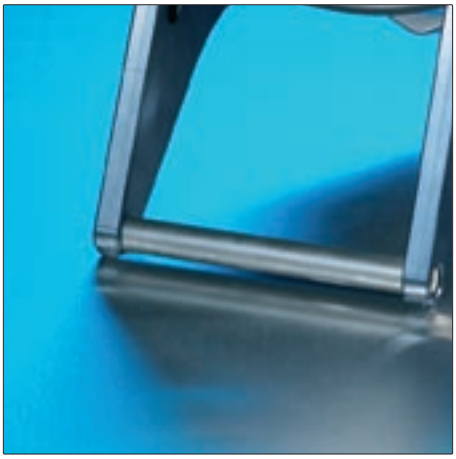
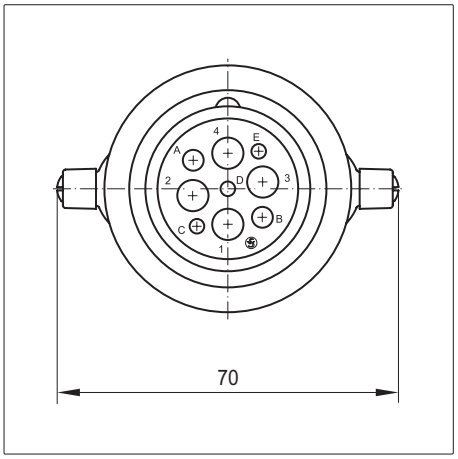
SCHALTBAU

Connect · Contact · Control

Connectors according to UIC 541-5 VE

EP Series





F 121.en

Connector to UIC standard 541-5 VE, EP Series

The connector is designed in accordance with the specifications of the international railway standard UIC 541-5. It adds to the range of our well-proven connectors for the railway industry. This heavy-duty connector is designed to ensure the electrical connection within a train for the electropneumatic brakes (EP brakes) as well as the bypass of an electropneumatic emergency brake.

Both systems have functions which overlap through their control and monitoring elements. They are fed by a common electrical cable that runs the length of the train. Integrated in the receptacle is a switching element as pilot contact which is used for feedback signalling a plug being mated, whereas the end of train is signalled by means of a pin contact in the dummy receptacle.

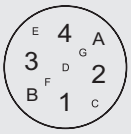
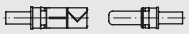
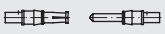
Features

- **Feedback**
  - Plug being mated: via a switching element integrated in the receptacle shell
  - End of train: via a pin contact in the dummy receptacle
- **Shell:**
  - Receptacle shell with metal handle
  - Metal latch locking: Handle of receptacle and plug when mated
  - New design ensuring better protection against splashwater
- **Contacts:**
  - High-quality, screw machine contacts
  - gold or silver plated
  - Crimp terminals

Applications

- **DMUs, EMUs, rail cars, and passenger coaches:**
  Power and signal transfer for electropneumatic brakes as well as electropneumatic emergency brake override (EBO)
- **Freight wagons:**
  Power and signal transfer for electropneumatic brakes

Specifications

Connectors	EP Series		
Applicable standard	UIC 541-5 VE		
Contact arrangement and identification Pin insert: Rear view Socket insert: Front view	 		
Rated voltage	250 V		
Contacts	Contact cavities	Wire gauge	Rated current
	1, 2, 3, 4	AWG 7	35 A
	A, B	AWG 9	25 A
	C, E	AWG 18 ... 16	6 A
	D	AWG 12	12 A
--- ---	F, G	empty	---
Terminal type	Crimp		
Pilot contact	integrated in receptacle shell together with 1 S870 Series SPDT, 10 A (see catalogue D70e)		
Contact resistance (IEC 60512-2)	≤ 2 mΩ		
Operating temperature range	- 30 °C ... + 80 °C		
Degree of protection (IEC 60529)	Mated connector: IP66 / Receptacle with handle closed: IP66		
Test standard (IEC 60068-1), (t_{min}[°C] / t_{max}[°C] / $t_{testing\ time}$[days]	15/100/21		
Mechanical endurance (IEC 60512-5, test 9a)	> 10,000 mating cycles		
Materials			
Receptacle shell	Aluminium die-cast		
Plug shell	Polyamide PA 6.6, black		
Inserts	for plugs: Polyamide PA 6.6, black; for receptacles: Polyamide PA 6, black		
Seals	Thermoplastic elastomer (TME) / Neoprene		
Contacts	Copper wrought alloy, crimpable		
Finish	Silver or gold plated		

