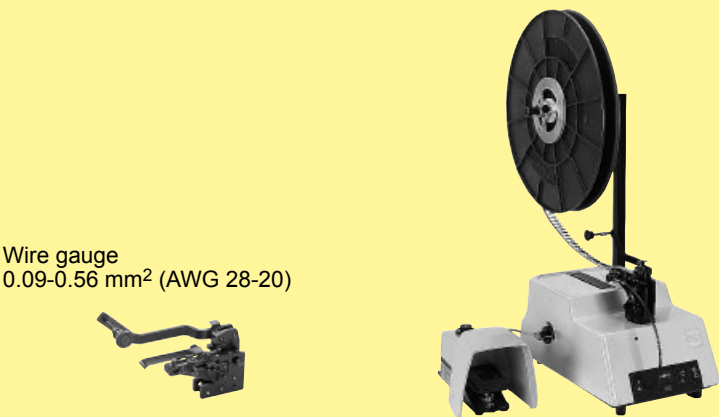
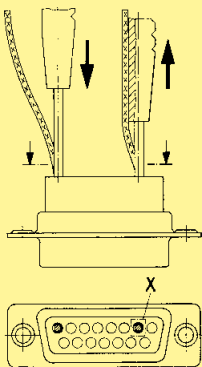
The adjacent sketches show important features of the HARTING hand crimping tool.

The HARTING automatic crimping tool uses bandoliered contacts.

The machine strips insulation from the wire and then crimps the contact. Both the crimping area and the insulation support are independently adjustable to facilitate the use of any wire type with dimensions within the stated crimp capacity.



## Tools for crimp termination

| Identification                                                                                                                                                                                                  | Part No.                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <b>Service crimp tool</b><br><br>for single <b>standard</b> contacts<br><br>for single <b>high density</b> contacts                                                                                             | 09 99 000 0175<br><br>09 99 000 0535                       | <br>for standard contacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <br>for high density contacts |
| <b>HARTING-Crimp tool</b><br><br>for 500 bandoliered <b>standard</b> contacts<br><br>for 500 bandoliered <b>high density</b> contacts                                                                           | 09 99 000 0169<br><br>09 99 000 0597                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                 |
| <b>HARTING-Semi-automatic crimping device</b><br><br>Main drive<br>foot-operated<br>220 V / 50 Hz<br><br>Crimping head for<br>bandoliered <b>standard</b><br>contacts<br><br>Reel holder for<br>10 000 contacts | 09 99 000 0246<br><br>09 99 000 0253<br><br>09 99 000 0158 | <br>Wire gauge<br>0.09-0.56 mm <sup>2</sup> (AWG 28-20)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                 |
| <b>Insertion and removal tool</b><br><br>for single <b>standard</b> contacts<br><br>for single <b>high density</b> contacts                                                                                     | 09 99 000 0171<br><br>09 99 000 0513                       | <br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                 |
|                                                                                                                                                                                                                 |                                                            |  <p><b>Assembly of crimp contacts</b><br/>           After crimping the stranded wire to the contact using a hand tool or automatic crimping device, insert the contact into the chamber with the tool, working from the wiring side. You will hear the contacts snap home and to check that they are securely in place, give the wire a gentle pull.</p> <p><b>Removing crimp contacts</b><br/>           Position the tool from the wiring side as shown in the diagram below and insert into the contact chamber. The contact can then easily be removed from the wiring side together with the wire itself and reinserted in a different chamber. The tool is designed for a maximum insulation diameter of Ø 1.7 mm.</p> <p>Stripping length: 2.5 + 0.5 mm</p> |                                                                                                                 |

## Tools for crimp termination – D-Sub-S, D-Sub-HD

Identification

Part No.

### Crimp tool

for turned male  
and female contacts  
AWG 28-18

4 indent crimp  
in acc. to  
MIL 22 520/2-01

09 99 000 0501



| Contact Part No. | Gauge          | Crimp tool selection No.              |
|------------------|----------------|---------------------------------------|
| 09 67 000 3x76   | AWG 18, 20, 22 | 6 for AWG 18 and AWG 20, 5 for AWG 22 |
| 09 67 000 8x76   | AWG 20, 22, 24 | 6                                     |
| 09 67 000 5x76   | AWG 22, 24, 26 | 6                                     |
| 09 67 000 7x76   | AWG 24, 26, 28 | 6                                     |

Locator for crimp tool  
Details see table

09 99 000 0531



printing

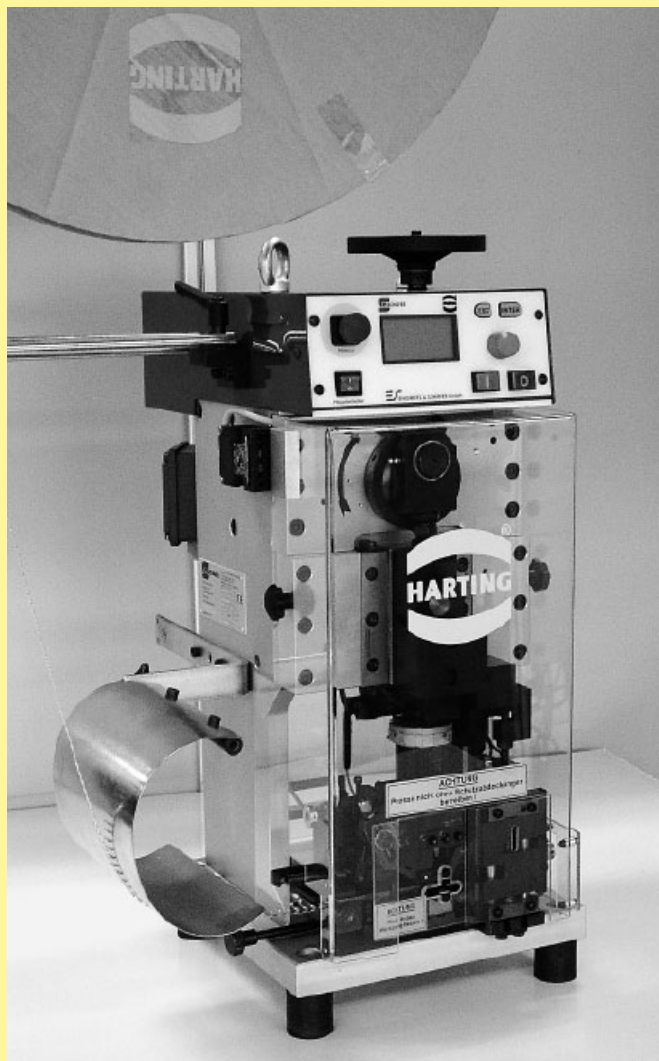
USE WITH CONTACTS

HARTING

09 67 000 xxxx

|       | Selector |    |    |    |    |    |  |
|-------|----------|----|----|----|----|----|--|
| AWG   | 18       | 20 | 22 | 24 | 26 | 28 |  |
| 18-22 | 6        | 6  | 5  | -  | -  | -  |  |
| 20-24 | -        | 6  | 6  | 6  | -  | -  |  |
| 22-26 | -        | -  | 6  | 6  | 6  | -  |  |
| 24-28 | -        | -  | -  | 6  | 6  | 6  |  |

## Automated crimping machine type BK



### Main characteristics

- Smooth run through electronic brakes
- Hand wheel for manual adjustments
- Maintenance friendly through needle bearing rail
- Simple handling by quick change tool and stripper

**Part No. 09 98 000 5000**

### Technical characteristics

#### Dimensions

Height 690 mm  
(1400 mm with a contact reel)

Width 350 mm

Depth 370 mm

Total weight 72 kg

Power supply 230 V, 50/60 Hz, 2.5 A

Consumption 0.75 kW

Motor speed 440 - 2000 rpm

Cable length 2 m incl. plug

Control SPS

Work cycle trigger Sensor

Work cycle 0.35 s for stripping and crimping

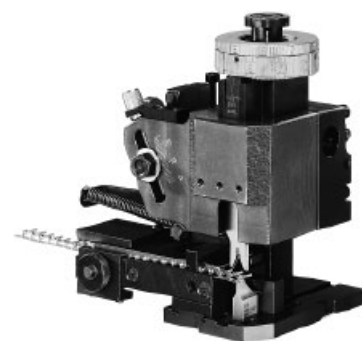
Illumination Integrated tool light

Stroke counter Daywise and fixed

Crimp force monitor BB07i

Crimping tool Quick change tool

Adjustable process parameters  
Crimping height on wire  
Crimping height on insulation  
Depth of insulation stripping  
Length of insulation stripping  
Wire retainer position  
Wire position in the crimp contact  
Band thrust

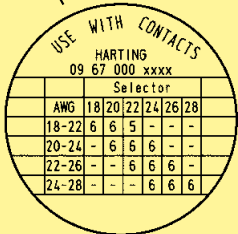


| Identification                                               | for use with          | Part No.                         | Wire gauge [mm <sup>2</sup> ] | AWG                | Insulation [Ø mm]      |
|--------------------------------------------------------------|-----------------------|----------------------------------|-------------------------------|--------------------|------------------------|
| Crimping tool<br><br>for DIN 41 612 connectors <sup>1)</sup> | contacts BC           | 09 98 000 3004                   | 0.09 - 0.56                   | 28 - 20            | 0.7 - 1.6              |
|                                                              | contacts FC 1         | 09 98 000 3005                   | 0.09 - 0.25                   | 28 - 24            | 0.7 - 1.6              |
|                                                              | FC 2                  | 09 98 000 3006                   | 0.14 - 0.56                   | 26 - 20            | 0.8 - 2.3              |
|                                                              | FC 3                  | 09 98 000 3007                   | 0.50 - 1.50                   | 20 - 16            | 1.6 - 2.8              |
|                                                              |                       |                                  |                               |                    |                        |
|                                                              |                       |                                  |                               |                    |                        |
|                                                              |                       |                                  |                               |                    |                        |
| for D-Sub connectors <sup>2)</sup>                           | standard contacts     | 09 98 000 3008<br>09 98 000 3009 | 0.09 - 0.25<br>0.25 - 0.56    | 28 - 24<br>24 - 20 | 0.7 - 1.4<br>0.9 - 1.7 |
|                                                              | high density contacts | 09 98 000 3012                   |                               | 26 - 24            | 0.8 - 1.4              |
|                                                              |                       |                                  |                               |                    |                        |
|                                                              |                       |                                  |                               |                    |                        |

<sup>1)</sup> 3.5 + 0.5 mm of insulation is stripped from the wire to be crimped

<sup>2)</sup> 2.5 + 0.5 mm of insulation is stripped from the wire to be crimped

## Tools for crimp termination

| Identification                                                                        | Part No.       |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
|---------------------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|----------------|----------------|-------------------------------|---------------------------------------|----------------|------------------------------|---------------------------------------|----------------|----------------|-------------------------------|----------------|------------|-------------------------------|----------------|------------|-------------------------------|----------------|------------|-------------------------------|----------------|-----------|------------------------------|----------------|-----------|
| Hand crimp tool<br>for <b>signal</b> contacts                                         | 09 99 000 0501 | <br>printing<br><br>Wire gauge AWG 18 – 28                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Die<br>(To be ordered separately.)                                                    | 09 99 000 0531 |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Hand crimp tool<br>for <b>power</b> contacts                                          | 09 99 000 0509 |                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Positioner for male and female contacts<br>(To be ordered separately.)                | 09 99 000 0504 |                                                                                                                                                                                                                                                                      | <table><tr><th>Contact Part No.</th><th>Gauge</th><th>Tool setting</th></tr><tr><td>09 69 182 x420</td><td>AWG 16, 18, 20</td><td>3 for AWG 16, 2 for AWG 18 and AWG 20</td></tr><tr><td>09 69 282 x420</td><td>AWG 16, 18, 20</td><td>3 for AWG 16, 2 for AWG 18 and AWG 20</td></tr><tr><td>09 69 182 x421</td><td>AWG 12, 14</td><td>5 for AWG 12 and 4 for AWG 14</td></tr><tr><td>09 69 282 x421</td><td>AWG 12, 14</td><td>5 for AWG 12 and 4 for AWG 14</td></tr><tr><td>09 69 182 x422</td><td>AWG 10, 12</td><td>7 for AWG 10 and 6 for AWG 12</td></tr><tr><td>09 69 282 x422</td><td>AWG 10, 12</td><td>7 for AWG 10 and 6 for AWG 12</td></tr><tr><td>09 69 182 x423</td><td>AWG 8, 10</td><td>7 for AWG 8 and 6 for AWG 10</td></tr><tr><td>09 69 282 x423</td><td>AWG 8, 10</td><td>7 for AWG 8 and 6 for AWG 10</td></tr></table> | Contact Part No. | Gauge          | Tool setting   | 09 69 182 x420 | AWG 16, 18, 20                | 3 for AWG 16, 2 for AWG 18 and AWG 20 | 09 69 282 x420 | AWG 16, 18, 20               | 3 for AWG 16, 2 for AWG 18 and AWG 20 | 09 69 182 x421 | AWG 12, 14     | 5 for AWG 12 and 4 for AWG 14 | 09 69 282 x421 | AWG 12, 14 | 5 for AWG 12 and 4 for AWG 14 | 09 69 182 x422 | AWG 10, 12 | 7 for AWG 10 and 6 for AWG 12 | 09 69 282 x422 | AWG 10, 12 | 7 for AWG 10 and 6 for AWG 12 | 09 69 182 x423 | AWG 8, 10 | 7 for AWG 8 and 6 for AWG 10 | 09 69 282 x423 | AWG 8, 10 |
| Contact Part No.                                                                      | Gauge          | Tool setting                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 182 x420                                                                        | AWG 16, 18, 20 | 3 for AWG 16, 2 for AWG 18 and AWG 20                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 282 x420                                                                        | AWG 16, 18, 20 | 3 for AWG 16, 2 for AWG 18 and AWG 20                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 182 x421                                                                        | AWG 12, 14     | 5 for AWG 12 and 4 for AWG 14                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 282 x421                                                                        | AWG 12, 14     | 5 for AWG 12 and 4 for AWG 14                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 182 x422                                                                        | AWG 10, 12     | 7 for AWG 10 and 6 for AWG 12                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 282 x422                                                                        | AWG 10, 12     | 7 for AWG 10 and 6 for AWG 12                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 182 x423                                                                        | AWG 8, 10      | 7 for AWG 8 and 6 for AWG 10                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 282 x423                                                                        | AWG 8, 10      | 7 for AWG 8 and 6 for AWG 10                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Positioner for male contacts<br>(To be ordered separately.)                           | 09 99 000 0522 | <table><tr><th>Contact Part No.</th><th>Gauge</th><th>Tool setting</th></tr><tr><td>09 69 282 x821</td><td>AWG 12, 14</td><td>5 for AWG 12 and 4 for AWG 14</td></tr><tr><td>09 69 282 x823</td><td>AWG 8, 10</td><td>7 for AWG 8 and 6 for AWG 10</td></tr></table> | Contact Part No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Gauge            | Tool setting   | 09 69 282 x821 | AWG 12, 14     | 5 for AWG 12 and 4 for AWG 14 | 09 69 282 x823                        | AWG 8, 10      | 7 for AWG 8 and 6 for AWG 10 |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Contact Part No.                                                                      | Gauge          | Tool setting                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 282 x821                                                                        | AWG 12, 14     | 5 for AWG 12 and 4 for AWG 14                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 282 x823                                                                        | AWG 8, 10      | 7 for AWG 8 and 6 for AWG 10                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Positioner for female contacts<br>(To be ordered separately.)                         | 09 99 000 0521 | <table><tr><th>Contact Part No.</th><th>Gauge</th><th>Tool setting</th></tr><tr><td>09 69 182 x821</td><td>AWG 12, 14</td><td>5 for AWG 12 and 4 for AWG 14</td></tr><tr><td>09 69 182 x823</td><td>AWG 8, 10</td><td>7 for AWG 8 and 6 for AWG 10</td></tr></table> | Contact Part No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Gauge            | Tool setting   | 09 69 182 x821 | AWG 12, 14     | 5 for AWG 12 and 4 for AWG 14 | 09 69 182 x823                        | AWG 8, 10      | 7 for AWG 8 and 6 for AWG 10 |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Contact Part No.                                                                      | Gauge          | Tool setting                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 182 x821                                                                        | AWG 12, 14     | 5 for AWG 12 and 4 for AWG 14                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 182 x823                                                                        | AWG 8, 10      | 7 for AWG 8 and 6 for AWG 10                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Hand crimp tool<br>for <b>coaxial</b> contacts,<br>solder/crimp version <sup>1)</sup> | 09 99 000 0503 |                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Die<br>(To be ordered separately.)                                                    | 09 99 000 0508 |                                                                                                                                                                                                                                                                      | <table><tr><th>Contact Part No.</th><th>Cavity</th></tr><tr><td>09 69 181 x230</td><td rowspan="2">B</td></tr><tr><td>09 69 281 x230</td></tr><tr><td>09 69 181 x141</td><td rowspan="2">C</td></tr><tr><td>09 69 281 x141</td></tr><tr><td>09 69 181 x140</td><td rowspan="2">B</td></tr><tr><td>09 69 281 x140</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Contact Part No. | Cavity         | 09 69 181 x230 | B              | 09 69 281 x230                | 09 69 181 x141                        | C              | 09 69 281 x141               | 09 69 181 x140                        | B              | 09 69 281 x140 |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Contact Part No.                                                                      | Cavity         |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 181 x230                                                                        | B              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 281 x230                                                                        |                |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 181 x141                                                                        | C              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 281 x141                                                                        |                |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 181 x140                                                                        | B              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 281 x140                                                                        |                |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Die<br>(To be ordered separately.)                                                    | 09 99 000 0515 | <table><tr><th>Contact Part No.</th><th>Cavity</th></tr><tr><td>09 69 181 x143</td><td rowspan="2">A</td></tr><tr><td>09 69 281 x143</td></tr></table>                                                                                                               | Contact Part No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Cavity           | 09 69 181 x143 | A              | 09 69 281 x143 |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Contact Part No.                                                                      | Cavity         |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 181 x143                                                                        | A              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 281 x143                                                                        |                |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Die<br>(To be ordered separately.)                                                    | 09 99 000 0519 | <table><tr><th>Contact Part No.</th><th>Cavity</th></tr><tr><td>09 69 181 x233</td><td rowspan="2">B</td></tr><tr><td>09 69 281 x233</td></tr></table>                                                                                                               | Contact Part No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Cavity           | 09 69 181 x233 | B              | 09 69 281 x233 |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| Contact Part No.                                                                      | Cavity         |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 181 x233                                                                        | B              |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |
| 09 69 281 x233                                                                        |                |                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                |                |                |                               |                                       |                |                              |                                       |                |                |                               |                |            |                               |                |            |                               |                |            |                               |                |           |                              |                |           |

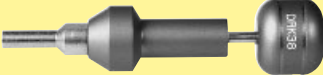
<sup>1)</sup> Only the outer ferrule is crimped (inner conductor is soldered)

## Tools for crimp termination

| Identification                                                                                                                 | Part No.       |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
|--------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|----------------------------------|----------------|----------------------------------|----------------|----------------|----------------|----------------|
| Hand crimp tool<br>for <b>coaxial</b> contacts,<br>crimp/crimp version <sup>1)</sup> ,<br>suitable for <b>inner</b><br>contact | 09 99 000 0501 |                                                                                                                                                                                                                                                                                                                   |                  |                |                                  |                |                                  |                |                |                |                |
| Inner contact die<br>(To be ordered<br>separately.)                                                                            | 09 99 000 0507 |  <table><tr><th>Contact Part No.</th></tr><tr><td>09 69 182 x140</td></tr><tr><td>09 69 282 x140</td></tr><tr><td>09 69 182 x230</td></tr><tr><td>09 69 282 x230</td></tr><tr><td>09 69 182 x232</td></tr><tr><td>09 69 282 x232</td></tr><tr><td>09 69 182 x233</td></tr><tr><td>09 69 282 x233</td></tr></table> | Contact Part No. | 09 69 182 x140 | 09 69 282 x140                   | 09 69 182 x230 | 09 69 282 x230                   | 09 69 182 x232 | 09 69 282 x232 | 09 69 182 x233 | 09 69 282 x233 |
| Contact Part No.                                                                                                               |                |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 182 x140                                                                                                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 282 x140                                                                                                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 182 x230                                                                                                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 282 x230                                                                                                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 182 x232                                                                                                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 282 x232                                                                                                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 182 x233                                                                                                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 282 x233                                                                                                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| Hand crimp tool<br>for <b>coaxial</b> contacts,<br>crimp/crimp version <sup>1)</sup> ,<br>suitable for <b>outer</b><br>ferrule | 09 99 000 0503 |                                                                                                                                                                                                                                                                                                                 |                  |                |                                  |                |                                  |                |                |                |                |
| Outer contact die<br>(To be ordered<br>separately.)                                                                            | 09 99 000 0508 |  <table><tr><th>Contact Part No.</th><th>Cavity</th></tr><tr><td>09 69 182 x140<br/>09 69 282 x140</td><td>B</td></tr><tr><td>09 69 182 x230<br/>09 69 282 x230</td><td>B</td></tr></table>                                                                                                                      | Contact Part No. | Cavity         | 09 69 182 x140<br>09 69 282 x140 | B              | 09 69 182 x230<br>09 69 282 x230 | B              |                |                |                |
| Contact Part No.                                                                                                               | Cavity         |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 182 x140<br>09 69 282 x140                                                                                               | B              |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 182 x230<br>09 69 282 x230                                                                                               | B              |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| Outer contact die<br>(To be ordered<br>separately.)                                                                            | 09 99 000 0518 | <table><tr><th>Contact Part No.</th><th>Cavity</th></tr><tr><td>09 69 182 x232<br/>09 69 282 x232</td><td>A</td></tr></table>                                                                                                                                                                                                                                                                       | Contact Part No. | Cavity         | 09 69 182 x232<br>09 69 282 x232 | A              |                                  |                |                |                |                |
| Contact Part No.                                                                                                               | Cavity         |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 182 x232<br>09 69 282 x232                                                                                               | A              |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| Outer contact die<br>(To be ordered<br>separately.)                                                                            | 09 99 000 0519 | <table><tr><th>Contact Part No.</th><th>Cavity</th></tr><tr><td>09 69 182 x233<br/>09 69 282 x233</td><td>B</td></tr></table>                                                                                                                                                                                                                                                                       | Contact Part No. | Cavity         | 09 69 182 x233<br>09 69 282 x233 | B              |                                  |                |                |                |                |
| Contact Part No.                                                                                                               | Cavity         |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |
| 09 69 182 x233<br>09 69 282 x233                                                                                               | B              |                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                |                                  |                |                                  |                |                |                |                |

<sup>1)</sup> Both inner and outer conductor are crimped

Tools for crimp termination

| Identification                                                                      | Part No.              |                                                                                                                                                                                                                                                                                                                                                  |                  |       |              |                |                       |                                                       |                |                       |                                                       |
|-------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------|--------------|----------------|-----------------------|-------------------------------------------------------|----------------|-----------------------|-------------------------------------------------------|
| Hand crimp tool<br>for <b>high voltage</b><br>contacts                              | 09 99 000 0501        |                                                                                                                                                                                                                                                                |                  |       |              |                |                       |                                                       |                |                       |                                                       |
| Die for male contacts<br>(To be ordered<br>separately.)                             | 09 99 000 0507        | <table><tr><th>Contact Part No.</th><th>Gauge</th><th>Tool setting</th></tr><tr><td>09 69 182 2550</td><td>AWG<br/>24, 26, 28, 30</td><td>5 for AWG 24 and 26, 4 for AWG 28<br/>and 3 for AWG 30</td></tr><tr><td>09 69 282 2550</td><td>AWG<br/>24, 26, 28, 30</td><td>5 for AWG 24 and 26, 4 for AWG 28<br/>and 3 for AWG 30</td></tr></table> | Contact Part No. | Gauge | Tool setting | 09 69 182 2550 | AWG<br>24, 26, 28, 30 | 5 for AWG 24 and 26, 4 for AWG 28<br>and 3 for AWG 30 | 09 69 282 2550 | AWG<br>24, 26, 28, 30 | 5 for AWG 24 and 26, 4 for AWG 28<br>and 3 for AWG 30 |
| Contact Part No.                                                                    | Gauge                 | Tool setting                                                                                                                                                                                                                                                                                                                                     |                  |       |              |                |                       |                                                       |                |                       |                                                       |
| 09 69 182 2550                                                                      | AWG<br>24, 26, 28, 30 | 5 for AWG 24 and 26, 4 for AWG 28<br>and 3 for AWG 30                                                                                                                                                                                                                                                                                            |                  |       |              |                |                       |                                                       |                |                       |                                                       |
| 09 69 282 2550                                                                      | AWG<br>24, 26, 28, 30 | 5 for AWG 24 and 26, 4 for AWG 28<br>and 3 for AWG 30                                                                                                                                                                                                                                                                                            |                  |       |              |                |                       |                                                       |                |                       |                                                       |
| Die for female contacts<br>(To be ordered<br>separately.)                           | 09 99 000 0533        |                                                                                                                                                                                                                                                                |                  |       |              |                |                       |                                                       |                |                       |                                                       |
| Insertion and<br>extraction tool<br>for <b>signal</b> contacts                      | 09 99 000 0511        |                                                                                                                                                                                                                                                              |                  |       |              |                |                       |                                                       |                |                       |                                                       |
| Extraction tool<br>for <b>coaxial, power</b><br>and <b>high voltage</b><br>contacts | 09 99 000 0512        |                                                                                                                                                                                                                                                              |                  |       |              |                |                       |                                                       |                |                       |                                                       |

Tooling  
crimp



1. Strip the wire.

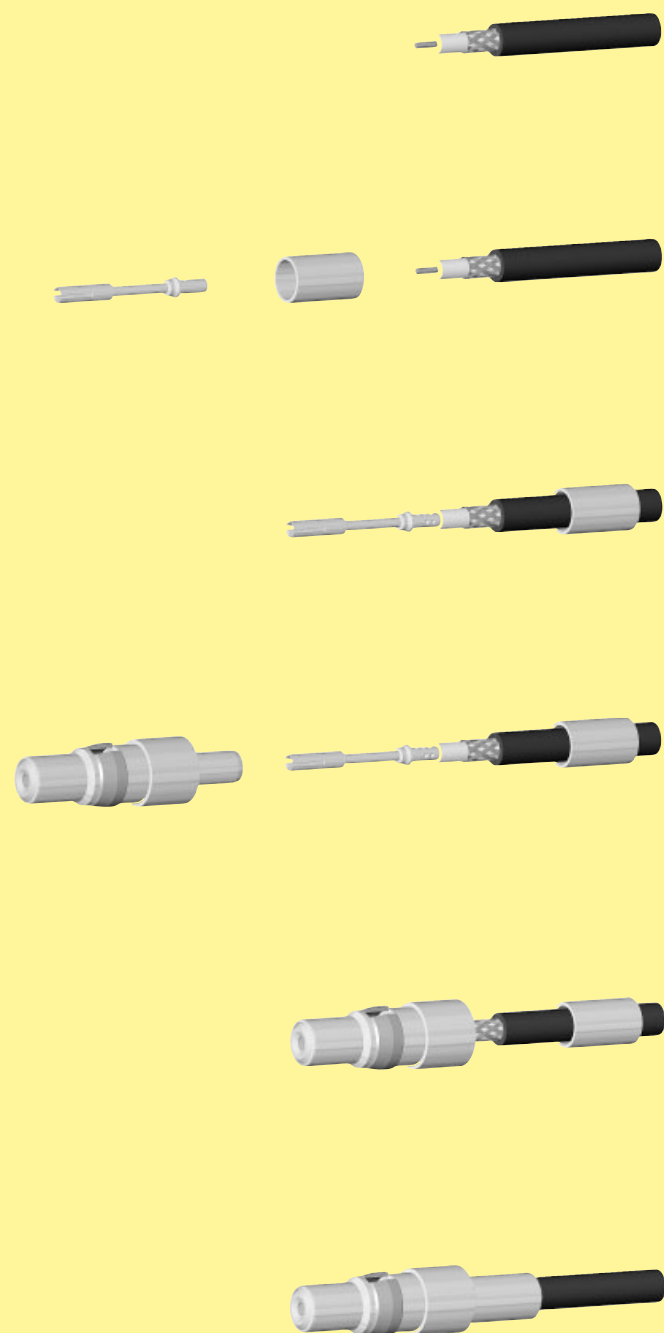
2. Attach the sleeve and inner conductor.

3. Crimp the inner conductor.

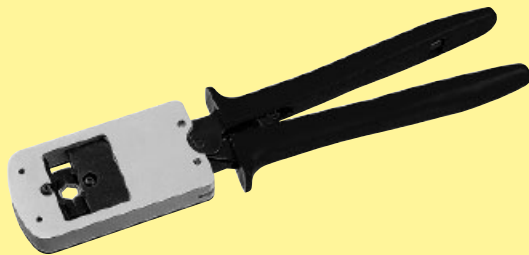
4. Snap the inner conductor into the contact.

5. Tap the shield on.

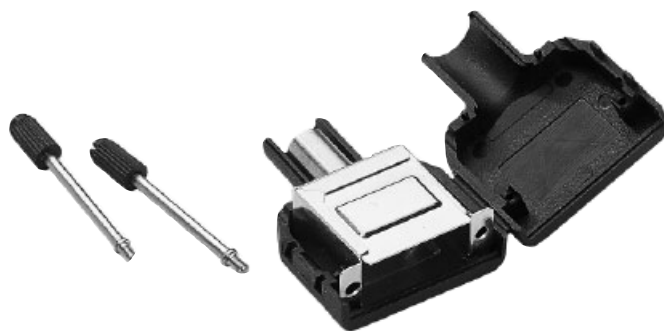
6. Slide the sleeve forwards and crimp.



Tools for crimp termination

| Identification                                                |                                 | Part No.       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|---------------------------------------------------------------|---------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|
| Hexagonal head screwdriver<br>for hoods with hexagonal screws |                                 | 61 03 600 0021 |                                                                                                                                                                                                                                                                                                                                                                                                    |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Crimp tool<br>for flange and ferrule                          |                                 | 61 03 600 0020 |                                                                                                                                                                                                                                                                                                                                                                                                    |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Inserts for crimp tool                                        |                                 |                | <table><tr><th>Width of hexagonal nut [mm]</th></tr><tr><td>5.0</td></tr><tr><td>5.5</td></tr><tr><td>6.0</td></tr><tr><td>6.5</td></tr><tr><td>7.0</td></tr><tr><td>7.5</td></tr><tr><td>8.0</td></tr><tr><td>8.5</td></tr><tr><td>9.0</td></tr><tr><td>9.5</td></tr><tr><td>10.0</td></tr><tr><td>10.5</td></tr><tr><td>11.0</td></tr><tr><td>11.5</td></tr><tr><td>12.0</td></tr><tr><td>12.5</td></tr><tr><td>13.0</td></tr><tr><td>13.5</td></tr><tr><td>14.0</td></tr></table> | Width of hexagonal nut [mm] | 5.0 | 5.5 | 6.0 | 6.5 | 7.0 | 7.5 | 8.0 | 8.5 | 9.0 | 9.5 | 10.0 | 10.5 | 11.0 | 11.5 | 12.0 | 12.5 | 13.0 | 13.5 | 14.0 |
|                                                               | Width of hexagonal nut [mm]     |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 5.0                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 5.5                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 6.0                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 6.5                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 7.0                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 7.5                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 8.0                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 8.5                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 9.0                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 9.5                                                           |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 10.0                                                          |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 10.5                                                          |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 11.0                                                          |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 11.5                                                          |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 12.0                                                          |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 12.5                                                          |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 13.0                                                          |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 13.5                                                          |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| 14.0                                                          |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0179                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0180                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0098                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0099                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0100                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0101                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0102                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0103                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0104                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0105                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0174                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0172                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0168                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0169                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0175                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0176                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0177                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0178                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | 61 03 000 0173                  |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Mounting tool<br>for flange                                   |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                  |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | for D-Sub hoods (9-37 contacts) | 61 03 600 0017 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               | for D-Sub hoods (50 contacts)   | 61 03 600 0018 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Insertion and removal tool<br>for contacts                    |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                  |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               |                                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                                               |                                 | 09 99 000 0171 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |

Tooling  
crimp

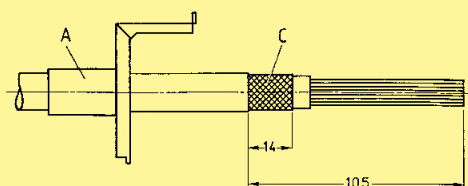


## Tool / Assembly instructions

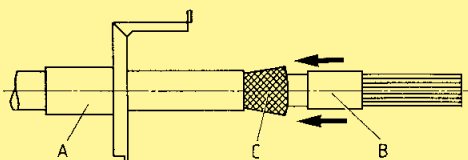
| Identification                | No. of contacts | Part No.       | Drawing | Dimensions in mm |
|-------------------------------|-----------------|----------------|---------|------------------|
| Crimp tool for screened hoods |                 | 09 99 000 0233 |         |                  |
| Crimp tool dies               | 9               | 09 99 000 0235 |         |                  |
|                               | 15              | 09 99 000 0235 |         |                  |
|                               | 25              | 09 99 000 0236 |         |                  |
|                               | 37              | 09 99 000 0237 |         |                  |

### Assembly instructions for screened hoods

Place the metal screen part (A) on the cable. Prepare the cable for termination.



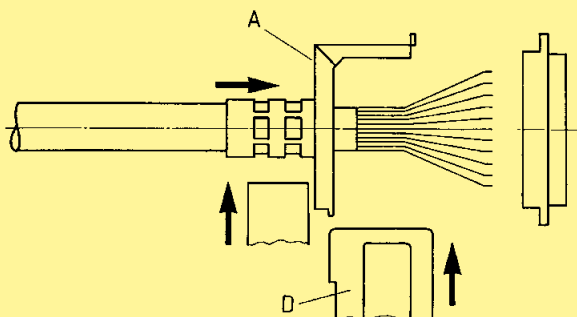
Place the inner ferrule (B) between conductors and the outer braid (C).



Terminate the D-Sub connector.

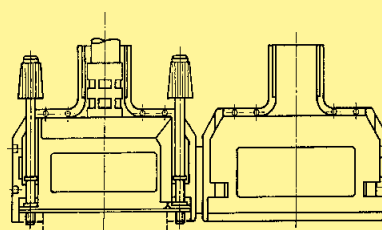
Put the metal screen part (A) over the braid and crimp directly over the inner ferrule, ensuring that the correct crimp tool die is used.

Slide in the other metal screen part (D).



Push back the terminated connector into the assembled screen.

Put the assembled connector, screen and knurled screws into the thermoplastic hood and snap closed.





Tooling for IDC technology

Page

|                        |              |
|------------------------|--------------|
| <b>harlink®</b> .....  | <b>32.02</b> |
| <b>harmik®</b> .....   | <b>32.02</b> |
| <b>D-Sub – S</b> ..... | <b>32.05</b> |
| <b>SEK</b> .....       | <b>32.06</b> |

Tools

| Identification                              | Part No.       | Drawing                                                                                                                                                                                                                                                                                                                                            | Dimensions in mm |
|---------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Crimping hand tool<br>for shell cable entry | 27 99 000 0001 |   <p>A manual for the <i>har-link</i>® cable free connector assembly is available in our online catalogue <i>HARKIS</i>® or on demand at your local HARTING representative</p> |                  |

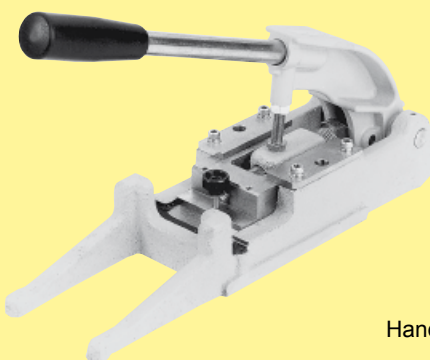
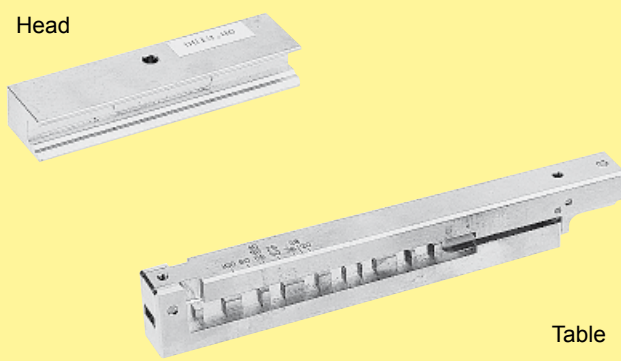
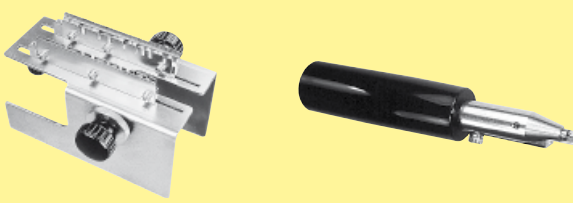
Tools for insulation displacement termination  
for Pin and socket and Bellows range

Selection chart for hand assembly

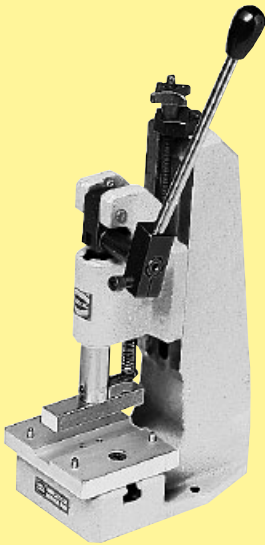
| for connector                                                                                                 | Hand cable aligner | Head and table | Hand press     |
|---------------------------------------------------------------------------------------------------------------|--------------------|----------------|----------------|
| Male Pin and socket<br>60 03 ... 5200<br>60 03 ... 5205<br>60 03 ... 5210<br>60 03 ... 5215<br>60 03 ... 5220 | 60 99 000 0011     | 60 99 000 0010 | 60 99 000 0007 |
| Male Bellows<br>60 13 ... 5200<br>60 13 ... 5205<br>60 13 ... 5215                                            | 60 99 000 0017     | 60 99 000 0016 |                |

Number of contacts

## Tools for insulation displacement termination

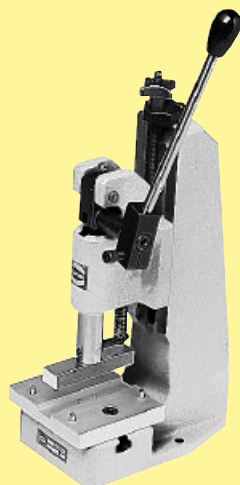
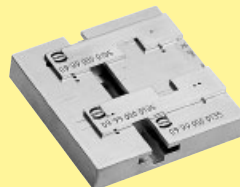
| Identification                                                                               | Part No.       |                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hand press                                                                                   | 60 99 000 0007 |  <p>Hand press</p>                                                                                                                                                            |
| Head and table<br>for male Pin and socket connector                                          | 60 99 000 0010 |  <p>Head</p> <p>Table</p>                                                                                                                                                    |
| Head and table<br>for male Bellows connector                                                 | 60 99 000 0016 |                                                                                                                                                                                                                                                                 |
| Hand cable aligner<br>and press cutter<br>for Pin and socket and<br>female Bellows connector | 60 99 000 0011 |                                                                                                                                                                             |
| Hand cable aligner<br>and press cutter<br>for male Bellows connector                         | 60 99 000 0017 |                                                                                                                                                                                                                                                                 |
| Press cutter                                                                                 | 60 99 000 0038 |                                                                                                                                                                             |
|                                                                                              |                |  <p>A manual for the <i>har-mik</i>® connector and cable assembly is available in our online catalogue <i>HARKIS</i>® or on demand at your local HARTING representative.</p> |

## Tools for insulation displacement termination

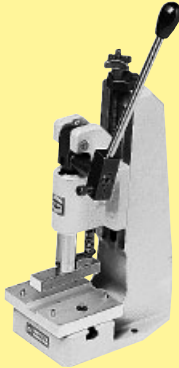
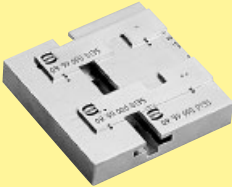
| Identification                                                              | Part No.                         | Drawing                                                                              | Dimensions in mm |
|-----------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------|------------------|
| <b>Bench press</b><br>for termination of insulation displacement connectors | 09 99 000 0114                   |    |                  |
| <b>Cabling tool</b><br>for termination of flat cables                       | 60 99 000 0034                   |  |                  |
| <b>Cable cutter</b><br>for flat cables                                      | 09 99 000 0116                   |  |                  |
| <b>Spare parts</b><br>Blade<br>Cutting plate                                | 09 99 000 0179<br>09 99 000 0180 |                                                                                      |                  |



## Tools for insulation displacement termination

| Identification                                                                                                    | Part No.                         | Drawing                                                                              | Dimensions in mm |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------|------------------|
| <b>Bench press</b><br>for termination of insulation displacement connectors                                       | 09 99 000 0114                   |    |                  |
| <b>Cabling tool</b><br>for termination of flat cables                                                             | 09 99 000 0135                   |   |                  |
| <b>Insert</b><br>for termination of 37 pole male connectors                                                       | 09 99 600 0201                   |  |                  |
| <b>Hand tool with base plates (included in tool kit)</b><br>for termination of insulation displacement connectors | 09 99 000 0149                   |  |                  |
| <b>Cable cutter</b><br>for flat cables                                                                            | 09 99 000 0116                   |                                                                                      |                  |
| <b>Spare parts</b><br>Blade<br>Cutting plate                                                                      | 09 99 000 0179<br>09 99 000 0180 |  |                  |

Tools for insulation displacement termination

| Identification                                                                                                                                        | Part No.       | Drawing                                                                              | Dimensions in mm                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <p><b>Bench press</b><br/>for termination of insulation displacement connectors</p>                                                                   | 09 99 000 0114 |    |    |
| <p><b>Cabling tool</b><br/>for termination of flat cables<br/>suitable for ...</p>                                                                    |                |                                                                                      |                                                                                       |
| female                                                                                                                                                | 09 99 000 0115 |                                                                                      |                                                                                       |
| DIP                                                                                                                                                   | 09 99 000 0134 |                                                                                      |                                                                                       |
| Pcb, 2 rows                                                                                                                                           | 09 99 000 0131 |                                                                                      |                                                                                       |
| Pcb, 4 rows                                                                                                                                           | 09 99 000 0130 |                                                                                      |                                                                                       |
| DIN 41 612                                                                                                                                            | 09 99 000 0150 |                                                                                      |                                                                                       |
| <p><b>Hand tool with base plates</b><br/>(included in tool kit)<br/>for termination of insulation displacement connectors</p> <p>suitable for ...</p> |                |  |  |
| female                                                                                                                                                |                |                                                                                      |                                                                                       |
| DIP                                                                                                                                                   |                |                                                                                      |                                                                                       |
| Pcb, 2 rows                                                                                                                                           |                |                                                                                      |                                                                                       |
| DIN 41 612                                                                                                                                            | 09 99 000 0149 |                                                                                      |                                                                                       |
| <p><b>Cable cutter</b><br/>for flat cables</p>                                                                                                        | 09 99 000 0116 |  |                                                                                       |
| <p><b>Spare parts</b><br/>Blade</p>                                                                                                                   | 09 99 000 0179 |                                                                                      |                                                                                       |
| Cutting plate                                                                                                                                         | 09 99 000 0180 |                                                                                      |                                                                                       |



Cables and cable assemblies

Page

|                            |              |
|----------------------------|--------------|
| <b>harlink®</b> .....      | <b>40.02</b> |
| <b>harmik®</b> .....       | <b>40.03</b> |
| <b>D-Sub and SEK</b> ..... | <b>40.08</b> |



## Cable assemblies

Identification      Part No.      Drawing      Dimensions in mm

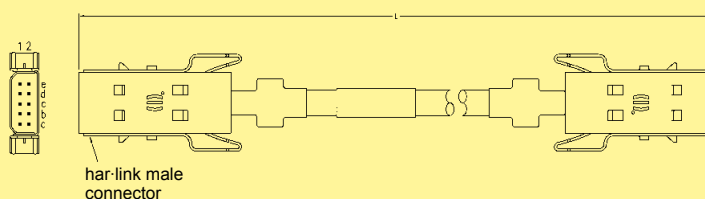
### Standard cable assembly har-link® 10 pole

