

SIEMENS



Operating Instructions

SENTRON

Circuit Breakers

3WT Air Circuit Breakers

Edition

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Circuit Breakers 3WT




Operating Instructions

<u>Safety notes</u>	1
<u>General</u>	2
<u>Product description</u>	3
<u>Installation</u>	4
<u>Connection</u>	5
<u>Electronic components</u>	6
<u>Auxiliary release and auxiliary switches</u>	7
<u>Commissioning</u>	8
<u>Maintenance</u>	9
<u>Accessories</u>	10
<u>Troubleshooting</u>	11
<u>Dimension drawings</u>	12
<u>Circuit diagrams</u>	13

Legal information

Warning notice system

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.

Proper use of Siemens products

Note the following:

 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.

Trademarks

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Table of contents

1	Safety notes	7
2	General	11
2.1	Standard specifications	11
2.2	Transport.....	12
3	Product description	15
3.1	Design	15
3.1.1	Circuit Breaker	15
3.1.2	Guide frame	16
3.2	Label	17
3.3	Indicators of the Circuit Breaker	19
4	Installation	21
4.1	Installation	21
4.2	Racking in/out of the Circuit Breaker	23
4.3	Position of the Circuit Breaker in the guide frame	27
4.4	Remove the Circuit Breaker from guide frame.....	28
4.5	Inserting the Circuit Breaker in the guide frame	29
4.6	Door sealing frame IP41	30
4.7	Protective cover IP55	32
5	Connection	35
5.1	Connecting bar	35
5.1.1	Horizontal connection.....	35
5.1.2	Vertical connection	36
5.1.3	Front connection	39
5.2	Connecting the main conductor	41
5.3	Connecting the auxiliary conductor	45
5.4	Connection for protective conductor	48
6	Electronic components	49
6.1	Electronic Trip Unit (ETU) - functional overview	49
6.2	ETU35WT.....	51
6.3	ETU37WT.....	53
6.4	ETU45WT.....	56
6.5	ETU47WT.....	59
6.6	Indicators on the ETU.....	63

6.7	Protection functions	65
6.7.1	Basic protection functions.....	65
6.7.2	LT: Overload protection (Long time), L-tripping	65
6.7.3	ST: Short-time delay short-circuit release (Short time), S tripping.....	66
6.7.4	INST: Instantaneous short-circuit release (Instantaneous), I-tripping	67
6.7.5	GF: Ground-fault protection (Ground-fault), G-tripping.....	67
6.7.6	N: Neutral conductor protection (Neutral), N-tripping.....	68
6.8	Additional functions	69
6.8.1	Phase-failure protection	69
6.8.2	Thermal memory (can be switched on/off)	69
6.9	Menus on the ETU35WT ETU37WT display.....	70
6.10	Alphanumeric display of ETU45WT and ETU47WT.....	72
6.10.1	Modifying the displays inclination	72
6.10.2	Menu structure.....	74
6.11	Communication.....	81
6.12	Breaker Status Sensor (BSSWT).....	83
6.13	COM16WT module	85
6.14	Metering function.....	88
6.15	External voltage supply.....	90
7	Auxiliary release and auxiliary switches	93
7.1	Overview.....	94
7.2	Setting the delay time of the undervoltage release	96
8	Commissioning	97
8.1	Charging the stored-energy spring mechanism.....	97
8.1.1	Charging manually	97
8.1.2	Charging with a motor operating mechanism.....	98
8.2	Preparing for operation.....	99
8.3	Closing operation	100
8.4	Opening operation	101
8.5	Recommissioning after opening operation by means of electronic trip unit.....	102
9	Maintenance.....	103
9.1	Preparatory work	104
9.2	Checking the arc chutes.....	107
9.3	Checking the wear on the contacts	108
9.4	Replacing the conducting paths	109
9.5	Internal self-test of the electronic trip unit function	121
9.6	Internal self-test of Circuit Breaker with tripping operation	123
9.7	Replacing the electronic trip unit.....	125
10	Accessories	129

10.1	Accessories	129
10.2	Accessories - general.....	131
10.2.1	Removing the operating device	132
10.2.2	Installing the operating device	133
10.3	Hand-held test device	134
10.4	External transformer for neutral conductors	139
10.4.1	External transformer for neutral conductors (for ETU37WT ... ETU47WT)	139
10.4.2	External ground fault current transformer (only for ETU47WT)	141
10.5	Retrofitting the internal N transformer	142
10.6	Counting mechanism.....	145
10.7	Castell lock	148
10.8	3WT lock (set), 3 locks with 2 keys	155
10.9	Mechanical interlock.....	161
10.9.1	Information about mechanical interlock	161
10.9.2	Mechanical interlock of fixed-mounted Circuit Breakers	168
10.9.3	Mechanical interlock of withdrawable Circuit Breakers.....	175
10.9.4	Installing Bowden wire.....	180
10.10	Door interlock.....	183
10.10.1	Door interlock for fixed-mounted Circuit Breaker	183
10.10.2	Door interlock for guide frame	187
10.11	Phase barrier	190
10.11.1	Phase barrier for fixed-mounted Circuit Breaker.....	191
10.11.2	Phase barrier for guide frame	196
10.12	Automatic mechanical resetting device after overcurrent tripping.....	200
10.13	Switching from fixed-mounted Circuit Breakers to withdrawable Circuit Breakers.....	206
10.14	Vertical connections for fixed-mounted Circuit Breaker	215
10.15	Connection bars for guide frame (frame size I)	218
10.16	Connection bars / connection pieces for guide frame version FS II.....	221
10.17	Position signaling switch for guide frame	226
10.18	Shutters.....	229
10.19	Arc chute cover.....	237
10.20	Safety locking device	241
11	Troubleshooting	245
12	Dimension drawings.....	247
12.1	Fixed-mounted Circuit Breaker, Frame size I, 3 pole and 4 pole	248
12.2	Fixed-mounted Circuit Breaker, Frame size II, 3 pole and 4 pole	250
12.3	Withdrawable Circuit Breaker, Frame size I, 3 pole and 4 pole	253
12.4	Withdrawable Circuit Breaker, Frame size II, 3 pole and 4 pole	255
12.5	Accessories 3 pole / 4 pole	258

12.6	Door cutout 3 pole / 4 pole.....	260
12.7	Current transformer for N conductor	261
13	Circuit diagrams.....	263
13.1	Overall circuit diagram.....	263
13.2	Circuit diagram for undervoltage release with delay	265
13.3	Terminal diagrams	266
	Glossary	269

Safety notes


1

	<p>EN  DANGER</p> <p>Hazardous voltage. Will cause death or serious injury. Turn off and lock out all power supplying this device before working on this device.</p> <p>NOTICE</p> <p> Installation and maintenance must be carried out by qualified personnel. </p>
<p>DE  GEFAHR</p> <p>Gefährliche Spannung. Lebensgefahr oder schwere Verletzungsgefahr. Bevor Arbeiten am Gerät durchgeführt werden, müssen alle Stromquellen ausgeschaltet und mit einer Einschaltssicherung versehen werden.</p> <p>HINWEIS</p> <p> Installations- und Wartungsarbeiten sind von qualifiziertem Personal durchzuführen. </p>	<p>FR  DANGER</p> <p>Tension électrique dangereuse. Danger de mort ou risque de blessures graves. Avant d'intervenir sur l'appareil, couper toutes les sources de tension et les consigner contre la refermeture.</p> <p>NOTIFICATION</p> <p> L'installation et la maintenance doivent être effectuées uniquement par des personnes qualifiées. </p>
<p>ES  PELIGRO</p> <p>Tensión peligrosa. Puede causar la muerte o lesiones graves. Antes de trabajar en este dispositivo, desconecte y bloquee todas las fuentes que lo alimentan eléctricamente.</p> <p>NOTA</p> <p> La instalación y el mantenimiento deben corre a cargo de personal cualificado. </p>	<p>IT  PERICOLO</p> <p>Tensione pericolosa. Può causare la morte o lesioni gravi. Prima di lavorare su questa apparecchiatura, disinserire tutte le fonti di alimentazione elettrica dell'apparecchiatura ed assicurarle contro la reinserzione.</p> <p>NOTA</p> <p> L'installazione e la manutenzione devono essere eseguite da personale qualificato. </p>
<p>PT  PERIGO</p> <p>Tensão perigosa. Perigo de morte ou ferimentos graves. Desligue e bloqueie todas as fontes de alimentação antes de executar quaisquer trabalhos no aparelho.</p> <p>ATENÇÃO</p> <p> A instalação e manutenção têm de ser efetuadas por pessoal qualificado. </p>	<p>TR  TEHLİKE</p> <p>Tehlikeli gerilim. Ölüm tehlikesi veya ağır yaralanma tehlikesi mevcuttur. Cihazda çalışmalar yapılmadan önce, tüm güç kaynakları kapatılmalı ve bir açma emniyetiyle donatılmalıdır.</p> <p>NOT</p> <p> Montaj ve bakım işlemleri kalifiye personel tarafından yapılmalıdır. </p>
<p>PY  ОПАСНО</p> <p>Опасное напряжение. Опасность для жизни или телесных повреждений. До начала работы выключите и заблокируйте все источники питания этого устройства.</p> <p>ПРИМЕЧАНИЕ</p> <p> Установка и техническое обслуживание должны производиться квалифицированным персоналом. </p>	<p>PL  ZAGROŻENIE</p> <p>Niebezpieczne napięcie. Niebezpieczeństwo poważnych obrażeń lub utraty życia. Wyłączyć i zablokować wszystkie źródła zasilania urządzenia przed rozpoczęciem pracy na urządzeniu.</p> <p>UWAGA</p> <p> Instalacja i konserwacja muszą być wykonywane przez wykwalifikowany personel. </p>
<p>中  危険</p> <p>危険电压。可能导致生命危险或重伤危险。 操作此设备前必须确保切断其电源并采取防接通保护措施。</p> <p>注意</p> <p> 安装和维护必须由具备专业资质的人员进行。 </p>	<p>HR  OPASNOST</p> <p>Opasni napon. Opasnost po život ili opasnost od teških ozljeda. Prije rada na uređaju potrebno je isključiti sve izvore struje i osigurati uređaj zaštitom od uključivanja.</p> <p>NAPOMENA</p> <p> Montažu i održavanje treba obavljati kvalificirano osoblje. </p>
<p>FI  VAARA</p> <p>Vaarallinen jännite. Vakava loukkaantumisvaara tai hengenvaara. Laitteen kaikki virransyöttö tulee katkaista ja sen kytketyminen päälle tulee estää lukolla ennen kuin laitteeseen kohdistetaan mitään toimenpiteitä.</p> <p>HUOMAUTUS</p> <p> Asennus- ja huoltotyöt on annettava pätevän ammattilaisen suoritettaviksi. </p>	<p>БГ  ОПАСНОСТ</p> <p>Опасно напрежение. Опасност за живота или опасност от тежки телесни повреди. Преди да извършвате дейности по устройството, изключете и обезопасете всички ذخранващи източници.</p> <p>ПРЕДУПРЕЖДЕНИЕ</p> <p> Инсталирането и поддръжката трябва да се извършват от квалифициран персонал. </p>