Ordering code

EP Series

● EP plug: EP SK L3000

Series

EP	

Connector type

ST	Plug
SK	Connector cable, single ended
VK	Connector cable, double ended

Cable length (SK and VK only)

L2000	Cable length 2000 mm
L3000	Cable length 3000 mm
L4500	Cable length 4500 mm

Note

In this catalogue only stock items are presented that can be delivered immediately.

Variants

Do you need a special variant? Do not hesitate to contact us! Maybe the connector you are looking for is among our many **special designs**. If not, we also deliver connectors **manufactured to custormer requirements**. In this case, however, minimum order quantities apply.

● EP receptacle: EP DK R1 S1 K1 E Lxxxx

Series

EP	

Connector type

KD	Receptacle
BD	Dummy receptacle
DK	Connector cable with receptacle

Backshell

R0	none
R1	with cable gland M40x1.5
R2	with adapter Pg29
R3	without adapter
R4	made of metal

Pilot contact

S0	none
S1	existent

Terminal block

K0	none
K1	existent

Drainage slots

E	existent

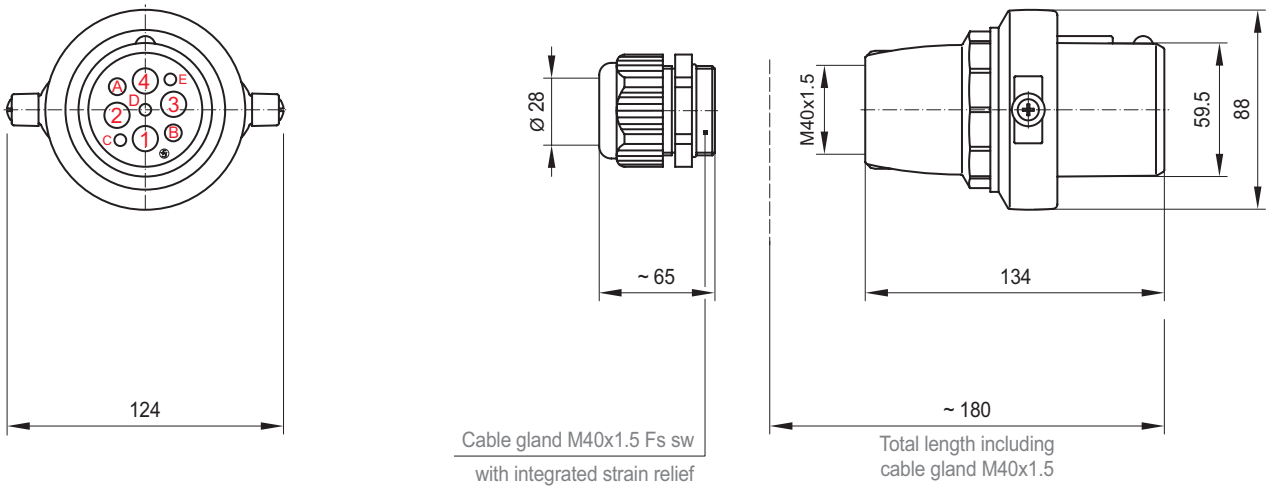
Cable length (DK only)