Cable: 5 twisted pairs,  
AWG 28, shielded, PVC

Wiring: 1:1

Length: L = 0.5 m  
L = 1.0 m  
L = 2.0 m

33 27 243 0500 001  
33 27 243 1000 002  
33 27 243 2000 003



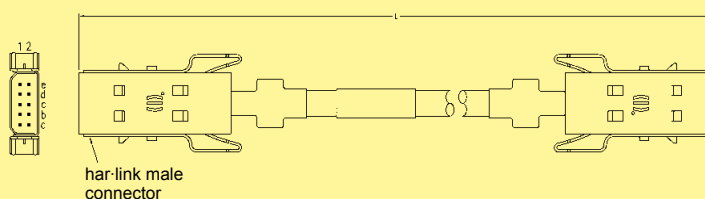
### High end cable assembly har-link® 10 pole

Cable: 5 twisted pairs,  
AWG 30, double  
shielded, PVC

Wiring: 1:1

Length: L = 0.5 m  
L = 1.0 m  
L = 2.0 m

33 27 243 0500 006  
33 27 243 1000 007  
33 27 243 2000 008



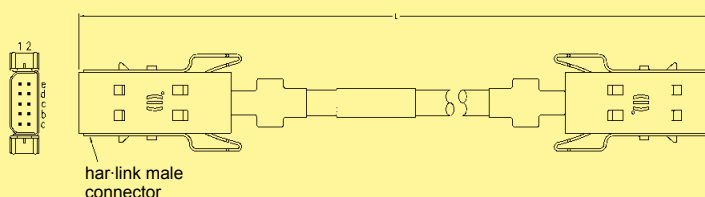
### High end cable assembly har-link® 10 pole

Cable: 5 twisted pairs,  
AWG 30, double  
shielded, PVC

Wiring: acc. to IEEE 1355

Length: L = 0.5 m  
L = 1.0 m  
L = 2.0 m

33 27 243 0500 015  
33 27 243 1000 016  
33 27 243 2000 017



#### IEEE 1355 wiring

| Connector 1 | Connector 2 |
|-------------|-------------|
| 2-e         | 1-a         |
| 1-e         | 2-a         |
| 2-d         | 1-b         |
| 1-d         | 2-b         |
| 2-c         | 2-c         |
| 1-c         | 1-c         |
| 2-b         | 1-d         |
| 1-b         | 2-d         |
| 2-a         | 1-e         |
| 1-a         | 2-e         |

## Cables for insulation displacement termination

| Identification                                                                     | No. of pairs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Standard version                                                                                                           | Part No.<br><i>Halogen free version with screened pairs</i> |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------|------------------|---------|---|-----|----|-----|----|-----|----|-----|----|-----|----|-----|----|------|--------------|------------------|---|-----------|
| Twisted pair cable with braid shield<br>AWG 28<br>AWG 30<br>Length per reel: 100 m | 5<br>10<br>13<br>18<br>25<br>34<br>50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 60 90 005 6010<br>60 90 010 6010<br>60 90 013 6010<br>60 90 018 6010<br>60 90 025 6010<br>60 90 034 6010<br>60 90 050 6010 | 60 90 005 6009                                              |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Drawing                                                                            | <table><thead><tr><th rowspan="2">No. of pairs</th><th>Outside diameter</th></tr><tr><th>Nominal</th></tr></thead><tbody><tr><td>5</td><td>5.4</td></tr><tr><td>10</td><td>6.6</td></tr><tr><td>13</td><td>6.8</td></tr><tr><td>18</td><td>7.5</td></tr><tr><td>25</td><td>8.5</td></tr><tr><td>34</td><td>8.9</td></tr><tr><td>50</td><td>11.1</td></tr></tbody></table> <table><thead><tr><th>No. of pairs</th><th>Outside diameter</th></tr></thead><tbody><tr><td>5</td><td>5.5 ± 0.3</td></tr></tbody></table> <p>Twisted pair<br/>Screened twisted pairs<br/>Separator<br/>Shield<br/>Jacket PVC<br/>Jacket FRNC</p> <p>Dimensions in mm</p> |                                                                                                                            |                                                             | No. of pairs | Outside diameter | Nominal | 5 | 5.4 | 10 | 6.6 | 13 | 6.8 | 18 | 7.5 | 25 | 8.5 | 34 | 8.9 | 50 | 11.1 | No. of pairs | Outside diameter | 5 | 5.5 ± 0.3 |
| No. of pairs                                                                       | Outside diameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
|                                                                                    | Nominal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| 5                                                                                  | 5.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| 10                                                                                 | 6.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| 13                                                                                 | 6.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| 18                                                                                 | 7.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| 25                                                                                 | 8.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| 34                                                                                 | 8.9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| 50                                                                                 | 11.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| No. of pairs                                                                       | Outside diameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| 5                                                                                  | 5.5 ± 0.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Technical characteristics                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
|                                                                                    | Standard version                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <i>Halogen free version with screened pairs</i>                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Number of pairs                                                                    | 5, 10, 13, 18, 25, 34, 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5                                                                                                                          |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Voltage rating                                                                     | 30 V (style UL 2789)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 100 V                                                                                                                      |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Maximum conductor resistance (20 °C)                                               | 233 Ω/km                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 350 Ω/km                                                                                                                   |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Minimum insulation resistance (20 °C)                                              | 1 MΩ/km                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10 GΩ/km                                                                                                                   |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Nominal differential impedance (TDR)                                               | 85 Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 95 Ω ± 5 Ω                                                                                                                 |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Nominal differential capacitance (1 kHz)                                           | 110 pF/m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 45 pF/m                                                                                                                    |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Propagation velocity                                                               | 55 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Temperature range                                                                  | – 20 °C ... + 105 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | – 25 °C ... + 80 °C                                                                                                        |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Cable materials                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Conductor                                                                          | 7 x 0.13 mm stranded tinned copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 7 x 0.1 mm stranded tinned copper                                                                                          |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Insulation (except 50 pairs)<br>(for 50 pairs)                                     | PVC Ø 0.62 mm<br>PVC Ø 0.67 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Polypropylene Ø 0.74 mm                                                                                                    |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Shield                                                                             | Tinned copper braid,<br>covering ≥ 80 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Tinned copper braid,<br>covering ≥ 65 %                                                                                    |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Jacket                                                                             | PVC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | FRNC                                                                                                                       |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Flammability rating                                                                | Flame tested as per UL style 2789                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                            |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |
| Sheath marking                                                                     | AWM 2789 60°C 30V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AWM 21283 80°C 30V VW1                                                                                                     |                                                             |              |                  |         |   |     |    |     |    |     |    |     |    |     |    |     |    |      |              |                  |   |           |

Thin print: Standard version  
Italic print: Halogen free version



## Cable assemblies

| Identification | Part No. | Drawing | Dimensions in mm |
|----------------|----------|---------|------------------|
|----------------|----------|---------|------------------|

### Cable assembly *har-mik*® pin and socket, 68 pole

Hood: metal hood with top entry

Cable: 34 twisted pairs, AWG 28, shielded, PVC

Wiring: 1:1

Length: L = 0.5 m

L = 1.0 m

L = 2.0 m

L = 5.0 m

L = 10.0 m

L = 15.0 m

L = 20.0 m

33 60 214 5000 102

33 60 213 1000 103

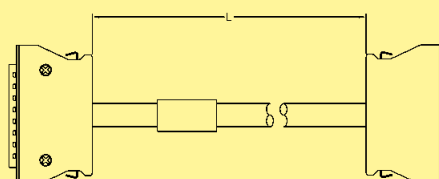
33 60 213 2000 104

33 60 213 5000 105

33 60 212 1000 106

33 60 212 1500 107

33 60 212 2000 108



### Cable assembly *har-mik*® bellows, 36 pole

Hood: shielded plastic hood with top entry

Cable: 18 twisted pairs, AWG 28, shielded, PVC

Wiring: 1:1

Length: L = 0.5 m

L = 1.0 m

L = 2.0 m

L = 5.0 m

L = 10.0 m

L = 15.0 m

L = 20.0 m

33 60 214 5000 088

33 60 211 0010 089

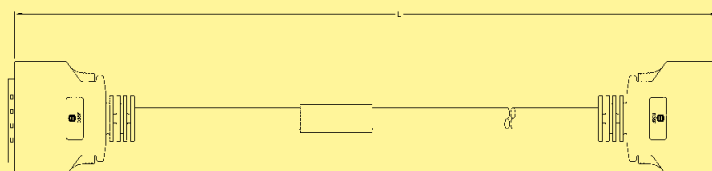
33 60 211 0020 090

33 60 211 0050 091

33 60 211 0100 092

33 60 211 0150 093

33 60 211 0200 094





## Cable assemblies

| Identification                                                                                                                                                                                                                                                 | Part No.                                                                                                              | Drawing | Dimensions in mm |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------|------------------|
| <p><b>Cable assembly har-mik® bellows, 36 pole, male</b></p> <p>Hood: overmoulded with top entry</p> <p>Cable: 18 twisted pairs, AWG 28, shielded, PVC</p> <p>Wiring: 1:1</p> <p>Length: L = 0.5 m<br/>L = 1.0 m<br/>L = 1.5 m<br/>L = 2.0 m<br/>L = 5.0 m</p> | <p>33 60 224 5000 191<br/>33 60 223 1000 192<br/>33 60 223 1500 193<br/>33 60 223 2000 194<br/>33 60 223 5000 195</p> |         |                  |
| <p><b>Cable assembly har-mik® bellows, 26 pole, male</b></p> <p>Hood: overmoulded with top entry</p> <p>Cable: 13 twisted pairs, AWG 28, shielded, PVC</p> <p>Wiring: 1:1</p> <p>Length: L = 0.5 m<br/>L = 1.0 m<br/>L = 1.5 m<br/>L = 2.0 m<br/>L = 5.0 m</p> | <p>33 60 224 5000 180<br/>33 60 223 1000 181<br/>33 60 223 1500 182<br/>33 60 223 2000 183<br/>33 60 223 5000 184</p> |         |                  |
| <p><b>Cable assembly har-mik® bellows, 14 pole, male</b></p> <p>Hood: overmoulded with top entry</p> <p>Cable: 7 twisted pairs, AWG 28, shielded, PVC</p> <p>Wiring: 1:1</p> <p>Length: L = 0.5 m<br/>L = 1.0 m<br/>L = 1.5 m<br/>L = 2.0 m<br/>L = 5.0 m</p>  | <p>33 60 224 5000 186<br/>33 60 223 1000 187<br/>33 60 223 1500 188<br/>33 60 223 2000 189<br/>33 60 223 5000 190</p> |         |                  |

## Cables for insulation displacement termination

| Identification                                              | No. of wires | Part No.                         |
|-------------------------------------------------------------|--------------|----------------------------------|
| Flat cable<br>for IDC connector<br>Pitch 0.635 mm<br>AWG 30 |              |                                  |
| Length per reel: 100 ft<br>30.48 m                          | 50<br>68     | 60 90 050 6008<br>60 90 068 6008 |

## Drawing

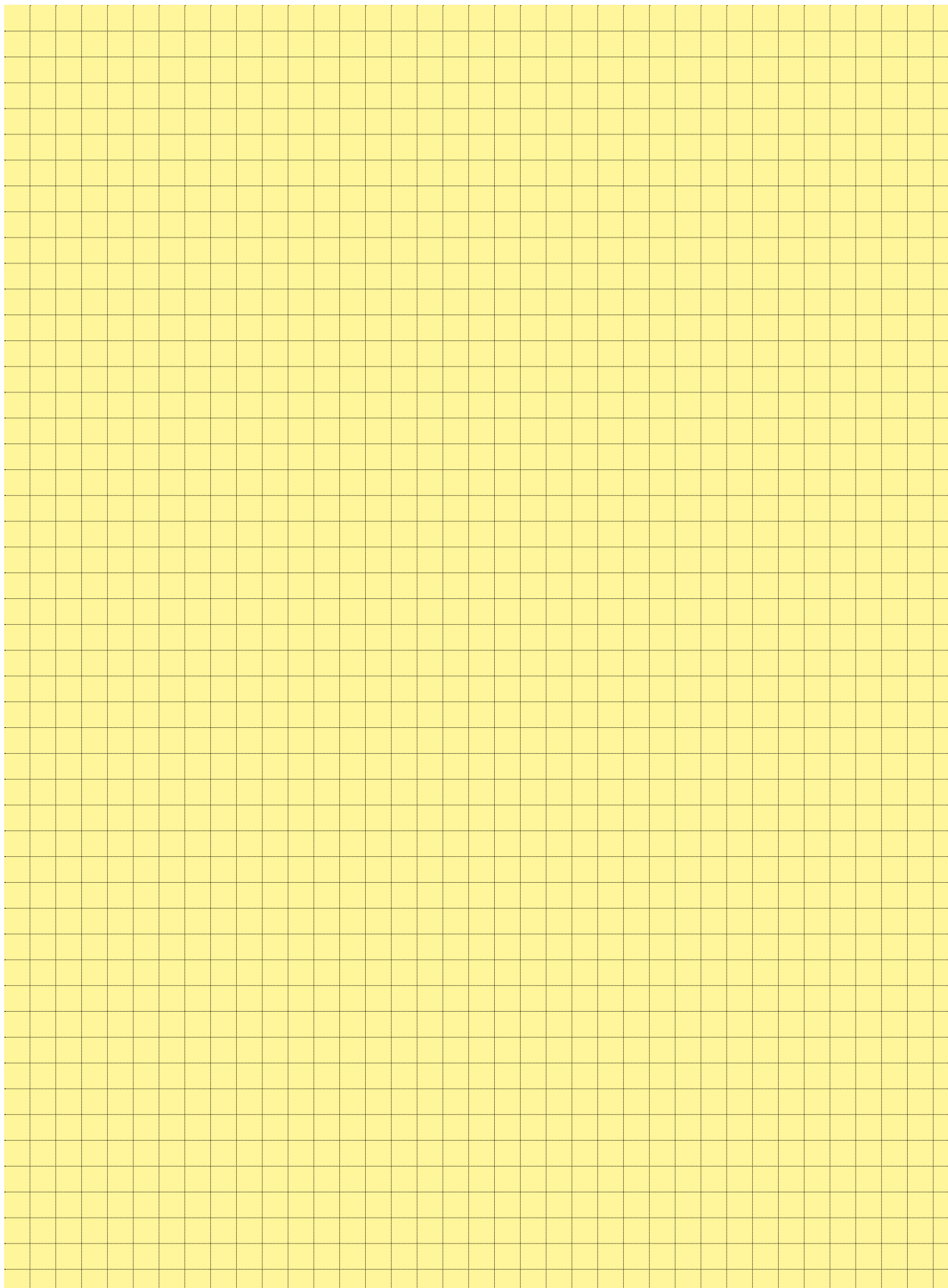
Dimensions in mm

|    | a<br>± 0.25 | b<br>± 0.05 | c<br>± 0.2 | d<br>± 0.05 |
|----|-------------|-------------|------------|-------------|
| 50 | 31.75       | 0.635       | 31.12      | 0.68        |
| 68 | 43.20       | 0.635       | 42.55      | 0.68        |

The tolerance b is not cumulative

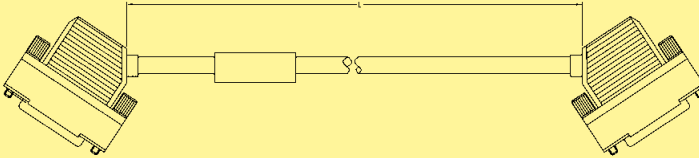
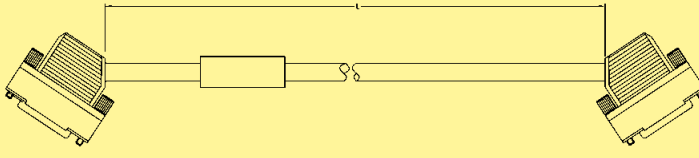
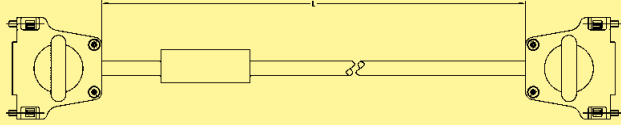
| Technical characteristics                |                          |                                                  |
|------------------------------------------|--------------------------|--------------------------------------------------|
| Number of wires                          | 50, 68                   |                                                  |
| Voltage rating                           | 150 V                    |                                                  |
| Current rating                           | 1.5 A max. per conductor |                                                  |
| Impedance                                | 75 Ω                     |                                                  |
| Nominal differential capacitance (1 kHz) | 90 pF/m                  |                                                  |
| Pitch                                    | 0.635 mm                 |                                                  |
| UL style                                 | 2678                     |                                                  |
| Cables                                   | Temperature range        | – 30 °C ... + 105 °C                             |
|                                          | Materials                |                                                  |
|                                          | Conductor                | 7 x 0.102 mm regular tinning or Z-bonding AWG 30 |
|                                          | Insulation               | PVC                                              |





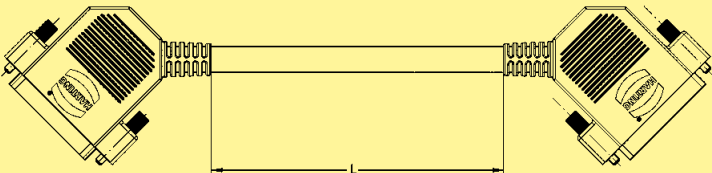
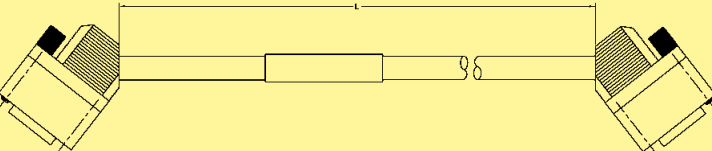


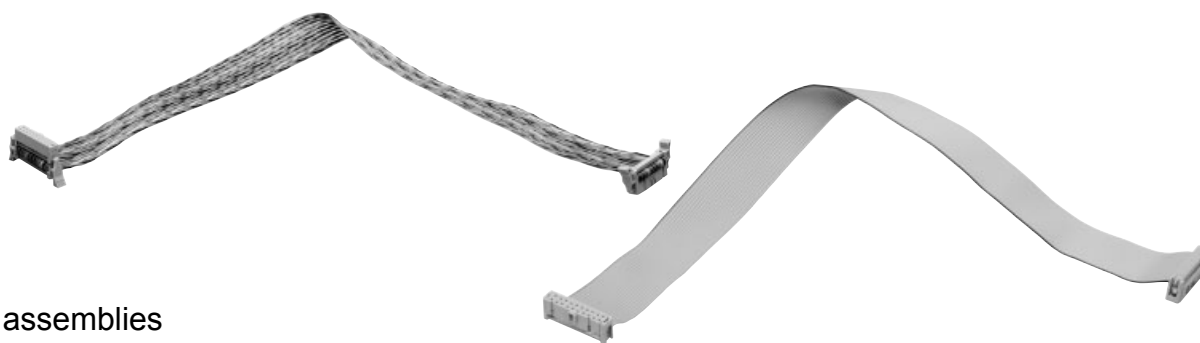
## Cable assemblies

| Identification                                                                                                                                                                                                                                                            | Part No. | Drawing                                                                              | Dimensions in mm |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------------------------------------------------------------------------------|------------------|
| <b>Cable assembly D-Sub HD 78 pole</b><br>Hood: shielded plastic hood with side entry, screw 4-40 UNC<br>Cable: 39 twisted pairs, AWG 26, double shielded, PVC<br>Wiring: 1:1<br><br>Length: L = 0.5 m<br>L = 1.0 m<br>L = 2.0 m<br>L = 5.0 m<br>L = 10.0 m<br>L = 20.0 m |          |    |                  |
| <b>Cable assembly D-Sub HD 44 pole</b><br>Hood: shielded plastic hood with side entry, screw 4-40 UNC<br>Cable: 22 twisted pairs, AWG 26, double shielded, PVC<br>Wiring: 1:1<br><br>Length: L = 0.5 m<br>L = 1.0 m<br>L = 1.5 m<br>L = 2.0 m<br>L = 5.0 m<br>L = 10.0 m  |          |  |                  |
| <b>Cable assembly D-Sub HD 44 pole</b><br>Hood: metal hood with top entry, screw 4-40 UNC<br>Cable: 24 twisted pairs, AWG 26, double shielded, PVC<br>Wiring: 1:1<br><br>Length: L = 0.5 m<br>L = 1.0 m<br>L = 5.0 m<br>L = 10.0 m<br>L = 20.0 m                          |          |  |                  |



## Cable assemblies

| Identification                                                                                                                                                                                                                                           | Part No.                                                                                                   | Drawing                                                                              | Dimensions in mm |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------|
| <b>Cable assembly D-Sub HD 44 pole</b><br>Hood: overmoulded with side entry<br>Cable: 24 twisted pairs, solid wires, AWG 26, shielded, halogen free<br>Wiring: 1:1<br><br>Length: L = 0.5 m<br>L = 1.0 m<br>L = 2.0 m<br>L = 5.0 m                       | 33 56 224 5000 001<br>33 56 221 0010 001<br>33 56 221 0020 001<br>33 56 221 0050 001                       |    |                  |
| <b>Cable assembly D-Sub 9 pole</b><br>Hood: shielded plastic hood with side entry, screw 4-40 UNC<br>Cable: 5 twisted pairs, stranded, AWG 24, shielded, PVC<br>Wiring: 1:1<br><br>Length: L = 0.5 m<br>L = 1.0 m<br>L = 1.5 m<br>L = 2.0 m<br>L = 5.0 m | 33 66 214 5000 058<br>33 66 213 1000 059<br>33 66 213 1500 060<br>33 66 213 2000 061<br>33 66 213 5000 062 |  |                  |



## Identification

## Part No.

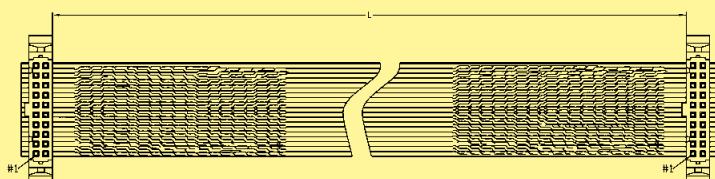
### Drawing

Dimensions in mm

Cable: Flat cable,  
10 twisted pairs, AWG 28/7,  
1.27 mm pitch  
Wiring: 1:1

Length:  $L = 0.5 \text{ m}$   
 $L = 1.0 \text{ m}$   
 $L = 1.5 \text{ m}$

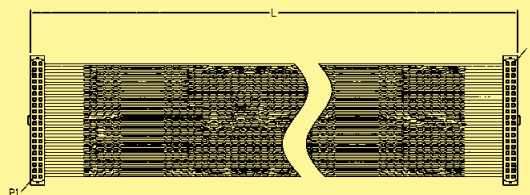
33 18 243 0500 060  
33 18 243 1000 062  
33 18 243 1500 068



Cable: Flat cable,  
20 twisted pairs, AWG 28/7,  
1.27 mm pitch  
Wiring: 1:1

Length:  $L = 0.5 \text{ m}$   
 $L = 1.0 \text{ m}$   
 $L = 1.5 \text{ m}$

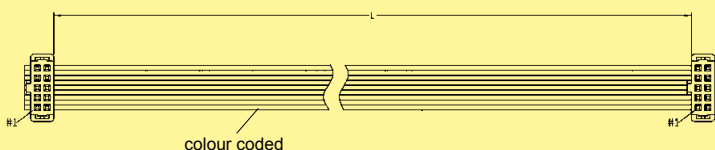
33 18 243 0500 055  
33 18 243 1000 057  
33 18 243 1500 069



Cable: Flat cable, grey,  
10 wires, AWG 28/7,  
1.27 mm pitch  
Wiring: 1:1

Length:  $L = 0.1 \text{ m}$   
 $L = 0.2 \text{ m}$   
 $L = 0.5 \text{ m}$   
 $L = 0.8 \text{ m}$   
 $L = 1.0 \text{ m}$

33 18 243 0100 063  
33 18 243 0200 064  
33 18 243 0500 065  
33 18 243 0800 066  
33 18 243 1000 067



## Cables for insulation displacement termination

| Identification                                                             | No. of contacts | Part No.      | Drawing | Dimensions in mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------|-----------------|---------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Flat cable</b><br>grey<br>UL AWM-style 2651<br>CSA                      |                 |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 6               | 09 18 006 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 9               | 09 18 009 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 10              | 09 18 010 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 14              | 09 18 014 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 15              | 09 18 015 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 16              | 09 18 016 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 18              | 09 18 018 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 20              | 09 18 020 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 24              | 09 18 024 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 25              | 09 18 025 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 26              | 09 18 026 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 28              | 09 18 028 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 30              | 09 18 030 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 34              | 09 18 034 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 37              | 09 18 037 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 40              | 09 18 040 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Length per reel                                                            | 50              | 09 18 050 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 30.48 m (100 feet)                                                         | 60              | 09 18 060 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 64              | 09 18 064 700 |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 100 m (328 feet)                                                           |                 |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            |                 |               |         | Conductor material _____ Copper tinned<br>Gauge _____ AWG 28/7 0.089 mm <sup>2</sup><br>Voltage rating _____ 300 V <sub>r.m.s.</sub><br>Current rating at 25 °C _____ 2.1 A max.<br>Capacity unbalanced _____ 45.9 pF/m<br>Impedance unbalanced _____ 105 Ω<br>Propagation delay _____ 4.9 ns/m nominal<br>Insulation material _____ PVC<br>Temperature rating (operating) _____ -20 °C ... +105 °C<br>Temperature rating (static) _____ -30 °C ... +105 °C<br>Flammability rating _____ UL: VW-1<br>Insulation resistance _____ > 100 MΩ/km |
| <b>Flat cable</b><br>grey<br>non-halogenated<br>UL style 21447<br>for VW-1 |                 |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 6               | 09 18 006 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 9               | 09 18 009 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 10              | 09 18 010 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 14              | 09 18 014 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 15              | 09 18 015 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 16              | 09 18 016 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 18              | 09 18 018 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 20              | 09 18 020 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 24              | 09 18 024 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 25              | 09 18 025 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 26              | 09 18 026 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 28              | 09 18 028 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 34              | 09 18 034 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 37              | 09 18 037 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 40              | 09 18 040 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 50              | 09 18 050 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            | 60              | 09 18 060 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Length per reel                                                            | 64              | 09 18 064 700 | 900     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 30.48 m (100 feet)                                                         |                 |               |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                            |                 |               |         | Conductor material _____ Copper tinned<br>Gauge _____ AWG 28/7 0.089 mm <sup>2</sup><br>Voltage rating _____ 300 V <sub>r.m.s.</sub><br>Current rating _____ 1.3 A<br>Capacity unbalanced _____ 42.6 pF/m at 1 MHz<br>Impedance unbalanced _____ 100 Ω<br>Inductance _____ 0.56 μH/m<br>Propagation delay _____ 4.8 ns/m<br>Insulation material _____ Non-halogenated flame retardent Polyolefin<br>Temperature rating _____ -40 °C ... +80 °C<br>Insulation resistance _____ 10000 MΩ/km                                                    |

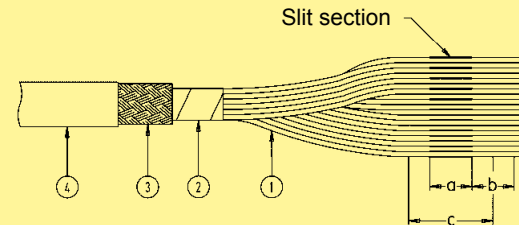
Important: always store reel vertically

## Cables for insulation displacement termination

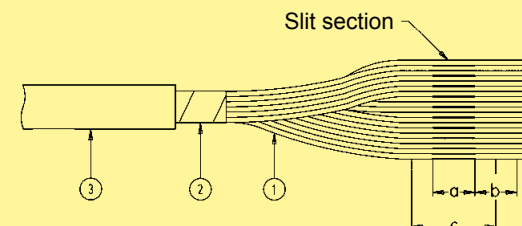
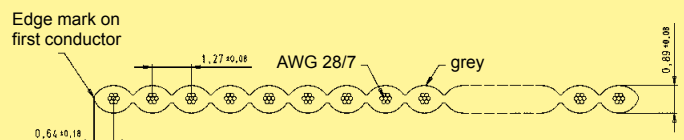
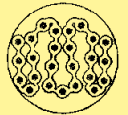
| Identification                                                                                            | No. of contacts | Part No.       | Drawing                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Dimensions in mm                                                                                                               |
|-----------------------------------------------------------------------------------------------------------|-----------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Flat cable</b><br>colour coded<br><br>Length per reel<br>30.48 m (100 feet)<br><br>UL AWM-style 2651   |                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Colour code sequence<br>(in 10 steps)<br><br>brown, red, orange,<br>yellow, green, blue, violet,<br>grey, white, black<br><br> |
|                                                                                                           | 6               | 09 18 006 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 9               | 09 18 009 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 10              | 09 18 010 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 14              | 09 18 014 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 15              | 09 18 015 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 16              | 09 18 016 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 18              | 09 18 018 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 20              | 09 18 020 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 24              | 09 18 024 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 25              | 09 18 025 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 26              | 09 18 026 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 28              | 09 18 028 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 30              | 09 18 030 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 34              | 09 18 034 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 37              | 09 18 037 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 40              | 09 18 040 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 50              | 09 18 050 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 60              | 09 18 060 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 64              | 09 18 064 7005 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
| <b>Flat cable</b><br>twisted pair<br><br>Length per reel<br>30.48 m (100 feet)<br><br>UL AWM-style 20 130 |                 |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 10              | 09 18 010 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 14              | 09 18 014 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 16              | 09 18 016 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 20              | 09 18 020 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 26              | 09 18 026 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 34              | 09 18 034 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 40              | 09 18 040 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 50              | 09 18 050 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 60              | 09 18 060 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           | 64              | 09 18 064 7006 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                |
|                                                                                                           |                 |                | Conductor material _____ Copper tinned<br>Gauge _____ AWG 28/7 0.089 mm <sup>2</sup><br>Voltage rating _____ 300 V <sub>r.m.s.</sub><br>Conductor resistance _____ 221 mΩ/m<br>Capacity unbalanced _____ 49 pF/m<br>Impedance unbalanced _____ 105 Ω<br>Signal delay _____ 5.2 ns/m<br>Insulation material _____ PVC<br>Temperature rating _____ -20 °C ... + 105 °C<br>Flammability rating _____ UL: VW 1<br>Insulation resistance _____ 10 <sup>4</sup> MΩ/km |                                                                                                                                |

## Cables for insulation displacement termination

| Identification                               | No. of contacts | Part No.     | Drawing       | Dimensions in mm |
|----------------------------------------------|-----------------|--------------|---------------|------------------|
| <b>Round flat cable</b>                      |                 |              | <b>ø max.</b> |                  |
| with screening<br>(shielding)                | 9               | 09 18 009 70 | ┐             | 6.86             |
|                                              | 10              | 09 18 010 70 | ┐             | 6.86             |
|                                              | 14              | 09 18 014 70 | ┐             | 7.37             |
|                                              | 15              | 09 18 015 70 | ┐             | 7.62             |
|                                              | 16              | 09 18 016 70 | ┐             | 7.87             |
|                                              | 20              | 09 18 020 70 | ┐             | 8.38             |
|                                              | 25              | 09 18 025 70 | ┐             | 9.14             |
|                                              | 26              | 09 18 026 70 | ┐             | 9.14             |
|                                              | 34              | 09 18 034 70 | ┐             | 10.16            |
|                                              | 37              | 09 18 037 70 | ┐             | 10.41            |
| UL listed PLCC CL2<br>CSA certified AWM FT-1 | 40              | 09 18 040 70 | ┐             | 10.92            |
|                                              | 50              | 09 18 050 70 | ┐             | 12.19            |
|                                              | 60              | 09 18 060 70 | ┐*            | 13.21            |
|                                              | 64              | 09 18 064 70 | ┐             | 13.46            |
| Length per reel                              |                 |              |               |                  |
| 30.48 m<br>(100 feet)                        | 07              |              |               |                  |
| 100 m<br>(328 feet)                          | 10*             |              |               |                  |
| without screening<br>(shielding)             | 9               | 09 18 009 70 | ┐             | 6.35             |
|                                              | 10              | 09 18 010 70 | ┐             | 6.35             |
|                                              | 14              | 09 18 014 70 | ┐             | 6.60             |
|                                              | 15              | 09 18 015 70 | ┐             | 6.86             |
|                                              | 16              | 09 18 016 70 | ┐             | 7.11             |
|                                              | 20              | 09 18 020 70 | ┐             | 7.62             |
|                                              | 25              | 09 18 025 70 | ┐             | 8.38             |
|                                              | 26              | 09 18 026 70 | ┐             | 8.38             |
|                                              | 34              | 09 18 034 70 | ┐             | 9.40             |
|                                              | 37              | 09 18 037 70 | ┐             | 9.65             |
| UL listed PLCC CL2<br>CSA certified AWM FT-1 | 40              | 09 18 040 70 | ┐             | 10.16            |
|                                              | 50              | 09 18 050 70 | ┐             | 11.43            |
|                                              | 60              | 09 18 060 70 | ┐*            | 12.45            |
|                                              | 64              | 09 18 064 70 | ┐             | 12.70            |
| Length per reel                              |                 |              |               |                  |
| 30.48 m<br>(100 feet)                        | 08              |              |               |                  |
| 100 m<br>(328 feet)                          | 11*             |              |               |                  |



- ① Flat cable, AWG 28/7  
 ② Aluminium / Polyester tape (spiral wrap)  
 ③ 85 % minimum coverage tinned copper braid  
 ④ Outer jacket: black PVC



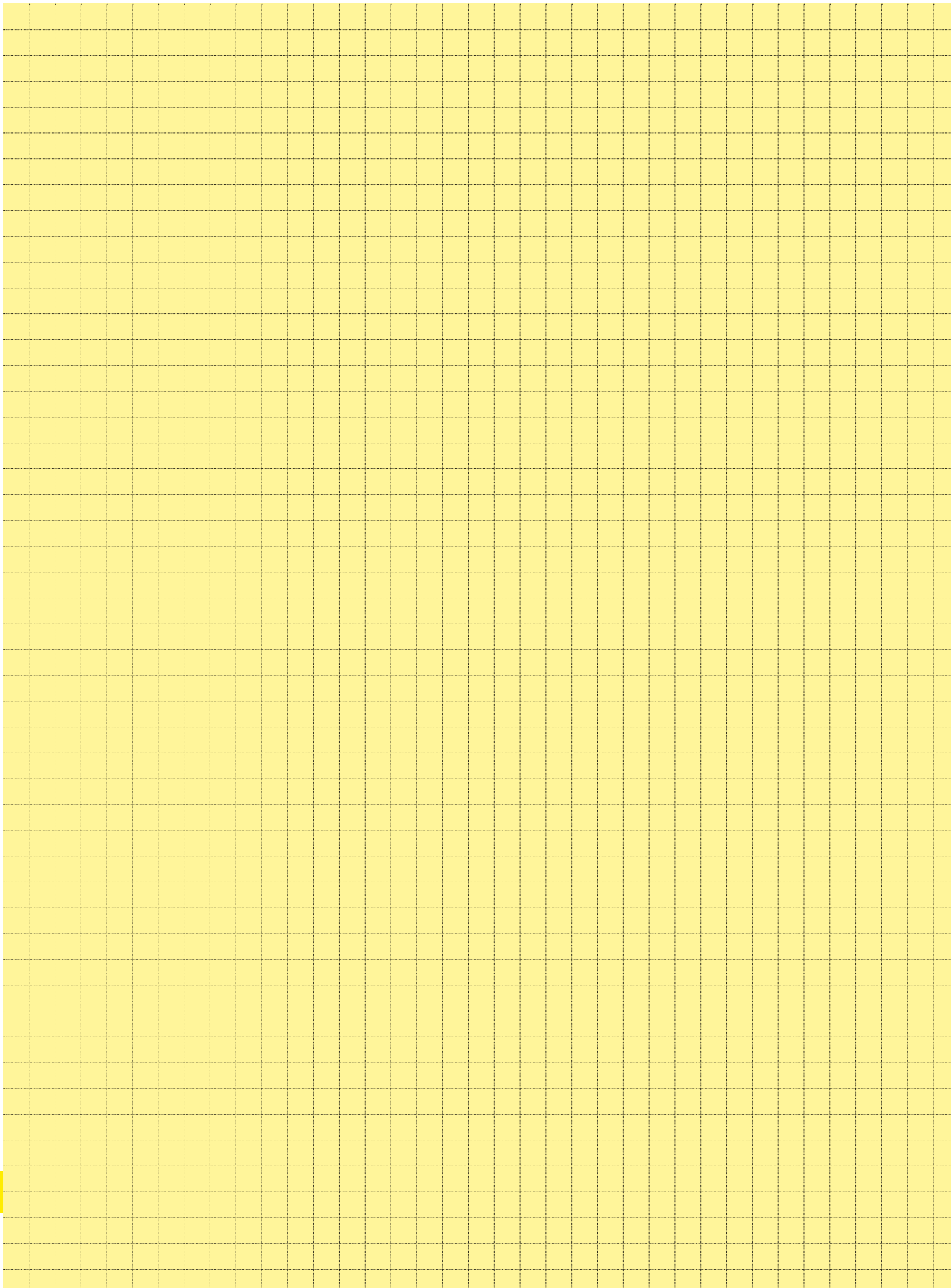
- ① Flat cable, AWG 28/7  
 ② Clear polyester  
 ③ Outer jacket: black PVC

| No. of contacts | a     | b     | c     |
|-----------------|-------|-------|-------|
| 9 to 26         | 19.05 | 19.05 | 38.10 |
| 34 to 64        | 38.10 | 19.05 | 57.15 |

Conductor material \_\_\_\_\_ Copper tinned  
 Gauge \_\_\_\_\_ AWG 28/7 0.089 mm<sup>2</sup>  
 Voltage rating \_\_\_\_\_ 300 V<sub>r.m.s.</sub>  
 Conductor resistance \_\_\_\_\_ 225 mΩ/m  
 Capacity unbalanced \_\_\_\_\_ 78.7 pF/m  
 Impedance unbalanced \_\_\_\_\_ 75 Ω  
 Signal delay \_\_\_\_\_ 5.25 ns/m nom.  
 Insulation material \_\_\_\_\_ PVC  
 Temperature rating \_\_\_\_\_ -20 °C ... + 105 °C  
 Flammability rating \_\_\_\_\_ UL: VW 1  
 Insulation resistance \_\_\_\_\_ 10<sup>4</sup> MΩ/km

