

# 1

## Connectors

ZH Series

Inter-car jumpers  
to UIC 552

Catalogue F122.en



More information at:  
[schaltbau-gmbh.com](http://schaltbau-gmbh.com)

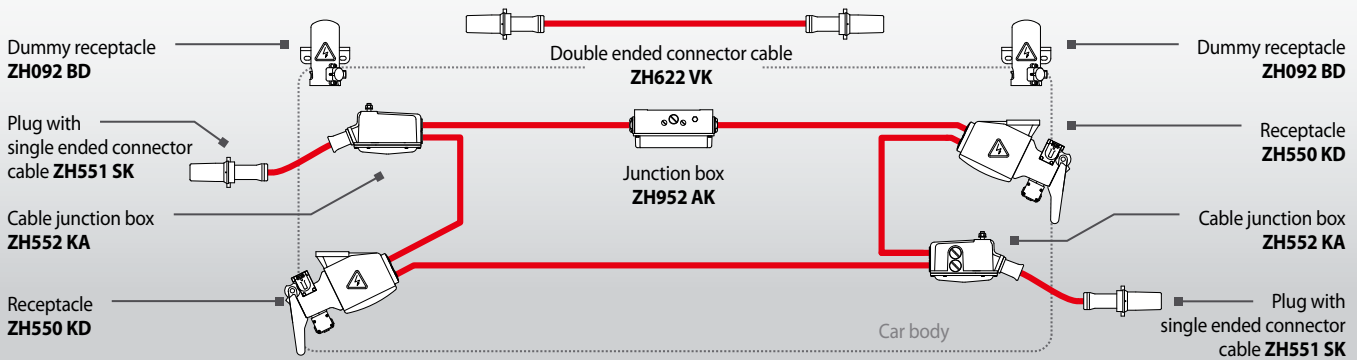
## ZH Series Inter-car jumpers to UIC 552

Schaltbau inter-car jumpers to UIC standard – cost-effective, durable and highly reliable

Schaltbau ZH series connectors fully meet the requirements of UIC 552. With their long time proven design these jumpers have been the stock items of Schaltbau for the railway industry since decades.

All railway vehicles used in cross-border rail traffic, such as locomotives as well as electric and diesel multiple units that are equipped with a train line require these ZH Series jumpers.

### Circuit diagram of energy transmission between cars equipped with a train line



## Features

Series ZH

### ZH Series plug with single or double ended connector cable:

- UIC 552 compliant
- Rugged, durable aluminium die cast housing
- Termination:
  - High-quality screw machined contact, continuous low contact resistance
  - Crimp connection, wire gauge 185 mm<sup>2</sup>
  - Earthing: sheathed cable, wire gauge 25 mm<sup>2</sup>, connected to plug housing
- Assembly of plug: Single or double ended connector cable in different designs and lengths

### ZH series receptacle:

- UIC 552 compliant: rugged, durable aluminium die cast housing, metal handled lid
- Termination:
  - High-quality screw machined contact, continuous low contact resistance
  - Screw-type connection with M16 screw
  - Earthing: M10 screw connection at side of shell and mounting surface
  - Optional pilot contact for feedback signalling a plug being mated
- Housing:
  - Massive, two-piece receptacle shell with universal terminals for connecting cables
  - Easy mounting and maintenance
  - Lock and key for mounting on the right or left
  - Metal latch locking of mated plug in receptacle

### ZH Series dummy receptacle:

- Rugged, durable aluminium die cast housing
- Designed to accommodate not mated ZH series plugs (parking position)
- Lock and key
- Earthing: mounting surface

### ZH Series junction boxes:

- Rugged, durable aluminium die cast housing
- Termination:
  - Screw terminal or terminal block
  - Earthing: mounting surface or M12 screw terminal

### Common features

- **Life:** Designed for frequent use up to 5,000 mating cycles
- **IP54 rated** Receptacle with closed lid and for mated connector, including cable entry
- **Temperature resistance:** -50° C min. up to +85° C max., valid for all materials used
- **Corrosion resistance:** Increased resistance against chemicals, in particular detergents alkaline or acidic
- **Flammability rating:**
  - UL94-V0 rated
  - Meets requirements for fire protection according to EN 45545

