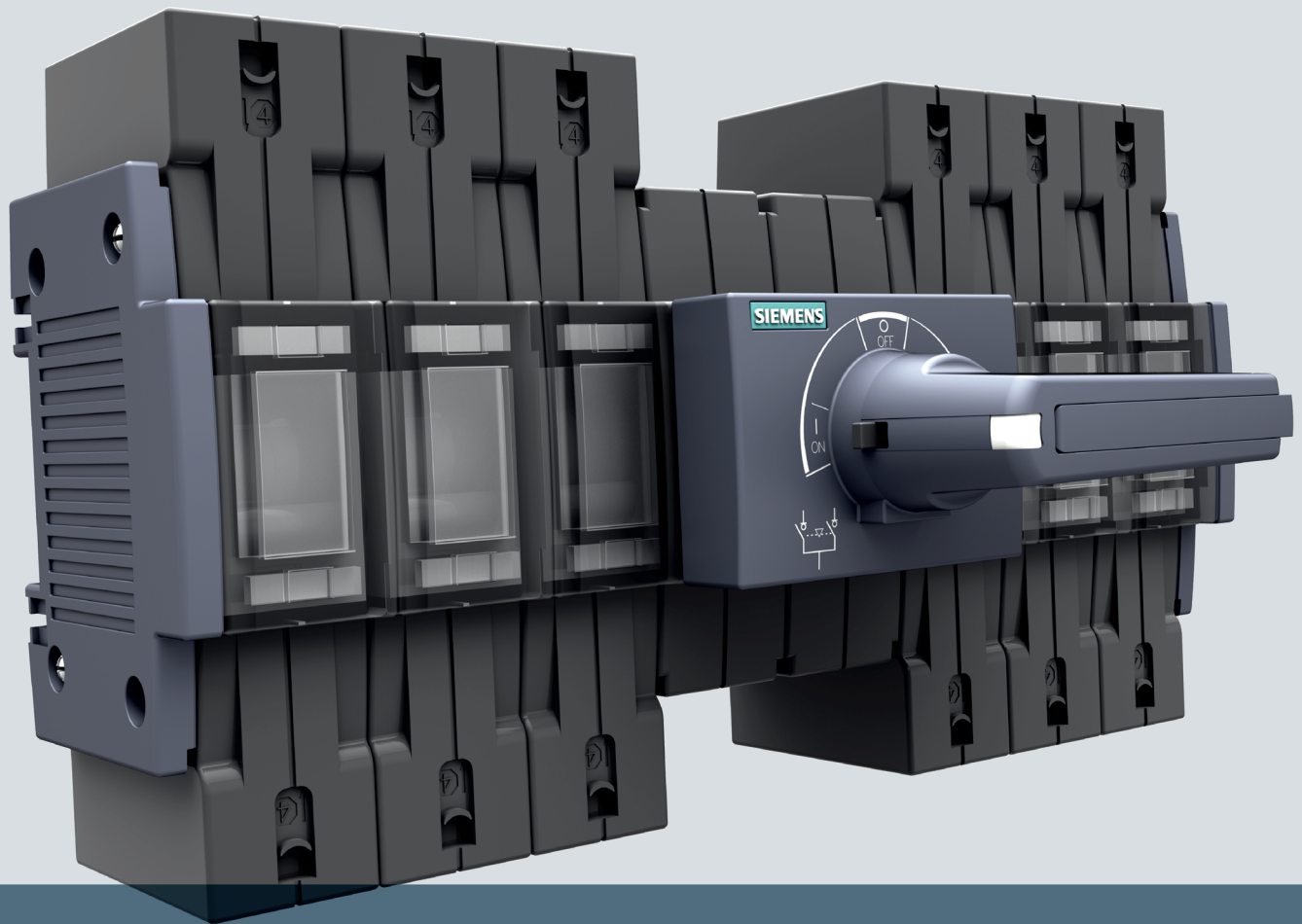


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Transfer Switching Equipment and Load Transfer Switches
3KC0 Transfer Switching Equipment

Manual

Edition

09/2018

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SENTRON

Transfer switching equipment and load transfer switches 3KC0 manual transfer switching equipment




Manual

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Legal information

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This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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 WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Introduction

1.1 Purpose of this manual

This manual describes the functions, commissioning and operation of the following transfer switching equipment:

- 3KC0 manual transfer switching equipment (MTSE)
(MTSE = **M**anually **O**perated **T**ransfer **S**witching **E**quipment)

This manual describes the following topics:

- Product specifications
- Mounting
- Connection
- Operation
- Commissioning
- Accessories
- Corrective maintenance and fault rectification
- Application examples

1.2 Target groups and required basic knowledge

This manual is intended for:

- Users
- Electrically skilled persons
- Switchgear manufacturers
- Maintenance personnel

A general knowledge of low-voltage power distribution is required to understand this manual.

Scale

The diagrams are not shown in the original size (1:1 scale).

Technical Support

You can find further support on the Internet (<https://www.siemens.com/lowvoltage/technical-support>).
















Applicable documents

You can find more information on the Internet via the following link:

3KC0 manual transfer switching equipment

(<https://support.industry.siemens.com/cs/products?mfn=ps&lc=en-US>)

1.3 Used symbols

Symbol	Meaning	Symbol	Meaning
	Pliers		OK
	Hexagon socket wrench		Not OK
	Cross-tip screwdriver PZ		Lock
	Wrench		Click to snap
	Graver		Solid conductor
	Cross-tip screwdriver PH		Stranded conductor
	Slotted screwdriver		Measure
	Trash bin		

General information

2.1 Standards

The transfer switching equipment and its accessories comply with the following international standards:

Standard	Designation
IEC 60269-1	Low-voltage fuses – Part 1: General requirements
IEC 60269-2	Low-voltage fuses - Part 2: Supplementary requirements for fuses for use by qualified electrical technicians or electrically trained persons (fuses predominantly for industrial use)
IEC 60947-1	Low-voltage switchgear and controlgear – Part 1: General rules
IEC 60947-3	Low-voltage switchgear and controlgear – Part 3: <ul style="list-style-type: none"> • Switches • Disconnectors • Switch-disconnectors • Fuse-combination units
IEC 60947-5-1	Low-voltage switchgear and controlgear – Part 5-1: Control circuit devices and switching elements – electromechanical control circuit devices
IEC 60947-6-1	Low-voltage switchgear and controlgear – Part 6-1: Multiple function equipment – Transfer switching equipment
IEC 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 3-1: Conformity verification report for IEC 61010-1:2001 – General requirements
IEC 61326-1	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements

2.2 Certification

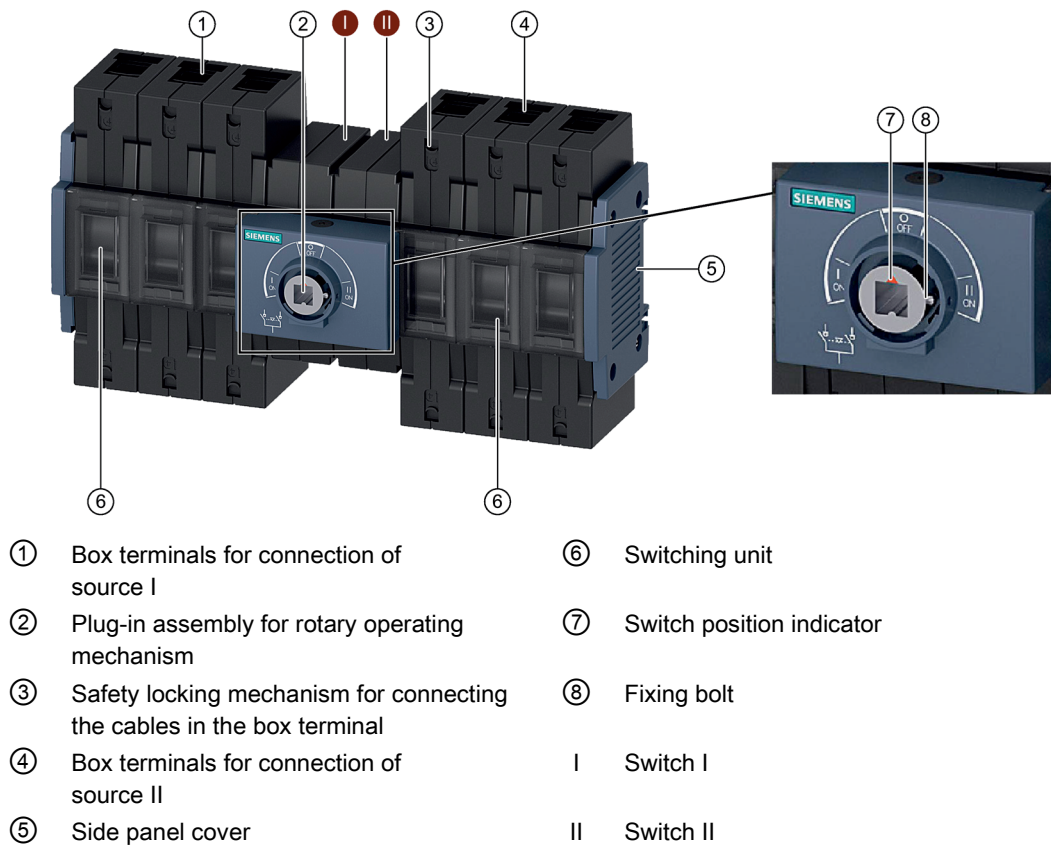
You can find the current certificates for this product in the Siemens Industrial Online Support (<https://support.industry.siemens.com/cs/ww/en/ps/cert>).

Product information

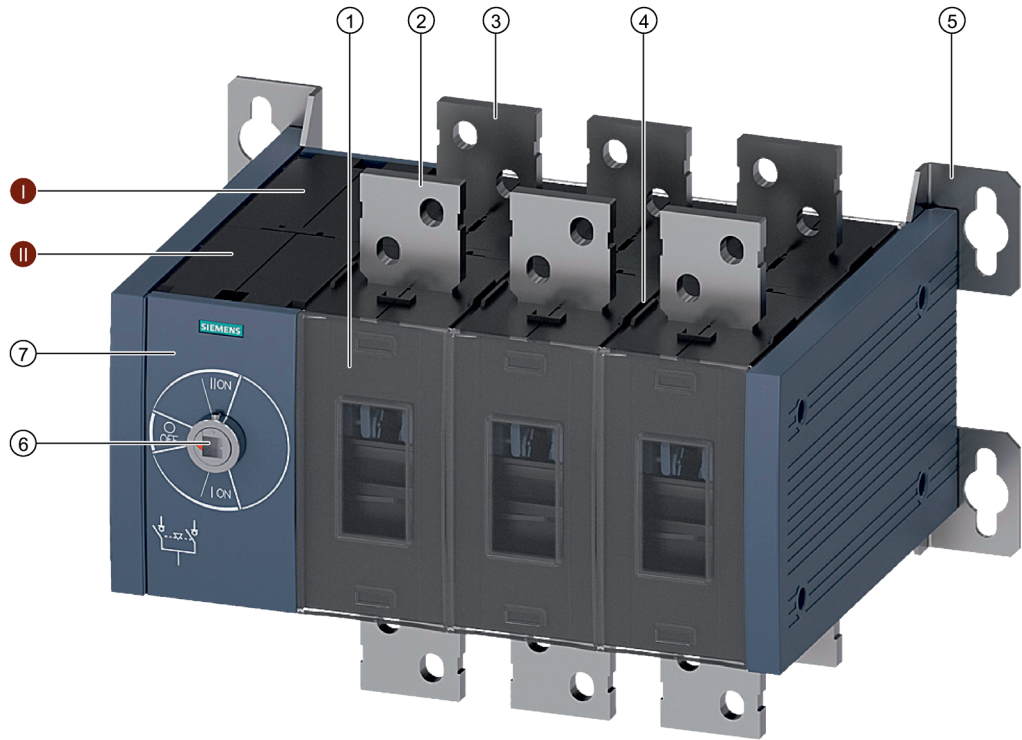
3.1 Product description

3.1.1 Design

Sizes 1 and 2



Sizes 3, 4 and 5



- ① Switching unit
- ② Connecting terminals of source II
- ③ Connecting terminals of source I
- ④ Plug-in assembly for terminal covers/phase barriers
- ⑤ Assembly for mounting
- ⑥ Plug-in assembly for rotary operating mechanism
- ⑦ Cover
- I Switch I
- II Switch II

3.1.2 Current ratings

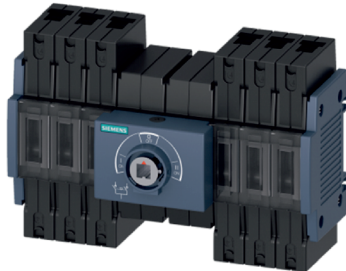
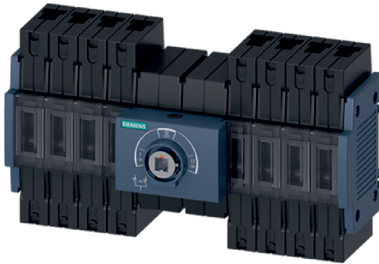
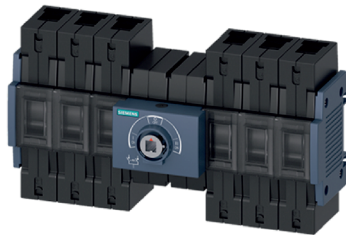
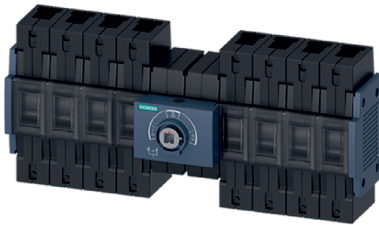

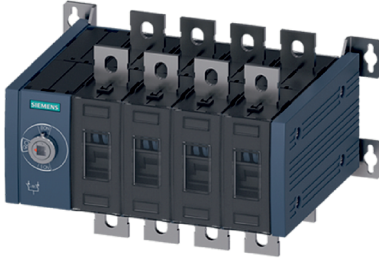
Size	1	2	3	4	5
Rated current (A)	16 ... 63	80 ... 160	200 ... 400	500 ... 800	1000 ... 1600
Number of poles					
3	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓
Position of operating mechanism module					
Front operating mechanism, center	✓	✓	-	-	-
Front operating mechanism, left	-	-	✓	✓	✓

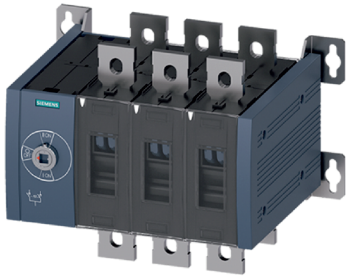
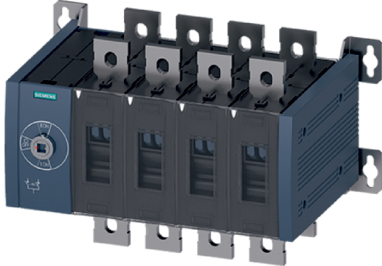
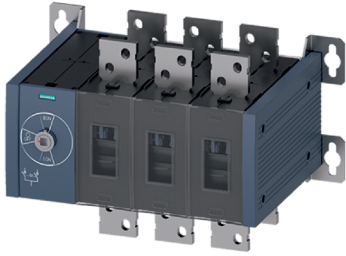
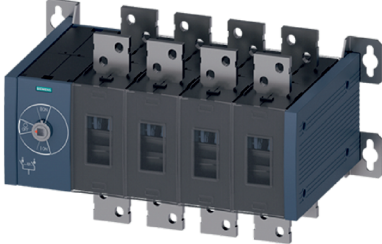
Size	1	2	3	4	5
Rated current (A)	16 ... 63	80 ... 160	200 ... 400	500 ... 800	1000 ... 1600
Type of mounting					
Floor mounting (wall mounting)	✓*	✓*	✓	✓	✓
DIN rail mounting	✓	✓	–	–	–
Connections					
Flat terminal	–	–	✓	✓	✓
Box terminal	✓	✓	–	–	–

* You can find more information in chapter Component overview for sizes 1 and 2 (Page 56).

Sizes

The figures below show the sizes of the transfer switching equipment depending on the current rating:

	3-pole	4-pole	Current rating (A)
Size 1			<ul style="list-style-type: none"> • 16 • 32 • 63
Size 2			<ul style="list-style-type: none"> • 80 • 100 • 125 • 160
Size 3			<ul style="list-style-type: none"> • 200 • 250 • 315 • 400

	3-pole	4-pole	Current rating (A)
Size 4			<ul style="list-style-type: none"> • 500 • 630 • 800
Size 5			<ul style="list-style-type: none"> • 1000 • 1250 • 1600

3.2 Product family

3.2.1 Use

The 3KC0 transfer switching equipment is used in power supply networks for load transfers between the normal power source and an alternative power source with an interrupted supply at current ratings up to 1600 A.

The 3KC0 transfer switching equipment can also be used as a load transfer switch for switching between two loads.

3.2.2 Properties

- 3 and 4-pole transfer switching equipment for AC applications
- 5 sizes:
 - Sizes 1 and 2: 16 to 160 A (operating mechanism at center)
 - Sizes 3, 4 and 5 200 to 1600 A (operating mechanism on the left)
- Front operating mechanism
- Modular retrofittable additional poles (4th contact) for sizes 1 and 2
- Direct operating mechanism and door-coupling operating mechanism available as accessories in gray or red/yellow.

- Lockable handle
- Floor mounting or DIN rail mounting (up to 160 A)

3.2.3 Applications

Application areas

The 3KC0 transfer switching equipment can be used in residential/non-residential, industrial and infrastructure applications.

Non-residential/residential

- Safety devices in high buildings
- Computing centers (e.g. in banks, insurance companies)
- Fire pumps, air conditioning systems, cold rooms
- Lighting systems in shopping malls

Industry

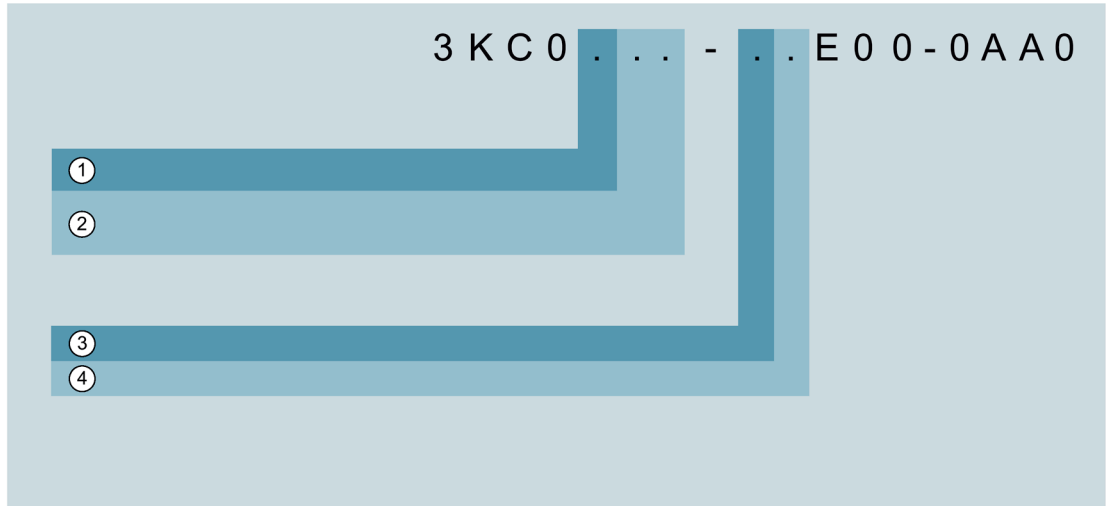
- Production lines in continuous operation
- Engine rooms
- Ancillary systems in crucial thermal power plants
- Pumps
- Cooling systems
- Fans

Infrastructure

- Installations in ports and loading stations
- Airports
- Lighting

3.2.4 Structure of the article numbers

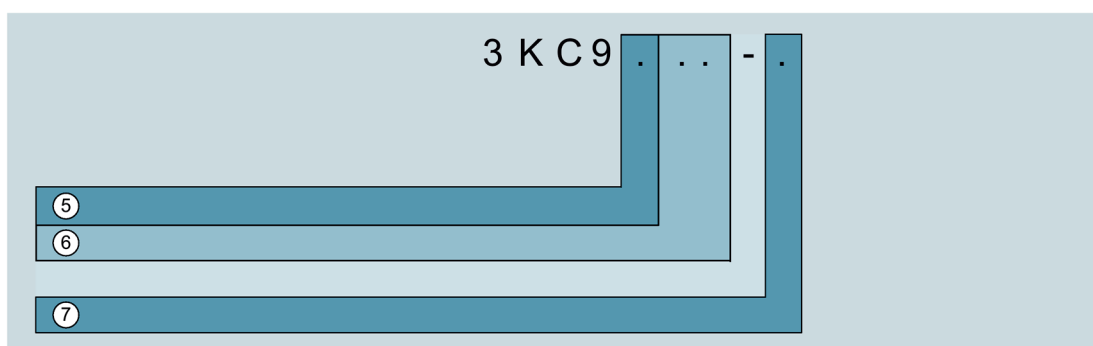
Article numbers for transfer switching equipment



Serial No.	Description	Value	Explanation
①	Number of poles	3	• 3-pole
		4	• 4-pole
②	Rated current	16	• 16 A
		22	• 32 A
		26	• 63 A
		28	• 80 A
		30	• 100 A
		32	• 125 A
		34	• 160 A
		36	• 200 A
		38	• 250 A
		40	• 315 A
		42	• 400 A
		44	• 500 A
		46	• 630 A
		48	• 800 A
50	• 1000 A		
52	• 1250 A		

Serial No.	Description	Value	Explanation
		54	• 1600 A
③	Connection type	0 2	• Flat terminal • Box terminal
④	Size	M	• Size 1
		N	• Size 2
		P	• Size 3
		Q	• Size 4
		R	• Size 5

Article numbers for accessories



Serial No.	Description	Value	Explanation
⑤	Suitable for transfer switching equipment in size	1	• Size 1
		2	• Size 2
		3	• Size 3
		4	• Size 4
		5	• Size 5
⑥	Type of accessory		
⑦	Accessory version		

Functions

4.1 Function

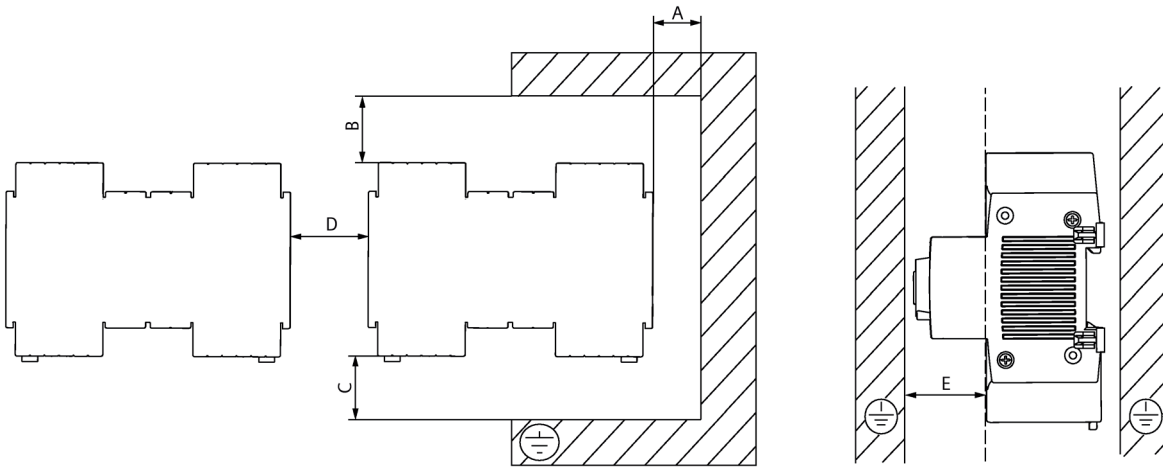
The 3KC0 transfer switching equipment is used in power supply networks for load transfers between the normal power source and an alternative power source with an interrupted supply at current ratings up to 1600 A. Switchovers are performed manually.

The 3KC0 can be used for switching between two main sources, one main source and one generator, or between two generators. It is possible to use the 3KC0 as transfer switching equipment for switching between two sources in compliance with IEC 60947-6-1. It is also possible to use the 3KC0 as a load transfer switch for switching between two loads in compliance with IEC 60947-3.

Mounting

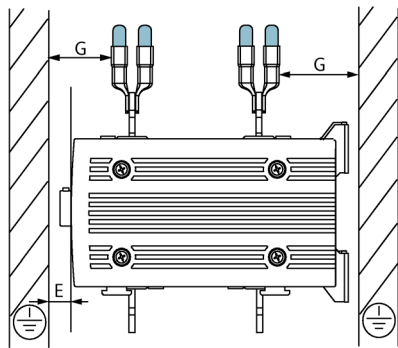
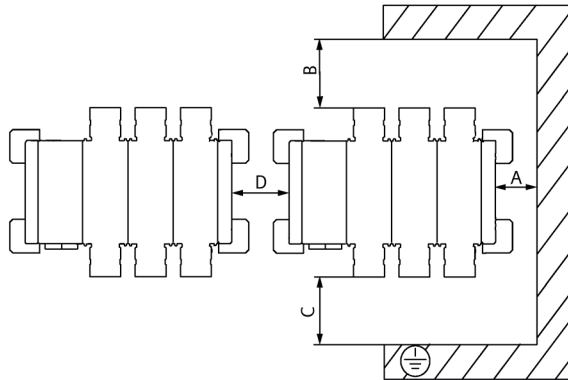
5.1 Clearances for mounting

Sizes 1 and 2



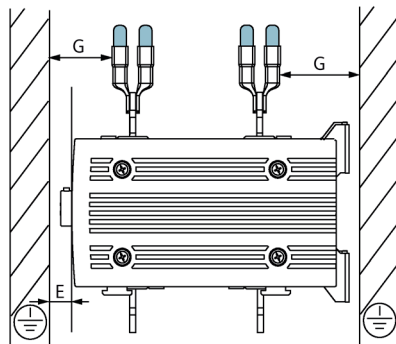
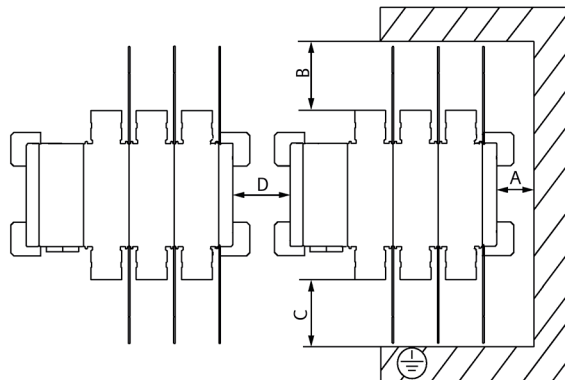
	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
Size 1	0	10		0	
Size 2	0	10		0	

Sizes 3, 4 and 5 without phase barriers



	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	G (mm)
3KC0.36 / 38 / 40 / 42	20	40		33	0	14
3KC0.44 / 46 / 48	30	50		47		
3KC0.50 / 52 / 54	36.5			73		

Sizes 3, 4 and 5 with phase barriers



	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	G (mm)
3KC0.36 / 38 / 40 / 42	16.5	44.5		33	0	14
3KC0.44 / 46 / 48	23.5	50		47		
3KC0.50 / 52 / 54	36.5	70		73		

5.2 Mounting positions

5.2.1 Mounting position for sizes 1 and 2



5.2.2 Mounting position for sizes 3, 4 and 5



Note

Overhead mounting is not permitted for sizes 3, 4 and 5.

Some applications require the use of phase barriers. You can find more information in chapter Phase barriers (Page 105).

5.3 Mounting the 3KC0 transfer switching equipment

Note

If you need one of the following accessories, you must fit the accessory before you mount the transfer switching equipment:

- Floor mounting for sizes 1 and 2
Assembly kit for floor mounting
You can find more information in chapter Component overview for sizes 1 and 2 (Page 56).
- Auxiliary switch module for sizes 1 and 2
You can find more information in chapter Auxiliary switches and auxiliary switch modules (Page 64).
- Additional poles for sizes 1 and 2
You can find more information in chapter Additional poles for sizes 1 and 2 (Page 61).
- Direct operating mechanism
You can find more information in chapter Direct operating mechanism (Page 98).