Lxxxx	Cable length to customer requirements

EP ST Plug, socket contacts included

EP Series

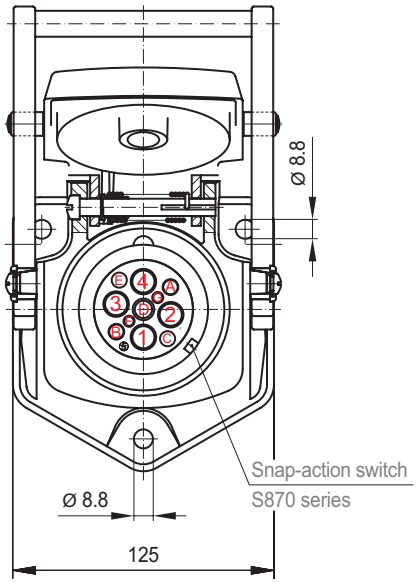
● Plug

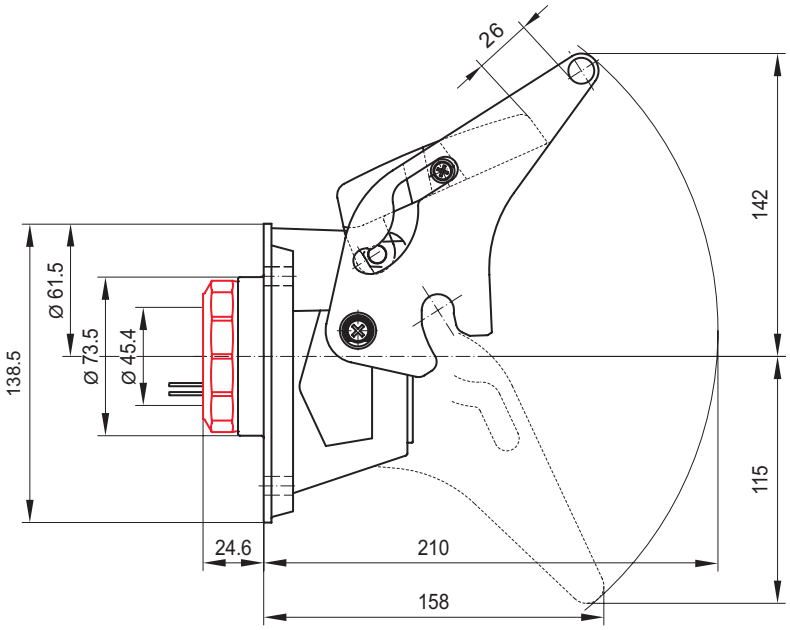


Reduced scale diagrams / dimensions in mm

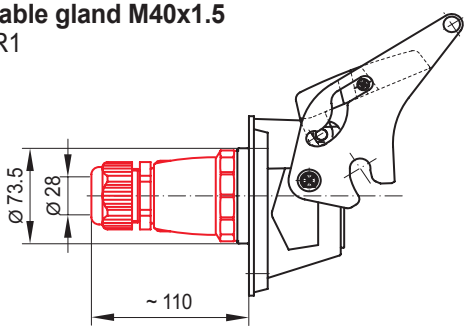
EP KD R0...4 Sx Kx E Receptacle, pin contacts included EP Series

- **Receptacle without backshell**
  Type R0

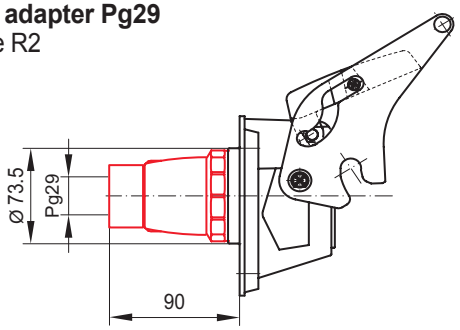




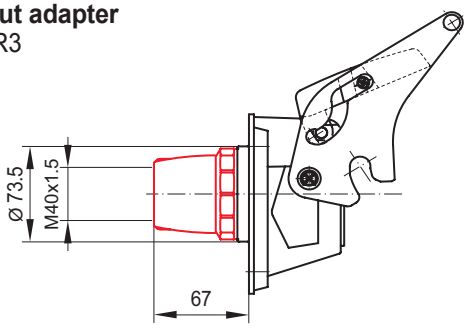
- **Receptacle with backshell and cable gland M40x1.5**
  Type R1