## Specifications

Series ZH

Jumpers	ZH
Standard	UIC 552
Number of contacts	1
Rated voltage	3 kV AC / DC
Rated current (UIC 552)	800 A at -10 °C
Terminal type	Crimp connection M16 screw connection
	Pin Socket
Contact diameter	25 mm
Wire gauge	185 mm <sup>2</sup>
Contact resistance, typ. (IEC 60512-2-2)	< 1 mΩ
Test voltage (DIN EN 50124-1)	11.5 kV (50 Hz) 10 sec
Contact forces	
Mating force	> 200 N
Sliding force	> 100 N
Unmating force	> 100 N
Pilot contact	optional in receptacle shell: 1 SPDT, 250 V AC: 15 A / 24 V DC: 6 A
IP rating (IEC 60529, IP code)	When mated: IP54 Receptacle with lid closed: IP54
Shock, Vibration (IEC 61373)	Category 1, Class B
Operating temperature	- 50 °C ... + 85 °C
Mechanical endurance (IEC 60512-9-1)	5,000 mating cycles
Materials	
Plug shell, receptacle shell	Aluminium die cast
Inserts	Thermoplastic / Thermoset
Seals	Thermoplastic elastomer (TME) / Neoprene
Contacts	Copper wrought alloy, crimpable



## Quality and reliability

### Rail vehicles in good hands – with Schaltbau jumpers

The development, manufacture and assembly of our products are subject to the quality management provisions of DIN EN ISO 9001 and IRIS (International Railway Industry Standard).

Continuous testing guarantees consistently high quality. Your benefit: Great performance at low operating costs. Maximum operating reliability and long lifetime of your rolling stock.

**Ordering code**

Series ZH

• ZH plug with cable

Example: **ZH551 SK-L3000**

<b>Series</b>	
ZH551 SK	Plug with single ended cable
ZH622 VK	Double ended cable with 2 plugs
<b>Cable length</b>	
Lxxxx	Cable length in mm, standard and lengths on request

• ZH Receptacle

Example: **ZH550-KD-DK-V1-S0-B-P**

<b>Series</b>	ZH550 KD	Receptacle
<b>Handled lid</b>	DL	Handled lid, long
	DM	Handled lid, medium
	DK	Handled lid, short
<b>Lock and key</b>	V0	---
	V1	Lock
<b>Pilot contact</b>	S0	---
	S1	1x Pilot contact
<b>Colour</b>	B	Black, RAL 9005
	C	Concrete grey, ground coated, RAL 7023
<b>Threads for cable glands</b>	P	Thread 2x Pg36 / 1x Pg13.5
	M40	Metric thread 2x M40x1.5 / 1x M20x1.5
	M50	Metric thread 2x M50x1.5 / 1x M20x1.5

• ZH dummy receptacle

Example: **ZH092 BD-V1-B**

<b>Series</b>	ZH092 BD	Dummy receptacle
<b>Lock and key</b>	V0	---
	V1	Lock
<b>Colour</b>	B	Black, RAL 9005
	C	Concrete grey, RAL 7023

• ZH junction box

Example: **ZH552 KA-B-P**

<b>Series</b>	ZH552 KA	Cable junction box for ZH551 SK Lxxxx	
	ZH952 AK	Junction box	
<b>Colour</b>	B	Black, RAL 9005	
	C	Concrete grey, RAL 7023	
<b>Threads of cable glands</b>	P	Pg36 + Pg13.5	} ZH552 KA only
	M40	M40x1.5	
	M50	M50x1.5	
	P1	Pg36 + Pg29 + Pg13.5	} ZH952 AK only
	M1	M50x1.5 + M25x1.5 + M20x1.5	



**Note:**

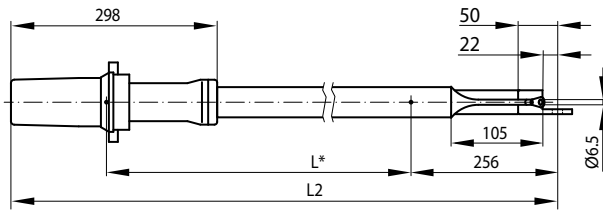
This catalogue shows only stock items. For some variants minimum quantities apply. Please ask for the conditions.

**Special variant:**

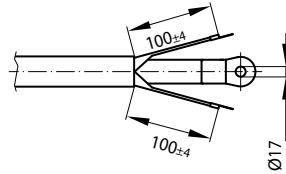
If you need a special variant of the connector, please do not hesitate to contact us. Maybe the type of connector you are looking for is among our many special designs. If not, we can also supply customized designs. In this case, however, minimum order quantities apply.

