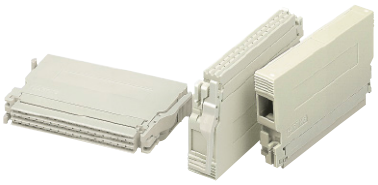
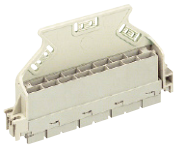
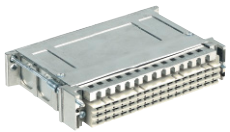
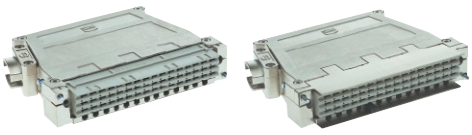
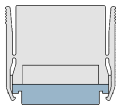
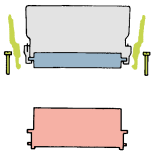
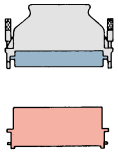
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Shell housings and accessories

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Summary of shell housings and accessories	**20.02**
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Shell housing 2C, 3C	**20.08**
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Shell housings D 20 metal 	**20.30**
Electronic connectors in Heavy Duty Housings	**20.33**

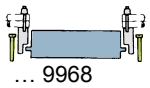
Summary shell housings and accessories

Appropriate connectors in shell housings	Types B, C, D, E, har-bus® 64	Types 2C, 3C	Type F	Types F, H, MH	Types E, F, H, MH
Check list: How to order shell housings and accessories. The Part number is stated.					
Shell housings	C 09 02 064 0501 09 02 064 0502 09 03 096 0501 09 05 048 0501	2C, 3C 09 23 048 0501 09 25 030 0501	A 09 06 048 0501 09 06 048 0402	B 09 06 048 0503 09 06 048 0504 09 06 048 0505	G 09 06 000 9957
Cable insert	09 02 000 9910 09 02 000 9911			09 06 000 9914 09 06 000 9915	
Insert for LED				09 06 000 9917	
Locking lever Order 2 pieces, in some cases each with different Part Nos. for left and right hand	09 02 000 9902 09 02 000 9903	Supplied with the shell housing	Supplied with the shell housing	09 06 000 9913 09 06 000 9919	
Locking screws Order 2 sets — for fixing elements with male connectors	09 02 000 9909 M 2.5 x 16 M 2.5	09 02 000 9909 M 2.5 x 16 M 2.5	M 2.5 x 12 M 2.5	09 06 000 9926 M 2.5 x 20 M 2.5	Supplied with the shell housing
for interface connectors I	09 02 000 9909 M 2.5 x 16 M 2.5		M 2.5 x 22 Supplied with the interface connector I	09 06 000 9955 M 2.5 x 26	Supplied with the shell housing
Fixing brackets for 19" racks, for male connectors	C	C	A	B	B
Multiple fixing left	09 02 000 9919	09 02 000 9919	09 06 000 9901	09 06 000 9907 09 06 000 9966 09 06 000 9908 09 06 000 9967	09 06 000 9907 09 06 000 9966 09 06 000 9908 09 06 000 9967
Multiple fixing right	09 02 000 9920	09 02 000 9920	09 06 000 9902		
Single fixing left	09 02 000 9921	09 02 000 9921	09 06 000 9905	09 06 000 9909 09 06 001 9934 09 06 000 9910 09 06 001 9935	09 06 000 9909 09 06 001 9934 09 06 000 9910 09 06 001 9935
Single fixing right	09 02 000 9922	09 02 000 9922	09 06 000 9906		
for female connectors				B	
Multiple fixing left right				09 06 000 9933 09 06 000 9933	
Fixing brackets for angled male connectors on pcb	C	C			
left right	09 02 000 9926 09 02 000 9927	09 02 000 9926 09 02 000 9927			
Fixing brackets for inverse male connectors on pcb	R	R			
R 1 R 32	09 02 000 9953 09 02 000 9954	09 02 000 9953 09 02 000 9954			
Distance fixing brackets for piggyback connectors					
Type D top Type E bottom	09 04 000 9907 09 04 000 9906				09 04 000 9907 09 04 000 9906
Type F top bottom	09 06 000 9936 09 06 000 9937				09 06 000 9936 09 06 000 9937
Protection strip for 20 mm shell housing				09 06 000 9929	
Protection and fixing strip for 20 mm shell housing				09 06 001 9909	

Female connectors Male connectors

Detailed system description see chapter 00

Summary shell housings and accessories

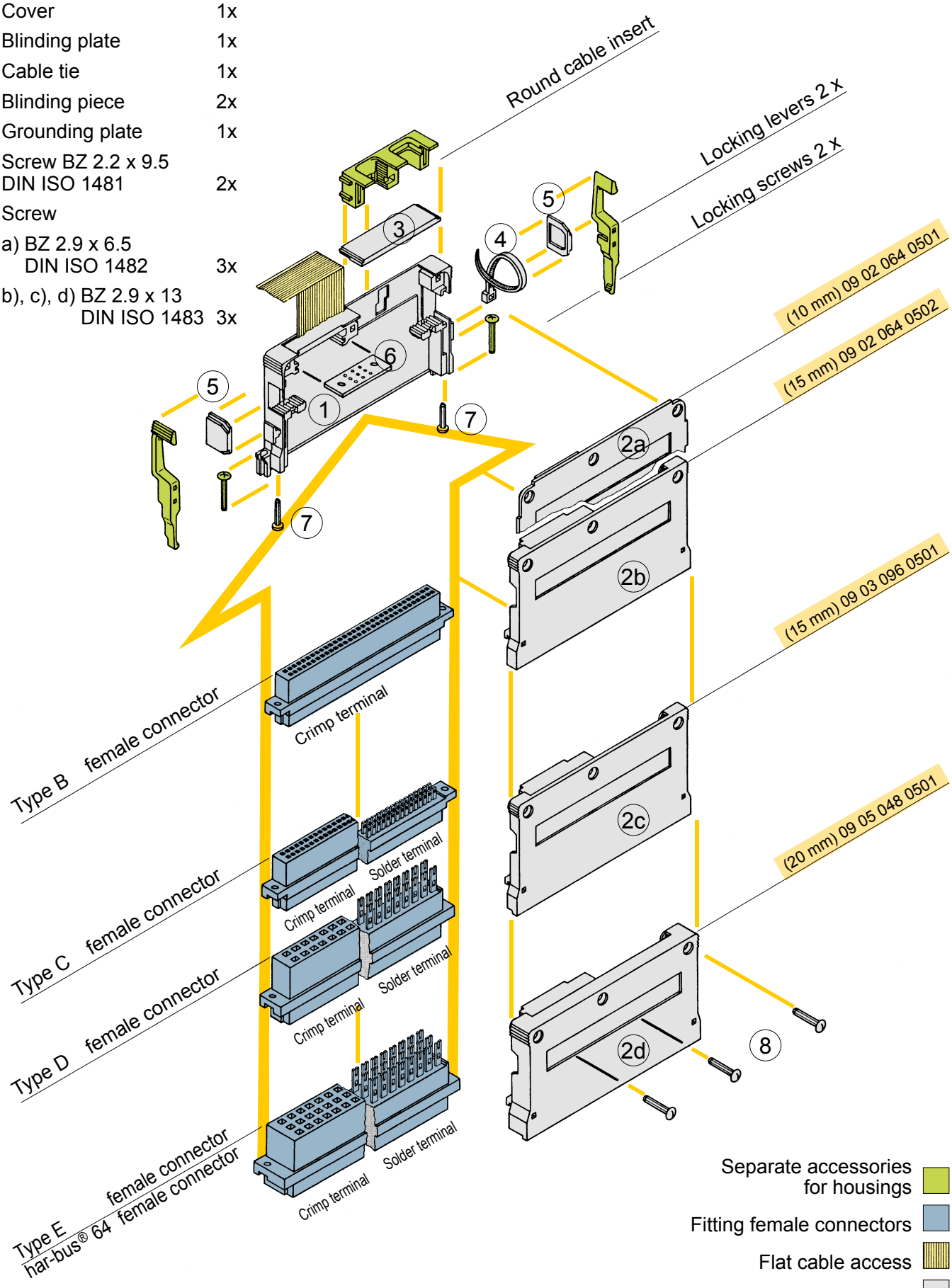
Appropriate connectors in shell housings	Types F, H, MH	Types F, H, MH	Types F, H, MH	Types F, H, MH	Types F, H, MH
Check list: How to order shell housings and accessories. The Part number is stated.	 … 9968  … 9930	 			
Shell housings	O 09 06 000 9968 09 06 000 9930° ° order 2 pieces	D 15 09 06 048 0515	D 20 09 06 048 0521 09 06 048 0522	D 20 metallised 09 06 948 0521 09 06 948 0522	D 20 metal 09 06 848 0550 09 06 848 0551
Cable insert			09 06 000 9988 09 06 000 9989	09 06 900 9988	
Insert for LED			09 06 000 9986 09 06 000 9987	09 06 900 9986 09 06 900 9987	
Locking lever Order 2 pieces, in some cases each with different Part Nos. for left and right hand		Supplied with the shell housing			
Locking screws Order 2 sets — for fixing elements with male connectors	09 06 000 9926 M 2.5 x 20 M 2.5	09 06 000 9926 M 2.5 x 16 M 2.5	Supplied with the shell housing	Supplied with the shell housing	Supplied with the shell housing
for interface connectors I	——	——	——	——	——
Shroud for screw fixing with interface connector I	——	——	09 06 001 9964	09 06 001 9964	——
Fixing brackets for 19" racks	B	B	B	B	B
for male connectors — Multiple fixing — left	09 06 000 9907 09 06 000 9966	09 06 000 9907 09 06 000 9966	09 06 000 9907 09 06 000 9966 09 06 000 9995 09 06 000 9997	09 06 900 9907 09 06 900 9966 09 06 900 9995 09 06 900 9997	09 06 900 9997
right	09 06 000 9908 09 06 000 9967	09 06 000 9908 09 06 000 9967	09 06 000 9908 09 06 000 9967 09 06 000 9996 09 06 000 9998	09 06 900 9908 09 06 900 9967 09 06 900 9996	09 06 900 9996
Single fixing — left	09 06 000 9909 09 06 001 9934	09 06 000 9909 09 06 001 9934	09 06 000 9909 09 06 001 9934	09 06 900 9909 09 06 901 9934	09 06 800 9943 09 06 901 9924
right	09 06 000 9910 09 06 001 9935	09 06 000 9910 09 06 001 9935	09 06 000 9910 09 06 001 9935	09 06 900 9910 09 06 901 9935	09 06 800 9944 09 06 901 9925
for female connectors	B	B			
Multiple fixing — left / right	only … 9930 09 06 000 9933 09 06 000 9933	09 06 000 9933 09 06 000 9933			
Protection and fixing strip for 20 mm shell housing			09 06 001 9909	09 06 901 9909	

Female connectors Male connectors

Detailed system description see chapter 00

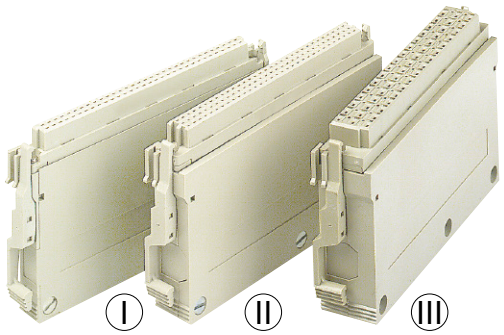
Shell housing C for types B, C, D, E and har-bus® 64

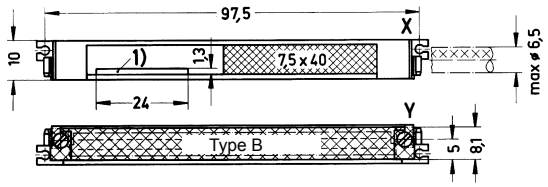
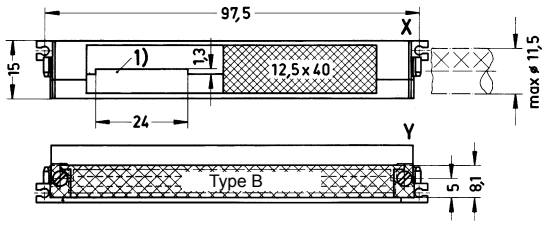
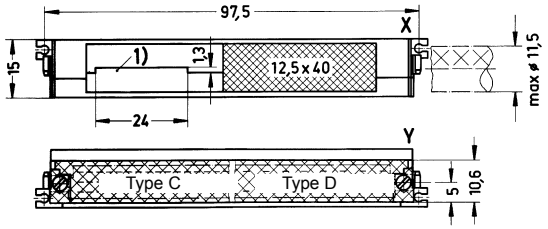
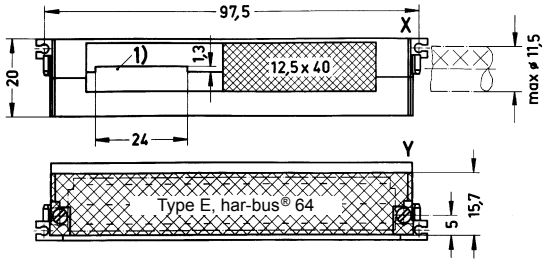
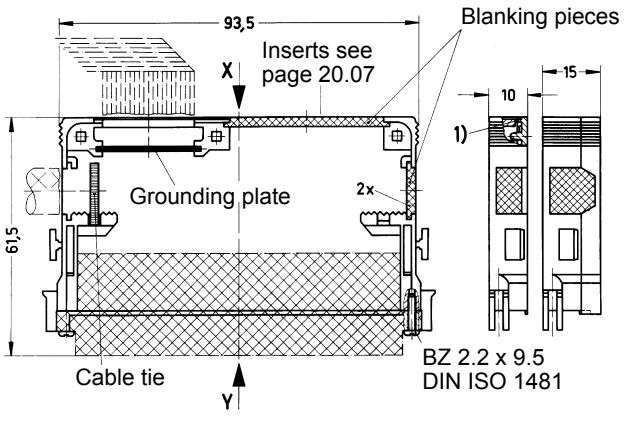
1	Shell	1x
2	Cover	1x
3	Blinding plate	1x
4	Cable tie	1x
5	Blinding piece	2x
6	Grounding plate	1x
7	Screw BZ 2.2 x 9.5 DIN ISO 1481	2x
8	Screw	
	a) BZ 2.9 x 6.5 DIN ISO 1482	3x
	b), c), d) BZ 2.9 x 13 DIN ISO 1483	3x



Moulding material: thermoplastic resin, glass-fibre filled, UL 94-V0

Shell housing C for types B, C, D, E and har-bus® 64

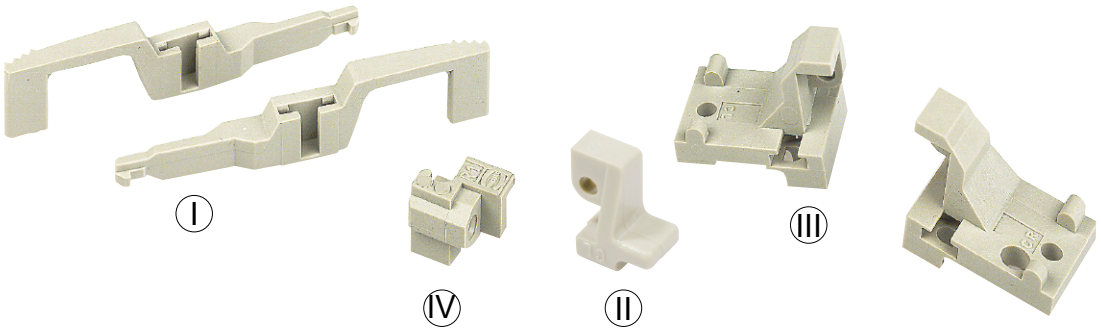


Identification	Part number	Drawing	Dimensions in mm
Shell housing C for female connectors type B I	10 mm 09 02 064 0501		
	15 mm 09 02 064 0502		
Shell housing C for female connectors types C, D II	15 mm 09 03 096 0501		
Shell housing C for female connectors type E, har-bus® 64 III	20 mm 09 05 048 0501		
			