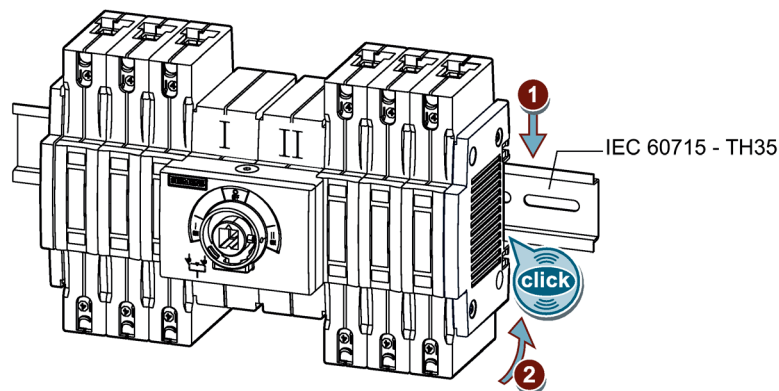
5.3.1 DIN rail mounting for sizes 1 and 2

Overview

Note

You are not permitted to install the assembly kit for floor mounting in the case of DIN rail mounting.

The figure below shows the procedure for mounting the 3KC0 transfer switching equipment on a DIN rail (in compliance with DIN RAIL IEC 60715).

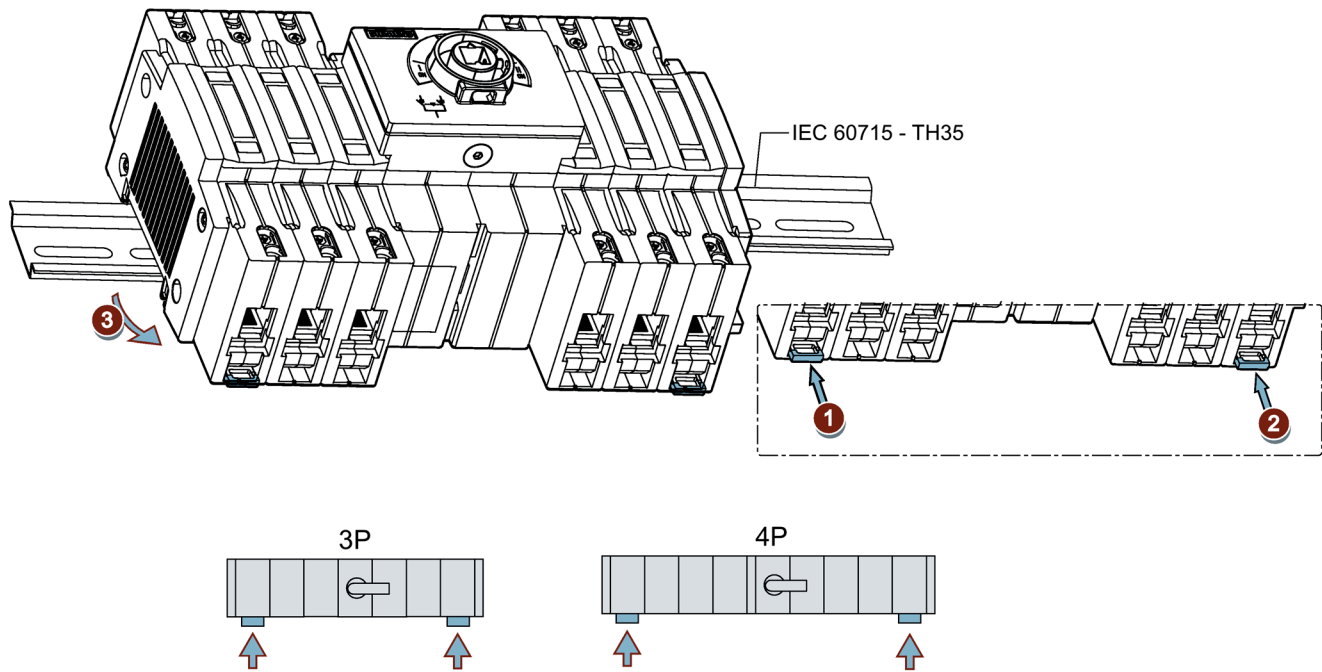


Procedure

1. Insert the transfer switching equipment with the plug-in assembly on the DIN rail from above.
2. Push the transfer switching equipment back until the plug-in assembly audibly locks into place on the underside.

5.3.2 Removal from DIN rail for sizes 1 and 2

Overview



Procedure

1. Lever the first slide for DIN rail mounting out of the enclosure, e.g. using a slotted screwdriver. The slide locks into place audibly.
2. Lever the second slide for DIN rail mounting out of the enclosure, e.g. using a slotted screwdriver. The slide locks into place audibly.
3. Lift the transfer switching equipment off the DIN rail.
4. Push the first slide into the enclosure.
5. Push the second slide into the enclosure.

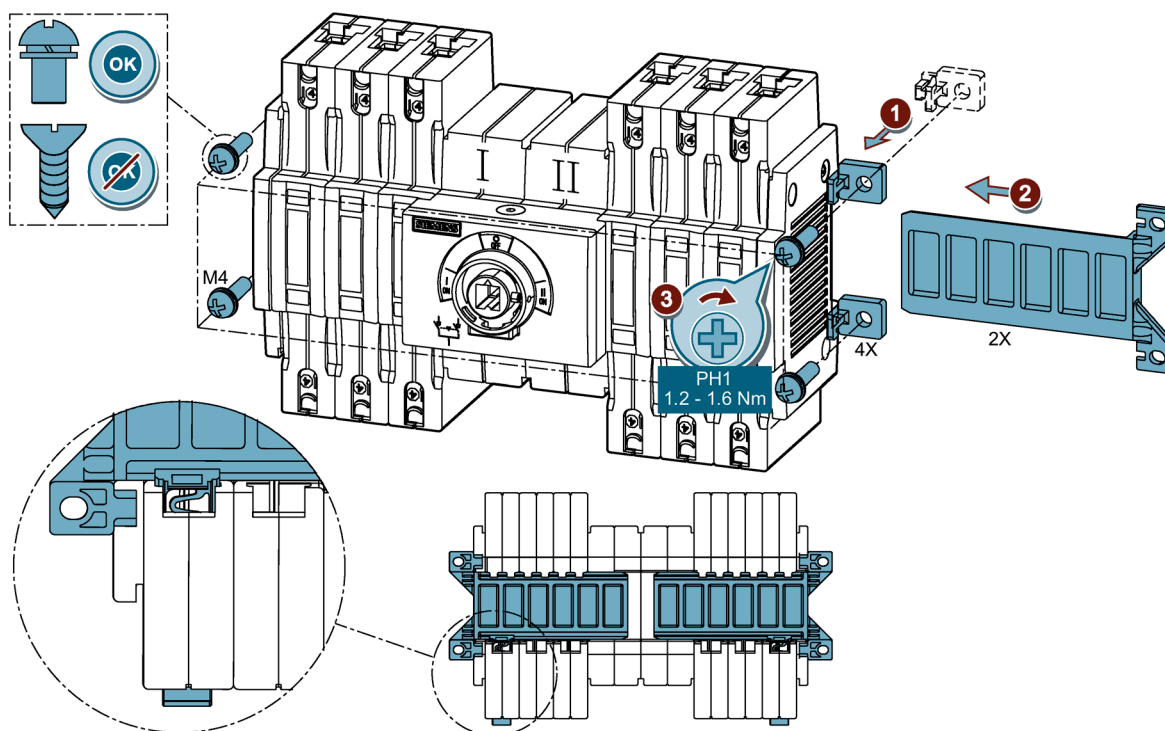
5.3.3 Floor mounting for sizes 1 and 2

Overview

A 3KC9120-1 assembly kit for floor mounting is needed for floor mounting. You can find more information in chapter Component overview for sizes 1 and 2 (Page 56).

Note

The assembly kit for floor mounting including the mounting bracket are not included in the scope of supply.



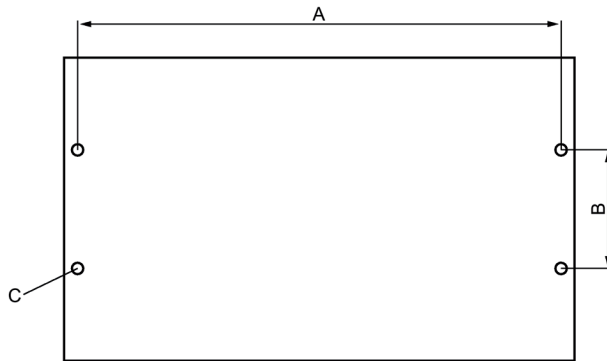
Procedure

Note

Once you have inserted the mounting bracket into the recess of the side panel cover, it is not possible to remove it again.

1. Push the four mounting brackets into the recesses on the side panel cover.
2. Push the two mounting plates on the underside on the left and right into the DIN rail guide until they engage. Ensure that the openings for the bolts on the mounting brackets and on the mounting plates are aligned with each other.
3. Mount the transfer switching equipment in the desired position using four bolts.

Clearances for mounting



mm	Size 1		Size 2	
	3	4	3	4
A	191	227	245	299
B	46.5			
C	4.5 (suitable for M4 bolts)			

Note

The clearances change when auxiliary switch modules and additional poles are used. You can find more information in chapter Component overview for sizes 1 and 2 (Page 56).

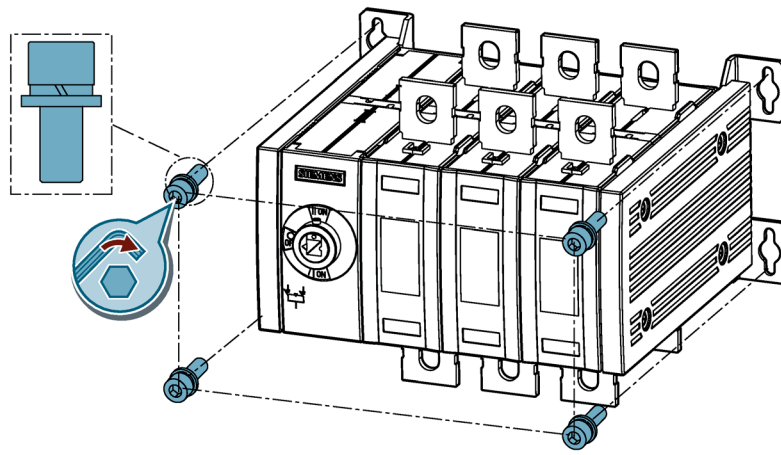
See also chapter Component overview for sizes 1 and 2 (Page 56).

5.3.4 Floor mounting for sizes 3, 4 and 5

Note

Some applications require the use of phase barriers. You can find more information in chapter Phase barriers (Page 105).

Overview

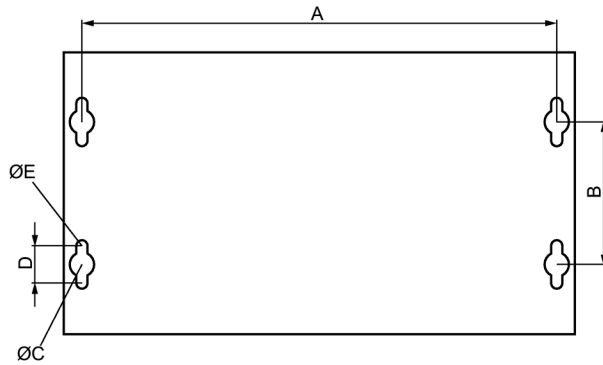


Size	Tightening torque (Nm)	Width across flats for wrench (mm)	Bolt size
3	3.5 ... 4.0	4.0	M5
4	8.0 ... 10.0	6.0	M8
5	15.0 ... 20.0	10.0	M12

Procedure

1. Mount the transfer switching equipment in the desired position using four bolts.

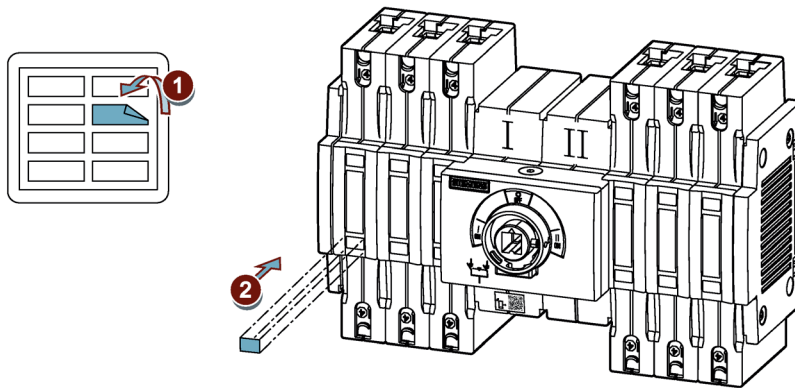
Clearances for mounting

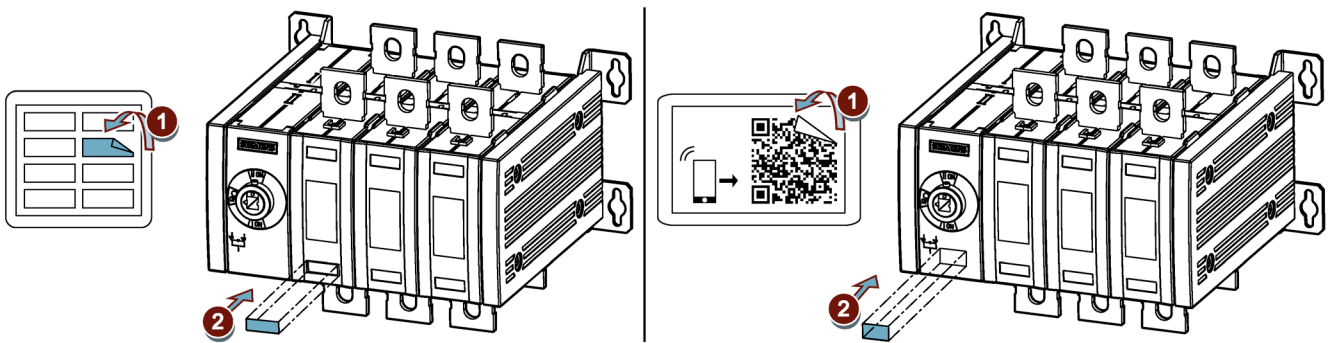


Size	A		B		C		D		E	
	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P
3	216	260	88		12		20		5.5	
4	293	353	127		18		29		5.5	
5	435	525	156.5		27		41		12.5	

5.4 Affixing labels

Overview





Note

Any label in the appropriate size can be used as an alternative to the labels offered by Siemens.

Label sizes

Suitable for transfer switching equipment in size	Max. label size (mm x mm)
1, 2	6.8 x 4.3
3, 4, 5	20 x 7.2

Procedure

1. Affix the labels.

Connection

6.1 Network types and applications

You can connect the 3KC0 transfer switching equipment to various network types. It can be used in the following networks:

- Single-phase network with neutral conductor (1PH + N)
- Three-phase 3-wire network without neutral conductor (3PH)
- Three-phase 4-wire network with neutral conductor (3PH + N)

You can use the 3KC0 transfer switching equipment both in networks with balanced load, as well as in networks with unbalanced load.

NOTICE

Possible damage to the device!

The product is designed for the following rated impulse withstand voltage U_{imp} :

- 8 kV for sizes 1 and 2 with 16 to 160 A
- 12 kV for sizes 3, 4 and 5 with 200 to 1600 A

When using the product in an application in which overvoltages of > 8 kV or > 12 kV can occur, suitable measures, such as surge arresters, must additionally be taken to limit these overvoltages to no more than 8 kV or 12 kV, respectively.

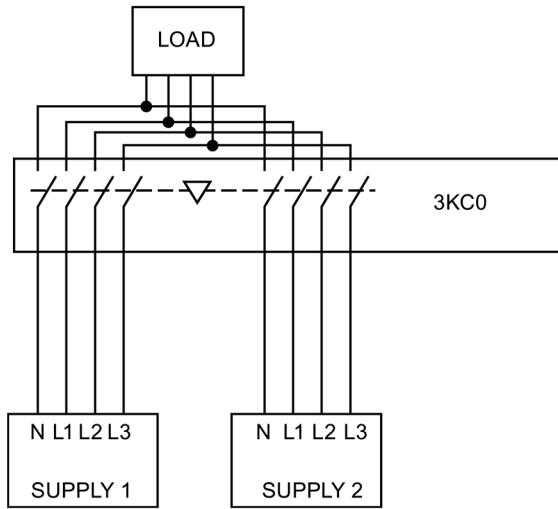
It is possible to use the 3KC0 as **transfer switching equipment** for switching between two sources (in compliance with IEC 60947-6-1).

It is also possible to use the 3KC0 as a **load transfer switch** for switching between two loads (in compliance with IEC 60947-3).

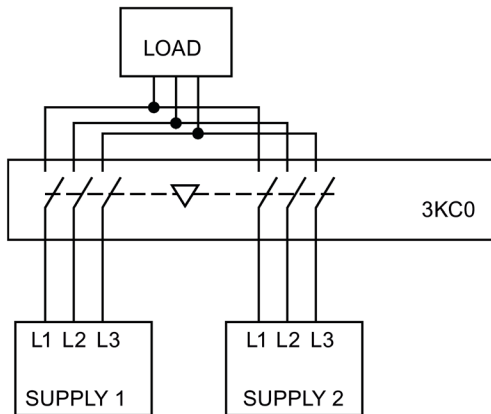
6.1.1 Transfer switching equipment

If the 3KC0 is used as transfer switching equipment, switching is performed between two sources (in compliance with IEC 60947-6-1).

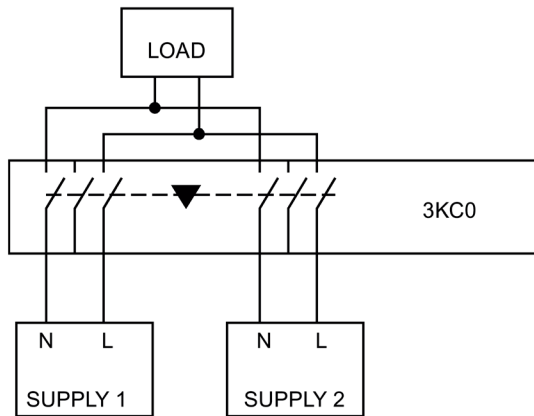
Circuit diagram of 3KC0 as three-phase 4-wire network with three phases with neutral conductor (3PH + N)



Circuit diagram of 3KC0 as three-phase 4-wire network with three phases without neutral conductor (3PH)



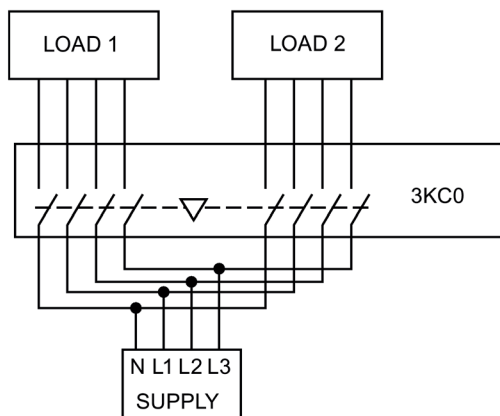
Circuit diagram of 3KC0 as single-phase network with neutral conductor (1PH + N)



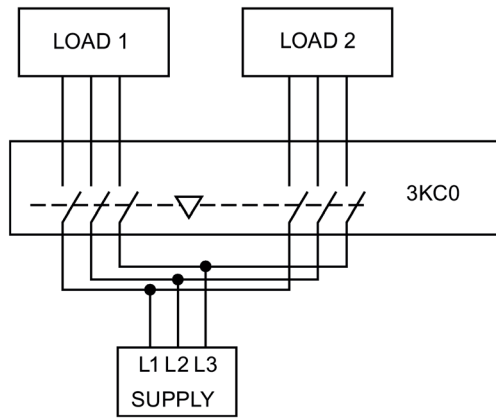
6.1.2 Load transfer switches

If the 3KC0 is used as a load transfer switch, switching is performed between two loads (in compliance with IEC 60947-3). Only one load is supplied – or in the OFF position – no load is supplied.

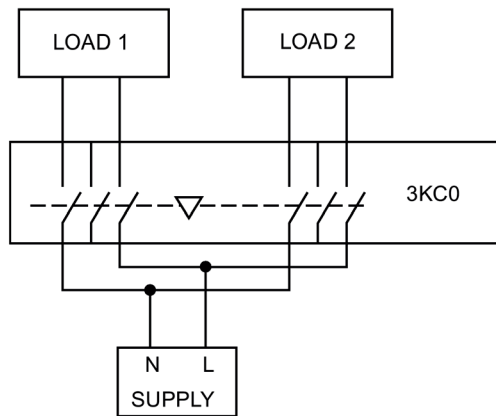
Circuit diagram of 3KC0 as three-phase 4-wire network with three phases with neutral conductor (3PH + N)



Circuit diagram of 3KC0 as three-phase 4-wire network with three phases without neutral conductor (3PH)



Circuit diagram of 3KC0 as single-phase network with neutral conductor (1PH + N)



6.2 Connecting to the circuit

This chapter describes options for connecting the 3KC0 transfer switching equipment to the circuit.

NOTICE
System damage! System damage is possible if the equipment is not installed properly. <ul style="list-style-type: none">• Connect the two power supply systems with phase equality.• Tighten all terminals on sizes 1 and 2.

6.2.1 Load connection

The load can be connected in any way with the 3KC0 transfer switching equipment: The load can be connected at either the top or the bottom of the device.

6.2.2 Arrangement of the power supply systems

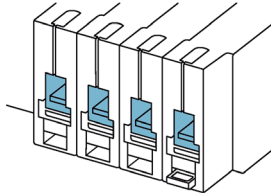
Sources I or II can be connected with the 3KC0 transfer switching equipment. No distinction is made between prioritized sources.

The same applies to the connection of the generator and the main source.

6.2.3 Connecting the terminals for sizes 1 and 2

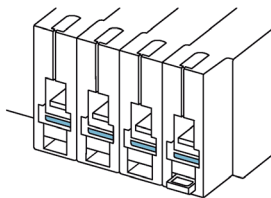
Connect the circuit to the 3KC0 transfer switching equipment sizes 1 and 2 using box terminals. The box terminals of the transfer switching equipment have two openings.

Upper opening of box terminal



Use the upper opening of the box terminal exclusively for the primary circuit.

Lower opening of box terminal



You can connect either the bridging bar accessory (3KC9118- or 3KC9218-) or a copper bar to the lower opening of the box terminal. You can find more information in chapter Connecting transfer switching equipment sizes 1 and 2 to the circuit (Page 41).

6.2.4 Connecting transfer switching equipment sizes 1 and 2

To connect the 3KC0 transfer switching equipment properly, you must first mount the bridging bar accessory. The steps listed below describe the mounting of the bridging bar and the connection to the power supply system.

6.2.4.1 Connecting a bridging bar to sizes 1 and 2

**Hazardous voltage!**

Ensure there is no live voltage before mounting the bridging bars.

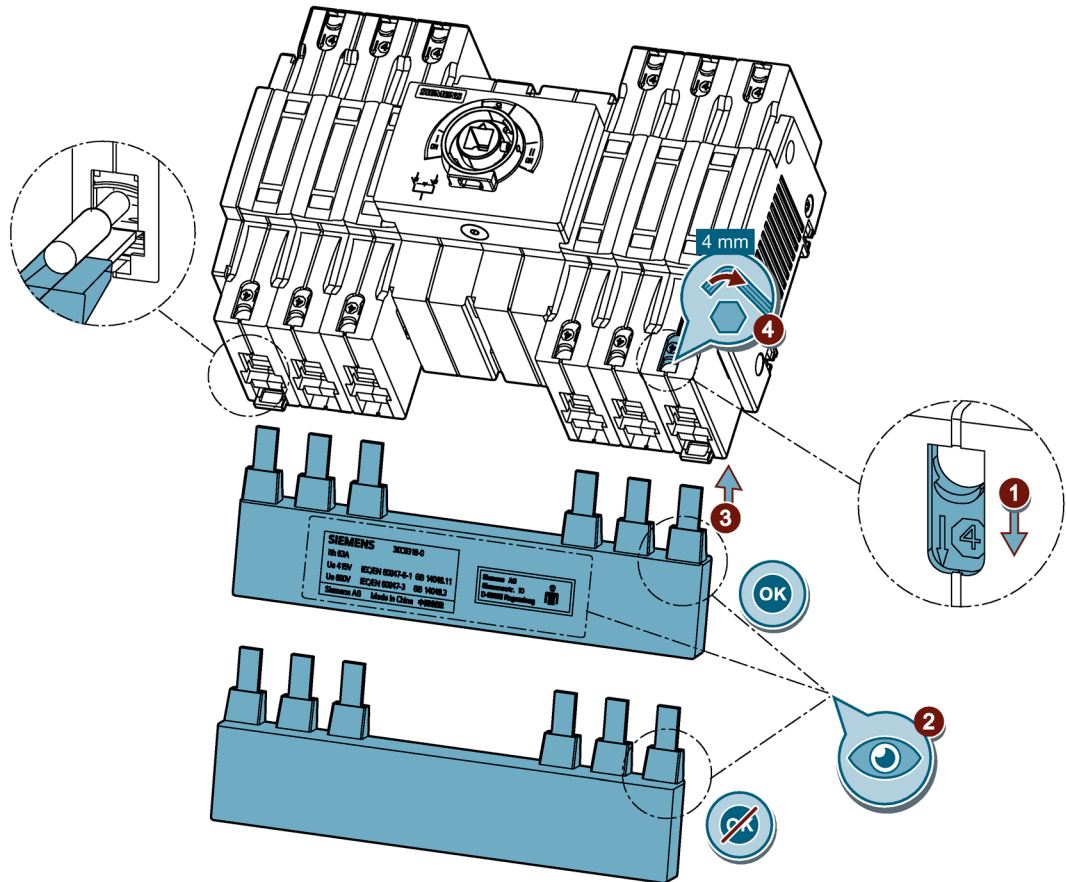
If you use the transfer switching equipment for switching between two sources (in compliance with IEC 60947-6-1), a bridging bar must be used on the load side.

If you use the 3KC0 transfer switching equipment as a load transfer switch for switching between two loads (in compliance with IEC 60947-3), you must mount a bridging bar on the line side. You can mount the bridging bar on either the top or the bottom of the transfer switching equipment.

The bridging bar is not included in the scope of supply. You can order the bridging bar as an accessory. You will find further information on the bridging bar in chapter Bridging bars (Page 58).

Procedure

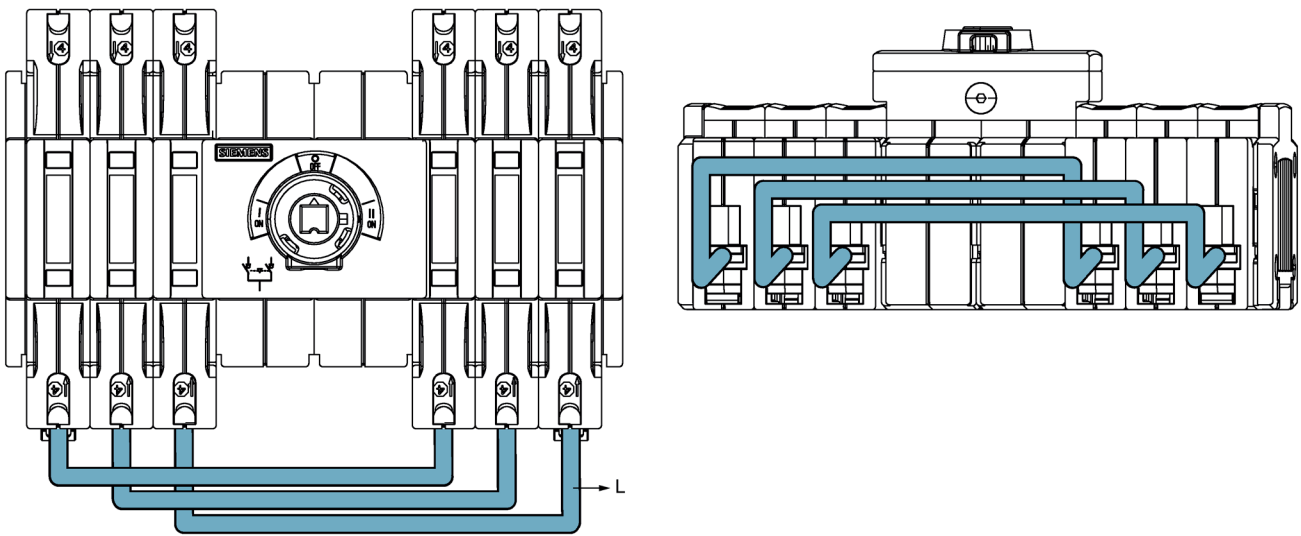
1. Push the protective covers back so that the openings are exposed.



