

# 3

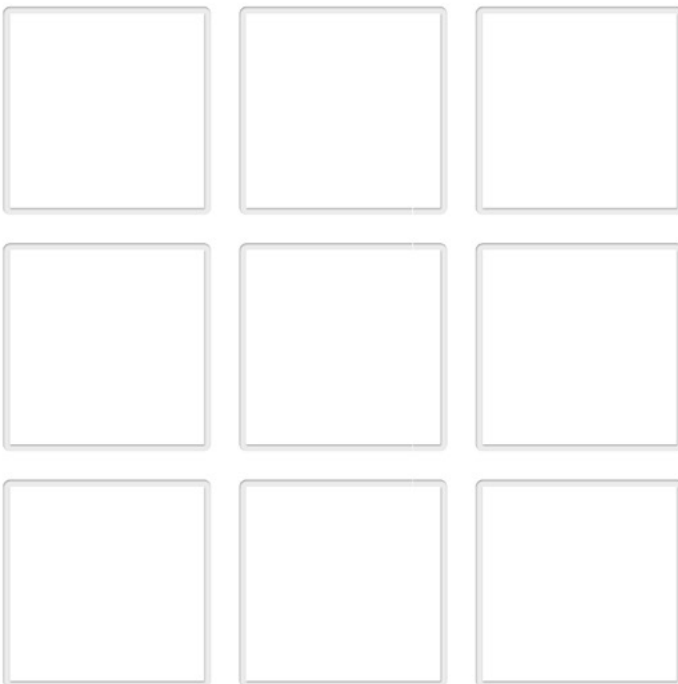
## Contactors

**C320 series**

1 pole  
AC and bi-directional DC  
NO contactors for 1,000 A

Installation and  
maintenance instructions

Manual C320-M.en



# Installation

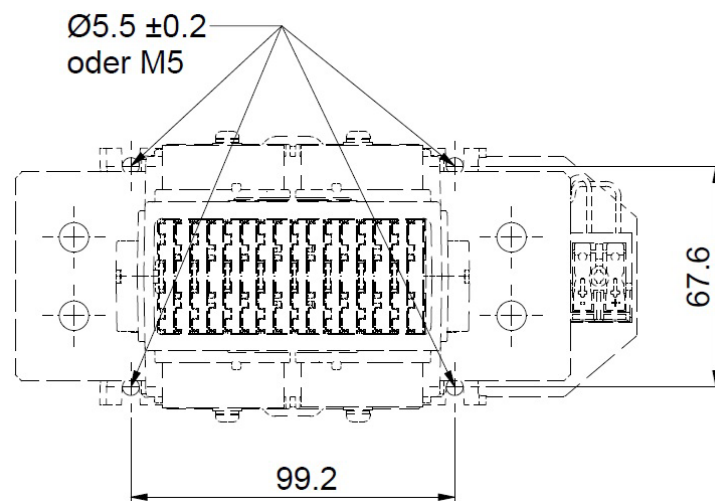
## Mounting

### Dimensions/interfaces and further technical specifications

The dimensions and other technical specifications are given in the respective data sheets.

#### Preparatory measures

- A suitable mounting plate with four mounting holes in accordance with the following dimensional drawing (*Fig. 1*) must be provided for fastening of the contactors.
- The mounting holes can be either:
  - threaded holes (for threaded screws)
  - or through holes (for threaded screws and nuts)
- Fastening of the contactors on the mounting plate is performed using M5 mounting screws.
  - The length of the mounting screws must be determined dependent on the structural circumstances.
  - To secure the mounting screws so that they do not come loose, appropriate screw locking elements must be provided. Schaltbau recommends using Schnorr washers (or similar).
  - The mounting screws must be equipped with washers (resting on the device). Installation without washers is not permitted!
  - The mounting screws must be tightened to a torque of 2.5 Nm (screws of strength class 4.6)



*Fig. 1: Dimensions and layout of mounting holes*

# Mounting positions

The contactors are designed for horizontal or vertical mounting. Examples of correct and incorrect mounting positions as shown in *Fig. 2*.