\* Not normally kept in stock  
 Important: always store reels vertically







# List of part numbers



| Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  |
|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|
| 09 02 264 6828     | 09.31 | 09 18 014 7001     | 40.11 | 09 18 026 7010     | 40.13 | 09 18 064 7007     | 40.13 | 09 18 506 5814     | 09.22 |
| 09 02 264 7828     | 09.31 | 09 18 014 7001 900 | 40.11 | 09 18 026 7011     | 40.13 | 09 18 064 7008     | 40.13 | 09 18 506 5901     | 09.06 |
|                    |       | 09 18 014 7004     | 40.11 |                    |       | 09 18 064 7010     | 40.13 | 09 18 506 5902     | 09.08 |
|                    |       | 09 18 014 7005     | 40.12 | 09 18 028 7001     | 40.11 | 09 18 064 7011     | 40.13 | 09 18 506 5903     | 09.06 |
| 09 03 000 9940     | 09.31 | 09 18 014 7006     | 40.12 | 09 18 028 7001 900 | 40.11 |                    |       | 09 18 506 5904     | 09.08 |
|                    |       | 09 18 014 7007     | 40.13 | 09 18 028 7004     | 40.11 | 09 18 104 9422     | 09.25 | 09 18 506 5906     | 09.18 |
| 09 03 264 6828     | 09.31 | 09 18 014 7008     | 40.13 | 09 18 028 7005     | 40.12 | 09 18 104 9622     | 09.25 | 09 18 506 5907     | 09.18 |
| 09 03 264 7828     | 09.31 | 09 18 014 7010     | 40.13 |                    |       |                    |       | 09 18 506 5911     | 09.06 |
|                    |       | 09 18 014 7011     | 40.13 | 09 18 030 7001     | 40.11 | 09 18 106 9422     | 09.25 | 09 18 506 5912     | 09.08 |
|                    |       |                    |       | 09 18 030 7004     | 40.11 | 09 18 106 9622     | 09.25 | 09 18 506 5913     | 09.06 |
| 09 03 764 6828     | 09.31 |                    |       | 09 18 030 7005     | 40.12 |                    |       | 09 18 506 5914     | 09.08 |
|                    |       | 09 18 015 7001     | 40.11 |                    |       | 09 18 108 9422     | 09.25 | 09 18 506 5916     | 09.18 |
|                    |       | 09 18 015 7001 900 | 40.11 | 09 18 034 7001     | 40.11 | 09 18 108 9622     | 09.25 | 09 18 506 5917     | 09.18 |
| 09 17 014 9622     | 09.29 | 09 18 015 7004     | 40.11 | 09 18 034 7001 900 | 40.11 |                    |       | 09 18 506 5921     | 09.06 |
|                    |       | 09 18 015 7005     | 40.12 | 09 18 034 7004     | 40.11 | 09 18 110 9422     | 09.25 | 09 18 506 5922     | 09.08 |
| 09 17 016 9622     | 09.29 | 09 18 015 7007     | 40.13 | 09 18 034 7005     | 40.12 | 09 18 110 9622     | 09.25 | 09 18 506 5923     | 09.06 |
|                    |       | 09 18 015 7008     | 40.13 | 09 18 034 7006     | 40.12 |                    |       | 09 18 506 5924     | 09.08 |
| 09 17 024 9622     | 09.29 | 09 18 015 7010     | 40.13 | 09 18 034 7007     | 40.13 | 09 18 114 9422     | 09.25 | 09 18 506 5926     | 09.18 |
|                    |       | 09 18 015 7011     | 40.13 | 09 18 034 7008     | 40.13 | 09 18 114 9622     | 09.25 | 09 18 506 5927     | 09.18 |
|                    |       |                    |       | 09 18 034 7010     | 40.13 |                    |       | 09 18 506 5953     | 09.12 |
| 09 17 028 9622     | 09.29 | 09 18 016 7001     | 40.11 | 09 18 034 7011     | 40.13 | 09 18 116 9422     | 09.25 | 09 18 506 5963     | 09.12 |
|                    |       | 09 18 016 7001 900 | 40.11 |                    |       | 09 18 116 9622     | 09.25 | 09 18 506 5973     | 09.12 |
| 09 17 040 9622     | 09.29 | 09 18 016 7004     | 40.11 | 09 18 037 7001     | 40.11 |                    |       | 09 18 506 6004     | 09.10 |
|                    |       | 09 18 016 7005     | 40.12 | 09 18 037 7001 900 | 40.11 | 09 18 120 9422     | 09.25 | 09 18 506 6014     | 09.10 |
|                    |       | 09 18 016 7006     | 40.12 | 09 18 037 7004     | 40.11 | 09 18 120 9622     | 09.25 | 09 18 506 6024     | 09.10 |
|                    |       | 09 18 016 7007     | 40.13 | 09 18 037 7005     | 40.12 |                    |       | 09 18 506 6322     | 09.15 |
| 09 18 000 9901     | 09.16 | 09 18 016 7008     | 40.13 | 09 18 037 7007     | 40.13 | 09 18 124 9422     | 09.25 | 09 18 506 6323     | 09.14 |
| 09 18 000 9901     | 09.20 | 09 18 016 7010     | 40.13 | 09 18 037 7008     | 40.13 | 09 18 124 9622     | 09.25 | 09 18 506 6324     | 09.15 |
| 09 18 000 9901     | 09.23 | 09 18 016 7011     | 40.13 | 09 18 037 7010     | 40.13 |                    |       | 09 18 506 6329     | 20.19 |
| 09 18 000 9901     | 22.32 |                    |       | 09 18 037 7011     | 40.13 | 09 18 126 9422     | 09.25 | 09 18 506 6803     | 09.22 |
| 09 18 000 9903     | 09.16 | 09 18 018 7001     | 40.11 |                    |       | 09 18 126 9622     | 09.25 | 09 18 506 6803 58U | 09.22 |
| 09 18 000 9903     | 09.20 | 09 18 018 7001 900 | 40.11 | 09 18 040 7001     | 40.11 |                    |       | 09 18 506 6804     | 09.22 |
| 09 18 000 9904     | 09.16 | 09 18 018 7004     | 40.11 | 09 18 040 7001 900 | 40.11 | 09 18 130 9422     | 09.25 | 09 18 506 6813     | 09.22 |
| 09 18 000 9904     | 09.20 | 09 18 018 7005     | 40.12 | 09 18 040 7004     | 40.11 | 09 18 130 9622     | 09.25 | 09 18 506 6813 58U | 09.22 |
| 09 18 000 9905     | 09.14 |                    |       | 09 18 040 7005     | 40.12 |                    |       | 09 18 506 6814     | 09.22 |
| 09 18 000 9905     | 09.15 | 09 18 020 7001     | 40.11 | 09 18 040 7006     | 40.12 | 09 18 134 9422     | 09.25 | 09 18 506 6901     | 09.06 |
| 09 18 000 9905     | 09.23 | 09 18 020 7001 900 | 40.11 | 09 18 040 7007     | 40.13 | 09 18 134 9622     | 09.25 | 09 18 506 6902     | 09.08 |
| 09 18 000 9905     | 22.30 | 09 18 020 7004     | 40.11 | 09 18 040 7008     | 40.13 |                    |       | 09 18 506 6903     | 09.06 |
| 09 18 000 9905     | 22.31 | 09 18 020 7005     | 40.12 | 09 18 040 7010     | 40.13 | 09 18 140 9422     | 09.25 | 09 18 506 6904     | 09.08 |
| 09 18 000 9905 58U | 09.23 | 09 18 020 7006     | 40.12 | 09 18 040 7011     | 40.13 | 09 18 140 9622     | 09.25 | 09 18 506 6906     | 09.18 |
| 09 18 000 9906     | 09.16 | 09 18 020 7007     | 40.13 |                    |       |                    |       | 09 18 506 6907     | 09.18 |
| 09 18 000 9906     | 09.20 | 09 18 020 7008     | 40.13 | 09 18 050 7001     | 40.11 | 09 18 150 9422     | 09.25 | 09 18 506 6911     | 09.06 |
| 09 18 000 9906     | 22.32 | 09 18 020 7010     | 40.13 | 09 18 050 7001 900 | 40.11 | 09 18 150 9622     | 09.25 | 09 18 506 6912     | 09.08 |
|                    |       | 09 18 020 7011     | 40.13 | 09 18 050 7004     | 40.11 |                    |       | 09 18 506 6913     | 09.06 |
| 09 18 006 7001     | 40.11 |                    |       | 09 18 050 7005     | 40.12 | 09 18 160 9422     | 09.25 | 09 18 506 6914     | 09.08 |
| 09 18 006 7001 900 | 40.11 | 09 18 024 7001     | 40.11 | 09 18 050 7006     | 40.12 | 09 18 160 9622     | 09.25 | 09 18 506 6916     | 09.18 |
| 09 18 006 7004     | 40.11 | 09 18 024 7001 900 | 40.11 | 09 18 050 7007     | 40.13 |                    |       | 09 18 506 6917     | 09.18 |
| 09 18 006 7005     | 40.12 | 09 18 024 7004     | 40.11 | 09 18 050 7008     | 40.13 | 09 18 164 9422     | 09.25 | 09 18 506 6921     | 09.06 |
|                    |       | 09 18 024 7005     | 40.12 | 09 18 050 7010     | 40.13 | 09 18 164 9622     | 09.25 | 09 18 506 6922     | 09.08 |
| 09 18 009 7001     | 40.11 |                    |       | 09 18 050 7011     | 40.13 |                    |       | 09 18 506 6923     | 09.06 |
| 09 18 009 7001 900 | 40.11 | 09 18 025 7001     | 40.11 |                    |       | 09 18 500 9902     | 09.16 | 09 18 506 6924     | 09.08 |
| 09 18 009 7004     | 40.11 | 09 18 025 7001 900 | 40.11 | 09 18 060 7001     | 40.11 | 09 18 500 9902     | 09.20 | 09 18 506 6926     | 09.18 |
| 09 18 009 7005     | 40.12 | 09 18 025 7004     | 40.11 | 09 18 060 7001 900 | 40.11 | 09 18 500 9902     | 22.32 | 09 18 506 6927     | 09.18 |
| 09 18 009 7007     | 40.13 | 09 18 025 7005     | 40.12 | 09 18 060 7004     | 40.11 |                    |       | 09 18 506 6953     | 09.12 |
| 09 18 009 7008     | 40.13 | 09 18 025 7007     | 40.13 | 09 18 060 7005     | 40.12 | 09 18 506 5004     | 09.10 | 09 18 506 6963     | 09.12 |
| 09 18 009 7010     | 40.13 | 09 18 025 7008     | 40.13 | 09 18 060 7006     | 40.12 | 09 18 506 5014     | 09.10 | 09 18 506 6973     | 09.12 |
| 09 18 009 7011     | 40.13 | 09 18 025 7010     | 40.13 | 09 18 060 7007     | 40.13 | 09 18 506 5024     | 09.10 | 09 18 506 7004     | 09.10 |
|                    |       | 09 18 025 7011     | 40.13 | 09 18 060 7008     | 40.13 | 09 18 506 5322     | 09.15 | 09 18 506 7014     | 09.10 |
| 09 18 010 7001     | 40.11 |                    |       | 09 18 060 7010     | 40.13 | 09 18 506 5323     | 09.14 | 09 18 506 7024     | 09.10 |
| 09 18 010 7001 900 | 40.11 | 09 18 026 7001     | 40.11 | 09 18 060 7011     | 40.13 | 09 18 506 5324     | 09.15 | 09 18 506 7322     | 09.15 |
| 09 18 010 7004     | 40.11 | 09 18 026 7001 900 | 40.11 |                    |       | 09 18 506 5329     | 20.19 | 09 18 506 7323     | 09.14 |
| 09 18 010 7005     | 40.12 | 09 18 026 7004     | 40.11 | 09 18 064 7001     | 40.11 | 09 18 506 5803     | 09.22 | 09 18 506 7324     | 09.15 |
| 09 18 010 7006     | 40.12 | 09 18 026 7005     | 40.12 | 09 18 064 7001 900 | 40.11 | 09 18 506 5803 58U | 09.22 | 09 18 506 7329     | 20.19 |
| 09 18 010 7007     | 40.13 | 09 18 026 7006     | 40.12 | 09 18 064 7004     | 40.11 | 09 18 506 5804     | 09.22 | 09 18 506 7803     | 09.22 |
| 09 18 010 7008     | 40.13 | 09 18 026 7007     | 40.13 | 09 18 064 7005     | 40.12 | 09 18 506 5813     | 09.22 | 09 18 506 7803 58U | 09.22 |
| 09 18 010 7010     | 40.13 | 09 18 026 7008     | 40.13 | 09 18 064 7006     | 40.12 | 09 18 506 5813 58U | 09.22 | 09 18 506 7804     | 09.22 |
| 09 18 010 7011     | 40.13 |                    |       |                    |       |                    |       |                    |       |

# List of part numbers



| Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  |
|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|
| 09 18 506 7813     | 09.22 | 09 18 510 6024     | 09.10 | 09 18 510 9002     | 09.23 | 09 18 514 6922     | 09.08 | 09 18 516 5912     | 09.08 |
| 09 18 506 7813 58U | 09.22 | 09 18 510 6322     | 09.15 | 09 18 510 9002 58U | 09.23 | 09 18 514 6923     | 09.06 | 09 18 516 5913     | 09.06 |
| 09 18 506 7814     | 09.22 | 09 18 510 6323     | 09.14 |                    |       | 09 18 514 6924     | 09.08 | 09 18 516 5914     | 09.08 |
| 09 18 506 7901     | 09.06 | 09 18 510 6324     | 09.15 |                    |       | 09 18 514 6926     | 09.18 | 09 18 516 5916     | 09.18 |
| 09 18 506 7902     | 09.08 | 09 18 510 6329     | 20.19 | 09 18 514 5004     | 09.10 | 09 18 514 6927     | 09.18 | 09 18 516 5917     | 09.18 |
| 09 18 506 7903     | 09.06 | 09 18 510 6803     | 09.22 | 09 18 514 5014     | 09.10 | 09 18 514 6953     | 09.12 | 09 18 516 5919     | 20.16 |
| 09 18 506 7904     | 09.08 | 09 18 510 6803 58U | 09.22 | 09 18 514 5024     | 09.10 | 09 18 514 6963     | 09.12 | 09 18 516 5921     | 09.06 |
| 09 18 506 7906     | 09.18 | 09 18 510 6804     | 09.22 | 09 18 514 5322     | 09.15 | 09 18 514 6973     | 09.12 | 09 18 516 5922     | 09.08 |
| 09 18 506 7907     | 09.18 | 09 18 510 6813     | 09.22 | 09 18 514 5323     | 09.14 | 09 18 514 7004     | 09.10 | 09 18 516 5923     | 09.06 |
| 09 18 506 7911     | 09.06 | 09 18 510 6813 58U | 09.22 | 09 18 514 5324     | 09.15 | 09 18 514 7014     | 09.10 | 09 18 516 5924     | 09.08 |
| 09 18 506 7912     | 09.08 | 09 18 510 6814     | 09.22 | 09 18 514 5329     | 20.19 | 09 18 514 7024     | 09.10 | 09 18 516 5926     | 09.18 |
| 09 18 506 7913     | 09.06 | 09 18 510 6901     | 09.06 | 09 18 514 5803     | 09.22 | 09 18 514 7322     | 09.15 | 09 18 516 5927     | 09.18 |
| 09 18 506 7914     | 09.08 | 09 18 510 6902     | 09.08 | 09 18 514 5803 58U | 09.22 | 09 18 514 7323     | 09.14 | 09 18 516 5929     | 20.16 |
| 09 18 506 7916     | 09.18 | 09 18 510 6903     | 09.06 | 09 18 514 5804     | 09.22 | 09 18 514 7324     | 09.15 | 09 18 516 5953     | 09.12 |
| 09 18 506 7917     | 09.18 | 09 18 510 6904     | 09.08 | 09 18 514 5813     | 09.22 | 09 18 514 7329     | 20.19 | 09 18 516 5963     | 09.12 |
| 09 18 506 7921     | 09.06 | 09 18 510 6906     | 09.18 | 09 18 514 5813 58U | 09.22 | 09 18 514 7803     | 09.22 | 09 18 516 5973     | 09.12 |
| 09 18 506 7922     | 09.08 | 09 18 510 6907     | 09.18 | 09 18 514 5814     | 09.22 | 09 18 514 7803 58U | 09.22 | 09 18 516 6004     | 09.10 |
| 09 18 506 7923     | 09.06 | 09 18 510 6911     | 09.06 | 09 18 514 5901     | 09.06 | 09 18 514 7804     | 09.22 | 09 18 516 6014     | 09.10 |
| 09 18 506 7924     | 09.08 | 09 18 510 6912     | 09.08 | 09 18 514 5902     | 09.08 | 09 18 514 7813     | 09.22 | 09 18 516 6024     | 09.10 |
| 09 18 506 7926     | 09.18 | 09 18 510 6913     | 09.06 | 09 18 514 5903     | 09.06 | 09 18 514 7813 58U | 09.22 | 09 18 516 6322     | 09.15 |
| 09 18 506 7927     | 09.18 | 09 18 510 6914     | 09.08 | 09 18 514 5904     | 09.08 | 09 18 514 7814     | 09.22 | 09 18 516 6323     | 09.14 |
| 09 18 506 7953     | 09.12 | 09 18 510 6916     | 09.18 | 09 18 514 5906     | 09.18 | 09 18 514 7901     | 09.06 | 09 18 516 6324     | 09.15 |
| 09 18 506 7963     | 09.12 | 09 18 510 6917     | 09.18 | 09 18 514 5907     | 09.18 | 09 18 514 7902     | 09.08 | 09 18 516 6329     | 20.19 |
| 09 18 506 7973     | 09.12 | 09 18 510 6921     | 09.06 | 09 18 514 5909     | 20.16 | 09 18 514 7903     | 09.06 | 09 18 516 6329     | 20.19 |
| 09 18 506 9002     | 09.23 | 09 18 510 6922     | 09.08 | 09 18 514 5911     | 09.06 | 09 18 514 7904     | 09.08 | 09 18 516 6803     | 09.22 |
| 09 18 506 9002 58U | 09.23 | 09 18 510 6923     | 09.06 | 09 18 514 5912     | 09.08 | 09 18 514 7906     | 09.18 | 09 18 516 6803 58U | 09.22 |
|                    |       | 09 18 510 6924     | 09.08 | 09 18 514 5913     | 09.06 | 09 18 514 7907     | 09.18 | 09 18 516 6804     | 09.22 |
|                    |       | 09 18 510 6926     | 09.18 | 09 18 514 5914     | 09.08 | 09 18 514 7911     | 09.06 | 09 18 516 6813     | 09.22 |
|                    |       | 09 18 510 6927     | 09.18 | 09 18 514 5916     | 09.18 | 09 18 514 7912     | 09.08 | 09 18 516 6813 58U | 09.22 |
| 09 18 510 5004     | 09.10 | 09 18 510 6927     | 09.18 | 09 18 514 5917     | 09.18 | 09 18 514 7913     | 09.06 | 09 18 516 6814     | 09.22 |
| 09 18 510 5014     | 09.10 | 09 18 510 6953     | 09.12 | 09 18 514 5919     | 20.16 | 09 18 514 7916     | 09.08 | 09 18 516 6901     | 09.06 |
| 09 18 510 5024     | 09.10 | 09 18 510 6963     | 09.12 | 09 18 514 5921     | 09.06 | 09 18 514 7917     | 09.18 | 09 18 516 6902     | 09.08 |
| 09 18 510 5322     | 09.15 | 09 18 510 6973     | 09.12 | 09 18 514 5922     | 09.08 | 09 18 514 7921     | 09.06 | 09 18 516 6903     | 09.06 |
| 09 18 510 5323     | 09.14 | 09 18 510 7004     | 09.10 | 09 18 514 5923     | 09.06 | 09 18 514 7922     | 09.08 | 09 18 516 6904     | 09.08 |
| 09 18 510 5324     | 09.15 | 09 18 510 7014     | 09.10 | 09 18 514 5926     | 09.18 | 09 18 514 7924     | 09.08 | 09 18 516 6906     | 09.18 |
| 09 18 510 5329     | 20.19 | 09 18 510 7024     | 09.10 | 09 18 514 5927     | 09.18 | 09 18 514 7926     | 09.18 | 09 18 516 6907     | 09.18 |
| 09 18 510 5803     | 09.22 | 09 18 510 7322     | 09.15 | 09 18 514 5929     | 20.16 | 09 18 514 7927     | 09.18 | 09 18 516 6911     | 09.06 |
| 09 18 510 5803 58U | 09.22 | 09 18 510 7323     | 09.14 | 09 18 514 5953     | 09.12 | 09 18 514 7953     | 09.12 | 09 18 516 6912     | 09.08 |
| 09 18 510 5804     | 09.22 | 09 18 510 7324     | 09.15 | 09 18 514 5963     | 09.12 | 09 18 514 7963     | 09.12 | 09 18 516 6913     | 09.06 |
| 09 18 510 5813     | 09.22 | 09 18 510 7329     | 20.19 | 09 18 514 5973     | 09.12 | 09 18 514 7973     | 09.12 | 09 18 516 6914     | 09.08 |
| 09 18 510 5813 58U | 09.22 | 09 18 510 7803     | 09.22 | 09 18 514 6004     | 09.10 | 09 18 514 9002     | 09.23 | 09 18 516 6916     | 09.18 |
| 09 18 510 5814     | 09.22 | 09 18 510 7803 58U | 09.22 | 09 18 514 6014     | 09.10 | 09 18 514 9002 58U | 09.23 | 09 18 516 6917     | 09.18 |
| 09 18 510 5901     | 09.06 | 09 18 510 7804     | 09.22 | 09 18 514 6024     | 09.10 |                    |       | 09 18 516 6921     | 09.06 |
| 09 18 510 5902     | 09.08 | 09 18 510 7813     | 09.22 | 09 18 514 6322     | 09.15 |                    |       | 09 18 516 6922     | 09.08 |
| 09 18 510 5903     | 09.06 | 09 18 510 7813 58U | 09.22 | 09 18 514 6323     | 09.14 |                    |       | 09 18 516 6923     | 09.06 |
| 09 18 510 5904     | 09.08 | 09 18 510 7814     | 09.22 | 09 18 514 6324     | 09.15 |                    |       | 09 18 516 6924     | 09.08 |
| 09 18 510 5906     | 09.18 | 09 18 510 7901     | 09.06 | 09 18 514 6329     | 20.19 | 09 18 516 5004     | 09.10 | 09 18 516 6926     | 09.18 |
| 09 18 510 5907     | 09.18 | 09 18 510 7902     | 09.08 | 09 18 514 6803     | 09.22 | 09 18 516 5014     | 09.10 | 09 18 516 6927     | 09.18 |
| 09 18 510 5909     | 20.16 | 09 18 510 7903     | 09.06 | 09 18 514 6803 58U | 09.22 | 09 18 516 5024     | 09.10 | 09 18 516 6953     | 09.12 |
| 09 18 510 5911     | 09.06 | 09 18 510 7904     | 09.08 | 09 18 514 6804     | 09.22 | 09 18 516 5322     | 09.15 | 09 18 516 6963     | 09.12 |
| 09 18 510 5912     | 09.08 | 09 18 510 7906     | 09.18 | 09 18 514 6813     | 09.22 | 09 18 516 5323     | 09.14 | 09 18 516 6973     | 09.12 |
| 09 18 510 5913     | 09.06 | 09 18 510 7907     | 09.18 | 09 18 514 6813 58U | 09.22 | 09 18 516 5324     | 09.15 | 09 18 516 7004     | 09.10 |
| 09 18 510 5914     | 09.08 | 09 18 510 7911     | 09.06 | 09 18 514 6814     | 09.22 | 09 18 516 5329     | 20.19 | 09 18 516 7014     | 09.10 |
| 09 18 510 5916     | 09.18 | 09 18 510 7912     | 09.08 | 09 18 514 6901     | 09.06 | 09 18 516 5803     | 09.22 | 09 18 516 7024     | 09.10 |
| 09 18 510 5917     | 09.18 | 09 18 510 7913     | 09.06 | 09 18 514 6902     | 09.08 | 09 18 516 5803 58U | 09.22 | 09 18 516 7322     | 09.15 |
| 09 18 510 5919     | 20.16 | 09 18 510 7914     | 09.08 | 09 18 514 6903     | 09.06 | 09 18 516 5804     | 09.22 | 09 18 516 7323     | 09.14 |
| 09 18 510 5921     | 09.06 | 09 18 510 7916     | 09.18 | 09 18 514 6904     | 09.08 | 09 18 516 5813     | 09.22 | 09 18 516 7324     | 09.15 |
| 09 18 510 5922     | 09.08 | 09 18 510 7917     | 09.18 | 09 18 514 6906     | 09.18 | 09 18 516 5813 58U | 09.22 | 09 18 516 7329     | 20.19 |
| 09 18 510 5923     | 09.06 | 09 18 510 7921     | 09.06 | 09 18 514 6907     | 09.18 | 09 18 516 5814     | 09.22 | 09 18 516 7803     | 09.22 |
| 09 18 510 5924     | 09.08 | 09 18 510 7922     | 09.08 | 09 18 514 6911     | 09.06 | 09 18 516 5901     | 09.06 | 09 18 516 7803 58U | 09.22 |
| 09 18 510 5926     | 09.18 | 09 18 510 7923     | 09.06 | 09 18 514 6912     | 09.08 | 09 18 516 5902     | 09.08 | 09 18 516 7804     | 09.22 |
| 09 18 510 5927     | 09.18 | 09 18 510 7924     | 09.08 | 09 18 514 6913     | 09.06 | 09 18 516 5903     | 09.06 | 09 18 516 7813     | 09.22 |
| 09 18 510 5929     | 20.16 | 09 18 510 7926     | 09.18 | 09 18 514 6914     | 09.08 | 09 18 516 5904     | 09.08 | 09 18 516 7813 58U | 09.22 |
| 09 18 510 5953     | 09.12 | 09 18 510 7927     | 09.18 | 09 18 514 6916     | 09.18 | 09 18 516 5906     | 09.18 | 09 18 516 7814     | 09.22 |
| 09 18 510 5963     | 09.12 | 09 18 510 7953     | 09.12 | 09 18 514 6917     | 09.18 | 09 18 516 5907     | 09.18 | 09 18 516 7901     | 09.06 |
| 09 18 510 5973     | 09.12 | 09 18 510 7963     | 09.12 | 09 18 514 6919     | 09.18 | 09 18 516 5909     | 20.16 | 09 18 516 7902     | 09.08 |
| 09 18 510 6004     | 09.10 | 09 18 510 7973     | 09.12 | 09 18 514 6921     | 09.06 | 09 18 516 5911     | 09.06 | 09 18 516 7903     | 09.06 |
| 09 18 510 6014     | 09.10 |                    |       |                    |       |                    |       |                    |       |

# List of part numbers



| Part No.           | Page  | Part No.           | Page  | Part No.       | Page  | Part No.           | Page  | Part No.           | Page  |
|--------------------|-------|--------------------|-------|----------------|-------|--------------------|-------|--------------------|-------|
| 09 18 516 7904     | 09.08 | 09 18 520 6803 58U | 09.22 | 09 18 524 5803 | 09.22 | 09 18 524 7921     | 09.06 | 09 18 526 6907     | 09.18 |
| 09 18 516 7906     | 09.18 | 09 18 520 6804     | 09.22 | 09 18 524 5813 | 09.22 | 09 18 524 7922     | 09.08 | 09 18 526 6911     | 09.06 |
| 09 18 516 7907     | 09.18 | 09 18 520 6813     | 09.22 | 09 18 524 5901 | 09.06 | 09 18 524 7923     | 09.06 | 09 18 526 6912     | 09.08 |
| 09 18 516 7911     | 09.06 | 09 18 520 6813 58U | 09.22 | 09 18 524 5902 | 09.08 | 09 18 524 7924     | 09.08 | 09 18 526 6913     | 09.06 |
| 09 18 516 7912     | 09.08 | 09 18 520 6814     | 09.22 | 09 18 524 5903 | 09.06 | 09 18 524 7926     | 09.18 | 09 18 526 6914     | 09.08 |
| 09 18 516 7913     | 09.06 | 09 18 520 6901     | 09.06 | 09 18 524 5904 | 09.08 | 09 18 524 7927     | 09.18 | 09 18 526 6916     | 09.18 |
| 09 18 516 7914     | 09.08 | 09 18 520 6902     | 09.08 | 09 18 524 5906 | 09.18 | 09 18 524 7953     | 09.12 | 09 18 526 6917     | 09.18 |
| 09 18 516 7916     | 09.18 | 09 18 520 6903     | 09.06 | 09 18 524 5907 | 09.18 | 09 18 524 7963     | 09.12 | 09 18 526 6921     | 09.06 |
| 09 18 516 7917     | 09.18 | 09 18 520 6904     | 09.08 | 09 18 524 5911 | 09.06 | 09 18 524 7973     | 09.12 | 09 18 526 6922     | 09.08 |
| 09 18 516 7921     | 09.06 | 09 18 520 6906     | 09.18 | 09 18 524 5912 | 09.08 | 09 18 524 9002     | 09.23 | 09 18 526 6923     | 09.06 |
| 09 18 516 7922     | 09.08 | 09 18 520 6907     | 09.18 | 09 18 524 5913 | 09.06 |                    |       | 09 18 526 6924     | 09.08 |
| 09 18 516 7923     | 09.06 | 09 18 520 6911     | 09.06 | 09 18 524 5914 | 09.08 |                    |       | 09 18 526 6926     | 09.18 |
| 09 18 516 7924     | 09.08 | 09 18 520 6912     | 09.08 | 09 18 524 5916 | 09.18 | 09 18 526 5004     | 09.10 | 09 18 526 6927     | 09.18 |
| 09 18 516 7926     | 09.18 | 09 18 520 6913     | 09.06 | 09 18 524 5917 | 09.18 | 09 18 526 5014     | 09.10 | 09 18 526 6953     | 09.12 |
| 09 18 516 7927     | 09.18 | 09 18 520 6914     | 09.08 | 09 18 524 5921 | 09.06 | 09 18 526 5024     | 09.10 | 09 18 526 6963     | 09.12 |
| 09 18 516 7953     | 09.12 | 09 18 520 6916     | 09.18 | 09 18 524 5922 | 09.08 | 09 18 526 5322     | 09.15 | 09 18 526 6973     | 09.12 |
| 09 18 516 7963     | 09.12 | 09 18 520 6917     | 09.18 | 09 18 524 5923 | 09.06 | 09 18 526 5323     | 09.14 | 09 18 526 7004     | 09.10 |
| 09 18 516 7973     | 09.12 | 09 18 520 6921     | 09.06 | 09 18 524 5924 | 09.08 | 09 18 526 5324     | 09.15 | 09 18 526 7014     | 09.10 |
| 09 18 516 9002     | 09.23 | 09 18 520 6922     | 09.08 | 09 18 524 5926 | 09.18 | 09 18 526 5329     | 20.19 | 09 18 526 7024     | 09.10 |
| 09 18 516 9002 58U | 09.23 | 09 18 520 6923     | 09.06 | 09 18 524 5927 | 09.18 | 09 18 526 5803     | 09.22 | 09 18 526 7322     | 09.15 |
|                    |       | 09 18 520 6924     | 09.08 | 09 18 524 5927 | 09.18 | 09 18 526 5803 58U | 09.22 | 09 18 526 7323     | 09.14 |
|                    |       | 09 18 520 6926     | 09.18 | 09 18 524 5953 | 09.12 | 09 18 526 5804     | 09.22 | 09 18 526 7324     | 09.15 |
|                    |       | 09 18 520 6927     | 09.18 | 09 18 524 5963 | 09.12 | 09 18 526 5813     | 09.22 | 09 18 526 7329     | 20.19 |
| 09 18 520 5004     | 09.10 | 09 18 520 6927     | 09.18 | 09 18 524 5973 | 09.12 | 09 18 526 5813 58U | 09.22 | 09 18 526 7803     | 09.22 |
| 09 18 520 5014     | 09.10 | 09 18 520 6953     | 09.12 | 09 18 524 6004 | 09.10 | 09 18 526 5814     | 09.22 | 09 18 526 7803 58U | 09.22 |
| 09 18 520 5024     | 09.10 | 09 18 520 6963     | 09.12 | 09 18 524 6014 | 09.10 | 09 18 526 5901     | 09.06 | 09 18 526 7804     | 09.22 |
| 09 18 520 5322     | 09.15 | 09 18 520 6973     | 09.12 | 09 18 524 6024 | 09.10 | 09 18 526 5902     | 09.08 | 09 18 526 7813     | 09.22 |
| 09 18 520 5323     | 09.14 | 09 18 520 7004     | 09.10 | 09 18 524 6803 | 09.22 | 09 18 526 5903     | 09.06 | 09 18 526 7813 58U | 09.22 |
| 09 18 520 5324     | 09.15 | 09 18 520 7014     | 09.10 | 09 18 524 6813 | 09.22 | 09 18 526 5904     | 09.08 | 09 18 526 7814     | 09.22 |
| 09 18 520 5329     | 20.19 | 09 18 520 7024     | 09.10 | 09 18 524 6901 | 09.06 | 09 18 526 5906     | 09.18 | 09 18 526 7901     | 09.06 |
| 09 18 520 5803     | 09.22 | 09 18 520 7322     | 09.15 | 09 18 524 6902 | 09.08 | 09 18 526 5907     | 09.18 | 09 18 526 7902     | 09.08 |
| 09 18 520 5803 58U | 09.22 | 09 18 520 7323     | 09.14 | 09 18 524 6903 | 09.06 | 09 18 526 5909     | 20.16 | 09 18 526 7903     | 09.06 |
| 09 18 520 5804     | 09.22 | 09 18 520 7324     | 09.15 | 09 18 524 6904 | 09.08 | 09 18 526 5911     | 09.06 | 09 18 526 7904     | 09.08 |
| 09 18 520 5813     | 09.22 | 09 18 520 7329     | 20.19 | 09 18 524 6906 | 09.18 | 09 18 526 5912     | 09.08 | 09 18 526 7906     | 09.18 |
| 09 18 520 5813 58U | 09.22 | 09 18 520 7803     | 09.22 | 09 18 524 6907 | 09.18 | 09 18 526 5913     | 09.06 | 09 18 526 7907     | 09.18 |
| 09 18 520 5814     | 09.22 | 09 18 520 7803 58U | 09.22 | 09 18 524 6911 | 09.06 | 09 18 526 5914     | 09.08 | 09 18 526 7911     | 09.06 |
| 09 18 520 5901     | 09.06 | 09 18 520 7804     | 09.22 | 09 18 524 6912 | 09.08 | 09 18 526 5916     | 09.18 | 09 18 526 7912     | 09.08 |
| 09 18 520 5902     | 09.08 | 09 18 520 7813     | 09.22 | 09 18 524 6913 | 09.06 | 09 18 526 5917     | 09.18 | 09 18 526 7913     | 09.06 |
| 09 18 520 5903     | 09.06 | 09 18 520 7813 58U | 09.22 | 09 18 524 6914 | 09.08 | 09 18 526 5919     | 20.16 | 09 18 526 7914     | 09.08 |
| 09 18 520 5904     | 09.08 | 09 18 520 7814     | 09.22 | 09 18 524 6916 | 09.18 | 09 18 526 5921     | 09.06 | 09 18 526 7916     | 09.18 |
| 09 18 520 5906     | 09.18 | 09 18 520 7901     | 09.06 | 09 18 524 6917 | 09.18 | 09 18 526 5922     | 09.08 | 09 18 526 7917     | 09.18 |
| 09 18 520 5907     | 09.18 | 09 18 520 7902     | 09.08 | 09 18 524 6921 | 09.06 | 09 18 526 5923     | 09.06 | 09 18 526 7921     | 09.06 |
| 09 18 520 5909     | 20.16 | 09 18 520 7903     | 09.06 | 09 18 524 6922 | 09.08 | 09 18 526 5924     | 09.08 | 09 18 526 7922     | 09.08 |
| 09 18 520 5911     | 09.06 | 09 18 520 7904     | 09.08 | 09 18 524 6923 | 09.06 | 09 18 526 5926     | 09.18 | 09 18 526 7923     | 09.06 |
| 09 18 520 5912     | 09.08 | 09 18 520 7906     | 09.18 | 09 18 524 6924 | 09.08 | 09 18 526 5927     | 09.18 | 09 18 526 7924     | 09.08 |
| 09 18 520 5913     | 09.06 | 09 18 520 7907     | 09.18 | 09 18 524 6926 | 09.18 | 09 18 526 5929     | 20.16 | 09 18 526 7926     | 09.18 |
| 09 18 520 5914     | 09.08 | 09 18 520 7911     | 09.06 | 09 18 524 6927 | 09.18 | 09 18 526 5953     | 09.12 | 09 18 526 7927     | 09.18 |
| 09 18 520 5916     | 09.18 | 09 18 520 7912     | 09.08 | 09 18 524 6953 | 09.12 | 09 18 526 5963     | 09.12 | 09 18 526 7953     | 09.12 |
| 09 18 520 5917     | 09.18 | 09 18 520 7913     | 09.06 | 09 18 524 6963 | 09.12 | 09 18 526 5973     | 09.12 | 09 18 526 7963     | 09.12 |
| 09 18 520 5919     | 20.16 | 09 18 520 7914     | 09.08 | 09 18 524 6973 | 09.12 | 09 18 526 6004     | 09.10 | 09 18 526 7973     | 09.12 |
| 09 18 520 5921     | 09.06 | 09 18 520 7916     | 09.18 | 09 18 524 7004 | 09.10 | 09 18 526 6014     | 09.10 | 09 18 526 9002     | 09.23 |
| 09 18 520 5922     | 09.08 | 09 18 520 7917     | 09.18 | 09 18 524 7014 | 09.10 | 09 18 526 6024     | 09.10 | 09 18 526 9002 58U | 09.23 |
| 09 18 520 5923     | 09.06 | 09 18 520 7921     | 09.06 | 09 18 524 7024 | 09.10 | 09 18 526 6322     | 09.15 |                    |       |
| 09 18 520 5924     | 09.08 | 09 18 520 7922     | 09.08 | 09 18 524 7803 | 09.22 | 09 18 526 6323     | 09.14 |                    |       |
| 09 18 520 5926     | 09.18 | 09 18 520 7923     | 09.06 | 09 18 524 7813 | 09.22 | 09 18 526 6324     | 09.15 | 09 18 530 5004     | 09.10 |
| 09 18 520 5927     | 09.18 | 09 18 520 7924     | 09.08 | 09 18 524 7901 | 09.06 | 09 18 526 6329     | 20.19 | 09 18 530 5014     | 09.10 |
| 09 18 520 5929     | 20.16 | 09 18 520 7926     | 09.18 | 09 18 524 7902 | 09.08 | 09 18 526 6803     | 09.22 | 09 18 530 5024     | 09.10 |
| 09 18 520 5953     | 09.12 | 09 18 520 7927     | 09.18 | 09 18 524 7903 | 09.06 | 09 18 526 6803 58U | 09.22 | 09 18 530 5322     | 09.15 |
| 09 18 520 5963     | 09.12 | 09 18 520 7953     | 09.12 | 09 18 524 7904 | 09.08 | 09 18 526 6804     | 09.22 | 09 18 530 5323     | 09.14 |
| 09 18 520 5973     | 09.12 | 09 18 520 7963     | 09.12 | 09 18 524 7906 | 09.18 | 09 18 526 6813     | 09.22 | 09 18 530 5324     | 09.15 |
| 09 18 520 6004     | 09.10 | 09 18 520 7973     | 09.12 | 09 18 524 7907 | 09.18 | 09 18 526 6813 58U | 09.22 | 09 18 530 5803     | 09.22 |
| 09 18 520 6014     | 09.10 | 09 18 520 9002     | 09.23 | 09 18 524 7911 | 09.06 | 09 18 526 6814     | 09.22 | 09 18 530 5803 58U | 09.22 |
| 09 18 520 6024     | 09.10 | 09 18 520 9002 58U | 09.23 | 09 18 524 7912 | 09.08 | 09 18 526 6901     | 09.06 | 09 18 530 5804     | 09.22 |
| 09 18 520 6322     | 09.15 |                    |       | 09 18 524 7913 | 09.06 | 09 18 526 6902     | 09.08 | 09 18 530 5813     | 09.22 |
| 09 18 520 6323     | 09.14 |                    |       | 09 18 524 7914 | 09.08 | 09 18 526 6903     | 09.06 | 09 18 530 5813 58U | 09.22 |
| 09 18 520 6324     | 09.15 | 09 18 524 5004     | 09.10 | 09 18 524 7916 | 09.18 | 09 18 526 6904     | 09.08 | 09 18 530 5814     | 09.22 |
| 09 18 520 6329     | 20.19 | 09 18 524 5014     | 09.10 | 09 18 524 7917 | 09.18 | 09 18 526 6906     | 09.18 | 09 18 530 5901     | 09.06 |
| 09 18 520 6803     | 09.22 | 09 18 524 5024     | 09.10 |                |       |                    |       |                    |       |

# List of part numbers



| Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  |
|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|
| 09 18 530 5902     | 09.08 | 09 18 530 7902     | 09.08 | 09 18 534 6329     | 20.19 | 09 18 540 5004     | 09.10 | 09 18 540 6926     | 09.18 |
| 09 18 530 5903     | 09.06 | 09 18 530 7903     | 09.06 | 09 18 534 6803     | 09.22 | 09 18 540 5014     | 09.10 | 09 18 540 6927     | 09.18 |
| 09 18 530 5904     | 09.08 | 09 18 530 7904     | 09.08 | 09 18 534 6803 58U | 09.22 | 09 18 540 5024     | 09.10 | 09 18 540 6953     | 09.12 |
| 09 18 530 5906     | 09.18 | 09 18 530 7906     | 09.18 | 09 18 534 6804     | 09.22 | 09 18 540 5322     | 09.15 | 09 18 540 6963     | 09.12 |
| 09 18 530 5907     | 09.18 | 09 18 530 7907     | 09.18 | 09 18 534 6813     | 09.22 | 09 18 540 5323     | 09.14 | 09 18 540 6973     | 09.12 |
| 09 18 530 5911     | 09.06 | 09 18 530 7911     | 09.06 | 09 18 534 6813 58U | 09.22 | 09 18 540 5324     | 09.15 | 09 18 540 7004     | 09.10 |
| 09 18 530 5912     | 09.08 | 09 18 530 7912     | 09.08 | 09 18 534 6814     | 09.22 | 09 18 540 5329     | 20.19 | 09 18 540 7014     | 09.10 |
| 09 18 530 5913     | 09.06 | 09 18 530 7913     | 09.06 | 09 18 534 6901     | 09.06 | 09 18 540 5803     | 09.22 | 09 18 540 7024     | 09.10 |
| 09 18 530 5914     | 09.08 | 09 18 530 7914     | 09.08 | 09 18 534 6902     | 09.08 | 09 18 540 5803 58U | 09.22 | 09 18 540 7322     | 09.15 |
| 09 18 530 5916     | 09.18 | 09 18 530 7916     | 09.18 | 09 18 534 6903     | 09.06 | 09 18 540 5804     | 09.22 | 09 18 540 7323     | 09.14 |
| 09 18 530 5917     | 09.18 | 09 18 530 7917     | 09.18 | 09 18 534 6904     | 09.08 | 09 18 540 5813     | 09.22 | 09 18 540 7324     | 09.15 |
| 09 18 530 5921     | 09.06 | 09 18 530 7921     | 09.06 | 09 18 534 6906     | 09.18 | 09 18 540 5813 58U | 09.22 | 09 18 540 7329     | 20.19 |
| 09 18 530 5922     | 09.08 | 09 18 530 7922     | 09.08 | 09 18 534 6907     | 09.18 | 09 18 540 5814     | 09.22 | 09 18 540 7803     | 09.22 |
| 09 18 530 5923     | 09.06 | 09 18 530 7923     | 09.06 | 09 18 534 6911     | 09.06 | 09 18 540 5901     | 09.06 | 09 18 540 7803 58U | 09.22 |
| 09 18 530 5924     | 09.08 | 09 18 530 7924     | 09.08 | 09 18 534 6912     | 09.08 | 09 18 540 5902     | 09.08 | 09 18 540 7804     | 09.22 |
| 09 18 530 5926     | 09.18 | 09 18 530 7926     | 09.18 | 09 18 534 6913     | 09.06 | 09 18 540 5903     | 09.06 | 09 18 540 7813     | 09.22 |
| 09 18 530 5927     | 09.18 | 09 18 530 7927     | 09.18 | 09 18 534 6914     | 09.08 | 09 18 540 5904     | 09.08 | 09 18 540 7813 58U | 09.22 |
| 09 18 530 5953     | 09.12 | 09 18 530 7953     | 09.12 | 09 18 534 6916     | 09.18 | 09 18 540 5906     | 09.18 | 09 18 540 7814     | 09.22 |
| 09 18 530 5963     | 09.12 | 09 18 530 7963     | 09.12 | 09 18 534 6917     | 09.18 | 09 18 540 5907     | 09.18 | 09 18 540 7901     | 09.06 |
| 09 18 530 5973     | 09.12 | 09 18 530 7973     | 09.12 | 09 18 534 6921     | 09.06 | 09 18 540 5909     | 20.16 | 09 18 540 7902     | 09.08 |
| 09 18 530 6004     | 09.10 | 09 18 530 9002     | 09.23 | 09 18 534 6922     | 09.08 | 09 18 540 5911     | 09.06 | 09 18 540 7903     | 09.06 |
| 09 18 530 6014     | 09.10 | 09 18 530 9002 58U | 09.23 | 09 18 534 6923     | 09.06 | 09 18 540 5912     | 09.08 | 09 18 540 7904     | 09.08 |
| 09 18 530 6024     | 09.10 |                    |       | 09 18 534 6924     | 09.08 | 09 18 540 5913     | 09.06 | 09 18 540 7906     | 09.18 |
| 09 18 530 6322     | 09.15 |                    |       | 09 18 534 6926     | 09.18 | 09 18 540 5914     | 09.08 | 09 18 540 7907     | 09.18 |
| 09 18 530 6323     | 09.14 | 09 18 534 5004     | 09.10 | 09 18 534 6927     | 09.18 | 09 18 540 5916     | 09.18 | 09 18 540 7911     | 09.06 |
| 09 18 530 6324     | 09.15 | 09 18 534 5014     | 09.10 | 09 18 534 6953     | 09.12 | 09 18 540 5917     | 09.18 | 09 18 540 7912     | 09.08 |
| 09 18 530 6803     | 09.22 | 09 18 534 5024     | 09.10 | 09 18 534 6963     | 09.12 | 09 18 540 5919     | 20.16 | 09 18 540 7913     | 09.06 |
| 09 18 530 6803 58U | 09.22 | 09 18 534 5322     | 09.15 | 09 18 534 6973     | 09.12 | 09 18 540 5921     | 09.06 | 09 18 540 7914     | 09.08 |
| 09 18 530 6804     | 09.22 | 09 18 534 5323     | 09.14 | 09 18 534 7004     | 09.10 | 09 18 540 5922     | 09.08 | 09 18 540 7916     | 09.18 |
| 09 18 530 6813     | 09.22 | 09 18 534 5324     | 09.15 | 09 18 534 7014     | 09.10 | 09 18 540 5923     | 09.06 | 09 18 540 7917     | 09.18 |
| 09 18 530 6813 58U | 09.22 | 09 18 534 5329     | 20.19 | 09 18 534 7024     | 09.10 | 09 18 540 5924     | 09.08 | 09 18 540 7921     | 09.06 |
| 09 18 530 6814     | 09.22 | 09 18 534 5803     | 09.22 | 09 18 534 7322     | 09.15 | 09 18 540 5926     | 09.18 | 09 18 540 7922     | 09.08 |
| 09 18 530 6901     | 09.06 | 09 18 534 5803 58U | 09.22 | 09 18 534 7323     | 09.14 | 09 18 540 5927     | 09.18 | 09 18 540 7923     | 09.06 |
| 09 18 530 6902     | 09.08 | 09 18 534 5804     | 09.22 | 09 18 534 7324     | 09.15 | 09 18 540 5929     | 20.16 | 09 18 540 7924     | 09.08 |
| 09 18 530 6903     | 09.06 | 09 18 534 5813     | 09.22 | 09 18 534 7329     | 20.19 | 09 18 540 5953     | 09.12 | 09 18 540 7926     | 09.18 |
| 09 18 530 6904     | 09.08 | 09 18 534 5813 58U | 09.22 | 09 18 534 7803     | 09.22 | 09 18 540 5963     | 09.12 | 09 18 540 7927     | 09.18 |
| 09 18 530 6906     | 09.18 | 09 18 534 5814     | 09.22 | 09 18 534 7803 58U | 09.22 | 09 18 540 5973     | 09.12 | 09 18 540 7953     | 09.12 |
| 09 18 530 6907     | 09.18 | 09 18 534 5901     | 09.06 | 09 18 534 7804     | 09.22 | 09 18 540 6004     | 09.10 | 09 18 540 7963     | 09.12 |
| 09 18 530 6911     | 09.06 | 09 18 534 5902     | 09.08 | 09 18 534 7813     | 09.22 | 09 18 540 6014     | 09.10 | 09 18 540 7973     | 09.12 |
| 09 18 530 6912     | 09.08 | 09 18 534 5903     | 09.06 | 09 18 534 7813 58U | 09.22 | 09 18 540 6024     | 09.10 | 09 18 540 9002     | 09.23 |
| 09 18 530 6913     | 09.06 | 09 18 534 5904     | 09.08 | 09 18 534 7814     | 09.22 | 09 18 540 6322     | 09.15 | 09 18 540 9002 58U | 09.23 |
| 09 18 530 6914     | 09.08 | 09 18 534 5906     | 09.18 | 09 18 534 7901     | 09.06 | 09 18 540 6323     | 09.14 |                    |       |
| 09 18 530 6916     | 09.18 | 09 18 534 5907     | 09.18 | 09 18 534 7902     | 09.08 | 09 18 540 6324     | 09.15 | 09 18 550 5004     | 09.10 |
| 09 18 530 6917     | 09.18 | 09 18 534 5909     | 20.16 | 09 18 534 7903     | 09.06 | 09 18 540 6329     | 20.19 | 09 18 550 5014     | 09.10 |
| 09 18 530 6921     | 09.06 | 09 18 534 5911     | 09.06 | 09 18 534 7904     | 09.08 | 09 18 540 6803     | 09.22 | 09 18 550 5024     | 09.10 |
| 09 18 530 6922     | 09.08 | 09 18 534 5912     | 09.08 | 09 18 534 7906     | 09.18 | 09 18 540 6803 58U | 09.22 | 09 18 550 5322     | 09.15 |
| 09 18 530 6923     | 09.06 | 09 18 534 5913     | 09.06 | 09 18 534 7907     | 09.18 | 09 18 540 6804     | 09.22 | 09 18 550 5323     | 09.14 |
| 09 18 530 6924     | 09.08 | 09 18 534 5914     | 09.08 | 09 18 534 7911     | 09.06 | 09 18 540 6813     | 09.22 | 09 18 550 5324     | 09.15 |
| 09 18 530 6926     | 09.18 | 09 18 534 5916     | 09.18 | 09 18 534 7912     | 09.08 | 09 18 540 6813 58U | 09.22 | 09 18 550 5329     | 20.19 |
| 09 18 530 6927     | 09.18 | 09 18 534 5917     | 09.18 | 09 18 534 7913     | 09.06 | 09 18 540 6814     | 09.22 | 09 18 550 5803     | 09.22 |
| 09 18 530 6953     | 09.12 | 09 18 534 5919     | 20.16 | 09 18 534 7914     | 09.08 | 09 18 540 6901     | 09.06 | 09 18 550 5804     | 09.22 |
| 09 18 530 6963     | 09.12 | 09 18 534 5921     | 09.06 | 09 18 534 7916     | 09.18 | 09 18 540 6902     | 09.08 | 09 18 550 5813     | 09.22 |
| 09 18 530 6973     | 09.12 | 09 18 534 5922     | 09.08 | 09 18 534 7917     | 09.18 | 09 18 540 6903     | 09.06 | 09 18 550 5814     | 09.22 |
| 09 18 530 7004     | 09.10 | 09 18 534 5923     | 09.06 | 09 18 534 7921     | 09.06 | 09 18 540 6904     | 09.08 | 09 18 550 5901     | 09.06 |
| 09 18 530 7014     | 09.10 | 09 18 534 5924     | 09.08 | 09 18 534 7922     | 09.08 | 09 18 540 6906     | 09.18 | 09 18 550 5902     | 09.08 |
| 09 18 530 7024     | 09.10 | 09 18 534 5926     | 09.18 | 09 18 534 7923     | 09.06 | 09 18 540 6907     | 09.18 | 09 18 550 5903     | 09.06 |
| 09 18 530 7322     | 09.15 | 09 18 534 5927     | 09.18 | 09 18 534 7924     | 09.08 | 09 18 540 6911     | 09.06 | 09 18 550 5904     | 09.08 |
| 09 18 530 7323     | 09.14 | 09 18 534 5929     | 20.16 | 09 18 534 7926     | 09.18 | 09 18 540 6912     | 09.08 | 09 18 550 5906     | 09.18 |
| 09 18 530 7324     | 09.15 | 09 18 534 5953     | 09.12 | 09 18 534 7927     | 09.18 | 09 18 540 6913     | 09.06 | 09 18 550 5907     | 09.18 |
| 09 18 530 7803     | 09.22 | 09 18 534 5963     | 09.12 | 09 18 534 7953     | 09.12 | 09 18 540 6914     | 09.08 | 09 18 550 5909     | 20.16 |
| 09 18 530 7803 58U | 09.22 | 09 18 534 5973     | 09.12 | 09 18 534 7963     | 09.12 | 09 18 540 6916     | 09.18 | 09 18 550 5911     | 09.06 |
| 09 18 530 7804     | 09.22 | 09 18 534 6004     | 09.10 | 09 18 534 7973     | 09.12 | 09 18 540 6917     | 09.18 | 09 18 550 5912     | 09.08 |
| 09 18 530 7813     | 09.22 | 09 18 534 6014     | 09.10 | 09 18 534 9002     | 09.23 | 09 18 540 6921     | 09.06 | 09 18 550 5913     | 09.06 |
| 09 18 530 7813 58U | 09.22 | 09 18 534 6024     | 09.10 | 09 18 534 9002 58U | 09.23 | 09 18 540 6922     | 09.08 | 09 18 550 5914     | 09.08 |
| 09 18 530 7814     | 09.22 | 09 18 534 6322     | 09.15 |                    |       | 09 18 540 6923     | 09.06 | 09 18 550 5916     | 09.18 |
| 09 18 530 7901     | 09.06 | 09 18 534 6323     | 09.14 |                    |       | 09 18 540 6924     | 09.08 | 09 18 550 5917     | 09.18 |
|                    |       | 09 18 534 6324     | 09.15 |                    |       |                    |       |                    |       |