**Single ended connector cables** Pre-assembled cable sets

Series ZH

**ZH551 SK Lxxxx** Single ended cable with plug


\*Length at ordering code



Cable length	Tolerance
≤ 2,000 mm	± 20 mm
> 2,000 mm, ≤ 4,000 mm	± 30 mm
> 4,000 mm, ≤ 10,000 mm	± 60 mm

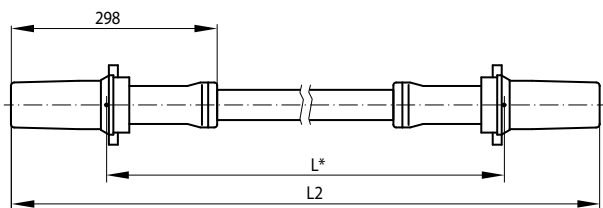
**Stock items**

Ordering code	Length L*	Total length L2
ZH551 SK L1420	1,420 mm	1,814 mm
ZH551 SK L1800	1,800 mm	2,094 mm
ZH551 SK L3300	3,300 mm	3,954 mm

**i** Note:  
Other lengths on request

**Double ended connector cables** Pre-assembled cable sets

Series ZH

**ZH622 VK Lxxxx** Double ended cable with two plugs


\*Length at ordering code

Cable length	Tolerance
≤ 2,000 mm	± 20 mm
> 2,000 mm, ≤ 4,000 mm	± 30 mm
> 4,000 mm, ≤ 10,000 mm	± 60 mm

**Stock items**

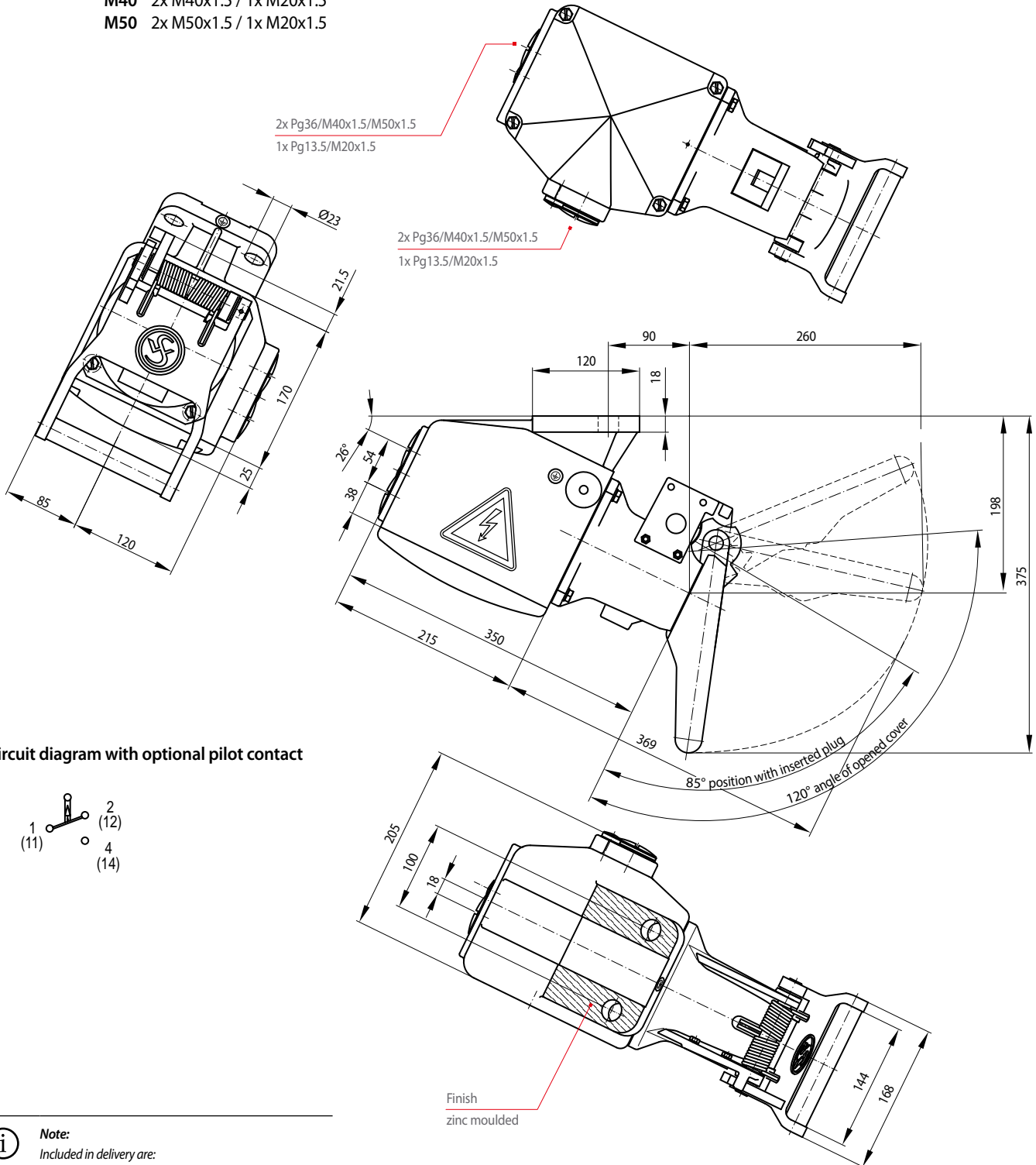
Ordering code	Length L*	Total length L2
ZH622 VK L1200	1,200 mm	1,476 mm
ZH622 VK L1460	1,460 mm	1,736 mm
ZH622 VK L3400	3,400 mm	3,672 mm