<p>EE  OHT</p> <p>Ohtlik pinge. Oht elule või raskete vigastuste oht. Enne seadme hooldustöid lülitage kõik toiteallikad välja ja võtke meetmed nende sisselülitamise takistamiseks.</p> <p> MÄRKUS </p> <p>Paigaldus- ja hooldustöid tohib teha ainult kvalifitseeritud personal.</p>	<p>LV  BĪSTAMI</p> <p>Bīstams spriegums. Letālu seku vai smagu traumu riski. Pirms veicat darbu ar šo ierīci pilnībā izslēdziet un nobloķējiet tās strāvas padevi.</p> <p> BRĪDINĀJUMS </p> <p>Uzstādīšana un tehniskā apkope jāveic kvalificētiem darbiniekiem.</p>
<p>LT  PAVOJUS</p> <p>Pavojinga įtampa. Pavojus gyvybei arba sunkaus susižalojimo pavojus. Prieš dirbdami ties šiuo prietaisu, išjunkite ir užblokuokite visus šio prietaiso maitinimo šaltinius.</p> <p> NUORODA </p> <p>Įrengimą ir techninę priežiūrą turi vykdyti kvalifikuoti darbuotojai.</p>	<p>DA  FARE</p> <p>Farlig spænding. Livsfare eller risiko for slemme kvæstelser. Sluk for og lås strømmen, der forsyner denne enhed, før du arbejder med denne enhed.</p> <p> BEMÆRK </p> <p>Installationen og vedligeholdelsen skal foretages af uddannet personale.</p>
<p>MT  PERIKLU</p> <p>Vultaġġ perikoluż. Riskju ta' mewt jew korriment serju. Qabel taħdem fuq dan l-apparat, itfi kull provvista tal-elettriku tiegħu u sakkar kontra xegħil mill-ġdid aċċidentali.</p> <p> AVVIŻ </p> <p>L-installazzjoni u l-manutenzjoni għandhom jitwettqu minn personal ikkwalifikat.</p>	<p>NL  GEVAAR</p> <p>Gevaarlijke spanning. Levensgevaar of gevaar voor ernstig letsel. Voordat u aan dit apparaat werkt, moet u alle actieve energiebronnen voor dit apparaat uitschakelen.</p> <p> OPMERKING </p> <p>Installatie en onderhoud moeten worden verricht door gekwalificeerd personeel.</p>
<p>EL  ΚΙΝΔΥΝΟΣ</p> <p>Επικίνδυνη τάση. Κίνδυνος για τη ζωή ή σοβαρού τραυματισμού. Απεverγοποιήστε και ασφαλίστε όλη την ενέργεια που τροφοδοτεί τη συσκευή, προτού εργαστείτε σε αυτή.</p> <p> ΠΡΟΣΟΧΉ </p> <p>Η εγκατάσταση και συντήρηση πρέπει να διεξάγονται από εξειδικευμένο προσωπικό.</p>	<p>GA  CONTÚIRT</p> <p>Voltas contúirteach. Baol go bhfaighfear bás nó tromghortú. Múch gach cumhacht a sholáthraíonn an gléas seo agus glasáil amach í roimh obair a dhéanamh ar an ngléas seo.</p> <p> FÓGRA </p> <p>Ní mór don fheistiú agus don chothabháil a bheith déanta ag pearsanra cáilithe.</p>
<p>RO  PERICOL</p> <p>Tensiune periculoasă. Pericol de moarte sau de accidentări grave. Opriti și blocați alimentarea cu energie a acestui dispozitiv înainte de a lucra la acesta.</p> <p> ÎNȘTIINȚARE </p> <p>Instalarea și întreținerea trebuie să se efectueze de către personalul calificat.</p>	<p>SV  FARA</p> <p>Farlig spänning. Livsfara eller risk för allvarliga personskador. Innan arbete utförst på utrustningen ska strömförsörjningen till utrustningen stängas av.</p> <p> OBS </p> <p>Installation och underhåll får endast utföras av kvalificerad personal.</p>
<p>CZ  NEBEZPEČÍ</p> <p>Nebezpečné napětí. Nebezpečí smrtelného nebo těžkého úrazu. Před zahájením prací na tomto zařízení odpojte a zajistěte veškeré přívody energie.</p> <p> POZNÁMKA </p> <p>Instalaci a údržbu musí provádět kvalifikovaní pracovníci.</p>	<p>SL  NEVARNOST</p> <p>Nevarna napetost. Nevarnost za življenje ali nevarnost hudih poškodb. Izklopite in prekinite celotno napajanje naprave, preden na njej opravljate dela.</p> <p> OPOMBA </p> <p>Namestitev in vzdrževanje mora opraviti usposobljeno osebo.</p>
<p>SK  NEBEZPEČENSTVO</p> <p>Nebezpečné napätie. Nebezpečenstvo ohrozenia života alebo vzniku ťažkých zranení. Pred prácou na zariadení vypnite a zaistite všetky napájacie prípojky tohto zariadenia.</p> <p> UPOZORNENIE </p> <p>Inštaláciu a údržbu musí vykonávať kvalifikovaný personál.</p>	<p>HU  VESZÉLY</p> <p>Veszélyes feszültség. Életveszély vagy súlyos sérülésveszély. Mielőtt bármilyen munkavégzést kezd az eszközön, az áramellátást le kell kapcsolni, és véletlen bekapcsolás elleni védelemmel kell ellátni.</p> <p> MEGJEGYZÉS </p> <p>A telepítést és a karbantartást kizárólag szakképzett személyzet végezheti.</p>

General

2.1 Standard specifications

 DANGER	
Hazardous voltage	
During operation, certain Circuit Breaker and guide frame components are subject to hazardous voltages or spring force.	
Note the operating instructions and warnings.	
If these are not observed, this can result in death, severe injury, or substantial material damage.	

Ambient conditions

The Circuit Breakers are designed to be operated in enclosed rooms in which the operating conditions are not affected by dust or corrosive vapors/gases. Suitable enclosures must be used in dusty or damp conditions

Technical specifications

For information about technical specifications, see the Catalog LV 35 (<https://support.industry.siemens.com/>).

Standards



GB/T 14048.2

IEC 60947-2

EN 60947-2

2.2 Transport

Overseas packaging

Check the humidity indicator plate.	
 Pink	 Blue
<ul style="list-style-type: none"> Sealed packaging ineffective. Check Circuit Breaker for corrosion. Report any damage to transport company. 	Good

Long-term storage


- Replace or dry the desiccant.
- Seal the plastic film.
- Check the packaging regularly.

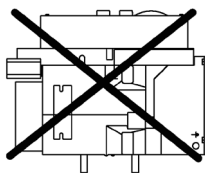
Unpacking and storing the Circuit Breaker

Unpack the Circuit Breaker and make sure that it was not damaged during transportation. If the Circuit Breaker or guide frame is not to be installed immediately, it must be stored and shipped in its original packaging only.

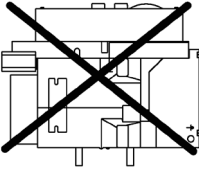
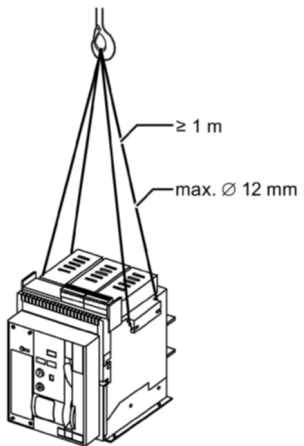
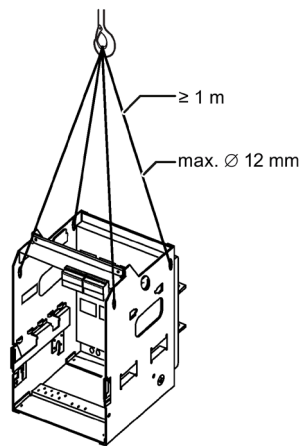
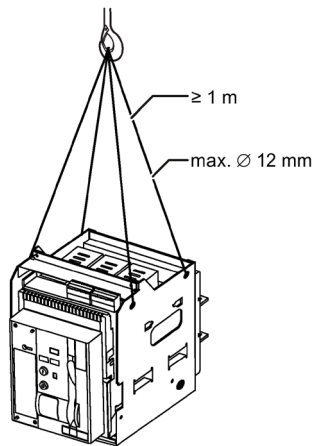
For withdrawable Circuit Breaker:

- Racking in/out of the Circuit Breaker (Page 23)
- Remove the Circuit Breaker from guide frame (Page 28)
- Inserting the Circuit Breaker in the guide frame (Page 29)

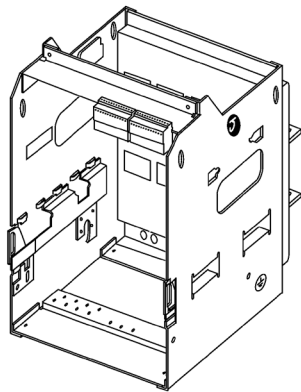
 CAUTION
Do not place the Circuit Breaker on its back.



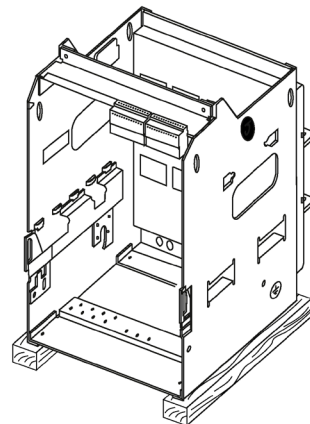
Transportation with crane

<p>Caution! Do not place the Circuit Breaker on its back.</p> 	<p>Circuit Breaker</p> 	<p>guide frame</p> 	<p>Circuit Breaker + guide frame</p> 
<p>Frame size / no. of poles</p>	<p>Weight for reference</p>		
<p>I / 3</p>	<p>38 kg</p>	<p>23 kg</p>	<p>61 kg</p>
<p>I / 4</p>	<p>51 kg</p>	<p>28 kg</p>	<p>79 kg</p>
<p>II / 3</p>	<p>63 kg</p>	<p>37 kg</p>	<p>100 kg</p>
<p>II / 4</p>	<p>76 kg</p>	<p>48 kg</p>	<p>124 kg</p>

Setting down the guide frame



Only set it down on its base plate.

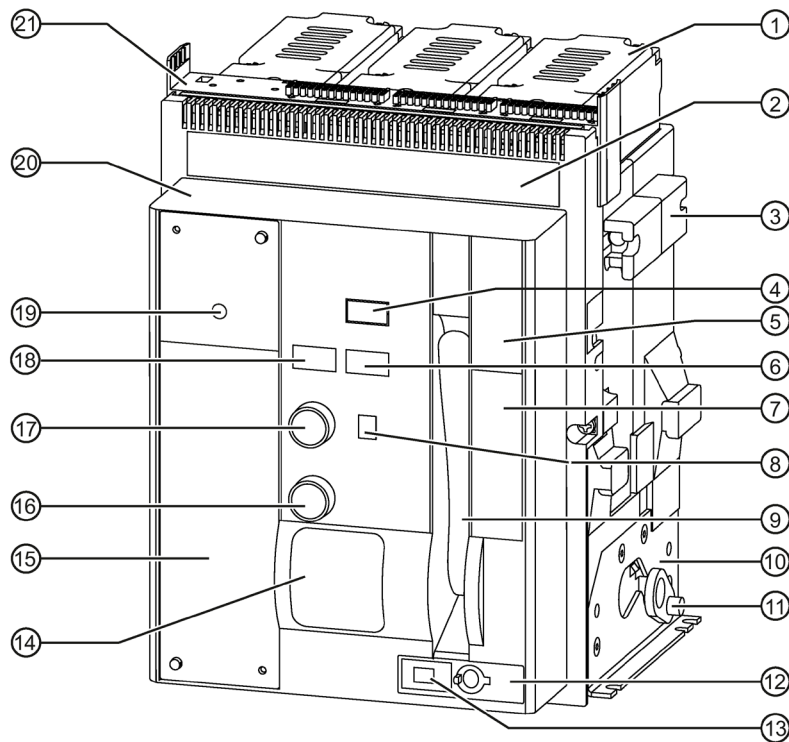


If the surface is uneven, use a level base.