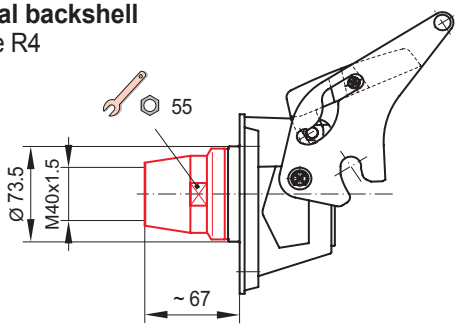
- **Receptacle with backshell and adapter Pg29**
  Type R2



- **Receptacle with backshell without adapter**
  Type R3

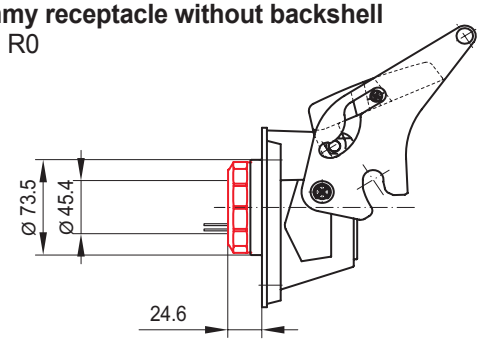


- **Receptacle with metal backshell**
  Type R4

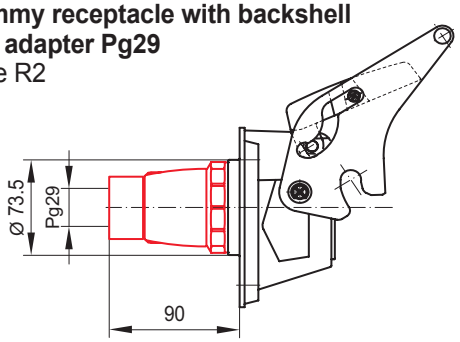


EP BD R0/R2 Sx Kx E Dummy receptacle, 1 pin contact for feedback included EP Series

- **Dummy receptacle without backshell**
  Type R0



- **Dummy receptacle with backshell and adapter Pg29**
  Type R2

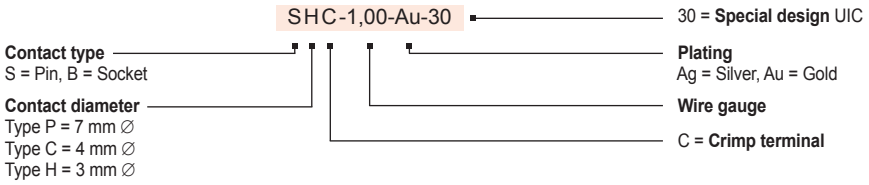


Reduced scale diagrams / dimensions in mm

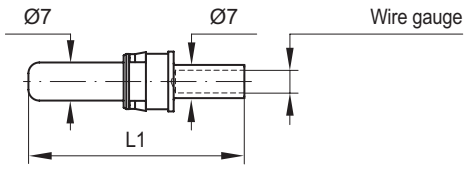
Contacts Crimp contacts (pin/socket) EP Series

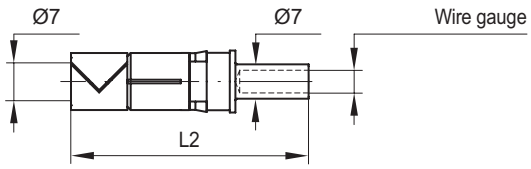
Ordering code contacts

Contacts



Crimp contacts for cavities 1, 2, 3, 4





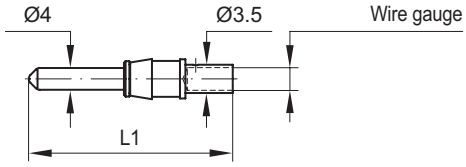
Ordering code	L1	Pin contact
SPC-10,0-Ag	39.7	for receptacle
SPC-2,5-Ag *	39.7	for dummy

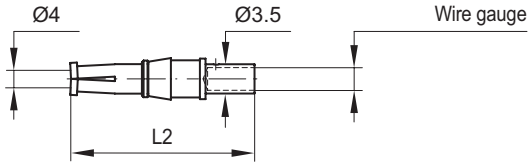
Ordering code	L2	Socket contact
BPC-10,0-Ag	42.2	for plug