**i** Note:  
Other lengths on request.

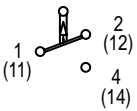
**ZH550-KD-DL-Vx-Sx-B-P** Receptacle, handled lid long

• Type of connector: Receptacle ZH550-KD

Handled lid:	<b>DL</b>	Long
Key lock:	<b>V0</b>	None
	<b>V1</b>	Existent
Pilot contact:	<b>S0</b>	None
	<b>S1</b>	Existent
Colour:	<b>B</b>	Black, RAL 9005
	<b>C</b>	Concrete grey, ground coated, RAL 7023
Threaded joint:	<b>P</b>	2x Pg36 / 1x Pg13.5
	<b>M40</b>	2x M40x1.5 / 1x M20x1.5
	<b>M50</b>	2x M50x1.5 / 1x M20x1.5



• Circuit diagram with optional pilot contact

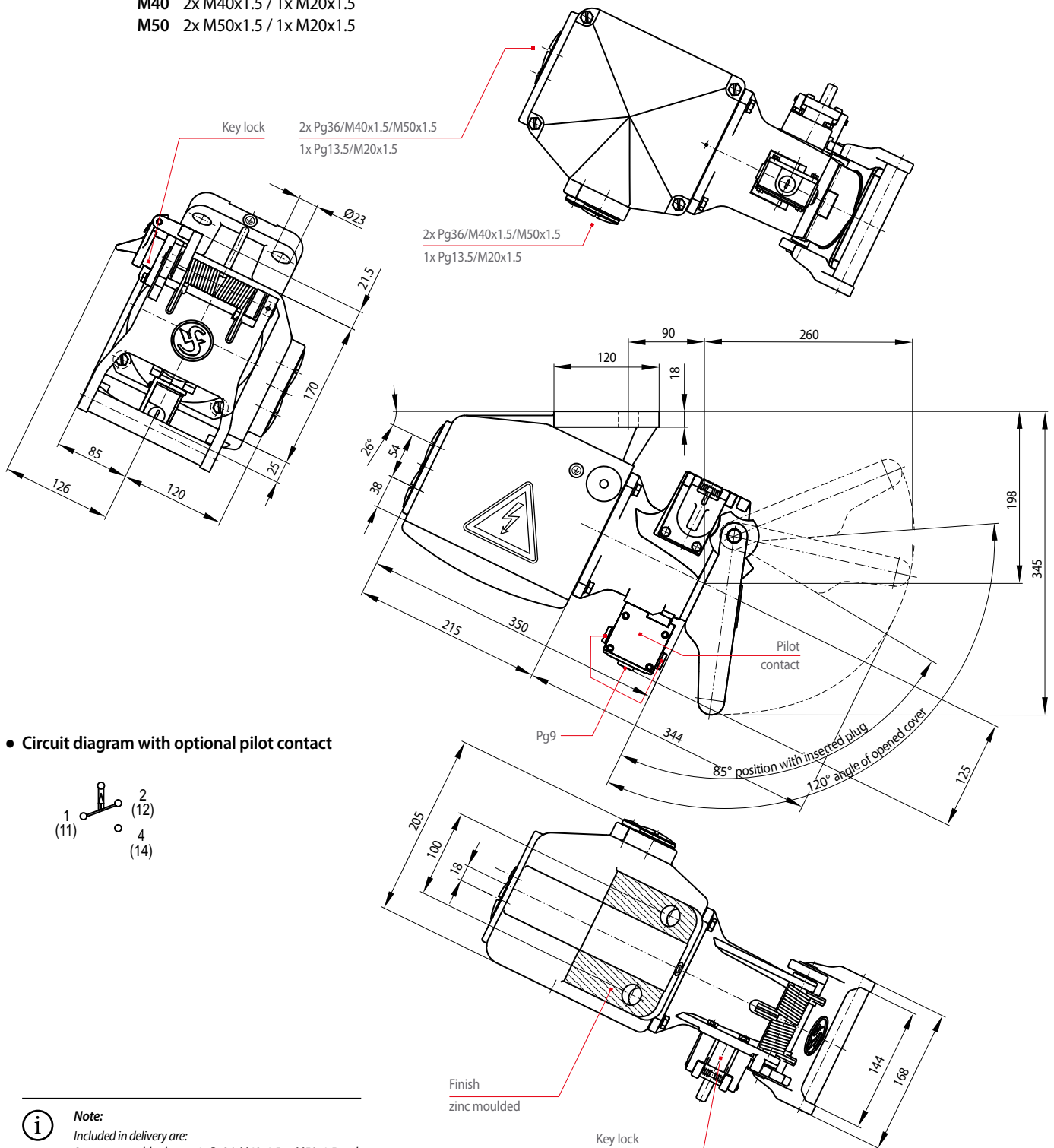
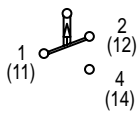