# List of part numbers



| Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.           | Page  |
|----------------|-------|----------------|-------|----------------|-------|----------------|-------|--------------------|-------|
| 09 18 550 5919 | 20.16 | 09 18 550 7921 | 09.06 | 09 18 560 6914 | 09.08 | 09 18 564 5913 | 09.06 | 09 18 564 7913     | 09.06 |
| 09 18 550 5921 | 09.06 | 09 18 550 7922 | 09.08 | 09 18 560 6916 | 09.18 | 09 18 564 5914 | 09.08 | 09 18 564 7914     | 09.08 |
| 09 18 550 5922 | 09.08 | 09 18 550 7923 | 09.06 | 09 18 560 6917 | 09.18 | 09 18 564 5916 | 09.18 | 09 18 564 7916     | 09.18 |
| 09 18 550 5923 | 09.06 | 09 18 550 7924 | 09.08 | 09 18 560 6921 | 09.06 | 09 18 564 5917 | 09.18 | 09 18 564 7917     | 09.18 |
| 09 18 550 5924 | 09.08 | 09 18 550 7926 | 09.18 | 09 18 560 6922 | 09.08 | 09 18 564 5919 | 20.16 | 09 18 564 7921     | 09.06 |
| 09 18 550 5926 | 09.18 | 09 18 550 7927 | 09.18 | 09 18 560 6923 | 09.06 | 09 18 564 5921 | 09.06 | 09 18 564 7922     | 09.08 |
| 09 18 550 5927 | 09.18 | 09 18 550 7953 | 09.12 | 09 18 560 6924 | 09.08 | 09 18 564 5922 | 09.08 | 09 18 564 7923     | 09.06 |
| 09 18 550 5929 | 20.16 | 09 18 550 7963 | 09.12 | 09 18 560 6926 | 09.18 | 09 18 564 5923 | 09.06 | 09 18 564 7924     | 09.08 |
| 09 18 550 5953 | 09.12 | 09 18 550 7973 | 09.12 | 09 18 560 6927 | 09.18 | 09 18 564 5924 | 09.08 | 09 18 564 7926     | 09.18 |
| 09 18 550 5963 | 09.12 | 09 18 550 9002 | 09.23 | 09 18 560 6953 | 09.12 | 09 18 564 5926 | 09.18 | 09 18 564 7927     | 09.18 |
| 09 18 550 5973 | 09.12 |                |       | 09 18 560 6963 | 09.12 | 09 18 564 5927 | 09.18 | 09 18 564 7953     | 09.12 |
| 09 18 550 6004 | 09.10 | 09 18 560 5004 | 09.10 | 09 18 560 6973 | 09.12 | 09 18 564 5929 | 20.16 | 09 18 564 7963     | 09.12 |
| 09 18 550 6014 | 09.10 | 09 18 560 5014 | 09.10 | 09 18 560 7004 | 09.10 | 09 18 564 5953 | 09.12 | 09 18 564 7973     | 09.12 |
| 09 18 550 6024 | 09.10 | 09 18 560 5024 | 09.10 | 09 18 560 7014 | 09.10 | 09 18 564 5963 | 09.12 | 09 18 564 9002     | 09.23 |
| 09 18 550 6322 | 09.15 | 09 18 560 5322 | 09.15 | 09 18 560 7024 | 09.10 | 09 18 564 5973 | 09.12 |                    |       |
| 09 18 550 6323 | 09.14 | 09 18 560 5323 | 09.14 | 09 18 560 7322 | 09.15 | 09 18 564 6004 | 09.10 |                    |       |
| 09 18 550 6324 | 09.15 | 09 18 560 5324 | 09.15 | 09 18 560 7323 | 09.14 | 09 18 564 6014 | 09.10 | 09 19 000 9903     | 22.32 |
| 09 18 550 6329 | 20.19 | 09 18 560 5329 | 20.19 | 09 18 560 7324 | 09.15 | 09 18 564 6024 | 09.10 | 09 19 000 9904     | 22.32 |
| 09 18 550 6803 | 09.22 | 09 18 560 5803 | 09.22 | 09 18 560 7329 | 20.19 | 09 18 564 6322 | 09.15 |                    |       |
| 09 18 550 6804 | 09.22 | 09 18 560 5804 | 09.22 | 09 18 560 7803 | 09.22 | 09 18 564 6323 | 09.14 | 09 19 010 9643     | 09.27 |
| 09 18 550 6813 | 09.22 | 09 18 560 5813 | 09.22 | 09 18 560 7804 | 09.22 | 09 18 564 6324 | 09.15 |                    |       |
| 09 18 550 6814 | 09.22 | 09 18 560 5814 | 09.22 | 09 18 560 7813 | 09.22 | 09 18 564 6329 | 20.19 | 09 19 016 9643     | 09.27 |
| 09 18 550 6901 | 09.06 | 09 18 560 5901 | 09.06 | 09 18 560 7814 | 09.22 | 09 18 564 6803 | 09.22 |                    |       |
| 09 18 550 6902 | 09.08 | 09 18 560 5902 | 09.08 | 09 18 560 7901 | 09.06 | 09 18 564 6804 | 09.22 | 09 19 020 9643     | 09.27 |
| 09 18 550 6903 | 09.06 | 09 18 560 5903 | 09.06 | 09 18 560 7902 | 09.08 | 09 18 564 6813 | 09.22 |                    |       |
| 09 18 550 6904 | 09.08 | 09 18 560 5904 | 09.08 | 09 18 560 7903 | 09.06 | 09 18 564 6814 | 09.22 | 09 19 026 9643     | 09.27 |
| 09 18 550 6906 | 09.18 | 09 18 560 5906 | 09.18 | 09 18 560 7904 | 09.08 | 09 18 564 6901 | 09.06 |                    |       |
| 09 18 550 6907 | 09.18 | 09 18 560 5907 | 09.18 | 09 18 560 7906 | 09.18 | 09 18 564 6902 | 09.08 | 09 19 034 9643     | 09.27 |
| 09 18 550 6911 | 09.06 | 09 18 560 5909 | 20.16 | 09 18 560 7907 | 09.18 | 09 18 564 6903 | 09.06 |                    |       |
| 09 18 550 6912 | 09.08 | 09 18 560 5911 | 09.06 | 09 18 560 7911 | 09.06 | 09 18 564 6904 | 09.08 | 09 19 040 9643     | 09.27 |
| 09 18 550 6913 | 09.06 | 09 18 560 5912 | 09.08 | 09 18 560 7912 | 09.08 | 09 18 564 6906 | 09.18 |                    |       |
| 09 18 550 6914 | 09.08 | 09 18 560 5913 | 09.06 | 09 18 560 7913 | 09.06 | 09 18 564 6907 | 09.18 | 09 19 050 9643     | 09.27 |
| 09 18 550 6916 | 09.18 | 09 18 560 5914 | 09.08 | 09 18 560 7914 | 09.08 | 09 18 564 6911 | 09.06 |                    |       |
| 09 18 550 6917 | 09.18 | 09 18 560 5916 | 09.18 | 09 18 560 7916 | 09.18 | 09 18 564 6912 | 09.08 | 09 19 506 5004     | 22.26 |
| 09 18 550 6921 | 09.06 | 09 18 560 5917 | 09.18 | 09 18 560 7917 | 09.18 | 09 18 564 6913 | 09.06 | 09 19 506 5014     | 22.26 |
| 09 18 550 6922 | 09.08 | 09 18 560 5919 | 20.16 | 09 18 560 7921 | 09.06 | 09 18 564 6914 | 09.08 | 09 19 506 5024     | 22.26 |
| 09 18 550 6923 | 09.06 | 09 18 560 5921 | 09.06 | 09 18 560 7922 | 09.08 | 09 18 564 6916 | 09.18 | 09 19 506 5323     | 22.30 |
| 09 18 550 6924 | 09.08 | 09 18 560 5922 | 09.08 | 09 18 560 7923 | 09.06 | 09 18 564 6917 | 09.18 | 09 19 506 5323 740 | 22.30 |
| 09 18 550 6926 | 09.18 | 09 18 560 5923 | 09.06 | 09 18 560 7924 | 09.08 | 09 18 564 6921 | 09.06 | 09 19 506 5323 741 | 22.30 |
| 09 18 550 6927 | 09.18 | 09 18 560 5924 | 09.08 | 09 18 560 7926 | 09.18 | 09 18 564 6922 | 09.08 | 09 19 506 5324     | 22.31 |
| 09 18 550 6953 | 09.12 | 09 18 560 5926 | 09.18 | 09 18 560 7927 | 09.18 | 09 18 564 6923 | 09.06 | 09 19 506 5324 740 | 22.31 |
| 09 18 550 6963 | 09.12 | 09 18 560 5927 | 09.18 | 09 18 560 7953 | 09.12 | 09 18 564 6924 | 09.08 | 09 19 506 5324 741 | 22.31 |
| 09 18 550 6973 | 09.12 | 09 18 560 5929 | 20.16 | 09 18 560 7963 | 09.12 | 09 18 564 6926 | 09.18 | 09 19 506 5903     | 22.22 |
| 09 18 550 7004 | 09.10 | 09 18 560 5953 | 09.12 | 09 18 560 7973 | 09.12 | 09 18 564 6927 | 09.18 | 09 19 506 5904     | 22.24 |
| 09 18 550 7014 | 09.10 | 09 18 560 5963 | 09.12 | 09 18 560 9002 | 09.23 | 09 18 564 6953 | 09.12 | 09 19 506 5913     | 22.22 |
| 09 18 550 7024 | 09.10 | 09 18 560 5973 | 09.12 |                |       | 09 18 564 6963 | 09.12 | 09 19 506 5914     | 22.24 |
| 09 18 550 7322 | 09.15 | 09 18 560 6004 | 09.10 | 09 18 564 5004 | 09.10 | 09 18 564 6973 | 09.12 | 09 19 506 5923     | 22.22 |
| 09 18 550 7323 | 09.14 | 09 18 560 6014 | 09.10 | 09 18 564 5014 | 09.10 | 09 18 564 7004 | 09.10 | 09 19 506 5924     | 22.24 |
| 09 18 550 7324 | 09.15 | 09 18 560 6024 | 09.10 | 09 18 564 5024 | 09.10 | 09 18 564 7014 | 09.10 | 09 19 506 5953     | 22.28 |
| 09 18 550 7329 | 20.19 | 09 18 560 6322 | 09.15 | 09 18 564 5322 | 09.15 | 09 18 564 7024 | 09.10 | 09 19 506 5963     | 22.28 |
| 09 18 550 7803 | 09.22 | 09 18 560 6323 | 09.14 | 09 18 564 5323 | 09.14 | 09 18 564 7322 | 09.15 | 09 19 506 5973     | 22.28 |
| 09 18 550 7804 | 09.22 | 09 18 560 6324 | 09.15 | 09 18 564 5324 | 09.15 | 09 18 564 7323 | 09.14 | 09 19 506 6004     | 22.26 |
| 09 18 550 7813 | 09.22 | 09 18 560 6329 | 20.19 | 09 18 564 5329 | 20.19 | 09 18 564 7324 | 09.15 | 09 19 506 6014     | 22.26 |
| 09 18 550 7814 | 09.22 | 09 18 560 6803 | 09.22 | 09 18 564 5803 | 09.22 | 09 18 564 7329 | 20.19 | 09 19 506 6024     | 22.26 |
| 09 18 550 7901 | 09.06 | 09 18 560 6804 | 09.22 | 09 18 564 5804 | 09.22 | 09 18 564 7803 | 09.22 | 09 19 506 6323     | 22.30 |
| 09 18 550 7902 | 09.08 | 09 18 560 6813 | 09.22 | 09 18 564 5813 | 09.22 | 09 18 564 7804 | 09.22 | 09 19 506 6323 740 | 22.30 |
| 09 18 550 7903 | 09.06 | 09 18 560 6814 | 09.22 | 09 18 564 5814 | 09.22 | 09 18 564 7813 | 09.22 | 09 19 506 6323 741 | 22.30 |
| 09 18 550 7904 | 09.08 | 09 18 560 6901 | 09.06 | 09 18 564 5901 | 09.06 | 09 18 564 7814 | 09.22 | 09 19 506 6324     | 22.31 |
| 09 18 550 7906 | 09.18 | 09 18 560 6902 | 09.08 | 09 18 564 5902 | 09.08 | 09 18 564 7901 | 09.06 | 09 19 506 6324 740 | 22.31 |
| 09 18 550 7907 | 09.18 | 09 18 560 6903 | 09.06 | 09 18 564 5903 | 09.06 | 09 18 564 7902 | 09.08 | 09 19 506 6324 741 | 22.31 |
| 09 18 550 7911 | 09.06 | 09 18 560 6904 | 09.08 | 09 18 564 5904 | 09.08 | 09 18 564 7903 | 09.06 | 09 19 506 6903     | 22.22 |
| 09 18 550 7912 | 09.08 | 09 18 560 6906 | 09.18 | 09 18 564 5906 | 09.18 | 09 18 564 7904 | 09.08 | 09 19 506 6904     | 22.24 |
| 09 18 550 7913 | 09.06 | 09 18 560 6907 | 09.18 | 09 18 564 5907 | 09.18 | 09 18 564 7906 | 09.18 | 09 19 506 6913     | 22.22 |
| 09 18 550 7914 | 09.08 | 09 18 560 6911 | 09.06 | 09 18 564 5909 | 20.16 | 09 18 564 7907 | 09.18 | 09 19 506 6914     | 22.24 |
| 09 18 550 7916 | 09.18 | 09 18 560 6912 | 09.08 | 09 18 564 5911 | 09.06 | 09 18 564 7911 | 09.06 | 09 19 506 6923     | 22.22 |
| 09 18 550 7917 | 09.18 | 09 18 560 6913 | 09.06 | 09 18 564 5912 | 09.08 | 09 18 564 7912 | 09.08 | 09 19 506 6924     | 22.24 |

# List of part numbers



| Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  |
|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|
| 09 19 506 6953     | 22.28 | 09 19 510 7324 741 | 22.31 | 09 19 516 5004     | 22.26 | 09 19 520 5913     | 22.22 | 09 19 524 6963     | 22.28 |
| 09 19 506 6963     | 22.28 | 09 19 510 7903     | 22.22 | 09 19 516 5014     | 22.26 | 09 19 520 5914     | 22.24 | 09 19 524 6973     | 22.28 |
| 09 19 506 6973     | 22.28 | 09 19 510 7904     | 22.24 | 09 19 516 5024     | 22.26 | 09 19 520 5923     | 22.22 | 09 19 524 7004     | 22.26 |
| 09 19 506 7004     | 22.26 | 09 19 510 7913     | 22.22 | 09 19 516 5323     | 22.30 | 09 19 520 5924     | 22.24 | 09 19 524 7014     | 22.26 |
| 09 19 506 7014     | 22.26 | 09 19 510 7914     | 22.24 | 09 19 516 5323 740 | 22.30 | 09 19 520 5953     | 22.28 | 09 19 524 7024     | 22.26 |
| 09 19 506 7024     | 22.26 | 09 19 510 7923     | 22.22 | 09 19 516 5323 741 | 22.30 | 09 19 520 5963     | 22.28 | 09 19 524 7903     | 22.22 |
| 09 19 506 7323     | 22.30 | 09 19 510 7924     | 22.24 | 09 19 516 5324     | 22.31 | 09 19 520 5973     | 22.28 | 09 19 524 7904     | 22.24 |
| 09 19 506 7323 740 | 22.30 | 09 19 510 7953     | 22.28 | 09 19 516 5324 740 | 22.31 | 09 19 520 6004     | 22.26 | 09 19 524 7913     | 22.22 |
| 09 19 506 7323 741 | 22.30 | 09 19 510 7963     | 22.28 | 09 19 516 5324 741 | 22.31 | 09 19 520 6014     | 22.26 | 09 19 524 7914     | 22.24 |
| 09 19 506 7324     | 22.31 | 09 19 510 7973     | 22.28 | 09 19 516 5903     | 22.22 | 09 19 520 6024     | 22.26 | 09 19 524 7923     | 22.22 |
| 09 19 506 7324 740 | 22.31 |                    |       | 09 19 516 5904     | 22.24 | 09 19 520 6323     | 22.30 | 09 19 524 7924     | 22.24 |
| 09 19 506 7324 741 | 22.31 |                    |       | 09 19 516 5913     | 22.22 | 09 19 520 6323 740 | 22.30 | 09 19 524 7953     | 22.28 |
| 09 19 506 7903     | 22.22 |                    |       | 09 19 516 5914     | 22.24 | 09 19 520 6323 741 | 22.30 | 09 19 524 7963     | 22.28 |
| 09 19 506 7904     | 22.24 | 09 19 514 5004     | 22.26 | 09 19 516 5923     | 22.22 | 09 19 520 6324     | 22.31 | 09 19 524 7973     | 22.28 |
| 09 19 506 7913     | 22.22 | 09 19 514 5014     | 22.26 | 09 19 516 5924     | 22.24 | 09 19 520 6324 740 | 22.31 |                    |       |
| 09 19 506 7914     | 22.24 | 09 19 514 5024     | 22.26 | 09 19 516 5953     | 22.28 | 09 19 520 6324 741 | 22.31 |                    |       |
| 09 19 506 7923     | 22.22 | 09 19 514 5323     | 22.30 | 09 19 516 5963     | 22.28 | 09 19 520 6903     | 22.22 | 09 19 526 5004     | 22.26 |
| 09 19 506 7924     | 22.24 | 09 19 514 5323 740 | 22.30 | 09 19 516 5973     | 22.28 | 09 19 520 6904     | 22.24 | 09 19 526 5014     | 22.26 |
| 09 19 506 7953     | 22.28 | 09 19 514 5323 741 | 22.30 | 09 19 516 6004     | 22.26 | 09 19 520 6913     | 22.22 | 09 19 526 5024     | 22.26 |
| 09 19 506 7963     | 22.28 | 09 19 514 5324     | 22.31 | 09 19 516 6014     | 22.26 | 09 19 520 6914     | 22.24 | 09 19 526 5323     | 22.30 |
| 09 19 506 7973     | 22.28 | 09 19 514 5324 740 | 22.31 | 09 19 516 6024     | 22.26 | 09 19 520 6923     | 22.22 | 09 19 526 5323 740 | 22.30 |
|                    |       | 09 19 514 5324 741 | 22.31 | 09 19 516 6323     | 22.30 | 09 19 520 6924     | 22.24 | 09 19 526 5323 741 | 22.30 |
|                    |       | 09 19 514 5903     | 22.22 | 09 19 516 6323 740 | 22.30 | 09 19 520 6953     | 22.28 | 09 19 526 5324     | 22.31 |
|                    |       | 09 19 514 5904     | 22.24 | 09 19 516 6323 741 | 22.30 | 09 19 520 6963     | 22.28 | 09 19 526 5324 740 | 22.31 |
|                    |       | 09 19 514 5913     | 22.22 | 09 19 516 6324     | 22.31 | 09 19 520 6973     | 22.28 | 09 19 526 5324 741 | 22.31 |
|                    |       | 09 19 514 5914     | 22.24 | 09 19 516 6324 740 | 22.31 | 09 19 520 7004     | 22.26 | 09 19 526 5903     | 22.22 |
|                    |       | 09 19 514 5923     | 22.22 | 09 19 516 6324 741 | 22.31 | 09 19 520 7014     | 22.26 | 09 19 526 5904     | 22.24 |
|                    |       | 09 19 514 5924     | 22.24 | 09 19 516 6903     | 22.22 | 09 19 520 7024     | 22.26 | 09 19 526 5913     | 22.22 |
|                    |       | 09 19 514 5953     | 22.28 | 09 19 516 6904     | 22.24 | 09 19 520 7323     | 22.30 | 09 19 526 5914     | 22.24 |
|                    |       | 09 19 514 5963     | 22.28 | 09 19 516 6913     | 22.22 | 09 19 520 7323 740 | 22.30 | 09 19 526 5923     | 22.22 |
|                    |       | 09 19 514 5973     | 22.28 | 09 19 516 6914     | 22.24 | 09 19 520 7323 741 | 22.30 | 09 19 526 5924     | 22.24 |
|                    |       | 09 19 514 6004     | 22.26 | 09 19 516 6923     | 22.22 | 09 19 520 7324     | 22.31 | 09 19 526 5953     | 22.28 |
|                    |       | 09 19 514 6014     | 22.26 | 09 19 516 6924     | 22.24 | 09 19 520 7324 740 | 22.31 | 09 19 526 5963     | 22.28 |
|                    |       | 09 19 514 6024     | 22.26 | 09 19 516 6953     | 22.28 | 09 19 520 7324 741 | 22.31 | 09 19 526 5973     | 22.28 |
|                    |       | 09 19 514 6323     | 22.30 | 09 19 516 6963     | 22.28 | 09 19 520 7903     | 22.22 | 09 19 526 6004     | 22.26 |
|                    |       | 09 19 514 6323 740 | 22.30 | 09 19 516 6973     | 22.28 | 09 19 520 7904     | 22.24 | 09 19 526 6014     | 22.26 |
|                    |       | 09 19 514 6323 741 | 22.30 | 09 19 516 7004     | 22.26 | 09 19 520 7913     | 22.22 | 09 19 526 6024     | 22.26 |
|                    |       | 09 19 514 6324     | 22.31 | 09 19 516 7014     | 22.26 | 09 19 520 7914     | 22.24 | 09 19 526 6323     | 22.30 |
|                    |       | 09 19 514 6324 740 | 22.31 | 09 19 516 7024     | 22.26 | 09 19 520 7923     | 22.22 | 09 19 526 6323 740 | 22.30 |
|                    |       | 09 19 514 6324 741 | 22.31 | 09 19 516 7323     | 22.30 | 09 19 520 7924     | 22.24 | 09 19 526 6323 741 | 22.30 |
|                    |       | 09 19 514 6903     | 22.22 | 09 19 516 7323 740 | 22.30 | 09 19 520 7953     | 22.28 | 09 19 526 6324     | 22.31 |
|                    |       | 09 19 514 6904     | 22.24 | 09 19 516 7323 741 | 22.30 | 09 19 520 7963     | 22.28 | 09 19 526 6324 740 | 22.31 |
|                    |       | 09 19 514 6913     | 22.22 | 09 19 516 7324     | 22.31 | 09 19 520 7973     | 22.28 | 09 19 526 6324 741 | 22.31 |
|                    |       | 09 19 514 6914     | 22.24 | 09 19 516 7324 740 | 22.31 |                    |       | 09 19 526 6903     | 22.22 |
|                    |       | 09 19 514 6923     | 22.22 | 09 19 516 7324 741 | 22.31 |                    |       | 09 19 526 6904     | 22.24 |
|                    |       | 09 19 514 6924     | 22.24 | 09 19 516 7903     | 22.22 | 09 19 524 5004     | 22.26 | 09 19 526 6913     | 22.22 |
|                    |       | 09 19 514 6924 740 | 22.24 | 09 19 516 7904     | 22.24 | 09 19 524 5014     | 22.26 | 09 19 526 6914     | 22.24 |
|                    |       | 09 19 514 6953     | 22.28 | 09 19 516 7904     | 22.24 | 09 19 524 5024     | 22.26 | 09 19 526 6923     | 22.22 |
|                    |       | 09 19 514 6963     | 22.28 | 09 19 516 7913     | 22.22 | 09 19 524 5903     | 22.22 | 09 19 526 6924     | 22.24 |
|                    |       | 09 19 514 6973     | 22.28 | 09 19 516 7914     | 22.24 | 09 19 524 5904     | 22.24 | 09 19 526 6953     | 22.28 |
|                    |       | 09 19 514 7004     | 22.26 | 09 19 516 7923     | 22.22 | 09 19 524 5913     | 22.22 | 09 19 526 6963     | 22.28 |
|                    |       | 09 19 514 7014     | 22.26 | 09 19 516 7924     | 22.24 | 09 19 524 5914     | 22.24 | 09 19 526 6973     | 22.28 |
|                    |       | 09 19 514 7024     | 22.26 | 09 19 516 7953     | 22.28 | 09 19 524 5923     | 22.22 | 09 19 526 7004     | 22.26 |
|                    |       | 09 19 514 7323     | 22.30 | 09 19 516 7963     | 22.28 | 09 19 524 5924     | 22.24 | 09 19 526 7014     | 22.26 |
|                    |       | 09 19 514 7323 740 | 22.30 | 09 19 516 7973     | 22.28 | 09 19 524 5953     | 22.28 | 09 19 526 7024     | 22.26 |
|                    |       | 09 19 514 7323 741 | 22.30 |                    |       | 09 19 524 5963     | 22.28 | 09 19 526 7323     | 22.30 |
|                    |       | 09 19 514 7324     | 22.31 |                    |       | 09 19 524 5973     | 22.28 | 09 19 526 7323 740 | 22.30 |
|                    |       | 09 19 514 7324 740 | 22.31 | 09 19 520 5004     | 22.26 | 09 19 524 6004     | 22.26 | 09 19 526 7323 741 | 22.30 |
|                    |       | 09 19 514 7324 741 | 22.31 | 09 19 520 5014     | 22.26 | 09 19 524 6014     | 22.26 | 09 19 526 7324     | 22.31 |
|                    |       | 09 19 514 7903     | 22.22 | 09 19 520 5024     | 22.26 | 09 19 524 6024     | 22.26 | 09 19 526 7324 740 | 22.31 |
|                    |       | 09 19 514 7904     | 22.24 | 09 19 520 5323     | 22.30 | 09 19 524 6903     | 22.22 | 09 19 526 7324 741 | 22.31 |
|                    |       | 09 19 514 7913     | 22.22 | 09 19 520 5323 740 | 22.30 | 09 19 524 6904     | 22.24 | 09 19 526 7903     | 22.22 |
|                    |       | 09 19 514 7914     | 22.24 | 09 19 520 5323 741 | 22.30 | 09 19 524 6913     | 22.22 | 09 19 526 7904     | 22.24 |
|                    |       | 09 19 514 7923     | 22.22 | 09 19 520 5324     | 22.31 | 09 19 524 6914     | 22.24 | 09 19 526 7913     | 22.22 |
|                    |       | 09 19 514 7924     | 22.24 | 09 19 520 5324 740 | 22.31 | 09 19 524 6923     | 22.22 | 09 19 526 7914     | 22.24 |
|                    |       | 09 19 514 7953     | 22.28 | 09 19 520 5324 741 | 22.31 | 09 19 524 6924     | 22.24 | 09 19 526 7923     | 22.22 |
|                    |       | 09 19 514 7963     | 22.28 | 09 19 520 5903     | 22.22 | 09 19 524 6953     | 22.28 | 09 19 526 7924     | 22.24 |
|                    |       | 09 19 514 7973     | 22.28 | 09 19 520 5904     | 22.24 |                    |       |                    |       |

# List of part numbers



| Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.       | Page  | Part No.           | Page  |
|--------------------|-------|--------------------|-------|--------------------|-------|----------------|-------|--------------------|-------|
| 09 19 526 7953     | 22.28 | 09 19 534 5324 740 | 22.31 | 09 19 540 6004     | 22.26 | 09 19 550 7014 | 22.26 | 09 19 564 5923     | 22.22 |
| 09 19 526 7963     | 22.28 | 09 19 534 5324 741 | 22.31 | 09 19 540 6014     | 22.26 | 09 19 550 7024 | 22.26 | 09 19 564 5924     | 22.24 |
| 09 19 526 7973     | 22.28 | 09 19 534 5903     | 22.22 | 09 19 540 6024     | 22.26 | 09 19 550 7323 | 22.30 | 09 19 564 5953     | 22.28 |
|                    |       | 09 19 534 5904     | 22.24 | 09 19 540 6323     | 22.30 | 09 19 550 7324 | 22.31 | 09 19 564 5963     | 22.28 |
|                    |       | 09 19 534 5913     | 22.22 | 09 19 540 6323 740 | 22.30 | 09 19 550 7903 | 22.22 | 09 19 564 5973     | 22.28 |
| 09 19 530 5004     | 22.26 | 09 19 534 5914     | 22.24 | 09 19 540 6323 741 | 22.30 | 09 19 550 7904 | 22.24 | 09 19 564 6004     | 22.26 |
| 09 19 530 5014     | 22.26 | 09 19 534 5923     | 22.22 | 09 19 540 6324     | 22.31 | 09 19 550 7913 | 22.22 | 09 19 564 6014     | 22.26 |
| 09 19 530 5024     | 22.26 | 09 19 534 5924     | 22.24 | 09 19 540 6324 740 | 22.31 | 09 19 550 7914 | 22.24 | 09 19 564 6024     | 22.26 |
| 09 19 530 5323     | 22.30 | 09 19 534 5953     | 22.28 | 09 19 540 6324 741 | 22.31 | 09 19 550 7923 | 22.22 | 09 19 564 6323     | 22.30 |
| 09 19 530 5323 740 | 22.30 | 09 19 534 5963     | 22.28 | 09 19 540 6903     | 22.22 | 09 19 550 7924 | 22.24 | 09 19 564 6324     | 22.31 |
| 09 19 530 5323 741 | 22.30 | 09 19 534 5973     | 22.28 | 09 19 540 6904     | 22.24 | 09 19 550 7953 | 22.28 | 09 19 564 6903     | 22.22 |
| 09 19 530 5324     | 22.31 | 09 19 534 6004     | 22.26 | 09 19 540 6913     | 22.22 | 09 19 550 7963 | 22.28 | 09 19 564 6904     | 22.24 |
| 09 19 530 5324 740 | 22.31 | 09 19 534 6014     | 22.26 | 09 19 540 6914     | 22.24 | 09 19 550 7973 | 22.28 | 09 19 564 6913     | 22.22 |
| 09 19 530 5324 741 | 22.31 | 09 19 534 6024     | 22.26 | 09 19 540 6923     | 22.22 |                |       | 09 19 564 6914     | 22.24 |
| 09 19 530 5903     | 22.22 | 09 19 534 6323     | 22.30 | 09 19 540 6924     | 22.24 | 09 19 560 5004 | 22.26 | 09 19 564 6923     | 22.22 |
| 09 19 530 5904     | 22.24 | 09 19 534 6323 740 | 22.30 | 09 19 540 6953     | 22.28 | 09 19 560 5014 | 22.26 | 09 19 564 6924     | 22.24 |
| 09 19 530 5913     | 22.22 | 09 19 534 6323 741 | 22.30 | 09 19 540 6963     | 22.28 | 09 19 560 5024 | 22.26 | 09 19 564 6953     | 22.28 |
| 09 19 530 5914     | 22.24 | 09 19 534 6324     | 22.31 | 09 19 540 6973     | 22.28 | 09 19 560 5323 | 22.30 | 09 19 564 6963     | 22.28 |
| 09 19 530 5923     | 22.22 | 09 19 534 6324 740 | 22.31 | 09 19 540 7004     | 22.26 | 09 19 560 5324 | 22.31 | 09 19 564 6973     | 22.28 |
| 09 19 530 5924     | 22.24 | 09 19 534 6324 741 | 22.31 | 09 19 540 7014     | 22.26 | 09 19 560 5903 | 22.22 | 09 19 564 7004     | 22.26 |
| 09 19 530 5953     | 22.28 | 09 19 534 6903     | 22.22 | 09 19 540 7024     | 22.26 | 09 19 560 5904 | 22.24 | 09 19 564 7014     | 22.26 |
| 09 19 530 5963     | 22.28 | 09 19 534 6904     | 22.24 | 09 19 540 7323     | 22.30 | 09 19 560 5913 | 22.22 | 09 19 564 7024     | 22.26 |
| 09 19 530 5973     | 22.28 | 09 19 534 6913     | 22.22 | 09 19 540 7323 740 | 22.30 | 09 19 560 5914 | 22.24 | 09 19 564 7323     | 22.30 |
| 09 19 530 6004     | 22.26 | 09 19 534 6914     | 22.24 | 09 19 540 7323 741 | 22.30 | 09 19 560 5923 | 22.22 | 09 19 564 7324     | 22.31 |
| 09 19 530 6014     | 22.26 | 09 19 534 6923     | 22.22 | 09 19 540 7324     | 22.31 | 09 19 560 5924 | 22.24 | 09 19 564 7903     | 22.22 |
| 09 19 530 6024     | 22.26 | 09 19 534 6924     | 22.24 | 09 19 540 7324 740 | 22.31 | 09 19 560 5953 | 22.28 | 09 19 564 7904     | 22.24 |
| 09 19 530 6323     | 22.30 | 09 19 534 6953     | 22.28 | 09 19 540 7324 741 | 22.31 | 09 19 560 5963 | 22.28 | 09 19 564 7913     | 22.22 |
| 09 19 530 6323 740 | 22.30 | 09 19 534 6963     | 22.28 | 09 19 540 7903     | 22.22 | 09 19 560 5973 | 22.28 | 09 19 564 7914     | 22.24 |
| 09 19 530 6323 741 | 22.30 | 09 19 534 6973     | 22.28 | 09 19 540 7904     | 22.24 | 09 19 560 6004 | 22.26 | 09 19 564 7923     | 22.22 |
| 09 19 530 6324     | 22.31 | 09 19 534 7004     | 22.26 | 09 19 540 7913     | 22.22 | 09 19 560 6014 | 22.26 | 09 19 564 7924     | 22.24 |
| 09 19 530 6324 740 | 22.31 | 09 19 534 7014     | 22.26 | 09 19 540 7914     | 22.24 | 09 19 560 6024 | 22.26 | 09 19 564 7953     | 22.28 |
| 09 19 530 6324 741 | 22.31 | 09 19 534 7024     | 22.26 | 09 19 540 7923     | 22.22 | 09 19 560 6323 | 22.30 | 09 19 564 7963     | 22.28 |
| 09 19 530 6903     | 22.22 | 09 19 534 7323     | 22.30 | 09 19 540 7924     | 22.24 | 09 19 560 6324 | 22.31 | 09 19 564 7973     | 22.28 |
| 09 19 530 6904     | 22.24 | 09 19 534 7323 740 | 22.30 | 09 19 540 7953     | 22.28 | 09 19 560 6903 | 22.22 |                    |       |
| 09 19 530 6913     | 22.22 | 09 19 534 7323 741 | 22.30 | 09 19 540 7963     | 22.28 | 09 19 560 6904 | 22.24 | 09 55 115 6611 741 | 21.08 |
| 09 19 530 6914     | 22.24 | 09 19 534 7324     | 22.31 | 09 19 540 7973     | 22.28 | 09 19 560 6913 | 22.22 | 09 55 115 6612 741 | 21.08 |
| 09 19 530 6923     | 22.22 | 09 19 534 7324 740 | 22.31 |                    |       | 09 19 560 6914 | 22.24 | 09 55 115 6621 741 | 21.08 |
| 09 19 530 6924     | 22.24 | 09 19 534 7324 741 | 22.31 | 09 19 550 5004     | 22.26 | 09 19 560 6923 | 22.22 | 09 55 115 6622 741 | 21.08 |
| 09 19 530 6953     | 22.28 | 09 19 534 7903     | 22.22 | 09 19 550 5014     | 22.26 | 09 19 560 6924 | 22.24 | 09 55 115 7611 741 | 21.08 |
| 09 19 530 6963     | 22.28 | 09 19 534 7904     | 22.24 | 09 19 550 5024     | 22.26 | 09 19 560 6953 | 22.28 | 09 55 115 7612 741 | 21.08 |
| 09 19 530 6973     | 22.28 | 09 19 534 7913     | 22.22 | 09 19 550 5323     | 22.30 | 09 19 560 6963 | 22.28 | 09 55 115 7621 741 | 21.08 |
| 09 19 530 7004     | 22.26 | 09 19 534 7914     | 22.24 | 09 19 550 5324     | 22.31 | 09 19 560 6973 | 22.28 | 09 55 115 7622 741 | 21.08 |
| 09 19 530 7014     | 22.26 | 09 19 534 7923     | 22.22 | 09 19 550 5903     | 22.22 | 09 19 560 7004 | 22.26 |                    |       |
| 09 19 530 7024     | 22.26 | 09 19 534 7924     | 22.24 | 09 19 550 5904     | 22.24 | 09 19 560 7014 | 22.26 | 09 55 129 6811 741 | 21.08 |
| 09 19 530 7323     | 22.30 | 09 19 534 7953     | 22.28 | 09 19 550 5913     | 22.22 | 09 19 560 7024 | 22.26 | 09 55 129 6812 741 | 21.08 |
| 09 19 530 7323 740 | 22.30 | 09 19 534 7963     | 22.28 | 09 19 550 5914     | 22.24 | 09 19 560 7323 | 22.30 | 09 55 129 6821 741 | 21.08 |
| 09 19 530 7323 741 | 22.30 | 09 19 534 7973     | 22.28 | 09 19 550 5923     | 22.22 | 09 19 560 7324 | 22.31 | 09 55 129 6822 741 | 21.08 |
| 09 19 530 7324     | 22.31 |                    |       | 09 19 550 5924     | 22.24 | 09 19 560 7903 | 22.22 | 09 55 129 7811 741 | 21.08 |
| 09 19 530 7324 740 | 22.31 | 09 19 540 5004     | 22.26 | 09 19 550 5953     | 22.28 | 09 19 560 7904 | 22.24 | 09 55 129 7812 741 | 21.08 |
| 09 19 530 7324 741 | 22.31 | 09 19 540 5014     | 22.26 | 09 19 550 5963     | 22.28 | 09 19 560 7913 | 22.22 | 09 55 129 7821 741 | 21.08 |
| 09 19 530 7903     | 22.22 | 09 19 540 5024     | 22.26 | 09 19 550 5973     | 22.28 | 09 19 560 7914 | 22.24 | 09 55 129 7822 741 | 21.08 |
| 09 19 530 7904     | 22.24 | 09 19 540 5323     | 22.30 | 09 19 550 6004     | 22.26 | 09 19 560 7923 | 22.22 |                    |       |
| 09 19 530 7913     | 22.22 | 09 19 540 5323 740 | 22.30 | 09 19 550 6014     | 22.26 | 09 19 560 7924 | 22.24 | 09 55 155 6611 741 | 21.10 |
| 09 19 530 7914     | 22.24 | 09 19 540 5323 741 | 22.30 | 09 19 550 6024     | 22.26 | 09 19 560 7953 | 22.28 | 09 55 155 6612 741 | 21.10 |
| 09 19 530 7923     | 22.22 | 09 19 540 5324     | 22.31 | 09 19 550 6323     | 22.30 | 09 19 560 7963 | 22.28 | 09 55 155 6621 741 | 21.10 |
| 09 19 530 7924     | 22.24 | 09 19 540 5324 740 | 22.31 | 09 19 550 6324     | 22.31 | 09 19 560 7973 | 22.28 | 09 55 155 6622 741 | 21.10 |
| 09 19 530 7953     | 22.28 | 09 19 540 5324 741 | 22.31 | 09 19 550 6903     | 22.22 |                |       | 09 55 155 7611 741 | 21.10 |
| 09 19 530 7963     | 22.28 | 09 19 540 5903     | 22.22 | 09 19 550 6904     | 22.24 | 09 19 564 5004 | 22.26 | 09 55 155 7612 741 | 21.10 |
| 09 19 530 7973     | 22.28 | 09 19 540 5904     | 22.24 | 09 19 550 6913     | 22.22 | 09 19 564 5014 | 22.26 | 09 55 155 7621 741 | 21.10 |
|                    |       | 09 19 540 5913     | 22.22 | 09 19 550 6914     | 22.24 | 09 19 564 5024 | 22.26 | 09 55 155 7622 741 | 21.10 |
| 09 19 534 5004     | 22.26 | 09 19 540 5914     | 22.24 | 09 19 550 6923     | 22.22 | 09 19 564 5323 | 22.30 |                    |       |
| 09 19 534 5014     | 22.26 | 09 19 540 5923     | 22.22 | 09 19 550 6924     | 22.24 | 09 19 564 5324 | 22.31 | 09 55 156 6611 741 | 21.04 |
| 09 19 534 5024     | 22.26 | 09 19 540 5924     | 22.24 | 09 19 550 6953     | 22.28 | 09 19 564 5903 | 22.22 | 09 55 156 6612 741 | 21.04 |
| 09 19 534 5323     | 22.30 | 09 19 540 5953     | 22.28 | 09 19 550 6963     | 22.28 | 09 19 564 5904 | 22.24 | 09 55 156 6615 741 | 21.06 |
| 09 19 534 5323 740 | 22.30 | 09 19 540 5963     | 22.28 | 09 19 550 6973     | 22.28 | 09 19 564 5913 | 22.22 | 09 55 156 6616 741 | 21.06 |
| 09 19 534 5323 741 | 22.30 | 09 19 540 5973     | 22.28 | 09 19 550 7004     | 22.26 | 09 19 564 5914 | 22.24 |                    |       |
| 09 19 534 5324     | 22.31 |                    |       |                    |       |                |       |                    |       |