Wire gauge	Rated current
AWG 7 (10 mm²)	35 A
AWG 12 (2.5 mm²)	12 A

* For feedback signalling end of train only one pin contact is implemented in contact cavity 4 of a dummy receptacle

Crimp contacts for cavities A, B



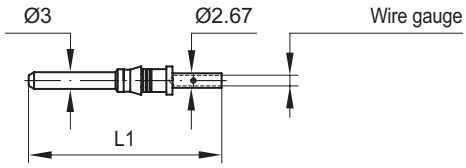


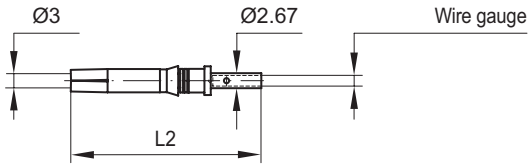
Ordering code	L1	Pin contact
SCC-6,00-Ag	37.5	for receptacle

Ordering code	L2	Socket contact
BCC-6,00-Ag	32.6	for plug

Wire gauge	Rated current
AWG 9 (6 mm²)	25 A

Crimp contacts for cavities C, E



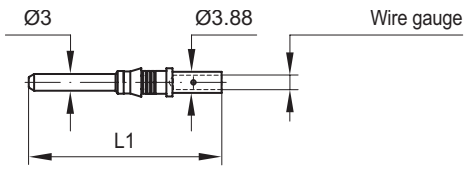


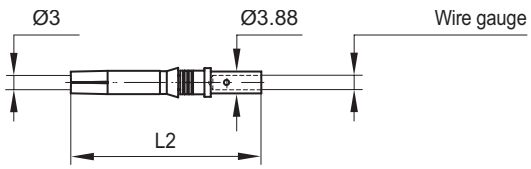
Ordering code	L1	Pin contact
SHC-1,00-Au-30	35.5	for receptacle

Ordering code	L2	Socket contact
BHC-1,00-Au-30	33.8	for plug

Wire gauge	Rated current
AWG 16 (1 mm²)	6 A

Crimp contacts for cavity D





Ordering code	L1	Pin contact
SHC-2,50-Au-30	35.5	for receptacle

Ordering code	L2	Socket contact
BHC-2,50-Au-30	33.8	for plug

Wire gauge	Rated current
AWG 12 (2.5 mm²)	6 A

CWZ-120, CWZ-600 Crimp tools

AWZ-C/H, AWZ-P Extraction tools

Tools

- **CWZ-120, CWZ-600** Crimp tools

Ordering code	Description
CWZ-120	Crimp tool for wire gauges AWG 7 ... 250 MCM (10 mm² ... 120 mm²), contacts Type P
CWZ-600	Crimp tool for wire gauges AWG 25 ... 9 (0.14 mm² ... 6 mm²), contacts Type C and H

- **AWZ-C/H, AWZ-P** Extraction tools

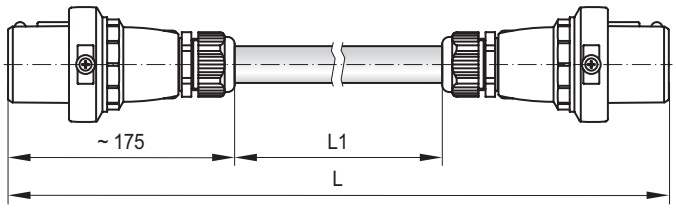
Fig. similar

Order code	Description
AWZ-C/H	Extraction tool for contacts, Type C and H
AWZ-P	Extraction tool for contacts, Type P