2. Ensure that the orientation of the bridging bar is correct.
3. Push the bridging bar into the lower openings of the box terminals.
4. Fix the bridging bar using a wrench.

As an alternative to a bridging bar, you can connect the two poles of sources I and II that belong together using cables. The cables must be of the following minimum lengths:

- Size 1: Minimum length 220 mm
- Size 2: Minimum length 250 mm



6.2.4.2 Connecting transfer switching equipment sizes 1 and 2 to the circuit

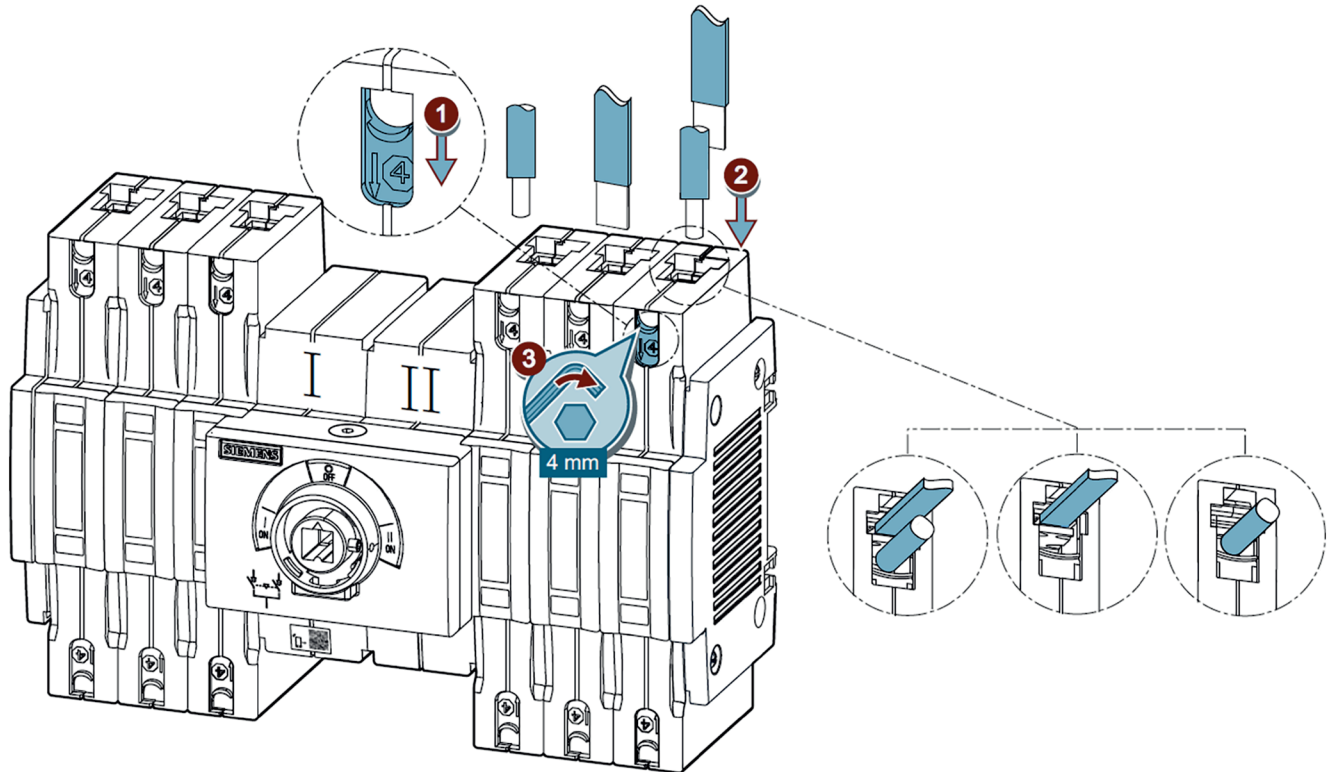
<p>! WARNING</p> <p>Hazardous voltage!</p> <p>Ensure there is no live voltage before connecting the transfer switching equipment to the circuit.</p>
--

<p>NOTICE</p> <p>System damage if equipment is not installed properly!</p> <p>Connect the power supply systems with phase equality.</p>

Mount the bridging bars before connecting the transfer switching equipment to the circuit. For more information, see chapter Connecting a bridging bar to sizes 1 and 2 (Page 39).

Procedure

1. Push the protective covers back so that the openings are exposed.



2. **If a flat cable is used:** Insert the cables into the lower openings of the box terminal.
If a round cable is used: Insert the cables into the upper openings of the box terminal.
3. Fix the cables using a wrench.

Size	Tightening torque (Nm)
1	5 ... 6.5
2	6.5 ... 8.0

Note


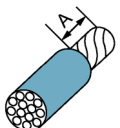

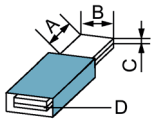
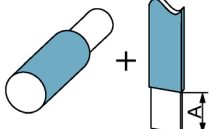
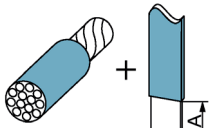
In order to access the box terminal bolt, you must move the integrated cover using a wrench.

The box terminals of the 3KC0 are designed such that they can simultaneously accommodate a round and a flat cable (solid copper bars or Flexibar).

4. Attach the label included in the scope of supply to label the phases and the neutral conductor.

Connecting the conductor to the box terminals

See the table below for the requirements of the supply lines needed for the connection:

		Size 1	Size 2	
	Cu	1 x 1 ... 16 mm ²	1 x 2.5 ... 16 mm ²	
	A	14 mm	18 mm	
	Cu	1 x 6 ... 35 mm ²	1 x 10 ... 70 mm ²	
	A	14 mm	18 mm	
	Cu	1 x 1 ... 35 mm ²	1 x 2.5 ... 70 mm ²	
	A	14 mm	18 mm	
	Cu	A	14 mm	18 mm
		B	9.0 mm	14.0 mm
		C	0.8 mm	0.8 mm
		D	2	3
	Cu	1 x 1 ... 16 mm ² + 2 x 9 mm ²	1 x 2.5 ... 16 mm ² + 3 x 14 mm ²	
	A	14 mm	18 mm	
	Cu	1 x 6 ... 35 mm ² + 2 x 9 mm ²	1 x 10 ... 70 mm ² + 3 x 14 mm ²	
	A	14 mm	18 mm	

NOTICE

Material damage can occur if the maximum conductor thickness is exceeded!

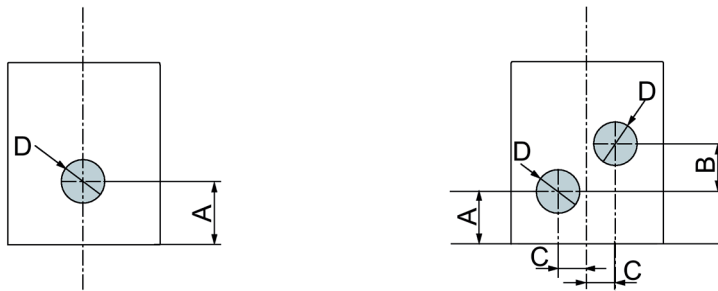
If the calculation of the number of layers multiplied by the thickness of a layer yields the exact maximum thickness of the box terminal, the conductor may not match the terminal in practice. The Flexibar is often a little thicker. A Flexibar with 4 x 0.5 mm layers can be thicker than 2 mm.

6.2.5 Connecting the terminals for sizes 3, 4 and 5

Flat terminal

Since the 3KC0 transfer switching equipment has flat terminals, you can connect it to the power supply system using cable lugs or busbars.

Dimensions for busbar holes



Size of transfer switching equipment	A (mm)	B (mm)	C (mm)	D (mm)
3	< 15.5	–	–	11
4	< 21	–	–	14
5	< 19	23 ... 29	13	14

6.2.6 Connecting transfer switching equipment sizes 3, 4 and 5

To connect the 3KC0 transfer switching equipment properly, you must first mount the bridging bar accessory. The steps listed below describe the mounting of the bridging bar and the connection to the power supply system.

6.2.6.1 Connecting a bridging bar to sizes 3, 4 and 5

WARNING
Hazardous voltage! Ensure there is no live voltage before mounting the bridging bars.

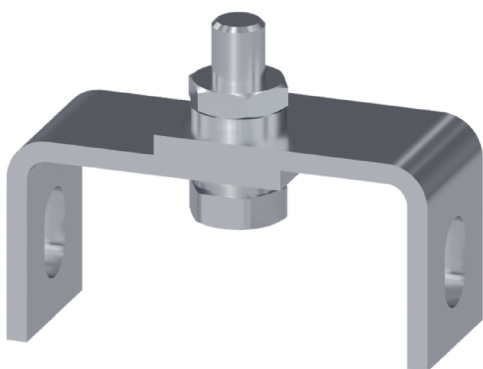
Note

In addition to the terminal covers, you must also connect side panel covers for lateral touch protection of the connection side at which the bridging bars are used (usually the load side).

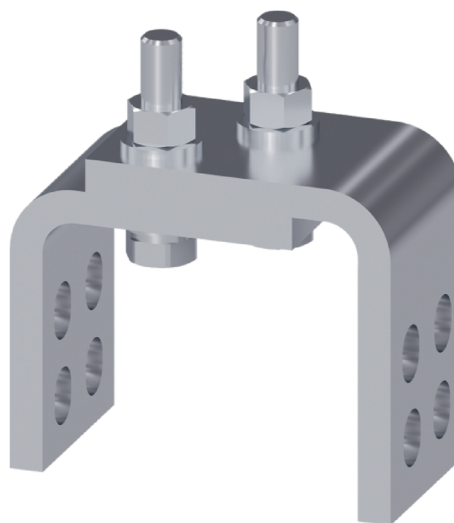
If you use the 3KC0 transfer switching equipment for switching between two sources (in compliance with IEC 60947-6-1), you must mount the bridging bars on the load side.

If you use the 3KC0 transfer switching equipment as a load transfer switch for switching between two loads (in compliance with IEC 60947-3), you must mount the bridging bars on the line side. You can mount the bridging bars on either the top or the bottom of the transfer switching equipment.

The bridging bars are not included in the scope of supply. You can order the bridging bars as accessories. You can find more information on the bridging bars in chapter Bridging bars (Page 58).



Bridging bar for flat terminal sizes 3 and 4



Bridging bar for flat terminal size 5

Procedure

Note

Three or four bridging bars are required for sizes 3, 4 and 5 depending on the number of poles. As only one bridging bar is included in the scope of supply of the bridging bar, you will have to order 3 or 4 packages as appropriate.

Note

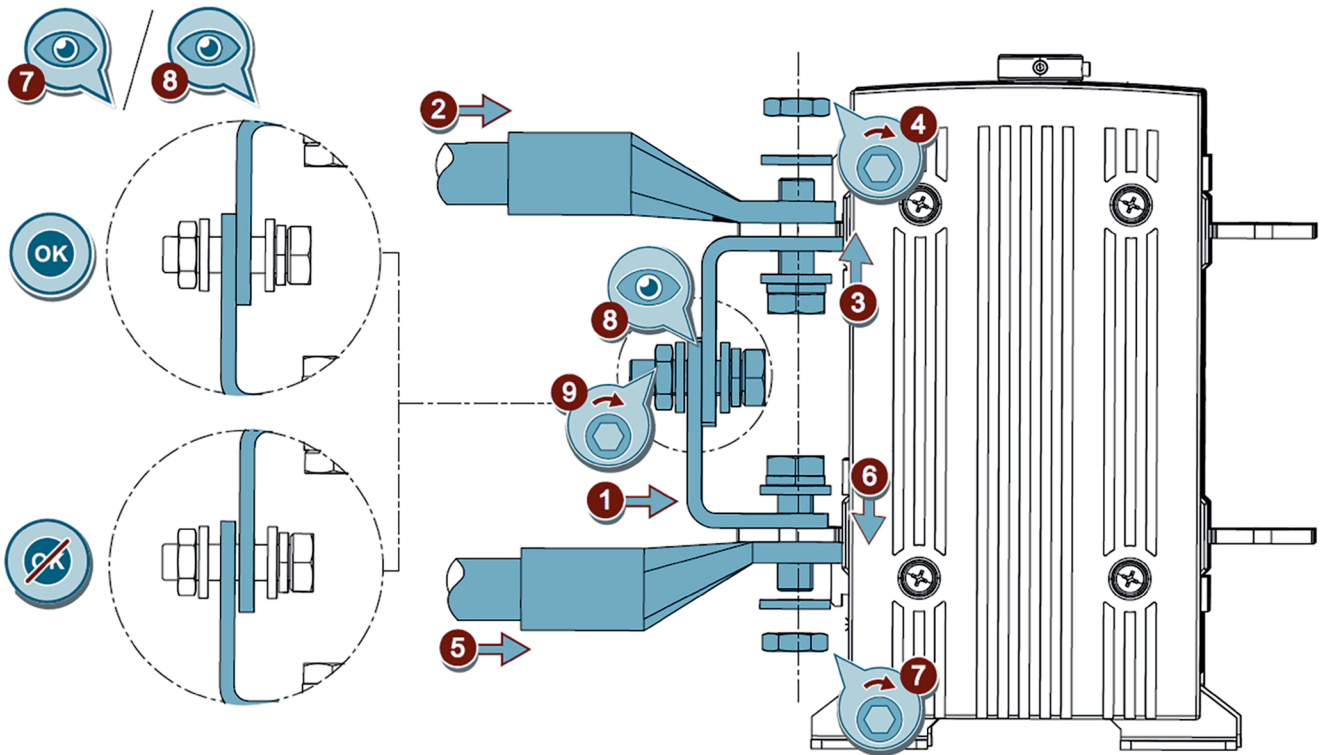
The bolts, washers and nuts needed for mounting the bridging bars on the connecting terminals are included in the scope of supply of the 3KC0.

Note

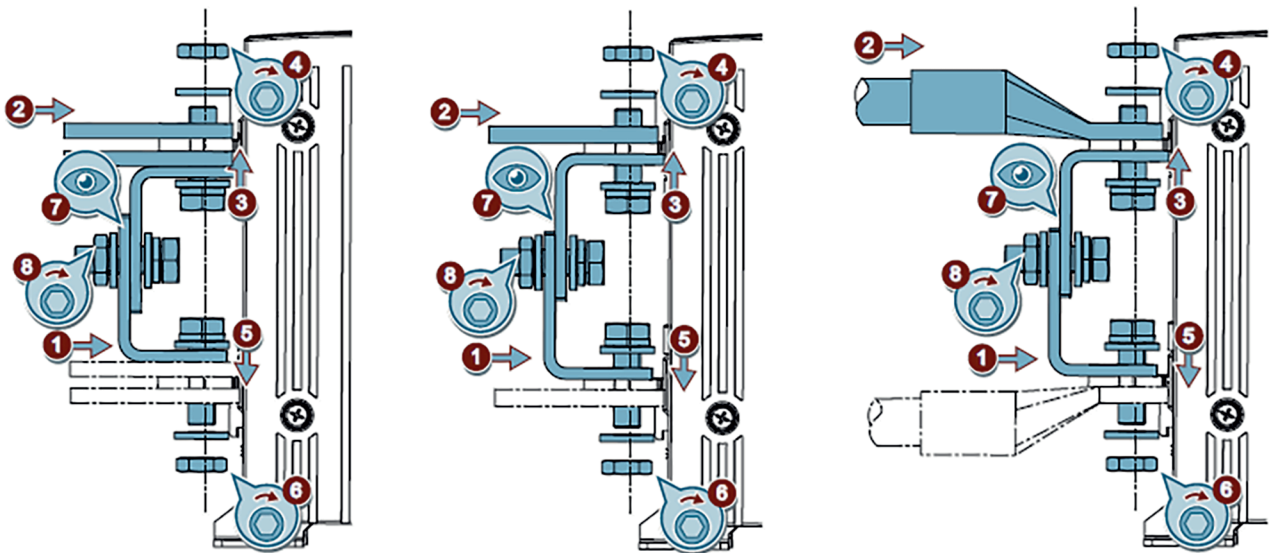
The bolts, washers and nuts needed for mounting the two halves of the bridging bars are included in the scope of supply of the bridging bar.

6.2 Connecting to the circuit

1. Position the bridging bar on the connecting terminal.



Size	Tightening torque (Nm)	Width across flats for wrench (mm)
3	30 ... 44	16
4	50 ... 75	18
5		




2. Position the first cable lug or first busbar at the connecting terminal.
3. Insert the first bolt from the center through the connecting terminal, the bridging bar and the cable lug or busbar.
4. Fix the first half of the bridging bar to the connecting terminal using the nut and washer.
5. Position the second cable lug or the second busbar at the second connecting terminal and insert the second bolt from the center through the connecting terminal, the bridging bar and the cable lug.
6. Fix the second half of the bridging bar to the connecting terminal using the nut and washer.

Note

The two halves of the bridging bar must come into contact completely after this work step.

7. Ensure that both parts of the bridging bar are lying flush.
8. Insert the bolt from the center through the two halves of the bridging bar and fasten the two halves with a washer and a nut.

6.2.6.2 Connecting transfer switching equipment sizes 3, 4 and 5 to the circuit

 WARNING
Hazardous voltage! Ensure there is no live voltage before connecting the transfer switching equipment to the circuit.

NOTICE
System damage if equipment is not installed properly! Connect the power supply systems with phase equality.



Note

Using bridging bars

Mount the bridging bars before connecting the transfer switching equipment to the circuit. For more information, see chapter Connecting a bridging bar to sizes 3, 4 and 5 (Page 44).

Note

The bolts, washers and nuts needed for mounting on the connecting terminals are included in the scope of supply of the 3KC0.

Size of transfer switching equipment	DIN ISO 46234 (mm ²)	DIN ISO 46235 (mm ²)	(mm ²)	
				
3	1 x 6 ... 240 2 x 6 ... 150	1 x 16 ... 185 2 x 16 ... 150	1 x 20 x 3 1 x 25 x 3 1 x 30 x 4 1 x 30 x 10	–
4	1 x 25 ... 240 2 x 25 ... 240	1 x 25 ... 240 2 x 25 ... 240	1 x 30 x 10 1 x 40 x 10 2 x 40 x 5	–
5	1 x 120 ... 240 2 x 95 ... 240	1 x 120 ... 185 2 x 95 ... 185	–	2 x 50 x 6 2 x 40 x 10 2 x 60 x 10

Procedure for sizes 3 and 4

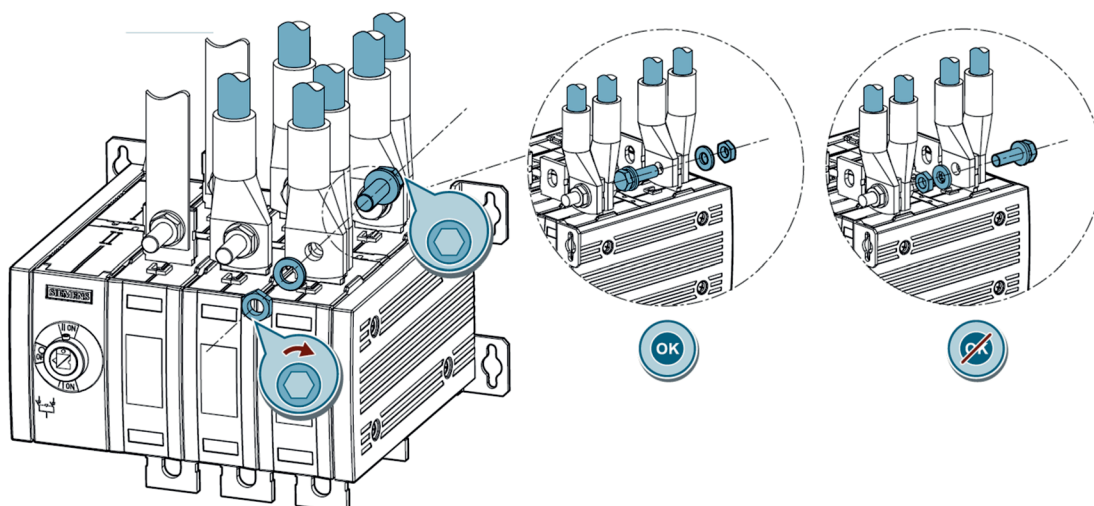
⚠ WARNING

Hazardous voltage!

All bolts must have the correct orientation: The nuts must be positioned on the outside of the transfer switching equipment.

Mount the cable lugs or busbars:

1. Insert both bolts from the center.
2. Secure each connection with 1 bolt, 1 washer, and 1 nut on the cable lug or busbar.



Size of transfer switching equipment	Tightening torque (Nm)	Width across flats for wrench (mm)
3	30 ... 44	16
4	50 ... 75	18

Procedure for size 5

⚠ WARNING

Hazardous voltage!

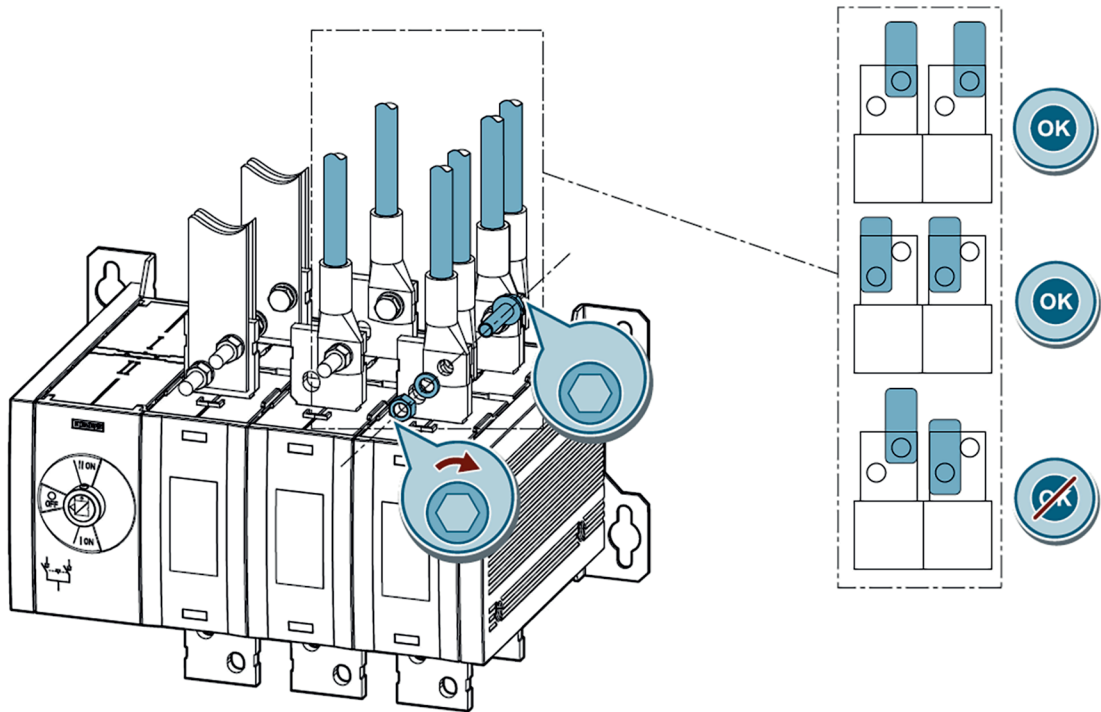
All bolts must have the correct orientation: The nuts must be positioned on the outside of the transfer switching equipment.

⚠ WARNING

Hazardous voltage!

If only one bolt per connecting terminal is used for mounting, you must fit this bolt in the same position on every connecting terminal (either on the top or on the bottom).

1. Mount the cable lugs or busbars.
 - **If the transfer switching equipment is connected using cable lugs:** Secure each connection with 1 bolt, 1 washer, and 1 nut on the cable lug.
 - **If the transfer switching equipment is connected using busbars:** Secure each connection with 2 bolts, 2 washers, and 2 nuts on the busbar. You must insert all bolts from the center.



Size of transfer switching equipment	Tightening torque (Nm)	Width across flats for wrench (mm)
5	50 ... 75	18

Operation

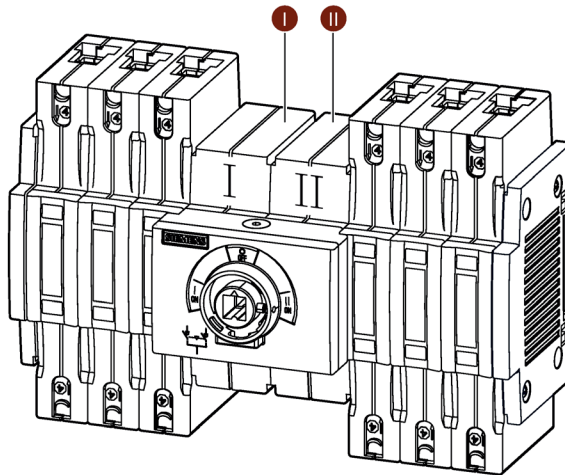
You can either operate the 3KC0 manual transfer switching equipment using a handle for direct operating mechanism directly on the switch or using a door-coupling rotary operating mechanism outside the cabinet. Switching is between positions I, 0 and II in each case:

Operating mechanism	Switch I	Switch II
Position I	Closed	Open
Position 0	Open	Open
Position II	Open	Closed

You can find further details about rotary operating mechanisms in chapter Accessories (Page 55).

7.1 Operating transfer switching equipment sizes 1 and 2

Transfer switching equipment sizes 1 and 2

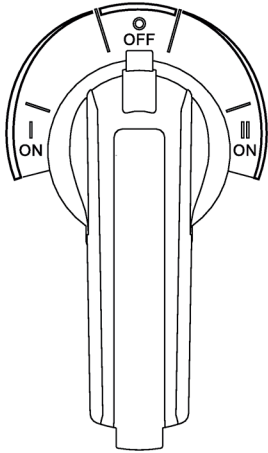


Switch I is on the left and switch II is on the right with transfer switching equipment sizes 1 and 2.

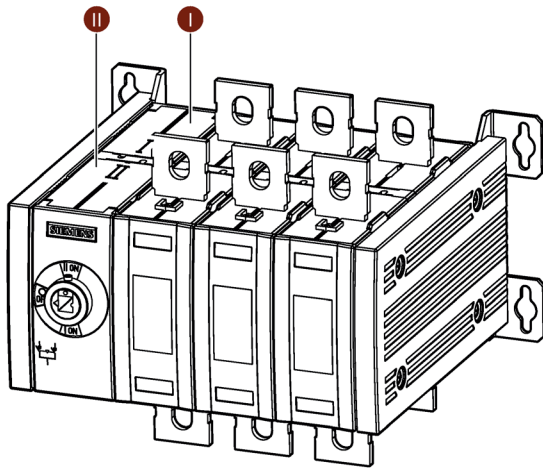
7.1 Operating transfer switching equipment sizes 1 and 2

Procedure

Turn the handle by 90° in the clockwise or counter-clockwise direction to switch to one of the two sources.



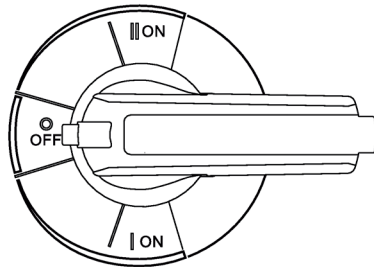
7.2 Operating transfer switching equipment sizes 3, 4 and 5




Switch I is at the rear and switch II is at the front with transfer switching equipment sizes 3, 4 and 5.