# List of part numbers



| Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  |
|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|
| 09 55 156 6619 741 | 21.06 | 09 55 256 6611 741 | 21.04 | 09 55 355 7612 741 | 21.10 | 09 55 455 6611 741 | 21.10 | 09 56 100 4701     | 03.03 |
| 09 55 156 6620 741 | 21.06 | 09 55 256 6612 741 | 21.04 | 09 55 355 7621 741 | 21.10 | 09 55 455 6612 741 | 21.10 | 09 56 100 4704     | 03.06 |
| 09 55 156 6621 741 | 21.04 | 09 55 256 6615 741 | 21.06 | 09 55 355 7622 741 | 21.10 | 09 55 455 6621 741 | 21.10 | 09 56 100 4715 050 | 03.06 |
| 09 55 156 6622 741 | 21.04 | 09 55 256 6616 741 | 21.06 |                    |       | 09 55 455 6622 741 | 21.10 | 09 56 100 5601     | 03.03 |
| 09 55 156 7611 741 | 21.04 | 09 55 256 6619 741 | 21.06 | 09 55 356 6611 741 | 21.04 | 09 55 455 7611 741 | 21.10 | 09 56 100 5604     | 03.06 |
| 09 55 156 7612 741 | 21.04 | 09 55 256 6620 741 | 21.06 | 09 55 356 6612 741 | 21.04 | 09 55 455 7612 741 | 21.10 | 09 56 100 5615 050 | 03.06 |
| 09 55 156 7615 741 | 21.06 | 09 55 256 6621 741 | 21.04 | 09 55 356 6615 741 | 21.06 | 09 55 455 7621 741 | 21.10 |                    |       |
| 09 55 156 7616 741 | 21.06 | 09 55 256 6622 741 | 21.04 | 09 55 356 6616 741 | 21.06 | 09 55 455 7622 741 | 21.10 | 09 56 151 5500     | 03.11 |
| 09 55 156 7619 741 | 21.06 | 09 55 256 7611 741 | 21.04 | 09 55 356 6619 741 | 21.06 |                    |       | 09 56 151 5512     | 03.12 |
| 09 55 156 7620 741 | 21.06 | 09 55 256 7612 741 | 21.04 | 09 55 356 6620 741 | 21.06 | 09 55 456 6611 741 | 21.04 | 09 56 151 5513     | 03.12 |
| 09 55 156 7621 741 | 21.04 | 09 55 256 7615 741 | 21.06 | 09 55 356 6621 741 | 21.04 | 09 55 456 6612 741 | 21.04 | 09 56 151 7500     | 03.11 |
| 09 55 156 7622 741 | 21.04 | 09 55 256 7616 741 | 21.06 | 09 55 356 6622 741 | 21.04 | 09 55 456 6615 741 | 21.06 | 09 56 151 7512     | 03.12 |
|                    |       | 09 55 256 7619 741 | 21.06 | 09 55 356 7611 741 | 21.04 | 09 55 456 6616 741 | 21.06 | 09 56 151 7513     | 03.12 |
| 09 55 166 6811 741 | 21.04 | 09 55 256 7620 741 | 21.06 | 09 55 356 7612 741 | 21.04 | 09 55 456 6619 741 | 21.06 |                    |       |
| 09 55 166 6812 741 | 21.04 | 09 55 256 7621 741 | 21.04 | 09 55 356 7615 741 | 21.06 | 09 55 456 6620 741 | 21.06 | 09 56 152 5612     | 03.08 |
| 09 55 166 6815 741 | 21.06 | 09 55 256 7622 741 | 21.04 | 09 55 356 7616 741 | 21.06 | 09 55 456 6621 741 | 21.04 | 09 56 152 5613     | 03.08 |
| 09 55 166 6816 741 | 21.06 |                    |       | 09 55 356 7619 741 | 21.06 | 09 55 456 6622 741 | 21.04 | 09 56 152 7612     | 03.08 |
| 09 55 166 6819 741 | 21.06 | 09 55 266 6811 741 | 21.04 | 09 55 356 7620 741 | 21.06 | 09 55 456 7611 741 | 21.04 | 09 56 152 7613     | 03.08 |
| 09 55 166 6820 741 | 21.06 | 09 55 266 6812 741 | 21.04 | 09 55 356 7621 741 | 21.04 | 09 55 456 7612 741 | 21.04 |                    |       |
| 09 55 166 6821 741 | 21.04 | 09 55 266 6815 741 | 21.06 | 09 55 356 7622 741 | 21.04 | 09 55 456 7615 741 | 21.06 | 09 56 161 5700     | 03.11 |
| 09 55 166 6822 741 | 21.04 | 09 55 266 6816 741 | 21.06 |                    |       | 09 55 456 7616 741 | 21.06 | 09 56 161 5712     | 03.12 |
| 09 55 166 7811 741 | 21.04 | 09 55 266 6819 741 | 21.06 | 09 55 366 6811 741 | 21.04 | 09 55 456 7619 741 | 21.06 | 09 56 161 5713     | 03.12 |
| 09 55 166 7812 741 | 21.04 | 09 55 266 6820 741 | 21.06 | 09 55 366 6812 741 | 21.04 | 09 55 456 7620 741 | 21.06 | 09 56 161 7700     | 03.11 |
| 09 55 166 7815 741 | 21.06 | 09 55 266 6821 741 | 21.04 | 09 55 366 6815 741 | 21.06 | 09 55 456 7621 741 | 21.04 | 09 56 161 7712     | 03.12 |
| 09 55 166 7816 741 | 21.06 | 09 55 266 6822 741 | 21.04 | 09 55 366 6816 741 | 21.06 | 09 55 456 7622 741 | 21.04 | 09 56 161 7713     | 03.12 |
| 09 55 166 7819 741 | 21.06 | 09 55 266 7811 741 | 21.04 | 09 55 366 6819 741 | 21.06 |                    |       |                    |       |
| 09 55 166 7820 741 | 21.06 | 09 55 266 7812 741 | 21.04 | 09 55 366 6820 741 | 21.06 | 09 55 466 6811 741 | 21.04 | 09 56 162 5812     | 03.08 |
| 09 55 166 7821 741 | 21.04 | 09 55 266 7815 741 | 21.06 | 09 55 366 6821 741 | 21.04 | 09 55 466 6812 741 | 21.04 | 09 56 162 5813     | 03.08 |
| 09 55 166 7822 741 | 21.04 | 09 55 266 7816 741 | 21.06 | 09 55 366 6822 741 | 21.04 | 09 55 466 6815 741 | 21.06 | 09 56 162 7812     | 03.08 |
|                    |       | 09 55 266 7819 741 | 21.06 | 09 55 366 6822 741 | 21.04 | 09 55 466 6816 741 | 21.06 | 09 56 162 7813     | 03.08 |
| 09 55 169 6811 741 | 21.10 | 09 55 266 7820 741 | 21.06 | 09 55 366 7811 741 | 21.04 | 09 55 466 6819 741 | 21.06 |                    |       |
| 09 55 169 6812 741 | 21.10 | 09 55 266 7821 741 | 21.04 | 09 55 366 7812 741 | 21.04 | 09 55 466 6820 741 | 21.06 | 09 56 200 4701     | 03.03 |
| 09 55 169 6821 741 | 21.10 | 09 55 266 7822 741 | 21.04 | 09 55 366 7815 741 | 21.06 | 09 55 466 6821 741 | 21.04 | 09 56 200 4704     | 03.06 |
| 09 55 169 6822 741 | 21.10 |                    |       | 09 55 366 7816 741 | 21.06 | 09 55 466 6822 741 | 21.04 | 09 56 200 4715 050 | 03.06 |
| 09 55 169 7811 741 | 21.10 | 09 55 269 6811 741 | 21.10 | 09 55 366 7819 741 | 21.06 | 09 55 466 7811 741 | 21.04 | 09 56 200 5601     | 03.03 |
| 09 55 169 7812 741 | 21.10 | 09 55 269 6812 741 | 21.10 | 09 55 366 7820 741 | 21.06 | 09 55 466 7812 741 | 21.04 | 09 56 200 5604     | 03.06 |
| 09 55 169 7821 741 | 21.10 | 09 55 269 6821 741 | 21.10 | 09 55 366 7821 741 | 21.04 | 09 55 466 7815 741 | 21.06 | 09 56 200 5615 050 | 03.06 |
| 09 55 169 7822 741 | 21.10 | 09 55 269 6822 741 | 21.10 | 09 55 366 7822 741 | 21.04 | 09 55 466 7816 741 | 21.06 |                    |       |
|                    |       | 09 55 269 7811 741 | 21.10 |                    |       | 09 55 466 7819 741 | 21.06 | 09 56 251 5500     | 03.11 |
| 09 55 215 6611 741 | 21.08 | 09 55 269 7812 741 | 21.10 | 09 55 369 6811 741 | 21.10 | 09 55 466 7820 741 | 21.06 | 09 56 251 5512     | 03.12 |
| 09 55 215 6612 741 | 21.08 | 09 55 269 7821 741 | 21.10 | 09 55 369 6812 741 | 21.10 | 09 55 466 7821 741 | 21.04 | 09 56 251 5513     | 03.12 |
| 09 55 215 6621 741 | 21.08 | 09 55 269 7822 741 | 21.10 | 09 55 369 6821 741 | 21.10 | 09 55 466 7822 741 | 21.04 | 09 56 251 7500     | 03.11 |
| 09 55 215 6622 741 | 21.08 |                    |       | 09 55 369 6822 741 | 21.10 |                    |       | 09 56 251 7512     | 03.12 |
| 09 55 215 7611 741 | 21.08 | 09 55 315 6611 741 | 21.08 | 09 55 369 7811 741 | 21.10 | 09 55 469 6811 741 | 21.10 | 09 56 251 7513     | 03.12 |
| 09 55 215 7612 741 | 21.08 | 09 55 315 6612 741 | 21.08 | 09 55 369 7812 741 | 21.10 | 09 55 469 6812 741 | 21.10 |                    |       |
| 09 55 215 7621 741 | 21.08 | 09 55 315 6621 741 | 21.08 | 09 55 369 7821 741 | 21.10 | 09 55 469 6821 741 | 21.10 | 09 56 252 5612     | 03.08 |
| 09 55 215 7622 741 | 21.08 | 09 55 315 6622 741 | 21.08 | 09 55 369 7822 741 | 21.10 | 09 55 469 6822 741 | 21.10 | 09 56 252 5613     | 03.08 |
|                    |       | 09 55 315 7611 741 | 21.08 |                    |       | 09 55 469 6822 741 | 21.10 | 09 56 252 7612     | 03.08 |
| 09 55 229 6811 741 | 21.08 | 09 55 315 7612 741 | 21.08 | 09 55 415 6611 741 | 21.08 | 09 55 469 7811 741 | 21.10 | 09 56 252 7613     | 03.08 |
| 09 55 229 6812 741 | 21.08 | 09 55 315 7621 741 | 21.08 | 09 55 415 6612 741 | 21.08 | 09 55 469 7812 741 | 21.10 |                    |       |
| 09 55 229 6821 741 | 21.08 | 09 55 315 7622 741 | 21.08 | 09 55 415 6621 741 | 21.08 | 09 55 469 7821 741 | 21.10 | 09 56 261 5700     | 03.11 |
| 09 55 229 6822 741 | 21.08 |                    |       | 09 55 415 6622 741 | 21.08 | 09 55 469 7822 741 | 21.10 | 09 56 261 5712     | 03.12 |
| 09 55 229 7811 741 | 21.08 | 09 55 329 6811 741 | 21.08 | 09 55 415 7611 741 | 21.08 |                    |       | 09 56 261 5713     | 03.12 |
| 09 55 229 7812 741 | 21.08 | 09 55 329 6812 741 | 21.08 | 09 55 415 7612 741 | 21.08 | 09 56 000 8155     | 03.04 | 09 56 261 7700     | 03.11 |
| 09 55 229 7821 741 | 21.08 | 09 55 329 6821 741 | 21.08 | 09 55 415 7621 741 | 21.08 | 09 56 000 8157     | 03.04 | 09 56 261 7712     | 03.12 |
| 09 55 229 7822 741 | 21.08 | 09 55 329 6822 741 | 21.08 | 09 55 415 7622 741 | 21.08 | 09 56 000 8165     | 03.04 | 09 56 261 7713     | 03.12 |
|                    |       | 09 55 329 7811 741 | 21.08 |                    |       | 09 56 000 8167     | 03.04 |                    |       |
| 09 55 255 6611 741 | 21.10 | 09 55 329 7812 741 | 21.08 | 09 55 429 6811 741 | 21.08 | 09 56 000 8175     | 03.04 | 09 56 262 5812     | 03.08 |
| 09 55 255 6612 741 | 21.10 | 09 55 329 7821 741 | 21.08 | 09 55 429 6812 741 | 21.08 | 09 56 000 8177     | 03.04 | 09 56 262 5813     | 03.08 |
| 09 55 255 6621 741 | 21.10 | 09 55 329 7822 741 | 21.08 | 09 55 429 6821 741 | 21.08 | 09 56 000 8255     | 03.04 | 09 56 262 7812     | 03.08 |
| 09 55 255 6622 741 | 21.10 |                    |       | 09 55 429 6822 741 | 21.08 | 09 56 000 8257     | 03.04 | 09 56 262 7813     | 03.08 |
| 09 55 255 7611 741 | 21.10 | 09 55 355 6611 741 | 21.10 | 09 55 429 7811 741 | 21.08 | 09 56 000 8265     | 03.04 |                    |       |
| 09 55 255 7612 741 | 21.10 | 09 55 355 6612 741 | 21.10 | 09 55 429 7812 741 | 21.08 | 09 56 000 8267     | 03.04 | 09 56 300 4701     | 03.03 |
| 09 55 255 7621 741 | 21.10 | 09 55 355 6621 741 | 21.10 | 09 55 429 7821 741 | 21.08 | 09 56 000 8275     | 03.04 | 09 56 300 4704     | 03.06 |
| 09 55 255 7622 741 | 21.10 | 09 55 355 6622 741 | 21.10 | 09 55 429 7822 741 | 21.08 | 09 56 000 8277     | 03.04 | 09 56 300 4715 050 | 03.06 |
|                    |       | 09 55 355 7611 741 | 21.10 |                    |       |                    |       | 09 56 300 5601     | 03.03 |



# List of part numbers



| Part No.           | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  |
|--------------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
| 09 56 300 5604     | 03.06 | 09 56 551 5500 | 03.11 | 09 64 113 7802 | 05.05 | 09 64 122 7228 | 05.12 | 09 64 211 7228 | 05.30 |
| 09 56 300 5615 050 | 03.06 | 09 56 551 5512 | 03.12 |                |       | 09 64 122 7230 | 05.10 | 09 64 211 7230 | 05.28 |
|                    |       | 09 56 551 5513 | 03.12 | 09 64 114 7210 | 05.16 | 09 64 122 7235 | 05.14 | 09 64 211 7237 | 05.30 |
| 09 56 351 5500     | 03.11 | 09 56 551 7500 | 03.11 | 09 64 114 7211 | 05.18 | 09 64 122 7236 | 05.14 | 09 64 211 7238 | 05.30 |
| 09 56 351 5512     | 03.12 | 09 56 551 7512 | 03.12 | 09 64 114 7212 | 05.20 | 09 64 122 7237 | 05.12 | 09 64 211 7240 | 05.28 |
| 09 56 351 5513     | 03.12 | 09 56 551 7513 | 03.12 | 09 64 114 7213 | 05.20 | 09 64 122 7238 | 05.12 | 09 64 211 7247 | 05.30 |
| 09 56 351 7500     | 03.11 |                |       | 09 64 114 7214 | 05.24 | 09 64 122 7240 | 05.10 | 09 64 211 7248 | 05.30 |
| 09 56 351 7512     | 03.12 | 09 56 552 5612 | 03.08 | 09 64 114 7215 | 05.24 | 09 64 122 7245 | 05.14 | 09 64 211 7800 | 05.06 |
| 09 56 351 7513     | 03.12 | 09 56 552 5613 | 03.08 | 09 64 114 7216 | 05.22 | 09 64 122 7246 | 05.14 |                |       |
|                    |       | 09 56 552 7612 | 03.08 | 09 64 114 7217 | 05.22 | 09 64 122 7247 | 05.12 | 09 64 212 7210 | 05.10 |
| 09 56 352 5612     | 03.08 | 09 56 552 7613 | 03.08 | 09 64 114 7218 | 05.26 | 09 64 122 7248 | 05.12 | 09 64 212 7215 | 05.14 |
| 09 56 352 5613     | 03.08 |                |       | 09 64 114 7219 | 05.26 | 09 64 122 7800 | 05.04 | 09 64 212 7216 | 05.14 |
| 09 56 352 7612     | 03.08 | 09 56 561 5700 | 03.11 | 09 64 114 7220 | 05.16 |                |       | 09 64 212 7217 | 05.12 |
| 09 56 352 7613     | 03.08 | 09 56 561 5712 | 03.12 | 09 64 114 7221 | 05.18 | 09 64 123 7802 | 05.05 | 09 64 212 7218 | 05.12 |
|                    |       | 09 56 561 5713 | 03.12 | 09 64 114 7222 | 05.20 |                |       | 09 64 212 7220 | 05.10 |
| 09 56 361 5700     | 03.11 | 09 56 561 7700 | 03.11 | 09 64 114 7223 | 05.20 | 09 64 124 7210 | 05.16 | 09 64 212 7225 | 05.14 |
| 09 56 361 5712     | 03.12 | 09 56 561 7712 | 03.12 | 09 64 114 7224 | 05.24 | 09 64 124 7211 | 05.18 | 09 64 212 7226 | 05.14 |
| 09 56 361 5713     | 03.12 | 09 56 561 7713 | 03.12 | 09 64 114 7225 | 05.24 | 09 64 124 7212 | 05.20 | 09 64 212 7227 | 05.12 |
| 09 56 361 7700     | 03.11 |                |       | 09 64 114 7226 | 05.22 | 09 64 124 7213 | 05.20 | 09 64 212 7228 | 05.12 |
| 09 56 361 7712     | 03.12 | 09 56 562 5812 | 03.08 | 09 64 114 7227 | 05.22 | 09 64 124 7214 | 05.24 | 09 64 212 7230 | 05.10 |
| 09 56 361 7713     | 03.12 | 09 56 562 5813 | 03.08 | 09 64 114 7228 | 05.26 | 09 64 124 7215 | 05.24 | 09 64 212 7235 | 05.14 |
|                    |       | 09 56 562 7812 | 03.08 | 09 64 114 7229 | 05.26 | 09 64 124 7216 | 05.22 | 09 64 212 7236 | 05.14 |
| 09 56 362 5812     | 03.08 | 09 56 562 7813 | 03.08 | 09 64 114 7230 | 05.16 | 09 64 124 7217 | 05.22 | 09 64 212 7237 | 05.12 |
| 09 56 362 5813     | 03.08 |                |       | 09 64 114 7231 | 05.18 | 09 64 124 7218 | 05.26 | 09 64 212 7238 | 05.12 |
| 09 56 362 7812     | 03.08 |                |       | 09 64 114 7232 | 05.20 | 09 64 124 7219 | 05.26 | 09 64 212 7240 | 05.10 |
| 09 56 362 7813     | 03.08 |                |       | 09 64 114 7233 | 05.20 | 09 64 124 7220 | 05.16 | 09 64 212 7245 | 05.14 |
|                    |       | 09 64 100 7210 | 05.09 | 09 64 114 7234 | 05.24 | 09 64 124 7221 | 05.18 | 09 64 212 7246 | 05.14 |
| 09 56 400 4701     | 03.03 | 09 64 100 7220 | 05.09 | 09 64 114 7235 | 05.24 | 09 64 124 7222 | 05.20 | 09 64 212 7247 | 05.12 |
| 09 56 400 4704     | 03.06 | 09 64 100 7230 | 05.09 | 09 64 114 7236 | 05.22 | 09 64 124 7223 | 05.20 | 09 64 212 7248 | 05.12 |
| 09 56 400 4715 050 | 03.06 | 09 64 100 7240 | 05.09 | 09 64 114 7237 | 05.22 | 09 64 124 7224 | 05.24 | 09 64 212 7800 | 05.04 |
| 09 56 400 5601     | 03.03 |                |       | 09 64 114 7238 | 05.26 | 09 64 124 7225 | 05.24 |                |       |
| 09 56 400 5604     | 03.06 | 09 64 111 7210 | 05.28 | 09 64 114 7239 | 05.26 | 09 64 124 7226 | 05.22 | 09 64 213 7802 | 05.05 |
| 09 56 400 5615 050 | 03.06 | 09 64 111 7217 | 05.30 | 09 64 114 7240 | 05.16 | 09 64 124 7227 | 05.22 |                |       |
|                    |       | 09 64 111 7218 | 05.30 | 09 64 114 7241 | 05.18 | 09 64 124 7228 | 05.26 | 09 64 214 7210 | 05.16 |
| 09 56 451 5500     | 03.11 | 09 64 111 7220 | 05.28 | 09 64 114 7242 | 05.20 | 09 64 124 7229 | 05.26 | 09 64 214 7211 | 05.18 |
| 09 56 451 5512     | 03.12 | 09 64 111 7227 | 05.30 | 09 64 114 7243 | 05.20 | 09 64 124 7230 | 05.16 | 09 64 214 7212 | 05.20 |
| 09 56 451 5513     | 03.12 | 09 64 111 7228 | 05.30 | 09 64 114 7244 | 05.24 | 09 64 124 7231 | 05.18 | 09 64 214 7213 | 05.20 |
| 09 56 451 7500     | 03.11 | 09 64 111 7230 | 05.28 | 09 64 114 7245 | 05.24 | 09 64 124 7232 | 05.20 | 09 64 214 7214 | 05.24 |
| 09 56 451 7512     | 03.12 | 09 64 111 7237 | 05.30 | 09 64 114 7246 | 05.22 | 09 64 124 7233 | 05.20 | 09 64 214 7215 | 05.24 |
| 09 56 451 7513     | 03.12 | 09 64 111 7238 | 05.30 | 09 64 114 7247 | 05.22 | 09 64 124 7234 | 05.24 | 09 64 214 7216 | 05.22 |
|                    |       | 09 64 111 7240 | 05.28 | 09 64 114 7248 | 05.26 | 09 64 124 7235 | 05.24 | 09 64 214 7217 | 05.22 |
| 09 56 452 5612     | 03.08 | 09 64 111 7247 | 05.30 | 09 64 114 7249 | 05.26 | 09 64 124 7236 | 05.22 | 09 64 214 7218 | 05.26 |
| 09 56 452 5613     | 03.08 | 09 64 111 7248 | 05.30 |                |       | 09 64 124 7237 | 05.22 | 09 64 214 7219 | 05.26 |
| 09 56 452 7612     | 03.08 | 09 64 111 7800 | 05.06 | 09 64 121 7210 | 05.28 | 09 64 124 7238 | 05.26 | 09 64 214 7220 | 05.16 |
| 09 56 452 7613     | 03.08 |                |       | 09 64 121 7217 | 05.30 | 09 64 124 7239 | 05.26 | 09 64 214 7221 | 05.18 |
|                    |       | 09 64 112 7210 | 05.10 | 09 64 121 7218 | 05.30 | 09 64 124 7240 | 05.16 | 09 64 214 7222 | 05.20 |
| 09 56 461 5700     | 03.11 | 09 64 112 7215 | 05.14 | 09 64 121 7220 | 05.28 | 09 64 124 7241 | 05.18 | 09 64 214 7223 | 05.20 |
| 09 56 461 5712     | 03.12 | 09 64 112 7216 | 05.14 | 09 64 121 7227 | 05.30 | 09 64 124 7242 | 05.20 | 09 64 214 7224 | 05.24 |
| 09 56 461 5713     | 03.12 | 09 64 112 7217 | 05.12 | 09 64 121 7228 | 05.30 | 09 64 124 7243 | 05.20 | 09 64 214 7225 | 05.24 |
| 09 56 461 7700     | 03.11 | 09 64 112 7218 | 05.12 | 09 64 121 7230 | 05.28 | 09 64 124 7244 | 05.24 | 09 64 214 7226 | 05.22 |
| 09 56 461 7712     | 03.12 | 09 64 112 7220 | 05.10 | 09 64 121 7237 | 05.30 | 09 64 124 7245 | 05.24 | 09 64 214 7227 | 05.22 |
| 09 56 461 7713     | 03.12 | 09 64 112 7225 | 05.14 | 09 64 121 7238 | 05.30 | 09 64 124 7246 | 05.22 | 09 64 214 7228 | 05.26 |
|                    |       | 09 64 112 7226 | 05.14 | 09 64 121 7240 | 05.28 | 09 64 124 7247 | 05.22 | 09 64 214 7229 | 05.26 |
| 09 56 462 5812     | 03.08 | 09 64 112 7227 | 05.12 | 09 64 121 7247 | 05.30 | 09 64 124 7248 | 05.26 | 09 64 214 7230 | 05.16 |
| 09 56 462 5813     | 03.08 | 09 64 112 7228 | 05.12 | 09 64 121 7248 | 05.30 | 09 64 124 7249 | 05.26 | 09 64 214 7231 | 05.18 |
| 09 56 462 7812     | 03.08 | 09 64 112 7230 | 05.10 | 09 64 121 7800 | 05.06 |                |       | 09 64 214 7232 | 05.20 |
| 09 56 462 7813     | 03.08 | 09 64 112 7235 | 05.14 |                |       | 09 64 200 7210 | 05.09 | 09 64 214 7233 | 05.20 |
|                    |       | 09 64 112 7236 | 05.14 | 09 64 122 7210 | 05.10 | 09 64 200 7220 | 05.09 | 09 64 214 7234 | 05.24 |
| 09 56 500 4701     | 03.03 | 09 64 112 7237 | 05.12 | 09 64 122 7215 | 05.14 | 09 64 200 7230 | 05.09 | 09 64 214 7235 | 05.24 |
| 09 56 500 4704     | 03.06 | 09 64 112 7238 | 05.12 | 09 64 122 7216 | 05.14 | 09 64 200 7240 | 05.09 | 09 64 214 7236 | 05.22 |
| 09 56 500 4715 050 | 03.06 | 09 64 112 7240 | 05.10 | 09 64 122 7217 | 05.12 |                |       | 09 64 214 7237 | 05.22 |
| 09 56 500 5501     | 03.03 | 09 64 112 7245 | 05.14 | 09 64 122 7218 | 05.12 | 09 64 211 7210 | 05.28 | 09 64 214 7238 | 05.26 |
| 09 56 500 5604     | 03.06 | 09 64 112 7246 | 05.14 | 09 64 122 7220 | 05.10 | 09 64 211 7217 | 05.30 | 09 64 214 7239 | 05.26 |
| 09 56 500 5615 050 | 03.06 | 09 64 112 7247 | 05.12 | 09 64 122 7225 | 05.14 | 09 64 211 7218 | 05.30 | 09 64 214 7240 | 05.16 |
|                    |       | 09 64 112 7248 | 05.12 | 09 64 122 7226 | 05.14 | 09 64 211 7220 | 05.28 | 09 64 214 7241 | 05.18 |
|                    |       | 09 64 112 7800 | 05.04 | 09 64 122 7227 | 05.12 | 09 64 211 7227 | 05.30 | 09 64 214 7242 | 05.20 |

# List of part numbers



| Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  |
|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
| 09 64 214 7243 | 05.20 | 09 64 224 7230 | 05.16 | 09 64 314 7212 | 05.20 | 09 64 322 7237 | 05.12 | 09 64 411 7240 | 05.28 |
| 09 64 214 7244 | 05.24 | 09 64 224 7231 | 05.18 | 09 64 314 7213 | 05.20 | 09 64 322 7238 | 05.12 | 09 64 411 7247 | 05.30 |
| 09 64 214 7245 | 05.24 | 09 64 224 7232 | 05.20 | 09 64 314 7214 | 05.24 | 09 64 322 7240 | 05.10 | 09 64 411 7248 | 05.30 |
| 09 64 214 7246 | 05.22 | 09 64 224 7233 | 05.20 | 09 64 314 7215 | 05.24 | 09 64 322 7245 | 05.14 | 09 64 411 7800 | 05.06 |
| 09 64 214 7247 | 05.22 | 09 64 224 7234 | 05.24 | 09 64 314 7216 | 05.22 | 09 64 322 7246 | 05.14 |                |       |
| 09 64 214 7248 | 05.26 | 09 64 224 7235 | 05.24 | 09 64 314 7217 | 05.22 | 09 64 322 7247 | 05.12 | 09 64 412 7210 | 05.10 |
| 09 64 214 7249 | 05.26 | 09 64 224 7236 | 05.22 | 09 64 314 7218 | 05.26 | 09 64 322 7248 | 05.12 | 09 64 412 7215 | 05.14 |
|                |       | 09 64 224 7237 | 05.22 | 09 64 314 7219 | 05.26 | 09 64 322 7800 | 05.04 | 09 64 412 7216 | 05.14 |
|                |       | 09 64 224 7238 | 05.26 | 09 64 314 7220 | 05.16 |                |       | 09 64 412 7217 | 05.12 |
| 09 64 221 7210 | 05.28 | 09 64 224 7239 | 05.26 | 09 64 314 7221 | 05.18 | 09 64 323 7802 | 05.05 | 09 64 412 7218 | 05.12 |
| 09 64 221 7217 | 05.30 | 09 64 224 7240 | 05.16 | 09 64 314 7222 | 05.20 |                |       | 09 64 412 7220 | 05.10 |
| 09 64 221 7218 | 05.30 | 09 64 224 7241 | 05.18 | 09 64 314 7223 | 05.20 |                |       | 09 64 412 7225 | 05.14 |
| 09 64 221 7220 | 05.28 | 09 64 224 7242 | 05.20 | 09 64 314 7224 | 05.24 | 09 64 324 7210 | 05.16 | 09 64 412 7226 | 05.14 |
| 09 64 221 7227 | 05.30 | 09 64 224 7243 | 05.20 | 09 64 314 7225 | 05.24 | 09 64 324 7211 | 05.18 | 09 64 412 7227 | 05.12 |
| 09 64 221 7228 | 05.30 | 09 64 224 7244 | 05.24 | 09 64 314 7226 | 05.22 | 09 64 324 7212 | 05.20 | 09 64 412 7228 | 05.12 |
| 09 64 221 7230 | 05.28 | 09 64 224 7245 | 05.24 | 09 64 314 7227 | 05.22 | 09 64 324 7213 | 05.20 | 09 64 412 7228 | 05.12 |
| 09 64 221 7237 | 05.30 | 09 64 224 7246 | 05.22 | 09 64 314 7228 | 05.26 | 09 64 324 7214 | 05.24 | 09 64 412 7230 | 05.10 |
| 09 64 221 7238 | 05.30 | 09 64 224 7247 | 05.22 | 09 64 314 7229 | 05.26 | 09 64 324 7215 | 05.24 | 09 64 412 7235 | 05.14 |
| 09 64 221 7240 | 05.28 | 09 64 224 7248 | 05.26 | 09 64 314 7230 | 05.16 | 09 64 324 7216 | 05.22 | 09 64 412 7236 | 05.14 |
| 09 64 221 7247 | 05.30 | 09 64 224 7249 | 05.26 | 09 64 314 7231 | 05.18 | 09 64 324 7217 | 05.22 | 09 64 412 7237 | 05.12 |
| 09 64 221 7248 | 05.30 |                |       | 09 64 314 7232 | 05.20 | 09 64 324 7218 | 05.26 | 09 64 412 7238 | 05.12 |
| 09 64 221 7800 | 05.06 |                |       | 09 64 314 7233 | 05.20 | 09 64 324 7219 | 05.26 | 09 64 412 7240 | 05.10 |
|                |       | 09 64 300 7210 | 05.09 | 09 64 314 7234 | 05.24 | 09 64 324 7220 | 05.16 | 09 64 412 7245 | 05.14 |
| 09 64 222 7210 | 05.10 | 09 64 300 7220 | 05.09 | 09 64 314 7235 | 05.24 | 09 64 324 7221 | 05.18 | 09 64 412 7246 | 05.14 |
| 09 64 222 7215 | 05.14 | 09 64 300 7230 | 05.09 | 09 64 314 7236 | 05.22 | 09 64 324 7222 | 05.20 | 09 64 412 7247 | 05.12 |
| 09 64 222 7216 | 05.14 | 09 64 300 7240 | 05.09 | 09 64 314 7237 | 05.22 | 09 64 324 7223 | 05.20 | 09 64 412 7248 | 05.12 |
| 09 64 222 7217 | 05.12 |                |       | 09 64 314 7238 | 05.26 | 09 64 324 7224 | 05.24 |                |       |
| 09 64 222 7218 | 05.12 | 09 64 311 7210 | 05.28 | 09 64 314 7239 | 05.26 | 09 64 324 7225 | 05.24 | 09 64 413 7802 | 05.05 |
| 09 64 222 7220 | 05.10 | 09 64 311 7217 | 05.30 | 09 64 314 7240 | 05.16 | 09 64 324 7226 | 05.22 |                |       |
| 09 64 222 7225 | 05.14 | 09 64 311 7218 | 05.30 | 09 64 314 7241 | 05.18 | 09 64 324 7227 | 05.22 | 09 64 414 7210 | 05.16 |
| 09 64 222 7226 | 05.14 | 09 64 311 7220 | 05.28 | 09 64 314 7242 | 05.20 | 09 64 324 7228 | 05.26 | 09 64 414 7211 | 05.18 |
| 09 64 222 7227 | 05.12 | 09 64 311 7227 | 05.30 | 09 64 314 7243 | 05.20 | 09 64 324 7229 | 05.26 | 09 64 414 7212 | 05.20 |
| 09 64 222 7228 | 05.12 | 09 64 311 7228 | 05.30 | 09 64 314 7244 | 05.24 | 09 64 324 7230 | 05.16 | 09 64 414 7213 | 05.20 |
| 09 64 222 7230 | 05.10 | 09 64 311 7230 | 05.28 | 09 64 314 7245 | 05.24 | 09 64 324 7231 | 05.18 | 09 64 414 7214 | 05.24 |
| 09 64 222 7235 | 05.14 | 09 64 311 7237 | 05.30 | 09 64 314 7246 | 05.22 | 09 64 324 7232 | 05.20 | 09 64 414 7215 | 05.24 |
| 09 64 222 7236 | 05.14 | 09 64 311 7238 | 05.30 | 09 64 314 7247 | 05.22 | 09 64 324 7233 | 05.20 | 09 64 414 7216 | 05.22 |
| 09 64 222 7237 | 05.12 | 09 64 311 7240 | 05.28 | 09 64 314 7248 | 05.26 | 09 64 324 7234 | 05.24 | 09 64 414 7217 | 05.22 |
| 09 64 222 7238 | 05.12 | 09 64 311 7247 | 05.30 | 09 64 314 7249 | 05.26 | 09 64 324 7235 | 05.24 | 09 64 414 7218 | 05.26 |
| 09 64 222 7240 | 05.10 | 09 64 311 7248 | 05.30 |                |       | 09 64 324 7236 | 05.22 | 09 64 414 7219 | 05.26 |
| 09 64 222 7245 | 05.14 | 09 64 311 7800 | 05.06 |                |       | 09 64 324 7237 | 05.22 | 09 64 414 7220 | 05.16 |
| 09 64 222 7246 | 05.14 |                |       | 09 64 321 7210 | 05.28 | 09 64 324 7238 | 05.26 | 09 64 414 7221 | 05.18 |
| 09 64 222 7247 | 05.12 | 09 64 312 7210 | 05.10 | 09 64 321 7217 | 05.30 | 09 64 324 7239 | 05.26 | 09 64 414 7222 | 05.20 |
| 09 64 222 7248 | 05.12 | 09 64 312 7215 | 05.14 | 09 64 321 7218 | 05.30 | 09 64 324 7240 | 05.16 | 09 64 414 7223 | 05.20 |
| 09 64 222 7800 | 05.04 | 09 64 312 7216 | 05.14 | 09 64 321 7220 | 05.28 | 09 64 324 7241 | 05.18 | 09 64 414 7224 | 05.24 |
|                |       | 09 64 312 7217 | 05.12 | 09 64 321 7227 | 05.30 | 09 64 324 7242 | 05.20 | 09 64 414 7225 | 05.24 |
| 09 64 223 7802 | 05.05 | 09 64 312 7218 | 05.12 | 09 64 321 7228 | 05.30 | 09 64 324 7243 | 05.20 | 09 64 414 7226 | 05.22 |
|                |       | 09 64 312 7220 | 05.10 | 09 64 321 7230 | 05.28 | 09 64 324 7244 | 05.24 | 09 64 414 7227 | 05.22 |
| 09 64 224 7210 | 05.16 | 09 64 312 7225 | 05.14 | 09 64 321 7237 | 05.30 | 09 64 324 7245 | 05.24 | 09 64 414 7228 | 05.26 |
| 09 64 224 7211 | 05.18 | 09 64 312 7226 | 05.14 | 09 64 321 7238 | 05.30 | 09 64 324 7246 | 05.22 | 09 64 414 7229 | 05.26 |
| 09 64 224 7212 | 05.20 | 09 64 312 7227 | 05.12 | 09 64 321 7240 | 05.28 | 09 64 324 7247 | 05.22 | 09 64 414 7230 | 05.16 |
| 09 64 224 7213 | 05.20 | 09 64 312 7228 | 05.12 | 09 64 321 7247 | 05.30 | 09 64 324 7248 | 05.26 | 09 64 414 7231 | 05.18 |
| 09 64 224 7214 | 05.24 | 09 64 312 7230 | 05.10 | 09 64 321 7248 | 05.30 | 09 64 324 7249 | 05.26 | 09 64 414 7232 | 05.20 |
| 09 64 224 7215 | 05.24 | 09 64 312 7235 | 05.14 | 09 64 321 7800 | 05.06 |                |       | 09 64 414 7233 | 05.20 |
| 09 64 224 7216 | 05.22 | 09 64 312 7236 | 05.14 |                |       | 09 64 400 7210 | 05.09 | 09 64 414 7234 | 05.24 |
| 09 64 224 7217 | 05.22 | 09 64 312 7237 | 05.12 | 09 64 322 7210 | 05.10 | 09 64 400 7220 | 05.09 | 09 64 414 7235 | 05.24 |
| 09 64 224 7218 | 05.26 | 09 64 312 7238 | 05.12 | 09 64 322 7215 | 05.14 | 09 64 400 7230 | 05.09 | 09 64 414 7236 | 05.22 |
| 09 64 224 7219 | 05.26 | 09 64 312 7240 | 05.10 | 09 64 322 7216 | 05.14 | 09 64 400 7240 | 05.09 | 09 64 414 7237 | 05.22 |
| 09 64 224 7220 | 05.16 | 09 64 312 7245 | 05.14 | 09 64 322 7217 | 05.12 |                |       | 09 64 414 7238 | 05.26 |
| 09 64 224 7221 | 05.18 | 09 64 312 7246 | 05.14 | 09 64 322 7218 | 05.12 | 09 64 411 7210 | 05.28 | 09 64 414 7239 | 05.26 |
| 09 64 224 7222 | 05.20 | 09 64 312 7247 | 05.12 | 09 64 322 7220 | 05.10 | 09 64 411 7217 | 05.30 | 09 64 414 7240 | 05.16 |
| 09 64 224 7223 | 05.20 | 09 64 312 7248 | 05.12 | 09 64 322 7225 | 05.14 | 09 64 411 7218 | 05.30 | 09 64 414 7241 | 05.18 |
| 09 64 224 7224 | 05.24 | 09 64 312 7800 | 05.04 | 09 64 322 7226 | 05.14 | 09 64 411 7220 | 05.28 | 09 64 414 7242 | 05.20 |
| 09 64 224 7225 | 05.24 |                |       | 09 64 322 7227 | 05.12 | 09 64 411 7227 | 05.30 | 09 64 414 7243 | 05.20 |
| 09 64 224 7226 | 05.22 | 09 64 313 7802 | 05.05 | 09 64 322 7228 | 05.12 | 09 64 411 7228 | 05.30 | 09 64 414 7244 | 05.24 |
| 09 64 224 7227 | 05.22 |                |       | 09 64 322 7230 | 05.10 | 09 64 411 7230 | 05.28 | 09 64 414 7245 | 05.24 |
| 09 64 224 7228 | 05.26 | 09 64 314 7210 | 05.16 | 09 64 322 7235 | 05.14 | 09 64 411 7237 | 05.30 | 09 64 414 7246 | 05.22 |
| 09 64 224 7229 | 05.26 | 09 64 314 7211 | 05.18 | 09 64 322 7236 | 05.14 | 09 64 411 7238 | 05.30 | 09 64 414 7247 | 05.22 |