Product description

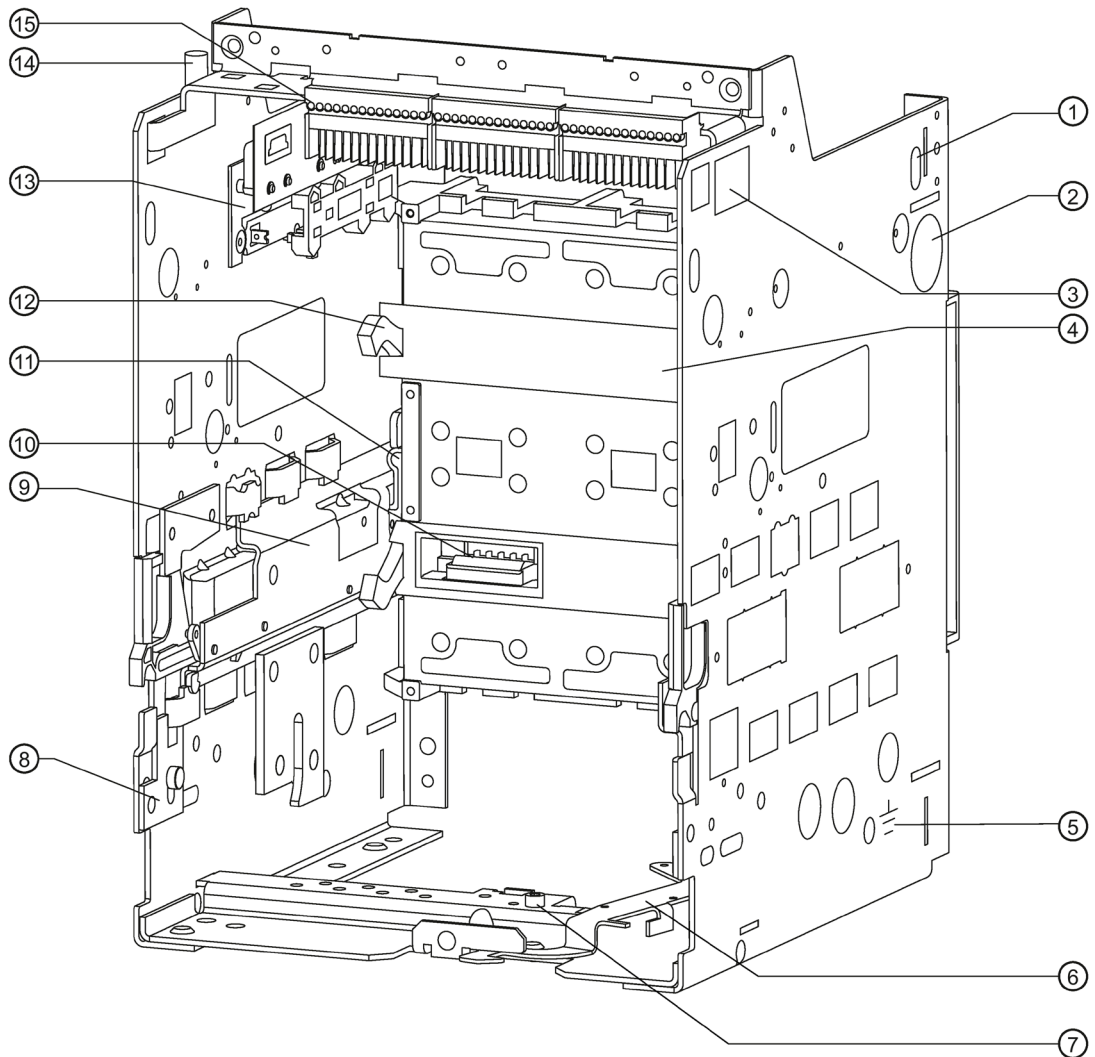
3.1 Design

3.1.1 Circuit Breaker



- | | |
|---------------------------------|-------------------------------------|
| ① Arc chute | ⑫ Draw-out window |
| ② Options label | ⑬ Position indicator |
| ③ Carrying handle | ⑭ CASTELL Locking |
| ④ Counting indicator | ⑮ Electronic trip unit (ETU) |
| ⑤ Type label | ⑯ "Mechanical OFF" button |
| ⑥ Store-energy indicator | ⑰ "Mechanical ON" button |
| ⑦ Racking pictogram | ⑱ Breaker ON/OFF indicator |
| ⑧ Ready to close indicator | ⑲ Reset button |
| ⑨ Spring charging lever | ⑳ Front panel |
| ⑩ Breaker foot | ㉑ Receptacle for auxiliary contacts |
| ⑪ Draw-out unit transport shaft | |

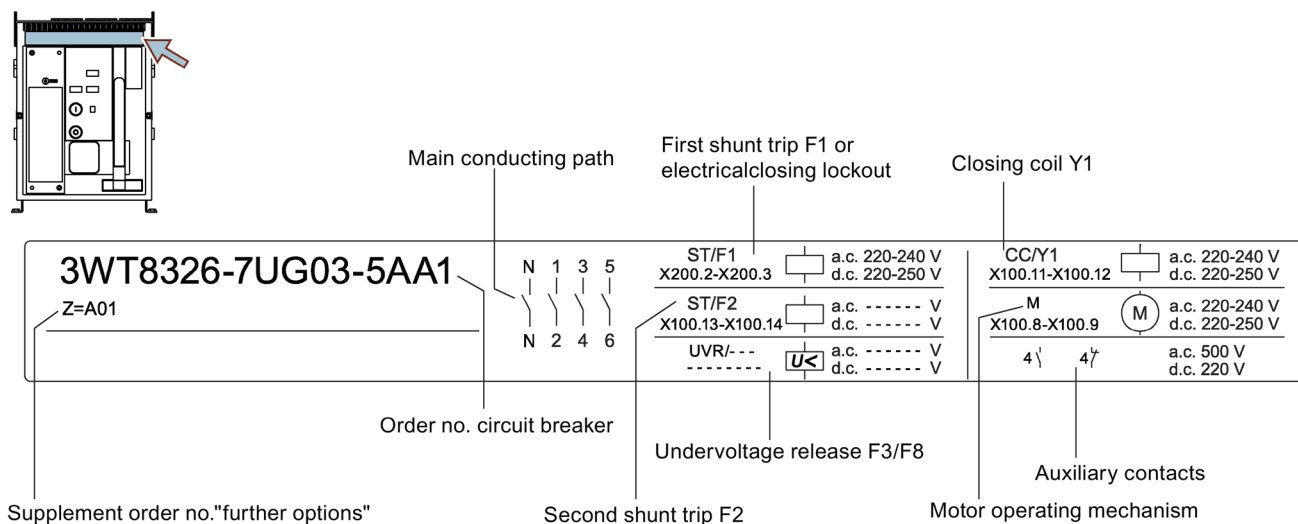
3.1.2 Guide frame



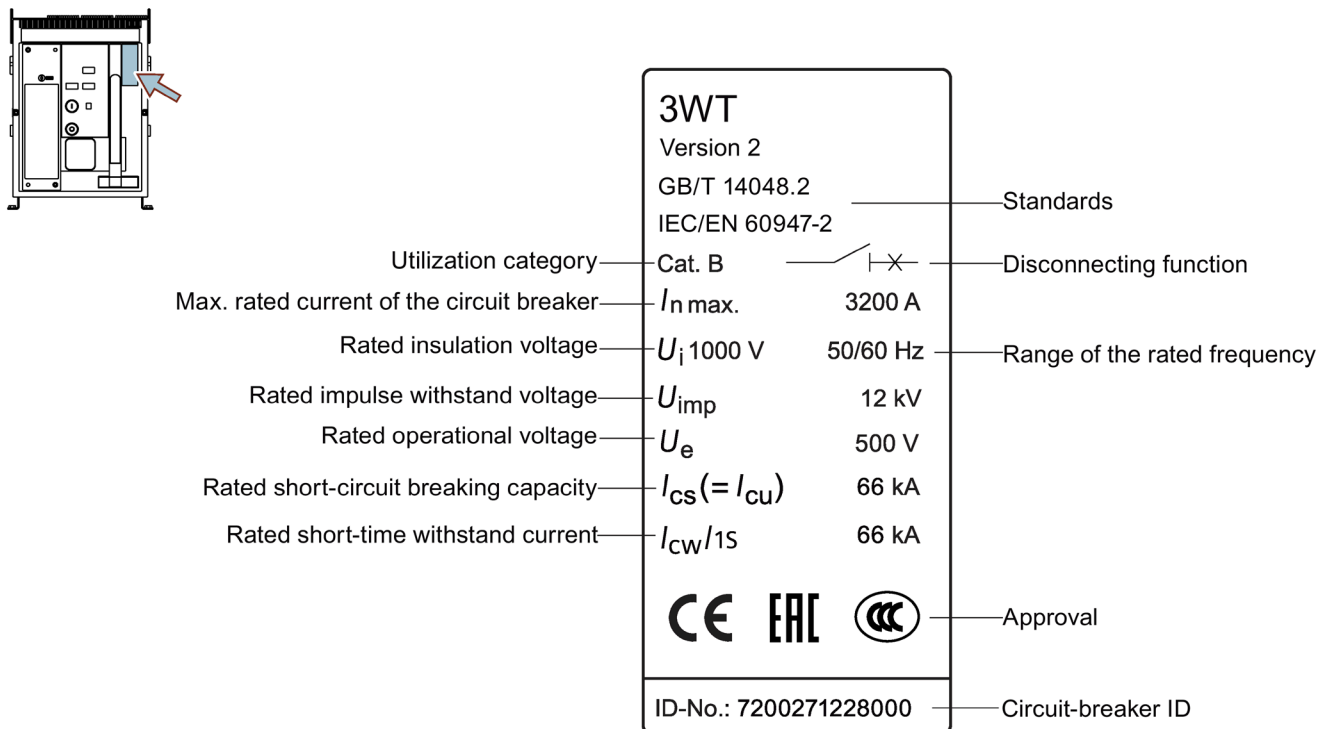
- | | |
|------------------------------|--------------------------------------|
| ① Hole for crane hook | ⑨ Guide rail |
| ② Crane hook label | ⑩ Disconnecting contacts |
| ③ Type label guide rail | ⑪ Locking device shutter |
| ④ Shutter plate (option) | ⑫ Shutter operating device (option) |
| ⑤ Grounding terminal | ⑬ Position signaling switch (option) |
| ⑥ Door interlocking (option) | ⑭ Crank handle |
| ⑦ Coding screw | ⑮ Auxiliary disconnects |
| ⑧ Locking device guide rail | |

3.2 Label

Circuit Breaker options label (With terminal designations)



Circuit Breaker type label



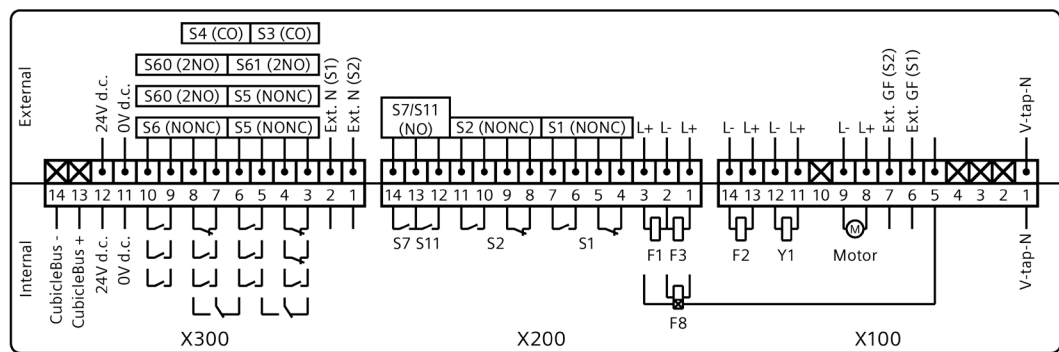
Terminal instruction label

⚠ WARNING

This is Version 2 breaker, and the pin of auxiliary & control circuit assignment has been changed. Please check the wiring according to circuit diagram. Wiring error will cause equipment damage or personal injury!

Note

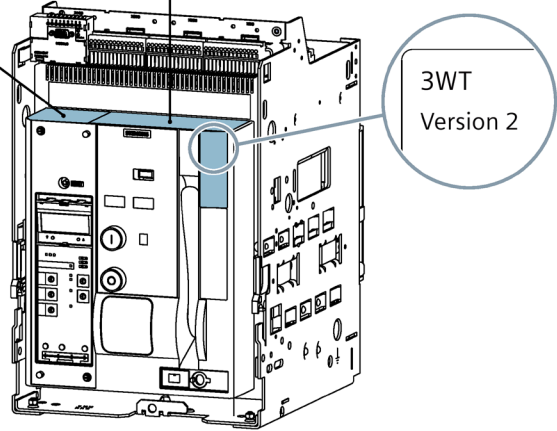
Please find the latest terminal assignment by the label on the top of the operator panel. Or find it from the operating instructions attached to the breaker.



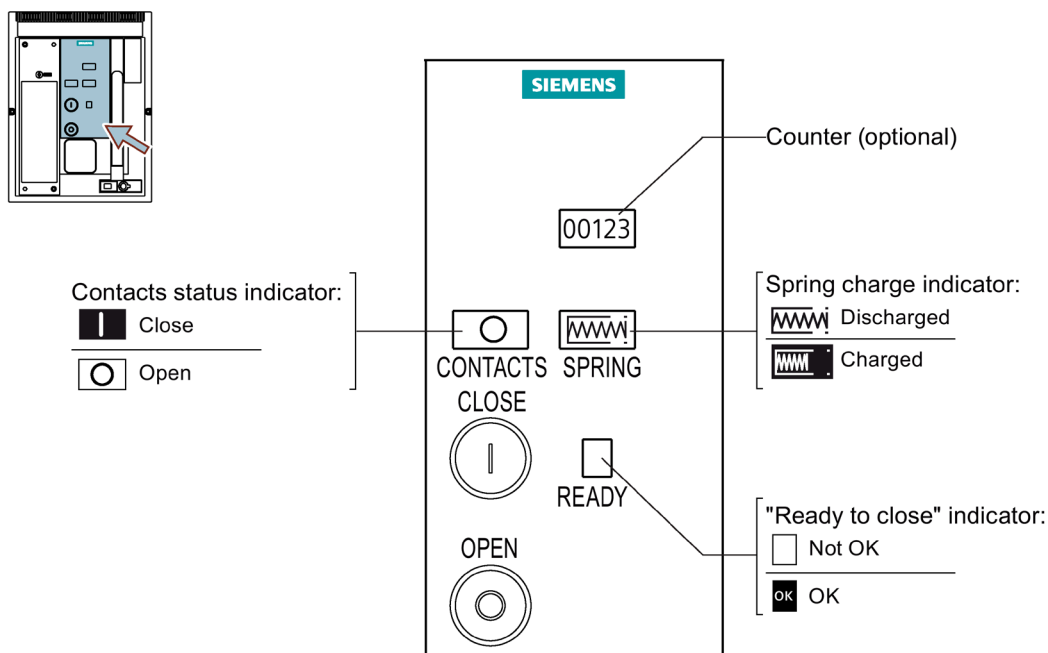
If external Neutral current sensor NOT be provided & connected, short terminals X300.1 & X300.2.