Pre-assembled cables Connector cables, single or double ended

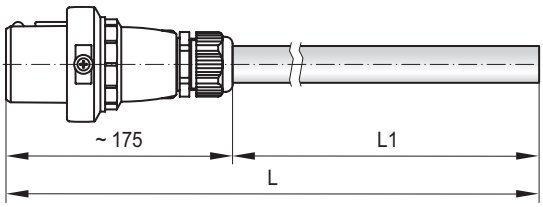
EP Series

- **EP VK Lxxxx** Connector cable, double ended



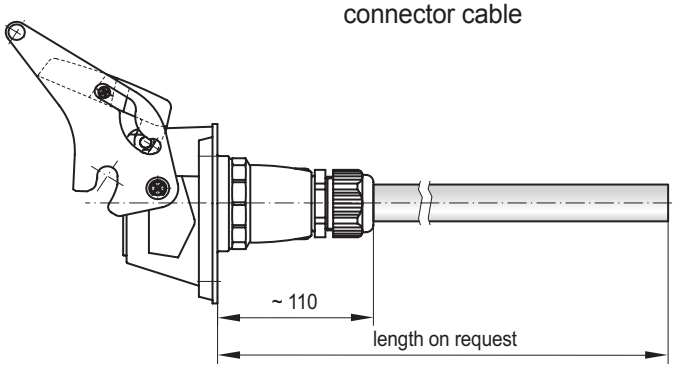
Ordering code	Total length L	Length L1
EP VK **L2000**	2000 mm ± 10	1650 mm
EP VK **L3000**	3000 mm ± 10	2650 mm
EP VK **L4500**	4500 mm ± 10	4150 mm

- **EP SK Lxxxx** Connector cable, single ended



Ordering code	Total length L	Length L1
EP SK **L2000**	2000 mm ± 10	1825 mm
EP SK **L3000**	3000 mm ± 10	2825 mm
EP SK **L4500**	4500 mm ± 10	4325 mm

- **EP DK Ra Sb Kc Lxxxx** Receptacle with connector cable



EP AK Cable junction box

Accessories

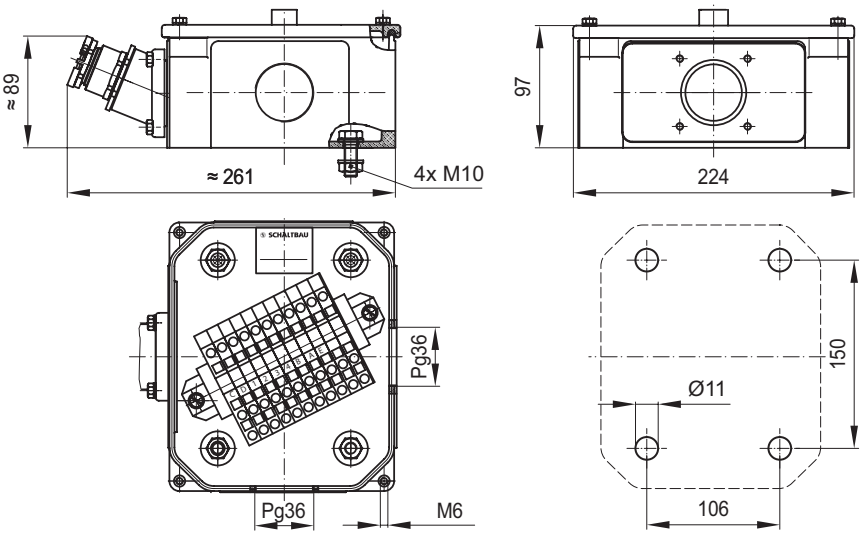
- **Cable junction box**

Junction box for holding a pre-assembled connector cable such as EP DK Ra Sb Kc Lxxxx.

The following variants are available:

Ordering code	Description
EP AK	Junction box with 9 pole terminal block for receptacles without pilot contact (S0)
EP AK11	Junction box with 11 pole terminal block for receptacles with pilot contact (S1)

To be mounted via 4 M10 screws at the bottom of the box, see dimension diagram.