# List of part numbers



| Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  |
|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
| 09 64 414 7248 | 05.26 | 09 64 424 7236 | 05.22 | 09 65 162 7815 | 02.18 | 09 65 223 7802 | 02.14 | 09 65 269 6711 | 22.14 |
| 09 64 414 7249 | 05.26 | 09 64 424 7237 | 05.22 | 09 65 162 7816 | 02.18 | 09 65 223 7803 | 02.14 | 09 65 269 6712 | 22.14 |
|                |       | 09 64 424 7238 | 05.26 | 09 65 162 7817 | 02.18 |                |       | 09 65 269 6713 | 22.14 |
| 09 64 421 7210 | 05.28 | 09 64 424 7239 | 05.26 |                |       | 09 65 229 6701 | 22.14 | 09 65 269 7711 | 22.14 |
| 09 64 421 7217 | 05.30 | 09 64 424 7240 | 05.16 | 09 65 163 6810 | 02.12 | 09 65 229 6702 | 22.14 | 09 65 269 7712 | 22.14 |
| 09 64 421 7218 | 05.30 | 09 64 424 7241 | 05.18 | 09 65 163 6811 | 02.12 | 09 65 229 6703 | 22.14 | 09 65 269 7713 | 22.14 |
| 09 64 421 7220 | 05.28 | 09 64 424 7242 | 05.20 | 09 65 163 6812 | 02.12 | 09 65 229 7701 | 22.14 |                |       |
| 09 64 421 7227 | 05.30 | 09 64 424 7243 | 05.20 | 09 65 163 6813 | 02.12 | 09 65 229 7702 | 22.14 | 09 65 321 6701 | 02.06 |
| 09 64 421 7228 | 05.30 | 09 64 424 7244 | 05.24 | 09 65 163 7810 | 02.12 | 09 65 229 7703 | 22.14 | 09 65 321 6702 | 02.06 |
| 09 64 421 7230 | 05.28 | 09 64 424 7245 | 05.24 | 09 65 163 7811 | 02.12 |                |       | 09 65 321 6703 | 02.06 |
| 09 64 421 7237 | 05.30 | 09 64 424 7246 | 05.22 | 09 65 163 7812 | 02.12 | 09 65 261 6711 | 02.06 | 09 65 321 7701 | 02.06 |
| 09 64 421 7238 | 05.30 | 09 64 424 7247 | 05.22 | 09 65 163 7813 | 02.12 | 09 65 261 6712 | 02.06 | 09 65 321 7702 | 02.06 |
| 09 64 421 7240 | 05.28 | 09 64 424 7248 | 05.26 |                |       | 09 65 261 6713 | 02.06 | 09 65 321 7703 | 02.06 |
| 09 64 421 7247 | 05.30 | 09 64 424 7249 | 05.26 | 09 65 166 6810 | 22.16 | 09 65 261 7711 | 02.06 | 09 65 322 6800 | 02.14 |
| 09 64 421 7248 | 05.30 |                |       | 09 65 166 6811 | 22.16 | 09 65 261 7712 | 02.06 | 09 65 322 6801 | 02.14 |
| 06 64 421 7800 | 05.06 |                |       | 09 65 166 6812 | 22.16 | 09 65 261 7713 | 02.06 | 09 65 322 6802 | 02.14 |
|                |       | 09 65 121 6701 | 02.06 | 09 65 166 6813 | 22.16 |                |       | 09 65 322 6803 | 02.14 |
| 09 64 422 7210 | 05.10 | 09 65 121 6702 | 02.06 | 09 65 166 6815 | 22.18 | 09 65 262 6810 | 02.12 | 09 65 322 7800 | 02.14 |
| 09 64 422 7215 | 05.14 | 09 65 121 6703 | 02.06 | 09 65 166 6816 | 22.18 | 09 65 262 6811 | 02.12 | 09 65 322 7801 | 02.14 |
| 09 64 422 7216 | 05.14 | 09 65 121 7701 | 02.06 | 09 65 166 6817 | 22.18 | 09 65 262 6812 | 02.12 | 09 65 322 7802 | 02.14 |
| 09 64 422 7217 | 05.12 | 09 65 121 7702 | 02.06 | 09 65 166 7810 | 22.16 | 09 65 262 6813 | 02.12 | 09 65 322 7803 | 02.14 |
| 09 64 422 7218 | 05.12 | 09 65 121 7703 | 02.06 | 09 65 166 7811 | 22.16 | 09 65 262 6815 | 02.18 |                |       |
| 09 64 422 7220 | 05.10 |                |       | 09 65 166 7812 | 22.16 | 09 65 262 6816 | 02.18 | 09 65 323 6800 | 02.14 |
| 09 64 422 7225 | 05.14 | 09 65 122 6800 | 02.14 | 09 65 166 7813 | 22.16 | 09 65 262 6817 | 02.18 | 09 65 323 6801 | 02.14 |
| 09 64 422 7226 | 05.14 | 09 65 122 6801 | 02.14 | 09 65 166 7815 | 22.18 | 09 65 262 7810 | 02.12 | 09 65 323 6802 | 02.14 |
| 09 64 422 7227 | 05.12 | 09 65 122 6802 | 02.14 | 09 65 166 7816 | 22.18 | 09 65 262 7811 | 02.12 | 09 65 323 6803 | 02.14 |
| 09 64 422 7228 | 05.12 | 09 65 122 6803 | 02.14 | 09 65 166 7817 | 22.18 | 09 65 262 7812 | 02.12 | 09 65 323 7800 | 02.14 |
| 09 64 422 7230 | 05.10 | 09 65 122 7800 | 02.14 |                |       | 09 65 262 7813 | 02.12 | 09 65 323 7801 | 02.14 |
| 09 64 422 7235 | 05.14 | 09 65 122 7801 | 02.14 | 09 65 167 6810 | 22.16 | 09 65 262 7815 | 02.18 | 09 65 323 7802 | 02.14 |
| 09 64 422 7236 | 05.14 | 09 65 122 7802 | 02.14 | 09 65 167 6811 | 22.16 | 09 65 262 7816 | 02.18 | 09 65 323 7803 | 02.14 |
| 09 64 422 7237 | 05.12 | 09 65 122 7803 | 02.14 | 09 65 167 6812 | 22.16 | 09 65 262 7817 | 02.18 |                |       |
| 09 64 422 7238 | 05.12 |                |       | 09 65 167 6813 | 22.16 |                |       | 09 65 329 6701 | 22.14 |
| 09 64 422 7240 | 05.10 | 09 65 123 6800 | 02.14 | 09 65 167 7810 | 22.16 | 09 65 263 6810 | 02.12 | 09 65 329 6702 | 22.14 |
| 09 64 422 7245 | 05.14 | 09 65 123 6801 | 02.14 | 09 65 167 7811 | 22.16 | 09 65 263 6811 | 02.12 | 09 65 329 6703 | 22.14 |
| 09 64 422 7246 | 05.14 | 09 65 123 6802 | 02.14 | 09 65 167 7812 | 22.16 | 09 65 263 6812 | 02.12 | 09 65 329 7701 | 22.14 |
| 09 64 422 7247 | 05.12 | 09 65 123 6803 | 02.14 | 09 65 167 7813 | 22.16 | 09 65 263 6813 | 02.12 | 09 65 329 7702 | 22.14 |
| 09 64 422 7248 | 05.12 | 09 65 123 7800 | 02.14 |                |       | 09 65 263 7810 | 02.12 | 09 65 329 7703 | 22.14 |
|                |       | 09 65 123 7801 | 02.14 | 09 65 169 6711 | 22.14 | 09 65 263 7811 | 02.12 |                |       |
| 09 64 423 7802 | 05.05 | 09 65 123 7802 | 02.14 | 09 65 169 6712 | 22.14 | 09 65 263 7812 | 02.12 | 09 65 361 6711 | 02.06 |
|                |       | 09 65 123 7803 | 02.14 | 09 65 169 6713 | 22.14 | 09 65 263 7813 | 02.12 | 09 65 361 6712 | 02.06 |
|                |       |                |       | 09 65 169 7711 | 22.14 |                |       | 09 65 361 6713 | 02.06 |
| 09 64 424 7210 | 05.16 | 09 65 129 6701 | 22.14 | 09 65 169 7712 | 22.14 |                |       | 09 65 361 7711 | 02.06 |
| 09 64 424 7211 | 05.18 | 09 65 129 6702 | 22.14 | 09 65 169 7713 | 22.14 | 09 65 266 6810 | 22.16 | 09 65 361 7712 | 02.06 |
| 09 64 424 7212 | 05.20 | 09 65 129 6703 | 22.14 |                |       | 09 65 266 6811 | 22.16 | 09 65 361 7713 | 02.06 |
| 09 64 424 7213 | 05.20 | 09 65 129 7701 | 22.14 | 09 65 221 6701 | 02.06 | 09 65 266 6812 | 22.16 |                |       |
| 09 64 424 7214 | 05.24 | 09 65 129 7702 | 22.14 | 09 65 221 6702 | 02.06 | 09 65 266 6813 | 22.16 | 09 65 362 6810 | 02.12 |
| 09 64 424 7215 | 05.24 | 09 65 129 7703 | 22.14 | 09 65 221 6703 | 02.06 | 09 65 266 6815 | 22.18 | 09 65 362 6811 | 02.12 |
| 09 64 424 7216 | 05.22 |                |       | 09 65 221 7701 | 02.06 | 09 65 266 6816 | 22.18 | 09 65 362 6812 | 02.12 |
| 09 64 424 7217 | 05.22 | 09 65 161 6711 | 02.06 | 09 65 221 7702 | 02.06 | 09 65 266 6817 | 22.18 | 09 65 362 6813 | 02.12 |
| 09 64 424 7218 | 05.26 | 09 65 161 6712 | 02.06 | 09 65 221 7703 | 02.06 | 09 65 266 7810 | 22.16 | 09 65 362 6815 | 02.18 |
| 09 64 424 7219 | 05.26 | 09 65 161 6713 | 02.06 |                |       | 09 65 266 7811 | 22.16 | 09 65 362 6816 | 02.18 |
| 09 64 424 7220 | 05.16 | 09 65 161 7711 | 02.06 | 09 65 222 6800 | 02.14 | 09 65 266 7812 | 22.16 | 09 65 362 6817 | 02.18 |
| 09 64 424 7221 | 05.18 | 09 65 161 7712 | 02.06 | 09 65 222 6801 | 02.14 | 09 65 266 7813 | 22.16 | 09 65 362 7810 | 02.12 |
| 09 64 424 7222 | 05.20 | 09 65 161 7713 | 02.06 | 09 65 222 6802 | 02.14 | 09 65 266 7815 | 22.18 | 09 65 362 7811 | 02.12 |
| 09 64 424 7223 | 05.20 |                |       | 09 65 222 6803 | 02.14 | 09 65 266 7816 | 22.18 | 09 65 362 7812 | 02.12 |
| 09 64 424 7224 | 05.24 | 09 65 162 6810 | 02.12 | 09 65 222 7800 | 02.14 | 09 65 266 7817 | 22.18 | 09 65 362 7813 | 02.12 |
| 09 64 424 7225 | 05.24 | 09 65 162 6811 | 02.12 | 09 65 222 7801 | 02.14 |                |       | 09 65 362 7815 | 02.18 |
| 09 64 424 7226 | 05.22 | 09 65 162 6812 | 02.12 | 09 65 222 7802 | 02.14 | 09 65 267 6810 | 22.16 | 09 65 362 7816 | 02.18 |
| 09 64 424 7227 | 05.22 | 09 65 162 6813 | 02.12 | 09 65 222 7803 | 02.14 | 09 65 267 6811 | 22.16 | 09 65 362 7817 | 02.18 |
| 09 64 424 7228 | 05.26 | 09 65 162 6815 | 02.18 |                |       | 09 65 267 6812 | 22.16 |                |       |
| 09 64 424 7229 | 05.26 | 09 65 162 6816 | 02.18 | 09 65 223 6800 | 02.14 | 09 65 267 6813 | 22.16 | 09 65 363 6810 | 02.12 |
| 09 64 424 7230 | 05.16 | 09 65 162 6817 | 02.18 | 09 65 223 6801 | 02.14 | 09 65 267 7810 | 22.16 | 09 65 363 6811 | 02.12 |
| 09 64 424 7231 | 05.18 | 09 65 162 7810 | 02.12 | 09 65 223 6802 | 02.14 | 09 65 267 7811 | 22.16 | 09 65 363 6812 | 02.12 |
| 09 64 424 7232 | 05.20 | 09 65 162 7811 | 02.12 | 09 65 223 6803 | 02.14 | 09 65 267 7812 | 22.16 | 09 65 363 6813 | 02.12 |
| 09 64 424 7233 | 05.20 | 09 65 162 7812 | 02.12 | 09 65 223 7800 | 02.14 | 09 65 267 7813 | 22.16 | 09 65 363 7810 | 02.12 |
| 09 64 424 7234 | 05.24 | 09 65 162 7813 | 02.12 | 09 65 223 7801 | 02.14 |                |       |                |       |
| 09 64 424 7235 | 05.24 |                |       |                |       |                |       |                |       |

| Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  |
|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
| 09 65 363 7811 | 02.12 | 09 65 461 6711 | 02.06 | 09 66 108 0001 | 02.32 | 09 66 122 6801 | 02.10 | 09 66 154 6517 | 20.10 |
| 09 65 363 7812 | 02.12 | 09 65 461 6712 | 02.06 |                |       | 09 66 122 6802 | 02.10 | 09 66 154 7511 | 20.10 |
| 09 65 363 7813 | 02.12 | 09 65 461 6713 | 02.06 | 09 66 111 6501 | 02.06 | 09 66 122 6803 | 02.10 | 09 66 154 7512 | 20.10 |
|                |       | 09 65 461 7711 | 02.06 | 09 66 111 6502 | 02.06 | 09 66 122 7801 | 02.10 | 09 66 154 7513 | 20.10 |
| 09 65 366 6810 | 22.16 | 09 65 461 7712 | 02.06 | 09 66 111 6503 | 02.06 | 09 66 122 7802 | 02.10 | 09 66 154 7515 | 20.10 |
| 09 65 366 6811 | 22.16 | 09 65 461 7713 | 02.06 | 09 66 111 7501 | 02.06 | 09 66 122 7803 | 02.10 | 09 66 154 7516 | 20.10 |
| 09 65 366 6812 | 22.16 |                |       | 09 66 111 7502 | 02.06 |                |       | 09 66 154 7517 | 20.10 |
| 09 65 366 6813 | 22.16 | 09 65 462 6810 | 02.12 | 09 66 111 7503 | 02.06 | 09 66 123 6801 | 02.10 |                |       |
| 09 65 366 6815 | 22.18 | 09 65 462 6811 | 02.12 |                |       | 09 66 123 6802 | 02.10 | 09 66 155 6511 | 22.14 |
| 09 65 366 6816 | 22.18 | 09 65 462 6812 | 02.12 | 09 66 112 6600 | 02.14 | 09 66 123 6803 | 02.10 | 09 66 155 6512 | 22.14 |
| 09 65 366 6817 | 22.18 | 09 65 462 6813 | 02.12 | 09 66 112 6601 | 02.14 | 09 66 123 7801 | 02.10 | 09 66 155 6513 | 22.14 |
| 09 65 366 7810 | 22.16 | 09 65 462 6815 | 02.18 | 09 66 112 6602 | 02.14 | 09 66 123 7802 | 02.10 | 09 66 155 7511 | 22.14 |
| 09 65 366 7811 | 22.16 | 09 65 462 6816 | 02.18 | 09 66 112 6603 | 02.14 | 09 66 123 7803 | 02.10 | 09 66 155 7512 | 22.14 |
| 09 65 366 7812 | 22.16 | 09 65 462 6817 | 02.18 | 09 66 112 7600 | 02.14 |                |       | 09 66 155 7513 | 22.14 |
| 09 65 366 7813 | 22.16 | 09 65 462 7810 | 02.12 | 09 66 112 7601 | 02.14 | 09 66 124 6704 | 20.12 |                |       |
| 09 65 366 7815 | 22.18 | 09 65 462 7811 | 02.12 | 09 66 112 7602 | 02.14 | 09 66 124 6705 | 20.12 | 09 66 156 6610 | 22.16 |
| 09 65 366 7816 | 22.18 | 09 65 462 7812 | 02.12 | 09 66 112 7603 | 02.14 | 09 66 124 6706 | 20.12 | 09 66 156 6611 | 22.16 |
| 09 65 366 7817 | 22.18 | 09 65 462 7813 | 02.12 |                |       | 09 66 124 6707 | 20.12 | 09 66 156 6612 | 22.16 |
|                |       | 09 65 462 7815 | 02.18 | 09 66 113 6600 | 02.14 | 09 66 124 7704 | 20.12 | 09 66 156 6613 | 22.16 |
| 09 65 367 6810 | 22.16 | 09 65 462 7816 | 02.18 | 09 66 113 6601 | 02.14 | 09 66 124 7705 | 20.12 | 09 66 156 6615 | 22.18 |
| 09 65 367 6811 | 22.16 | 09 65 462 7817 | 02.18 | 09 66 113 6602 | 02.14 | 09 66 124 7706 | 20.12 | 09 66 156 6616 | 22.18 |
| 09 65 367 6812 | 22.16 |                |       | 09 66 113 6603 | 02.14 | 09 66 124 7707 | 20.12 | 09 66 156 6617 | 22.18 |
| 09 65 367 6813 | 22.16 | 09 65 463 6810 | 02.12 | 09 66 113 6603 | 02.14 |                |       | 09 66 156 7610 | 22.16 |
| 09 65 367 7810 | 22.16 | 09 65 463 6811 | 02.12 | 09 66 113 7600 | 02.14 | 09 66 128 6700 | 02.32 | 09 66 156 7611 | 22.16 |
| 09 65 367 7811 | 22.16 | 09 65 463 6812 | 02.12 | 09 66 113 7601 | 02.14 | 09 66 128 6701 | 02.32 | 09 66 156 7612 | 22.16 |
| 09 65 367 7812 | 22.16 | 09 65 463 6813 | 02.12 | 09 66 113 7602 | 02.14 | 09 66 128 6702 | 02.32 | 09 66 156 7613 | 22.16 |
| 09 65 367 7813 | 22.16 | 09 65 463 7810 | 02.12 | 09 66 113 7603 | 02.14 | 09 66 128 7700 | 02.32 | 09 66 156 7615 | 22.18 |
|                |       | 09 65 463 7811 | 02.12 |                |       | 09 66 128 7701 | 02.32 | 09 66 156 7616 | 22.18 |
| 09 65 369 6711 | 22.14 | 09 65 463 7812 | 02.12 | 09 66 114 6500 | 20.12 | 09 66 128 7702 | 02.32 | 09 66 156 7617 | 22.18 |
| 09 65 369 6712 | 22.14 | 09 65 463 7813 | 02.12 | 09 66 114 6501 | 20.12 |                |       |                |       |
| 09 65 369 6713 | 22.14 |                |       | 09 66 114 6502 | 20.12 | 09 66 151 6511 | 02.06 | 09 66 157 6610 | 22.16 |
| 09 65 369 7711 | 22.14 | 09 65 466 6810 | 22.16 | 09 66 114 6503 | 20.12 | 09 66 151 6512 | 02.06 | 09 66 157 6611 | 22.16 |
| 09 65 369 7712 | 22.14 | 09 65 466 6811 | 22.16 | 09 66 114 6504 | 20.12 | 09 66 151 6513 | 02.06 | 09 66 157 6612 | 22.16 |
| 09 65 369 7713 | 22.14 | 09 65 466 6812 | 22.16 | 09 66 114 6505 | 20.12 | 09 66 151 7511 | 02.06 | 09 66 157 6613 | 22.16 |
|                |       | 09 65 466 6813 | 22.16 | 09 66 114 6506 | 20.12 | 09 66 151 7512 | 02.06 | 09 66 157 7610 | 22.16 |
| 09 65 421 6701 | 02.06 | 09 65 466 6815 | 22.18 | 09 66 114 6507 | 20.12 | 09 66 151 7513 | 02.06 | 09 66 157 7611 | 22.16 |
| 09 65 421 6702 | 02.06 | 09 65 466 6816 | 22.18 | 09 66 114 7500 | 20.12 |                |       | 09 66 157 7612 | 22.16 |
| 09 65 421 6703 | 02.06 | 09 65 466 6817 | 22.18 | 09 66 114 7501 | 20.12 | 09 66 152 6610 | 02.12 | 09 66 157 7613 | 22.16 |
| 09 65 421 7701 | 02.06 | 09 65 466 7810 | 22.16 | 09 66 114 7502 | 20.12 | 09 66 152 6611 | 02.12 |                |       |
| 09 65 421 7702 | 02.06 | 09 65 466 7811 | 22.16 | 09 66 114 7503 | 20.12 | 09 66 152 6612 | 02.12 | 09 66 162 6811 | 02.10 |
| 09 65 421 7703 | 02.06 | 09 65 466 7812 | 22.16 | 09 66 114 7504 | 20.12 | 09 66 152 6613 | 02.12 | 09 66 162 6812 | 02.10 |
|                |       | 09 65 466 7813 | 22.16 | 09 66 114 7505 | 20.12 | 09 66 152 6615 | 02.18 | 09 66 162 6813 | 02.10 |
| 09 65 422 6800 | 02.14 | 09 65 466 7815 | 22.18 | 09 66 114 7506 | 20.12 | 09 66 152 6616 | 02.18 | 09 66 162 6815 | 02.16 |
| 09 65 422 6801 | 02.14 | 09 65 466 7816 | 22.18 | 09 66 114 7507 | 20.12 | 09 66 152 6617 | 02.18 | 09 66 162 6816 | 02.16 |
| 09 65 422 6802 | 02.14 | 09 65 466 7817 | 22.18 |                |       | 09 66 152 7610 | 02.12 | 09 66 162 6817 | 02.16 |
| 09 65 422 6803 | 02.14 |                |       | 09 66 115 6501 | 22.14 | 09 66 152 7611 | 02.12 | 09 66 162 7811 | 02.10 |
| 09 65 422 7800 | 02.14 | 09 65 467 6810 | 22.16 | 09 66 115 6502 | 22.14 | 09 66 152 7612 | 02.12 | 09 66 162 7812 | 02.10 |
| 09 65 422 7801 | 02.14 | 09 65 467 6811 | 22.16 | 09 66 115 6503 | 22.14 | 09 66 152 7613 | 02.12 | 09 66 162 7813 | 02.10 |
| 09 65 422 7802 | 02.14 | 09 65 467 6812 | 22.16 | 09 66 115 7501 | 22.14 | 09 66 152 7615 | 02.18 | 09 66 162 7815 | 02.16 |
| 09 65 422 7803 | 02.14 | 09 65 467 6813 | 22.16 | 09 66 115 7502 | 22.14 | 09 66 152 7616 | 02.18 | 09 66 162 7816 | 02.16 |
|                |       | 09 65 467 7810 | 22.16 | 09 66 115 7503 | 22.14 | 09 66 152 7617 | 02.18 | 09 66 162 7817 | 02.16 |
| 09 65 423 6800 | 02.14 | 09 65 467 7811 | 22.16 |                |       |                |       |                |       |
| 09 65 423 6801 | 02.14 | 09 65 467 7812 | 22.16 | 09 66 118 6500 | 02.32 | 09 66 153 6610 | 02.12 | 09 66 163 6811 | 02.10 |
| 09 65 423 6802 | 02.14 | 09 65 467 7813 | 22.16 | 09 66 118 6501 | 02.32 | 09 66 153 6611 | 02.12 | 09 66 163 6812 | 02.10 |
| 09 65 423 6803 | 02.14 |                |       | 09 66 118 6502 | 02.32 | 09 66 153 6612 | 02.12 | 09 66 163 6813 | 02.10 |
| 09 65 423 7800 | 02.14 | 09 65 469 6711 | 22.14 | 09 66 118 7500 | 02.32 | 09 66 153 6613 | 02.12 | 09 66 163 7811 | 02.10 |
| 09 65 423 7801 | 02.14 | 09 65 469 6712 | 22.14 | 09 66 118 7501 | 02.32 | 09 66 153 7610 | 02.12 | 09 66 163 7812 | 02.10 |
| 09 65 423 7802 | 02.14 | 09 65 469 6713 | 22.14 | 09 66 118 7502 | 02.32 | 09 66 153 7611 | 02.12 | 09 66 163 7813 | 02.10 |
| 09 65 423 7803 | 02.14 | 09 65 469 7711 | 22.14 |                |       | 09 66 153 7612 | 02.12 |                |       |
|                |       | 09 65 469 7712 | 22.14 | 09 66 121 6701 | 02.05 | 09 66 153 7613 | 02.12 | 09 66 164 6715 | 20.10 |
| 09 65 429 6701 | 22.14 | 09 65 469 7713 | 22.14 | 09 66 121 6702 | 02.05 |                |       | 09 66 164 6716 | 20.10 |
| 09 65 429 6702 | 22.14 |                |       | 09 66 121 6703 | 02.05 | 09 66 154 6511 | 20.10 | 09 66 164 6717 | 20.10 |
| 09 65 429 6703 | 22.14 |                |       | 09 66 121 7701 | 02.05 | 09 66 154 6512 | 20.10 | 09 66 164 7715 | 20.10 |
| 09 65 429 7701 | 22.14 |                |       | 09 66 121 7702 | 02.05 | 09 66 154 6513 | 20.10 | 09 66 164 7716 | 20.10 |
| 09 65 429 7702 | 22.14 | 09 66 000 9972 | 08.02 | 09 66 121 7703 | 02.05 | 09 66 154 6515 | 20.10 | 09 66 164 7717 | 20.10 |
| 09 65 429 7703 | 22.14 | 09 66 000 9974 | 08.02 |                |       | 09 66 154 6516 | 20.10 |                |       |



# List of part numbers



| Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  |
|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
| 09 66 208 0001 | 02.32 | 09 66 222 6801 | 02.10 | 09 66 254 6517 | 20.10 | 09 66 308 0001 | 02.32 | 09 66 322 6801 | 02.10 |
|                |       | 09 66 222 6802 | 02.10 | 09 66 254 7511 | 20.10 |                |       | 09 66 322 6802 | 02.10 |
| 09 66 211 6501 | 02.06 | 09 66 222 6803 | 02.10 | 09 66 254 7512 | 20.10 | 09 66 311 6501 | 02.06 | 09 66 322 6803 | 02.10 |
| 09 66 211 6502 | 02.06 | 09 66 222 7801 | 02.10 | 09 66 254 7513 | 20.10 | 09 66 311 6502 | 02.06 | 09 66 322 7801 | 02.10 |
| 09 66 211 6503 | 02.06 | 09 66 222 7802 | 02.10 | 09 66 254 7515 | 20.10 | 09 66 311 6503 | 02.06 | 09 66 322 7802 | 02.10 |
| 09 66 211 7501 | 02.06 | 09 66 222 7803 | 02.10 | 09 66 254 7516 | 20.10 | 09 66 311 7501 | 02.06 | 09 66 322 7803 | 02.10 |
| 09 66 211 7502 | 02.06 |                |       | 09 66 254 7517 | 20.10 | 09 66 311 7502 | 02.06 |                |       |
| 09 66 211 7503 | 02.06 | 09 66 223 6801 | 02.10 |                |       | 09 66 311 7503 | 02.06 | 09 66 323 6801 | 02.10 |
|                |       | 09 66 223 6802 | 02.10 | 09 66 255 6511 | 22.14 |                |       | 09 66 323 6802 | 02.10 |
|                |       | 09 66 223 6803 | 02.10 | 09 66 255 6512 | 22.14 | 09 66 312 6600 | 02.14 | 09 66 323 6803 | 02.10 |
| 09 66 212 6600 | 02.14 | 09 66 223 7801 | 02.10 | 09 66 255 6513 | 22.14 | 09 66 312 6601 | 02.14 | 09 66 323 7801 | 02.10 |
| 09 66 212 6601 | 02.14 | 09 66 223 7802 | 02.10 | 09 66 255 7511 | 22.14 | 09 66 312 6602 | 02.14 | 09 66 323 7802 | 02.10 |
| 09 66 212 6602 | 02.14 | 09 66 223 7803 | 02.10 | 09 66 255 7512 | 22.14 | 09 66 312 6603 | 02.14 | 09 66 323 7803 | 02.10 |
| 09 66 212 6603 | 02.14 |                |       | 09 66 255 7513 | 22.14 | 09 66 312 6600 | 02.14 |                |       |
| 09 66 212 7600 | 02.14 | 09 66 224 6704 | 20.12 |                |       | 09 66 312 7601 | 02.14 | 09 66 324 6704 | 20.12 |
| 09 66 212 7601 | 02.14 | 09 66 224 6705 | 20.12 | 09 66 256 6610 | 22.16 | 09 66 312 7602 | 02.14 | 09 66 324 6705 | 20.12 |
| 09 66 212 7602 | 02.14 | 09 66 224 6706 | 20.12 | 09 66 256 6611 | 22.16 | 09 66 312 7603 | 02.14 | 09 66 324 6706 | 20.12 |
| 09 66 212 7603 | 02.14 | 09 66 224 6707 | 20.12 | 09 66 256 6612 | 22.16 |                |       | 09 66 324 6707 | 20.12 |
|                |       | 09 66 224 7704 | 20.12 | 09 66 256 6613 | 22.16 |                |       | 09 66 324 7704 | 20.12 |
| 09 66 213 6600 | 02.14 | 09 66 224 7705 | 20.12 | 09 66 256 6615 | 22.18 | 09 66 313 6600 | 02.14 | 09 66 324 7705 | 20.12 |
| 09 66 213 6601 | 02.14 | 09 66 224 7706 | 20.12 | 09 66 256 6616 | 22.18 | 09 66 313 6601 | 02.14 | 09 66 324 7706 | 20.12 |
| 09 66 213 6602 | 02.14 | 09 66 224 7707 | 20.12 | 09 66 256 6617 | 22.18 | 09 66 313 6602 | 02.14 | 09 66 324 7707 | 20.12 |
| 09 66 213 6603 | 02.14 |                |       | 09 66 256 7610 | 22.16 | 09 66 313 6603 | 02.14 |                |       |
| 09 66 213 7600 | 02.14 | 09 66 228 6700 | 02.32 | 09 66 256 7611 | 22.16 | 09 66 313 7600 | 02.14 | 09 66 328 6700 | 02.32 |
| 09 66 213 7601 | 02.14 | 09 66 228 6701 | 02.32 | 09 66 256 7612 | 22.16 | 09 66 313 7601 | 02.14 | 09 66 328 6701 | 02.32 |
| 09 66 213 7602 | 02.14 | 09 66 228 6702 | 02.32 | 09 66 256 7613 | 22.16 | 09 66 313 7602 | 02.14 | 09 66 328 6702 | 02.32 |
| 09 66 213 7603 | 02.14 | 09 66 228 7700 | 02.32 | 09 66 256 7615 | 22.18 | 09 66 313 7603 | 02.14 | 09 66 328 7700 | 02.32 |
|                |       | 09 66 228 7701 | 02.32 | 09 66 256 7616 | 22.18 |                |       | 09 66 328 7701 | 02.32 |
|                |       | 09 66 228 7702 | 02.32 | 09 66 256 7617 | 22.18 | 09 66 314 6500 | 20.12 | 09 66 328 7702 | 02.32 |
| 09 66 214 6500 | 20.12 |                |       |                |       | 09 66 314 6501 | 20.12 |                |       |
| 09 66 214 6501 | 20.12 | 09 66 251 6511 | 02.06 | 09 66 257 6610 | 22.16 | 09 66 314 6502 | 20.12 | 09 66 351 6511 | 02.06 |
| 09 66 214 6502 | 20.12 | 09 66 251 6512 | 02.06 | 09 66 257 6611 | 22.16 | 09 66 314 6503 | 20.12 | 09 66 351 6512 | 02.06 |
| 09 66 214 6503 | 20.12 | 09 66 251 6513 | 02.06 | 09 66 257 6612 | 22.16 | 09 66 314 6504 | 20.12 | 09 66 351 6513 | 02.06 |
| 09 66 214 6504 | 20.12 | 09 66 251 7511 | 02.06 | 09 66 257 6613 | 22.16 | 09 66 314 6505 | 20.12 | 09 66 351 7511 | 02.06 |
| 09 66 214 6505 | 20.12 | 09 66 251 7512 | 02.06 | 09 66 257 7610 | 22.16 | 09 66 314 6506 | 20.12 | 09 66 351 7512 | 02.06 |
| 09 66 214 6506 | 20.12 | 09 66 251 7513 | 02.06 | 09 66 257 7611 | 22.16 | 09 66 314 6507 | 20.12 | 09 66 351 7513 | 02.06 |
| 09 66 214 6507 | 20.12 |                |       | 09 66 257 7612 | 22.16 | 09 66 314 7500 | 20.12 |                |       |
| 09 66 214 7500 | 20.12 | 09 66 252 6610 | 02.12 | 09 66 257 7613 | 22.16 | 09 66 314 7501 | 20.12 | 09 66 352 6610 | 02.12 |
| 09 66 214 7501 | 20.12 | 09 66 252 6611 | 02.12 |                |       | 09 66 314 7502 | 20.12 | 09 66 352 6611 | 02.12 |
| 09 66 214 7502 | 20.12 | 09 66 252 6612 | 02.12 | 09 66 262 6811 | 02.10 | 09 66 314 7503 | 20.12 | 09 66 352 6612 | 02.12 |
| 09 66 214 7503 | 20.12 | 09 66 252 6613 | 02.12 | 09 66 262 6812 | 02.10 | 09 66 314 7504 | 20.12 | 09 66 352 6613 | 02.12 |
| 09 66 214 7504 | 20.12 | 09 66 252 6615 | 02.18 | 09 66 262 6813 | 02.10 | 09 66 314 7505 | 20.12 | 09 66 352 6615 | 02.18 |
| 09 66 214 7505 | 20.12 | 09 66 252 6616 | 02.18 | 09 66 262 6815 | 02.16 | 09 66 314 7506 | 20.12 | 09 66 352 6616 | 02.18 |
| 09 66 214 7506 | 20.12 | 09 66 252 6617 | 02.18 | 09 66 262 6816 | 02.16 | 09 66 314 7507 | 20.12 | 09 66 352 6617 | 02.18 |
| 09 66 214 7507 | 20.12 | 09 66 252 7610 | 02.12 | 09 66 262 6817 | 02.16 |                |       | 09 66 352 7610 | 02.12 |
|                |       | 09 66 252 7611 | 02.12 | 09 66 262 7811 | 02.10 | 09 66 315 6501 | 22.14 | 09 66 352 7611 | 02.12 |
| 09 66 215 6501 | 22.14 | 09 66 252 7612 | 02.12 | 09 66 262 7812 | 02.10 | 09 66 315 6502 | 22.14 | 09 66 352 7612 | 02.12 |
| 09 66 215 6502 | 22.14 | 09 66 252 7613 | 02.12 | 09 66 262 7813 | 02.10 | 09 66 315 6503 | 22.14 | 09 66 352 7613 | 02.12 |
| 09 66 215 6503 | 22.14 | 09 66 252 7615 | 02.18 | 09 66 262 7815 | 02.16 | 09 66 315 7501 | 22.14 | 09 66 352 7615 | 02.18 |
| 09 66 215 7501 | 22.14 | 09 66 252 7616 | 02.18 | 09 66 262 7816 | 02.16 | 09 66 315 7502 | 22.14 | 09 66 352 7616 | 02.18 |
| 09 66 215 7502 | 22.14 | 09 66 252 7617 | 02.18 | 09 66 262 7817 | 02.16 | 09 66 315 7503 | 22.14 | 09 66 352 7617 | 02.18 |
| 09 66 215 7503 | 22.14 |                |       |                |       |                |       |                |       |
|                |       | 09 66 253 6610 | 02.12 | 09 66 263 6811 | 02.10 | 09 66 318 6500 | 02.32 | 09 66 353 6610 | 02.12 |
| 09 66 218 6500 | 02.32 | 09 66 253 6611 | 02.12 | 09 66 263 6812 | 02.10 | 09 66 318 6501 | 02.32 | 09 66 353 6611 | 02.12 |
| 09 66 218 6501 | 02.32 | 09 66 253 6612 | 02.12 | 09 66 263 6813 | 02.10 | 09 66 318 6502 | 02.32 | 09 66 353 6612 | 02.12 |
| 09 66 218 6502 | 02.32 | 09 66 253 6613 | 02.12 | 09 66 263 7811 | 02.10 | 09 66 318 7500 | 02.32 | 09 66 353 6613 | 02.12 |
| 09 66 218 7500 | 02.32 | 09 66 253 7610 | 02.12 | 09 66 263 7812 | 02.10 | 09 66 318 7501 | 02.32 | 09 66 353 7610 | 02.12 |
| 09 66 218 7501 | 02.32 | 09 66 253 7611 | 02.12 | 09 66 263 7813 | 02.10 | 09 66 318 7502 | 02.32 | 09 66 353 7611 | 02.12 |
| 09 66 218 7502 | 02.32 | 09 66 253 7612 | 02.12 |                |       |                |       | 09 66 353 7612 | 02.12 |
|                |       | 09 66 253 7613 | 02.12 |                |       |                |       | 09 66 353 7613 | 02.12 |
|                |       |                |       | 09 66 264 6715 | 20.10 | 09 66 321 6701 | 02.05 |                |       |
| 09 66 221 6701 | 02.05 | 09 66 254 6511 | 20.10 | 09 66 264 6716 | 20.10 | 09 66 321 6702 | 02.05 | 09 66 354 6511 | 20.10 |
| 09 66 221 6702 | 02.05 | 09 66 254 6512 | 20.10 | 09 66 264 6717 | 20.10 | 09 66 321 6703 | 02.05 | 09 66 354 6512 | 20.10 |
| 09 66 221 6703 | 02.05 | 09 66 254 6513 | 20.10 | 09 66 264 7715 | 20.10 | 09 66 321 7701 | 02.05 | 09 66 354 6513 | 20.10 |
| 09 66 221 7701 | 02.05 | 09 66 254 6515 | 20.10 | 09 66 264 7716 | 20.10 | 09 66 321 7702 | 02.05 | 09 66 354 6515 | 20.10 |
| 09 66 221 7702 | 02.05 | 09 66 254 6516 | 20.10 | 09 66 264 7717 | 20.10 | 09 66 321 7703 | 02.05 | 09 66 354 6516 | 20.10 |
| 09 66 221 7703 | 02.05 |                |       |                |       |                |       |                |       |

Part No.

# List of part numbers



| Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  |
|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
| 09 66 354 6517 | 20.10 | 09 66 408 0001 | 02.32 | 09 66 422 6801 | 02.10 | 09 66 455 6511 | 22.14 | 09 66 514 6500 | 20.12 |
| 09 66 354 7511 | 20.10 |                |       | 09 66 422 6802 | 02.10 | 09 66 455 6512 | 22.14 | 09 66 514 6501 | 20.12 |
| 09 66 354 7512 | 20.10 | 09 66 411 6501 | 02.06 | 09 66 422 6803 | 02.10 | 09 66 455 6513 | 22.14 | 09 66 514 6502 | 20.12 |
| 09 66 354 7513 | 20.10 | 09 66 411 6502 | 02.06 | 09 66 422 7801 | 02.10 | 09 66 455 7511 | 22.14 | 09 66 514 6503 | 20.12 |
| 09 66 354 7515 | 20.10 | 09 66 411 6503 | 02.06 | 09 66 422 7802 | 02.10 | 09 66 455 7512 | 22.14 | 09 66 514 7500 | 20.12 |
| 09 66 354 7516 | 20.10 | 09 66 411 7501 | 02.06 | 09 66 422 7803 | 02.10 | 09 66 455 7513 | 22.14 | 09 66 514 7501 | 20.12 |
| 09 66 354 7517 | 20.10 | 09 66 411 7502 | 02.06 |                |       |                |       | 09 66 514 7502 | 20.12 |
|                |       | 09 66 411 7503 | 02.06 | 09 66 423 6801 | 02.10 | 09 66 456 6610 | 22.16 | 09 66 514 7503 | 20.12 |
| 09 66 355 6511 | 22.14 |                |       | 09 66 423 6802 | 02.10 | 09 66 456 6611 | 22.16 |                |       |
| 09 66 355 6512 | 22.14 | 09 66 412 6600 | 02.14 | 09 66 423 6803 | 02.10 | 09 66 456 6612 | 22.16 | 09 66 521 6701 | 02.05 |
| 09 66 355 6513 | 22.14 | 09 66 412 6601 | 02.14 | 09 66 423 7801 | 02.10 | 09 66 456 6613 | 22.16 | 09 66 521 6702 | 02.05 |
| 09 66 355 7511 | 22.14 | 09 66 412 6602 | 02.14 | 09 66 423 7802 | 02.10 | 09 66 456 6615 | 22.18 | 09 66 521 6703 | 02.05 |
| 09 66 355 7512 | 22.14 | 09 66 412 6603 | 02.14 | 09 66 423 7803 | 02.10 | 09 66 456 6616 | 22.18 | 09 66 521 7701 | 02.05 |
| 09 66 355 7513 | 22.14 | 09 66 412 7600 | 02.14 |                |       | 09 66 456 6617 | 22.18 | 09 66 521 7702 | 02.05 |
|                |       | 09 66 412 7601 | 02.14 | 09 66 428 6700 | 02.32 | 09 66 456 7610 | 22.16 | 09 66 521 7703 | 02.05 |
| 09 66 356 6610 | 22.16 | 09 66 412 7602 | 02.14 | 09 66 428 6701 | 02.32 | 09 66 456 7611 | 22.16 |                |       |
| 09 66 356 6611 | 22.16 | 09 66 412 7603 | 02.14 | 09 66 428 6702 | 02.32 | 09 66 456 7612 | 22.16 | 09 66 522 6801 | 02.10 |
| 09 66 356 6612 | 22.16 |                |       | 09 66 428 7700 | 02.32 | 09 66 456 7613 | 22.16 | 09 66 522 6802 | 02.10 |
| 09 66 356 6613 | 22.16 | 09 66 413 6600 | 02.14 | 09 66 428 7701 | 02.32 | 09 66 456 7615 | 22.18 | 09 66 522 6803 | 02.10 |
| 09 66 356 6615 | 22.18 | 09 66 413 6601 | 02.14 | 09 66 428 7702 | 02.32 | 09 66 456 7616 | 22.18 | 09 66 522 7801 | 02.10 |
| 09 66 356 6616 | 22.18 | 09 66 413 6602 | 02.14 |                |       | 09 66 456 7617 | 22.18 | 09 66 522 7802 | 02.10 |
| 09 66 356 6617 | 22.18 | 09 66 413 6603 | 02.14 | 09 66 451 6511 | 02.06 | 09 66 457 6610 | 22.16 | 09 66 522 7803 | 02.10 |
| 09 66 356 7610 | 22.16 | 09 66 413 7600 | 02.14 | 09 66 451 6512 | 02.06 | 09 66 457 6611 | 22.16 |                |       |
| 09 66 356 7611 | 22.16 | 09 66 413 7601 | 02.14 | 09 66 451 6513 | 02.06 | 09 66 457 6612 | 22.16 | 09 66 523 6801 | 02.10 |
| 09 66 356 7612 | 22.16 | 09 66 413 7602 | 02.14 | 09 66 451 7511 | 02.06 | 09 66 457 6613 | 22.16 | 09 66 523 6802 | 02.10 |
| 09 66 356 7613 | 22.16 | 09 66 413 7603 | 02.14 | 09 66 451 7512 | 02.06 | 09 66 457 7610 | 22.16 | 09 66 523 6803 | 02.10 |
| 09 66 356 7615 | 22.18 |                |       | 09 66 451 7513 | 02.06 | 09 66 457 7611 | 22.16 | 09 66 523 7801 | 02.10 |
| 09 66 356 7616 | 22.18 | 09 66 414 6500 | 20.12 | 09 66 452 6610 | 02.12 | 09 66 457 7612 | 22.16 | 09 66 523 7802 | 02.10 |
| 09 66 356 7617 | 22.18 | 09 66 414 6501 | 20.12 | 09 66 452 6611 | 02.12 | 09 66 457 7613 | 22.16 | 09 66 523 7803 | 02.10 |
|                |       | 09 66 414 6502 | 20.12 | 09 66 452 6612 | 02.12 |                |       |                |       |
| 09 66 357 6610 | 22.16 | 09 66 414 6503 | 20.12 | 09 66 452 6613 | 02.12 | 09 66 462 6811 | 02.10 | 09 66 552 6610 | 02.12 |
| 09 66 357 6611 | 22.16 | 09 66 414 6504 | 20.12 | 09 66 452 6615 | 02.18 | 09 66 462 6812 | 02.10 | 09 66 552 6611 | 02.12 |
| 09 66 357 6612 | 22.16 | 09 66 414 6505 | 20.12 | 09 66 452 6616 | 02.18 | 09 66 462 6813 | 02.10 | 09 66 552 6612 | 02.12 |
| 09 66 357 6613 | 22.16 | 09 66 414 6506 | 20.12 | 09 66 452 6617 | 02.18 | 09 66 462 6815 | 02.16 | 09 66 552 6613 | 02.12 |
| 09 66 357 7610 | 22.16 | 09 66 414 6507 | 20.12 | 09 66 452 7610 | 02.12 | 09 66 462 6816 | 02.16 | 09 66 552 6615 | 02.18 |
| 09 66 357 7611 | 22.16 | 09 66 414 7500 | 20.12 | 09 66 452 7611 | 02.12 | 09 66 462 6817 | 02.16 | 09 66 552 6616 | 02.18 |
| 09 66 357 7612 | 22.16 | 09 66 414 7501 | 20.12 | 09 66 452 7612 | 02.12 | 09 66 462 7811 | 02.10 | 09 66 552 6617 | 02.18 |
| 09 66 357 7613 | 22.16 | 09 66 414 7502 | 20.12 | 09 66 452 7613 | 02.12 | 09 66 462 7812 | 02.10 | 09 66 552 7610 | 02.12 |
|                |       | 09 66 414 7503 | 20.12 | 09 66 452 7615 | 02.18 | 09 66 462 7813 | 02.10 | 09 66 552 7611 | 02.12 |
| 09 66 362 6811 | 02.10 | 09 66 414 7504 | 20.12 | 09 66 452 7616 | 02.18 | 09 66 462 7815 | 02.16 | 09 66 552 7612 | 02.12 |
| 09 66 362 6812 | 02.10 | 09 66 414 7505 | 20.12 | 09 66 452 7617 | 02.18 | 09 66 462 7816 | 02.16 | 09 66 552 7613 | 02.12 |
| 09 66 362 6813 | 02.10 | 09 66 414 7506 | 20.12 |                |       | 09 66 462 7817 | 02.16 | 09 66 552 7615 | 02.18 |
| 09 66 362 6815 | 02.16 | 09 66 414 7507 | 20.12 | 09 66 453 6610 | 02.12 |                |       | 09 66 552 7616 | 02.18 |
| 09 66 362 6816 | 02.16 |                |       | 09 66 453 6611 | 02.12 | 09 66 463 6811 | 02.10 | 09 66 552 7617 | 02.18 |
| 09 66 362 6817 | 02.16 | 09 66 415 6501 | 22.14 | 09 66 453 6612 | 02.12 | 09 66 463 6812 | 02.10 |                |       |
| 09 66 362 7811 | 02.10 | 09 66 415 6502 | 22.14 | 09 66 453 6613 | 02.12 | 09 66 463 6813 | 02.10 | 09 66 554 6511 | 20.10 |
| 09 66 362 7812 | 02.10 | 09 66 415 6503 | 22.14 | 09 66 453 7610 | 02.12 | 09 66 463 7811 | 02.10 | 09 66 554 6512 | 20.10 |
| 09 66 362 7813 | 02.10 | 09 66 415 7501 | 22.14 | 09 66 453 7611 | 02.12 | 09 66 463 7812 | 02.10 | 09 66 554 6513 | 20.10 |
| 09 66 362 7815 | 02.16 | 09 66 415 7502 | 22.14 | 09 66 453 7612 | 02.12 | 09 66 463 7813 | 02.10 | 09 66 554 7511 | 20.10 |
| 09 66 362 7816 | 02.16 | 09 66 415 7503 | 22.14 | 09 66 453 7613 | 02.12 |                |       | 09 66 554 7512 | 20.10 |
| 09 66 362 7817 | 02.16 |                |       |                |       | 09 66 511 6501 | 02.06 | 09 66 554 7513 | 20.10 |
|                |       | 09 66 418 6500 | 02.32 | 09 66 454 6511 | 20.10 | 09 66 511 6502 | 02.06 |                |       |
| 09 66 363 6811 | 02.10 | 09 66 418 6501 | 02.32 | 09 66 454 6512 | 20.10 | 09 66 511 6503 | 02.06 | 09 66 562 6811 | 02.10 |
| 09 66 363 6812 | 02.10 | 09 66 418 6502 | 02.32 | 09 66 454 6513 | 20.10 | 09 66 511 7501 | 02.06 | 09 66 562 6812 | 02.10 |
| 09 66 363 6813 | 02.10 | 09 66 418 7500 | 02.32 | 09 66 454 6515 | 20.10 | 09 66 511 7502 | 02.06 | 09 66 562 6813 | 02.10 |
| 09 66 363 7811 | 02.10 | 09 66 418 7501 | 02.32 | 09 66 454 6516 | 20.10 | 09 66 512 6600 | 02.14 | 09 66 562 6815 | 02.16 |
| 09 66 363 7812 | 02.10 | 09 66 418 7502 | 02.32 | 09 66 454 6517 | 20.10 | 09 66 512 6601 | 02.14 | 09 66 562 6816 | 02.16 |
| 09 66 363 7813 | 02.10 |                |       | 09 66 454 7511 | 20.10 | 09 66 512 6602 | 02.14 | 09 66 562 6817 | 02.16 |
|                |       | 09 66 421 6701 | 02.05 | 09 66 454 7512 | 20.10 | 09 66 512 6603 | 02.14 | 09 66 562 7811 | 02.10 |
| 09 66 364 6715 | 20.10 | 09 66 421 6702 | 02.05 | 09 66 454 7513 | 20.10 | 09 66 512 7600 | 02.14 | 09 66 562 7812 | 02.10 |
| 09 66 364 6716 | 20.10 | 09 66 421 6703 | 02.05 | 09 66 454 7515 | 20.10 | 09 66 512 7601 | 02.14 | 09 66 562 7813 | 02.10 |
| 09 66 364 6717 | 20.10 | 09 66 421 7701 | 02.05 | 09 66 454 7516 | 20.10 | 09 66 512 7602 | 02.14 | 09 66 562 7815 | 02.16 |
| 09 66 364 7715 | 20.10 | 09 66 421 7702 | 02.05 | 09 66 454 7517 | 20.10 | 09 66 512 7603 | 02.14 | 09 66 562 7816 | 02.16 |
| 09 66 364 7716 | 20.10 | 09 66 421 7703 | 02.05 |                |       |                |       | 09 66 562 7817 | 02.16 |
| 09 66 364 7717 | 20.10 |                |       |                |       |                |       |                |       |