⚠ WARNING

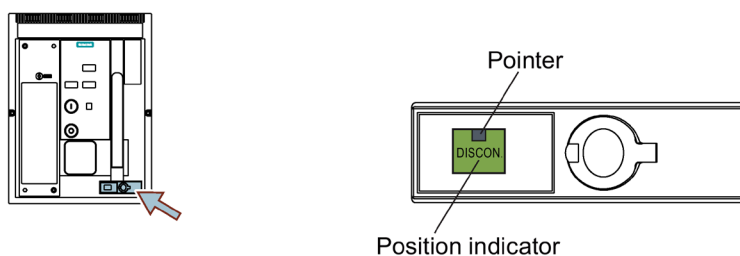
This is Version 2 breaker, and the pin of auxiliary & control circuit assignment has been changed. Please check the wiring according to circuit diagram. Wiring error will cause equipment damage or personal injury!



3.3 Indicators of the Circuit Breaker



Position indicator (for withdrawable breakers only)



Indicator label			
Color	Green	Blue	Red
Position status	Disconnection	Test	Connection

3.3 Indicators of the Circuit Breaker

Installation

4.1 Installation

! WARNING

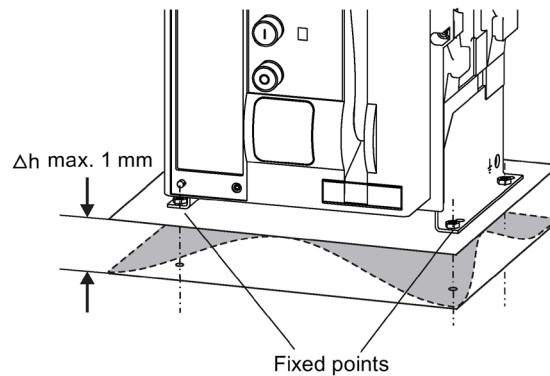
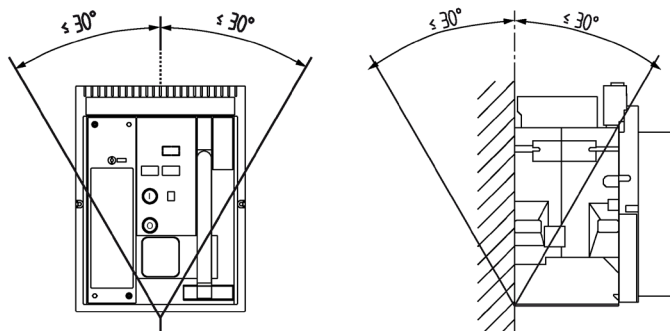
Before installing the device, make sure that the minimum distances from insulated, grounded, and live components in the switchgear are observed.

Details can be found in Catalog LV 35.

Installation position

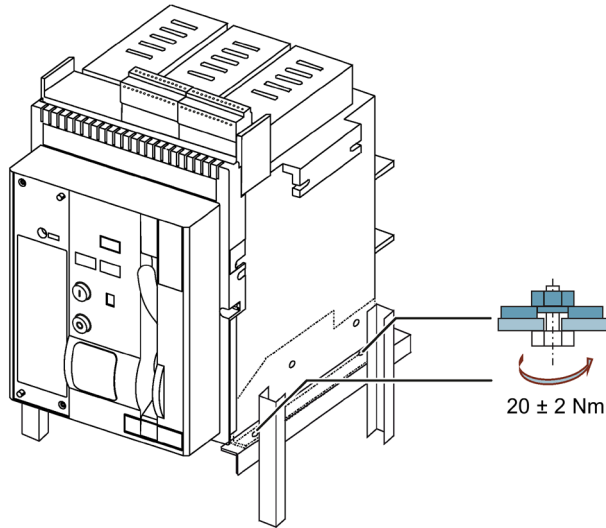
! WARNING

Breaker mounted tilted towards the frontside: Breaker may slide out on rails, when racked in disconnect position.



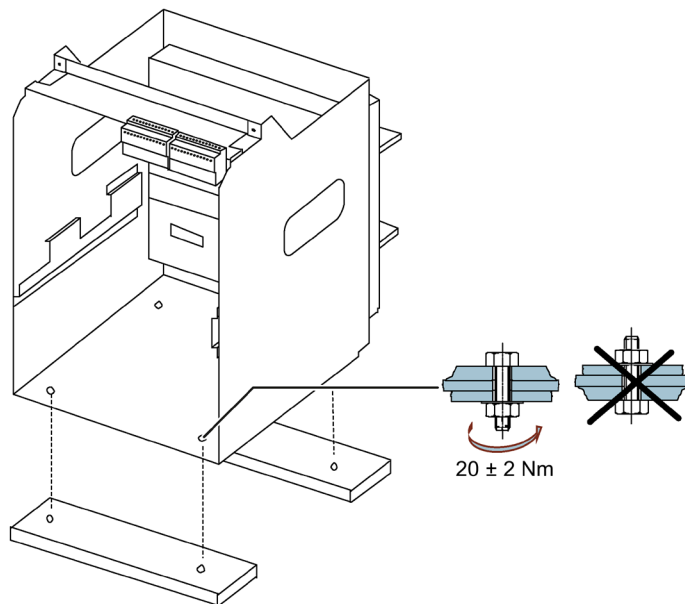
Installation on a horizontal surface

For fixed-mounted Circuit Breakers:



4 x M8-8.8 bolts + strain washers

For withdrawable Circuit Breakers:



Attaching the base plate: 4 x M8-8.8 bolts + nuts + washers

Arc chute cover

If several draw-out Circuit Breakers are arranged one above the other in cubicles without compartment bases we recommend to use arc chute covers.

See chapter Arc chute cover (Page 237)

4.2 Racking in/out of the Circuit Breaker

NOTICE

The Circuit Breaker must only be racked once the operator panel has been mounted and secured.

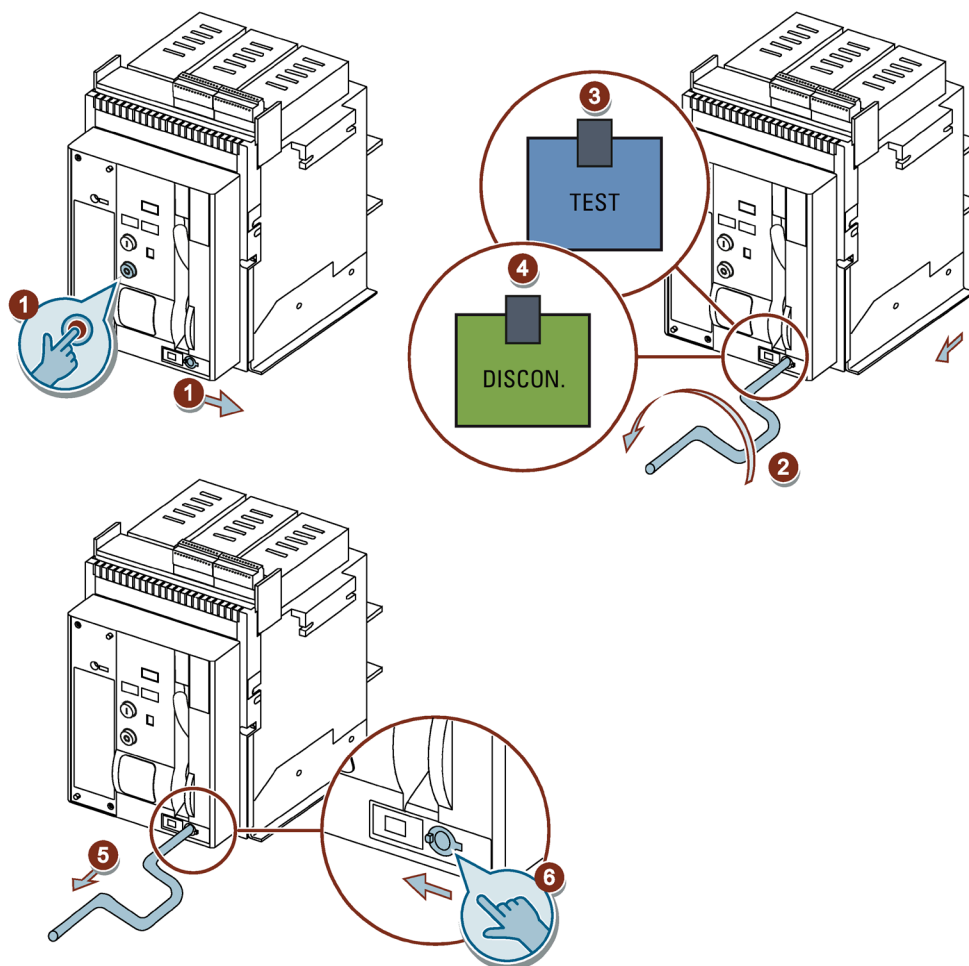
If a shutter is installed, a change of direction is not permitted while the Circuit Breaker is being racked until a defined position has been reached (disconnected/test/connected position).

Note

The indicator on the Circuit Breaker - position latching is not provided.

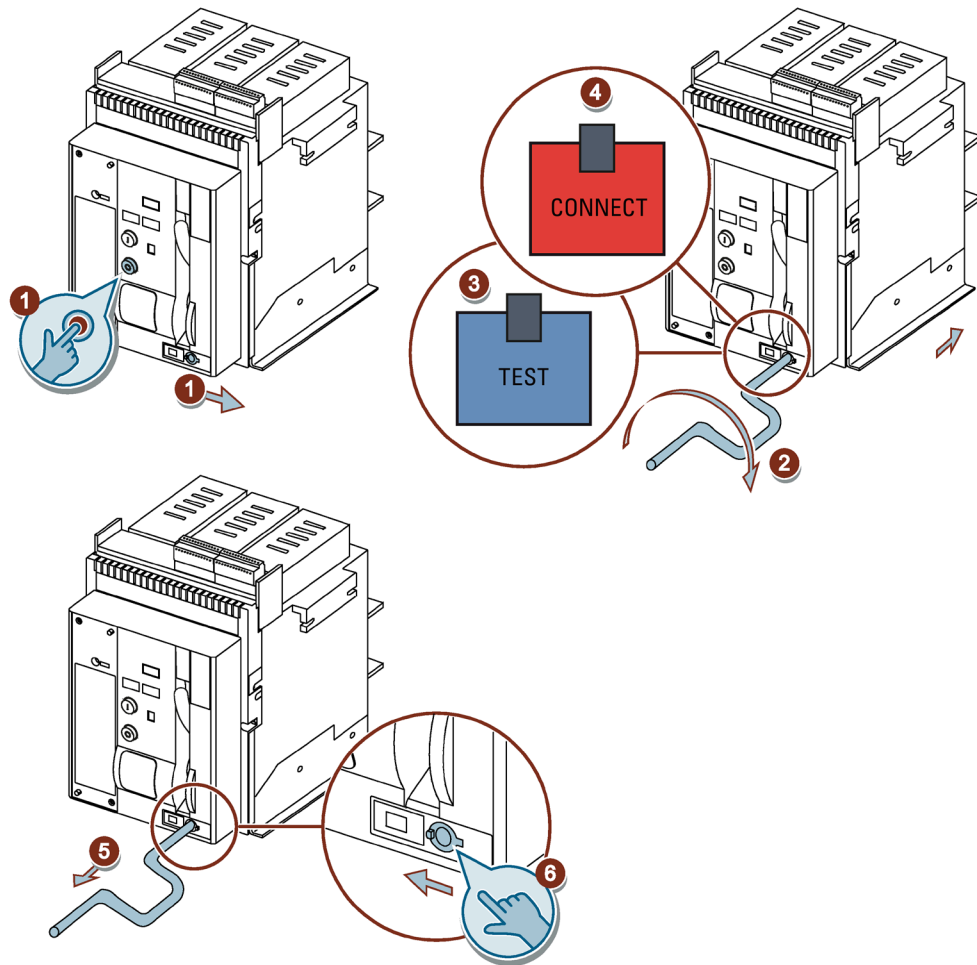
The position can only be checked via the indicator on the Circuit Breaker.