**Note:**  
Included in delivery are:  
2x screw-type blank caps 1x Pg36, M40x1.5 or M50x1.5 and  
1x Pg13.5 or M20x1.5

**ZH550-KD-DM-Vx-Sx-B-P** Receptacle, handled lid medium

**• Type of connector: Receptacle ZH550-KD**

Handled lid:	<b>DM</b>	Medium
Key lock:	<b>V0</b>	None
	<b>V1</b>	Existent
Pilot contact:	<b>S0</b>	None
	<b>S1</b>	Existent
Colour:	<b>B</b>	Black, RAL 9005
	<b>C</b>	Concrete grey, ground coated, RAL 7023
Threaded joint:	<b>P</b>	2x Pg36 / 1x Pg13.5
	<b>M40</b>	2x M40x1.5 / 1x M20x1.5
	<b>M50</b>	2x M50x1.5 / 1x M20x1.5

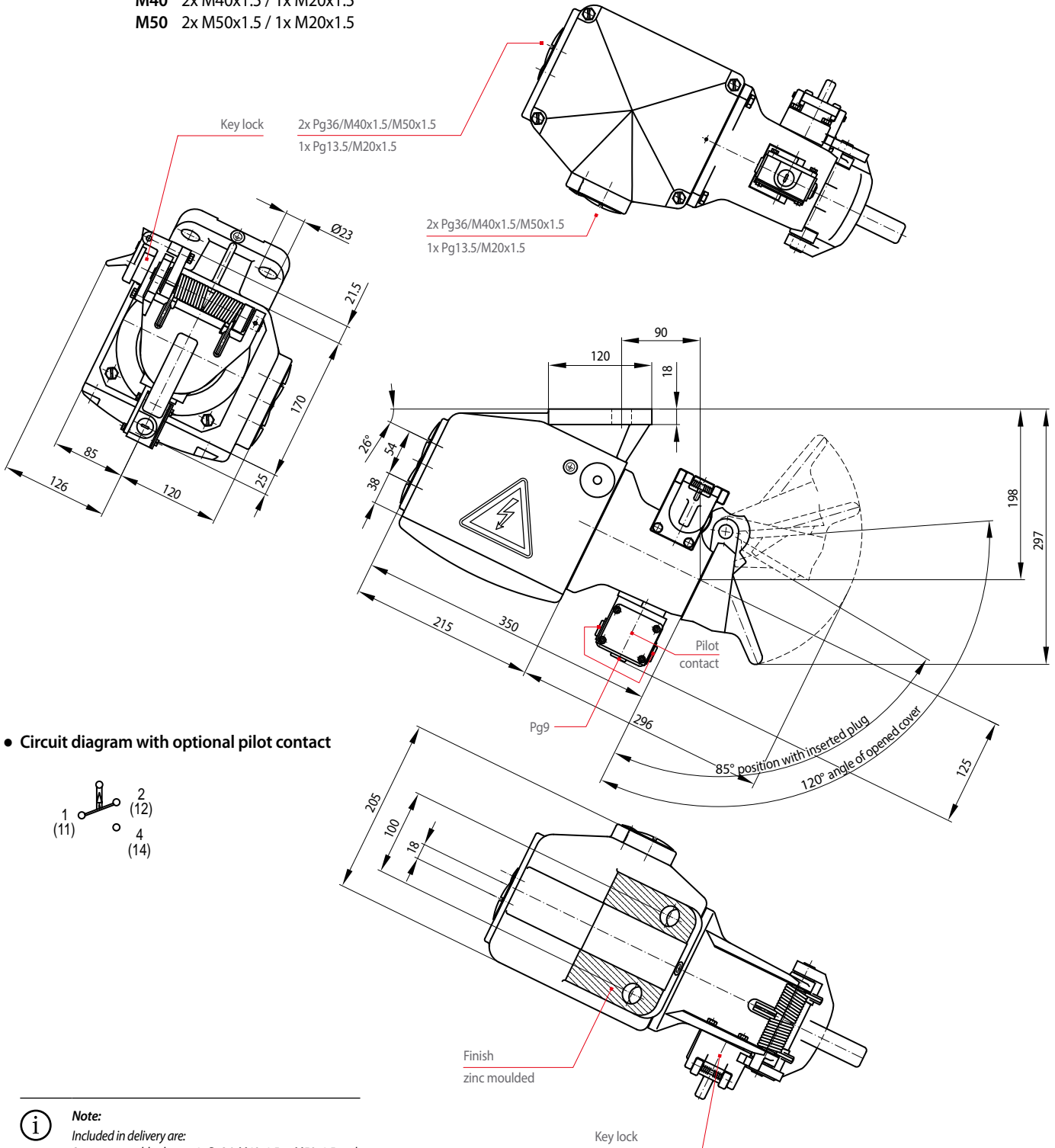

**• Circuit diagram with optional pilot contact**

**Note:**

Included in delivery are:  
 2x screw-type blank caps 1x Pg36, M40x1.5 or M50x1.5 and  
 1x Pg13.5 or M20x1.5