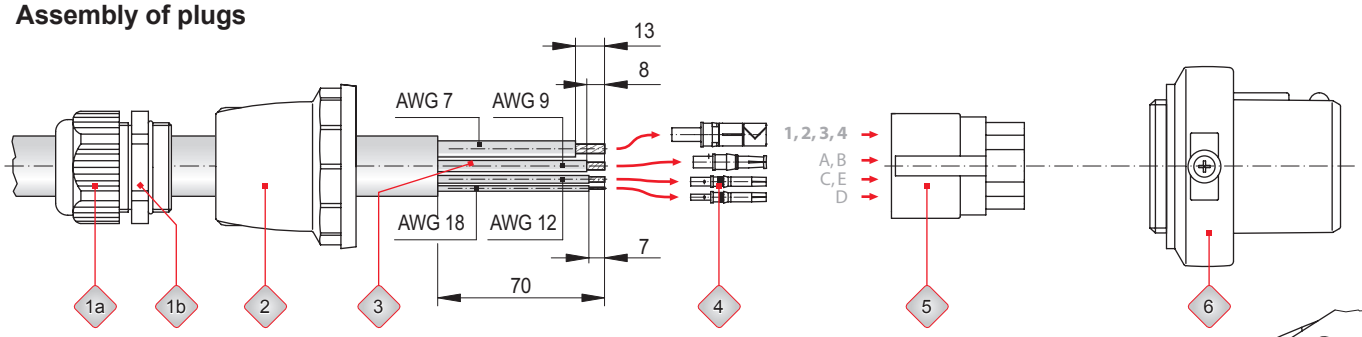


Reduced scale diagrams / dimensions in mm

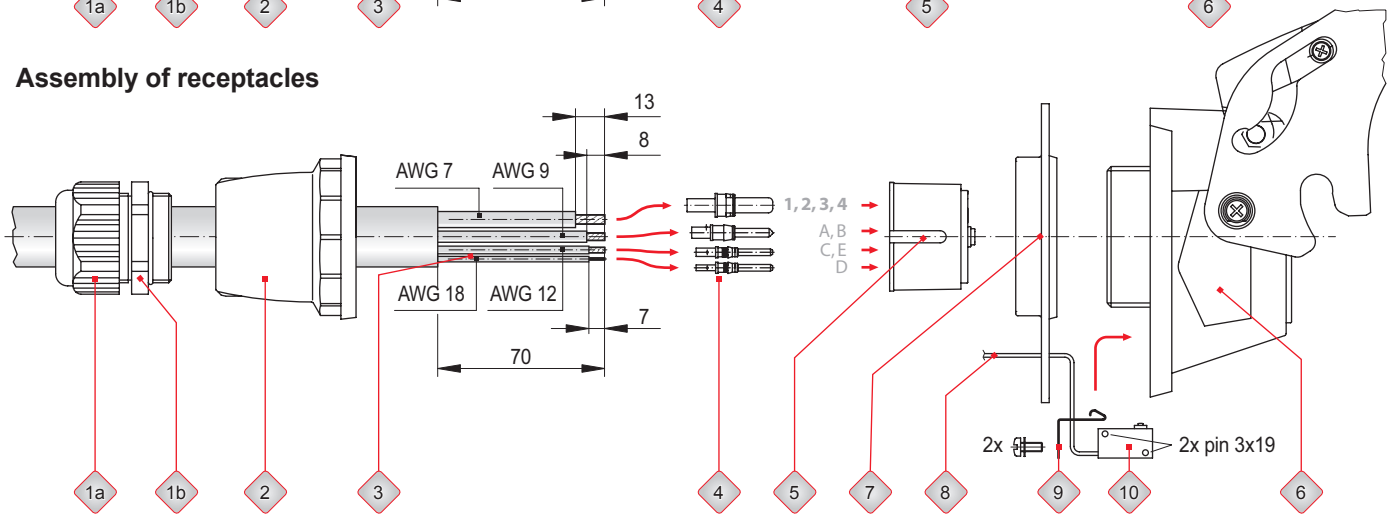
Assembly Plug and receptacle

EP Series

Assembly of plugs



Assembly of receptacles



Assembly instructions

Place cable gland with integrated strain relief ⟨1a⟩, ⟨1b⟩ and backshell ⟨2⟩ on cable in sequence shown. Remove part of cable jacket, trim the individual conductors ⟨3⟩ to the desired length and strip the insulation. Crimp cable conductors ⟨3⟩ to contacts ⟨4⟩. The edge of the insulation where the wire is stripped should abut on the point of crimping.