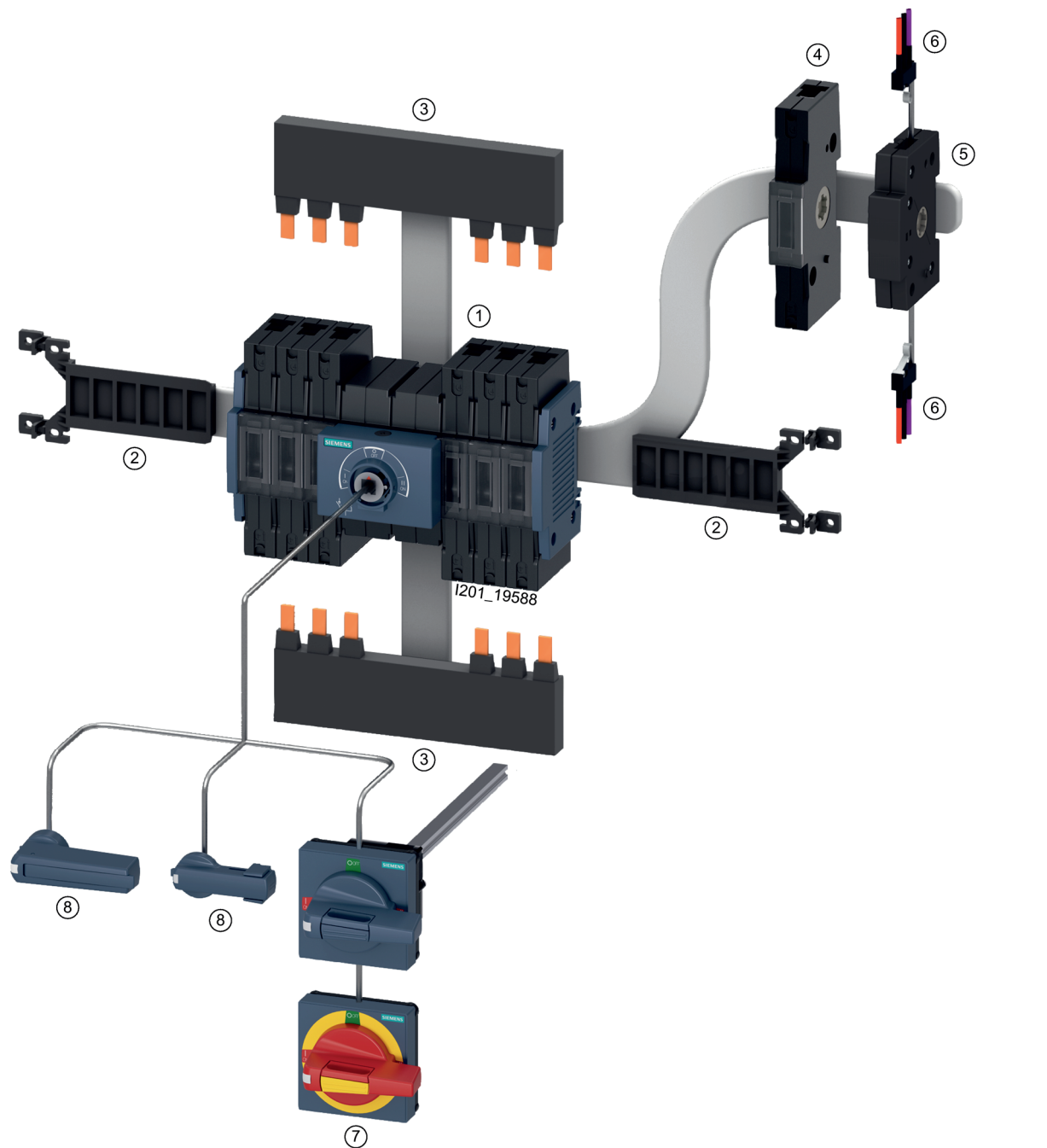
Procedure

Turn the handle by 90° in the clockwise or counter-clockwise direction to switch to one of the two sources.



 WARNING
Hazardous voltage! Ensure there is no live voltage before mounting an accessory.

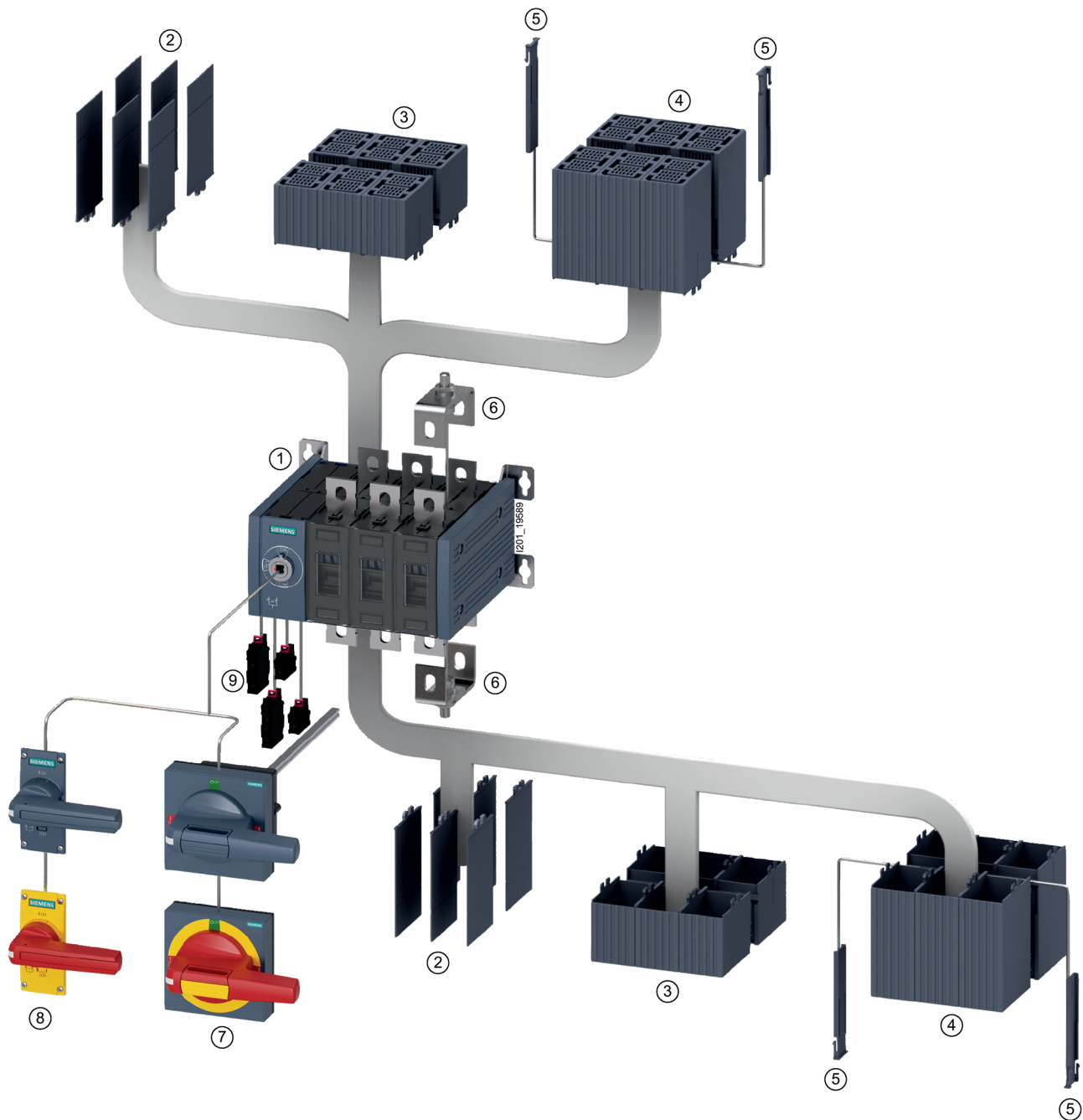
8.1 Component overview for sizes 1 and 2



- ① 3KC0 manual transfer switching equipment
- ② Assembly kit for floor mounting
- ③ Bridging bar
- ④ 4th pole

- ⑤ Auxiliary switch module
- ⑥ Auxiliary switches
- ⑦ Door-coupling rotary operating mechanism
- ⑧ Direct operating mechanism

8.2 Component overview for sizes 3, 4 and 5

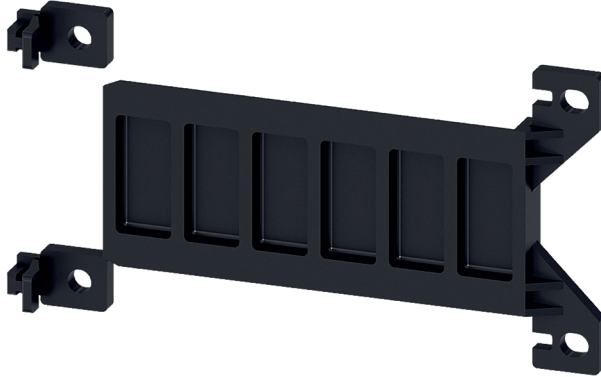


- ① 3KC0 manual transfer switching equipment
- ② Phase barriers
- ③ Terminal cover, short
- ④ Terminal cover
- ⑤ Side panel cover

- ⑥ Bridging bar
- ⑦ Door-coupling rotary operating mechanism
- ⑧ Direct operating mechanism
- ⑨ Auxiliary switches

8.3 Assembly kit for floor mounting for sizes 1 and 2

If you wish to mount the transfer switching equipment size 1 and 2 on the floor or on the wall, you must use the assembly kit for floor mounting.



Note

Two mounting plates (one for each side) and four mounting brackets are included in the scope of delivery.

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Position on transfer switching equipment	Article number	Required packages
1	3, 4	On both sides	3KC9120-1	1
2				

8.4 Bridging bars

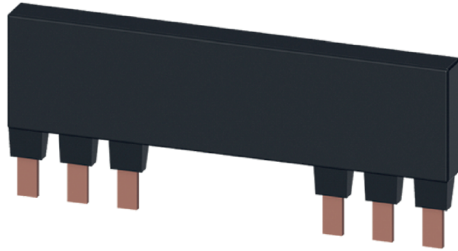
Function

For all current ratings, bridging bars can be mounted for implementing an upstream or downstream connection point.

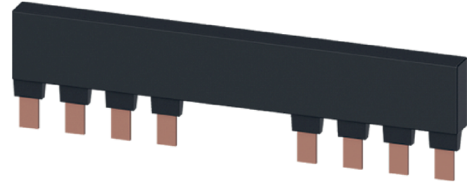
The bridging bars serve as bridges for a load-side or line-side connection and can be attached either on the top or the bottom of the transfer switching equipment.

If you use the 3KC0 transfer switching equipment for switching between two sources (in compliance with IEC 60947-6-1), you must mount a bridging bar on the load side.

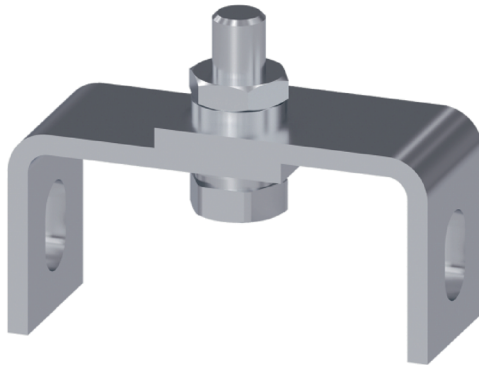
If you use the 3KC0 transfer switching equipment as a load transfer switch for switching between two loads (in compliance with IEC 60947-3), you must mount a bridging bar on the line side.



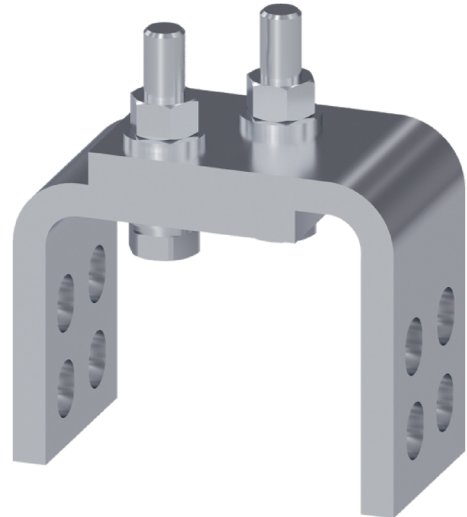
Bridging bar for sizes 1 and 2 with box terminals, 3-pole



Bridging bar for sizes 1 and 2 with box terminals, 4-pole



Bridging bar for sizes 3 and 4 with flat terminals



Bridging bar for size 5 with flat terminals

Note

In addition to the terminal covers, you must also connect side panel covers for lateral touch protection of the connection side at which the bridging bars are used (usually the load side) in the case of sizes 3, 4 and 5.

Sizes and article numbers

The bridging bars are not included in the scope of supply. You can order the bridging bars as accessories.

8.4 Bridging bars

Sizes 1 and 2

With transfer switching equipment sizes 1 and 2, you only need to order one bridging bar, as indicated in the table below.

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Position on transfer switching equipment	Article number	Required packages
1	3	Any (top or bottom)	3KC9118-1	1
	4		3KC9118-2	
2	3		3KC9218-1	
	4		3KC9218-2	

You can find more information on mounting the bridging bar in chapter Connecting a bridging bar to sizes 1 and 2 (Page 39).

Sizes 3, 4 and 5

Three or four bridging bars are required for transfer switching equipment sizes 3, 4 and 5 depending on the number of poles. As the bridging bar cannot be supplied separately, you will have to order 3 or 4 packages as appropriate.

The bolts for connecting the two bridging bar halves for flat terminals are included in the scope of supply.

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Position on transfer switching equipment	Article number	Required packages
3	3	Any (top or bottom)	3KC9318-0	3
	4			4
4	3		3KC9418-0	3
	4			4
5	3		3KC9518-0	3
	4			4

You can find more information on mounting the bridging bars in chapter Connecting a bridging bar to sizes 3, 4 and 5 (Page 44).

8.5 Additional poles for sizes 1 and 2

Function

The additionally switchable pole for transfer switching equipment sizes 1 and 2 with box terminals has the same function as the permanently mounted poles of the 3KC0.

The additional pole extends a 3-pole 3KC0 to a 4-pole 3KC0.



4th contact for size 1
3KD9105-2



4th contact for size 2
3KD9205-2

Note

It is not possible to fit an additional pole in the case of transfer switching equipment sizes 3 to 5. No additional poles are available for these modules for this reason.

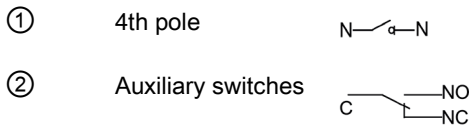
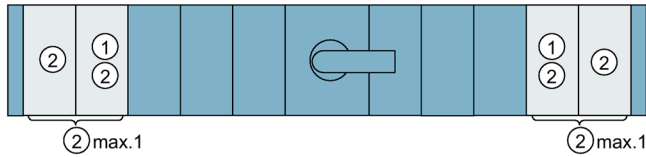
Sizes and article numbers

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Position on transfer switching equipment	Article number
1	3	On both sides	3KD9105-2
2			3KD9205-2

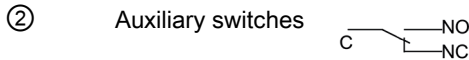
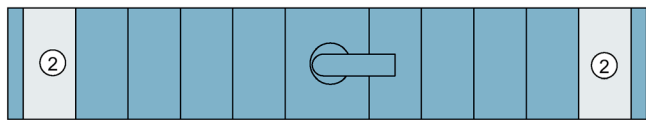
8.5.1 Mounting additional poles for sizes 1 and 2

Mounting position

3-pole transfer switching equipment



4-pole transfer switching equipment

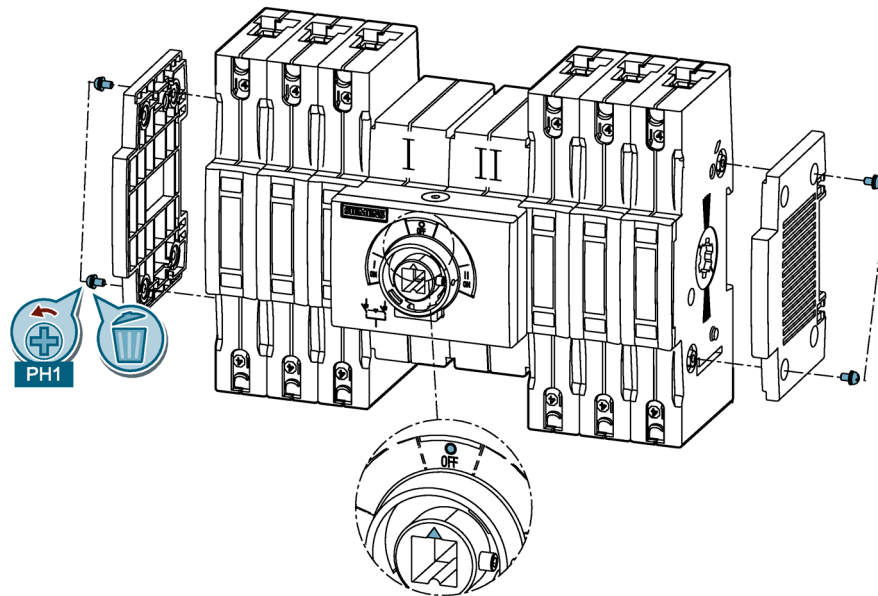


Procedure

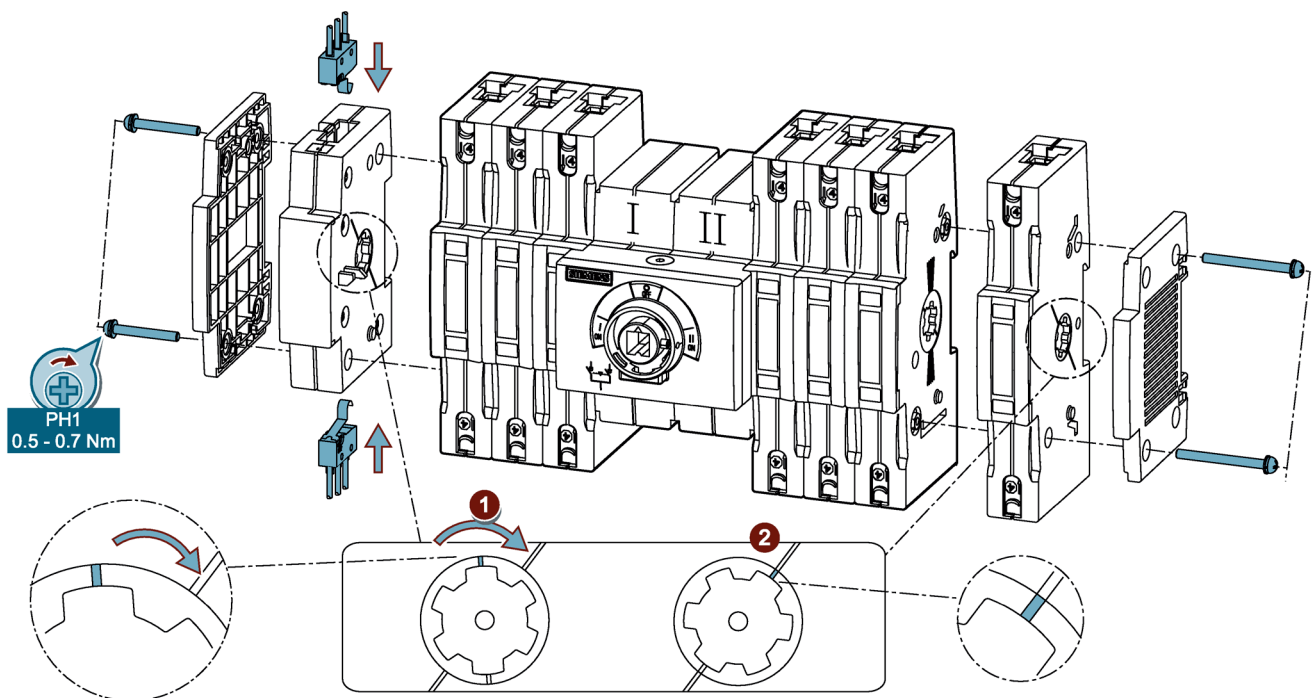
Note

- It is not necessary to fit an additional switchable pole in the case of 4-pole transfer switching equipment.
- You can use additional poles and auxiliary switch modules on one or both sides of the 3KC0 transfer switching equipment.
- A maximum of one switchable pole and one auxiliary switch module are permitted on each side.
- If a switchable pole and an auxiliary switch module are used simultaneously at the same side, you must connect the switchable pole directly to the 3KC0 transfer switching equipment and the auxiliary switch module on the outside.

1. Remove the side cover of the 3KC0 on the side of the switch on which the additional module is to be mounted. The removed bolts are no longer needed.



2. Rotate the shaft of the additional pole or auxiliary switch module to the correct position. Ensure that the pre-inscribed marks are aligned.



3. Mount the additional accessory on the transfer switching equipment (e.g. additional pole or auxiliary switch module).

8.6 Auxiliary switches and auxiliary switch modules

4. If you wish to mount an additional pole and an auxiliary switch module on the same side, attach the auxiliary switch module exactly as described in points 2 and 3.
5. Bolt each side panel tight using 2 bolts (included in the scope of supply of the accessory).

Note

Two sets of bolts are included in the scope of supply of the accessories:

- Use the shorter bolts if you only want to mount one module.
- Use the longer bolts if you wish to mount both an additional pole and an auxiliary switch module.

8.6 Auxiliary switches and auxiliary switch modules

Function

Note

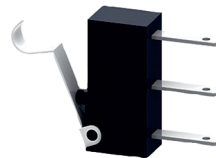
None of the auxiliary switches of the 3KC0 have a test function.

Auxiliary switches signal the switch position of the main contacts of the 3KC0 and can be retrofitted if required.

Designs



Auxiliary switch for sizes 1 and 2 with soldered-on connecting cables



Auxiliary switches for sizes 1 and 2 without soldered-on connecting cables



Auxiliary switch module for sizes 1 and 2



Auxiliary switches for sizes 3, 4 and 5

Contacts

Here are the contacts of the auxiliary switches for transfer switching equipment sizes 1 and 2.

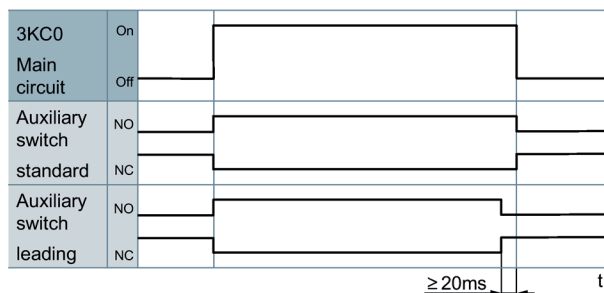


Switching time

You can choose different switching times for the auxiliary switches based on the mounting position:

- Leading switch-off (only available for sizes 3, 4 and 5). The auxiliary switch switches ≥ 20 ms earlier than the main switch.
- Simultaneous switching (standard): Main switch and auxiliary switch operate simultaneously.

You can find more information on the mounting position in chapter Mounting auxiliary switches on sizes 3, 4 and 5 (Page 68).



Auxiliary switch indications

Note

The auxiliary switches indicate the switch position of the respective switch disconnectors (I or II) to which they or the auxiliary switch module are connected.

Two auxiliary switches in total are required for each item of transfer switching equipment in order to be able to distinguish between all switching positions (I, 0, II). In the case of transfer switching equipment sizes 1 and 2, two auxiliary switch modules must be mounted on the transfer switching equipment, one on the left and one on the right. At least one auxiliary switch must be installed for each auxiliary switch module.

In the case of transfer switching equipment sizes 3 to 5, the two auxiliary switches only need to be mounted in different rows on the underside of the transfer switching equipment, one auxiliary switch at switch disconnector I and one at switch disconnector II.

8.6 Auxiliary switches and auxiliary switch modules

Auxiliary switch module for sizes 1 and 2

The optionally available auxiliary switch modules are listed in the table below.

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Position on transfer switching equipment	Article number
1	3, 4	On both sides	3KD9103-5
2			

Auxiliary switches for sizes 1 and 2

The auxiliary switches are listed in the following table.

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Position on transfer switching equipment	Article number	Note
1, 2	3, 4	On both sides	3KD9103-1	CO contact
			3KD9103-2*	CO contact
			3KD9103-3	CO contact, solid-state compatible
			3KD9103-4*	CO contact, solid-state compatible

* Without soldered-on connection cables

Auxiliary switches for sizes 3, 4 and 5

Note

Every version of the auxiliary switches is available with gold-plated contacts.

Function	Article number
1 contact: 1 NC contact • With gold-plated contacts	3SU1400-1AA10-1CA0 3SU1400-1AA10-1MA0
1 contact: 1 NO contact • With gold-plated contacts	3SU1400-1AA10-1BA0 3SU1400-1AA10-1LA0
2 contacts: 1 NC contact and 1 NO contact • With gold-plated contacts	3SU1400-1AA10-1FA0 3SU1400-1AA10-1QA0

Function	Article number
2 contacts: 2 NC contacts	3SU1400-1AA10-1EA0
• With gold-plated contacts	3SU1400-1AA10-1PA0
2 contacts: 2 NO contacts	3SU1400-1AA10-1DA0
• With gold-plated contacts	3SU1400-1AA10-1NA0

8.6.1 Mounting auxiliary switches on sizes 1 and 2

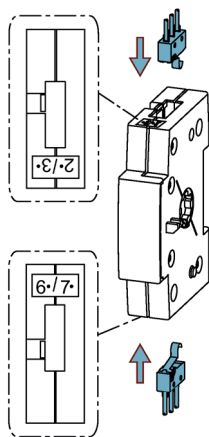
Size 1 and 2 use microswitches as auxiliary switches with a changeover contact (NO contact and NC contact) which are plugged into an auxiliary switch module. You can connect a maximum of two auxiliary switch modules for each 3KC0, one on either side.

Up to two auxiliary switch modules can be mounted in each auxiliary switch module.

The auxiliary switch modules are mounted on the sides of the 3KC0 transfer switching equipment like an additional pole. You can find information about mounting the auxiliary switch modules in chapter Additional poles for sizes 1 and 2 (Page 61).

Procedure

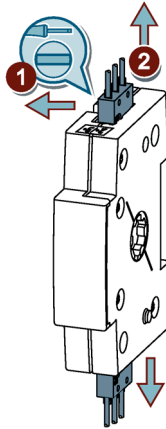
1. Plug the auxiliary switches into the already mounted auxiliary switch module.



8.6.2 Removing auxiliary switches from sizes 1 and 2

Procedure

1. Loosen the locking mechanism on the auxiliary switch module using a screwdriver.



2. Pull out the auxiliary switch.

8.6.3 Mounting auxiliary switches on sizes 3, 4 and 5

Procedure

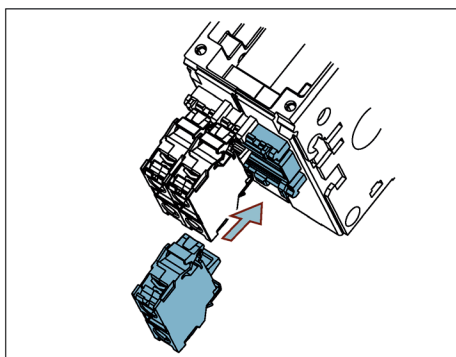
Note

Transfer switching equipment sizes 3, 4 and 5 use the auxiliary switches of the 3SU1 series.

Note

The auxiliary switches are plugged into the operating mechanism module of the 3KC0 transfer switching equipment.