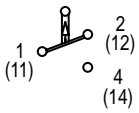
**ZH550-KD-DK-Vx-Sx-B-P** Receptacle, handled lid short

• Type of connector: Receptacle ZH550-KD

Handled lid:	<b>DK</b>	Short
Key lock:	<b>V0</b>	None
	<b>V1</b>	Existent
Pilot contact:	<b>S0</b>	None
	<b>S1</b>	Existent
Colour:	<b>B</b>	Black, RAL 9005
	<b>C</b>	Concrete grey, ground coated, RAL 7023
Threaded joint:	<b>P</b>	2x Pg36 / 1x Pg13.5
	<b>M40</b>	2x M40x1.5 / 1x M20x1.5
	<b>M50</b>	2x M50x1.5 / 1x M20x1.5



• Circuit diagram with optional pilot contact



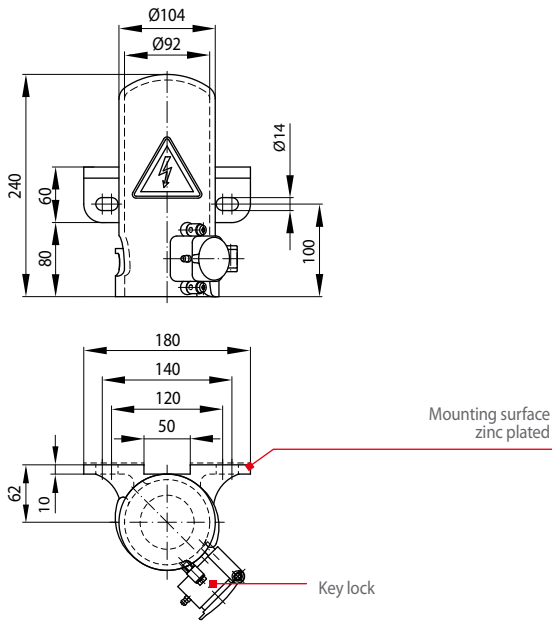
**Note:**  
Included in delivery are:  
2x screw-type blank caps 1x Pg36, M40x1.5 or M50x1.5 and  
1x Pg13.5 or M20x1.5