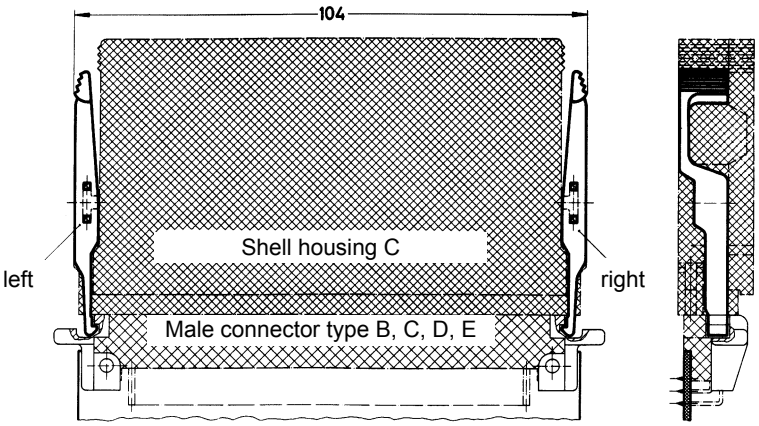
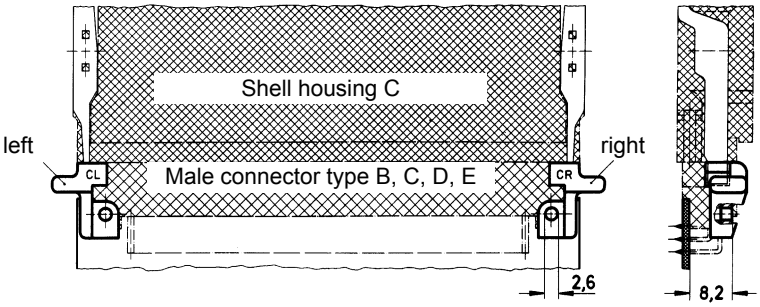
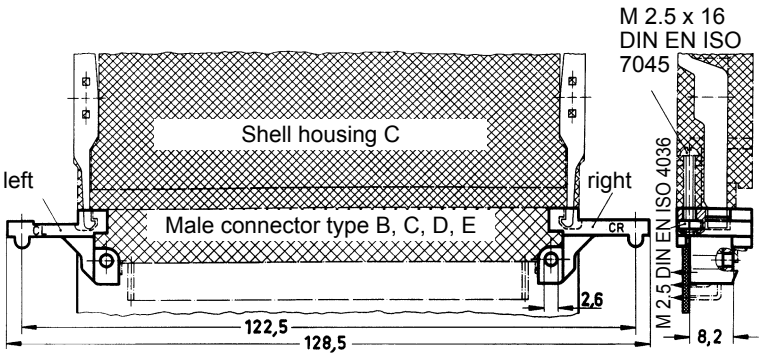
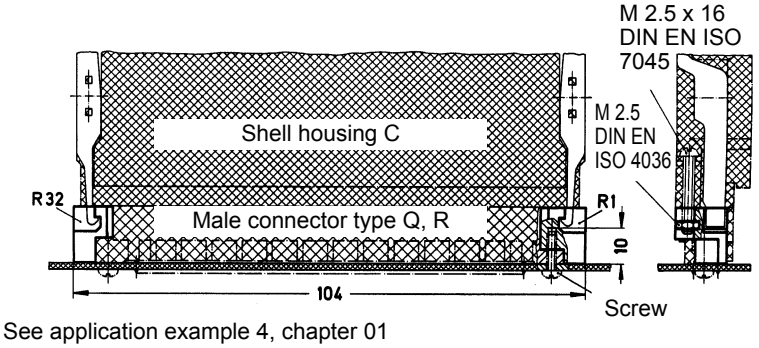
1) Possible access for flat cable (18 x Ø 1.27). Remove the blanking piece.

Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Shell housing C

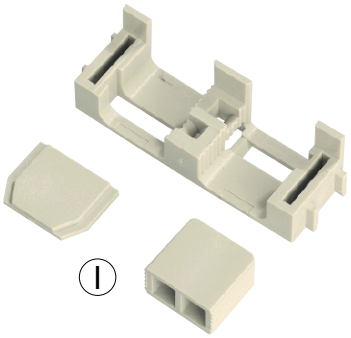


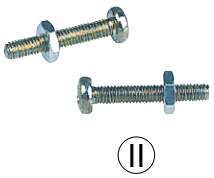
Accessories

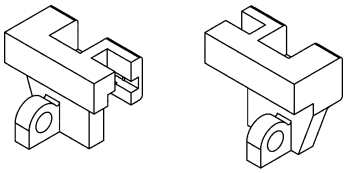
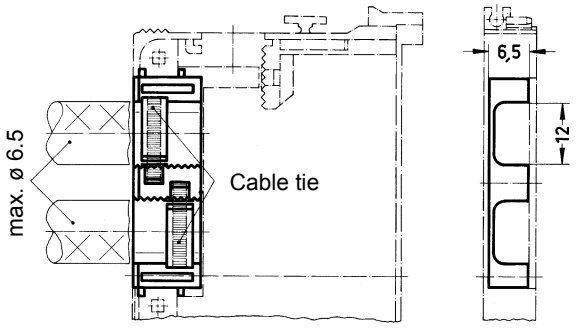
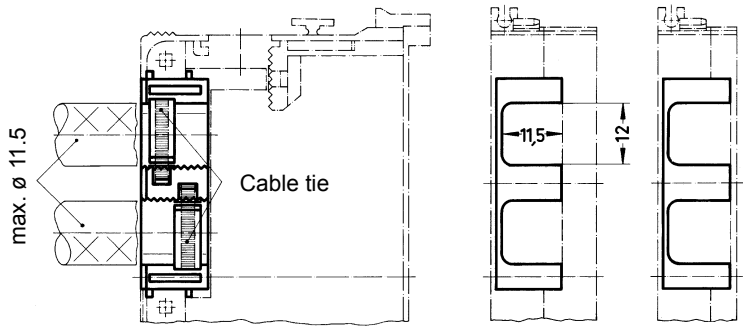
Identification	Part number	Drawing	Dimensions in mm
Locking lever for shell housing C Ⅰ	left 09 02 000 9902 right 09 02 000 9903		
Fixing brackets C for male connectors for 19“ racks according to DIN EN 60 297, part 3-101 Multiple fixing Ⅱ	left 09 02 000 9919 right 09 02 000 9920		
Single fixing Ⅲ	left 09 02 000 9921 right 09 02 000 9922		
Fixing brackets R for inverse male connectors on pcb’s Ⅳ Screw DIN ISO 7049 M 2.2 x 9.5	R 1 09 02 000 9953 R 32 09 02 000 9954 09 06 001 9974	 See application example 4, chapter 01	

Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Accessories





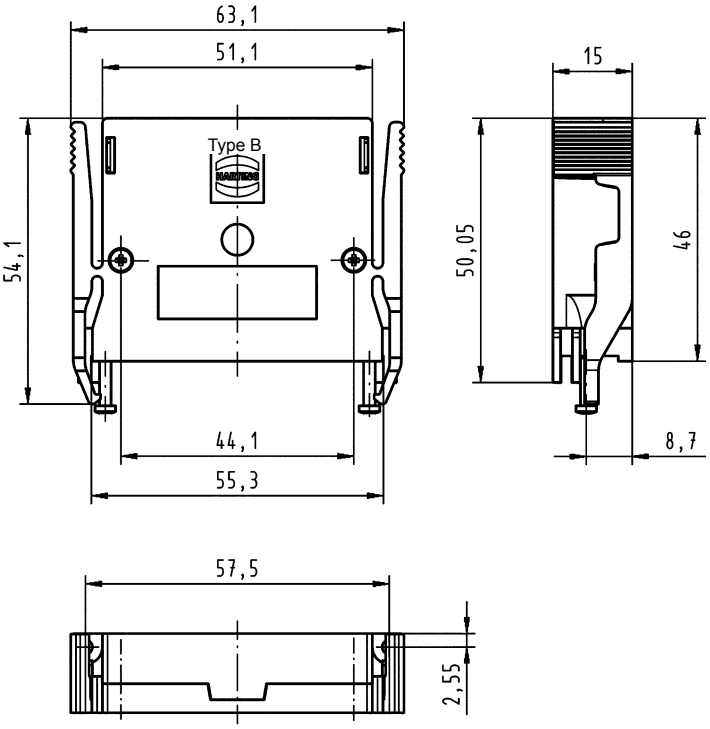
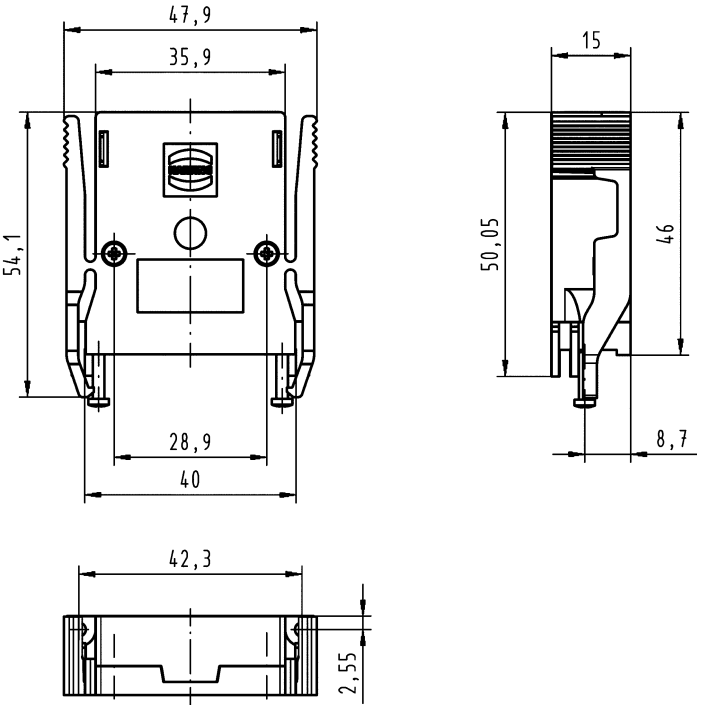
Identification	Part number	Drawing	Dimensions in mm
Fixing brackets C for angled male connectors on pcb without fixing possibility in 19" racks	left 09 02 000 9926[f)] right 09 02 000 9927[f)]		
Round cable insert 2 x ø 6.5 for shell housing C 09 02 064 0501 Supplied with: Round cable insert 1x Blinding piece A 1x Blinding piece B 1x Cable tie 1x	09 02 000 9910[f)]		
Round cable insert 2 x ø 11.5 I for shell housings C 09 02 064 0502 09 03 096 0501 09 05 048 0501 Supplied with: Round cable insert 1x Blinding piece A 1x Blinding piece B 1x Cable tie 1x	09 02 000 9911[f)]		
Locking screws II	09 02 000 9909[1)]		

[1)] Order 2 pieces for one shell housing
[f)] Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

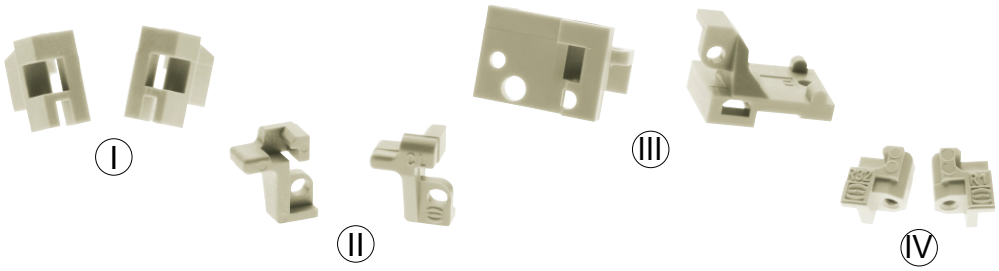
Shell housing 2C, 3C



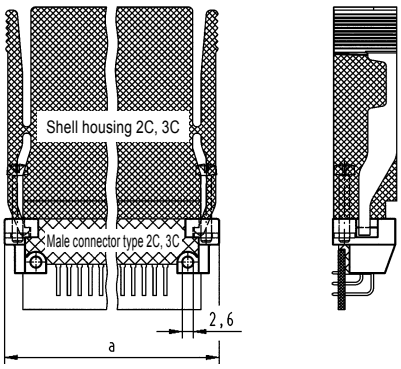
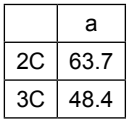
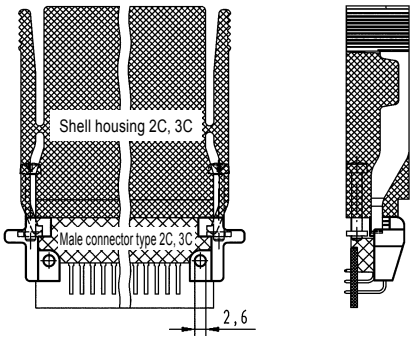
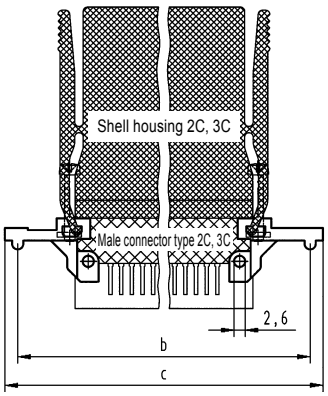
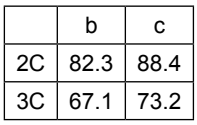
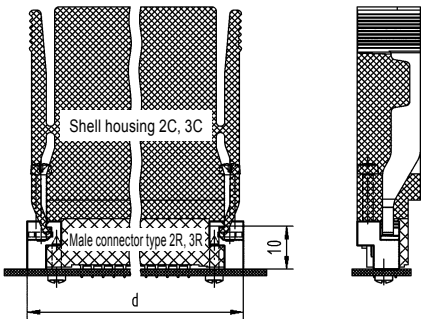
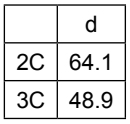


Identification	Part number	Drawing	Dimensions in mm
Shell housing 2C for female connectors type 2C Supplied with: Shell 1x Cover with 2 locking levers 1x Cable tie 1x Screw 2.2 x 9.5 4x (09 06 001 9974)	09 23 048 0501		
Shell housing 3C for female connectors type 3C Supplied with: Shell 1x Cover with 2 locking levers 1x Cable tie 1x Screw 2.2 x 9.5 4x (09 06 001 9974)	09 25 030 0501		

Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

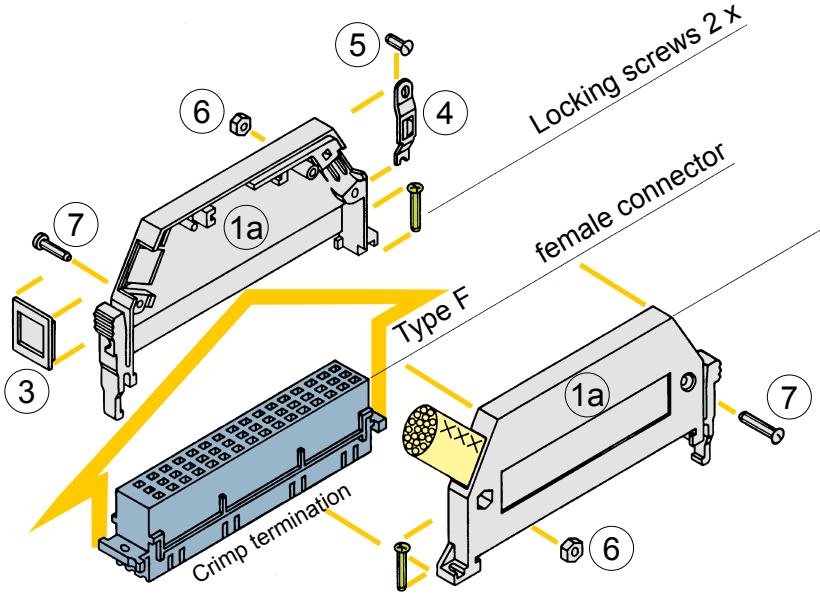


Accessories

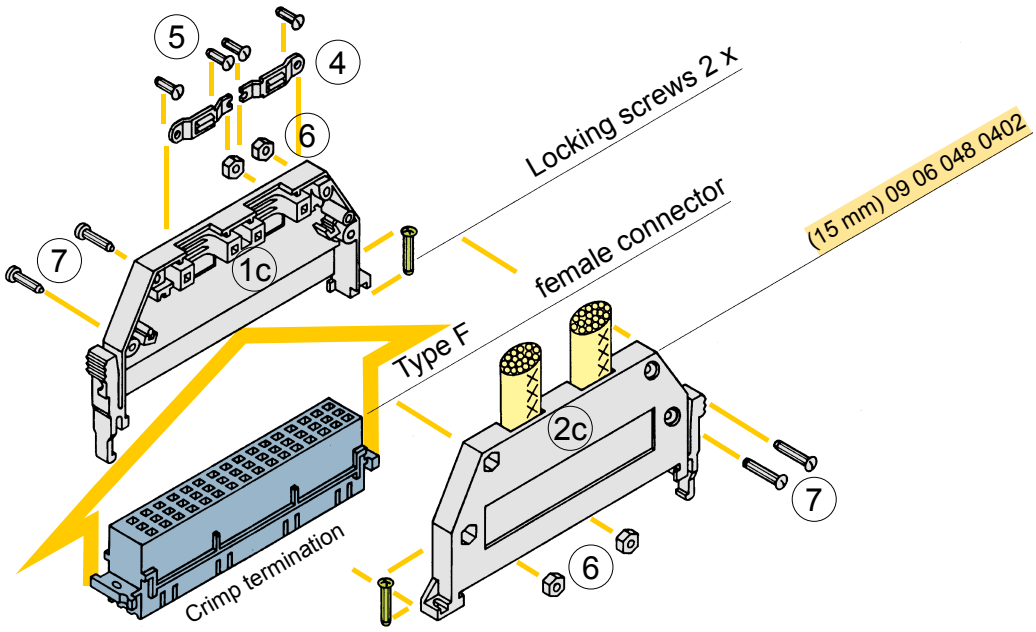
Identification	Part number	Drawing	Dimensions in mm
Fixing brackets C for angled male connectors on pcb without fixing possibility in 19" racks Ⅰ	left 09 02 000 9926 right 09 02 000 9927		
Fixing brackets C for male connectors for 19“ racks according to DIN EN 60 297, part 3-101 Multiple fixing Ⅱ	left 09 02 000 9919 right 09 02 000 9920		
Single fixing Ⅲ	left 09 02 000 9921 right 09 02 000 9922		
Fixing brackets R for inverse male connectors on pcb's Ⅳ Screw DIN ISO 7049 M2.2 x 9.5	R 1 09 02 000 9953 R 32 09 02 000 9954 09 06 001 9974		

Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Shell housing A for type F



1a	Casing shell	2x
3	Blinding piece	1x
4	Cable clamp	1x
5	Screw BZ 2.9 x 9.5 DIN ISO 1481	1x
6	Hexagonal nut M3 DIN EN ISO 4032	2x
7	Screw M3 x 12 DIN EN ISO 1207	2x



1c	Shell	1x
2c	Cover	1x
4	Cable clamp	2x
5	Screw BZ 2.9 x 9.5 DIN ISO 1481	4x
6	Hexagonal nut M3 DIN EN ISO 4032	4x
7	Screw M3 x 12 DIN EN ISO 1207	4x

Shell housings

Separate accessories for housings

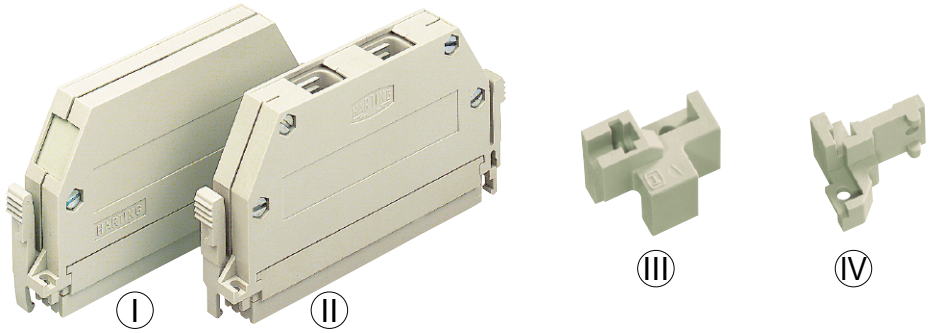
Fitting female connectors

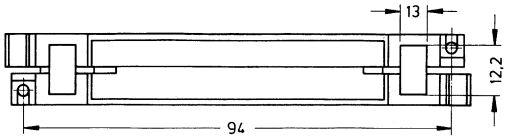
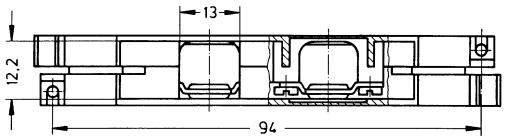
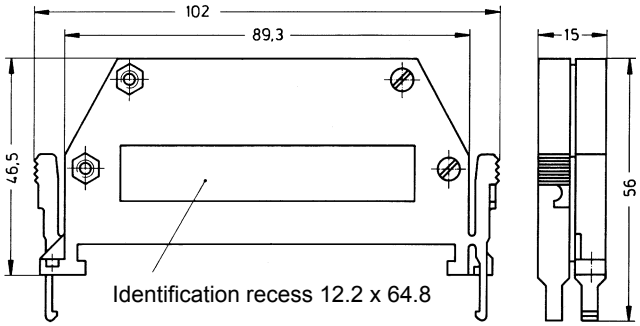
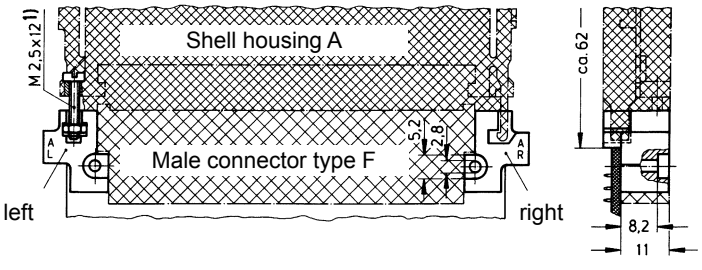
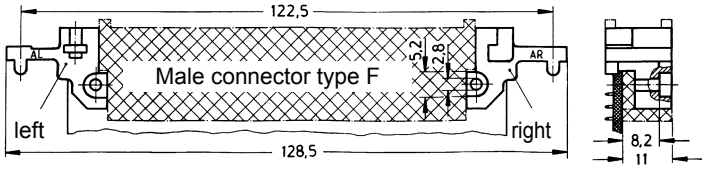
Cable access

Housing parts supplied

Moulding material: thermoplastic resin, glass-fibre filled, UL 94-V0

Shell housing A for type F



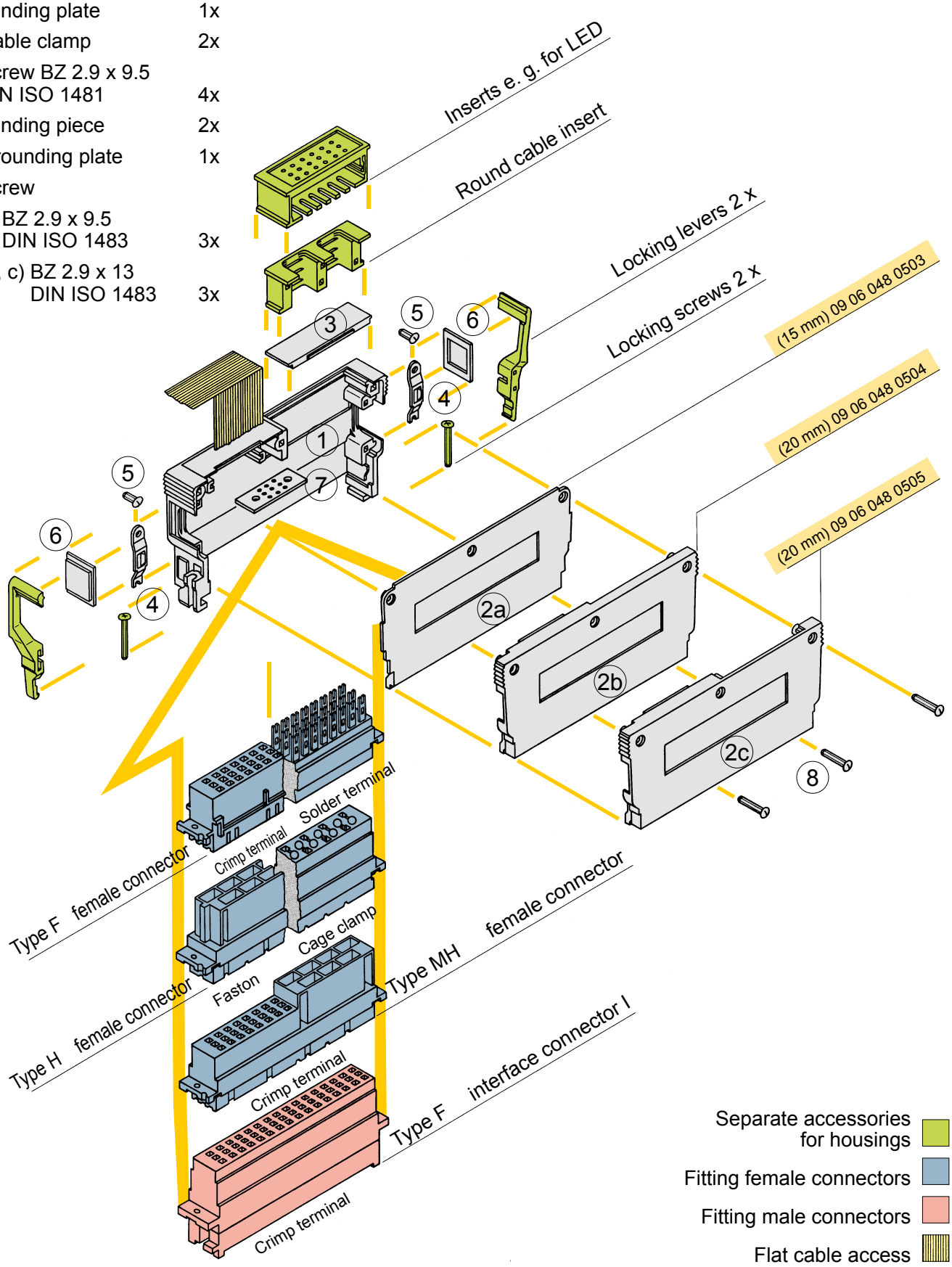
Identification	Part number	Drawing	Dimensions in mm
Shell housing A Side entry I	15 mm 09 06 048 0501[f]		
Top entry II	15 mm 09 06 048 0402[f]		
			
Cable clamp incl. screw	09 06 001 9986	1 x ④ + 2 x ⑤ on page 20.10	
Fixing brackets A for male connectors for 19" racks according to DIN EN 60 297, part 3-101 Multiple fixing III	left 09 06 000 9901[f] right 09 06 000 9902[f]		
Single fixing IV	left 09 06 000 9905[f] right 09 06 000 9906[f]		

[1] nut and screw not supplied with bracket

[f] Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Shell housing B for types F, H and MH

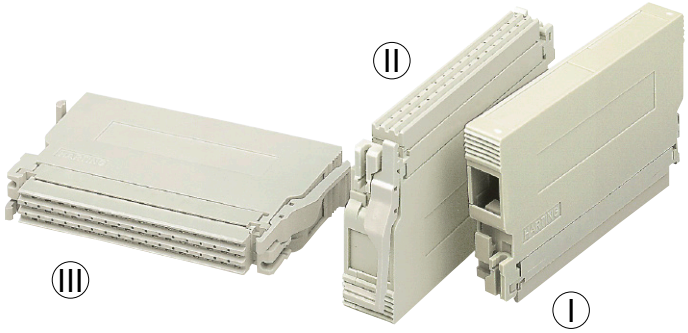
1	Shell	1x
2	Cover	1x
3	Blinding plate	1x
4	Cable clamp	2x
5	Screw BZ 2.9 x 9.5 DIN ISO 1481	4x
6	Blinding piece	2x
7	Grounding plate	1x
8	Screw	
	a) BZ 2.9 x 9.5 DIN ISO 1483	3x
	b), c) BZ 2.9 x 13 DIN ISO 1483	3x

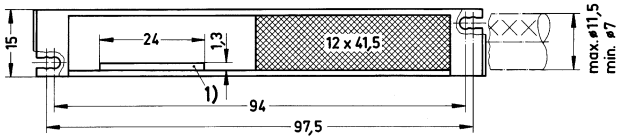
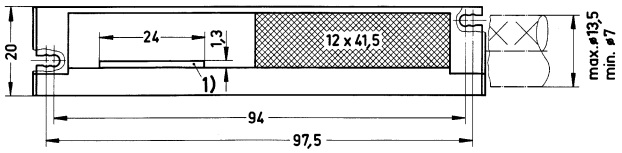
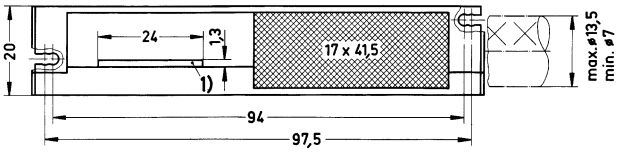
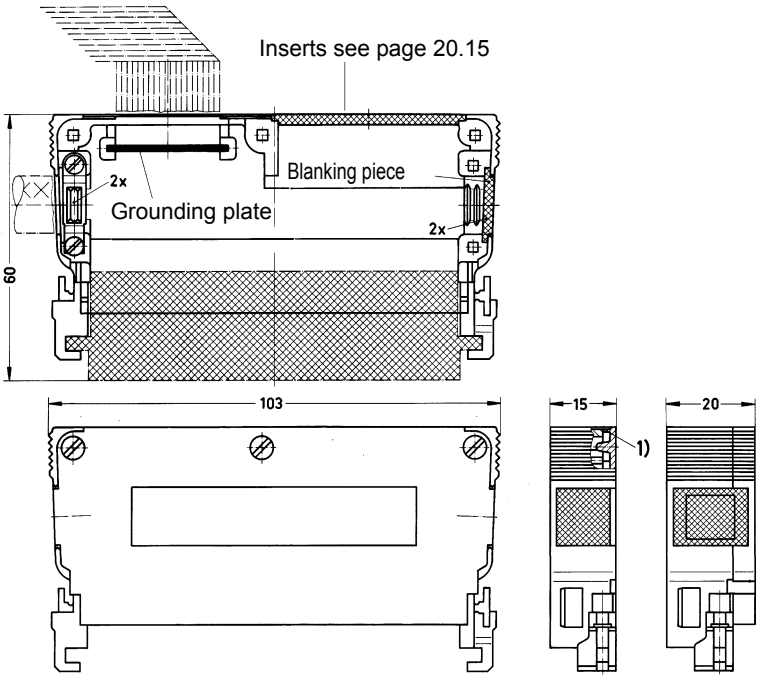


Shell housings

Moulding material: thermoplastic resin, glass-fibre filled, UL 94-V0

Shell housing B for types F, H and MH

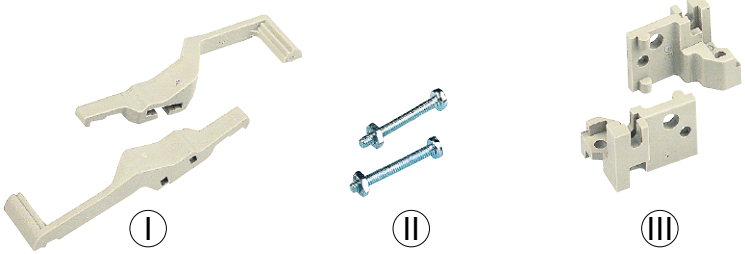


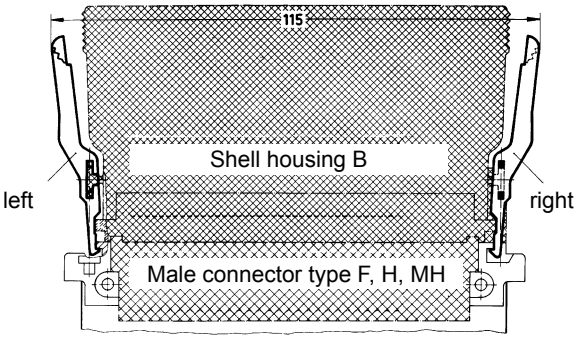
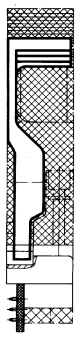
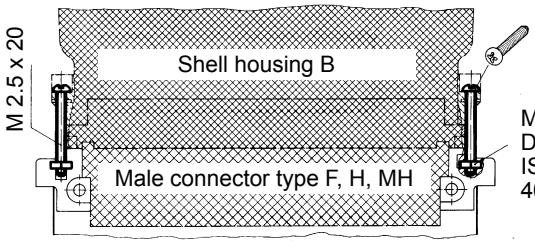
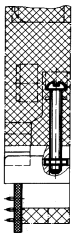
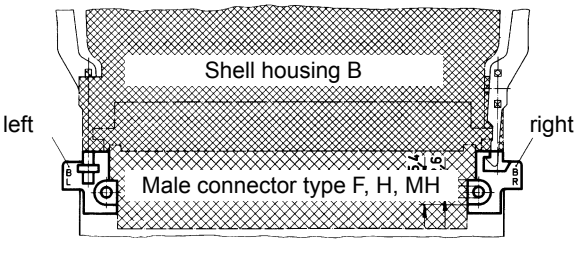
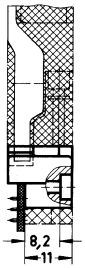
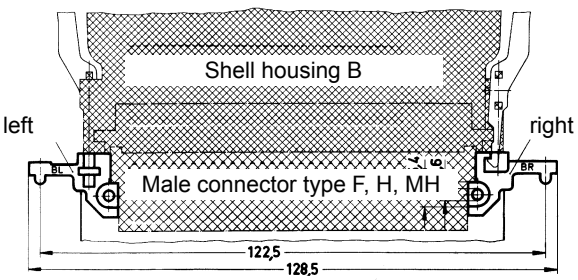
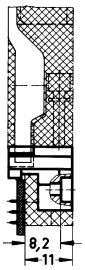
Identification	Part number	Drawing	Dimensions in mm
Shell housing B (I)	15 mm 09 06 048 0503		
(II)	20 mm 09 06 048 0504		
(III)	20 mm 09 06 048 0505		
			