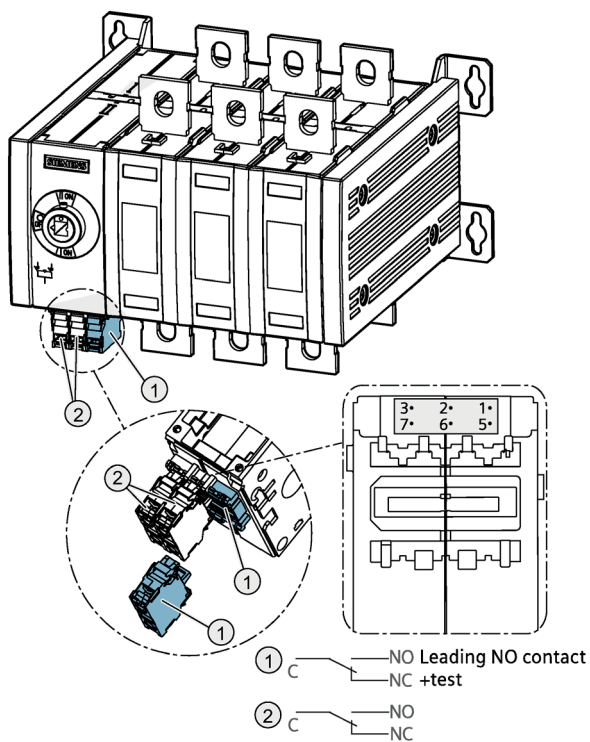
- You can plug a maximum of three auxiliary switches into the 3KC0 transfer switching equipment size 3.
 - You can plug a maximum of four auxiliary switches into the 3KC0 transfer switching equipment sizes 4 and 5.
-



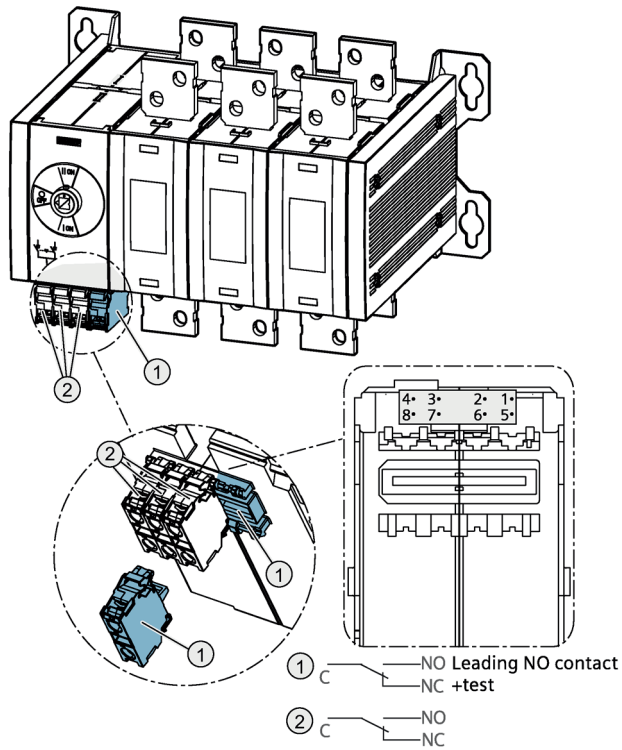
Mounting positions and switching behavior

- Auxiliary switches mounted at position 1 or at contact number 1 or 5 function as leading switch-off auxiliary switches.
- Auxiliary switches which are mounted at position 2 or at contact numbers 2 / 6, 3 / 7 and 4 / 8 (position 4 / 8 only with sizes 4 and 5) operate simultaneously with the main switch.

Size 3

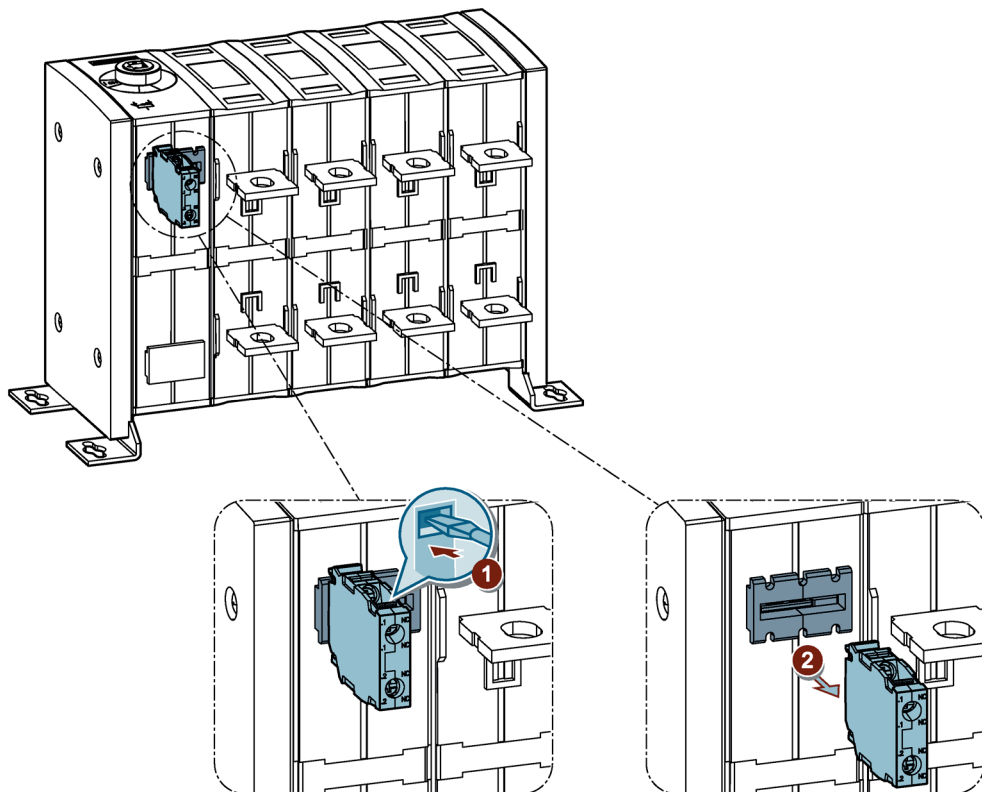


Sizes 4 and 5



8.6.4 Removing auxiliary switches from sizes 3, 4 and 5

Procedure



8.7 Door-coupling rotary operating mechanism of the 8UD1 series

The door-coupling rotary operating mechanism can be used to operate the switch disconnecter from outside the cabinet door.

8UD1 series

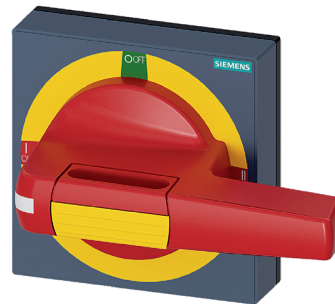
The modern design of the handles is identical to that of the 3KD, 3KF switch disconnectors and the 3VA molded case circuit breakers.

The 8UD series has the following functions:

- Padlocking function on handle with a maximum of 3 padlocks.
- With or without optional tolerance compensation
- With inscription I-0-II
- IP65 degree of protection

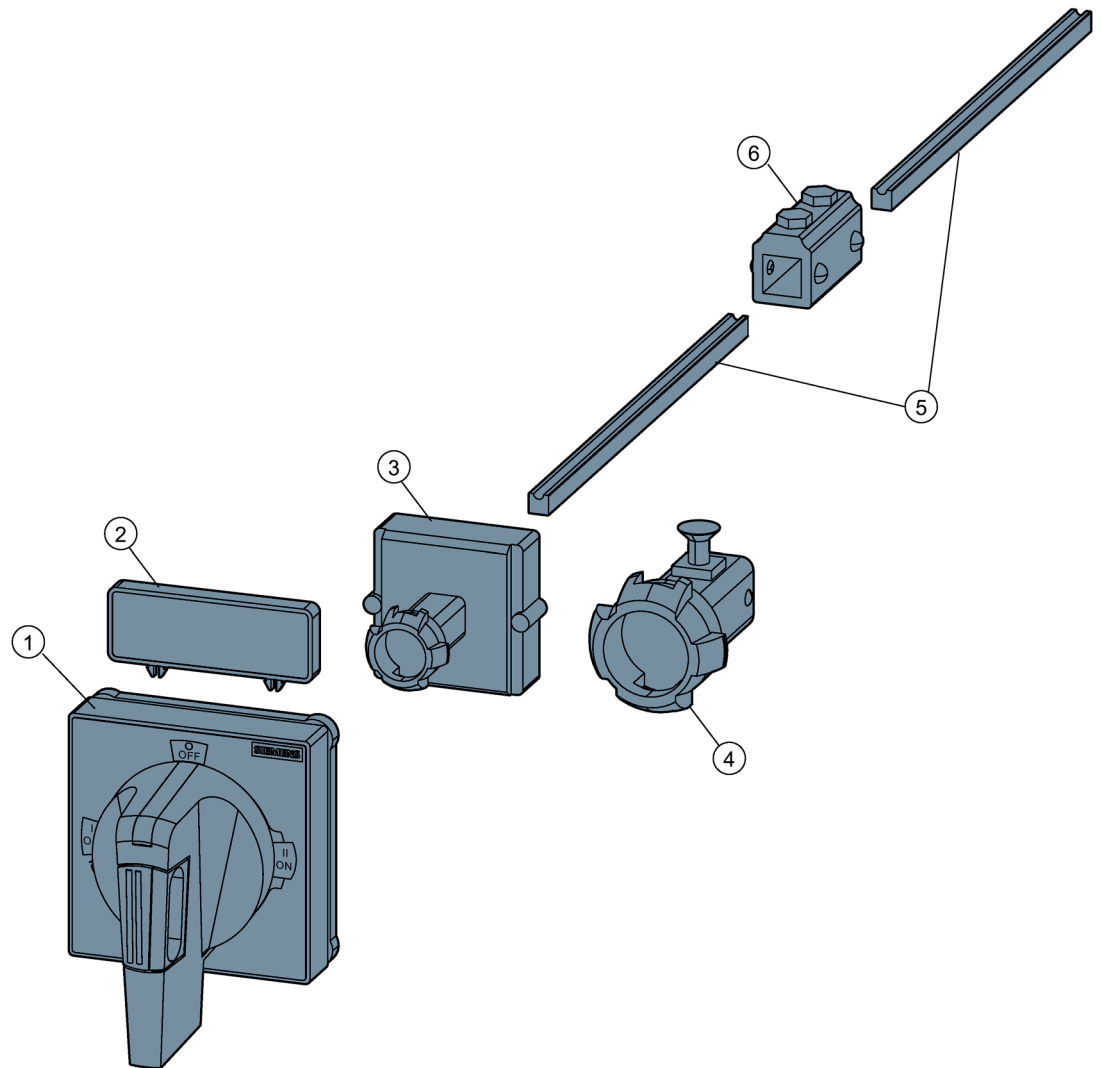


8UD1151-3AE21



8UD1851-3AE05

8.7.1 Component overview



- | | | | |
|---|---|---|--|
| ① | Handle (including front cover, seal and bolts for fixing to the front door) | ④ | Coupling driver without tolerance compensation |
| ② | Inscription label | ⑤ | Extension shaft |
| ③ | Coupling driver with tolerance compensation | ⑥ | Shaft coupling |

8.7.2 Types of delivery and versions

The 8UD1 is available as a complete unit ready for installation. It includes a handle, a coupling driver with tolerance compensation and a 300 mm long extension shaft.

All components are also available separately, e.g.:

- Shafts 300 mm or 600 mm in length
- Coupling driver with or without tolerance compensation
- Handle in gray or red/yellow

The article numbers of the 8UD1 complete units are listed below. You can find the ordering information for the other components in chapter Accessories for the 8UD1 series (Page 92).

Suitable for transfer switching equipment in size	Handle length (mm)	Suitable for shafts (mm x mm)	Article number
1, 2	55	8 x 8	8UD1131-2AE21
3	100	8 x 8	8UD1141-2AE21
4	140	10 x 10	8UD1151-3AE21
5	200	12 x 12	8UD1161-4AE21

8.7.3 Mounting the door-coupling rotary operating mechanism

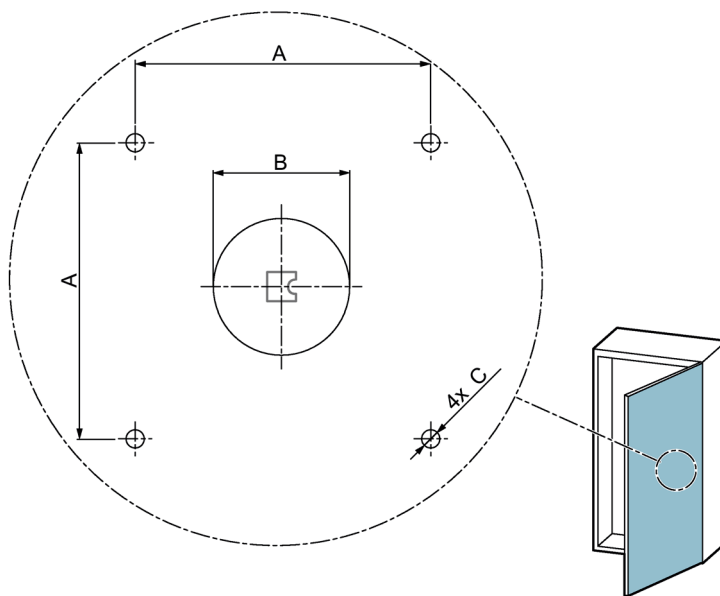
8.7.3.1 Use the hole drilling template for the cabinet door

Hole drilling template for cabinet door

Note

Scale

The hole drilling template does not have the scale 1:1.

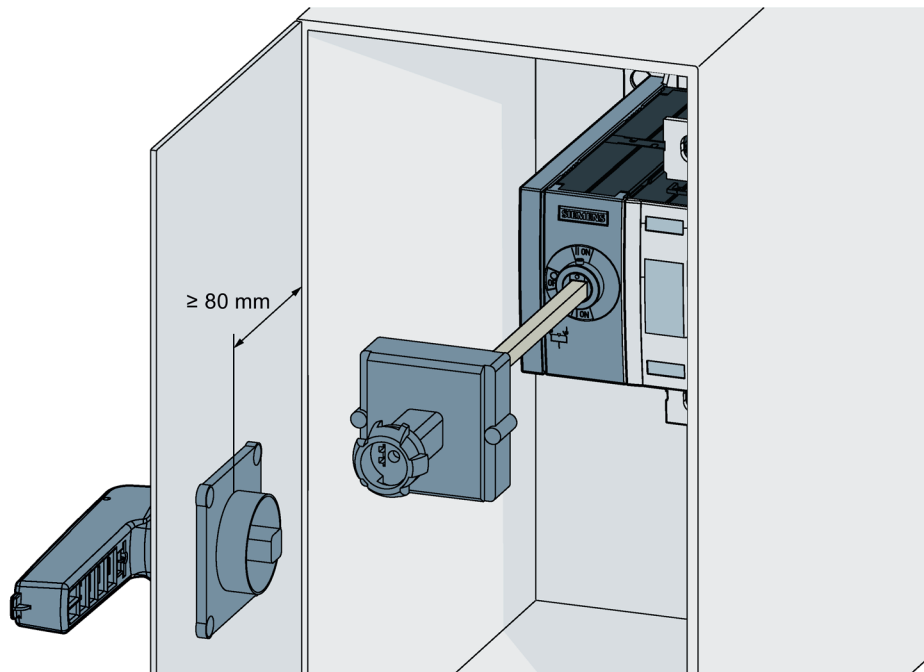


Size of transfer switching equipment	A (mm)	B (mm)	C (mm)
1, 2	65	∅ 30	∅ 4.5
3, 4, 5	88	∅ 65	∅ 5.5

Note

Shaft positioning

You can find the assignment of the center hole in the cabinet door (shaft) to the position of the 3KC0 transfer switching equipment in the cabinet in the dimension drawings of the 3KC0. See chapter Dimension drawings (Page 127).



The clearance between the center hole in the cabinet door (shaft) and the hinge of the cabinet door must be at least 80 mm.

8.7.3.2 Mounting the handle on the cabinet door

Procedure

Note

The following modifications on the handle can only be carried out when the handle has not yet been mounted on the cabinet door:

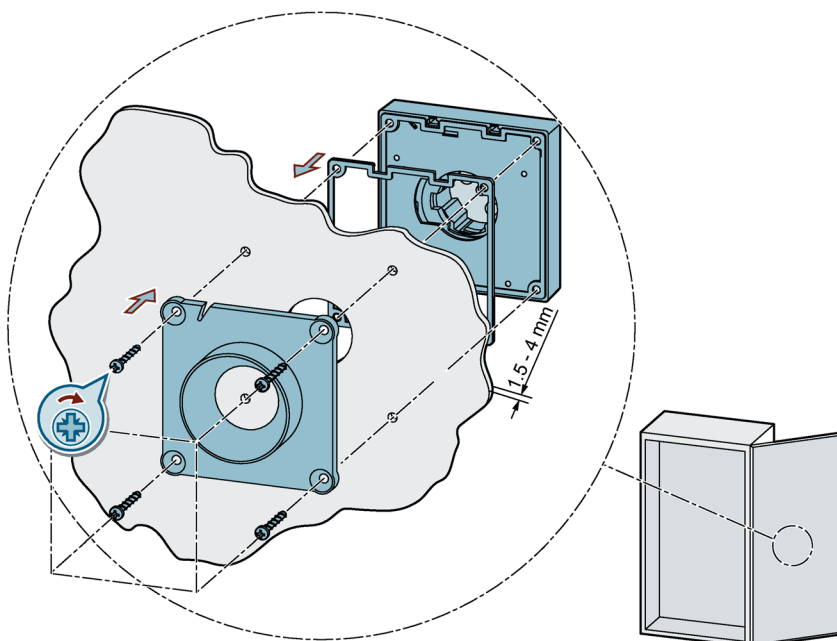
- Deactivation of the door padlocking
- Activation of the locking function in the ON position
- Mounting of the inscription label

If you want to use these functions or the accessory, you must perform the required steps before fitting the handle on the door. You can find additional information on the functions outlined above in chapters Function and operation (Page 83) and Accessories for the 8UD1 series (Page 92).

Note

Handles in the 8UD1 series can be used on doors with a thickness of 2.0 to 5.5 mm.

8.7 Door-coupling rotary operating mechanism of the 8UD1 series

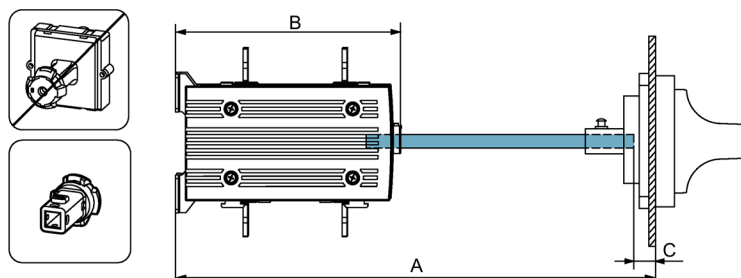


Size of transfer switching equipment	Cross-tip screwdriver	Tightening torque (Nm)
1, 2	PZ2	1.1 ... 1.3
3, 4, 5		2.1 ... 2.4

8.7.3.3 Calculating shaft length and cutting shaft to size

Procedure

Without tolerance compensation

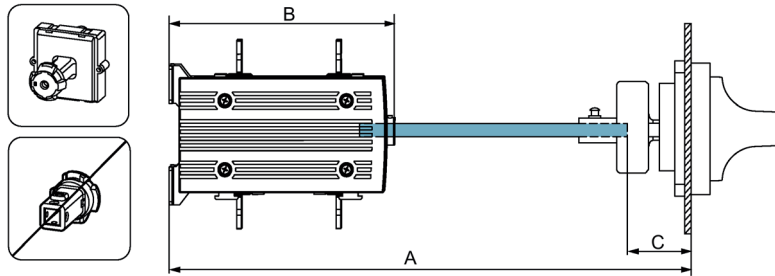


Size of 3KC0	A (mm min)	A (mm max)	B (mm)	C (mm)
1, 2	108.0	365.5	84.5	1.0
3	225.7	448.2	197.2	1.0

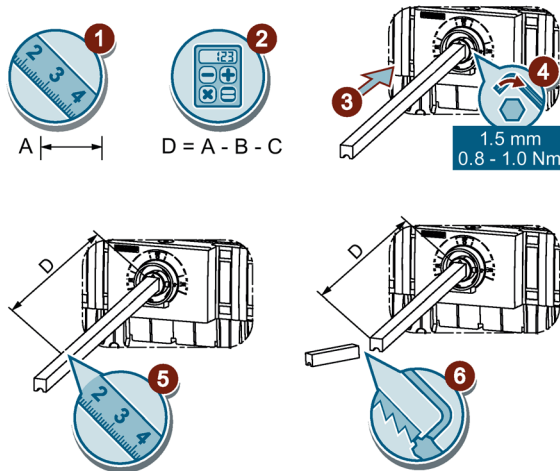
8.7 Door-coupling rotary operating mechanism of the 8UD1 series

Size of 3KC0	A (mm min)	A (mm max)	B (mm)	C (mm)
4	261.1	471.6	232.6	1.0
5	340.0	522.5	311.5	1.0

With tolerance compensation



Size of 3KC0	A (mm min)	A (mm max)	B (mm)	C (mm)
1, 2	150.0	407.5	84.5	43.0
3	267.7	490.2	197.2	43.0
4	303.1	513.6	232.6	43.0
5	382.0	564.5	311.5	43.0



1. Measure clearance A from the mounting plate/rear panel of the control cabinet to the outside of the cabinet door. Observe the maximum values for A.
2. Calculate length D.
3. Insert the shaft into the 3KC0 until it engages.
4. Fix the shaft to the door-coupling driver using a bolt.
5. Mark clearance D on the shaft.
6. Shorten the shaft at the mark for D.
7. Deburr the cutting edges of the shaft to ensure proper mounting.

8.7.3.4 Attaching the door-coupling driver to the shaft

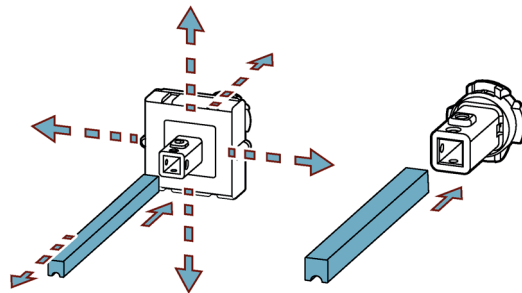
Procedure

NOTICE**Risk of damage to the device!**

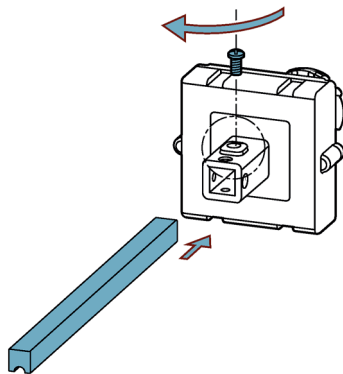
If you pull at the door with a force of 800 N or more when door padlocking is activated, you can irreparably damage the mechanism.

Only open the door if the padlocking has been unlocked.

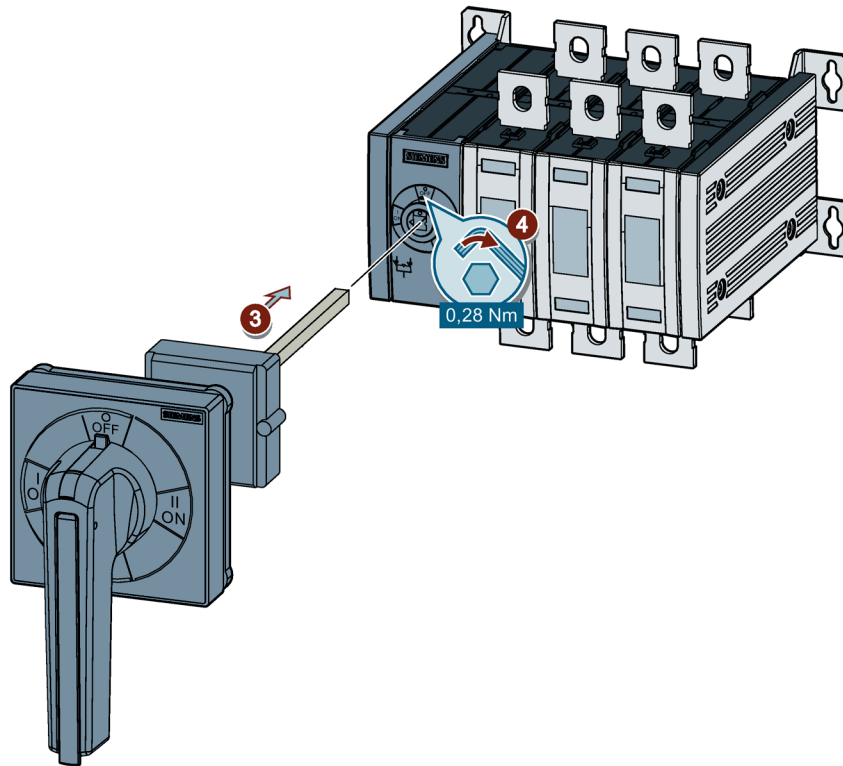
1. Attach the door-coupling driver onto the shaft until it engages.



2. Fix the shaft to the door-coupling driver using a bolt.



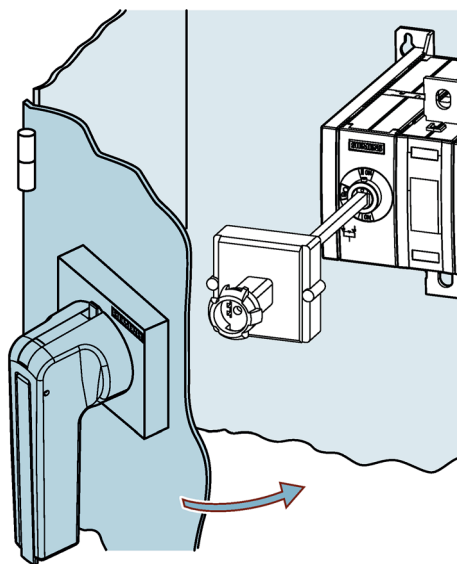
3. Insert the shaft into the 3KC0 until it engages.



4. Fix the shaft to the door-coupling driver using a bolt.

Size of 3KC0	Tightening torque (Nm)	Screwdriver (mm)
1, 2	0.8 ... 1.0	1.5
3	1.5 ... 2.0	2.0
4	4.0 ... 4.5	2.5
5	7.0 ... 7.5	3.0

5. Close the cabinet door carefully to check that the rotary operating mechanism and the 3KC0 are a good fit for each other.



NOTICE

Material damage

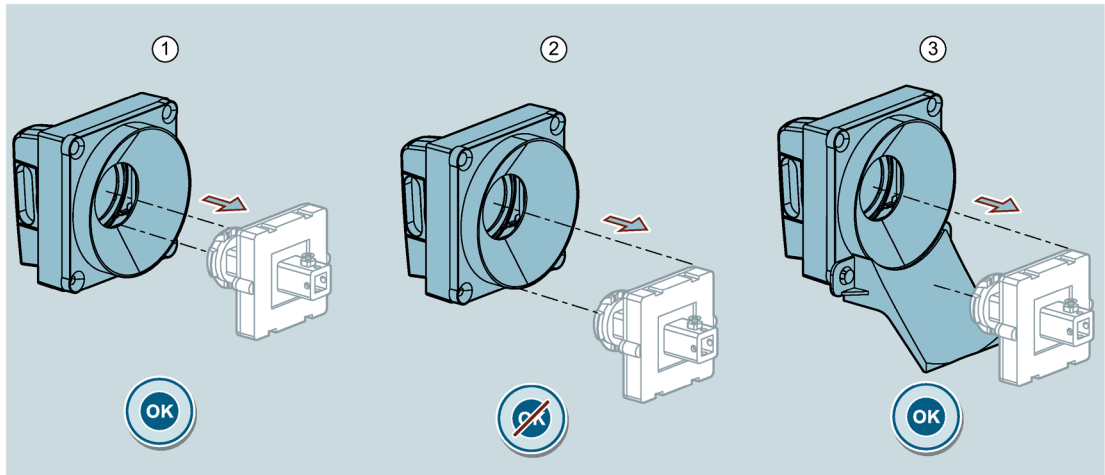
Risk of damage to the device.

When the cabinet door is opened, the coupling head of the 8UD1 is deflected slightly downwards. This deflection is caused by tolerances between the 8UD1 shaft and the mounting point on the 3KC0, as well as by tolerances between the 3KC0 and the mounting plate or DIN rail in the cabinet.

In the usual applications, the taper on the rear plate of the handle ensures that the coupling head engages in the handle even in the event of deflection.

If the 3KC0 is mounted on DIN rails and shafts that are longer than 300 mm, the deflection of the coupling head may be so great that the cabinet door cannot be closed or the 8UD1 can be damaged. In this case, the shaft of the 8UD1 used to eliminate the deflection can be supported by an internal structure in the cabinet or the shaft jack accessory for 8UD1 can be used. See chapter Handles (Page 92).