Fit crimped contacts ⟨4⟩ into contact insert ⟨5⟩. Make sure that clip is locked in place in contact insert. We recommend checking of the established contact. The contact retention test force is 40 N. Fit contact insert ⟨5⟩ into shell ⟨6⟩ and screw backshell ⟨2⟩ to plug and receptacle shell ⟨6⟩ respectively. Screw part ⟨1b⟩ of cable gland in backshell ⟨2⟩ and tighten part ⟨1a⟩ of cable gland securely to ensure strain relief of individual conductors (depends on type of backshell; this instruction refers to type R1).

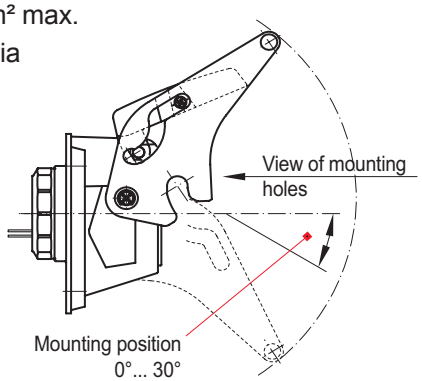
Instructions to be continued for receptacle: Mount snap-action switch ⟨10⟩ together with accessories ⟨9⟩ in receptacle and connect leads ⟨8⟩. Note: Make sure to secure the leads with sleeves! Press seal ⟨7⟩ to shell and mount receptacle and dummy receptacle respectively.

Mounting

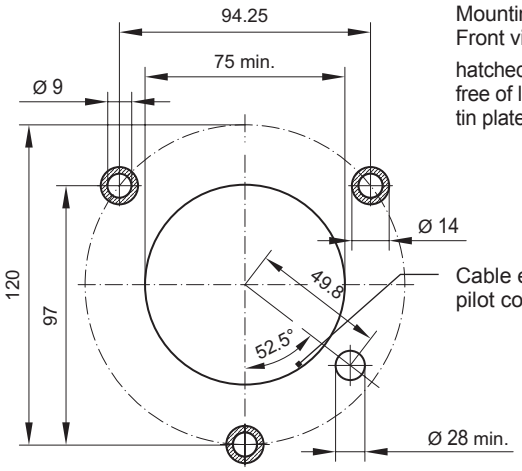
EP Series

Please observe the following instructions:

- Metal plate must be earthed
- Surface finish of metal plate: Rz 6.3 ... 12.5 µm
- Terminal block for pilot contact: wire gauge 2,5 mm² max.
- Earth connection via mounting holes
- Tightening torque 15 Nm min.
- Mounting position: horizontal up to - 30°



Mounting holes of receptacle and dummy receptacle:



Mounting holes, Front view

hatched part of drawing free of lacquer, zinc or tin plated

Cable entry for pilot contact

Reduced scale diagrams / dimensions in mm

Schaltbau GmbH has an environment management system that has been certified since 1994.

Schaltbau GmbH has a quality management system that has been certified since 1994.

Electrical Components and Systems for Railway Engineering and Industrial Applications

Connectors	• Connectors manufactured to industry standards • Connectors to suit the special requirements of communications engineering (MIL connectors) • Charging connectors for battery-powered machines and systems • Connectors for railway engineering, including UIC connectors • Special connectors to suit customer requirements
Snap-action switches	• Snap-action switches with positive opening operation • Snap-action switches with self-cleaning contacts • Enabling switches • Special switches to suit customer requirements
Contactors	• Single and multi-pole DC contactors • High-voltage AC/DC contactors • Contactors for battery powered vehicles and power supplies • Contactors for railway applications • Terminal bolts and fuse holders • DC emergency stop switches • Special contactors to suit customer requirements
Control devices	• Master controllers and reversers for railway applications • Toggle switch devices • Handles and foot switches for railway applications (dead-man equipment) • Switching elements with high breaking capacity • Emergency brake handles • Signal devices
Transportation system equipment	• Power supplies for passenger coaches (electric equipment) • Battery chargers for locomotives and passenger coaches • High-voltage equipment for single and multi-phase operation • Heating devices and heating controls • Design and engineering services for high-voltage equipment • Special equipment to suit customer requirements

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