[1] Possible access for flat cable (18 x ø 1.27). Remove the blanking piece

Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

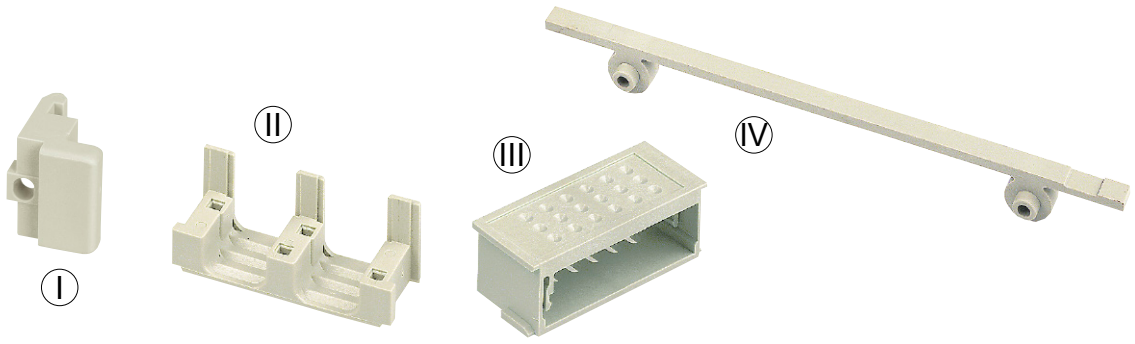
Accessories

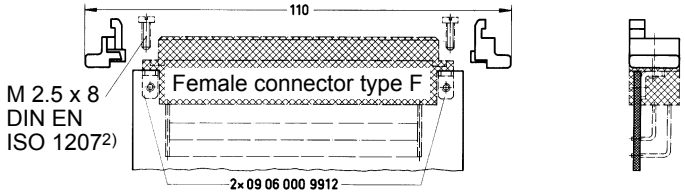
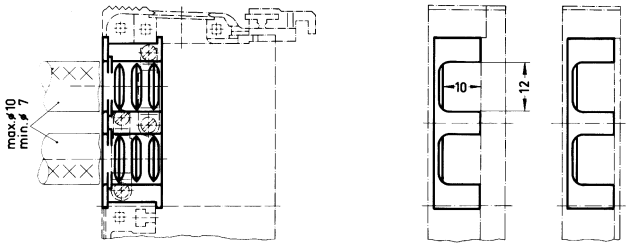
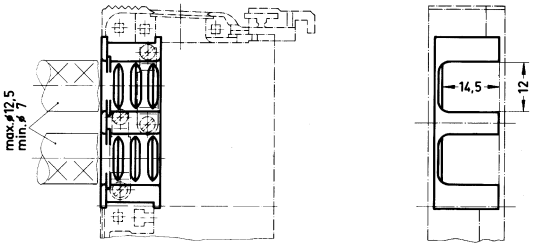
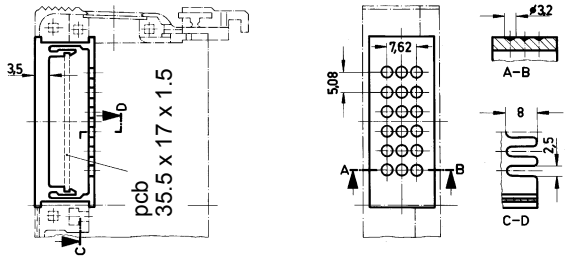
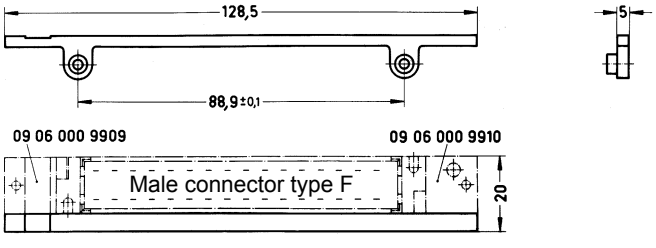


Identification	Part number	Drawing	Dimensions in mm
Locking lever for shell housing B 09 06 048 0503 (I) 09 06 048 0504 09 06 048 0505 [1] Order 2 pieces for one shell housing	09 06 000 9913[1)f)] left 09 06 000 9913[f)] right 09 06 000 9919[f)]		
Locking screws (II) [1] Order 2 pieces for one shell housing	09 06 000 9926[1)]		
Fixing brackets B for male connectors for 19" racks according to DIN EN 60 297, part 3-101 **Multiple fixing** without nut left 09 06 000 9907[f)] right 09 06 000 9908[f)] with nut M 2.5 DIN 562 left 09 06 000 9966[f)] right 09 06 000 9967[f)]			
Single fixing without nut (III) with nut M 2.5 DIN 562	left 09 06 000 9909[f)] right 09 06 000 9910[f)] left 09 06 001 9934 right 09 06 001 9935		

[f)] Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

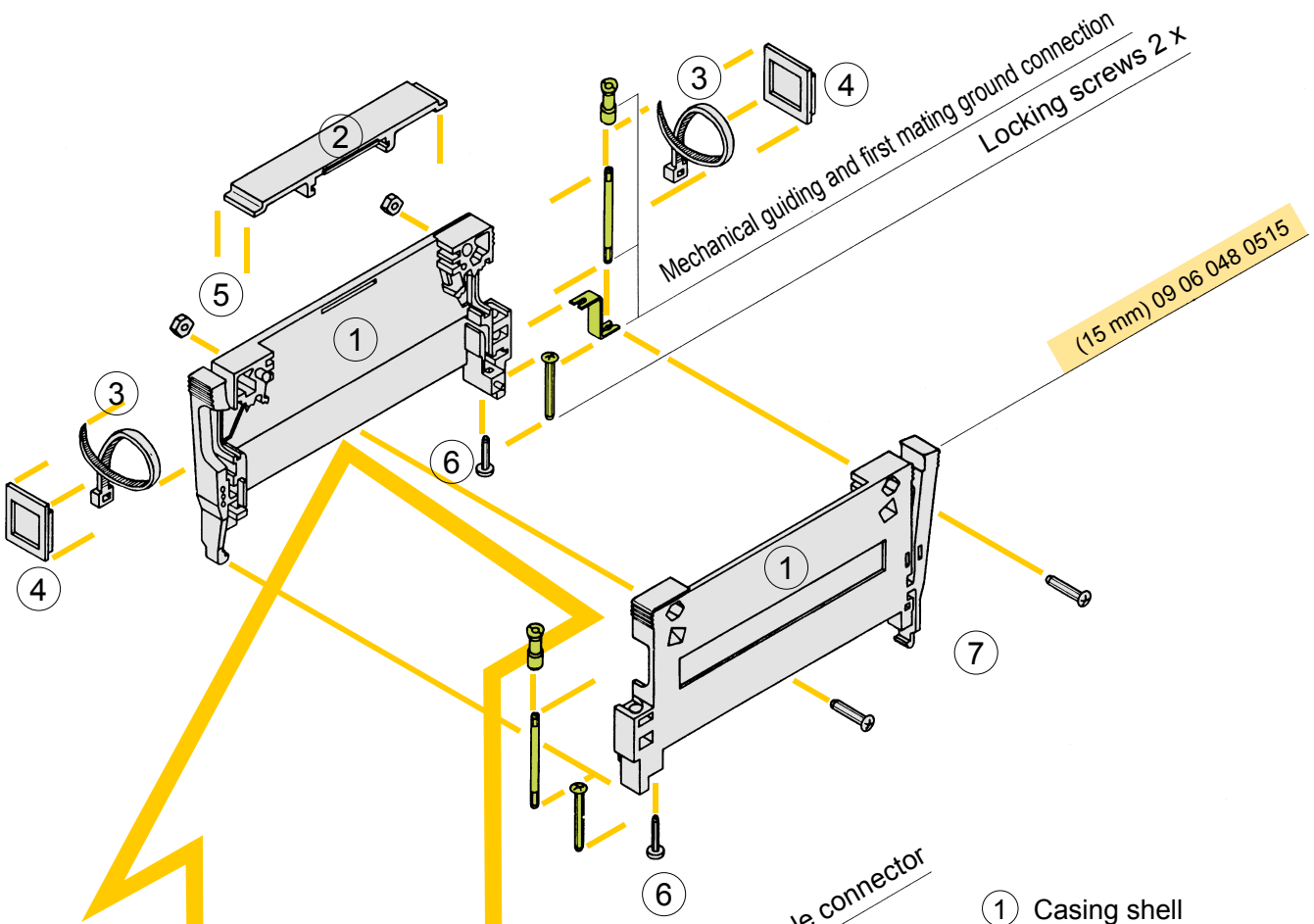
Accessories



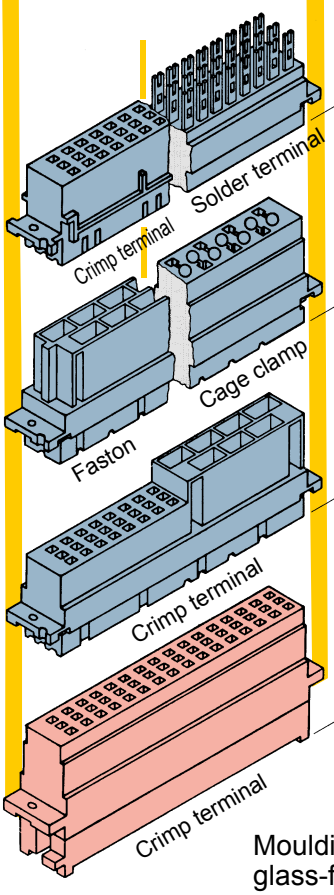
Identification	Part number	Drawing	Dimensions in mm
Fixing brackets B for female connectors for 19" racks according to DIN EN 60 297, part 3-101 Multiple fixing I 1) Order 2 pieces for one female connector	09 06 000 9933 1)	 2) nut and screw not supplied with fixing brackets	
Round cable insert 2 x ø 10 for shell housings B 09 06 048 0503 09 06 048 0504 Supplied with: Round cable insert 1x Blinding piece 1x	09 06 000 9914		
Round cable insert 2 x ø 12.5 II for shell housing B 09 06 048 0505 Supplied with: Round cable insert 1x Blinding piece 1x	09 06 000 9915		
Insert for LED III for shell housing B 09 06 048 0505	09 06 000 9917		
Protection strip IV Used with shell housings type B for front side access 09 06 048 0504 09 06 048 0505	09 06 000 9929		

Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Shell housing D 15 for types F, H and MH



1	Casing shell	2x
2	Blinding plate	1x
3	Cable tie	2x
4	Blinding piece	2x
5	Hexagonal nut M2.5 DIN EN ISO 4035	2x
6	Screw BZ 2.9 x 9.5 DIN ISO 1481	2x
7	Screw M2.5 x 12 DIN EN ISO 7045	2x



Moulding material: thermoplastic resin, glass-fibre filled, UL 94-V0

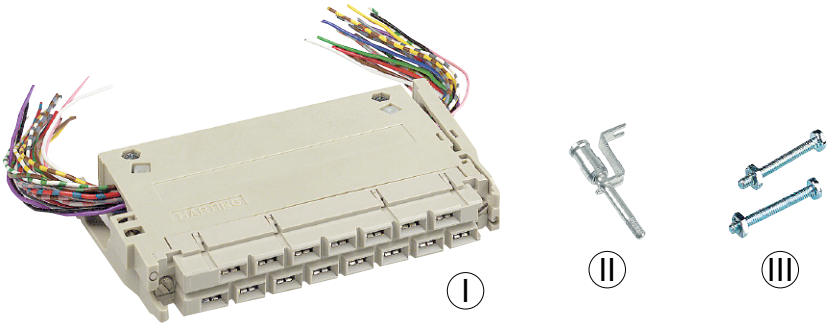
Separate accessories for housings

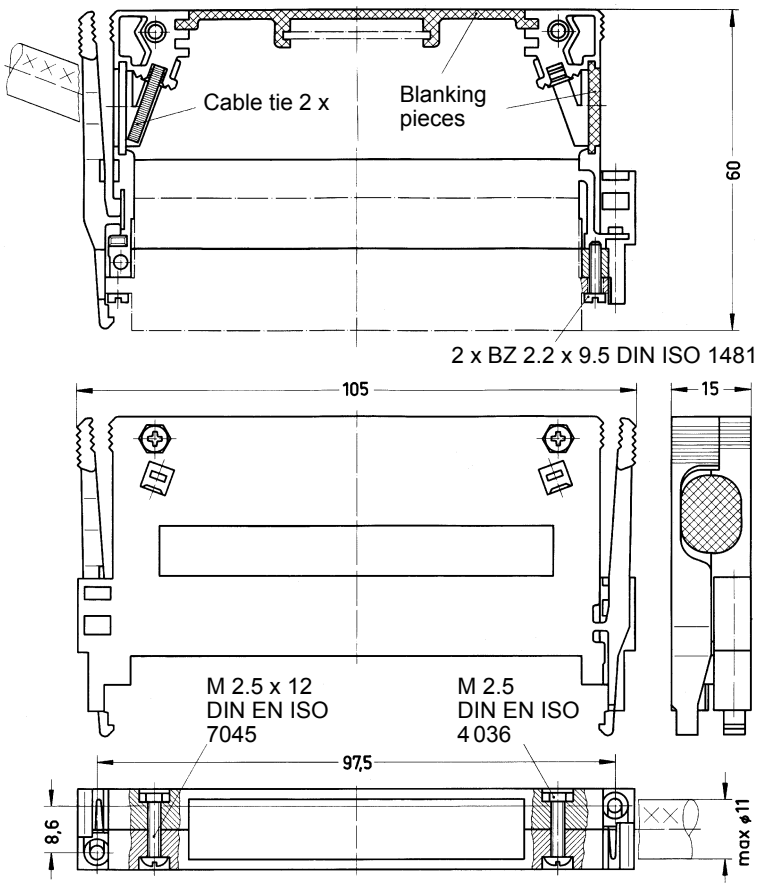
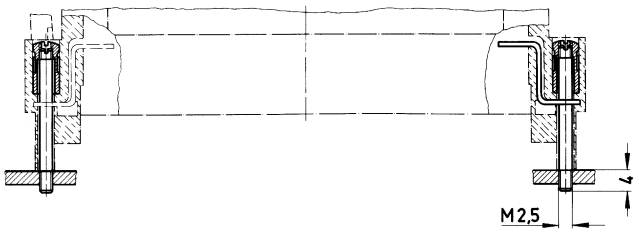
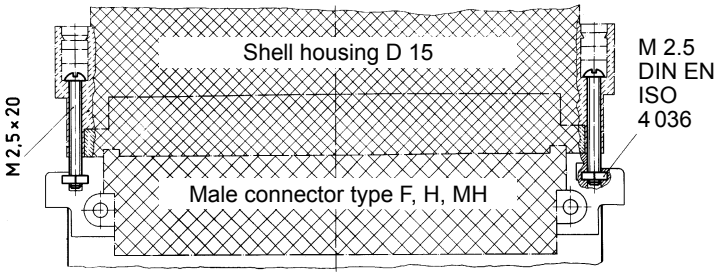
Fitting female connectors

Fitting male connectors

Housing parts supplied

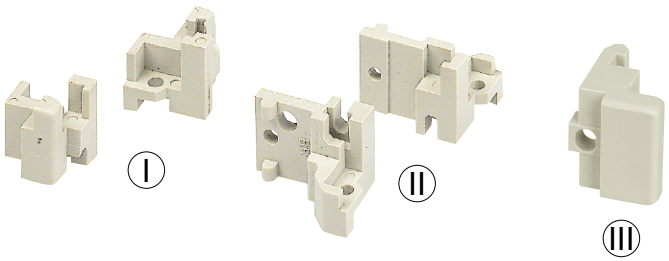
Shell housing D 15 for types F, H and MH