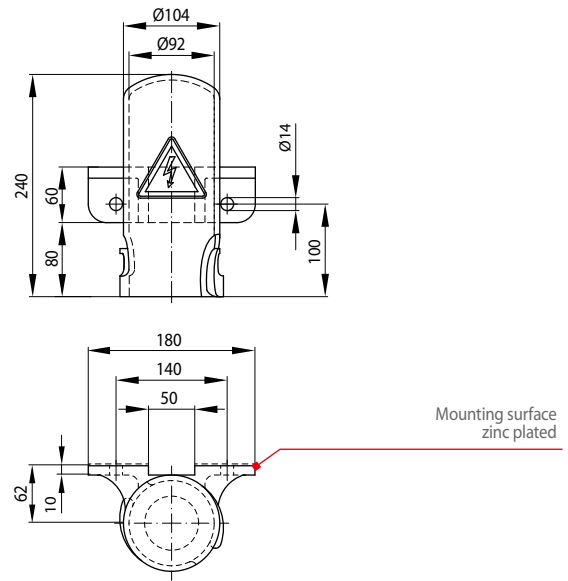
**Dummy receptacle**

Series ZH

- ZH092 BD-V1-x Dummy with lock and key



- ZH092 BD-V0-x Dummy without lock and key

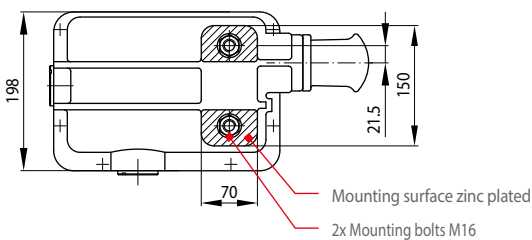
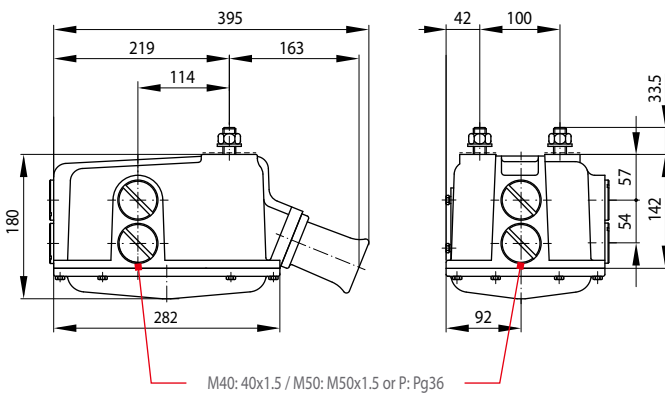


**i** **Note:**  
Dummy receptacles are available in black (RAL9005) or concrete grey (RAL 7023), see also ordering code on page 3.

**ZH552 KA Cable junction box**

Series ZH

- ZH552 KA Cable junction box for single ended connector cable ZH551 SK



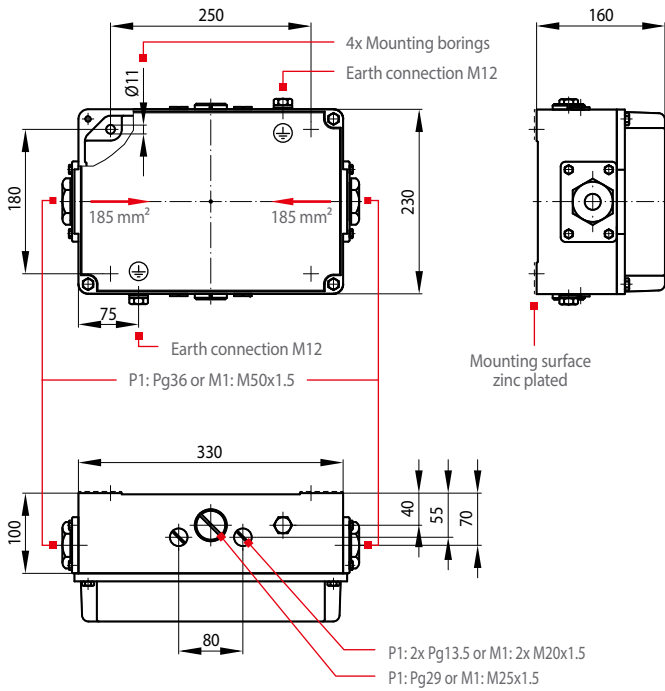
**i** **Note:**  
Cable glands and blank caps as depicted are included in delivery.  
Cable junction boxes are available in black (RAL9005) or concrete grey (RAL 7023), see also ordering code on page 4.

**ZH952 AK** Junction box

**ZH550 VS1, ZH550 VS2** Lock and key

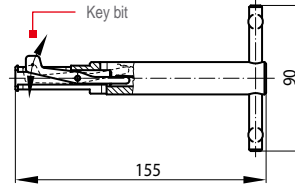
Series ZH

• ZH952 AK Junction box



Key for locking receptacles and dummy receptacles V1.

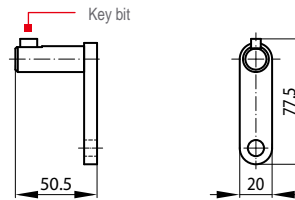
• ZH550 VS1 with movable bit Key



Features:

Key can be inserted and removed in any position.

• ZH550 VS2 with fixed bit Key



Features:

Key can only be inserted and removed when locked.



**Note:**

Cable glands and blank caps as depicted are included in delivery. Junction boxes are available in black (RAL9005) or concrete grey (RAL 7023), see also ordering code on page 4.

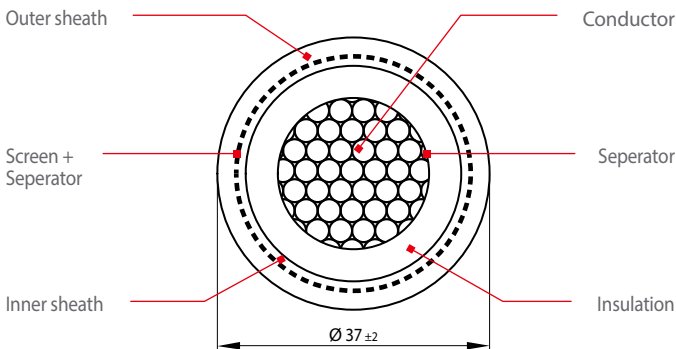


**Note:**

Lock and key are optional and not included in the delivery of receptacles and dummy receptacles. Please make sure to order them separately.

**Cable** Single pole sheathed connector cable, single or double ended

Series ZH



You can order the connector cable according to DIN EN 45545 by the metre.