# List of part numbers



| Part No.       | Page  | Part No.       | Page  | Part No.           | Page  | Part No.       | Page  | Part No.       | Page  |
|----------------|-------|----------------|-------|--------------------|-------|----------------|-------|----------------|-------|
| 09 66 563 6811 | 02.10 | 09 67 000 8147 | 02.28 | 09 67 002 9001     | 06.23 | 09 67 002 9133 | 07.19 | 09 67 009 5615 | 02.34 |
| 09 66 563 6812 | 02.10 | 09 67 000 8148 | 02.28 | 09 67 002 9002     | 06.23 | 09 67 002 9134 | 07.19 | 09 67 009 5616 | 02.25 |
| 09 66 563 6813 | 02.10 | 09 67 000 8156 | 02.28 | 09 67 002 9003     | 06.23 | 09 67 002 9135 | 07.19 | 09 67 009 5654 | 02.04 |
| 09 66 563 7811 | 02.10 | 09 67 000 8157 | 02.28 | 09 67 002 9006     | 06.23 | 09 67 002 9136 | 07.19 | 09 67 009 5655 | 02.04 |
| 09 66 563 7812 | 02.10 | 09 67 000 8158 | 02.28 | 09 67 002 9007     | 06.23 |                |       |                |       |
| 09 66 563 7813 | 02.10 | 09 67 000 8166 | 02.28 | 09 67 002 9008     | 06.25 |                |       |                |       |
|                |       | 09 67 000 8167 | 02.28 | 09 67 002 9009     | 06.25 | 09 67 009 0322 | 07.10 | 09 67 015 0322 | 07.10 |
|                |       | 09 67 000 8168 | 02.28 | 09 67 002 9010     | 06.25 | 09 67 009 0323 | 07.10 | 09 67 015 0323 | 07.10 |
|                |       | 09 67 000 8176 | 02.28 | 09 67 002 9011     | 06.25 | 09 67 009 0333 | 07.08 | 09 67 015 0333 | 07.08 |
|                |       | 09 67 000 8177 | 02.28 | 09 67 002 9012     | 06.25 | 09 67 009 0334 | 07.09 | 09 67 015 0334 | 07.09 |
| 09 67 000 3476 | 02.27 | 09 67 000 8178 | 02.28 | 09 67 002 9013     | 06.25 | 09 67 009 0335 | 07.09 | 09 67 015 0335 | 07.09 |
| 09 67 000 3476 | 04.22 | 09 67 000 8236 | 02.30 | 09 67 002 9017     | 07.20 | 09 67 009 0336 | 07.08 | 09 67 015 0336 | 07.08 |
| 09 67 000 3476 | 31.05 | 09 67 000 8237 | 02.30 | 09 67 002 9018     | 07.20 | 09 67 009 0343 | 07.08 | 09 67 015 0343 | 07.08 |
| 09 67 000 3576 | 02.27 | 09 67 000 8238 | 02.30 | 09 67 002 9019     | 07.20 | 09 67 009 0344 | 07.09 | 09 67 015 0344 | 07.09 |
| 09 67 000 3576 | 04.22 | 09 67 000 8246 | 02.30 | 09 67 002 9020     | 07.20 | 09 67 009 0348 | 07.08 | 09 67 015 0348 | 07.08 |
| 09 67 000 3576 | 31.05 | 09 67 000 8247 | 02.30 | 09 67 002 9028     | 07.08 | 09 67 009 0349 | 07.09 | 09 67 015 0349 | 07.09 |
| 09 67 000 3676 | 02.27 | 09 67 000 8248 | 02.30 | 09 67 002 9029     | 07.08 | 09 67 009 0411 | 07.15 | 09 67 015 0411 | 07.15 |
| 09 67 000 3676 | 04.22 | 09 67 000 8256 | 02.30 | 09 67 002 9030     | 08.03 | 09 67 009 0413 | 07.15 | 09 67 015 0413 | 07.15 |
| 09 67 000 5476 | 02.27 | 09 67 000 8257 | 02.30 | 09 67 002 9031     | 07.10 | 09 67 009 0421 | 07.07 | 09 67 015 0421 | 07.07 |
| 09 67 000 5476 | 04.22 | 09 67 000 8258 | 02.30 | 09 67 002 9032     | 07.10 | 09 67 009 0422 | 07.07 | 09 67 015 0422 | 07.07 |
| 09 67 000 5476 | 31.05 | 09 67 000 8266 | 02.30 | 09 67 002 9040     | 07.10 | 09 67 009 0423 | 07.07 | 09 67 015 0423 | 07.07 |
| 09 67 000 5576 | 02.27 | 09 67 000 8267 | 02.30 | 09 67 002 9041     | 07.10 | 09 67 009 0424 | 07.04 | 09 67 015 0424 | 07.04 |
| 09 67 000 5576 | 04.22 | 09 67 000 8268 | 02.30 | 09 67 002 9042     | 07.10 | 09 67 009 0425 | 07.04 | 09 67 015 0425 | 07.04 |
| 09 67 000 5576 | 31.05 | 09 67 000 8276 | 02.30 | 09 67 002 9044     | 07.10 | 09 67 009 0426 | 07.04 | 09 67 015 0426 | 07.04 |
| 09 67 000 5676 | 02.27 | 09 67 000 8277 | 02.30 | 09 67 002 9045     | 07.10 | 09 67 009 0427 | 07.04 | 09 67 015 0427 | 07.04 |
| 09 67 000 5676 | 04.22 | 09 67 000 8278 | 02.30 | 09 67 002 9050     | 06.23 | 09 67 009 0430 | 07.04 | 09 67 015 0430 | 07.04 |
| 09 67 000 7136 | 02.28 | 09 67 000 8476 | 02.27 | 09 67 002 9051     | 06.23 | 09 67 009 0431 | 07.04 | 09 67 015 0431 | 07.04 |
| 09 67 000 7137 | 02.28 | 09 67 000 8476 | 31.05 | 09 67 002 9052     | 06.23 | 09 67 009 0434 | 07.04 | 09 67 015 0434 | 07.04 |
| 09 67 000 7138 | 02.28 | 09 67 000 8476 | 04.22 | 09 67 002 9055     | 06.23 | 09 67 009 0435 | 07.04 | 09 67 015 0435 | 07.04 |
| 09 67 000 7146 | 02.28 | 09 67 000 8476 | 02.27 | 09 67 002 9056     | 06.23 | 09 67 009 0436 | 06.24 | 09 67 015 0436 | 06.24 |
| 09 67 000 7147 | 02.28 | 09 67 000 8576 | 04.22 | 09 67 002 9057     | 06.23 | 09 67 009 0437 | 06.24 | 09 67 015 0437 | 06.24 |
| 09 67 000 7148 | 02.28 | 09 67 000 8576 | 31.05 | 09 67 002 9060     | 06.23 | 09 67 009 0438 | 06.22 | 09 67 015 0438 | 06.22 |
| 09 67 000 7156 | 02.28 | 09 67 000 8576 | 02.27 | 09 67 002 9061     | 06.23 | 09 67 009 0439 | 06.22 | 09 67 015 0439 | 06.22 |
| 09 67 000 7157 | 02.28 | 09 67 000 8676 | 04.22 | 09 67 002 9062     | 06.23 | 09 67 009 0442 | 07.07 | 09 67 015 0442 | 07.07 |
| 09 67 000 7158 | 02.28 | 09 67 000 8676 | 07.17 | 09 67 002 9065     | 06.23 | 09 67 009 0443 | 07.07 | 09 67 015 0443 | 07.07 |
| 09 67 000 7166 | 02.28 | 09 67 000 8907 | 07.17 | 09 67 002 9066     | 06.23 | 09 67 009 0452 | 07.15 | 09 67 015 0452 | 07.15 |
| 09 67 000 7167 | 02.28 | 09 67 000 8914 | 07.17 | 09 67 002 9067     | 06.23 | 09 67 009 0453 | 07.15 | 09 67 015 0453 | 07.15 |
| 09 67 000 7168 | 02.28 | 09 67 000 8916 | 07.17 | 09 67 002 9075     | 07.05 | 09 67 009 0462 | 07.05 | 09 67 015 0462 | 07.05 |
| 09 67 000 7168 | 02.28 | 09 67 000 8917 | 07.17 | 09 67 002 9081     | 07.05 | 09 67 009 0463 | 07.05 | 09 67 015 0463 | 07.05 |
| 09 67 000 7176 | 02.28 | 09 67 000 8918 | 07.17 | 09 67 002 9090     | 07.09 | 09 67 009 0464 | 07.05 | 09 67 015 0464 | 07.05 |
| 09 67 000 7177 | 02.28 | 09 67 000 8922 | 08.03 | 09 67 002 9091     | 07.09 | 09 67 009 0465 | 07.05 | 09 67 015 0465 | 07.05 |
| 09 67 000 7178 | 02.28 | 09 67 000 8924 | 08.03 | 09 67 002 9092     | 07.08 | 09 67 009 0511 | 07.15 | 09 67 015 0511 | 07.15 |
| 09 67 000 7236 | 02.30 | 09 67 000 8925 | 07.07 | 09 67 002 9094     | 07.08 | 09 67 009 0513 | 07.15 | 09 67 015 0513 | 07.15 |
| 09 67 000 7237 | 02.30 | 09 67 000 8930 | 07.07 | 09 67 002 9101     | 07.08 | 09 67 009 0538 | 06.22 | 09 67 015 0538 | 06.22 |
| 09 67 000 7238 | 02.30 | 09 67 000 8971 | 07.06 | 09 67 002 9102     | 07.05 | 09 67 009 0539 | 06.22 | 09 67 015 0539 | 06.22 |
| 09 67 000 7246 | 02.30 | 09 67 000 8972 | 08.02 | 09 67 002 9103     | 07.05 | 09 67 009 0571 | 07.06 | 09 67 015 0571 | 07.06 |
| 09 67 000 7247 | 02.30 | 09 67 000 8973 | 08.03 | 09 67 002 9104     | 07.05 | 09 67 009 0573 | 07.06 | 09 67 015 0573 | 07.06 |
| 09 67 000 7248 | 02.30 | 09 67 000 8974 | 08.02 | 09 67 002 9105     | 07.05 | 09 67 009 0611 | 08.04 | 09 67 015 0611 | 08.04 |
| 09 67 000 7256 | 02.30 |                |       | 09 67 002 9106     | 07.05 | 09 67 009 0612 | 08.04 | 09 67 015 0612 | 08.04 |
| 09 67 000 7257 | 02.30 |                |       | 09 67 002 9120     | 08.03 | 09 67 009 0613 | 08.04 | 09 67 015 0613 | 08.04 |
| 09 67 000 7258 | 02.30 |                |       | 09 67 002 9121 xx1 | 07.19 | 09 67 009 0614 | 08.05 | 09 67 015 0614 | 08.05 |
| 09 67 000 7266 | 02.30 | 09 67 001 9928 | 08.03 | 09 67 002 9121 xx2 | 07.19 | 09 67 009 0615 | 08.05 | 09 67 015 0615 | 08.05 |
| 09 67 000 7267 | 02.30 | 09 67 001 9941 | 08.02 | 09 67 002 9121 xx3 | 07.19 | 09 67 009 0711 | 08.04 | 09 67 015 0711 | 08.04 |
| 09 67 000 7268 | 02.30 | 09 67 001 9954 | 08.02 | 09 67 002 9121 xx4 | 07.19 | 09 67 009 0712 | 08.04 | 09 67 015 0712 | 08.04 |
| 09 67 000 7276 | 02.30 | 09 67 001 9965 | 07.06 | 09 67 002 9122 xx1 | 07.19 | 09 67 009 0713 | 08.04 | 09 67 015 0713 | 08.04 |
| 09 67 000 7277 | 02.30 | 09 67 001 9968 | 07.05 | 09 67 002 9122 xx2 | 07.19 | 09 67 009 0714 | 08.05 | 09 67 015 0714 | 08.05 |
| 09 67 000 7278 | 02.30 | 09 67 001 9969 | 08.03 | 09 67 002 9122 xx3 | 07.19 | 09 67 009 0715 | 08.05 | 09 67 015 0715 | 08.05 |
| 09 67 000 7476 | 02.27 | 09 67 001 9970 | 08.03 | 09 67 002 9122 xx4 | 07.19 | 09 67 009 4701 | 02.26 | 09 67 015 4701 | 02.26 |
| 09 67 000 7476 | 31.05 | 09 67 001 9971 | 07.17 | 09 67 002 9123     | 07.19 | 09 67 009 4704 | 02.34 | 09 67 015 4704 | 02.34 |
| 09 67 000 7476 | 04.22 | 09 67 001 9972 | 07.17 | 09 67 002 9124     | 07.19 | 09 67 009 4707 | 02.25 | 09 67 015 4707 | 02.25 |
| 09 67 000 7576 | 02.27 | 09 67 001 9973 | 07.17 | 09 67 002 9125     | 07.19 | 09 67 009 4715 | 02.34 | 09 67 015 4715 | 02.34 |
| 09 67 000 7576 | 31.05 | 09 67 001 9974 | 08.02 | 09 67 002 9126     | 07.19 | 09 67 009 4716 | 02.25 | 09 67 015 4716 | 02.25 |
| 09 67 000 7576 | 04.22 | 09 67 001 9976 | 08.02 | 09 67 002 9129     | 07.19 | 09 67 009 4754 | 02.04 | 09 67 015 4754 | 02.04 |
| 09 67 000 7676 | 02.27 | 09 67 001 9977 | 07.06 | 09 67 002 9130     | 07.19 | 09 67 009 4755 | 02.04 | 09 67 015 4755 | 02.04 |
| 09 67 000 7676 | 04.22 | 09 67 001 9978 | 07.06 | 09 67 002 9131     | 07.19 | 09 67 009 5601 | 02.26 | 09 67 015 5601 | 02.26 |
| 09 67 000 8136 | 02.28 | 09 67 001 9985 | 08.03 | 09 67 002 9132     | 07.19 | 09 67 009 5604 | 02.34 | 09 67 015 5604 | 02.34 |
| 09 67 000 8137 | 02.28 | 09 67 001 9997 | 07.08 |                    |       | 09 67 009 5607 | 02.25 | 09 67 015 5607 | 02.25 |
| 09 67 000 8138 | 02.28 |                |       |                    |       |                |       |                |       |
| 09 67 000 8146 | 02.28 |                |       |                    |       |                |       |                |       |

Part No.

# List of part numbers



| Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  |
|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
| 09 67 015 5615 | 02.34 | 09 67 025 5615 | 02.34 | 09 67 050 0322 | 07.10 | 09 67 237 4704 | 02.34 | 09 67 609 6775 | 06.16 |
| 09 67 015 5616 | 02.25 | 09 67 025 5616 | 02.25 | 09 67 050 0323 | 07.10 | 09 67 237 4715 | 02.34 | 09 67 609 7615 | 06.10 |
| 09 67 015 5654 | 02.04 | 09 67 025 5654 | 02.04 | 09 67 050 0333 | 07.08 | 09 67 237 5604 | 02.34 | 09 67 609 7658 | 06.20 |
| 09 67 015 5655 | 02.04 | 09 67 025 5655 | 02.04 | 09 67 050 0334 | 07.09 | 09 67 237 5615 | 02.34 | 09 67 609 7675 | 06.16 |
|                |       |                |       | 09 67 050 0335 | 07.09 |                |       | 09 67 609 8715 | 06.10 |
|                |       |                |       | 09 67 050 0336 | 07.08 | 09 67 250 4704 | 02.34 | 09 67 609 8758 | 06.20 |
| 09 67 025 0322 | 07.10 | 09 67 037 0322 | 07.10 | 09 67 050 0343 | 07.08 | 09 67 250 4715 | 02.34 | 09 67 609 8775 | 06.16 |
| 09 67 025 0323 | 07.10 | 09 67 037 0323 | 07.10 | 09 67 050 0344 | 07.09 | 09 67 250 5604 | 02.34 | 09 67 609 9615 | 06.10 |
| 09 67 025 0333 | 07.08 | 09 67 037 0333 | 07.08 | 09 67 050 0348 | 07.08 | 09 67 250 5615 | 02.34 | 09 67 609 9658 | 06.20 |
| 09 67 025 0334 | 07.09 | 09 67 037 0334 | 07.09 | 09 67 050 0349 | 07.09 |                |       | 09 67 609 9675 | 06.16 |
| 09 67 025 0335 | 07.09 | 09 67 037 0335 | 07.09 | 09 67 050 0411 | 07.15 | 09 67 409 4715 | 06.04 |                |       |
| 09 67 025 0336 | 07.08 | 09 67 037 0336 | 07.08 | 09 67 050 0413 | 07.15 | 09 67 409 5615 | 06.04 | 09 67 615 6715 | 06.10 |
| 09 67 025 0343 | 07.08 | 09 67 037 0343 | 07.08 | 09 67 050 0423 | 07.07 |                |       | 09 67 615 6758 | 06.20 |
| 09 67 025 0344 | 07.09 | 09 67 037 0344 | 07.09 | 09 67 050 0424 | 07.04 | 09 67 415 4715 | 06.04 | 09 67 615 6775 | 06.16 |
| 09 67 025 0348 | 07.08 | 09 67 037 0348 | 07.08 | 09 67 050 0426 | 07.04 | 09 67 415 5615 | 06.04 | 09 67 615 7615 | 06.10 |
| 09 67 025 0349 | 07.09 | 09 67 037 0349 | 07.09 | 09 67 050 0438 | 06.22 |                |       | 09 67 615 7658 | 06.20 |
| 09 67 025 0411 | 07.15 | 09 67 037 0411 | 07.15 | 09 67 050 0439 | 06.22 | 09 67 425 4715 | 06.04 | 09 67 615 7675 | 06.16 |
| 09 67 025 0413 | 07.15 | 09 67 037 0413 | 07.15 | 09 67 050 0442 | 07.07 | 09 67 425 5615 | 06.04 | 09 67 615 8715 | 06.10 |
| 09 67 025 0421 | 07.07 | 09 67 037 0421 | 07.07 | 09 67 050 0443 | 07.07 |                |       | 09 67 615 8758 | 06.20 |
| 09 67 025 0422 | 07.07 | 09 67 037 0422 | 07.07 | 09 67 050 0452 | 07.15 | 09 67 437 4715 | 06.04 | 09 67 615 8775 | 06.16 |
| 09 67 025 0423 | 07.07 | 09 67 037 0423 | 07.07 | 09 67 050 0453 | 07.15 | 09 67 437 5615 | 06.04 | 09 67 615 9615 | 06.10 |
| 09 67 025 0424 | 07.04 | 09 67 037 0424 | 07.04 | 09 67 050 0511 | 07.15 |                |       | 09 67 615 9658 | 06.20 |
| 09 67 025 0425 | 07.04 | 09 67 037 0425 | 07.04 | 09 67 050 0513 | 07.15 | 09 67 450 4715 | 06.04 | 09 67 615 9675 | 06.16 |
| 09 67 025 0426 | 07.04 | 09 67 037 0426 | 07.04 | 09 67 050 0538 | 06.22 | 09 67 450 5615 | 06.04 |                |       |
| 09 67 025 0427 | 07.04 | 09 67 037 0427 | 07.04 | 09 67 050 0539 | 06.22 |                |       | 09 67 625 6715 | 06.10 |
| 09 67 025 0430 | 07.04 | 09 67 037 0434 | 07.04 | 09 67 050 0571 | 07.06 | 09 67 509 6715 | 06.06 | 09 67 625 6758 | 06.20 |
| 09 67 025 0431 | 07.04 | 09 67 037 0435 | 07.04 | 09 67 050 0573 | 07.06 | 09 67 509 6758 | 06.18 | 09 67 625 6775 | 06.16 |
| 09 67 025 0434 | 07.04 | 09 67 037 0438 | 06.22 | 09 67 050 0612 | 08.04 | 09 67 509 6775 | 06.14 | 09 67 625 7615 | 06.10 |
| 09 67 025 0435 | 07.04 | 09 67 037 0439 | 06.22 | 09 67 050 0613 | 08.04 | 09 67 509 7615 | 06.06 | 09 67 625 7658 | 06.20 |
| 09 67 025 0436 | 06.24 | 09 67 037 0442 | 07.07 | 09 67 050 0614 | 08.05 | 09 67 509 7658 | 06.18 | 09 67 625 7675 | 06.16 |
| 09 67 025 0437 | 06.24 | 09 67 037 0443 | 07.07 | 09 67 050 0615 | 08.05 | 09 67 509 7675 | 06.14 | 09 67 625 8715 | 06.10 |
| 09 67 025 0438 | 06.22 | 09 67 037 0452 | 07.15 | 09 67 050 0712 | 08.04 | 09 67 509 8715 | 06.06 | 09 67 625 8758 | 06.20 |
| 09 67 025 0439 | 06.22 | 09 67 037 0453 | 07.15 | 09 67 050 0713 | 08.04 | 09 67 509 8758 | 06.18 | 09 67 625 8775 | 06.16 |
| 09 67 025 0442 | 07.07 | 09 67 037 0462 | 07.05 | 09 67 050 0714 | 08.05 | 09 67 509 8775 | 06.14 | 09 67 625 9615 | 06.10 |
| 09 67 025 0443 | 07.07 | 09 67 037 0463 | 07.05 | 09 67 050 0715 | 08.05 | 09 67 509 9615 | 06.06 | 09 67 625 9658 | 06.20 |
| 09 67 025 0452 | 07.15 | 09 67 037 0464 | 07.05 | 09 67 050 4701 | 02.26 | 09 67 509 9658 | 06.18 | 09 67 625 9675 | 06.16 |
| 09 67 025 0453 | 07.15 | 09 67 037 0465 | 07.05 | 09 67 050 4704 | 02.34 | 09 67 509 9675 | 06.14 |                |       |
| 09 67 025 0462 | 07.05 | 09 67 037 0511 | 07.15 | 09 67 050 4707 | 02.25 |                |       | 09 67 637 6715 | 06.10 |
| 09 67 025 0463 | 07.05 | 09 67 037 0513 | 07.15 | 09 67 050 4715 | 02.34 | 09 67 515 6715 | 06.06 | 09 67 637 6758 | 06.20 |
| 09 67 025 0464 | 07.05 | 09 67 037 0538 | 06.22 | 09 67 050 4716 | 02.25 | 09 67 515 6758 | 06.18 | 09 67 637 6775 | 06.16 |
| 09 67 025 0465 | 07.05 | 09 67 037 0539 | 06.22 | 09 67 050 4754 | 02.04 | 09 67 515 6775 | 06.14 | 09 67 637 7615 | 06.10 |
| 09 67 025 0511 | 07.15 | 09 67 037 0571 | 07.06 | 09 67 050 4755 | 02.04 | 09 67 515 7615 | 06.06 | 09 67 637 7658 | 06.20 |
| 09 67 025 0513 | 07.15 | 09 67 037 0573 | 07.06 | 09 67 050 5601 | 02.26 | 09 67 515 7615 | 06.06 | 09 67 637 7675 | 06.16 |
| 09 67 025 0538 | 06.22 | 09 67 037 0611 | 08.04 | 09 67 050 5604 | 02.34 | 09 67 515 7658 | 06.18 | 09 67 637 8715 | 06.10 |
| 09 67 025 0539 | 06.22 | 09 67 037 0612 | 08.04 | 09 67 050 5607 | 02.25 | 09 67 515 7675 | 06.14 | 09 67 637 8758 | 06.20 |
| 09 67 025 0571 | 07.06 | 09 67 037 0613 | 08.04 | 09 67 050 5615 | 02.34 | 09 67 515 8715 | 06.06 | 09 67 637 8775 | 06.16 |
| 09 67 025 0573 | 07.06 | 09 67 037 0614 | 08.05 | 09 67 050 5616 | 02.25 | 09 67 515 8758 | 06.18 | 09 67 637 9615 | 06.10 |
| 09 67 025 0611 | 08.04 | 09 67 037 0615 | 08.05 | 09 67 050 5654 | 02.04 | 09 67 515 8775 | 06.14 | 09 67 637 9658 | 06.20 |
| 09 67 025 0612 | 08.04 | 09 67 037 0711 | 08.04 | 09 67 050 5655 | 02.04 | 09 67 515 9615 | 06.06 | 09 67 637 9675 | 06.16 |
| 09 67 025 0613 | 08.04 | 09 67 037 0712 | 08.04 |                |       | 09 67 515 9658 | 06.18 |                |       |
| 09 67 025 0614 | 08.05 | 09 67 037 0713 | 08.04 |                |       | 09 67 515 9675 | 06.14 |                |       |
| 09 67 025 0615 | 08.05 | 09 67 037 0714 | 08.05 | 09 67 209 4704 | 02.34 |                |       | 09 67 650 6715 | 06.10 |
| 09 67 025 0711 | 08.04 | 09 67 037 0715 | 08.05 | 09 67 209 4715 | 02.34 | 09 67 525 6715 | 06.06 | 09 67 650 6758 | 06.20 |
| 09 67 025 0712 | 08.04 | 09 67 037 4701 | 02.26 | 09 67 209 5604 | 02.34 | 09 67 525 6758 | 06.18 | 09 67 650 6775 | 06.16 |
| 09 67 025 0713 | 08.04 | 09 67 037 4704 | 02.34 | 09 67 209 5615 | 02.34 | 09 67 525 6775 | 06.14 | 09 67 650 7615 | 06.10 |
| 09 67 025 0714 | 08.05 | 09 67 037 4707 | 02.25 |                |       | 09 67 525 7615 | 06.06 | 09 67 650 7658 | 06.20 |
| 09 67 025 0715 | 08.05 | 09 67 037 4715 | 02.34 |                |       | 09 67 525 7658 | 06.18 | 09 67 650 7675 | 06.16 |
| 09 67 025 4701 | 02.26 | 09 67 037 4716 | 02.25 | 09 67 215 4704 | 02.34 | 09 67 525 7675 | 06.14 | 09 67 650 8715 | 06.10 |
| 09 67 025 4704 | 02.34 | 09 67 037 4754 | 02.04 | 09 67 215 4715 | 02.34 | 09 67 525 8715 | 06.06 | 09 67 650 8758 | 06.20 |
| 09 67 025 4707 | 02.25 | 09 67 037 4755 | 02.04 | 09 67 215 5604 | 02.34 | 09 67 525 8758 | 06.18 | 09 67 650 8775 | 06.16 |
| 09 67 025 4715 | 02.34 | 09 67 037 5601 | 02.26 | 09 67 215 5615 | 02.34 | 09 67 525 8775 | 06.14 | 09 67 650 9615 | 06.10 |
| 09 67 025 4716 | 02.25 | 09 67 037 5604 | 02.34 |                |       | 09 67 525 9615 | 06.06 | 09 67 650 9658 | 06.20 |
| 09 67 025 4754 | 02.04 | 09 67 037 5607 | 02.25 |                |       | 09 67 525 9658 | 06.18 | 09 67 650 9675 | 06.16 |
| 09 67 025 4755 | 02.04 | 09 67 037 5615 | 02.34 | 09 67 225 4704 | 02.34 | 09 67 525 9675 | 06.14 |                |       |
| 09 67 025 5601 | 02.26 | 09 67 037 5616 | 02.25 | 09 67 225 4715 | 02.34 |                |       | 09 67 709 6715 | 06.08 |
| 09 67 025 5604 | 02.34 | 09 67 037 5654 | 02.04 | 09 67 225 5604 | 02.34 | 09 67 609 6715 | 06.10 | 09 67 709 7615 | 06.08 |
| 09 67 025 5607 | 02.25 | 09 67 037 5655 | 02.04 | 09 67 225 5615 | 02.34 | 09 67 609 6758 | 06.20 |                |       |



# List of part numbers



| Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  | Part No.       | Page  |
|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|
| 09 67 709 8715 | 06.08 | 09 68 353 5611 | 02.20 | 09 69 182 2550 | 04.23 | 09 69 281 7420 | 04.24 | 09 69 401 5136 | 04.11 |
| 09 67 709 9615 | 06.08 | 09 68 353 5612 | 02.20 | 09 69 182 5140 | 04.26 | 09 69 281 7421 | 04.24 | 09 69 401 5214 | 04.07 |
|                |       | 09 68 353 5613 | 02.20 | 09 69 182 5230 | 04.26 | 09 69 281 7422 | 04.24 | 09 69 401 5253 | 04.08 |
| 09 67 715 6715 | 06.08 | 09 68 353 7611 | 02.20 | 09 69 182 5232 | 04.26 | 09 69 281 7423 | 04.24 | 09 69 401 5272 | 04.07 |
| 09 67 715 7615 | 06.08 | 09 68 353 7612 | 02.20 | 09 69 182 5233 | 04.26 | 09 69 281 7821 | 04.24 | 09 69 401 7136 | 04.11 |
| 09 67 715 8715 | 06.08 | 09 68 353 7613 | 02.20 | 09 69 182 5420 | 04.24 | 09 69 281 7823 | 04.24 | 09 69 401 7214 | 04.07 |
| 09 67 715 9615 | 06.08 |                |       | 09 69 182 5421 | 04.24 |                |       | 09 69 401 7253 | 04.08 |
|                |       | 09 68 363 5811 | 02.20 | 09 69 182 5422 | 04.24 | 09 69 282 2550 | 04.23 | 09 69 401 7272 | 04.07 |
| 09 67 725 6715 | 06.08 | 09 68 363 5812 | 02.20 | 09 69 182 5423 | 04.24 | 09 69 282 5140 | 04.26 |                |       |
| 09 67 725 7615 | 06.08 | 09 68 363 5813 | 02.20 | 09 69 182 5821 | 04.24 | 09 69 282 5230 | 04.26 | 09 69 402 0214 | 04.17 |
| 09 67 725 8715 | 06.08 | 09 68 363 7811 | 02.20 | 09 69 182 5823 | 04.24 | 09 69 282 5232 | 04.26 | 09 69 402 0253 | 04.18 |
| 09 67 725 9615 | 06.08 | 09 68 363 7812 | 02.20 | 09 69 182 7140 | 04.26 | 09 69 282 5233 | 04.26 | 09 69 402 0272 | 04.17 |
|                |       | 09 68 363 7813 | 02.20 | 09 69 182 7230 | 04.26 | 09 69 282 5420 | 04.24 |                |       |
| 09 67 809 6715 | 06.12 |                |       | 09 69 182 7232 | 04.26 | 09 69 282 5421 | 04.24 | 09 69 410 0077 | 04.14 |
| 09 67 809 7615 | 06.12 | 09 68 453 5611 | 02.20 | 09 69 182 7233 | 04.26 | 09 69 282 5422 | 04.24 | 09 69 410 0088 | 04.14 |
| 09 67 809 8715 | 06.12 | 09 68 453 5612 | 02.20 | 09 69 182 7420 | 04.24 | 09 69 282 5423 | 04.24 |                |       |
| 09 67 809 9615 | 06.12 | 09 68 453 5613 | 02.20 | 09 69 182 7421 | 04.24 | 09 69 282 5821 | 04.24 | 09 69 411 5136 | 04.11 |
|                |       | 09 68 453 5613 | 02.20 | 09 69 182 7422 | 04.24 | 09 69 282 5823 | 04.24 | 09 69 411 5214 | 04.07 |
| 09 67 815 6715 | 06.12 | 09 68 453 7611 | 02.20 | 09 69 182 7423 | 04.24 | 09 69 282 7140 | 04.26 | 09 69 411 5253 | 04.08 |
| 09 67 815 7615 | 06.12 | 09 68 453 7612 | 02.20 | 09 69 182 7821 | 04.24 | 09 69 282 7230 | 04.26 | 09 69 411 5272 | 04.07 |
| 09 67 815 8715 | 06.12 | 09 68 453 7613 | 02.20 | 09 69 182 7823 | 04.24 | 09 69 282 7232 | 04.26 | 09 69 411 5272 | 04.07 |
| 09 67 815 9615 | 06.12 |                |       |                |       | 09 69 282 7233 | 04.26 | 09 69 411 7136 | 04.11 |
|                |       | 09 68 463 5811 | 02.20 | 09 69 187 0060 | 04.29 | 09 69 282 7233 | 04.26 | 09 69 411 7214 | 04.07 |
| 09 67 825 6715 | 06.12 | 09 68 463 5812 | 02.20 | 09 69 187 0061 | 04.29 | 09 69 282 7420 | 04.24 | 09 69 411 7253 | 04.08 |
| 09 67 825 7615 | 06.12 | 09 68 463 5813 | 02.20 | 09 69 187 0062 | 04.29 | 09 69 282 7421 | 04.24 | 09 69 411 7272 | 04.07 |
| 09 67 825 8715 | 06.12 | 09 68 463 7811 | 02.20 | 09 69 187 0062 | 04.29 | 09 69 282 7422 | 04.24 |                |       |
| 09 67 825 9615 | 06.12 | 09 68 463 7812 | 02.20 | 09 69 187 0063 | 04.29 | 09 69 282 7423 | 04.24 | 09 69 412 0214 | 04.17 |
|                |       | 09 68 463 7813 | 02.20 |                |       | 09 69 282 7821 | 04.24 | 09 69 412 0253 | 04.18 |
| 09 67 837 6715 | 06.12 |                |       | 09 69 200 0033 | 04.14 | 09 69 282 7823 | 04.24 | 09 69 412 0272 | 04.17 |
| 09 67 837 7615 | 06.12 |                |       | 09 69 200 0633 | 04.16 |                |       |                |       |
| 09 67 837 8715 | 06.12 | 09 69 100 0022 | 04.15 | 09 69 201 5072 | 04.07 | 09 69 287 0060 | 04.29 | 09 69 501 5247 | 04.12 |
| 09 67 837 9615 | 06.12 | 09 69 100 0522 | 04.14 | 09 69 201 5111 | 04.10 | 09 69 287 0061 | 04.29 | 09 69 501 5364 | 04.13 |
|                |       |                |       | 09 69 201 7072 | 04.07 | 09 69 287 0062 | 04.29 | 09 69 501 5432 | 04.13 |
| 09 67 850 6715 | 06.12 | 09 69 101 5051 | 04.10 | 09 69 201 7111 | 04.10 | 09 69 287 0063 | 04.29 | 09 69 501 7247 | 04.12 |
| 09 67 850 7615 | 06.12 | 09 69 101 7051 | 04.10 |                |       |                |       | 09 69 501 7364 | 04.13 |
| 09 67 850 8715 | 06.12 |                |       | 09 69 202 0072 | 04.17 | 09 69 300 0055 | 04.14 | 09 69 501 7432 | 04.13 |
| 09 67 850 9615 | 06.12 |                |       | 09 69 202 0111 | 04.19 |                |       |                |       |
|                |       | 09 69 110 0022 | 04.15 |                |       | 09 69 301 5094 | 04.08 |                |       |
|                |       | 09 69 110 0522 | 04.14 | 09 69 210 0033 | 04.14 | 09 69 301 5133 | 04.08 | 09 69 502 0364 | 04.20 |
| 09 68 153 5611 | 02.20 |                |       | 09 69 210 0633 | 04.16 | 09 69 301 5172 | 04.07 |                |       |
| 09 68 153 5612 | 02.20 | 09 69 111 5051 | 04.10 |                |       | 09 69 301 5211 | 04.10 | 09 69 511 5247 | 04.12 |
| 09 68 153 5613 | 02.20 | 09 69 111 7051 | 04.10 | 09 69 211 5072 | 04.07 | 09 69 301 7094 | 04.08 | 09 69 511 5364 | 04.13 |
| 09 68 153 7611 | 02.20 |                |       | 09 69 211 5111 | 04.10 | 09 69 301 7133 | 04.08 | 09 69 511 5432 | 04.13 |
| 09 68 153 7612 | 02.20 | 09 69 181 2550 | 04.23 | 09 69 211 7072 | 04.07 | 09 69 301 7172 | 04.07 | 09 69 511 7247 | 04.12 |
| 09 68 153 7613 | 02.20 | 09 69 181 5140 | 04.26 | 09 69 211 7111 | 04.10 | 09 69 301 7211 | 04.10 | 09 69 511 7364 | 04.13 |
|                |       | 09 69 181 5141 | 04.26 |                |       |                |       | 09 69 511 7432 | 04.13 |
| 09 68 163 5811 | 02.20 | 09 69 181 5143 | 04.26 | 09 69 212 0072 | 04.17 | 09 69 302 0133 | 04.18 |                |       |
| 09 68 163 5812 | 02.20 | 09 69 181 5230 | 04.26 | 09 69 212 0111 | 04.19 | 09 69 302 0172 | 04.17 | 09 69 512 0364 | 04.20 |
| 09 68 163 5813 | 02.20 | 09 69 181 5233 | 04.26 |                |       | 09 69 302 0211 | 04.19 |                |       |
| 09 68 163 7811 | 02.20 | 09 69 181 5420 | 04.24 | 09 69 281 2550 | 04.23 | 09 69 310 0055 | 04.14 | 09 69 581 2550 | 04.23 |
| 09 68 163 7812 | 02.20 | 09 69 181 5421 | 04.24 | 09 69 281 5140 | 04.26 |                |       |                |       |
| 09 68 163 7813 | 02.20 | 09 69 181 5422 | 04.24 | 09 69 281 5141 | 04.26 | 09 69 311 5094 | 04.08 | 09 69 681 2550 | 04.23 |
|                |       | 09 69 181 5423 | 04.24 | 09 69 281 5143 | 04.26 | 09 69 311 5133 | 04.08 |                |       |
| 09 68 253 5611 | 02.20 | 09 69 181 5821 | 04.24 | 09 69 281 5230 | 04.26 | 09 69 311 5172 | 04.07 |                |       |
| 09 68 253 5612 | 02.20 | 09 69 181 5823 | 04.24 | 09 69 281 5233 | 04.26 | 09 69 311 5211 | 04.10 |                |       |
| 09 68 253 5613 | 02.20 | 09 69 181 7140 | 04.26 | 09 69 281 5233 | 04.26 | 09 69 311 5211 | 04.10 | 09 89 040 0000 | 30.04 |
| 09 68 253 7611 | 02.20 | 09 69 181 7141 | 04.26 | 09 69 281 5420 | 04.24 | 09 69 311 7094 | 04.08 |                |       |
| 09 68 253 7612 | 02.20 | 09 69 181 7143 | 04.26 | 09 69 281 5421 | 04.24 | 09 69 311 7133 | 04.08 |                |       |
| 09 68 253 7613 | 02.20 | 09 69 181 7230 | 04.26 | 09 69 281 5422 | 04.24 | 09 69 311 7172 | 04.07 |                |       |
|                |       | 09 69 181 7233 | 04.26 | 09 69 281 5423 | 04.24 | 09 69 311 7211 | 04.10 | 09 98 000 3004 | 31.07 |
| 09 68 263 5811 | 02.20 | 09 69 181 7420 | 04.24 | 09 69 281 5821 | 04.24 |                |       | 09 98 000 3005 | 31.07 |
| 09 68 263 5812 | 02.20 | 09 69 181 7421 | 04.24 | 09 69 281 5823 | 04.24 | 09 69 312 0133 | 04.18 | 09 98 000 3006 | 31.07 |
| 09 68 263 5813 | 02.20 | 09 69 181 7422 | 04.24 | 09 69 281 7140 | 04.26 | 09 69 312 0172 | 04.17 | 09 98 000 3007 | 31.07 |
| 09 68 263 7811 | 02.20 | 09 69 181 7423 | 04.24 | 09 69 281 7141 | 04.26 | 09 69 312 0211 | 04.19 | 09 98 000 3008 | 31.07 |
| 09 68 263 7812 | 02.20 | 09 69 181 7821 | 04.24 | 09 69 281 7143 | 04.26 |                |       | 09 98 000 3009 | 31.07 |
| 09 68 263 7813 | 02.20 | 09 69 181 7823 | 04.24 | 09 69 281 7230 | 04.26 | 09 69 400 0077 | 04.14 | 09 98 000 3012 | 31.07 |
|                |       |                |       | 09 69 281 7233 | 04.26 | 09 69 400 0088 | 04.14 | 09 98 000 5000 | 31.06 |