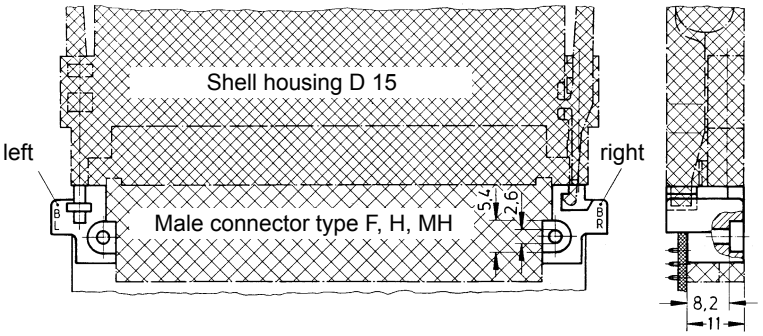
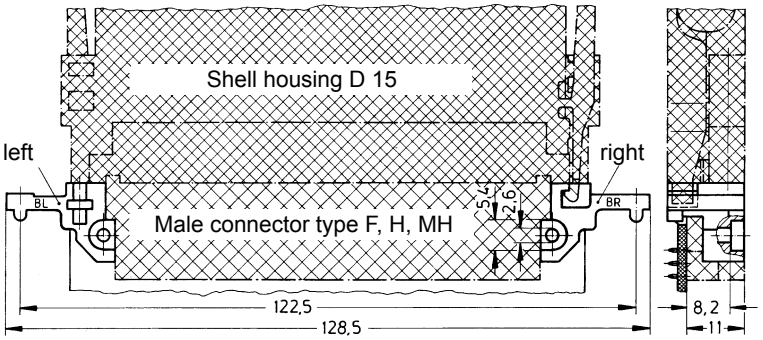
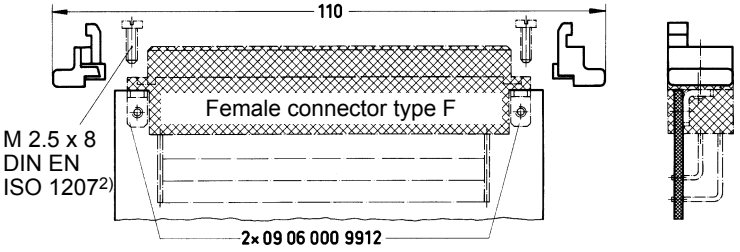
Identification	Part number	Drawing	Dimensions in mm
Shell housing D 15 I	15 mm 09 06 048 0515[f]		
Mechanical guiding and first mating ground connection II	09 06 000 9961		
Locking screws III	09 06 000 9926[1]		

[1] Order 2 pieces for one shell housing

[f] Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2



Accessories

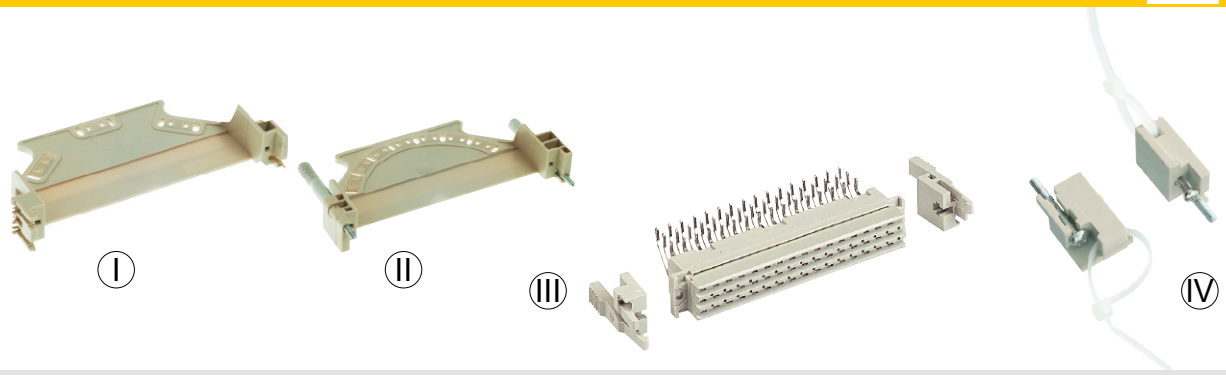
Identification	Part number	Drawing	Dimensions in mm
Fixing brackets B for male connectors for 19” racks according to DIN EN 60 297, part 3-101 **Multiple fixing** without nut I with nut M 2.5 DIN 562	left 09 06 000 9907 right 09 06 000 9908 left 09 06 000 9966 right 09 06 000 9967		
Single fixing without nut II with nut M 2.5 DIN 562	left 09 06 000 9909 right 09 06 000 9910 left 09 06 001 9934 right 09 06 001 9935		
Fixing brackets B for female connectors for 19” racks according to DIN EN 60 297, part 3-101 **Multiple fixing** III	09 06 000 9933[1]		

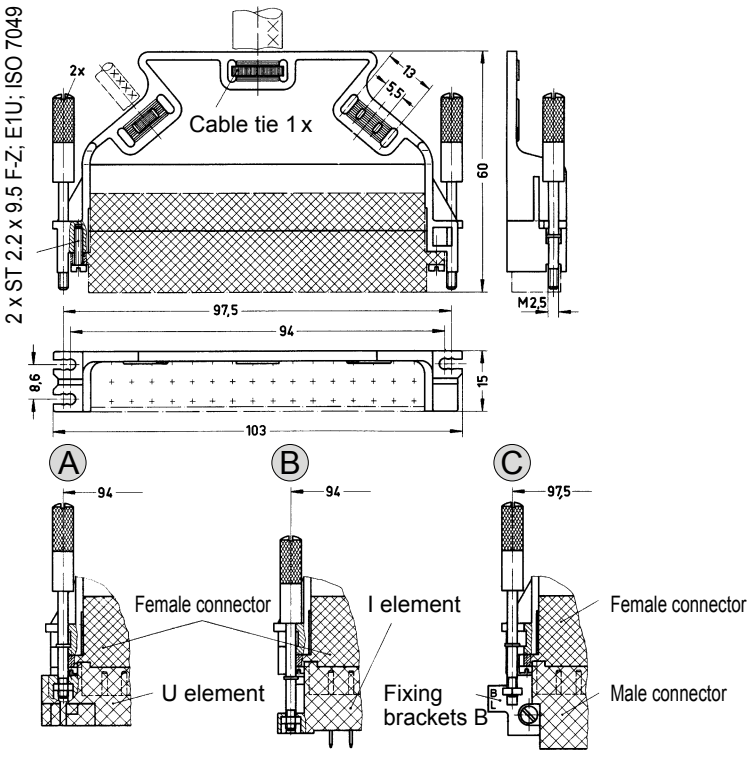
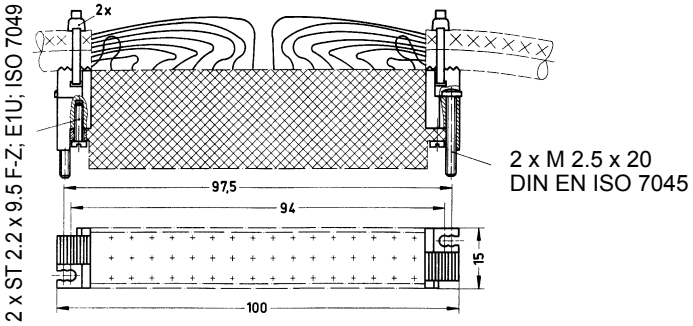
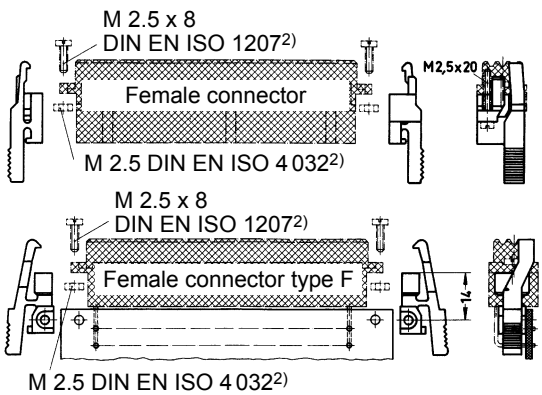
[1] Order 2 pieces for one female connector

[2] nut and screw not supplied with fixing brackets

Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Open hood G, junction element O, locking lever



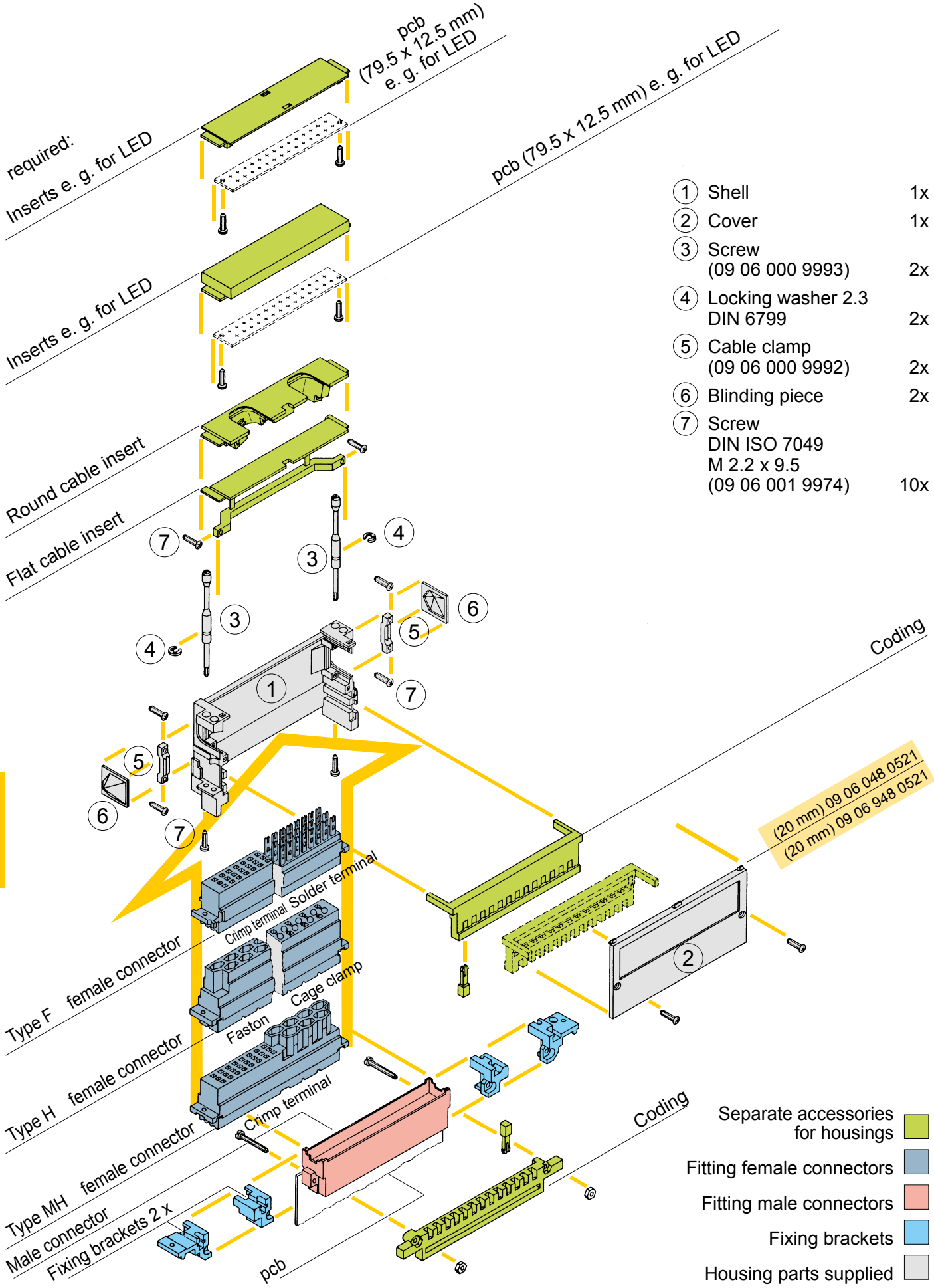
Identification	Part number	Drawing	Dimensions in mm
Open hood G (I) for types E, F, H and MH, for applications (A) (B) (C) Supplied with: Open hood 1x Locking screw 2x (09 06 000 9958) Cable tie 1x Screw 2x	09 06 000 9957		
Open hood G (II) for types E, F, H and MH, for application (C) Supplied with: Open hood 1x Pre-assembled, undetachable locking screw 2x Cable tie 1x Screw 2x	09 06 001 9939		
Junction element O for type F (IV) Supplied with: Junction element 2x Cable tie 2x Screw 2x Screw M2.5 x 20 2x	09 06 000 9968		
Locking lever for type F, H and MH (III)	09 06 000 9930[1)] 09 06 000 9911[1)]		

[1)] Order 2 pieces for one female connector

[2)] nut and screw not supplied with locking levers

Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Shell housing D 20/2 for types F, H and MH



1	Shell	1x
2	Cover	1x
3	Screw (09 06 000 9993)	2x
4	Locking washer 2.3 DIN 6799	2x
5	Cable clamp (09 06 000 9992)	2x
6	Blinding piece	2x
7	Screw DIN ISO 7049 M 2.2 x 9.5 (09 06 001 9974)	10x

Separate accessories for housings

Fitting female connectors

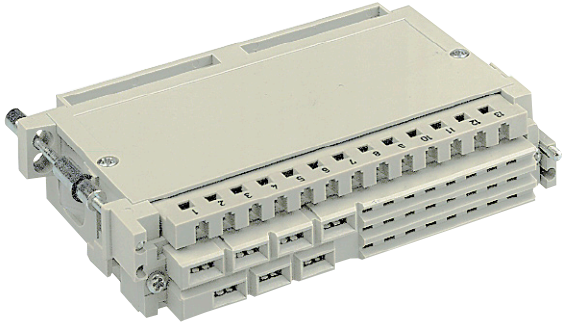
Fitting male connectors

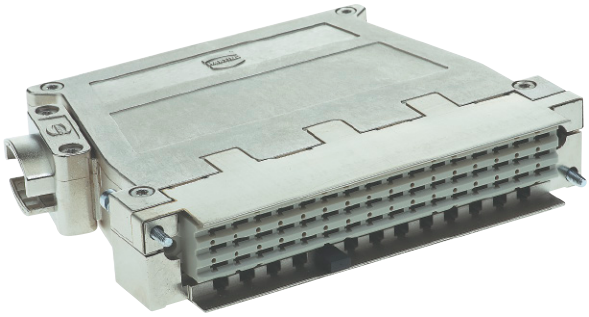
Fixing brackets

Housing parts supplied

Moulding material: thermoplastic resin, glass-fibre filled, UL 94-V0

Shell housing D 20





Fitting female connectors

Part-No.	Type	D 20/2	D 20/4	D 20 metal	D 20 metal HF
09 06 2__ _823	F with open solder lugs	X		X	X
09 06 2__ _853	F with closed solder lugs	X		X	X
09 06 248 3201	F moulding for crimp contacts	X	X	X	X
09 06 215 2871	H for faston	X		X	X
09 06 015 2813	H with cage clamps	X		X	X
09 06 231 2881	MH moulding for crimp contacts	X		X	X

Order example:

32 = 32 contacts
48 = 48 contacts

09 06 2__ _853

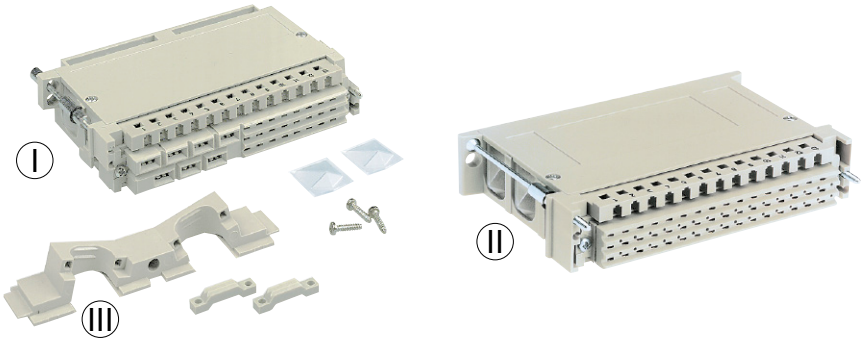
7 = performance level 3
6 = performance level 2
2 = performance level 1