Ordering code: **NSHXAFMOE 185QMM**

- Non-halogen sheathed power supply line for rail vehicles
- Following DIN VDE 0250-606 and DIN EN 50624
- Min. bending radius: 10 x diameter (cable freely movable)
- Wire gauge: 185 mm<sup>2</sup>
- Nominal voltage:  $U_0 = 3.6$  kV,  $U = 6$  kV
- Temperature range:  $-40^\circ\text{C} \dots +90^\circ\text{C}$

## Installation and safety instructions

Baureihe ZH

The UIC Series inter-car jumpers dealt with in this catalogue are intended for use with high-voltage systems and special installations. They are designed and tested in compliance with the generally recog-

nised state of the art. However, the improper use, operation, handling, maintenance of or tampering with electric equipment can cause serious or fatal injury to the user or others, and the appliance or other property can be damaged.



Due to our continuous improvement programme, the design of our products can be modified at any time. So some features may differ from the descriptions, specifications and drawings in the catalogue.

You can download the latest update of the catalogue at [➔ schaltbau.info/download1en](https://schaltbau.info/download1en). The updated catalogue renders the previous issue invalid.



**Electrical hazards: Any exposure to the connector's live parts. Risk of electrical shock!**

Observe all applicable national provisions, all safety, accident prevention and environmental regulations as well as the recognized technical rules for safe and proper working.

### Installation and safety instructions

- Only authorized and trained personnel are allowed to plan and carry out all mechanical and electrical installations, transport, commissioning, as well as maintenance and repair work.
- This applies to the observation of the general installation and safety regulations for high-voltage systems as well as the proper use of tools approved for this purpose. Electric equipment requires protection from moisture and dust during installation, operation and storage.
- Carry out regular inspections of all protection and safety devices to see if they work properly.
- Work on electric equipment may only be performed by a qualified electrician or trained personnel working under the direction and supervision of a qualified electrician according to the applicable rules of electrical engineering.
- The connectors supply power. They are intended for plug-in and detachable connections of components, devices and systems only.
- In order to comply with IEC 61984 make sure that always the live side of the connector – no matter whether plug or receptacle – is fitted with socket contacts.
- Make sure that there is no undue strain, pressure, flexing and torsion on the cable connection.
- According to IEC 61984 connectors used as intended must not be engaged or disengaged when live or under load.
- When disengaging a connector, pull the plug and never the cable.
- A connector that does not engage easily requires special attention: Check for the correct orientation, pollution or if contacts got bent. Remedy the cause without delay. Never use force! The connector should always engage easily.
- In order to meet the requirements of the protection class and to protect the connectors against the entry of dirt or moisture, make sure that, when not mated,
  - the plug is always inserted into a dummy receptacle
  - the hinged lid of receptacles is closed, according to its intended use
- Dirt, moisture, snow and ice in the interior of ZH092 series dummy receptacles contaminate the plug. The coupling of a contaminated plug to the receptacle may lead to a life-threatening electric shock. Always check if the interior of the receptacles is free from dirt, moisture, snow and ice before inserting a plug into a receptacle or a dummy receptacle.
- Use the connector only according to its intended use. Replace or repair damaged parts exclusively with original parts. Any other usage of or tampering with the connector is considered contrary to its intended use. No liability is assumed for damages and accidents caused due to non-compliance with the instructions or improper use of the connector.
- The connectors are constructed for specific ambient conditions. Operate the connectors only under the ambient conditions, like temperature ranges and IP protection classes as defined in our catalogue on page 3 "Specifications".

### Installation and maintenance manual



For a detailed list of all safety, installation and maintenance instructions, download our manual [➔ F122-M.en](https://schaltbau.info/F122-M.en)

### Visual inspections

Be sure to make visual inspections regularly. Improper handling of the connector, e.g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.



Defective and/or leaky parts must be replaced instantaneously!

# Schaltbau GmbH

For detailed information on our products and services visit our website – or give us a call!

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with compliments:



Schaltbau GmbH manufactures in compliance with RoHS.



The production facilities of Schaltbau GmbH have been IRIS certified since 2008.



Certified to DIN EN ISO 14001 since 2002. For the most recent certificate visit our website.



Certified to DIN EN ISO 9001 since 1994. For the most recent certificate visit our website.

## 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 disconnect switches
- Special contactors to suit customer requirements

### Electrics for rolling stock

- Equipment for driver's cab
- Equipment for passenger use
- High-voltage switchgear
- High-voltage heaters
- High-voltage roof equipment
- Equipment for electric brakes
- Design and engineering of train electrics to customer requirements

Subject to change!

For updated product information visit [www.schaltbau-gmbh.com](http://www.schaltbau-gmbh.com).  
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