Closing the cabinet door

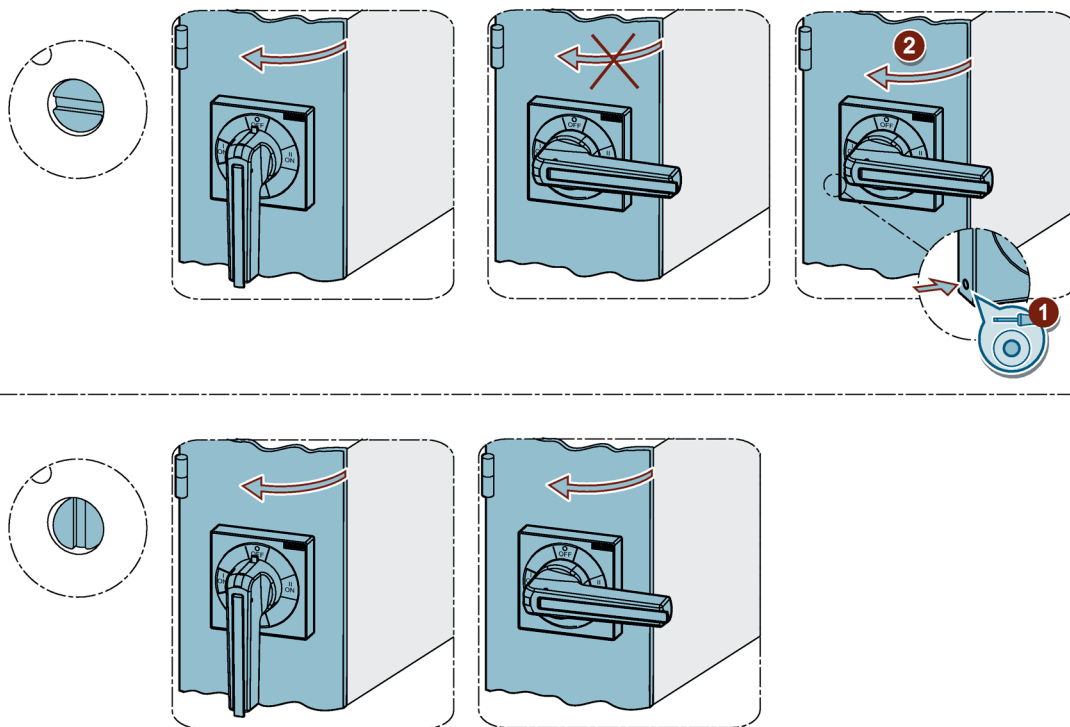


- ① Coupling head deflected slightly downwards – cabinet door can be closed.
- ② Coupling head deflected downwards by too much – cabinet door cannot be closed.
- ③ Coupling head deflected downwards by too much – 8UD1 handle with shaft jack – cabinet door can be closed.

8.7.4 Function and operation

8.7.4.1 Door padlocking

Overview of door padlocking



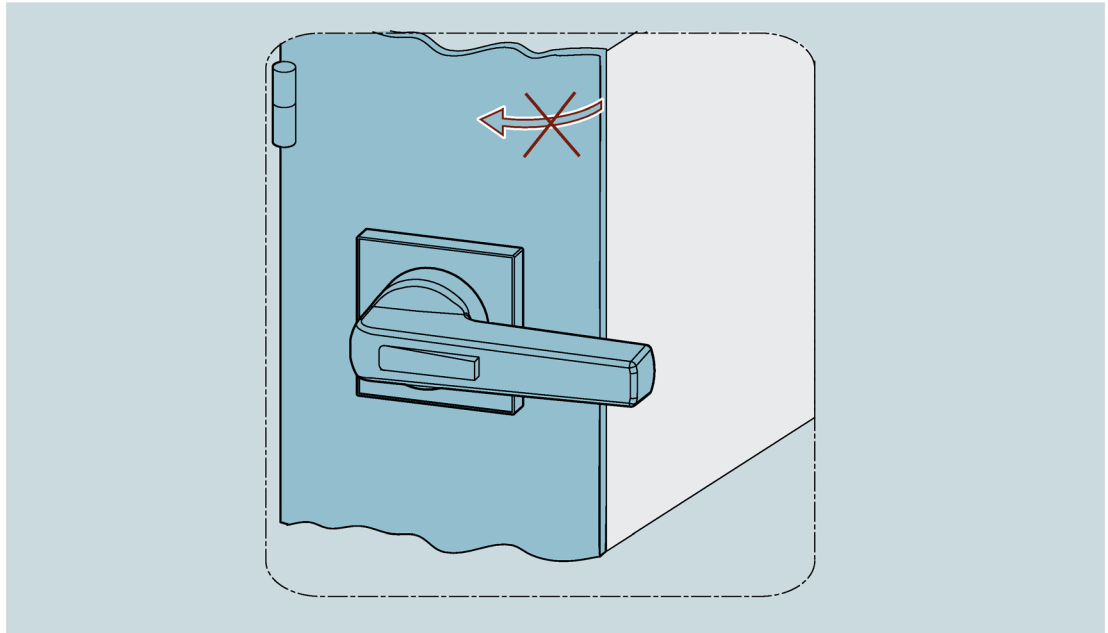
NOTICE

Material damage

Risk of damage to the device.

When deactivating door padlocking, ensure that the 8UD1 handle and the 3KC0 switch are in the same position (both ON or OFF) before you close the cabinet door. Otherwise the operating mechanism can be damaged.

The padlocking of the door-coupling rotary operating mechanism locks the door as soon as it is turned to the ON position (I or II).



NOTICE

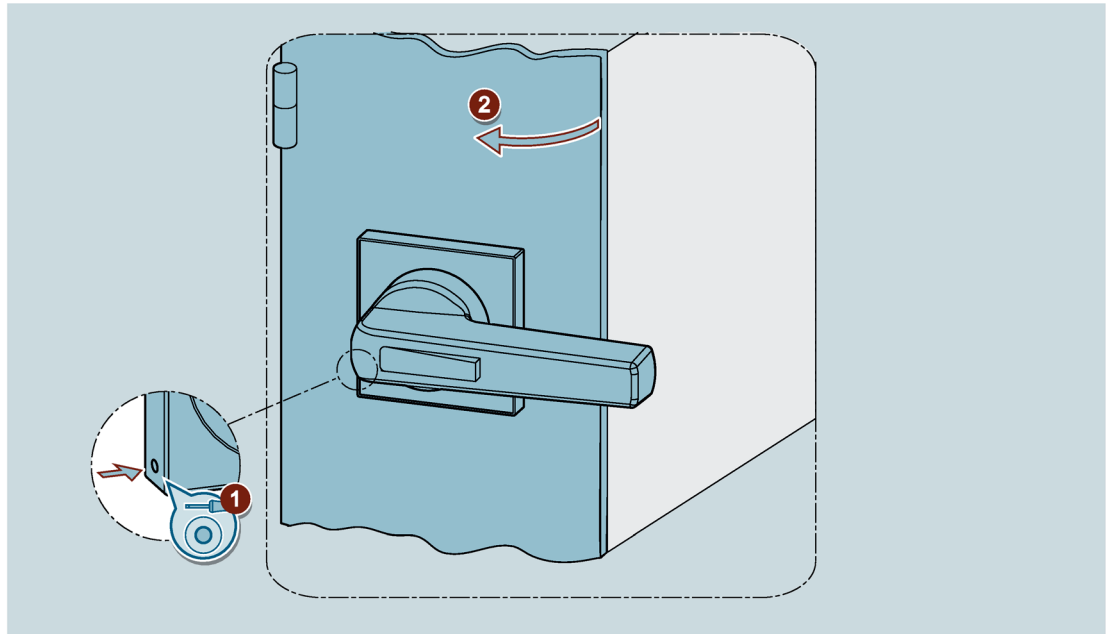
Material damage

Risk of damage to the device.

If a force of at least 800 N pulls at the door when door padlocking is activated, the operating mechanism can be irreparably damaged.

Overriding door padlocking

Door padlocking can be overridden by a deliberate action. The door can also be opened if the operating mechanism is in the ON position (I or II), e.g. for service purposes.



Procedure

1. Press in the door locking pin using a pointed object.
2. Hold down the pin when opening the door.

NOTICE

Material damage

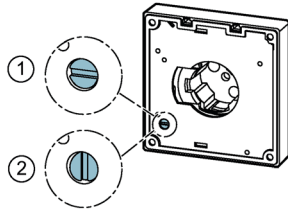
Risk of damage to the device.

When overriding door padlocking, ensure that the 8UD1 handle and the 3KC0 switch are in the same position (both ON or OFF) before you close the cabinet door. Otherwise the operating mechanism can be damaged.

Deactivating door padlocking

Door padlocking can also be permanently deactivated.

To deactivate door padlocking, the lever on the rear of the front cover of the 8UD1 must be turned to the vertical position using a (2.5 mm) slotted screwdriver.



① Activated door padlocking

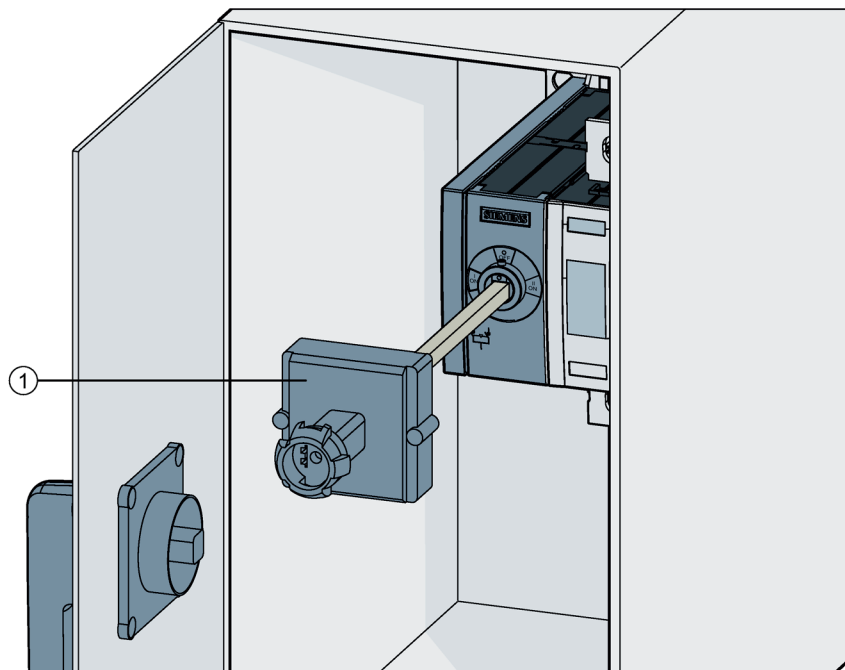
② Deactivated door padlocking

Note

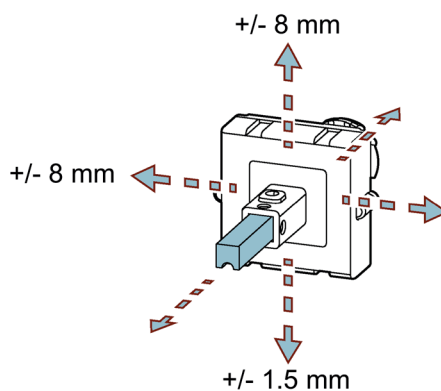
The lever for deactivating door padlocking can only be accessed when the handle has not yet been mounted on the cabinet door. If you want to deactivate door padlocking, ensure that the lever is in the correct position before you fit the handle.

8.7.4.2 Tolerance compensation

Door-coupling rotary operating mechanisms are supplied as standard with tolerance compensation. This device compensates potential minor offsets between the rotary switch of the cabinet door and the shaft of the door-coupling rotary operating mechanism.



① Coupling driver with tolerance compensation



Note

The coupling drivers are also available without tolerance compensation (accessory).

8.7.4.3 Padlocking

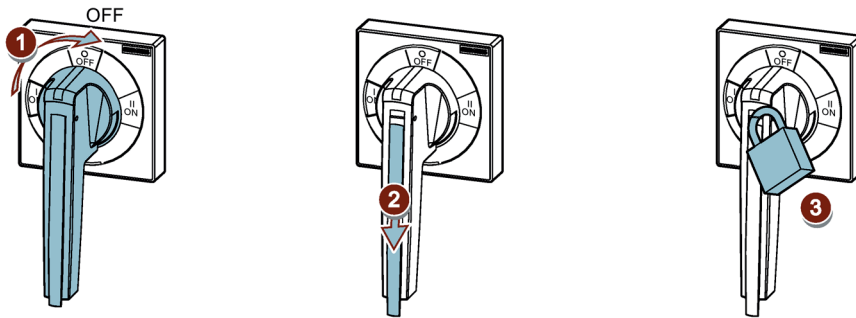
Padlocking in position 0 (OFF)

You can lock the 8UD1 in position 0 using a padlock.

When the handle is locked, you can neither switch the 3KC0 nor open the cabinet door. You cannot override padlocking with one padlock.

You can use up to 3 padlocks with a shackle diameter of 4.5 to 9.5 mm simultaneously for locking the rotary operating mechanism.

Padlocks are not included in the scope of supply.



Padlocking in position I or II

The 8UD1 can be modified such that it can be locked in any position using padlocks.

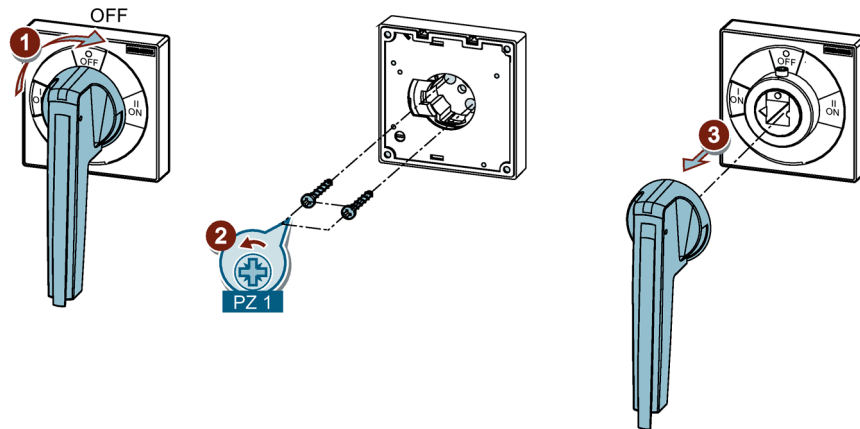
Note

This modification is not reversible.

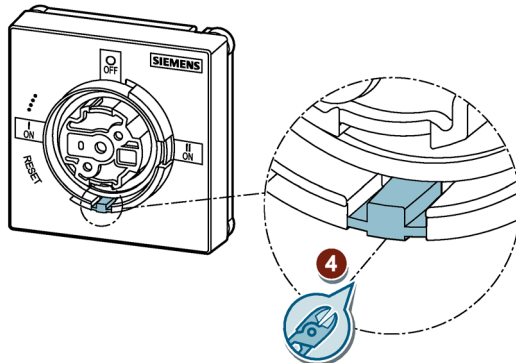
Padlocking in position I or II is only possible when the handle is not fitted to the cabinet door. If you wish to attach the padlock in position I or II, you must do so before you fit the handle.

Procedure

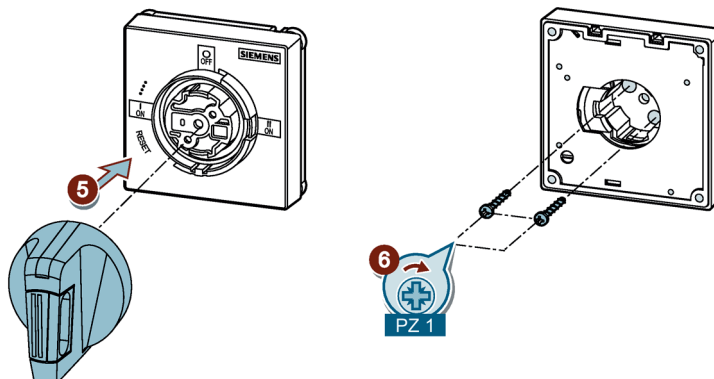
1. Turn the handle to position 0 (OFF).



2. Loosen the bolts on the rear of the cover.
3. Pull the handle off the cover.
4. Nip out the plastic part shown in the diagram using pliers.



5. Reattach the handle to the cover.



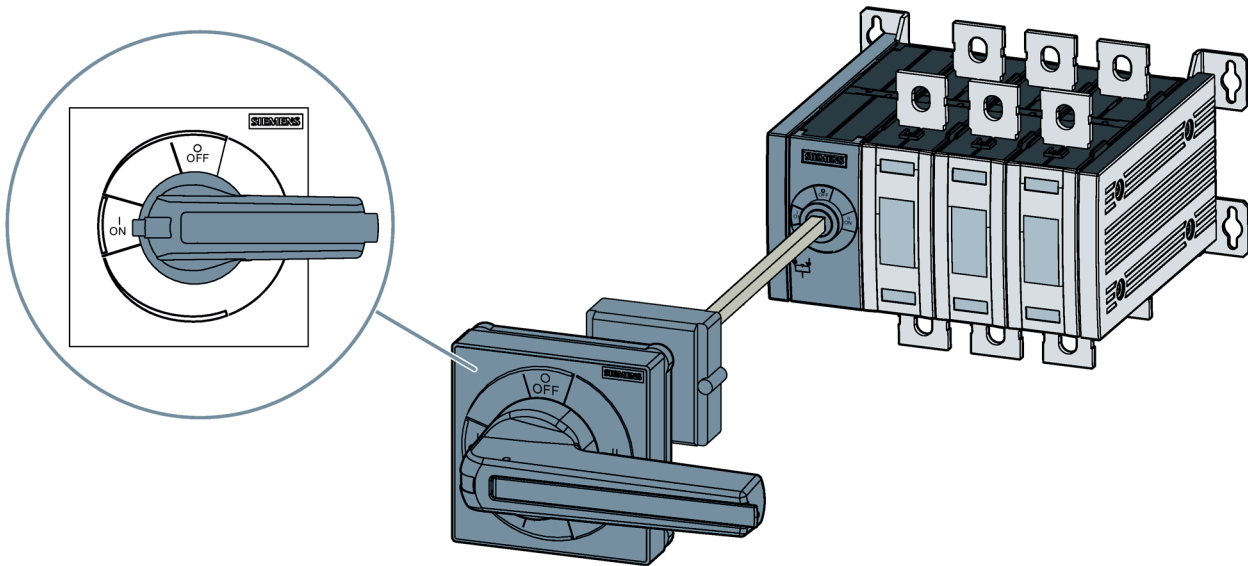
- Retighten the loosened bolts.

Size of transfer switching equipment	Tightening torque (Nm)
1, 2	1.0 ... 1.2
3, 4, 5	2.0 ... 2.5

- Check whether the direct operating mechanism can be locked in position I or II using a padlock before you mount the direct operating mechanism on the cabinet door.

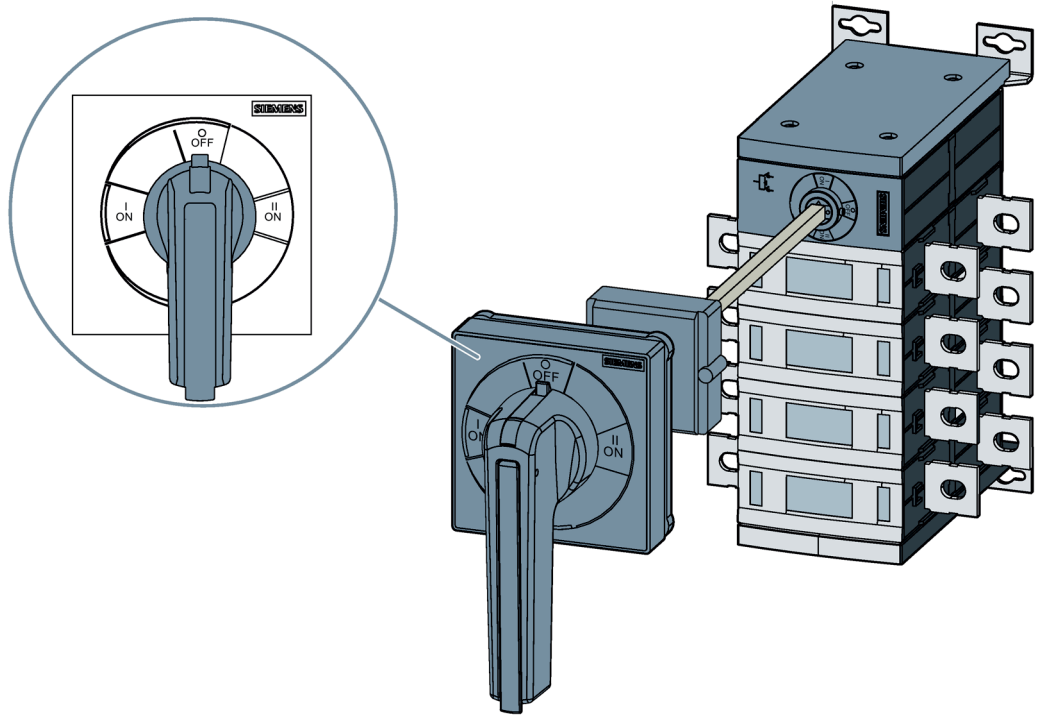
8.7.4.4 Assigning the switch position between the 8UD1 handle and 3KC0

The coupling drivers, shafts and the operating mechanism module of the 3KC0 are equipped with a tongue and groove connection to maintain the usual position for the 8UD1 handle (position I on the left, OFF on the top, position II on the right).



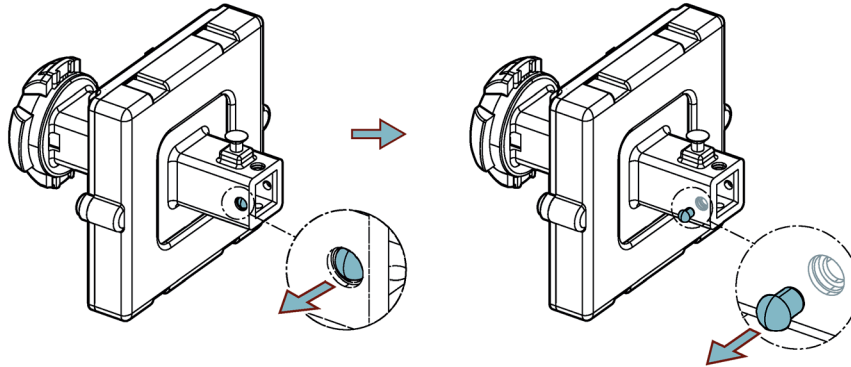
If the 3KC0 is rotated by 90° during mounting, the position of the 8UD1 handle is in the right-hand position. The tongue and groove connection on the coupling drivers and on the shaft coupling can be adjusted in steps of 90° in order to move it to the top position.

8.7 Door-coupling rotary operating mechanism of the 8UD1 series



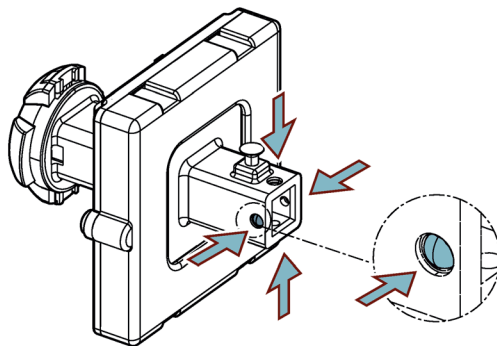
Adjust the tongue and groove connection on the coupling driver

1. Remove the bolt from the direct operating mechanism (press against it from the inside).
Use a tool, such as a screwdriver.



2. Mount outside at the desired position.

Turn the bolt back into the direct operating mechanism at one of the three other possible positions.



8.7.5 Accessories for the 8UD1 series

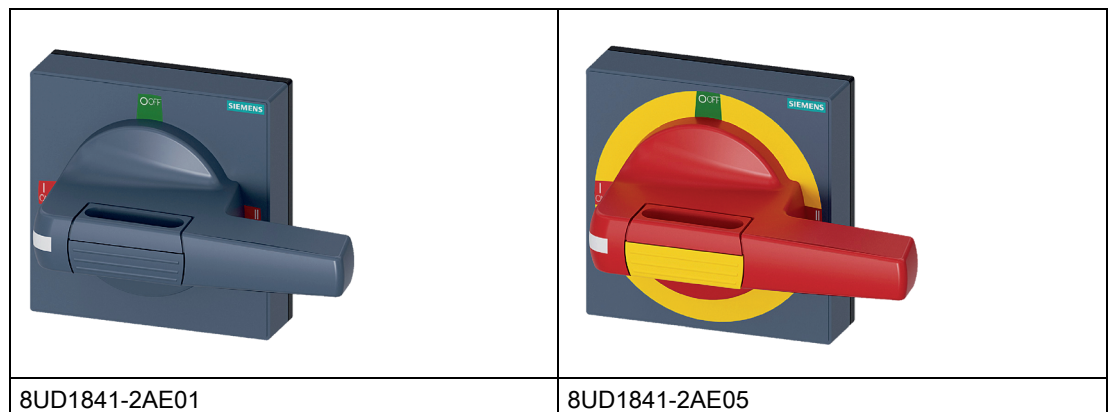
8.7.5.1 Handles

The handles are also available without extension shafts and without coupling drivers with the inscription I-0-II in the colors gray and red/yellow.

Suitable for transfer switching equipment in size	Handle length (mm)	Suitable for shafts (mm x mm)	Version	Article number
1, 2	55.0	8.0 x 8.0	Gray	8UD1731-2AE01
			Red/Yellow	8UD1731-2AE05
3	100.0	8.0 x 8.0	Gray	8UD1841-2AE01
			Red/Yellow	8UD1841-2AE05

8.7 Door-coupling rotary operating mechanism of the 8UD1 series

Suitable for transfer switching equipment in size	Handle length (mm)	Suitable for shafts (mm x mm)	Version	Article number
4	140.0	10.0 x 10.0	Gray	8UD1851-3AE01
			Red/Yellow	8UD1851-3AE05
5	200.0	12.0 x 12.0	Gray	8UD1861-4AE01
			Red/Yellow	8UD1861-4AE05

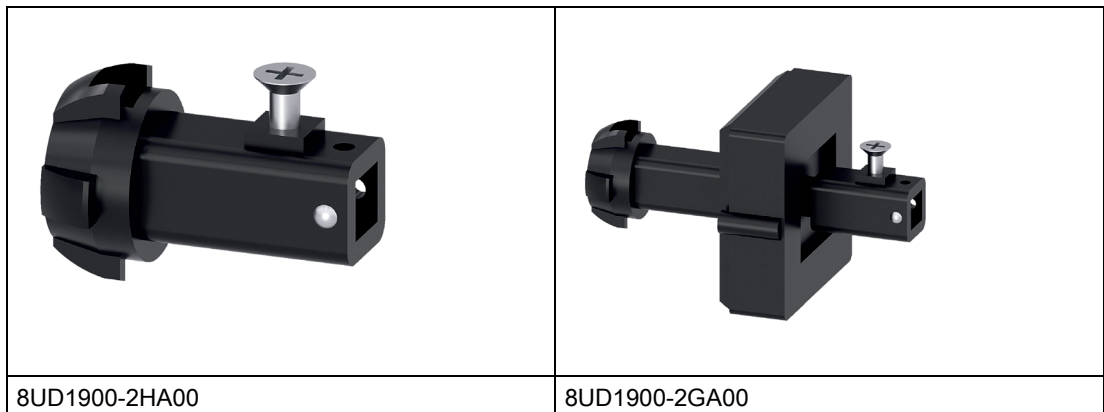


8.7.5.2 Coupling drivers

The coupling driver is available with and without tolerance compensation:

Suitable for transfer switching equipment in size	Suitable for shafts (mm x mm)	Tolerance compensation	Article number
1, 2	8.0 x 8.0	without	8UD1900-2HA00
		with	8UD1900-2GA00
3	8.0 x 8.0	without	8UD1900-6HA00
		with	8UD1900-6GA00
4	10.0 x 10.0	without	8UD1900-3HA00
		with	8UD1900-3GA00
5	12.0 x 12.0	without	8UD1900-4HA00
		with	8UD1900-4GA00

8.7 Door-coupling rotary operating mechanism of the 8UD1 series



8.7.5.3 Extension shafts

The extension shafts are available in 300 mm and 600 mm lengths. A shaft coupling can be used to extend a shaft.