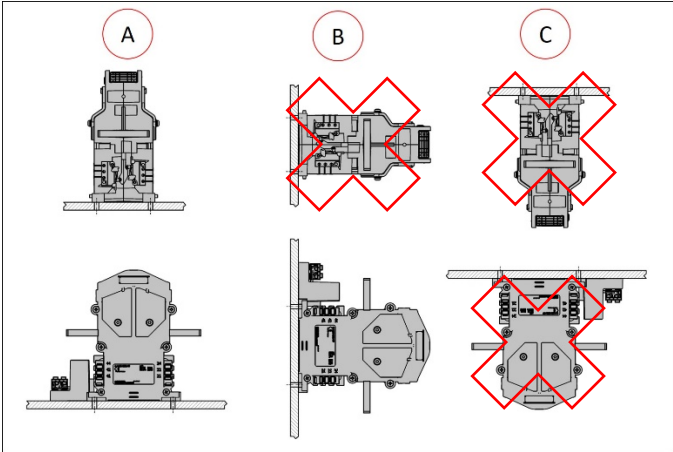


Fig. 2: C320K: Correct and incorrect installation positions.

# Required minimum clearances

Switching of high voltage currents produces electric arcs and it is possible that plasma will escape from the openings of the arcing chambers. Therefore, it is extremely important to maintain the minimum clearances to ground/earth and the connecting bars to avoid flashovers.

A minimum clearance from magnetic or magnetized parts is required on all sides and above for type C320K contactors.

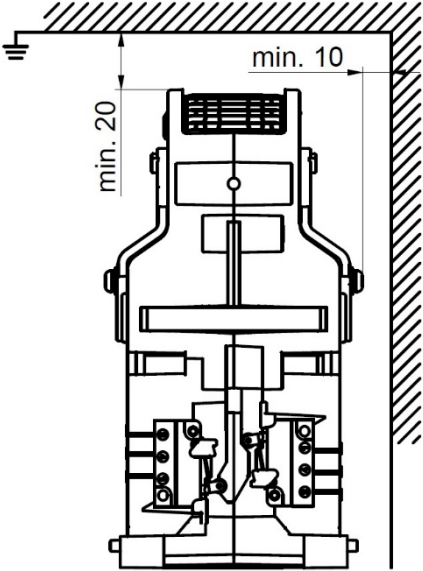


Fig. 3: C320K: Minimum clearance required from magnetic and earthed component.

## Installing the contactor

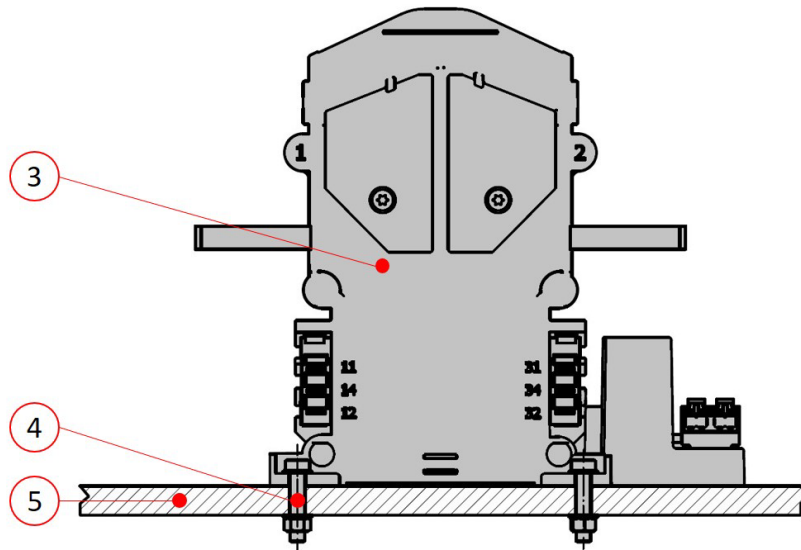


Fig. 4: C320K: Installing the contactor on the mounting plate

- Ensure that the contact surfaces on the mounting plate (5) are free from dirt and other contamination (e.g. metal chips).
- Position the contactor (3) on the mounting plate (5) which is provided with mounting holes.