Racking out



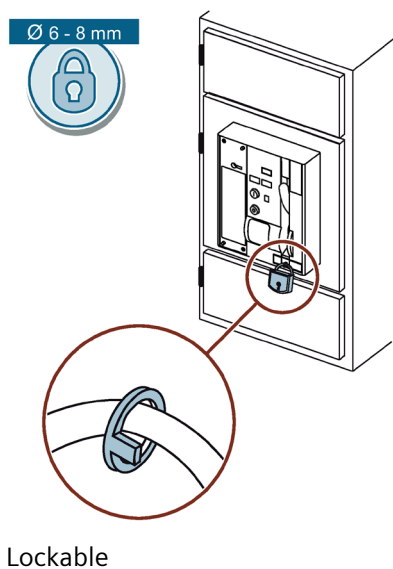
1. Press the OFF button and open the slide switch simultaneously.
2. Insert crank handle and racking out
3. Turn to test position
4. Turn to disconnected position
5. Remove crank handle
6. Close the slide switch

Racking in

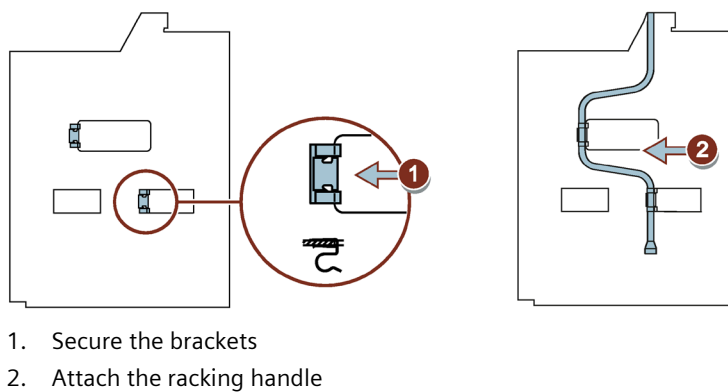


1. Press the OFF button and open the slide switch simultaneously.
2. Insert crank handle and racking in
3. Turn to test position
4. Turn to connected position
5. Remove crank handle
6. Close the slide switch

4.2 Racking in/out of the Circuit Breaker



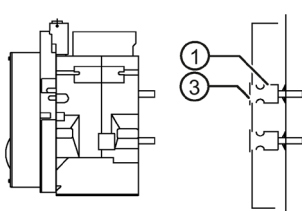
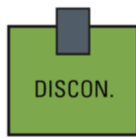
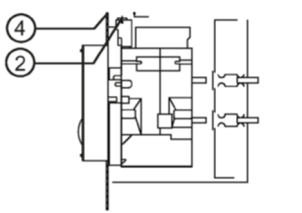
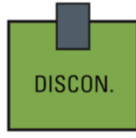
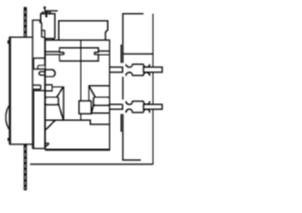
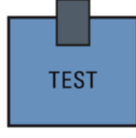
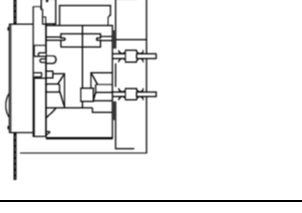
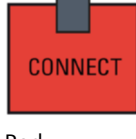
Attaching the racking handle



Note

The racking handle can also be attached on the right-hand side.

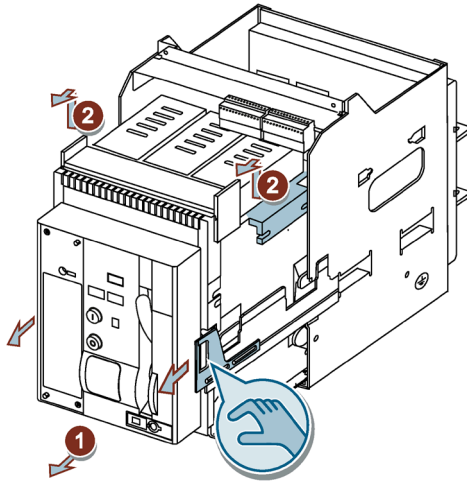
4.3 Position of the Circuit Breaker in the guide frame

Diagram	Position and display	Main and auxiliary circuit	Cubicle door	Shutter
	Maintenance position  Green	The auxiliary terminals of the breaker are outside of the auxiliary connector blocks of the guide frame.	Open	Closed
	Disconnect position  Green	The auxiliary terminals of the breaker are inside the auxiliary connector blocks of the guide frame. The guide rails are back in their initial position.	Closed	Closed
	Test position  Blue	Main circuits disconnected Auxiliary circuits connected	Closed	Closed
	Connected position  Red	Main circuits connected Auxiliary circuits connected	Closed	Open

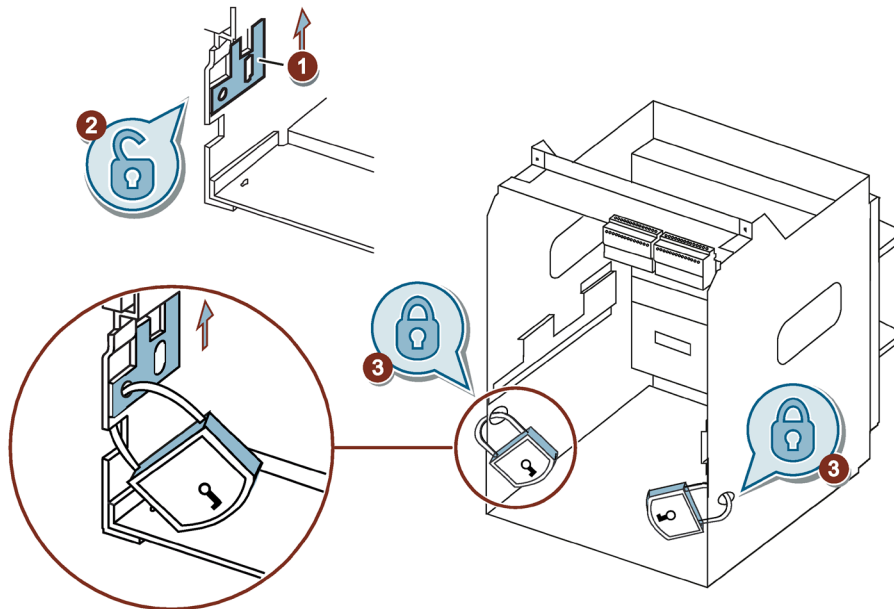
- ① Main circuit
- ② Auxiliary circuit
- ③ Shutter
- ④ Cubicle door

4.4 Remove the Circuit Breaker from guide frame

Remove the Circuit Breaker



Interlocking device



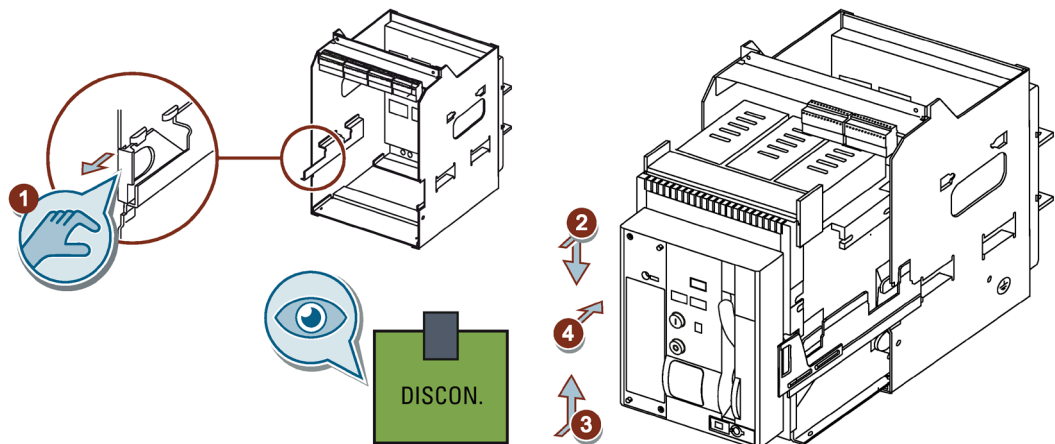
Block the shutter.

The guide rails can be blocked by means of two padlocks to prevent installation of a Circuit Breaker.

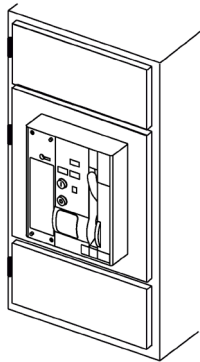
4.5 Inserting the Circuit Breaker in the guide frame

NOTICE

Please remove the lock if there is any.



1. Pull out the guide rails.
2. Insert the Circuit Breaker.
3. Lift it up slightly
4. Push it to the end stop of the disconnected position. The correct position can be identified as the guiding rails must be again back in their initial position, and the auxiliary contacts hidden.

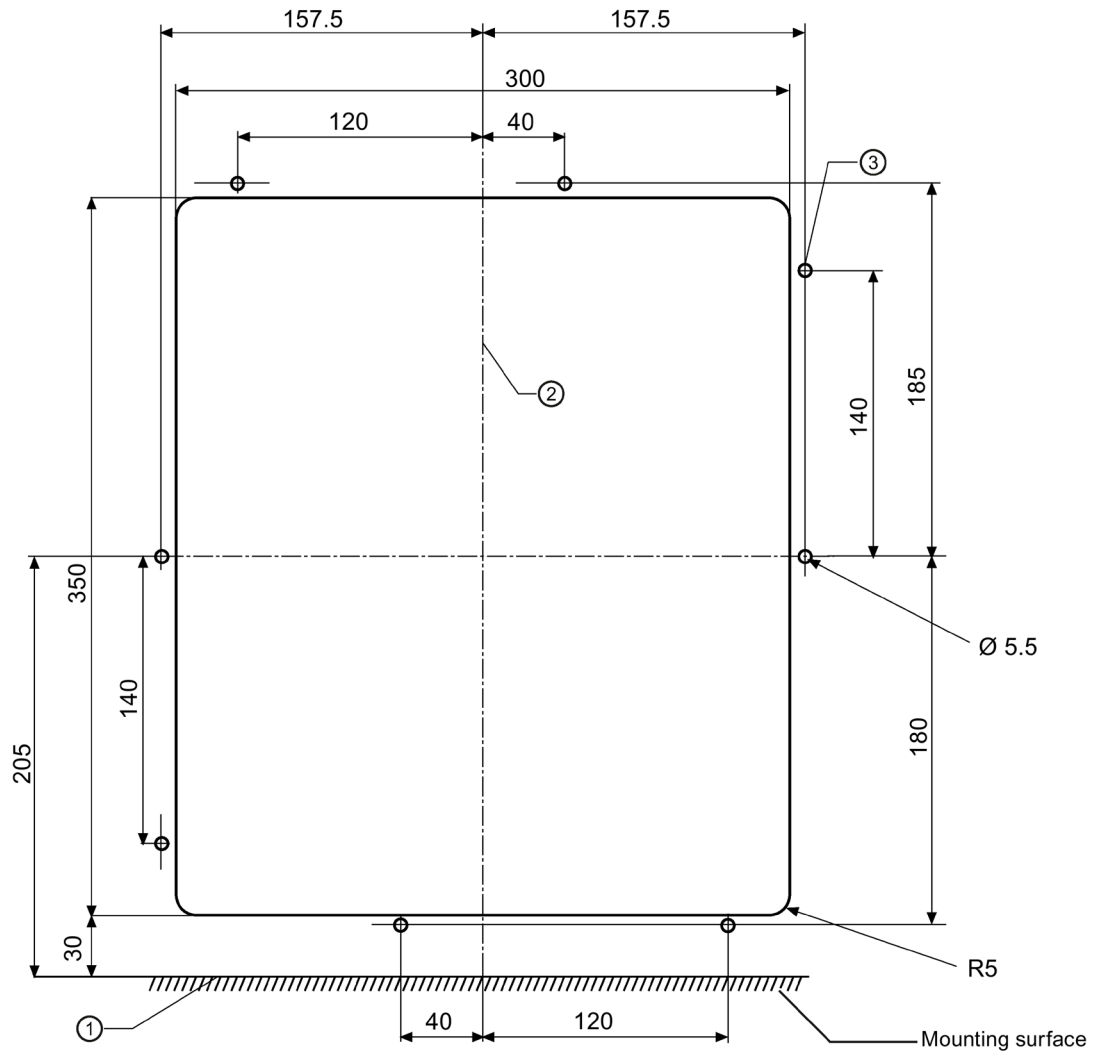


Close the cubicle door.