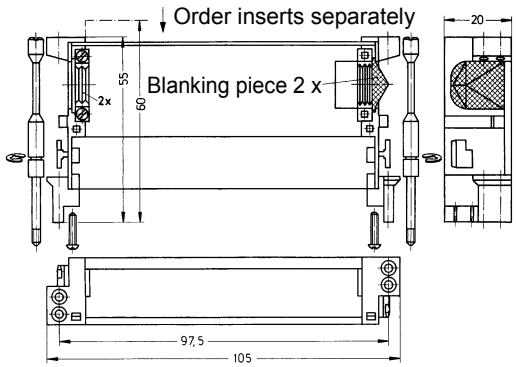
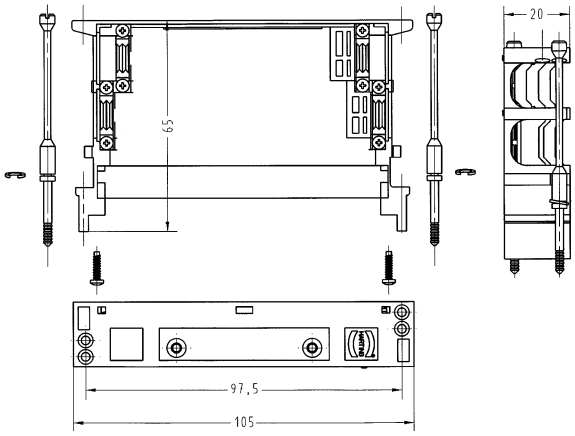
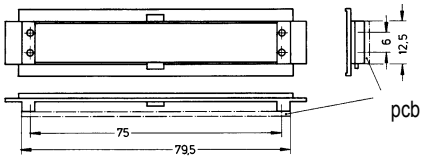
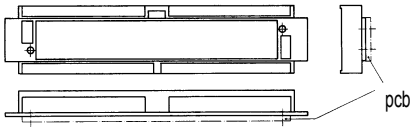
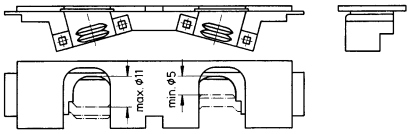
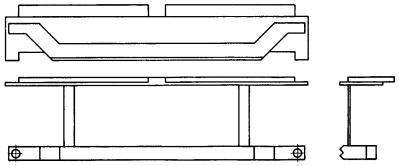
Technical characteristics

	D 20/2	D 20/2 metallised[1)]	D 20/4	D 20/4 metallised[1)]	D 20 metal	D 20 metal HF
Part number	09 06 048 0521	09 06 948 0521	09 06 048 0522	09 06 948 0522	09 06 848 0550	09 06 848 0551
Material	Polycarbonate	Polycarbonate	Polycarbonate	Polycarbonate	Zinc alloy	Zinc alloy
Surface	none	nickel/copper	none	nickel/copper	nickel-plated	nickel-plated
Weight [g]	36	44	43	52	182	188
Cable entries	side (2 x), top (2 x)	side (2 x), top (2 x)	side (4 x)	side (4 x)	side (2 x), top (2 x)	side (2 x) top (2 x)
Protection	IP20	IP20	IP20	IP20	IP20	IP20

[1)] upper temperature limit is +105 °C

Shell housing D 20 for types F, H and MH

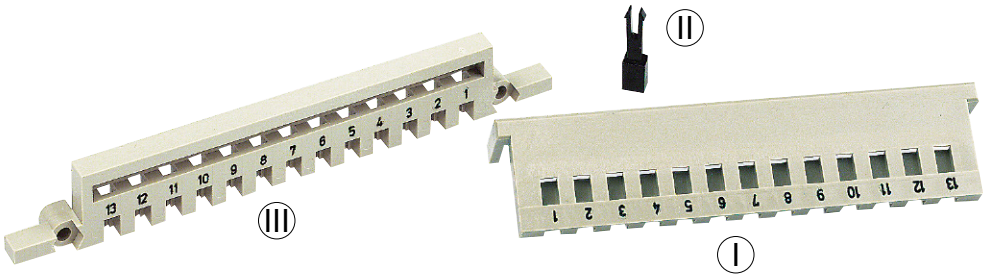


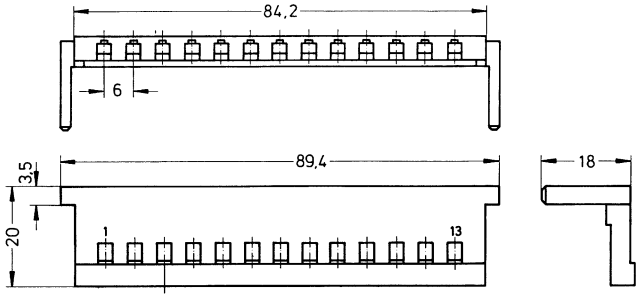
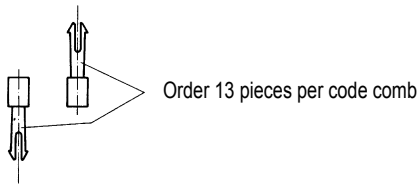
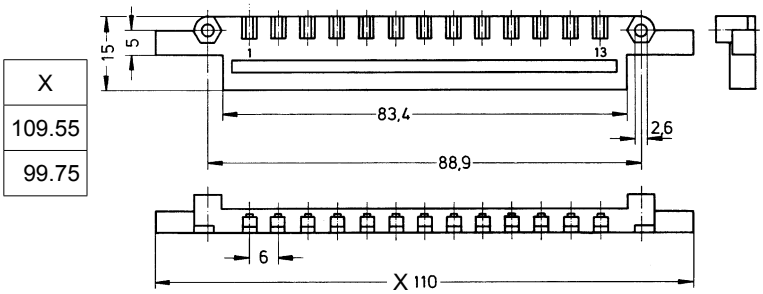
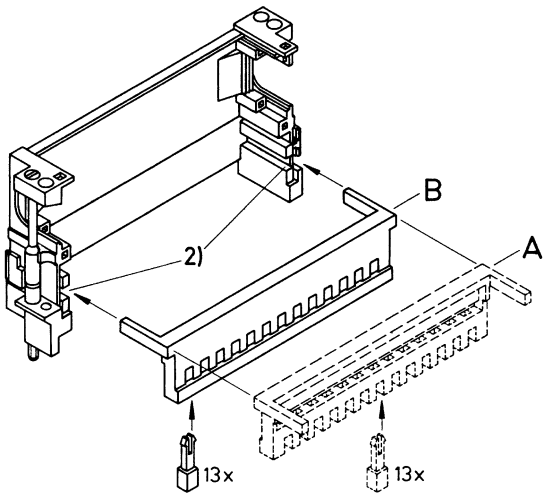
Identification	Part number	Drawing	Dimensions in mm
Shell housing D 20/2 Two side cable entries I	20 mm 09 06 048 0521		
Shell housing D 20/4 Four side cable entries II Supplied with: Shell 1x Cover 1x Locking screw 2x (09 06 000 9920) Locking washer 2.3 2x Screw BZ 2.2x9.5 12x Blinding piece 3x Cable clamp 2x	20 mm 09 06 048 0522		
Inserts e. g. for LED*			
for 55 mm height	09 06 000 9986		
for 60 mm height	09 06 000 9987		
Round cable insert* 2 x ø 11 III	09 06 000 9988		
Flat cable insert*	09 06 000 9989		

* Fits D 20/2
Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Shell housing D 20

Coding



Identification	Part number	Drawing	Dimensions in mm
Code comb for shell housing[3)] (can also be used as a blanking cover) I	09 06 000 9984[f)]		
Coding pin[3)] II [1)] Order 13 pieces per code comb	09 06 001 9905[1)]		
Code comb for male connectors[3)] III			
short version for a full metal locking lever	09 06 000 9985[f)]		
	09 06 001 9985[f)]		
with nut M2.5	09 06 001 9995[f)]		
Mounting possibilities for the code comb in the shell housing D 20/2			

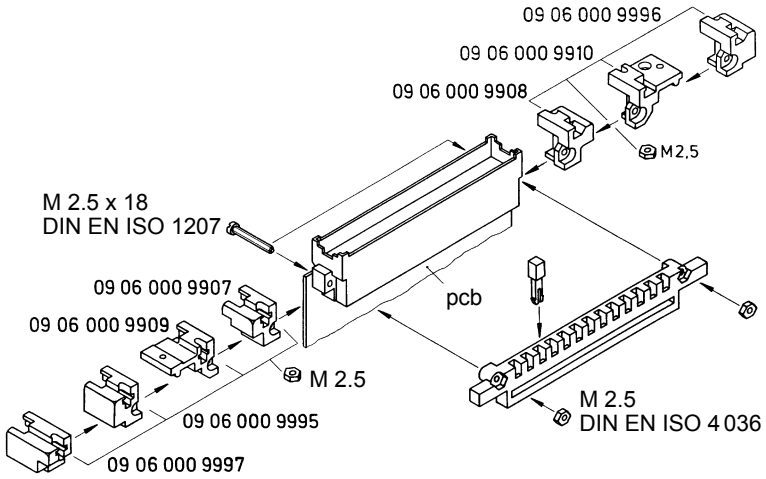
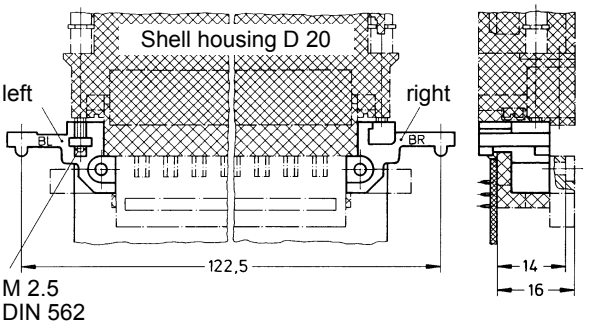
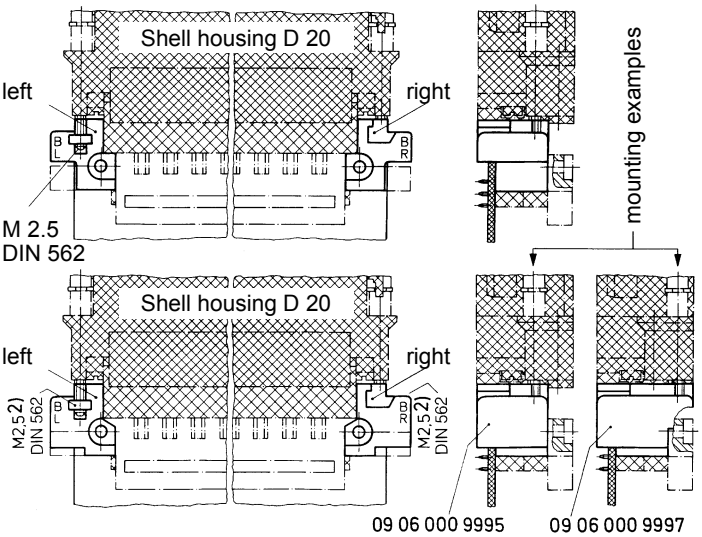
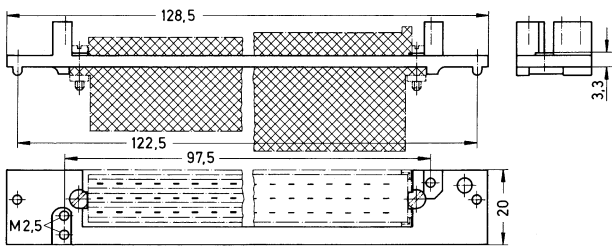
X
109.55
99.75

[2)] Use the lower slot when coding the male connector with fixing brackets

Mounting example **A** max. cable entry ø 14 mm to the top, see page 20.25
Mounting example **B** max. cable entry ø 14 mm to the bottom, see page 20.25

[3)] Fits D 20/2 and D 20/4
[f)] Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Shell housing D 20

Identification	Part number	Drawing	Dimensions in mm
Mounting possibilities for code comb at the male connector with fixing brackets			
Fixing brackets B for male connectors* for 19" racks according to DIN EN 60 297, part 3-101			
Single fixing* without nut	left 09 06 000 9909 right 09 06 000 9910		
with nut M 2.5 DIN 562	left 09 06 001 9934 right 09 06 001 9935		
Multiple fixing* without coding at the fixing bracket without nut	left 09 06 000 9907 right 09 06 000 9908		
without coding at the fixing bracket with nut M 2.5 DIN 562	left 09 06 000 9966 right 09 06 000 9967		
with coding at fixing bracket[1] with nut M 2.5 DIN 562 15 mm	left 09 06 000 9995 09 06 000 9997		
with coding at fixing bracket[1] with nut M 2.5 DIN 562 20 mm	right 09 06 000 9996 09 06 000 9998	[2] supplied with fixing	
Protection and fixing strip* for 20 mm shell housing Single fixing fits female connectors and I element crimp	09 06 001 9909		

* Fits D 20/2 and D 20/4

[1] Specific coding between the fixing bracket and the pcb guiding rail. The guiding rail and corresponding coding pins are not scope of delivery

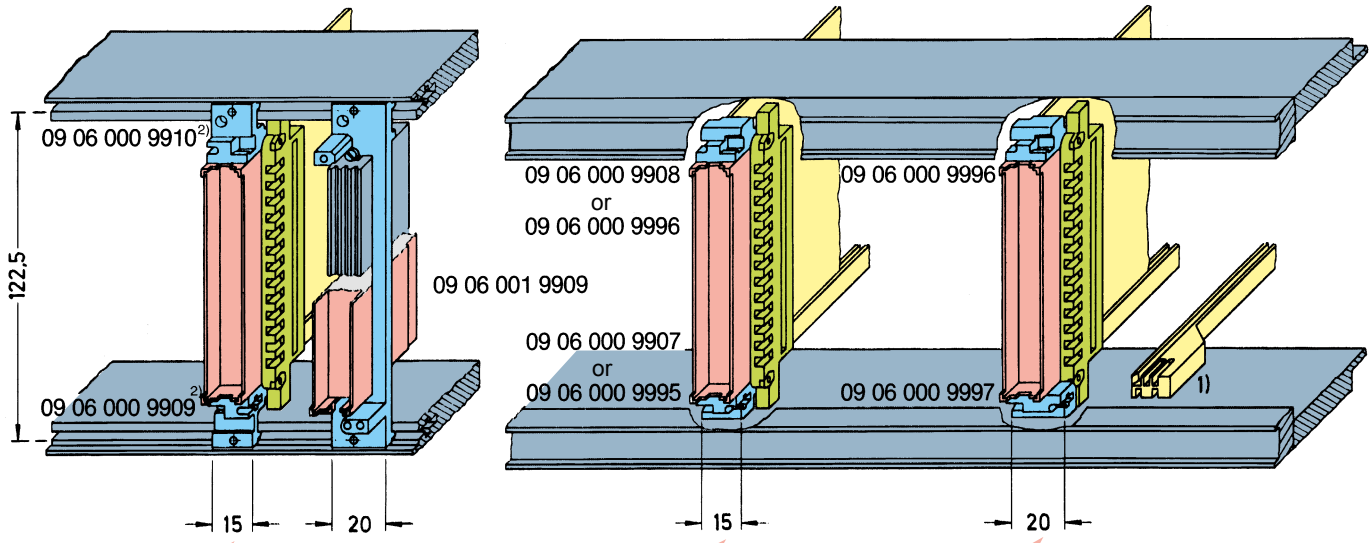
Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

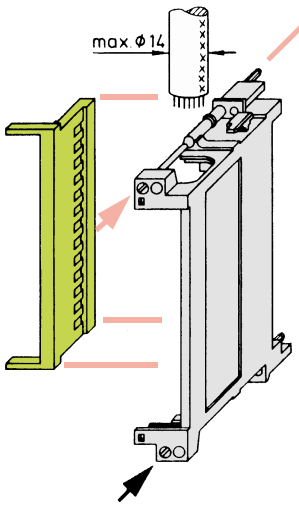
Mounting examples

Dimensions in mm

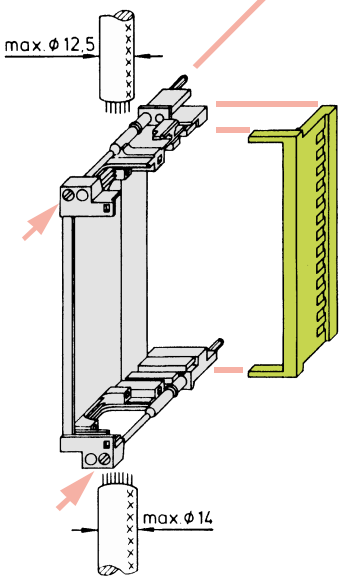
Single fixing

Multiple fixing





Mounting example A[2)]
max. cable entry to the top



Mounting example B
max. cable entry
to the bottom

Separate accessories for housings

Fitting female connectors

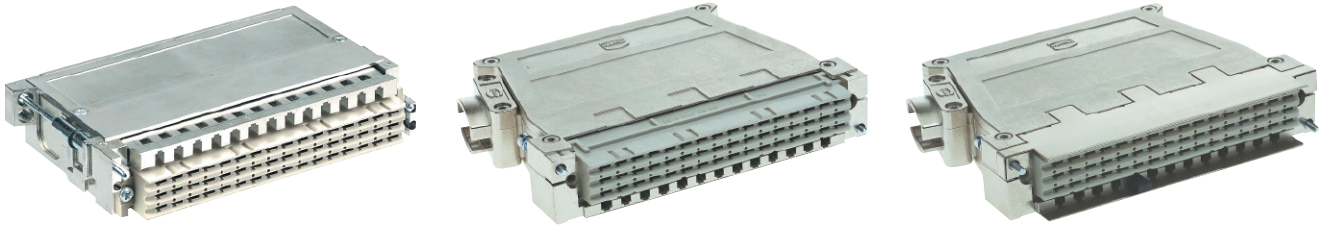
Fitting male connectors

Fixing brackets

Housing parts supplied

[1)] Specific coding between the fixing bracket and the pcb guiding rail

[2)] Max. cable entry (ø 14 mm) from the bottom with fixing brackets 09 06 901 9924/…9925 possible. See page 20.32.