Suitable for transfer switching equipment in size	Suitable for shafts (mm x mm)	Length (mm)	Article number
1, 2, 3	8.0 x 8.0	300.0	8UC6032
		600.0	8UC6082
4	10.0 x 10.0	300.0	8UC6033
		600.0	8UC6083
5	12.0 x 12.0	300.0	8UC6034
		600.0	8UC6084

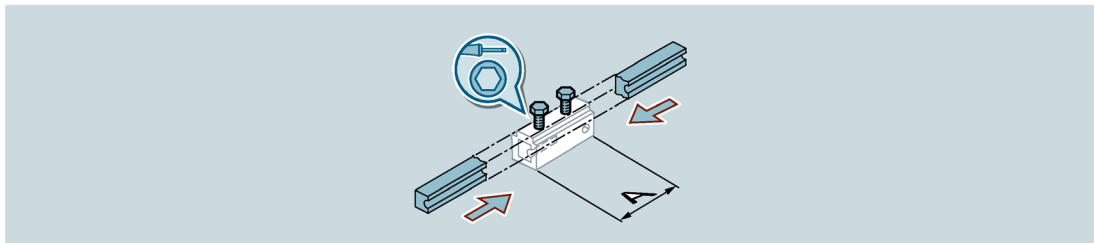


8UC6032

8.7.5.4 Shaft coupling

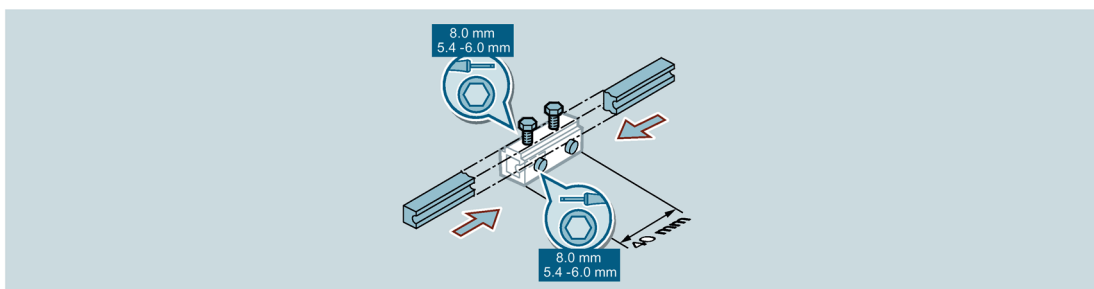
The shaft coupling is used if the shaft length of 300/600 mm is not sufficient and needs to be extended.

For 3KC0 sizes 1 to 4



Size of 3KC0	Tightening torque (Nm)	Width across flats for wrench (mm)	A [mm]
1, 2, 3	2.6 ... 3.0	8.0	28.0
4, 5	5.4 ... 6.0	8.0	40.0

For 3KC0 size 5



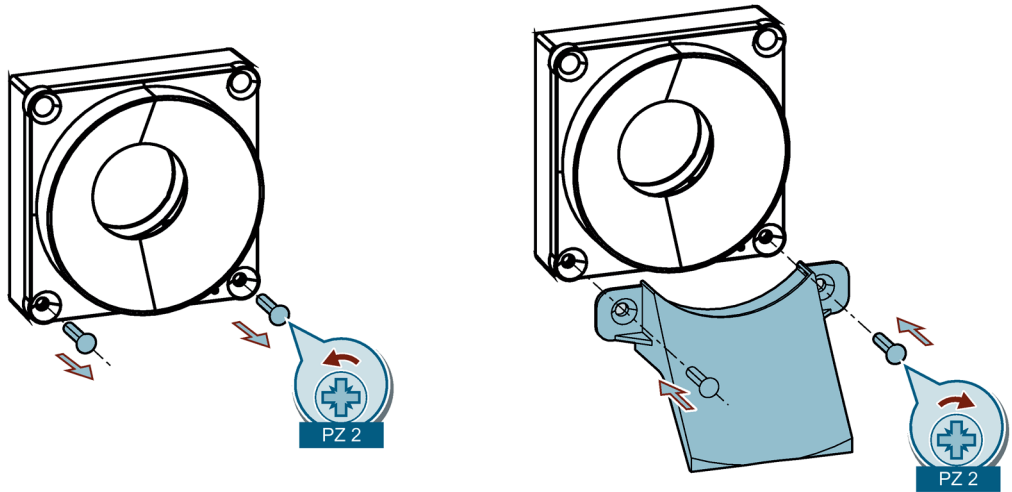
Sizes and article numbers

Suitable for transfer switching equipment in size	Suitable for shafts (mm x mm)	Article number
1, 2, 3	8.0 x 8.0	8UC6022
4	10.0 x 10.0	8UC6023
5	12.0 x 12.0	8UC6024

8.7.5.5 Shaft jack for 3KC0 sizes 1 and 2

The shaft jack with article number 8UD1900-0FA00 is used if the coupling head is deflected too much and the cabinet door cannot therefore be closed due to the mechanical collision between the coupling head and the 8UD1 handle.

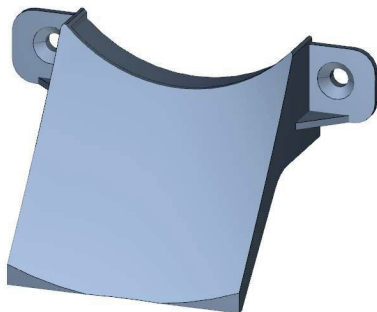
This accessory is also required if a 3KC0 is to be mounted on a DIN rail and the shafts are longer than 300 mm.



Size of 3KC0	Cross-tip screwdriver	Tightening torque (Nm)
1, 2	PZ2	1.0

No shaft jack is provided for sizes 3, 4, 5.

8UD1900-0FA00



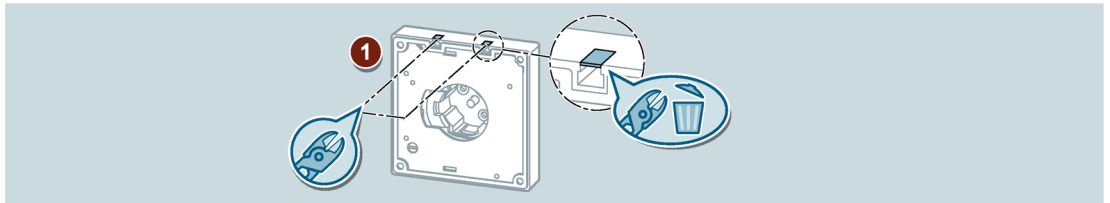
8.7.5.6 Inscription label

The inscription label with article number 3VA9087-0SX10 can be used for labeling directly at the front on the 8UD1 handle.

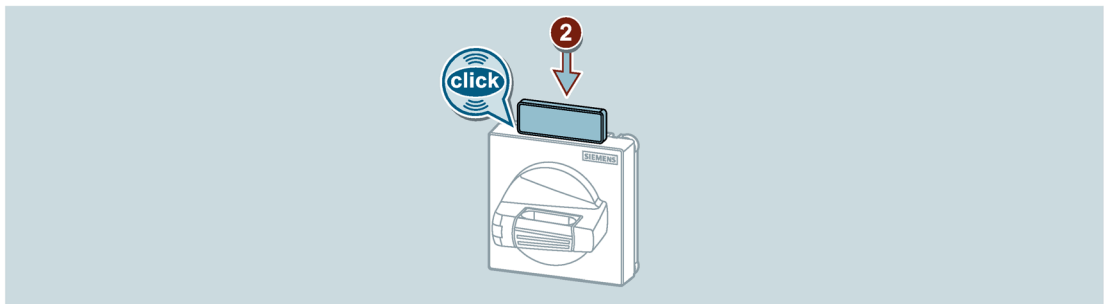
The inscription area is 44.5 x 14.5 mm.

Mounting

Remove the knockout on the rear panel of the front cover of the 8UD1.



Snap the inscription label onto the front cover of the 8UD1.



8.8 Direct operating mechanism

8.8.1 Direct operating mechanism for sizes 1 and 2

Overview



Direct operating mechanism for sizes 1 and 2,
standard version

Gray

3KC9201-3



Direct operating mechanism for size 1 only,
flat version

Gray

3KC9101-4

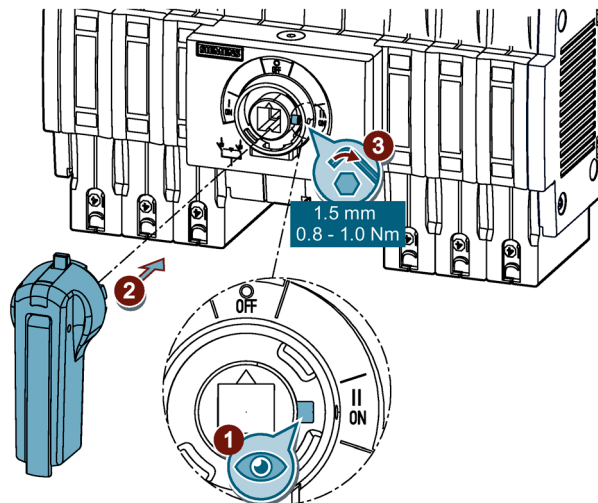
Note

The flat version of the direct operating mechanism is especially designed for distribution boards and requires no additional overall depth in the closed condition.

8.8.1.1 Mounting the direct operating mechanism on sizes 1 and 2

Procedure

1. Ensure that the 3KC0 is in position 0.

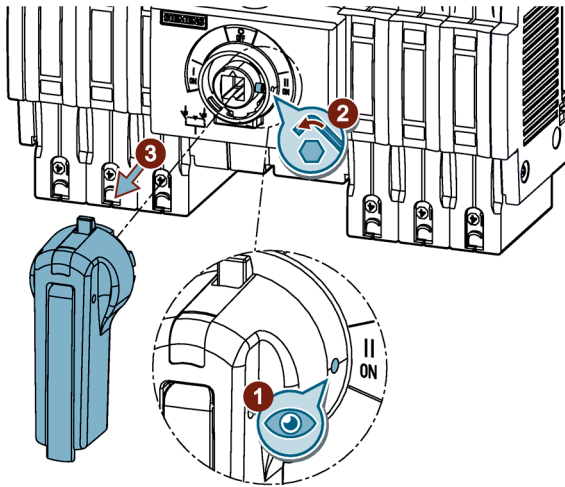


2. Loosen the bolt until the recess is completely free.
3. Attach the handle.
4. Tighten the bolt to fix the handle in place.

8.8.1.2 Removing the direct operating mechanism from sizes 1 and 2

Procedure

1. Ensure that the 3KC0 is in position 0.



2. Loosen the bolts using a wrench.
3. Pull out the handle.

8.8.2 Direct operating mechanism for sizes 3, 4 and 5

Overview



Direct operating mechanism



Direct operating mechanism

Gray	Red/Yellow
Size 3: 3KC9301-1	Size 3: 3KC9301-2
Size 4: 3KC9401-1	Size 4: 3KC9401-2
Size 5: 3KC9501-1	Size 5: 3KC9501-2

8.8.2.1 Mounting the direct operating mechanism on sizes 3, 4 and 5



WARNING

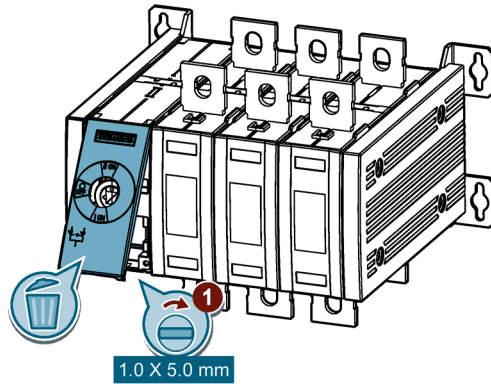
Danger of death!

If you are using a direct operating mechanism, you must mount terminal covers or a shrouding cover.

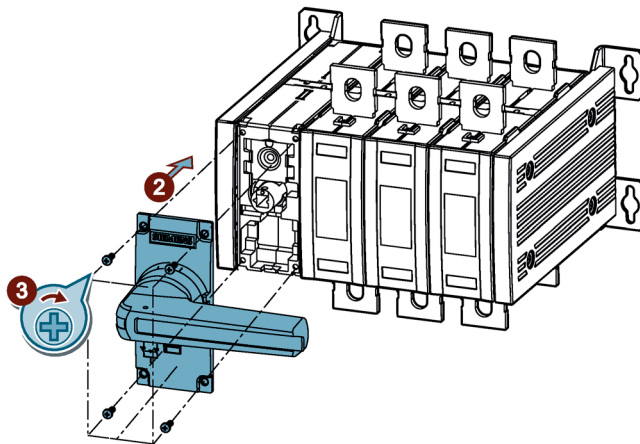
You can find more information in chapter Installing the terminal covers (Page 109).

Procedure

1. Remove the cover using a screwdriver. The cover is not needed for operation with the direct operating mechanism.



2. Mount the handle with the direct operating mechanism attached on the transfer switching equipment.
3. Bolt the handle onto the transfer switching equipment using the four supplied bolts.

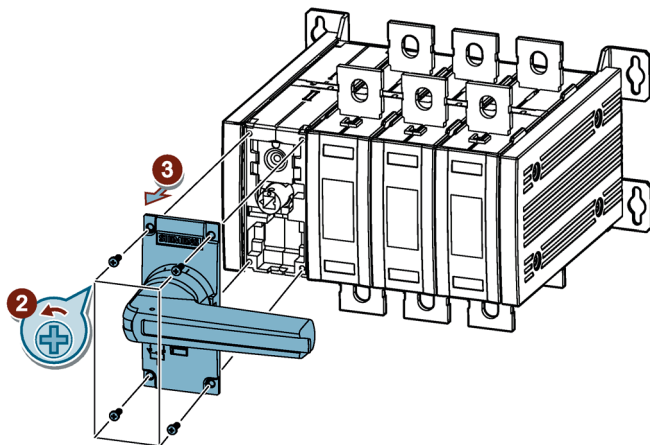


8.8.2.2 Removing the direct operating mechanism from sizes 3, 4 and 5

Procedure

Note

It is only possible to remove the handle in position 0.



1. Ensure that the handle is in position 0.
2. Loosen the bolts.
3. Pull out the handle.

8.8.3 Padlocking mode for direct operating mechanism

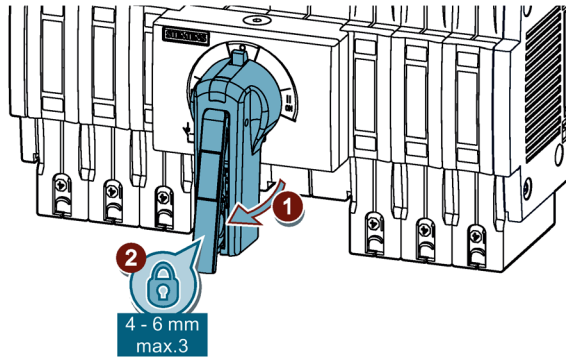
Function

Padlocking mode prevents inadvertent operation of the 3KC0 transfer switching equipment. The direct operating mechanisms can only be locked in position 0 using padlocks.

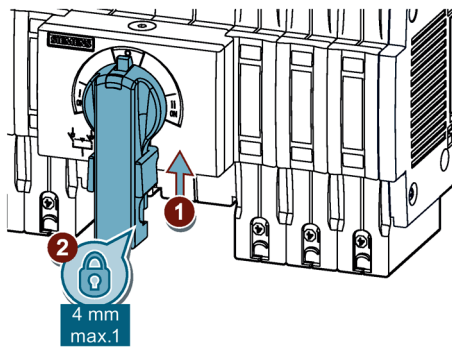
Version of direct operating mechanism	Maximum number of padlocks
Flat version	1
Standard version	3

8.8.3.1 Padlocking mode of direct operating mechanism for sizes 1 and 2

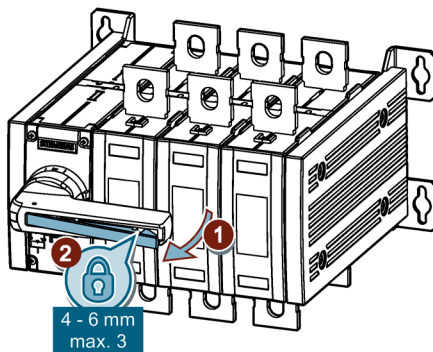
Standard version



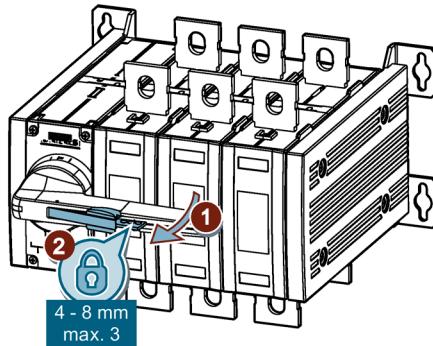
Flat version



8.8.3.2 Padlocking mode of direct operating mechanism for size 3



8.8.3.3 Padlocking mode of direct operating mechanism for sizes 4 and 5



8.9 Phase barriers

Function

Phase barriers are used for safe insulation between the connecting terminals. They are available for current ratings 200 A to 1600 A.




! WARNING

Danger of death!

For the following applications of the 3KC0 transfer switching equipment size 3, you must mount phase barriers or terminal covers:

- AC-23
- AC-22 from 400 V
- AC-33B
- AC-33iB
- If cable lug connections are used

 WARNING
<p>Danger of death!</p> <p>For the following applications of the 3KC0 transfer switching equipment size 4, you must mount phase barriers or terminal covers:</p> <ul style="list-style-type: none"> • AC-23 • AC-33B • AC-33iB • If cable lug connections are used

Sizes and article numbers

The optionally available phase barriers are listed in the table below.

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Position on transfer switching equipment	Article number	Quantity per package	Required packages per device
3	3	Top, bottom	3KD9308-6	6	2
	4		3KD9308-8	8	
4	3		3KD9408-6	6	
	4		3KD9408-8	8	
5	3		3KD9508-6	6	
	4		3KD9508-8	8	

8.9.1 Mounting phase barriers

Note

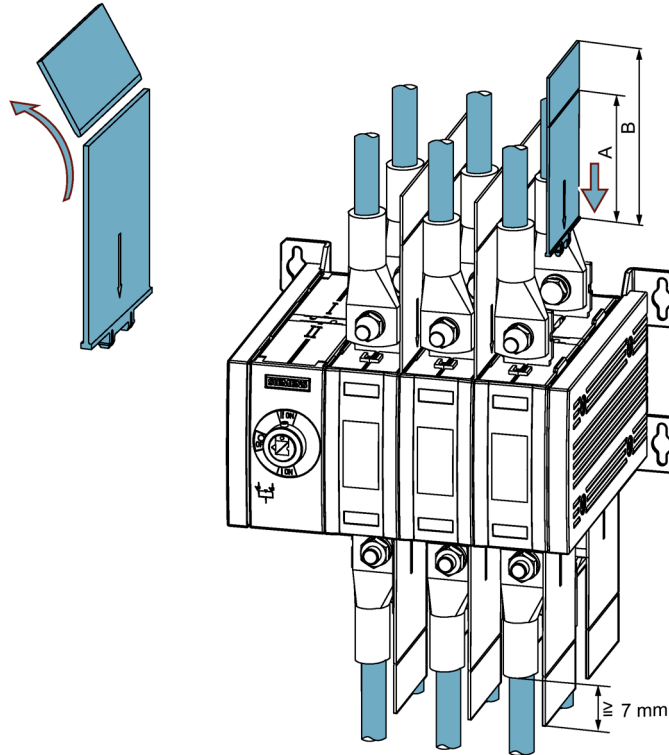
If bridging bars are used, mount them first.

Requirement

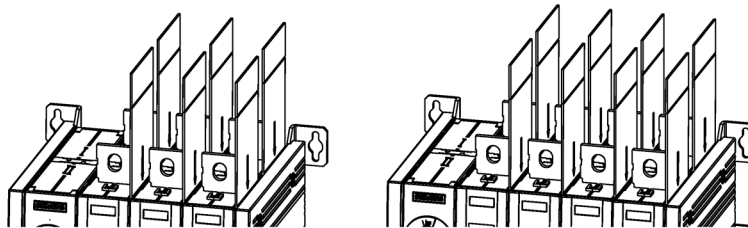
- Circuit is disconnected.
- Bridging bars are mounted (if used).

Procedure

1. Shorten the phase barriers for the transfer switching equipment sizes 3 and 4 if necessary.



2. Insert the phase barrier into the appropriate mounting channel on the transfer switching equipment.
 - With 3-pole types, insert 6 phase barriers per side in each case. You will need a total of 12 phase barriers per device.
 - With 4-pole types, insert 8 phase barriers per side in each case. You will need a total of 16 phase barriers per device.



8.10 Terminal cover

Function

Terminal covers are used as touch protection for the MTSE with flat terminal.

If additional touch protection is required for the terminals (e.g. IP20 degree of protection from the front), terminal covers can be used instead of phase barriers.

Phase barriers and terminal covers cannot be connected simultaneously.



Sizes and article numbers

The optionally available terminal covers are listed in the table below.

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Position on transfer switching equipment	Article number	Required packages
3	3	Top, bottom	3KD9304-6	2
			3KD9304-7 *	
	4		3KD9304-8	
	3KD9304-5 *			
4	3		3KD9404-6	
			3KD9404-7 *	
	4		3KD9404-8	
	3KD9404-5 *			
5	3	3KD9504-6		
	4	3KD9504-8		

* Short version

8.10.1 Installing the terminal covers

Requirement

Note

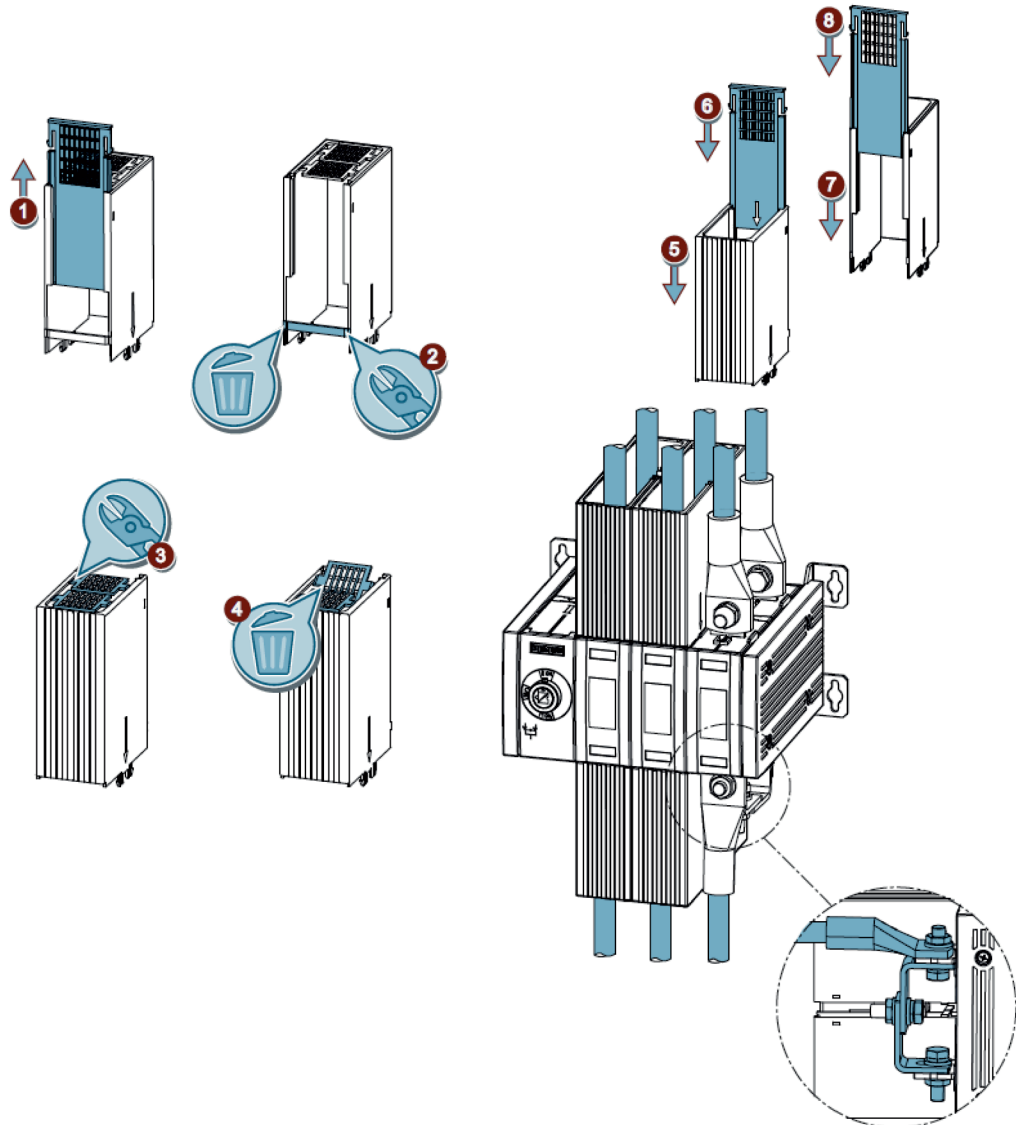
If bridging bars are used, mount them first. You can find more information in chapter Bridging bars (Page 58).

The following steps are necessary for fitting the terminal covers.

- Circuit is disconnected.
- Bridging bars are mounted (if used).

Procedure

1. Pull the loose rear panel out of the terminal cover.



2. Nip off the plastic part using pliers.
3. Nip off the plastic grid on the top of the terminal cover using pliers.
4. Push the first terminal cover over a flat terminal.
The rear panel must be positioned on the inside.
5. Push the removed rear panel into the terminal cover.

Note

If you are using bridging bars, you cannot push the removed rear panel into the terminal covers.

6. Push the second/any other terminal covers over a flat terminal.
The rear panel must be positioned on the inside.
7. Push the removed rear panel into the terminal cover.

Note

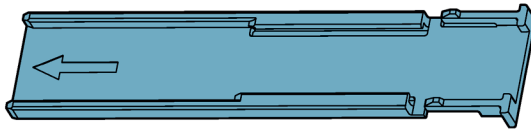
If you are using bridging bars, you cannot push the removed rear panel into the terminal covers.

8.10.2 Side panel covers for terminal covers

Function

Note

In addition to the terminal covers, you must also connect side panel covers for lateral touch protection of the connection side at which the bridging bars are used (usually the load side) in the case of sizes 3, 4 and 5.

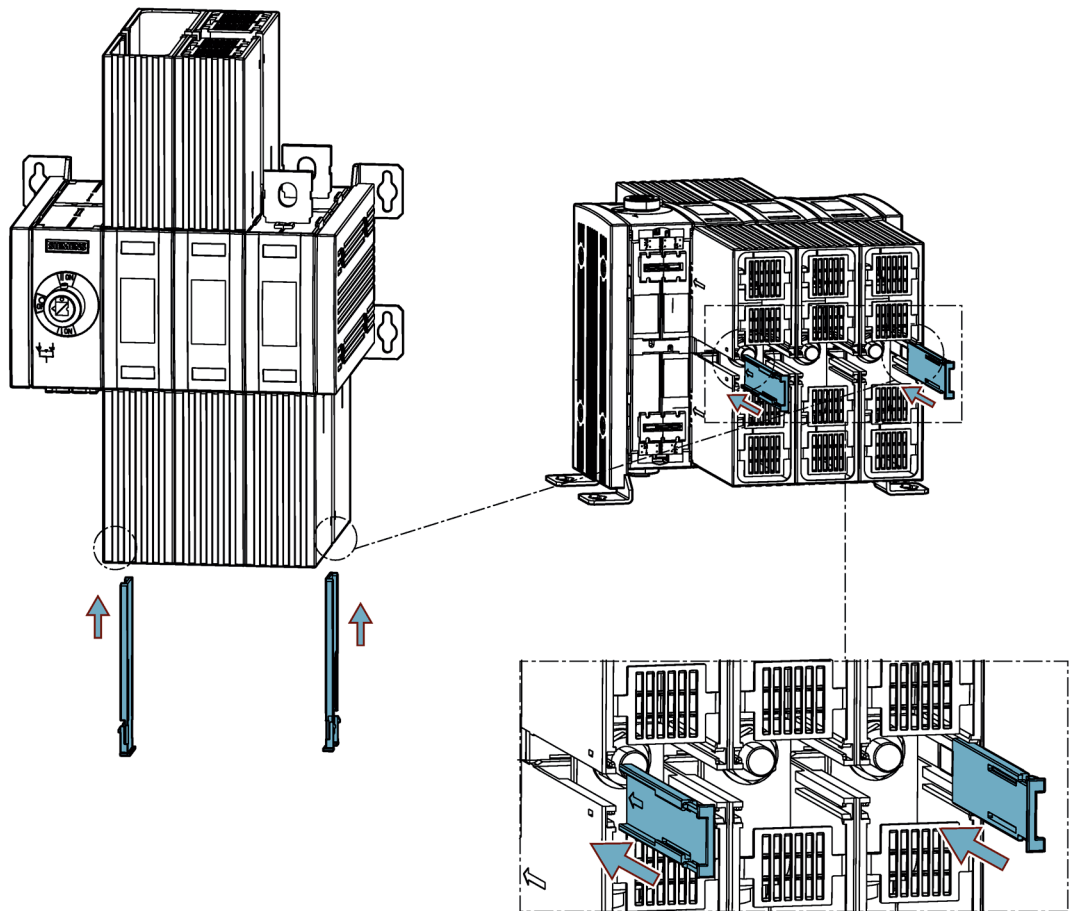


Sizes and article numbers

The side panel covers are only suitable for terminal covers of a standard length.