Part No.

| Part No.       | Page  | Part No.           | Page  | Part No.           | Page  | Part No.           | Page  | Part No.       | Page  |
|----------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|----------------|-------|
| 09 99 000 0114 | 32.04 | 09 99 000 0508     | 31.09 | 33 18 243 0500 055 | 40.10 | 33 60 212 1000 106 | 40.04 | 60 02 068 5120 | 01.05 |
| 09 99 000 0114 | 32.05 | 09 99 000 0509     | 31.08 | 33 18 243 0500 060 | 40.10 | 33 60 212 1500 107 | 40.04 | 60 02 068 5120 | 22.06 |
| 09 99 000 0114 | 32.06 | 09 99 000 0510     | 30.12 | 33 18 243 0500 065 | 40.10 | 33 60 212 2000 108 | 40.04 | 60 02 068 5141 | 01.07 |
| 09 99 000 0115 | 32.06 | 09 99 000 0511     | 31.10 | 33 18 243 0800 066 | 40.10 |                    |       | 60 02 068 5150 | 01.07 |
| 09 99 000 0116 | 32.04 | 09 99 000 0512     | 31.10 | 33 18 243 1000 057 | 40.10 | 33 60 213 1000 103 | 40.04 | 60 02 068 5322 | 20.06 |
| 09 99 000 0116 | 32.05 | 09 99 000 0513     | 31.04 | 33 18 243 1000 062 | 40.10 | 33 60 213 2000 104 | 40.04 |                |       |
| 09 99 000 0116 | 32.06 | 09 99 000 0514     | 30.12 | 33 18 243 1000 067 | 40.10 | 33 60 213 5000 105 | 40.04 | 60 02 100 5141 | 01.07 |
| 09 99 000 0130 | 32.06 | 09 99 000 0515     | 31.08 | 33 18 243 1500 068 | 40.10 |                    |       | 60 02 100 5150 | 01.07 |
| 09 99 000 0131 | 32.06 | 09 99 000 0516     | 30.12 | 33 18 243 1500 069 | 40.10 |                    |       |                |       |
| 09 99 000 0133 | 09.16 | 09 99 000 0518     | 31.09 |                    |       | 33 60 214 5000 088 | 40.04 |                |       |
| 09 99 000 0133 | 09.20 | 09 99 000 0519     | 31.08 |                    |       | 33 60 214 5000 102 | 40.04 | 60 03 ... 5200 | 32.02 |
| 09 99 000 0133 | 09.23 | 09 99 000 0519     | 31.09 |                    |       |                    |       | 60 03 ... 5205 | 32.02 |
| 09 99 000 0133 | 22.32 | 09 99 000 0520     | 30.12 | 33 27 243 0500 001 | 00.08 |                    |       | 60 03 ... 5210 | 32.02 |
| 09 99 000 0134 | 32.06 | 09 99 000 0521     | 31.08 | 33 27 243 0500 001 | 40.02 | 33 60 223 1000 181 | 40.05 | 60 03 ... 5215 | 32.02 |
| 09 99 000 0135 | 32.05 | 09 99 000 0522     | 31.08 | 33 27 243 0500 006 | 00.08 | 33 60 223 1000 187 | 40.05 | 60 03 ... 5220 | 32.02 |
| 09 99 000 0149 | 32.05 | 09 99 000 0523     | 30.10 | 33 27 243 0500 006 | 40.02 | 33 60 223 1000 192 | 40.05 |                |       |
| 09 99 000 0149 | 32.06 | 09 99 000 0526     | 30.12 | 33 27 243 0500 015 | 00.08 | 33 60 223 1500 182 | 40.05 |                |       |
| 09 99 000 0150 | 32.06 | 09 99 000 0531     | 31.05 | 33 27 243 0500 015 | 40.02 | 33 60 223 1500 188 | 40.05 | 60 03 020 0255 | 01.16 |
| 09 99 000 0158 | 31.04 | 09 99 000 0531     | 31.08 | 33 27 243 1000 002 | 00.08 | 33 60 223 1500 193 | 40.05 | 60 03 020 0555 | 01.17 |
| 09 99 000 0169 | 31.04 | 09 99 000 0533     | 31.10 | 33 27 243 1000 002 | 40.02 | 33 60 223 2000 183 | 40.05 | 60 03 020 5200 | 01.09 |
| 09 99 000 0171 | 31.12 | 09 99 000 0534     | 30.12 | 33 27 243 1000 007 | 00.08 | 33 60 223 2000 189 | 40.05 | 60 03 020 5210 | 01.09 |
| 09 99 000 0171 | 31.04 | 09 99 000 0535     | 31.04 | 33 27 243 1000 007 | 40.02 | 33 60 223 2000 194 | 40.05 | 60 03 020 5220 | 01.09 |
| 09 99 000 0175 | 31.04 | 09 99 000 0540     | 30.12 | 33 27 243 1000 016 | 00.08 | 33 60 223 5000 184 | 40.05 |                |       |
| 09 99 000 0179 | 32.04 | 09 99 000 0550     | 30.12 | 33 27 243 1000 016 | 40.02 | 33 60 223 5000 190 | 40.05 | 60 03 026 0255 | 01.16 |
| 09 99 000 0179 | 32.05 | 09 99 000 0560     | 30.12 | 33 27 243 2000 003 | 00.08 | 33 60 223 5000 195 | 40.05 | 60 03 026 0555 | 01.17 |
| 09 99 000 0179 | 32.06 | 09 99 000 0564     | 30.12 | 33 27 243 2000 003 | 40.02 |                    |       | 60 03 026 5200 | 01.09 |
| 09 99 000 0180 | 32.04 | 09 99 000 0597     | 31.04 | 33 27 243 2000 008 | 00.08 |                    |       | 60 03 026 5220 | 01.09 |
| 09 99 000 0180 | 32.05 | 09 99 000 0600     | 30.10 | 33 27 243 2000 008 | 40.02 | 33 60 224 5000 180 | 40.05 |                |       |
| 09 99 000 0180 | 32.06 | 09 99 000 0710     | 30.11 | 33 27 243 2000 017 | 00.08 | 33 60 224 5000 186 | 40.05 | 60 03 036 0255 | 01.16 |
| 09 99 000 0197 | 30.09 | 09 99 000 0714     | 30.11 | 33 27 243 2000 017 | 40.02 | 33 60 224 5000 191 | 40.05 |                |       |
| 09 99 000 0201 | 30.09 | 09 99 000 0716     | 30.11 |                    |       |                    |       | 60 03 050 0143 | 01.16 |
| 09 99 000 0215 | 07.06 | 09 99 000 0720     | 30.11 |                    |       |                    |       | 60 03 050 0255 | 01.16 |
| 09 99 000 0216 | 07.06 | 09 99 000 0726     | 30.11 | 33 56 212 0050 028 | 40.08 | 33 66 213 1000 059 | 40.09 | 60 03 050 0555 | 01.17 |
| 09 99 000 0218 | 30.12 | 09 99 000 0734     | 30.11 | 33 56 212 0050 032 | 40.08 | 33 66 213 1500 060 | 40.09 | 60 03 050 5200 | 01.09 |
| 09 99 000 0220 | 30.12 | 09 99 000 0740     | 30.11 | 33 56 212 0100 033 | 40.08 | 33 66 213 2000 061 | 40.09 | 60 03 050 5210 | 01.09 |
| 09 99 000 0233 | 31.13 | 09 99 000 0750     | 30.11 | 33 56 212 0500 029 | 40.08 | 33 66 213 5000 062 | 40.09 | 60 03 050 5220 | 01.09 |
| 09 99 000 0235 | 31.13 | 09 99 000 0760     | 30.11 | 33 56 212 0500 034 | 40.08 |                    |       |                |       |
| 09 99 000 0236 | 31.13 | 09 99 000 0764     | 30.11 | 33 56 212 1000 027 | 40.08 | 33 66 214 5000 058 | 40.09 | 60 03 068 0143 | 01.16 |
| 09 99 000 0237 | 31.13 |                    |       | 33 56 212 1000 030 | 40.08 |                    |       | 60 03 068 0145 | 01.16 |
| 09 99 000 0246 | 31.04 | 09 99 600 0201     | 32.05 | 33 56 212 1000 035 | 40.08 |                    |       | 60 03 068 0255 | 01.16 |
| 09 99 000 0253 | 31.04 | 09 99 600 0709     | 30.10 | 33 56 212 2000 031 | 40.08 |                    |       | 60 03 068 0555 | 01.17 |
| 09 99 000 0255 | 30.09 | 09 99 600 0715     | 30.10 | 33 56 212 2000 036 | 40.08 |                    |       | 60 03 068 0655 | 01.17 |
| 09 99 000 0256 | 30.12 | 09 99 600 0725     | 30.10 |                    |       | 60 01 000 9013     | 01.20 | 60 03 068 5205 | 01.09 |
| 09 99 000 0282 | 30.09 |                    |       | 33 56 213 0500 023 | 40.08 | 60 01 000 9018     | 01.20 | 60 03 068 5215 | 01.09 |
| 09 99 000 0406 | 30.12 |                    |       | 33 56 213 1000 002 | 40.08 | 60 01 000 9019     | 01.20 |                |       |
| 09 99 000 0410 | 30.12 | 27 11 122 2001     | 00.07 | 33 56 213 1000 024 | 40.08 | 60 01 000 9020     | 01.20 | 60 03 100 0143 | 01.16 |
| 09 99 000 0414 | 30.12 |                    |       | 33 56 213 1500 022 | 40.08 | 60 01 000 9021     | 01.20 | 60 03 100 5210 | 01.09 |
| 09 99 000 0416 | 30.12 |                    |       | 33 56 213 2000 016 | 40.08 | 60 01 000 9030     | 01.20 |                |       |
| 09 99 000 0420 | 30.12 | 27 21 121 8000     | 00.07 | 33 56 213 2000 025 | 40.08 |                    |       |                |       |
| 09 99 000 0426 | 30.12 | 27 21 121 8002     | 00.07 | 33 56 213 5000 026 | 40.08 | 60 01 020 5102     | 01.04 | 60 04 050 5343 | 01.08 |
| 09 99 000 0434 | 30.12 | 27 21 121 8004     | 00.07 |                    |       | 60 01 020 5132     | 01.06 | 60 04 050 5344 | 01.08 |
| 09 99 000 0440 | 30.12 | 27 21 121 8005     | 00.07 |                    |       | 60 01 020 5140     | 01.06 |                |       |
| 09 99 000 0450 | 30.12 | 27 21 121 8006     | 00.07 | 33 56 221 0010 001 | 40.09 |                    |       | 60 04 068 5343 | 01.08 |
| 09 99 000 0460 | 30.12 | 27 21 121 8010     | 00.07 | 33 56 221 0020 001 | 40.09 |                    |       | 60 04 068 5344 | 01.08 |
| 09 99 000 0464 | 30.12 |                    |       | 33 56 221 0050 001 | 40.09 |                    |       |                |       |
| 09 99 000 0501 | 31.05 |                    |       |                    |       | 60 01 026 5102     | 01.04 |                |       |
| 09 99 000 0501 | 31.08 | 27 71 040 0001     | 00.08 |                    |       | 60 01 026 5132     | 01.06 | 60 05 068 5100 | 01.23 |
| 09 99 000 0501 | 31.09 | 27 71 040 0002     | 00.08 | 33 56 224 5000 001 | 40.09 | 60 01 026 5140     | 01.06 | 60 05 068 5100 | 22.07 |
| 09 99 000 0501 | 31.10 |                    |       |                    |       |                    |       | 60 05 068 5322 | 20.07 |
| 09 99 000 0503 | 31.08 |                    |       |                    |       | 60 01 050 5102     | 01.04 |                |       |
| 09 99 000 0503 | 31.09 | 27 99 000 0001     | 32.02 | 33 60 211 0010 089 | 40.04 | 60 01 050 5132     | 01.06 |                |       |
| 09 99 000 0504 | 31.08 |                    |       | 33 60 211 0020 090 | 40.04 | 60 01 050 5140     | 01.06 | 60 06 050 5440 | 01.24 |
| 09 99 000 0506 | 30.12 |                    |       | 33 60 211 0050 091 | 40.04 |                    |       | 60 06 050 9001 | 01.24 |
| 09 99 000 0507 | 31.09 |                    |       | 33 60 211 0100 092 | 40.04 |                    |       |                |       |
| 09 99 000 0507 | 31.10 | 33 18 243 0100 063 | 40.10 | 33 60 211 0150 093 | 40.04 | 60 01 068 5102     | 01.04 | 60 06 068 5440 | 01.24 |
| 09 99 000 0508 | 31.08 | 33 18 243 0200 064 | 40.10 | 33 60 211 0200 094 | 40.04 | 60 01 068 5132     | 01.06 | 60 06 068 9001 | 01.24 |
|                |       |                    |       |                    |       | 60 01 068 5140     | 01.06 |                |       |

| Part No.           | Page  | Part No.           | Page  | Part No.       | Page  | Part No.           | Page  | Part No.       | Page  |
|--------------------|-------|--------------------|-------|----------------|-------|--------------------|-------|----------------|-------|
| 60 11 014 5732     | 01.13 | 60 13 014 0146 110 | 01.19 | 61 03 000 0045 | 07.20 | 61 03 000 5165     | 07.20 | 61 03 600 0017 | 31.12 |
| 60 11 014 5732     | 22.09 | 60 13 014 0146 351 | 01.19 | 61 03 000 0046 | 07.20 | 61 03 000 5166     | 07.20 | 61 03 600 0018 | 31.12 |
| 60 11 014 5732 710 | 01.13 | 60 13 014 0153 351 | 01.18 | 61 03 000 0047 | 07.20 |                    |       | 61 03 600 0020 | 31.12 |
| 60 11 014 5732 710 | 22.09 | 60 13 014 5205     | 01.14 | 61 03 000 0048 | 07.20 |                    |       | 61 03 600 0021 | 31.12 |
| 60 11 014 5740     | 01.13 | 60 13 014 5215     | 01.14 | 61 03 000 0049 | 07.20 | 61 03 001 0010     | 07.11 |                |       |
| 60 11 014 5740     | 22.09 |                    |       | 61 03 000 0050 | 07.20 | 61 03 001 0010 010 | 07.11 |                |       |
| 60 11 014 5740 710 | 01.13 | 60 13 020 0153     | 01.18 | 61 03 000 0051 | 07.20 | 61 03 001 0011     | 07.16 |                |       |
| 60 11 014 5740 710 | 22.09 | 60 13 020 5200     | 01.14 | 61 03 000 0052 | 07.20 | 61 03 001 0012     | 07.16 |                |       |
|                    |       |                    |       | 61 03 000 0053 | 07.20 | 61 03 001 0013     | 07.11 | 66 63 009 5013 | 07.22 |
| 60 11 020 5732     | 01.13 | 60 13 026 0146 110 | 01.19 | 61 03 000 0054 | 07.20 | 61 03 001 0013 010 | 07.11 | 66 63 009 5014 | 07.22 |
| 60 11 020 5732     | 22.09 | 60 13 026 0146 351 | 01.19 | 61 03 000 0055 | 07.20 | 61 03 001 0014     | 07.11 | 66 63 009 5017 | 07.24 |
| 60 11 020 5732 710 | 01.13 | 60 13 026 0153 351 | 01.18 | 61 03 000 0056 | 07.20 | 61 03 001 0015     | 07.11 | 66 63 009 5018 | 07.24 |
| 60 11 020 5732 710 | 22.09 | 60 13 026 0555     | 01.18 | 61 03 000 0057 | 07.20 | 61 03 001 0016     | 07.11 | 66 63 009 6004 | 07.23 |
| 60 11 020 5740     | 01.13 | 60 13 026 5205     | 01.14 | 61 03 000 0058 | 07.20 | 61 03 001 0017     | 07.11 | 66 63 009 6016 | 07.23 |
| 60 11 020 5740     | 22.09 | 60 13 026 5215     | 01.14 | 61 03 000 0059 | 07.20 | 61 03 001 0018     | 07.11 |                |       |
| 60 11 020 5740 710 | 01.13 |                    |       | 61 03 000 0060 | 07.20 | 61 03 001 0019     | 07.11 |                |       |
| 60 11 020 5740 710 | 22.09 | 60 13 036 0146 110 | 01.19 | 61 03 000 0061 | 07.20 | 61 03 001 0020     | 07.16 | 66 67 009 0346 | 07.12 |
|                    |       | 60 13 036 0146 351 | 01.19 | 61 03 000 0062 | 07.20 | 61 03 001 0021     | 07.16 | 66 67 009 0347 | 07.12 |
|                    |       | 60 13 036 0153 351 | 01.18 | 61 03 000 0063 | 07.20 | 61 03 001 0022     | 07.16 |                |       |
| 60 11 026 5102     | 01.11 | 60 13 036 5205     | 01.14 | 61 03 000 0064 | 07.20 | 61 03 001 0118     | 07.12 |                |       |
| 60 11 026 5732     | 01.13 | 60 13 036 5215     | 01.14 | 61 03 000 0065 | 07.20 | 61 03 001 0118 010 | 07.12 |                |       |
| 60 11 026 5732     | 22.09 |                    |       | 61 03 000 0066 | 07.20 | 61 03 001 0119     | 07.12 |                |       |
| 60 11 026 5732 710 | 01.13 | 60 13 050 0153     | 01.18 | 61 03 000 0067 | 07.20 | 61 03 001 0119 010 | 07.12 |                |       |
| 60 11 026 5732 710 | 22.09 | 60 13 050 5200     | 01.14 | 61 03 000 0068 | 07.20 | 61 03 001 1010     | 07.11 |                |       |
| 60 11 026 5740     | 01.13 |                    |       | 61 03 000 0069 | 07.20 | 61 03 001 1010 010 | 07.11 |                |       |
| 60 11 026 5740     | 22.09 | 60 13 068 0153     | 01.18 | 61 03 000 0070 | 07.20 | 61 03 001 1010 123 | 07.19 |                |       |
| 60 11 026 5740 710 | 01.13 | 60 13 068 5200     | 01.14 | 61 03 000 0071 | 07.20 | 61 03 001 1013     | 07.11 |                |       |
| 60 11 026 5740 710 | 22.09 |                    |       | 61 03 000 0072 | 07.20 | 61 03 001 1013 010 | 07.11 |                |       |
|                    |       |                    |       | 61 03 000 0078 | 07.20 | 61 03 001 1014     | 07.11 |                |       |
| 60 11 036 5102     | 01.11 | 60 90 005 6009     | 40.03 | 61 03 000 0098 | 31.12 | 61 03 001 1015     | 07.11 |                |       |
| 60 11 036 5732     | 01.13 | 60 90 005 6010     | 40.03 | 61 03 000 0099 | 31.12 | 61 03 001 1016     | 07.11 |                |       |
| 60 11 036 5732     | 22.09 |                    |       | 61 03 000 0100 | 31.12 | 61 03 001 1017     | 07.11 |                |       |
| 60 11 036 5732 710 | 01.13 | 60 90 010 6010     | 40.03 | 61 03 000 0101 | 31.12 | 61 03 001 1018     | 07.11 |                |       |
| 60 11 036 5732 710 | 22.09 |                    |       | 61 03 000 0102 | 31.12 | 61 03 001 1019     | 07.11 |                |       |
| 60 11 036 5740     | 01.13 | 60 90 013 6010     | 40.03 | 61 03 000 0103 | 31.12 | 61 03 001 1118     | 07.12 |                |       |
| 60 11 036 5740     | 22.09 |                    |       | 61 03 000 0104 | 31.12 | 61 03 001 1118 010 | 07.12 |                |       |
| 60 11 036 5740 710 | 01.13 | 60 90 018 6010     | 40.03 | 61 03 000 0105 | 31.12 | 61 03 001 1119     | 07.12 |                |       |
| 60 11 036 5740 710 | 22.09 |                    |       | 61 03 000 0127 | 07.20 | 61 03 001 1119 010 | 07.12 |                |       |
|                    |       | 60 90 025 6010     | 40.03 | 61 03 000 0141 | 07.20 | 61 03 001 2010     | 07.11 |                |       |
| 60 11 050 5102     | 01.11 |                    |       | 61 03 000 0142 | 07.20 | 61 03 001 2010 010 | 07.11 |                |       |
| 60 11 050 5732     | 01.13 | 60 90 034 6010     | 40.03 | 61 03 000 0143 | 07.20 | 61 03 001 2010 123 | 07.19 |                |       |
| 60 11 050 5732     | 22.09 |                    |       | 61 03 000 0145 | 07.20 | 61 03 001 2013     | 07.11 |                |       |
| 60 11 050 5732 710 | 01.13 | 60 90 050 6008     | 40.06 | 61 03 000 0165 | 07.20 | 61 03 001 2013 010 | 07.11 |                |       |
| 60 11 050 5732 710 | 22.09 | 60 90 050 6010     | 40.03 | 61 03 000 0166 | 07.20 | 61 03 001 2014     | 07.11 |                |       |
| 60 11 050 5740     | 01.13 |                    |       | 61 03 000 0168 | 31.12 | 61 03 001 2015     | 07.11 |                |       |
| 60 11 050 5740     | 22.09 | 60 90 068 6008     | 40.06 | 61 03 000 0169 | 31.12 | 61 03 001 2016     | 07.11 |                |       |
| 60 11 050 5740 710 | 01.13 |                    |       | 61 03 000 0172 | 31.12 | 61 03 001 2017     | 07.11 |                |       |
| 60 11 050 5740 710 | 22.09 |                    |       | 61 03 000 0173 | 31.12 | 61 03 001 2018     | 07.11 |                |       |
|                    |       | 60 99 000 0007     | 32.03 | 61 03 000 0174 | 31.12 | 61 03 001 2019     | 07.11 |                |       |
|                    |       | 60 99 000 0010     | 32.02 | 61 03 000 0175 | 31.12 | 61 03 001 2118     | 07.12 |                |       |
|                    |       | 60 99 000 0010     | 32.03 | 61 03 000 0176 | 31.12 | 61 03 001 2118 010 | 07.12 |                |       |
| 60 11 068 5102     | 01.11 | 60 99 000 0011     | 32.02 | 61 03 000 0177 | 31.12 | 61 03 001 2119     | 07.12 |                |       |
| 60 11 068 5732     | 01.13 | 60 99 000 0011     | 32.03 | 61 03 000 0178 | 31.12 | 61 03 001 2119 010 | 07.12 |                |       |
| 60 11 068 5732     | 22.09 | 60 99 000 0016     | 32.02 | 61 03 000 0179 | 31.12 | 61 03 001 3010     | 07.11 |                |       |
| 60 11 068 5732 710 | 01.13 | 60 99 000 0016     | 32.03 | 61 03 000 0180 | 31.12 | 61 03 001 3010 010 | 07.11 |                |       |
| 60 11 068 5732 710 | 22.09 | 60 99 000 0017     | 32.02 | 61 03 000 5062 | 07.20 | 61 03 001 3013     | 07.11 |                |       |
| 60 11 068 5739     | 22.10 | 60 99 000 0017     | 32.03 | 61 03 000 5063 | 07.20 | 61 03 001 3013 010 | 07.11 |                |       |
| 60 11 068 5740     | 01.13 | 60 99 000 0031     | 30.10 | 61 03 000 5064 | 07.20 | 61 03 001 3014     | 07.11 |                |       |
| 60 11 068 5740     | 22.09 | 60 99 000 0032     | 30.10 | 61 03 000 5065 | 07.20 | 61 03 001 3015     | 07.11 |                |       |
| 60 11 068 5740 710 | 01.13 | 60 99 000 0034     | 32.04 | 61 03 000 5066 | 07.20 | 61 03 001 3016     | 07.11 |                |       |
| 60 11 068 5740 710 | 22.09 | 60 99 000 0038     | 32.03 | 61 03 000 5067 | 07.20 | 61 03 001 3017     | 07.11 |                |       |
| 60 11 068 5749     | 22.10 |                    |       | 61 03 000 5068 | 07.20 | 61 03 001 3018     | 07.11 |                |       |
|                    |       |                    |       | 61 03 000 5069 | 07.20 | 61 03 001 3019     | 07.11 |                |       |
| 60 13 ... 5200     | 32.02 | 61 03 000 0041     | 07.20 | 61 03 000 5070 | 07.20 | 61 03 001 3118     | 07.12 |                |       |
| 60 13 ... 5205     | 32.02 | 61 03 000 0042     | 07.20 | 61 03 000 5071 | 07.20 | 61 03 001 3118 010 | 07.12 |                |       |
| 60 13 ... 5215     | 32.02 | 61 03 000 0044     | 07.20 | 61 03 000 5072 | 07.20 | 61 03 001 3119     | 07.12 |                |       |
|                    |       |                    |       |                |       | 61 03 001 3119 010 | 07.12 |                |       |

Please send me further information:



**Interface Connectors**



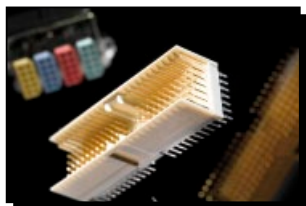
**Device Connectivity**



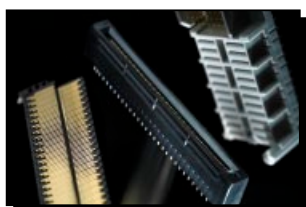
**Industrial Connectors Han®**



**Connectors  
DIN 41612**



**Coaxial and Metric  
Connectors**



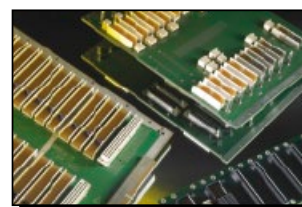
**TCA Connectors**



**Intelligent Network  
Solutions**



**Application  
brochure**



**High Speed  
Backplanes**

Sender:

Company: \_\_\_\_\_

Department: \_\_\_\_\_

Name: \_\_\_\_\_

Prenome: \_\_\_\_\_

Function: \_\_\_\_\_

Street: \_\_\_\_\_

Postcode/Town: \_\_\_\_\_

Country: \_\_\_\_\_

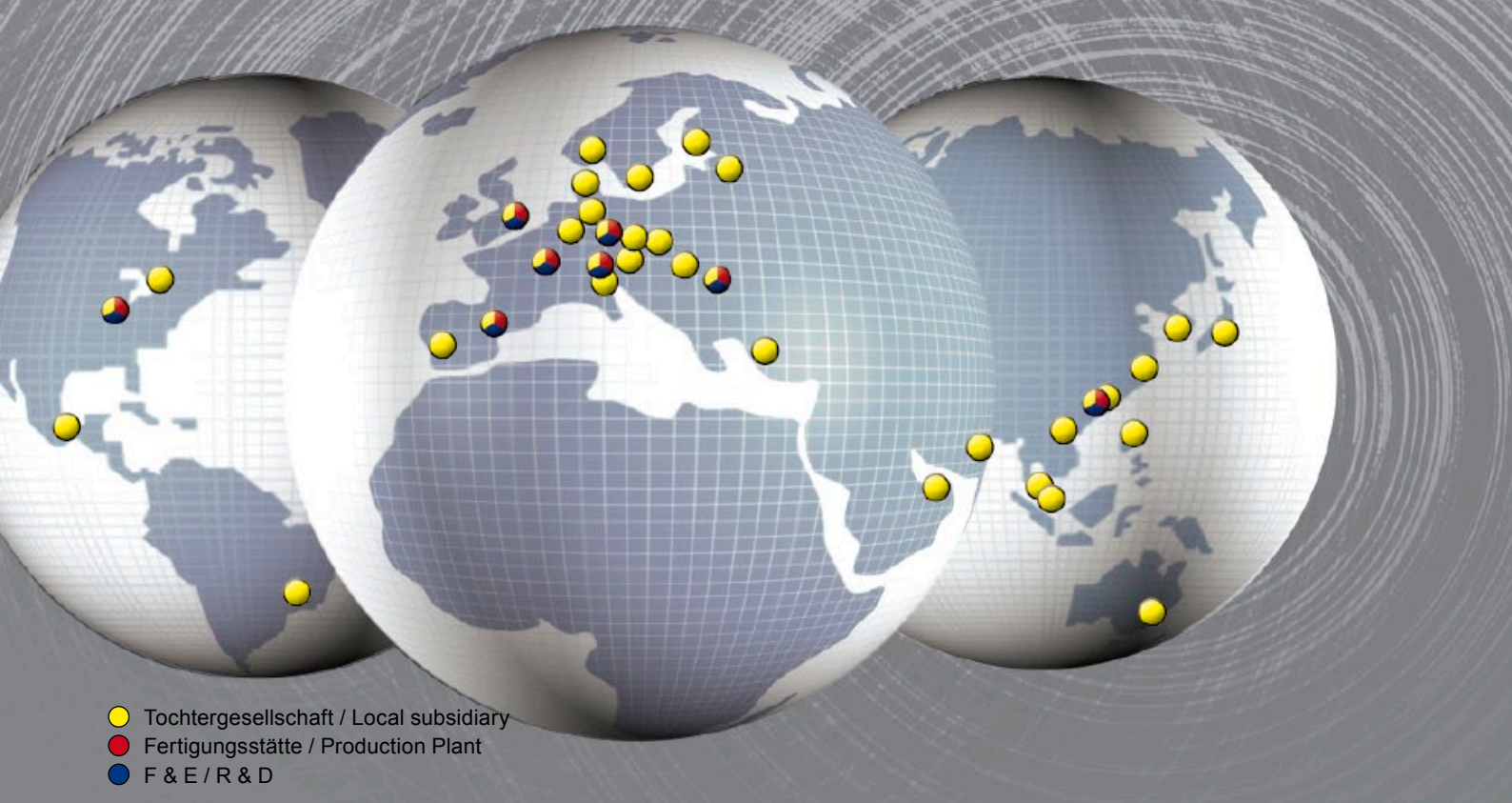
Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

E-Mail: \_\_\_\_\_

***Please send it by post or fax to your local HARTING representatives (see page addresses) or visit us under [www.HARTING.com](http://www.HARTING.com).***





## Sales Network – worldwide



### **Afghanistan**

see United Arab Emirates

**Albania:** see Eastern Europe

### **Argentina**

Condelectric S.A.  
Hipólito Yrigoyen 2591, 1640 - Martínez  
Buenos Aires – Argentina  
Phone +54 11 4836 1053  
Fax +54 11 4836 1053  
comercial@condelectric.com.ar

**Armenia:** see Eastern Europe

### **Australia**

HARTING Pty Ltd  
Suite 11 / 2 Enterprise Drive  
Bundoora 3083, AUS-Victoria  
Phone +61 3 9466 7088  
Fax +61 3 9466 7099  
au@HARTING.com  
www.HARTING.com.au

### **Austria**

HARTING Ges.m.b.H.  
Deutschstraße 19, A-1230 Wien  
Phone +431 6162121  
Fax +431 6162121-21  
at@HARTING.com  
www.HARTING.at

**Azerbaijan:** see Eastern Europe

**Bahrain:** see United Arab Emirates

### **Belgium**

HARTING N.V./S.A.  
Z.3 Doornveld 23, B-1731 Zellik  
Phone +32 2 466 0190  
Fax +32 2 466 7855  
be@HARTING.com  
www.HARTING.be

### **Bosnia and Herzegovina**

see Eastern Europe

### **Brazil**

HARTING Ltda.  
Rua Major Paladino 128 –  
Prédio 11  
CEP 05307-000 – São Paulo –  
SP – Brasil  
Phone +55 11 5035 0073  
Fax +55 11 5034 4743  
br@HARTING.com  
www.HARTING.com.br

**Brunei:** see Singapore

**Bulgaria:** see Eastern Europe

### **Canada**

HARTING Canada Inc.  
8455 Trans-Canada Hwy., Suite 202 St.  
Laurent, QC, H4S1Z1, Canada  
Phone 855-659-6653,  
Fax 855-659-6654  
info.ca@HARTING.com  
www.HARTING.ca

### **China**

HARTING (Zhuhai)  
Manufacturing Co., Ltd.  
Shanghai Branch, Room 3501- 3503,  
No. 1, Hong Qiao Road, Grand Gateway I  
Xu Hui District, Shanghai 200030, China  
Phone +86 21 6386 2200  
Fax +86 21 6386 8636  
cn@HARTING.com  
www.HARTING.com.cn

**Croatia:** see Eastern Europe

### **Czech Republic**

HARTING s.r.o.  
Mlýnská 2, CZ-160 00 Praha 6  
Phone +420 220 380 460  
Fax +420 220 380 461  
cz@HARTING.com  
www.HARTING.cz

### **Denmark**

HARTING ApS  
Hjulgagervej 4a  
DK - 7100 Vejle  
Phone +45 70 25 00 32  
Fax +45 75 80 64 99  
dk@HARTING.com  
www.HARTING.dk

### **Eastern Europe**

HARTING Eastern Europe GmbH  
Bamberger Straße 7  
D-01187 Dresden  
Phone +49 351 4361 760  
Fax +49 351 436 1770  
Eastern.Europe@HARTING.com  
www.HARTING.com

**Egypt:** see United Arab Emirates

**Estonia:** see Eastern Europe

## **Finland**

HARTING Oy  
Teknobulevardi 3-5  
FI-01530 Vantaa  
Phone +358 207 291 510  
Fax +358 207 291 511  
fi@HARTING.com  
www.HARTING.fi

## **France**

HARTING France  
181 avenue des Nations, Paris Nord 2  
BP 66058 Tremblay en France  
F-95972 Roissy Charles de Gaulle Cédex  
Phone +33 1 4938 3400  
Fax +33 1 4863 2306  
fr@HARTING.com  
www.HARTING.fr

## **Germany**

HARTING Deutschland GmbH & Co. KG  
P.O. Box 2451, D-32381 Minden  
Simeons carré 1, D-32427 Minden  
Phone +49 571 8896 0  
Fax +49 571 8896 282  
de@HARTING.com  
www.HARTING.de

**Georgia:** see Eastern Europe

## **Great Britain**

HARTING Ltd., Caswell Road  
Brackmills Industrial Estate  
GB-Northampton, NN4 7PW  
Phone +44 1604 827 500  
Fax +44 1604 706 777  
gb@HARTING.com  
www.HARTING.co.uk

## **Hong Kong**

HARTING (HK) Limited  
Regional Office Asia Pacific  
3512 Metroplaza Tower 1  
223 Hing Fong Road  
Kwai Fong, N. T., Hong Kong  
Phone +852 2423 7338  
Fax +852 2480 4378  
ap@HARTING.com  
www.HARTING.com.hk

## **Hungary**

HARTING Magyarország Kft.  
Fehérvári út 89-95, H-1119 Budapest  
Phone +36 1 205 34 64  
Fax +36 1 205 34 65  
hu@HARTING.com  
www.HARTING.hu

## **India**

HARTING India Pvt Ltd  
7th Floor (West Wing), Central Square II  
Unit No.B-19 Part, B 20&21  
TVK Industrial Estate  
Guindy, Chennai - 600032  
Phone +91-44-43560415  
+91-44-43456262  
Fax +91-44-43560417  
in@HARTING.com  
http://www.HARTING.in

**Indonesia:** see Malaysia

**Iran:** see United Arab Emirates

**Iraq:** see United Arab Emirates

## **Israel**

COMTEL  
Israel Electronic Solutions Ltd.  
Bet Hapamon, 20 Hataas st.  
P.O.Box 66  
Kefar-Saba 44425  
Phone +972-9-7677240  
Fax +972-9-7677243  
sales@comtel.co.il  
www.comtel.co.il

## **Italy**

HARTING SpA  
Via Dell' Industria 7  
I-20090 Vimodrone (Milano)  
Phone +39 02 250801  
Fax +39 02 2650 597  
it@HARTING.com  
www.HARTING.it

## **Japan**

HARTING K. K.  
Yusen Shin-Yokohama 1 Chome Bldg., 2F  
1-7-9, Shin-Yokohama, Kohoku  
Yokohama 222-0033 Japan  
Phone +81 45 476 3456  
Fax +81 45 476 3466  
jp@HARTING.com  
www.HARTING.co.jp

**Jemen:** see United Arab Emirates

**Jordan:** see United Arab Emirates

**Kazakhstan:** see Eastern Europe

**Kirghizia:** see Eastern Europe

## **Korea (South)**

HARTING Korea Limited  
#308 Yatap Leaders Building  
342-1, Yatap-dong, Bundang-gu  
Sungnam-City, Kyunggi-do  
463-828, Republic of Korea  
Phone +82 31 781 4615  
Fax +82 31 781 4616  
kr@HARTING.com  
www.HARTING.co.kr

**Kosovo:** see Eastern Europe

**Kuwait:** see United Arab Emirates

**Latvia:** see Eastern Europe

**Lebanon:** see United Arab Emirates

**Lithuania:** see Eastern Europe

**Macedonia:** see Eastern Europe

## **Malaysia (Office)**

HARTING Singapore Pte Ltd  
Malaysia Branch  
11-02 Menara Amcorp  
Jln. Persiaran Barat  
46200 PJ, Sel. D. E., Malaysia  
Phone +60 3 / 7955 6173  
Fax +60 3 / 7955 5126  
sg@HARTING.com

**Montenegro:** see Eastern Europe

## **Netherlands**

HARTING B.V.  
Larenweg 44  
NL-5234 KA 's-Hertogenbosch  
Postbus 3526  
NL-5203 DM 's-Hertogenbosch  
Phone +31 736 410 404  
Fax +31 736 440 699  
nl@HARTING.com  
www.HARTINGbv.nl

**New Zealand:** see Australia

## **Norway**

HARTING A/S  
Østensjøveien 36, N-0667 Oslo  
Phone +47 22 700 555  
Fax +47 22 700 570  
no@HARTING.com  
www.HARTING.no

**Oman:** see United Arab Emirates

**Pakistan:** see United Arab Emirates

**Philippines:** see Malaysia

## **Poland**

HARTING Polska Sp. z o. o.  
ul. Duńska 9  
PL- 54-427 Wrocław  
Phone +48 71 352 81 71  
Fax +48 71 350 42 13  
pl@HARTING.com  
www.HARTING.pl

## **Portugal**

HARTING Iberia, S. A.  
Avda. Josep Tarradellas 20-30 4º 6a  
E-08029 Barcelona  
Phone +351 219 673 177  
Fax +351 219 678 457  
es@HARTING.com  
www.HARTING.es/pt

**Qatar:** see United Arab Emirates

**Republic of Moldova**  
see Eastern Europe

**Romania**

HARTING Romania SCS  
Europa Unita str. 21  
550018-Sibiu, Romania  
Phone +40 369-102 671  
Fax +40 369-102 622  
ro@HARTING.com  
www.HARTING.com

**Russia**

HARTING ZAO  
Maliy Sampsoniyevsky prospect 2A  
194044 Saint Petersburg, Russia  
Phone +7 812 327 6477  
Fax +7 812 327 6478  
ru@HARTING.com  
www.HARTING.ru

**Saudi Arabia**

see United Arab Emirates

**Serbia:** see Eastern Europe

**Singapore**

HARTING Singapore Pte Ltd.  
25 International Business Park  
#04-108 German Centre  
Singapore 609916  
Phone +65 6225 5285  
Fax +65 6225 9947  
sg@HARTING.com  
www.HARTING.sg

**Slovakia**

HARTING s.r.o.  
Sales office Slovakia  
J. Simora 5, SK - 940 52 Nové Zámky  
Phone +421 356-493 993  
Fax +421 356-402 114  
sk@HARTING.com  
www.HARTING.sk

**Slovenia:** see Eastern Europe

**South Africa**

HARTING South Africa (Pty) Ltd  
Ground Floor, Twickenham Building  
PO Box 67302  
Johannesburg (Bryanston)  
2021, South Africa  
Phone +27 (0) 11 575 0017  
Fax +27 (0) 11 576 6000  
za@HARTING.com  
www.HARTING.co.za

**Spain**

HARTING Iberia S.A.  
Avda. Josep Tarradellas 20-30 4º 6ª  
E-08029 Barcelona  
Phone +34 93 363 84 75  
Fax +34 93 419 95 85  
es@HARTING.com  
www.HARTING.es

**Sweden**

HARTING AB  
Gustavslundsvägen 141 B 4tr  
S-167 51 Bromma  
Phone +46 8 445 7171  
Fax +46 8 445 7170  
se@HARTING.com  
www.HARTING.se

**Switzerland**

HARTING AG  
Industriestrasse 26  
CH-8604 Volketswil  
Phone +41 44 908 20 60  
Fax +41 44 908 20 69  
ch@HARTING.com  
www.HARTING.ch

**Syria:** see United Arab Emirates

**Taiwan**

HARTING Taiwan Ltd.  
Room 1, 5/F  
495 GuangFu South Road  
RC-110 Taipei, Taiwan  
Phone +886 2 2758 6177  
Fax +886 2 2758 7177  
tw@HARTING.com  
www.HARTING.com.tw

**Tajikistan:** see Eastern Europe

**Thailand:** see Malaysia

**Turkey**

HARTING TURKEI Elektronik Ltd. Şti.  
Barbaros Mah. Dereboyu Cad.  
Fesleğen Sok.  
Uphill Towers, A-1b Kat:8 D:45  
34746 Ataşehir, İstanbul  
Phone +90 216 688 81 00  
Fax +90 216 688 81 01  
tr@HARTING.com  
www.HARTING.com.tr

**Turkmenistan:** see Eastern Europe

**Ukraine:** see Eastern Europe

**United Arab Emirates**

HARTING Middle East FZ-LLC  
Knowledge Village, Block 2A, Office F72  
P.O. Box 454372, Dubai  
United Arab Emirates  
Tel. +971 4 453 9737  
Fax +971 4 439 0339  
uae@HARTING.com  
www.HARTING.ae

**USA**

HARTING Inc. of North America  
1370 Bowes Road  
USA-Elgin, Illinois 60123  
Phone +1 (877) 741-1500 (toll free)  
Fax +1 (866) 278-0307 (Inside Sales)  
us@HARTING.com  
www.HARTING-USA.com

**Uzbekistan:** see Eastern Europe

**Vietnam:** see Singapore

## Distributors – worldwide



Digi-Key Corporation:  
www.digikey.com

Farnell:  
www.farnell.com

FUTURE Electronics:  
www.futureelectronics.com

Mouser Electronics:  
www.mouser.com

RS Components:  
www.rs-components.com

## Other countries and general contact



HARTING Electronics GmbH  
P.O. Box 1433  
32328 Espelkamp - Germany  
Phone +49 5772/47-97200  
Fax +49 5772/47-777  
electronics@HARTING.com

## General information



It is the customer's responsibility to check whether the components illustrated in this catalogue also comply with different regulations from those stated in special fields of applications.

We reserve the right to modify designs or substance of content in order to improve quality, keep pace with technological advancement or meet particular requirements in production.

No part of this catalogue may be reproduced in any form (print, photocopy, microfilm or any other process) or processed, duplicated or distributed by means of electronic systems without the prior written consent of HARTING Electronics GmbH, Espelkamp. We are bound by the German version only.



**Pushing Performance**

**HARTING Technology Group**

Marienwerderstr. 3, 32339 Espelkamp – Germany

P.O. Box 11 33, 32325 Espelkamp – Germany

Phone +49 5772 47-0, Fax +49 5772 47-400

[info@HARTING.com](mailto:info@HARTING.com)

[www.HARTING.com](http://www.HARTING.com)



## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 View [09670029078](#) on WIN SOURCE

 [HARTING](#) Information

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management