EMC with HARTING connectors

HARTING offers metallised D 20 housings and full metal housings for EMC connectors according to IEC 60 603-2. Its strong EMI characteristics and metallised fixing elements offers optimal shielding and grounding.

The connection of the cable braid to different types of connector housings, as well as the influence of the connector itself on EMC characteristics of an instrument application, were analysed in regard to **the shielding effectiveness against electromagnetic radiation.** The shielded signal data lines of a railway application were carried via two eurocard pcb´s installed into a 19”-rack. The fixing of the cable braid was realised with different HARTING D 20 housings.

The application including the connectors was then exposed to RF signals, transient bursts and electrostatic discharges.

The standard plastic housings showed minimal EMC performance. The EMC performance of metallised and full metal housings showed significant improvements.

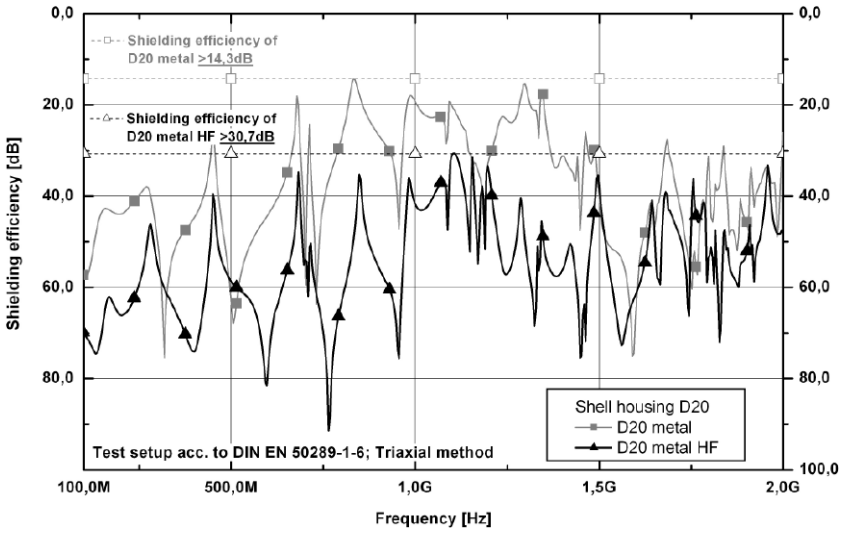
One advantage of metallised housings is their reduced weight (40 grams compared to 180 grams of a full metal housing). Therefore, minimal interference is applied to the pcb in applications where strong vibration is occuring. The HARTING housings are comparatively light through the use of metallised plastic.

The main advantages of a full metal housing are improved cable braid fixing, easy mounting and robustness.

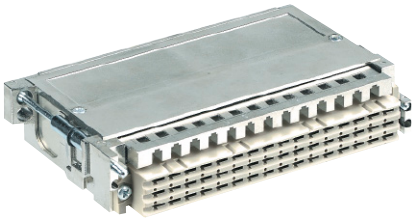
In general, one should keep in mind that an unshielded cable entry leads to loss of the shielding against electromagnetic interference.

“A high-resistance interruption of the cable shield (e.g. by using “pigtails” via twisted stranded wires of the cable shield) may affect the EMC performance and therefore cause unacceptable effects to the electromagnetic environment.”

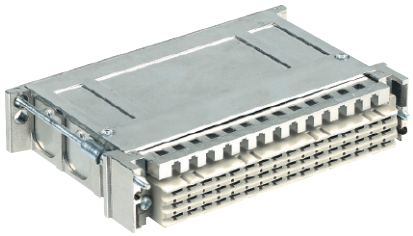
These housings are applied in electronic installations of the railway vehicles of the GERMAN RAILWAY. They are also recommended for stationary installations of the GERMAN RAILWAY (see norm BN 74016, part 1 of December 1989).



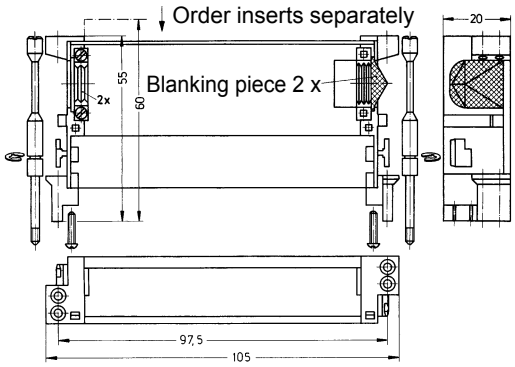
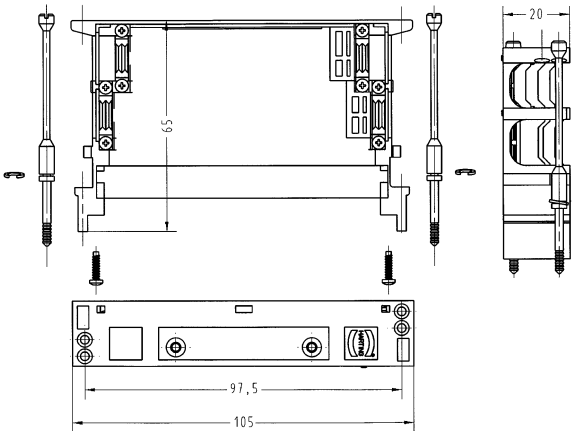
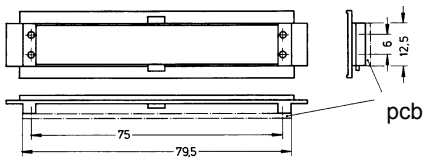
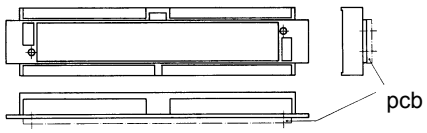
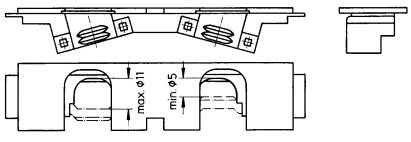
Shell housing D 20 metallised for types F, H and MH



Ⅰ



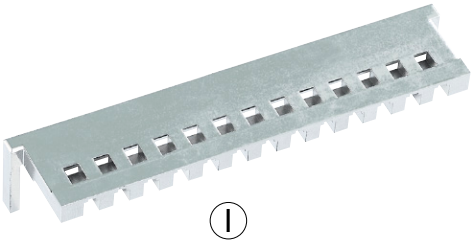
Ⅱ

Identification	Part number	Drawing	Dimensions in mm
Shell housing D 20/2 metallised with two side cable entries Ⅰ Supplied with: see page 20.20	20 mm 09 06 948 0521		
Shell housing D 20/4 metallised with four side cable entries Ⅱ Supplied with: Shell 1x Cover 1x Locking screw 2x (09 06 000 9920) Locking washer 2.3 2x Screw BZ 2.2x7.5 12x Blinding piece 3x Cable clamp 2x	20 mm 09 06 948 0522		
Metallised insert e. g. for LED* for 55 mm height	09 06 900 9986		
for 60 mm height	09 06 900 9987		
Metallised round cable insert* 2 x ø 11	09 06 900 9988		

* Fits D 20/2 metallised

Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Shell housing D 20 metallised

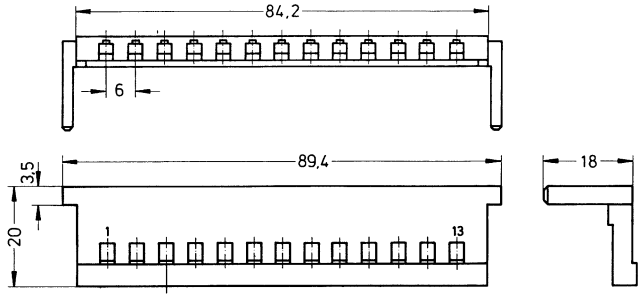
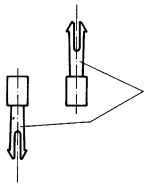
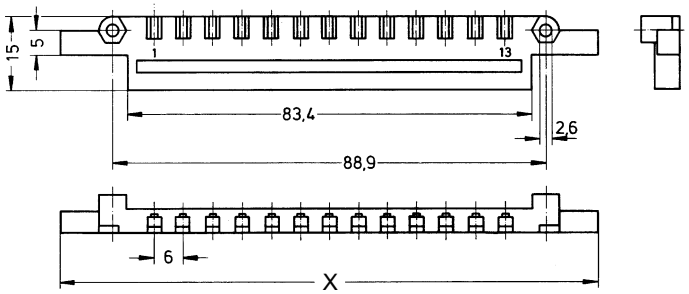
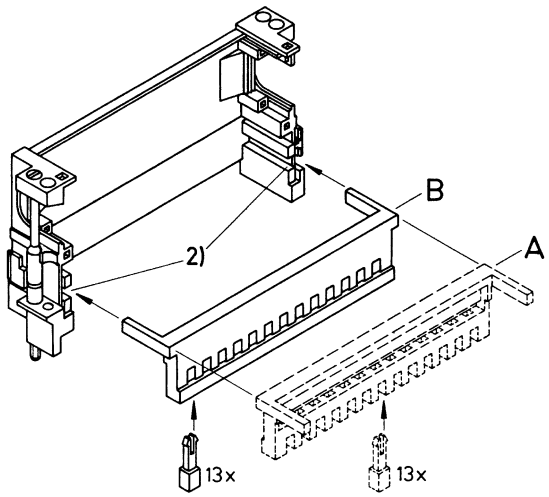


Ⅰ



Ⅱ

Coding

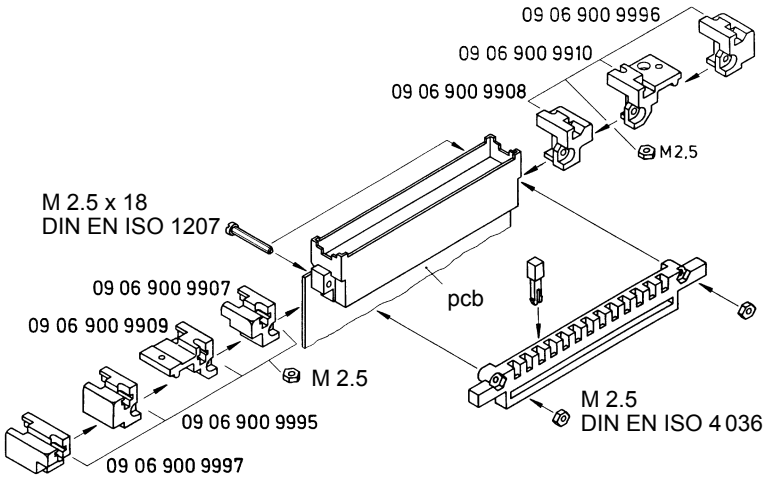
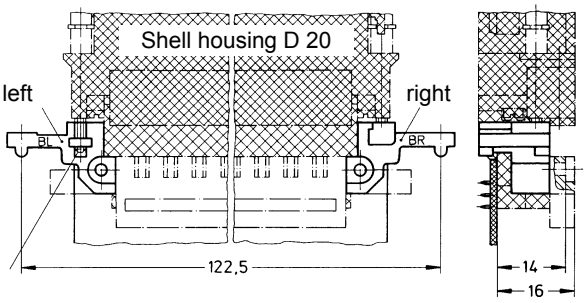
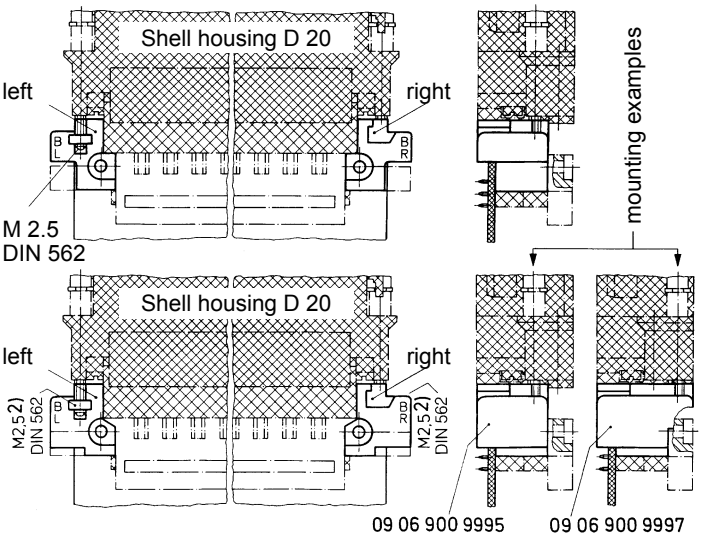
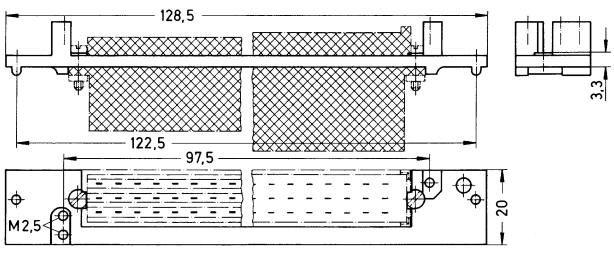
Identification	Part number	Drawing	Dimensions in mm
Metallised code comb for shell housing[3)] (can also be used as blanking cover) Ⅰ	09 06 900 9984[f)]		
Code pin[3)] [1)] Order 13 pieces per code comb	09 06 001 9905[1)]	 Order 13 pieces per code comb	
Metallised code comb for male connector[3)] Ⅱ short version for a full metal locking lever	09 06 900 9985[f)] 09 06 901 9985[f)]		
Mounting possibilities for the code comb in shell housing D 20/2 metallised			

[2)] Use the lower slot when coding the male connector with fixing brackets

Mounting example **A** max. cable entry ø 14 mm to the top, see page 20.25
Mounting example **B** max. cable entry ø 14 mm to the bottom, see page 20.25

[3)] Fits D 20/2 and D 20/4 metallised
[f)] Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Shell housing D 20 metallised

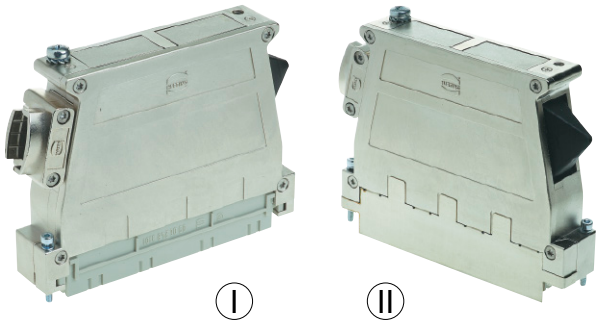
Identification	Part number	Drawing	Dimensions in mm
Mounting possibilities for coding at the male connector with fixing brackets			
Fixing brackets B metallised for male connectors* for 19" racks according to DIN EN 60 297, part 3-101 Single fixing* without nut	left 09 06 900 9909 right 09 06 900 9910		
with nut M 2.5 DIN EN ISO 4 036	left 09 06 901 9934 right 09 06 901 9935	M 2.5 DIN EN ISO 4 036	
Multiple fixing* without coding at fixing bracket without nut	left 09 06 900 9907 right 09 06 900 9908		
without coding at fixing bracket with nut M 2.5 DIN 562	left 09 06 900 9966 right 09 06 900 9967		
with coding at fixing bracket[1] with nut M 2.5 DIN 562	left 15 mm 09 06 900 9995 20 mm 09 06 900 9997 right 15 mm 09 06 900 9996	[2] supplied with fixing	
Protection and fixing* strip for 20 mm shell housing Single fixing fits female connectors and I element crimp	09 06 901 9909		