### Attention:

The mounting screws M5 (4) must be equipped with washers (resting on the device). Installation without washers is not permitted!

- Secure the contactor to the mounting flange with four mounting screws M5 (4) on the mounting plate (5).
  - In designs with the mounting holes implemented as threaded holes, screw the mounting screws into the holes directly, not forgetting the washers.
  - In designs with through holes, fit the mounting screws and washers and tighten the screws using suitable screw locking elements and nuts.
- The mounting screws (4) must be tightened to a torque of 2.5 Nm (screws of strength class 4.6)

## Electrical connection

### Electrical data and other technical specifications



For the power consumption of the magnetic drive system and electrical data of the auxiliary switches as well as other technical specifications, refer to the respective data sheets

### Preparatory measures

- Connection of the main power circuit can be implemented with wires or busbars.
- If connecting wires are used, they must be selected taking into consideration the insulation class and the ambient conditions.
- The minimum conductor cross-sections for the connecting wires are given in our technical specifications and must be adhered to.

- The connecting wires of the main power circuit must be fitted with appropriate ring terminals (for M8 terminal screws).
- The terminal screws for the main contacts and the maximum permissible torque are 10 Nm
- Schaltbau recommends Schnorr washers (or similar) to prevent the terminal screws from coming loose. The terminal screws must be tightened with the specified torque (see above).
- The connections for coils are cage clamp and auxiliary switches are made with flat plugs:
  - Coil terminal: Cage Clamp (Wago 294), 0.5 ... 1.5 mm<sup>2</sup> with sleeve  
0.5 ... 2.5 mm<sup>2</sup> without sleeve  
Stripping length: 8 ... 9 mm
  - Auxiliary switch connection: Flat plug 6.3 x 0.8 mm
- The maximum permissible conductor cross section of the auxiliary contact control wires is 1.5 mm<sup>2</sup> / AWG 16 stranded wire.

## Safety

 <b>DANGER</b>	
	<p>The contactors are used for voltage switching. Contact with live electrical parts can result in serious injuries or even death!</p> <p>Live parts are all metal parts belonging directly to one of the circuits or wires connecting to them. All other visible metal parts and wiring may also be live if a fault exists.</p> <p>Before starting any work on the contactors, always comply with the following safety rules:</p> <ul style="list-style-type: none"> <li>▶ Disconnect on all sides</li> <li>▶ Secure to prevent switching back on</li> <li>▶ Clearly identify the working area</li> <li>▶ Check that a voltage-free state exists</li> <li>▶ Earth and short circuit; this includes discharging any capacitors in the main circuit</li> <li>▶ Besides the main power circuits, also disconnect additional and auxiliary circuits</li> <li>▶ Cover or insulate adjacent live parts</li> <li>▶ The presence of a voltage-free state can only be clearly identified by a qualified electrician.</li> <li>▶ When the work has been concluded, follow the procedure in reverse.</li> </ul>

## Checks

After the installation, perform the following checks:

- Check that the contactors are correctly installed on the mounting plate and tightly screwed in place.
- Check that the connecting wires or busbars are correctly installed and fit tightly at the main contacts.
- Check that the control wires of the coil terminals are correctly installed and have the correct polarity.
- Check that the control wires are correctly connected to the auxiliary switch. Check the correct assignment and function of the auxiliary switch using a continuity tester.
- Switch the contactor several times without activating the main power circuit.
- Check the pull-in and drop-off voltage based on the Schaltbau specifications.
- Check the routing of the wiring. Wires must not be squeezed or bent. If applicable bundle and secure wires using cable ties.
- After every installation or after maintenance, check the contactor for correct operation in accordance with the following standards:

- EN/IEC 60077-2
- EN/IEC 60947-4-1

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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