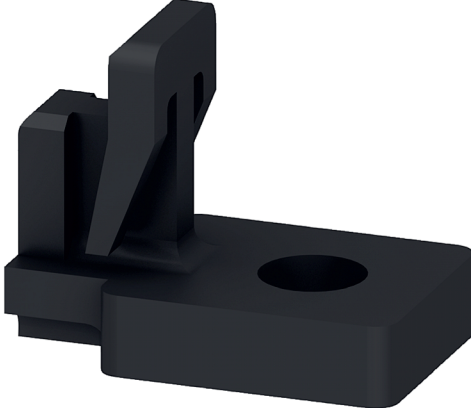
Size	Number of poles	Position	Article number	Required packages
3	3	On left and right sides, top or bottom	3KC9304-0	1
	4			
4	3		3KC9404-0	
	4			
5	3		3KC9504-0	
	4			

Mounting the side panel covers for the terminal covers



8.11 Spare parts

3KD9120-1 mounting bracket



The mounting brackets are included in the scope of supply of the assembly kit for floor mounting for sizes 1 to 2. They are also available as spare parts; one unit contains 4 items.

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Article number
1	3, 4	3KD9120-1
2		

3KF9112-0BA00 slide for mounting on DIN rail



The slides for mounting on DIN rail are included in the scope of supply of the 3KC0 sizes 1 to 2. They are also available as spare parts; one unit contains 5 items.

Suitable for transfer switching equipment in size	Suitable for transfer switching equipment with number of poles	Article number
1	3, 4	3KF9112-0BA00
2		

Service and maintenance

No servicing measures are necessary.

Technical data

10.1 Technical specifications of 3KC0 from 16 to 160 A

General technical details

Manual transfer switching equipment (MTSE) from 16 to 160 A, 3KC0...		16-M	22-...M	..26-M	28-N	30-..N	32-..N	34-N
Size		1			2			
Continuous current	A	16	32	63	80	100	125	160
Operational voltage at 50/60 Hz AC in compliance with IEC 60947-6-1	V	415						
Operational voltage at 50/60 Hz AC in compliance with IEC 60947-3	V	690						
Insulation voltage (U _i)	V	1000 AC						
Impulse withstand voltage (U _{imp})	kV	8						
Overvoltage category with pollution degree 3		III						
Operational current in compliance with IEC 60947-6-1								
• AC-31 B, at 415 V	A	16	32	63	80	100	125	160
• AC-32 B, at 415 V	A	16	32	63	80	100	125	160
• AC-33 B, at 415 V	A	16	32	63	80	100	125	160
• AC-35 B, at 400 V	A	16	32	63	80	100	125	160
Operational current in compliance with IEC 60947-3								
• AC-21 A, at AC-22 A, at 415 ... 690 V	A	16	32	63	80	100	125	160
• AC-23 A, at 415 V	A	16	32	63	80	100	125	160
• AC-23 A, at 500 V	A	16	32	63	80	100	125	160
• AC-23 A, at 690 V	A	16	32	63	80	100	125	160
Operational power in compliance with IEC 60947-3								
• AC-23 A, at 415 V	kW	7.5	15	30	37	55	55	90
• AC-23 A, at 500 V	kW	7.5	18.5	37	55	55	75	110
• AC-23 A, at 690 V	kW	11	30	55	75	90	110	110

Short-circuit behavior

Manual transfer switching equipment (MTSE) from 16 to 160 A, 3KC0....		16-.M	22-...M	..26-.M	28-.N	30.-.N	32.-.N	34-.N
Size		1			2			
Continuous current	A	16	32	63	80	100	125	160
Short-circuit current ratings in compliance with IEC 60947-6-1:								
• Short-time withstand current (I_{cw} , 100 ms, 415 V)	kA	5			10			
• Short-circuit current making capacity (I_{cm} , 415 V)	kA	7.7			17			
Short-circuit current ratings in compliance with IEC 60947-3:								
• Short-time withstand current (I_{cw} , 1 s, 415 V / 690 V)	kA	3			4			
• Short-circuit current making capacity (I_{cm} , 690 V)	kA	7			12			
Conditional short-circuit current with fuse: Operational power in compliance with IEC 60947-3								
• Continuous current of upstream gG fuse (500 V / 690 V)	A	63			160			
• Conditional short-circuit current with gG fuse (415 V) in compliance with IEC 60947-6-1	kA	100			100			
• Conditional short-circuit current with gG fuse (415 V)	kA	100			100			
• Conditional short-circuit current with gG fuse (690 V)	kA	100			65			
• Max. permissible let-through current of gG fuse (500 V)	kA	8.1			18			
• Max. permissible let-through current of gG fuse (690 V)	kA	8.8			16			
• Max. permissible I^2t value of gG fuse (500 V)	kA ² s	13.3			135.6			
• Max. permissible I^2t value of gG fuse (690 V)	kA ² s	13.7			178.3			

Main conductor connection¹

Manual transfer switching equipment (MTSE) from 16 to 160 A, 3KC0....		16-.M	22-...M	..26-.M	28-.N	30-.-.N	32-.-.N	34-.N
Size		1			2			
Continuous current	A	16	32	63	80	100	125	160
Cu conductor, solid	mm ²	1 x (1 ... 16)			1 x (2.5 ... 16)			
Cu conductor, stranded	mm ²	1 x (6 ... 35)			1 x (10 ... 70)			
With cable lug (DIN 46234)	mm ²	-			-			
Cu busbar	mm ²	1 x 2 x 9			1 x 3 x 14			
Tightening torque for main contacts	Nm	5 ... 6.5			6.5 ... 8			

¹ You can find the values for connection of aluminum cables in the product data sheet. You can find more information at Siemens Industry Online Support (<https://support.industry.siemens.com/>).

Other properties

Manual transfer switching equipment (MTSE) from 16 to 160 A, 3KC0....		16-.M	22-...M	..26-.M	28-.N	30-.-.N	32-.-.N	34-.N
Size		1			2			
Continuous current	A	16	32	63	80	100	125	160
Power loss; per pole	W	0.2	0.6	2	2	3	4.5	7
Mechanical endurance		15000						
Electrical endurance (AC-23 A at 415 V / 690 V)		6000			1500			
IP degree of protection / with cover		IP20						
Ambient temperature								
• Operation	°C	-20 ... +70						
• Storage	°C	-50 ... +80						
Width x height x depth (3-pole transfer switching equipment)	mm	201.6 x 119 x 84.5			255.6 x 126 x 84.5			
Width x height x depth (4-pole transfer switching equipment)	mm	237.6 x 119 x 84.5			309.6 x 126 x 84.5			

10.2 Technical specifications of 3KC0 from 200 to 500 A

General technical details

Manual transfer switching equipment (MTSE) from 200 to 500 A, 3KC0....		36-.P	38-.P	40-.P	42-.P	44-.Q
Size		3				4
Continuous current	A	200	250	315	400	500
Operational voltage at 50/60 Hz AC in compliance with IEC 60947-6-1	V	415				
Operational voltage at 50/60 Hz AC in compliance with IEC 60947-3	V	690				
Insulation voltage (U _i)	V	1000 AC				
Impulse withstand voltage (U _{imp})	kV	12				
Overvoltage category with pollution degree 3		IV				
Operational current in compliance with IEC 60947-6-1						
• AC-31 B, at 415 V	A	200	250	315	400	500
• AC-32 B, at 415 V	A	200	250	315	350	500
• AC-33 B, at 415 V	A	200	250	315	315	500
• AC-35 B, at 400 V	A	200	250	315	350	500
Operational current in compliance with IEC 60947-3						
• AC-21 A, at AC-22 A, at 415 ... 690 V	A	200	250	315	400	500
• AC-23 A, at 415 V	A	200	250	315	400	500
• AC-23 A, at 500 V	A	200	250	315	350	500
• AC-23 A, at 690 V	A	200	250	315	315	500
Operational power in compliance with IEC 60947-3						
• AC-23 A, at 415 V	kW	110	132	160	220	280
• AC-23 A, at 500 V	kW	132	160	220	250	355
• AC-23 A, at 690 V	kW	185	220	280	355	500

Short-circuit behavior

Manual transfer switching equipment (MTSE) from 200 to 500 A, 3KC0....		36-P	38-P	40-P	42-P	44-Q
Size		3				4
Continuous current	A	200	250	315	400	500
Short-circuit current ratings in compliance with IEC 60947-6-1:						
• Short-time withstand current (I_{cw} , 100 ms, 415 V)	kA	18				30
• Short-circuit current making capacity (I_{cm} , 415 V)	kA	36				63
Short-circuit current ratings in compliance with IEC 60947-3:						
• Short-time withstand current (I_{cw} , 1 s, 415 V / 690 V)	kA	13				30
• Short-circuit current making capacity (I_{cm} , 690 V)	kA	26				63
Conditional short-circuit current with fuse: Operational power in compliance with IEC 60947-3						
• Continuous current of upstream gG fuse (500 V / 690 V)	A	250	400		630	
• Conditional short-circuit current with gG fuse (415 V) in compliance with IEC 60947-6-1	kA	100	65		100	
• Conditional short-circuit current with gG fuse (415 V)	kA	100	65		100	
• Conditional short-circuit current with gG fuse (690 V)	kA	65	35		65	
• Max. permissible let-through current of gG fuse (500 V)	kA	24.8	34.3		65.5	
• Max. permissible let-through current of gG fuse (690 V)	kA	25	33		54	
• Max. permissible I^2t value of gG fuse (500 V)	kA ² s	426.5	1165		3687.5	
• Max. permissible I^2t value of gG fuse (690 V)	kA ² s	348	1157.5		4450	

Main conductor connection¹

Manual transfer switching equipment (MTSE) from 200 to 500 A, 3KC0....		36-.P	38-.P	40-.P	42-.P	44-.Q
Size		3				4
Continuous current	A	200	250	315	400	500
Cu conductor, solid	mm ²	–		–		
Cu conductor, stranded	mm ²	–		–		
With cable lug (DIN 46234)	mm ²	1 x (6 ... 240) 2 x (6 ... 150)		1 x (25 ... 240) 2 x (25 ... 240)		
Cu busbar	mm ²	1 x 30 x 10		1 x 40 x 10, 2 x 40 x 5		
Tightening torque for main contacts	Nm	30 ... 44		50 ... 75		

¹ You can find the values for connection of aluminum cables in the product data sheet. You can find more information at Siemens Industry Online Support (<https://support.industry.siemens.com>).

Other properties

Manual transfer switching equipment (MTSE) from 200 to 500 A, 3KC0...		36-.P	38-.P	40-.P	42-.P	44-.Q
Size		3				4
Continuous current	A	200	250	315	400	500
Power loss; per pole	W	4	7	10	17	15
Mechanical endurance		10000				8000
Electrical endurance (AC-23 A at 415 V / 690 V)		1000				1000
IP degree of protection / with cover		IP00 / IP20				IP00 / IP20
Ambient temperature						
• Operation	°C	-20 ... +70				
• Storage	°C	-50 ... +80				
Width x height x depth (3-pole transfer switching equipment)	mm	235 x 164 x 197.2				319 x 235 x 232.5
Width x height x depth (4-pole transfer switching equipment)	mm	279 x 164 x 197.2				379 x 235 x 232.5

10.3 Technical specifications of 3KC0 from 630 to 1600 A

General technical details

Manual transfer switching equipment (MTSE) from 360 to 1600 A, 3KC0....		46-.Q	48-.Q	50-.R	52-.R	54-.R
Size		4		5		
Continuous current	A	630	800	1000	1250	1600
Operational voltage at 50/60 Hz AC in compliance with IEC 60947-6-1	V	415				
Operational voltage at 50/60 Hz AC in compliance with IEC 60947-3	V	690				
Insulation voltage (U _i)	V	1000 AC				
Impulse withstand voltage (U _{imp})	kV	12				
Overvoltage category with pollution degree 3		IV				
Operational current in compliance with IEC 60947-6-1						
• AC-31 B, at 415 V	A	630	800	1000	1250	1600
• AC-32 B, at 415 V	A	630	800	1000	1250	1250
• AC-33 B, at 415 V	A	500	500	800	800	800
• AC-35 B, at 400 V	A	630	800	1000	1250	1250
Operational current in compliance with IEC 60947-3	A	630	800	1000	1250	1600
• AC-21 A, at AC-22 A, at 415 ... 690 V	A	630	670	800	800	800
• AC-23 A, at 415 V	A	630	630	800	800	800
• AC-23 A, at 500 V	A	500	500	800	800	800
• AC-23 A, at 690 V	A	500	500	800	800	800
Operational power in compliance with IEC 60947-3						
• AC-23 A, at 415 V	kW	355		400		
• AC-23 A, at 500 V	kW	400		560		
• AC-23 A, at 690 V	kW	500		800		

Short-circuit behavior

Manual transfer switching equipment (MTSE) from 360 to 1600 A, 3KC0....		46-.Q	48-.Q	50-.R	52-.R	54-.R
Size		4		5		
Continuous current	A	630	800	1000	1250	1600
Short-circuit current ratings in compliance with IEC 60947-6-1:						
• Short-time withstand current (I_{cw} , 100 ms, 415 V)	kA	30		50		
• Short-circuit current making capacity (I_{cm} , 415 V)	kA	63		105		
Short-circuit current ratings in compliance with IEC 60947-3:						
• Short-time withstand current (I_{cw} , 1 s, 415 V / 690 V)	kA	30		50		
• Short-circuit current making capacity (I_{cm} , 690 V)	kA	63		105		
Conditional short-circuit current with fuse: Operational power in compliance with IEC 60947-3						
• Continuous current of upstream gG fuse (500 V / 690 V)	A	630	800	1000/ –	1250/ –	1600/ –
• Conditional short-circuit current with gG fuse (415 V)	kA	100	65	100	80	80
• Conditional short-circuit current with gG fuse (415 V)	kA	100	65	100	80	80
• Conditional short-circuit current with gG fuse (690 V)	kA	65	50	–		
• Max. permissible let-through current of gG fuse (500 V)	kA	65.5	70.8	95.2	112.6	
• Max. permissible let-through current of gG fuse (690 V)	kA	54	65	–		
• Max. permissible I^2t value of gG fuse (500 V)	kA ² s	3687.5	7471.7	15400	25960	30900
• Max. permissible I^2t value of gG fuse (690 V)	kA ² s	4450	103000	–		

Main conductor connection¹

Manual transfer switching equipment (MTSE) from 360 to 1600 A, 3KC0...		46-Q	48-Q	50-R	52-R	54-R
Size		4		5		
Continuous current	A	630	800	1000	1250	1600
Cu conductor, solid	mm ²	-		-		
Cu conductor, stranded	mm ²	-		-		
With cable lug (DIN 46234)	mm ²	1 x (25 ... 240) 2 x (25 ... 240)		1 x (120 ... 240) 2 x (95 ... 240)		
Cu busbar	mm ²	1 x 40 x 10, 2 x 40 x 5		2 x 60 x 10		
Tightening torque for main contacts	Nm	50 ... 75				

¹ You can find the values for connection of aluminum cables in the product data sheet. You can find more information in Siemens Industry Online Support (<https://support.industry.siemens.com>).

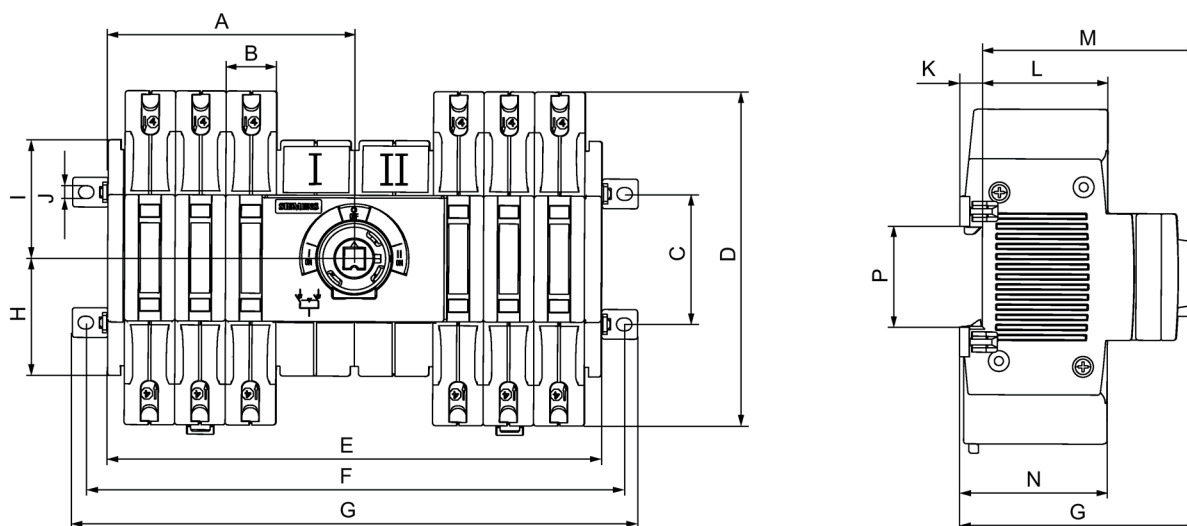
Other properties

Manual transfer switching equipment (MTSE) from 360 to 1600 A, 3KC0....		46-Q	48-Q	50-R	52-R	54-R
Size		4		5		
Continuous current	A	630	800	1000	1250	1600
Power loss; per pole	W	22	35	47	70	120
Mechanical endurance		8000		6000		
Electrical endurance (AC-23 A at 415 V / 690 V)		1000		500		
IP degree of protection / with cover		IP00 / IP20		IP00 / IP20		
Ambient temperature						
• Operation	°C	-20 ... +70				
• Storage	°C	-50 ... +80				
Width x height x depth (3-pole transfer switching equipment)	mm	319 x 235 x 232.5		475 x 310 x 311.5		
Width x height x depth (4-pole transfer switching equipment)	mm	379 x 235 x 232.5		565 x 310 x 311.5		

Dimension drawings

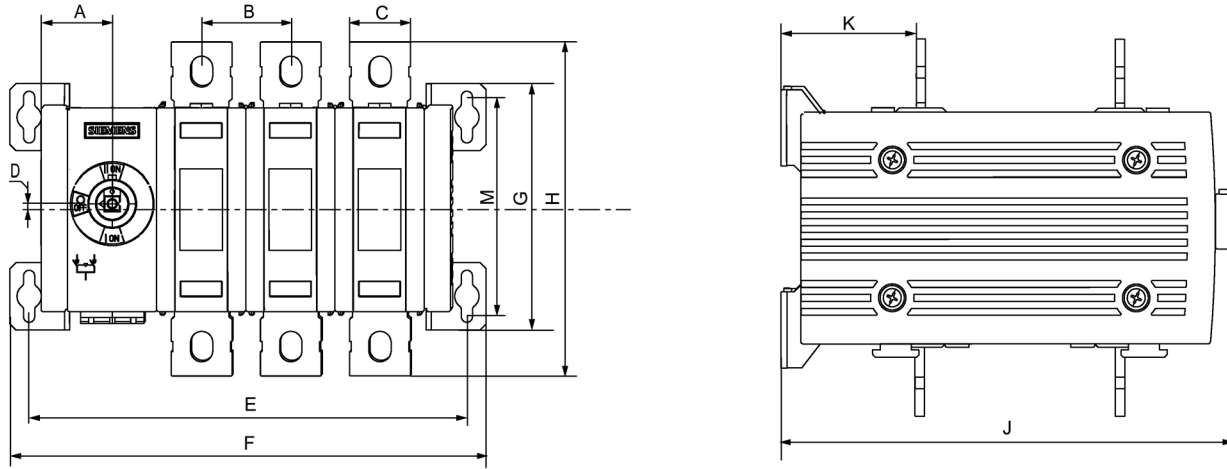
11.1 Dimension drawings

Sizes 1 and 2



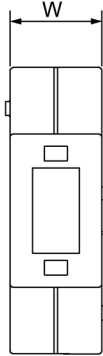
mm	Size 1		Size 2	
	3P	4P	3P	4P
A	42	42	42	42
B	42	42	42	42
C	18	18	27	27
D	46.5	46.5	46.5	46.5
E	119	119	126	126
F	176	212	230	284
G	191	227	245	299
H	201.6	237.6	255.6	309.6
J	88	124	115	169

Sizes 3, 4 and 5



mm	Size 3		Size 4		Size 5	
	3P	4P	3P	4P	3P	4P
A	35	35	46	46	66	66
B	44	44	60	60	90	90
C	30	30	40	40	60	60
D	3	3	5	5	10	10
E	216	260	293	353	435	525
F	235	279	319	379	475	565
G	121	121	177	177	230	230
H	164	164	235	235	310	310
J	197.2	197.2	232.6	232.6	311.5	311.5
K	58.7	58.7	72.5	72.5	97	97
M	108	108	156	156	197.5	197.5

11.2 Dimension drawing of additional poles for sizes 1 and 2



mm	3KD9105-2	3KD9205-2
W	18	27

11.3 Dimension drawing of auxiliary switch for sizes 1 and 2



mm	3KD9103-5
W	18

Appendix

A.1 Environmental conditions

IP degree of protection

- IP20 protection against direct contact of the interfaces when the terminal covers are mounted correctly and according to regulations
- IP00 protection without mounted terminal covers

A.2 Operating conditions

A.2.1 Temperature

At a temperature of -25 °C to +70 °C

Correction factor K_t	Temperature
0.9	40 °C ... 50 °C
0.8	50 °C ... 60 °C
0.7	60 °C ... 70 °C

The simplified method of calculating the derating is used here:

$$I_{thu} \leq I_{th} \times K_f$$

In a few cases, specific requirements demand precise derating calculations. You can find further support on the Internet at:

<https://www.siemens.com/lowvoltage/technical-support>
<https://www.siemens.com/lowvoltage/technical-support>

A.2.2 Humidity

- At 80% air humidity and 55 °C, condensation does not take place.
- At 95% air humidity and 40 °C, condensation does not take place.

A.2.3 Altitude conditions

- Up to 2000 m: No derating
- For higher altitudes, the following derating correction factor must be factored in:

Correction factor K_a	2000 m < A^1 ≤ 3000 m	3000 m < A^1 ≤ 4000 m
U_e	0.95	0.8
I_e	0.85	0.85

¹⁾ Height

A.3 Storage conditions**A.3.1 Temperature**

Store the transfer switching equipment between -50 °C and $+80\text{ °C}$.

A.3.2 Storage conditions

- Maximum storage time: 12 months
- Storage in a dry, non-corrosive, salt-free environment is recommended.

A.3.3 Storage position

If the 3KC0 transfer switching equipment is stored on a pallet, the number of stackable layers is not unlimited. You can find more information in the table below:

Size	Stackable layers
1 and 2	10
3	5
4	3
5	2

A.3.4 Dimensions and weight of the transfer switching equipment

Article number	Size	Number of poles	Weight (kg)		Dimensions including packaging (mm)
			Net	Gross	
3KC03...M	1	3	1.4	1.568	184 x 133 x 100
3KC04...M	1	4	1.7	1.91	220 x 133 x 100
3KC03...N	2	3	2.1	2.232	236 x 132 x 100
3KC04...N	2	4	2.65	2.796	290 x 132 x 100
3KC03...P	3	3	5.4	6.64	393 x 200 x 238
3KC04...P	3	4	6.5	7.926	393 x 200 x 238
3KC03...Q	4	3	13.75	15.94	540 x 263 x 285
3KC04...Q	4	4	16.75	19.36	540 x 263 x 285
3KC03...R	5	3	31.9	46	724 x 348 x 496
3KC04...R	5	4	39.1	55	724 x 348 x 496

ESD guidelines

B.1 Introduction to ESD

Observe the ESD guidelines described in this chapter when handling the 3KC0 transfer switching equipment.

B.2 Electrostatic sensitive devices (ESD)

Electrostatic sensitive devices are destroyed by voltage and energy levels far below the limits of human perception. Voltages of this kind occur as soon as a device or an assembly is touched by a person who is not electrostatically discharged. Electrostatic sensitive devices which have been subject to such voltages are usually not immediately recognized as being defective, because a malfunction does not occur until after a longer period of operation.

ESD guidelines

NOTICE

Electrostatic sensitive devices

Electronic modules contain components that can be destroyed by electrostatic discharge. These modules can be easily destroyed or damaged by improper handling.

- You must discharge your body electrostatically immediately before touching an electronic module. To do this, touch a conductive, grounded object, e.g., a bare metal part of a switch cabinet or the water pipe.
- Always hold the component by the plastic enclosure.
- Electronic modules should not be brought into contact with electrically insulating materials such as plastic film, plastic parts, insulating table supports or clothing made of synthetic fibers.
- Always place electrostatic sensitive devices on conductive bases.
- Always store and transport electronic modules or components in ESD-safe conductive packaging, e.g. metallized plastic or metal containers. Leave the component in its packaging until installation.

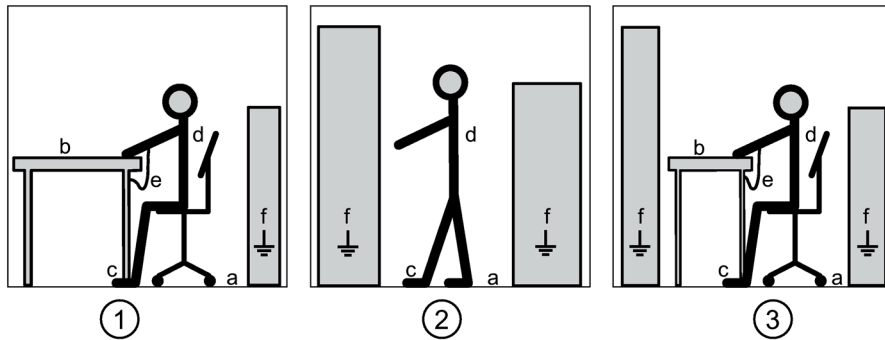
NOTICE

Storage and transport

If you have to store or transport the module in non-conductive packaging, you must pack the module in ESD-safe, conductive material, e.g. conductive foam rubber, ESD bag.

ESD workstation

The diagrams below illustrate the required ESD protective measures for electrostatic sensitive devices.



- ① ESD seat
- ② ESD standing position
- ③ ESD seat and ESD standing position

Protective measures

- a Conductive floor
- b ESD table
- c ESD footwear
- d ESD smock
- e ESD bracelet
- f Cubicle ground connection

List of abbreviations

C.1 List of abbreviations

Meaning of abbreviations used in this document

Abbreviation	Meaning
1PH + N	Single-phase network with 1 phase and neutral conductor
3PH	Three-phase 4-wire network without neutral conductor
3PH + N	Three-phase 4-wire network with neutral conductor
AC	Alternating voltage
MTSE	Manually Operated Transfer Switching Equipment
Cu	Copper
DC	Direct current
DPS	Dual power supply
EN	European Standard
ESD	Electrostatic discharge
IEC	International Electrotechnical Commission
IP	International Protection
N	Neutral conductor
RJ	Registered jack
PH	Phase

Meaning of symbols and abbreviations

Sym- bol/abbreviation	Meaning
ΔU	Voltage tolerance
ΔF	Frequency tolerance
I^2t	Let-through energy
I_{cm}	Short-circuit current making capacity
I_{cw}	Short-time withstand current
U_e	Rated operational voltage
V_{Imp}	Impulse withstand voltage
U_n	Nominal voltage

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