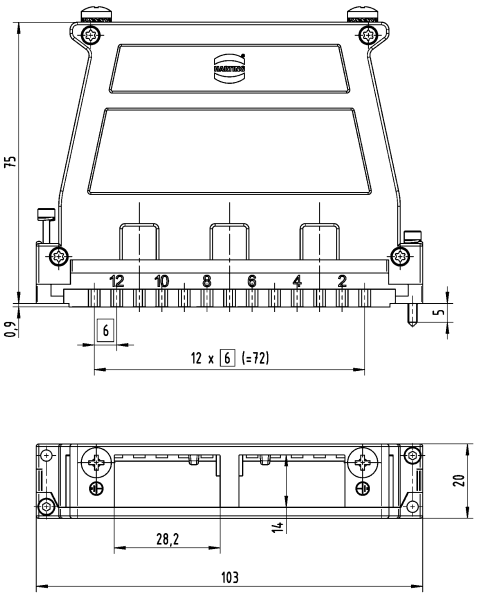
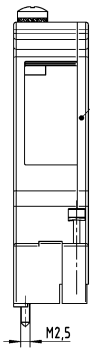
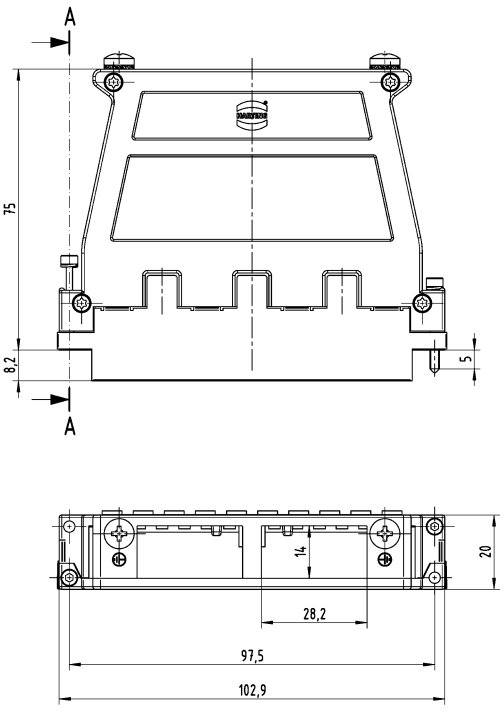
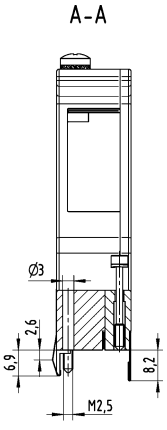
* Fits D 20/2 and D 20/4 metallised

[1] Specific coding between the fixing bracket and pcb guiding rail

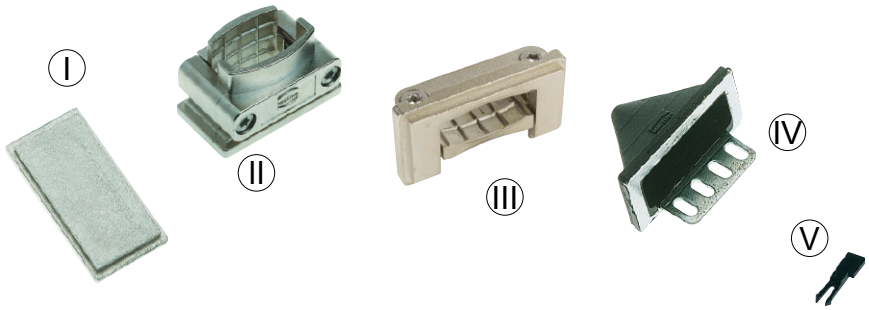
Railway classification NFF 16-101,
Smoke index: F1, Flammability class: I2

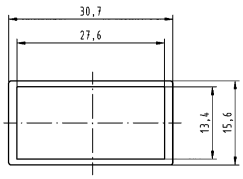
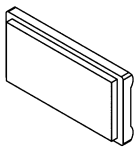
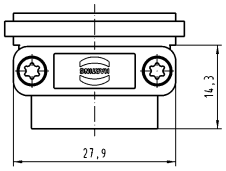
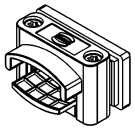
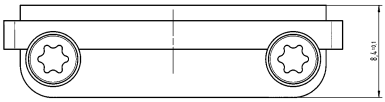
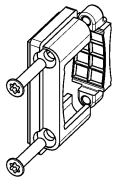
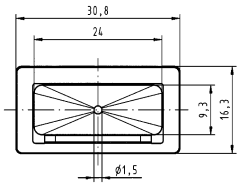
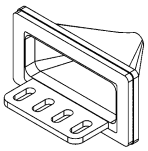
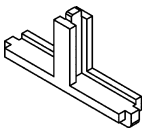
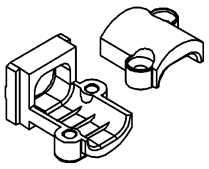
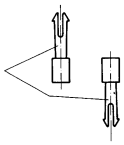
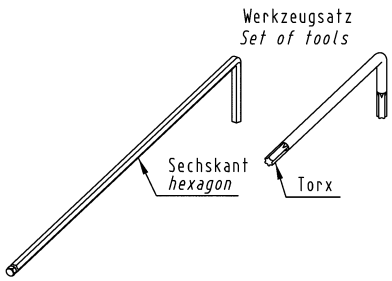
Shell housing D 20 metal for types F, H and MH



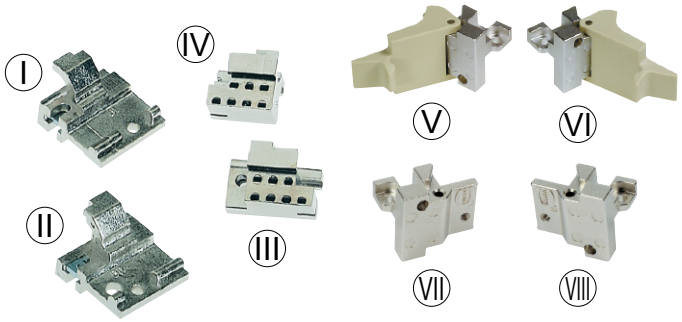
Identification	Part number	Drawing	Dimensions in mm
Shell housing D 20 metal I Supplied with: Shell with coding 1x Cover 1x Locking screw (hexagonal) M2.5 x 23 (09 06 800 9953) 2x Screw (torx) M2.5 x 10 (09 06 800 9960) 4x Earth screw M4 x 8 (09 06 800 9958) 2x	09 06 848 0550		
Shell housing D 20 metal HF with nickel-plated surface II Supplied with: Shell with coding and HF-sealing spring 1x Cover with shielding plate 1x Locking screw (hexagonal) M2.5 x 23 (09 06 800 9953) 2x Screw (torx) M2.5 x 10 (09 06 800 9960) 4x Earth screw M4 x 8 (09 06 800 9958) 2x	09 06 848 0551		

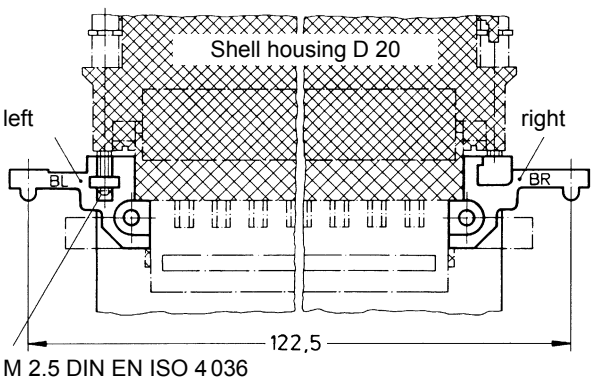
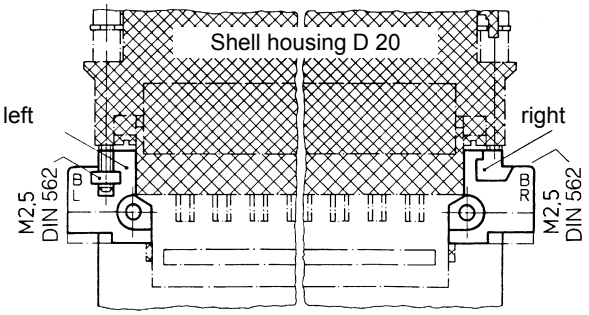
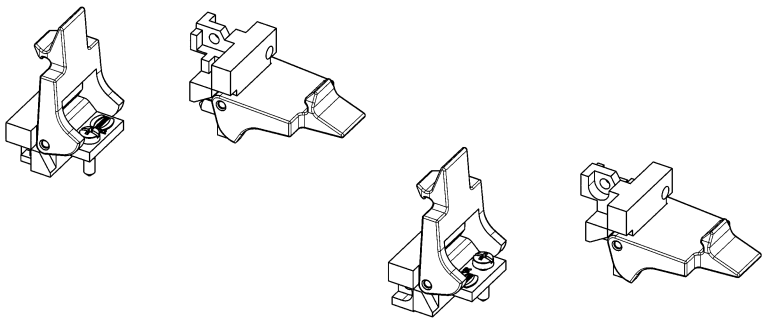
Shell housing D 20 metal for types F, H and MH



Identification	Part number	Drawing	Dimensions in mm
Blinding piece (I)	09 06 800 9951		
Cable clamp wide (II)	09 06 800 9955		
small (III)	09 06 800 9962		
Cable grommet with strain relief (IV)	09 06 800 9950		
Crimp flange insert	09 06 800 9952		
Cable clamp cable-Ø appr. 5- 7 mm cable-Ø appr. 7-10 mm cable-Ø appr. 10-12 mm	 61 03 000 0141 61 03 000 0044 61 03 000 0143		
Blanking piece for hoods	61 03 000 0042		
Code pin (V)	09 06 001 9905	Order 13 pieces per code comb 	
Hexagon ball-head screw driver	09 99 000 0003		

Shell housing D 20 metal HF for types F, H and MH



Identification	Part number	Drawing	Dimensions in mm
Fixing brackets B metallised for male connectors for 19" racks according to DIN EN 60 297, part 3-101 **Single fixing** with nut M 2.5 DIN EN ISO 4 036 (I, II)	left 20 mm 09 06 901 9924[f)] right 20 mm 09 06 901 9925[f)]		
Multiple fixing with coding at fixing bracket with nut M 2.5 DIN 562 (III, IV)	left 20 mm 09 06 900 9997[f)] right 15 mm 09 06 900 9996[f)]		
Fixing brackets B metal for male connectors for 19" racks according to DIN EN 60 297, part 3-101 **Single fixing** with ejector handle (V, VI) without ejector handle (VII, VIII)	left 09 06 800 9946 right 09 06 800 9948 left 09 06 800 9966 right 09 06 800 9968		

[f)] Railway classification NFF 16-101, Smoke index: F1, Flammability class: I2

Electronic connectors in heavy duty housings

For applications where robust, high density, splash-proof connectors are required, e.g. in the automated control and industrial processing systems, HARTING have combined the proven reliability of DIN 41 612 connectors with standard Han® 24 B heavy duty hoods and housings, to bring forward a connector system with up to 96 ways and various contact plating thicknesses to suit the individual requirements.

Advantages

- The combination enhances design flexibility, as it permits an identical wiring interface between the standard 19“ racking systems and the peripheral equipment.
- Simplified stock-holding, identical operating tools.

Inserts

Female	2 x 48 way type F female connectors with crimp contact elements see chapter 03
Male	2 x 48 way type F interface connectors I with crimp contact elements see chapter 03

Hoods and housings

see catalogue "Heavy Duty Han® Connectors"

chapter 30
size 24 B

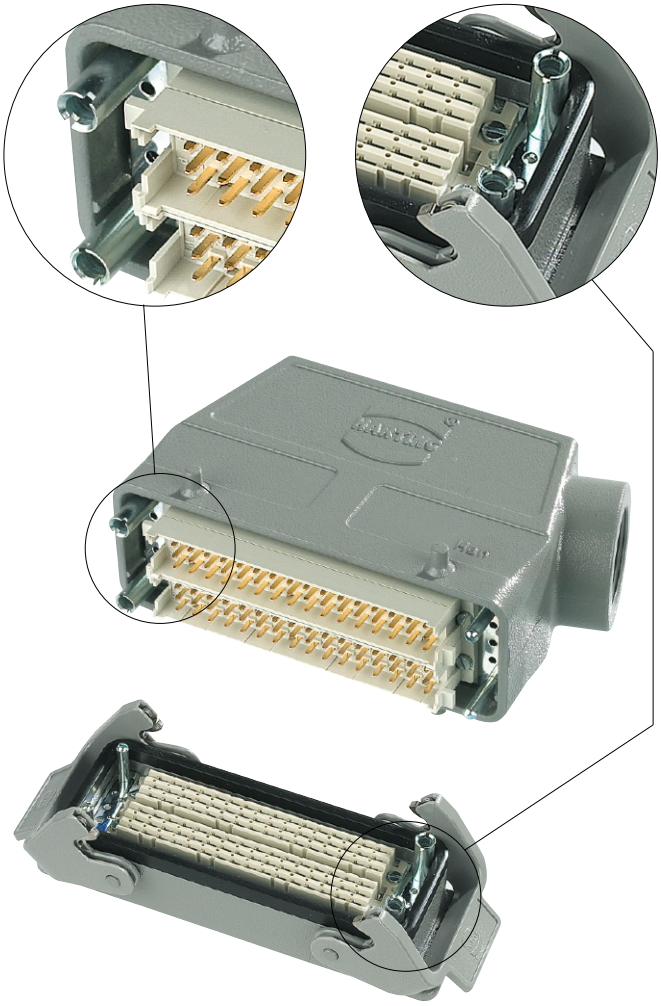
Degree of protection for hoods and housings: IP65

Retaining frames

For fixing the inserts into the housing.

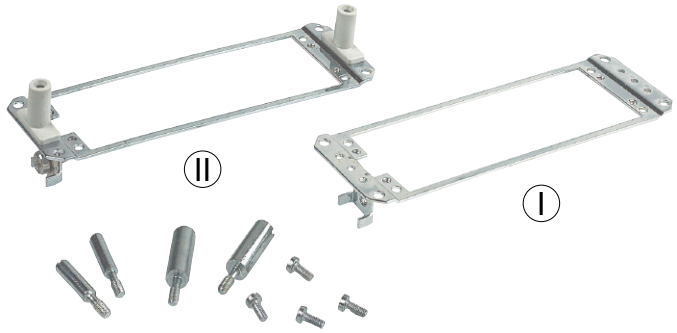
Alternative versions with pre-mating contacts and ground termination.

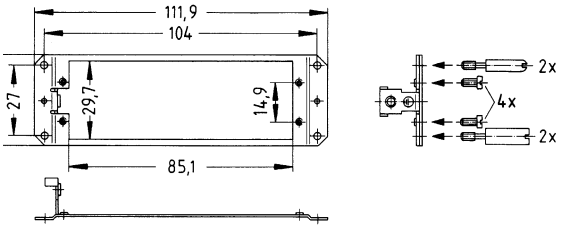
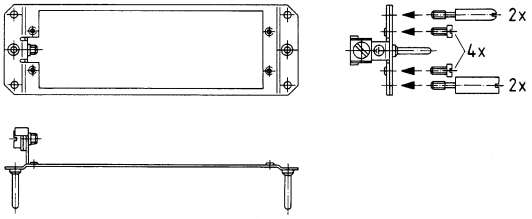
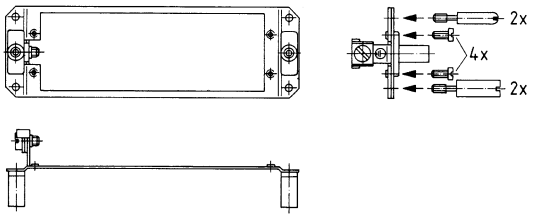
If the working voltages are in excess of 42 V (50 V) it is essential to use retaining frames which have pre-mating ground contacts.





Retaining frames

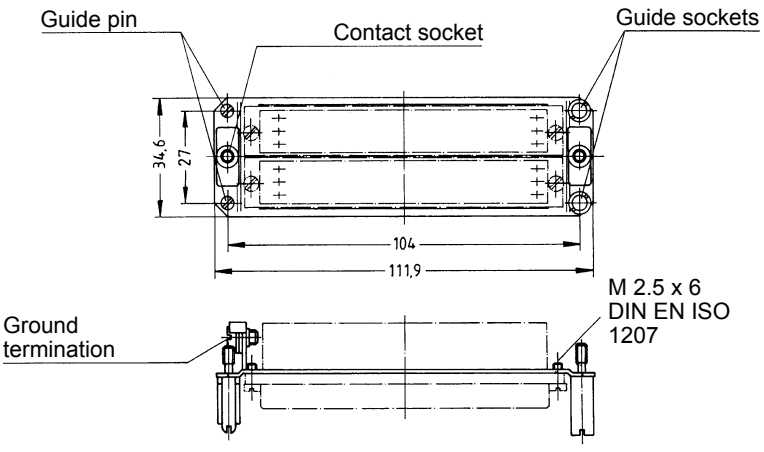


Identification	Part number	Drawing	Dimensions in mm
Retaining frame without contact elements I	09 06 001 9904		
Retaining frame with 2 contact pins and ground termination	09 06 001 9902		
Retaining frame with 2 contact sockets and ground termination II	09 06 001 9903		

Each retaining frame is supplied with 4 fixing screws for mounting the inserts and with 2 guide pins and sockets that provide mechanical protection for the contacts during mating and disconnection. These can also be used as a coding system to prevent cross plugging of adjacent connectors.

Mounting example

Connectors in the retaining frame with contact sockets



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