4.6 Door sealing frame IP41

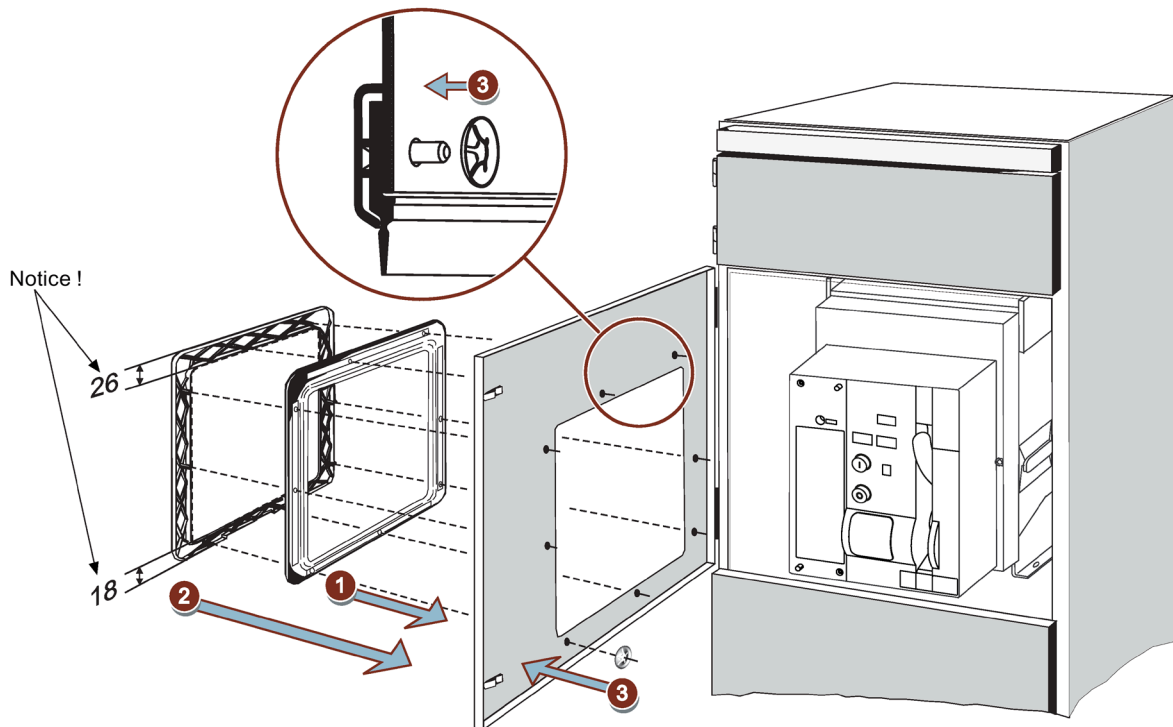
Preparing the switchgear door

unit: mm



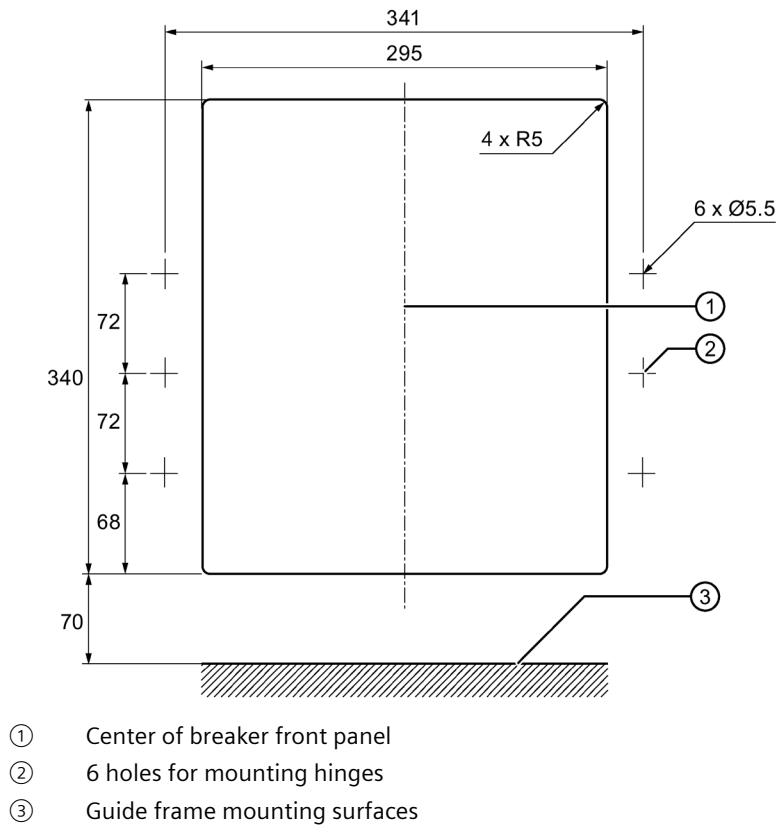
- ① Mounting surface of Circuit Breaker or guide frame
- ② Centre of front panel
- ③ Eight mounting holes for the door sealing frame

Installing the sealing frame

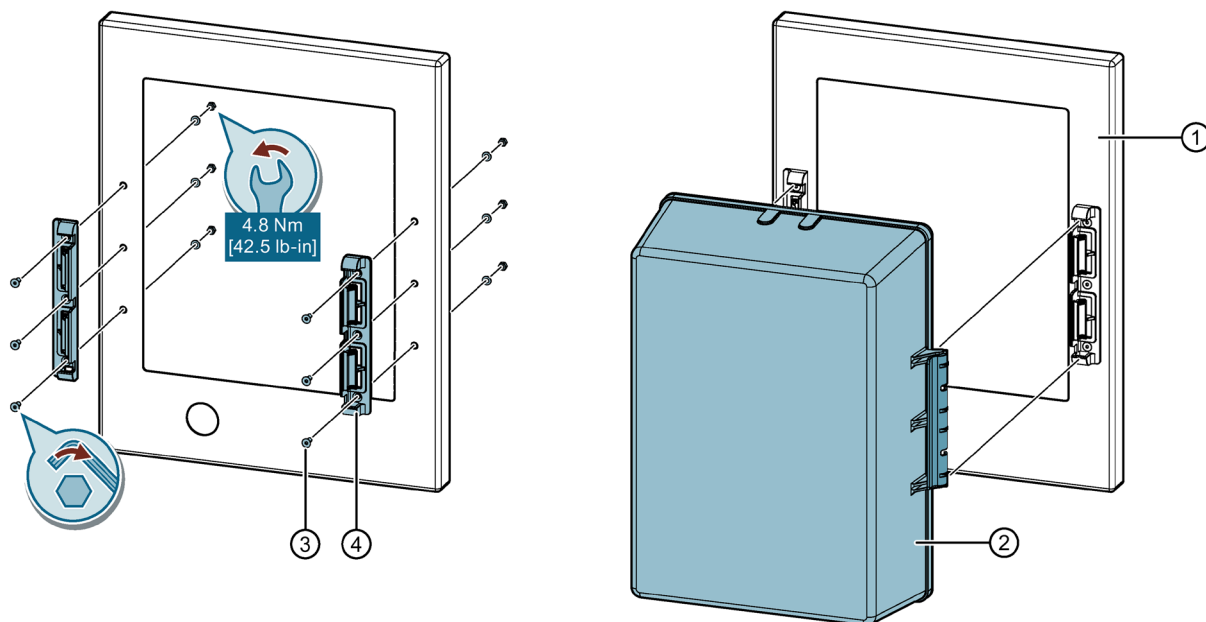


4.7 Protective cover IP55

Dimension drawing for door cutout and mounting holes



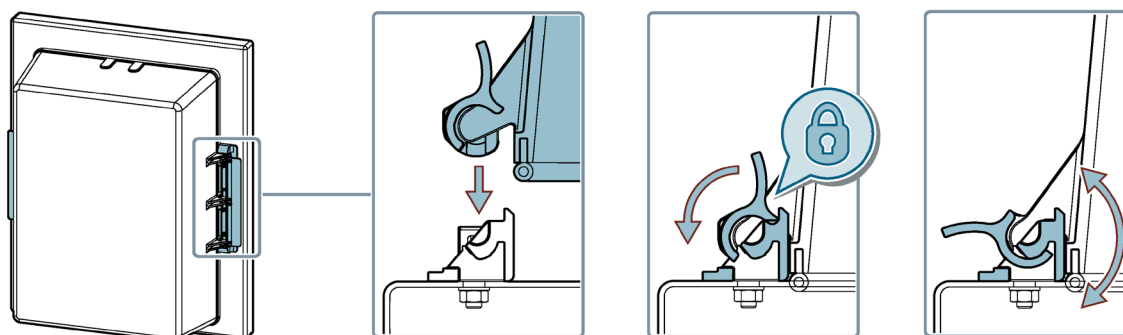
Mounting the protective cover



- ① Cubicle door with door cutout
- ② Protective cover
- ③ 6 x Hexagon socket-head screw M5 with washers and safety nuts
- ④ Hinges with opening function (right and left)

Installation of the right side hinge in the same fashion.

Handling



Article No.

Description	Article No.
Protective cover with plastic hinges	3WL9111-0AP02-0AA0

Connection

5.1 Connecting bar

! WARNING

Attention, the fastening screws above and below the connection bars on the back of the guide frame are voltage-carrying!

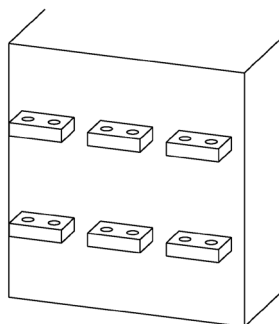
See chapter Dimension drawings (Page 247)

The 3-pole products are taken as examples in below images which are just for reference, and for detailed information please see Catalog LV35

(<https://support.industry.siemens.com/cs/ww/en/view/109744330>).

5.1.1 Horizontal connection

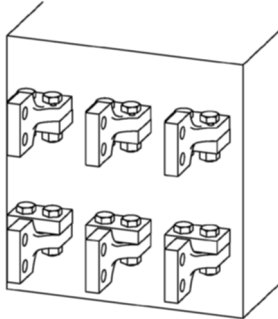
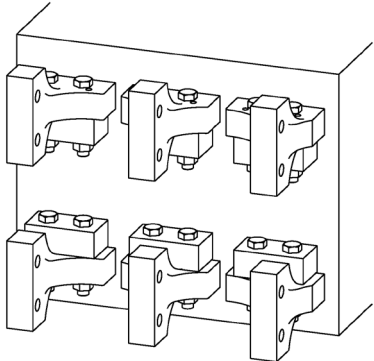
The horizontal connection is the standard connection for fixed-mounted Circuit Breakers and guide frame.



5.1.2 Vertical connection

Fixed-mounted breaker

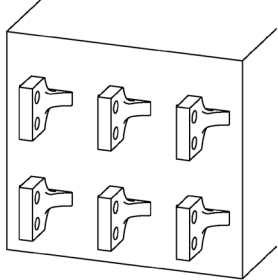
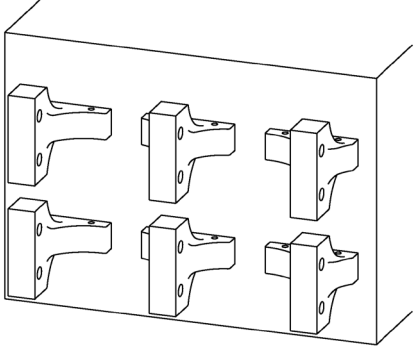
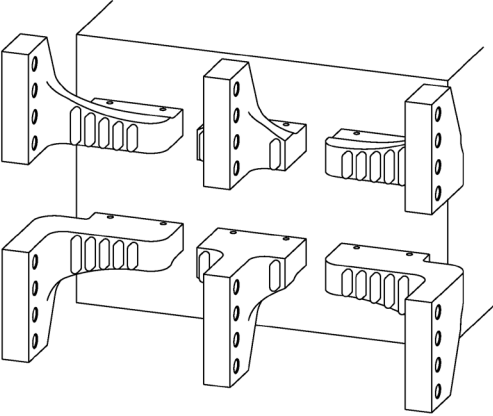
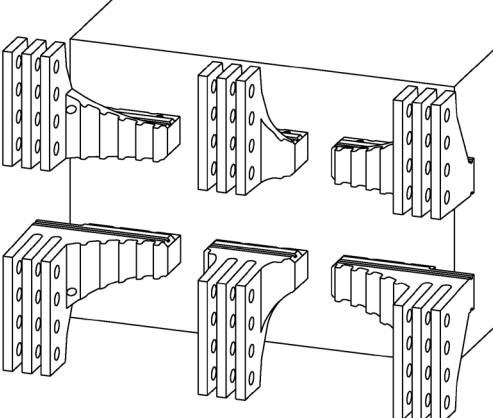
Take 3-pole product as an example:

	<p>Frame size I:</p> <p>≤ 1250 A, N/S class; 1600 A, N class; 1600 A, S class;</p>
	<p>Frame size II:</p> <p>≤ 2500 A 3200 A</p> <p>Vertical terminals left and right asymmetrical</p>

	<p>Frame size II:</p> <p>4000 A</p> <p>Vertical terminals left and right asymmetrical</p> <p>Only suitable for Circuit Breakers with the order number designation: 3WT840 _ - _ _ _ 2 - _ _ _ _</p>
	<p>Frame size II:</p> <p>4000 A</p> <p>Vertical terminals left and right asymmetrical</p>

Guide frame

Take 3-pole product as an example:

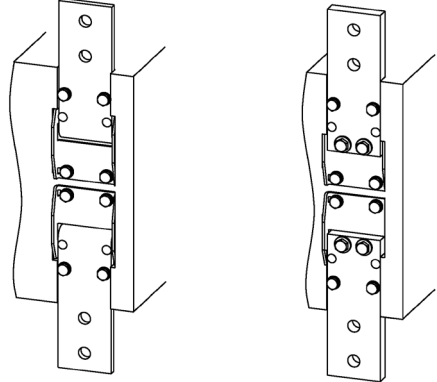
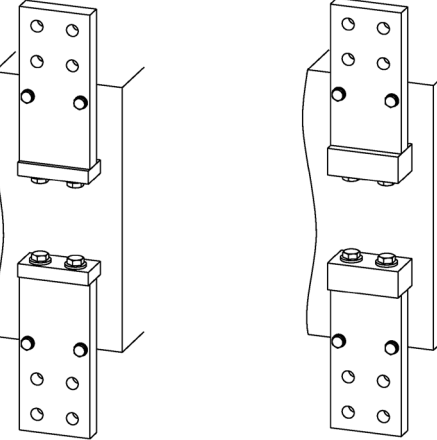
	<p>Frame size I:</p> <p>≤ 1250 A, N/S class; 1600 A, N class; 1600 A, S class;</p>
	<p>Frame size II:</p> <p>≤ 2500 A 3200 A</p> <p>Vertical terminals left and right asymmetrical</p>
	<p>Frame size II:</p> <p>3800 A</p> <p>Vertical terminals left and right asymmetrical</p>
	<p>Frame size II:</p> <p>4000 A</p> <p>Vertical terminals left and right asymmetrical</p>

5.1.3 Front connection

Fixed-mounted breaker

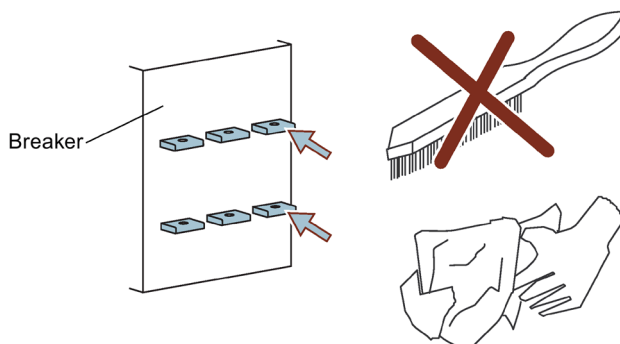
	<p>Frame size I:</p> <p>≤ 1250 A, N/S class; 1600 A, N class; 1600 A, S class;</p> <p>Front connection with double hole (holes according to DIN 43673)</p>
	<p>Frame size II:</p> <p>≤ 2500 A 3200 A</p> <p>Front connection with double hole (holes according to DIN 43673)</p>

Guide frame

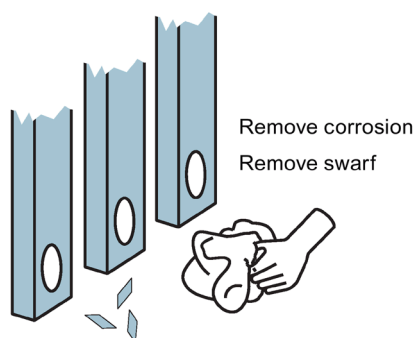
	<p>Frame size I:</p> <p>≤ 1250 A, N/S class; 1600 A, N class; 1600 A, S class;</p> <p>Front connection with double hole (holes according to DIN 43673)</p>
	<p>Frame size II:</p> <p>≤ 2500 A 3200 A</p> <p>Front connection with double hole (holes according to DIN 43673)</p>

5.2 Connecting the main conductor

Cleaning the main conductor connection



Cleaning the copper bars



Main conductor connection

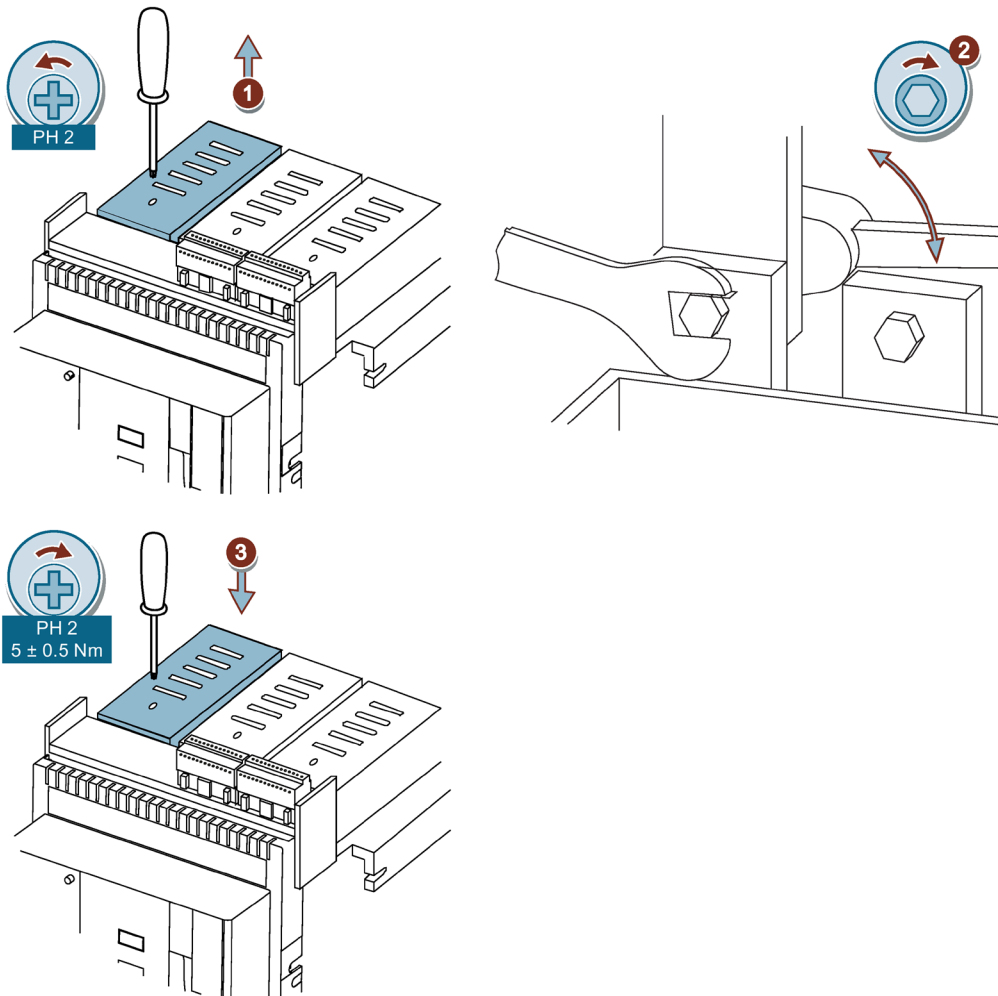
Terminal screws with strain washers (internal diameter = 12 mm to DIN 6769-Fst)	M12
Recommended tightening torque	70 Nm
Required screw strength	8.8 to DIN 267

Connecting the Circuit Breaker with front connections

1. Disconnect the main/control circuits from the power supply and set the withdrawable Circuit Breaker to the maintenance position.
2. Open the Circuit Breaker mechanically.

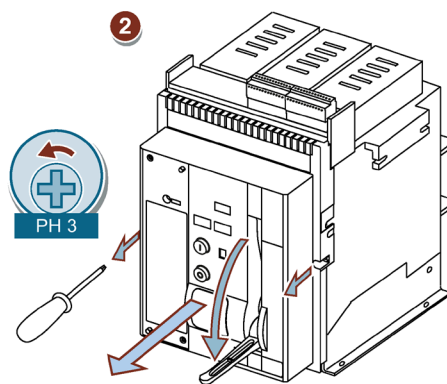
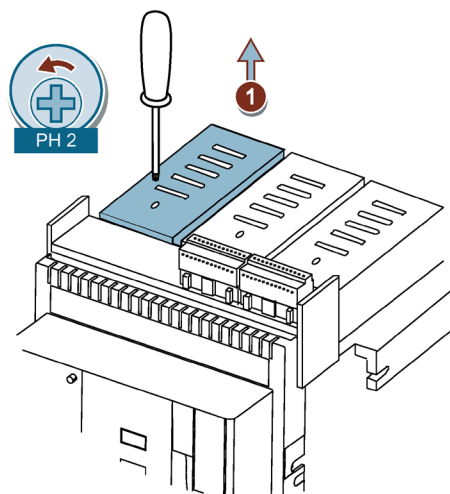
Please see chapter Preparatory work (Page 104)

In systems with connection points accessible from the rear

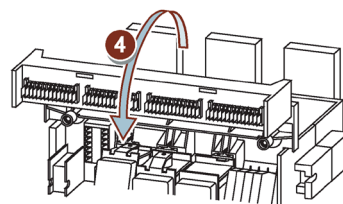
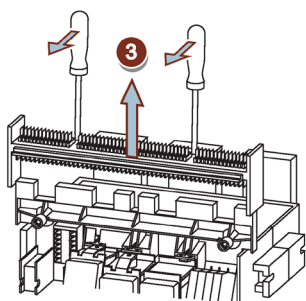


1. Remove the arc chutes.
2. Secure the system-side rails.
3. Attach arc chutes

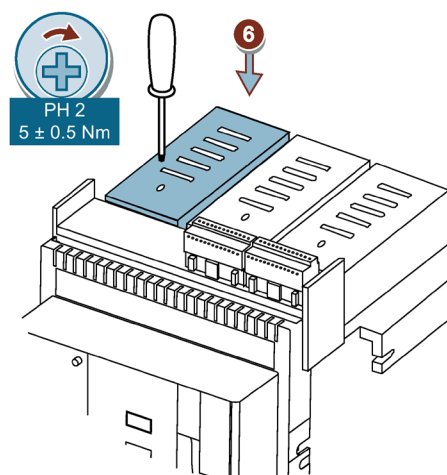
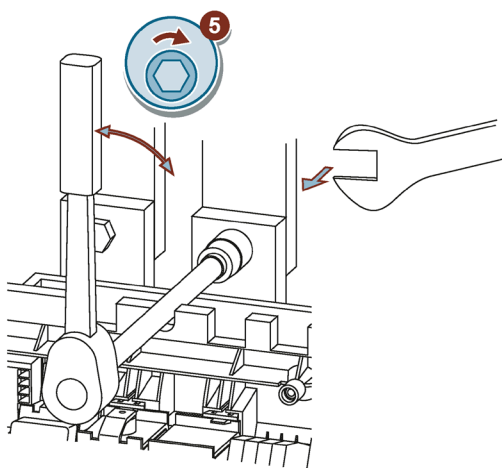
In systems with connection points not accessible from the rear



1. Remove the arc chutes.
2. Remove the screws and pull out the operator panel.

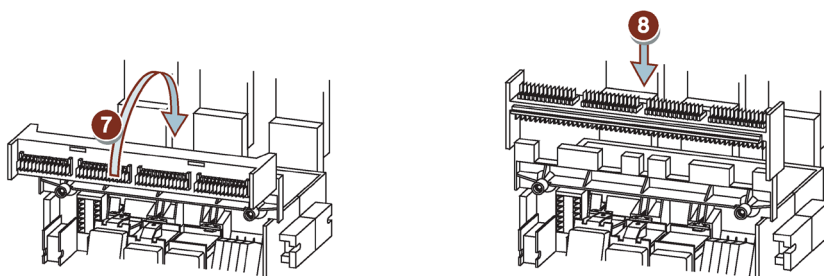


3. Unlock the secondary disconnect and remove it by pulling it up.
4. Swing the secondary disconnect forward.

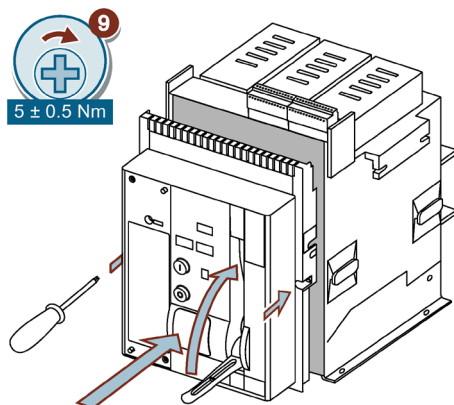


5. Secure the system-side rails.
6. Attach arc chutes

5.2 Connecting the main conductor



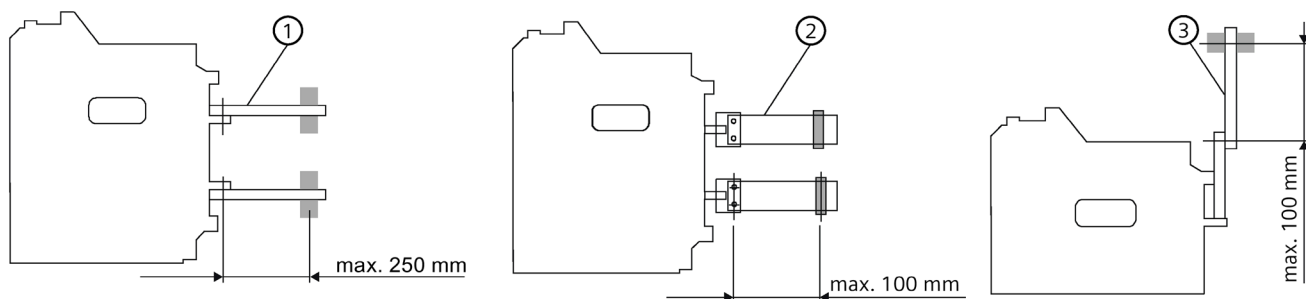
- 7. Swing the secondary disconnect backward.
- 8. Snap on the secondary disconnect.



- 9. Attach and secure the operator panel.

Supporting the main conductor

Reinforcing the main conductor



- ① Horizontal connection
- ② Vertical connection
- ③ Front connection

Recommended tightening torque $70 \pm 7 \text{ Nm}$

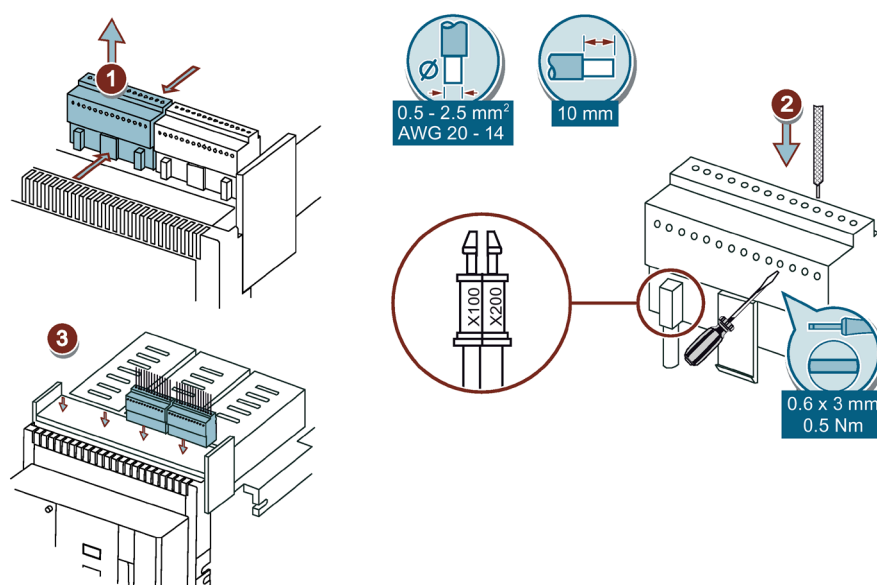
5.3 Connecting the auxiliary conductor

! WARNING

This is Version 2 breaker, and the pin of auxiliary & control circuit assignment has been changed. Please check the wiring according to circuit diagram. Wiring error will cause equipment damage or personal injury!

For fixed-mounted Circuit Breakers

Conductor connection to connector



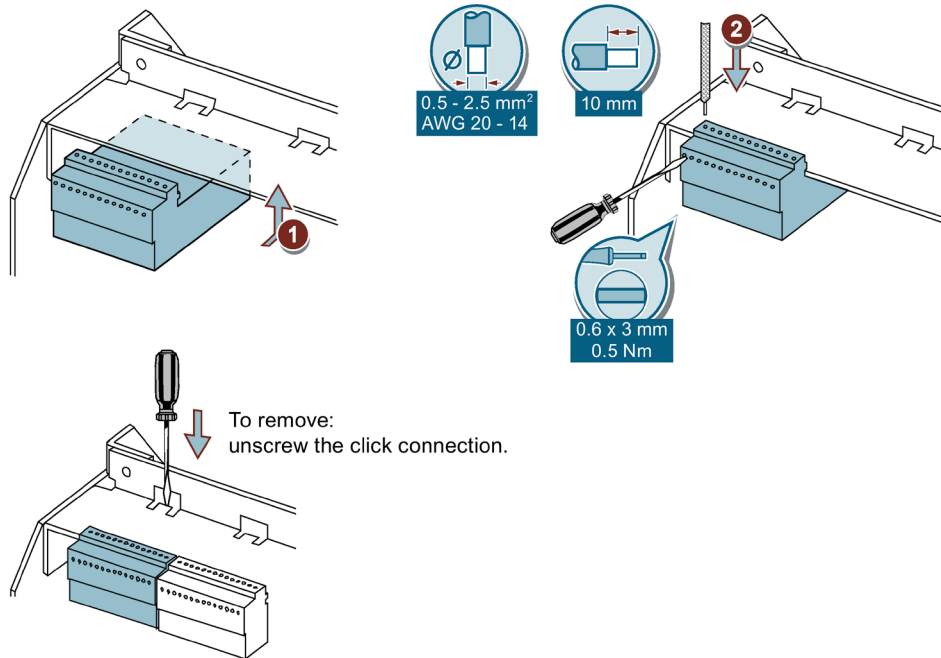
1. Release latching.
2. Connect the conductor (note the coding).
3. Attach the encoded connector.

Note

Route the auxiliary conductor only in the front section of the Circuit Breaker.

For withdrawable Circuit Breakers

Connection between conductor and connector

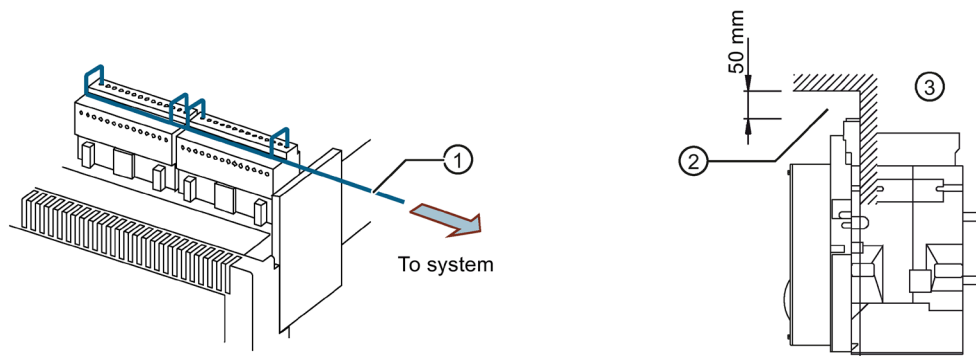


1. Connect the connector.
2. Connect the conductor.

Note

Route the auxiliary conductor only in the front section of the Circuit Breaker.

System-side routing of auxiliary conductor



- ① Auxiliary conductor
- ② Area in which auxiliary conductor is routed
- ③ Area in which auxiliary conductor must not be routed

Article No. for spare part

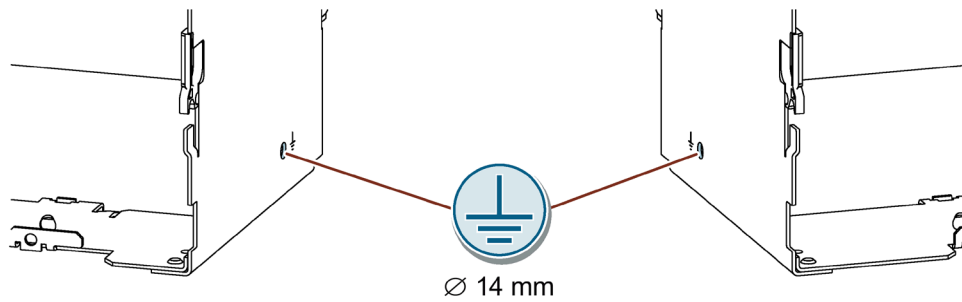
Description	Article No.
Auxiliary supply connector for fixed-mounted Circuit Breakers	3WT9825-1JC00
Auxiliary supply connector for guide frame	3WT9827-1JA00

5.4 Connection for protective conductor

Fixed-mounted Circuit Breaker



Guide frame



Connection for protective conductor.

Electronic components

6.1 Electronic Trip Unit (ETU) - functional overview

NOTICE

We have checked the content of this manual to ensure that it is consistent with the hardware and software described. Discrepancies cannot be wholly excluded, however, which means that we cannot assume responsibility for the correctness of the information provided here.

The information in this manual is reviewed on a regular basis and any necessary corrections are included in subsequent editions.

Overcurrent protection settings

⚠ CAUTION

Adjust parameters only when the Circuit Breaker is switched off.

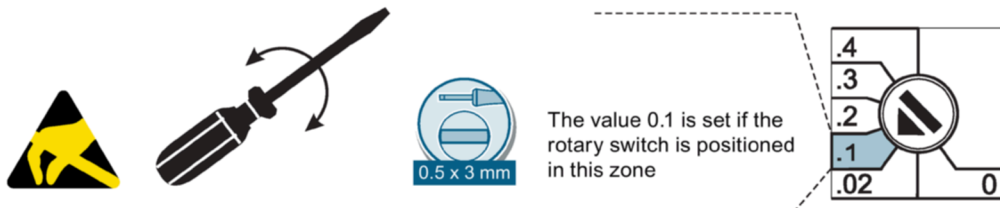
If the parameters are modified with the Circuit Breaker switched on, this can trip the Circuit Breaker unintentionally.

⚠ CAUTION

When planning a project and considering selectivity it has to be ensured loads carried by the Circuit Breaker will not exceed the breaking capacity stated in the 3WT catalogue.

Upstream protection equipment has to be set in a way, that these faults are interrupted safely.

All parameters are adjusted with rotary coding switches.

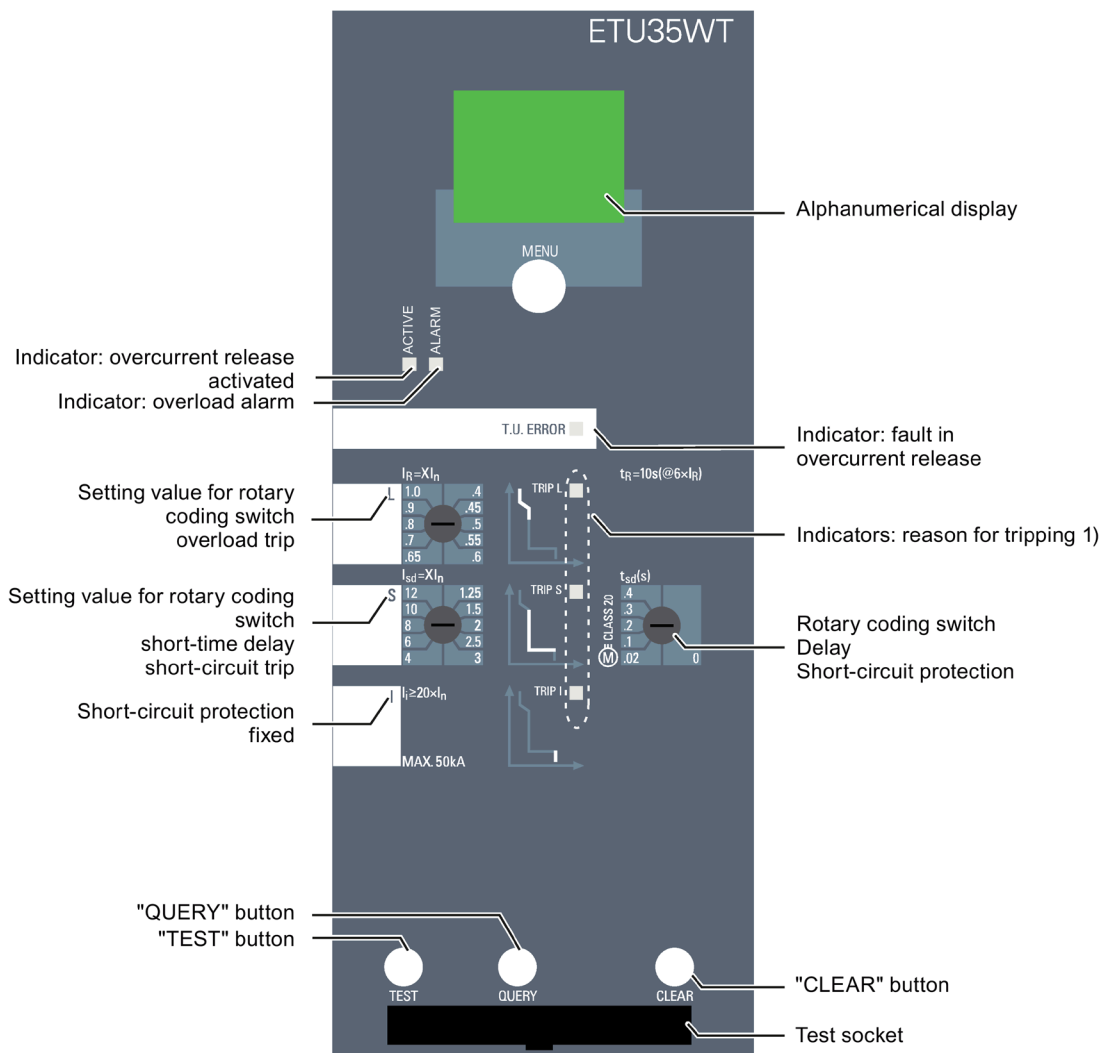


Overview of functions

Functions	Electronic trip unit			
	ETU35WT	ETU37WT	ETU45WT	ETU47WT
LT: Overload protection (Long time), L-tripping	✓	✓	✓	✓
Thermal memory can be switched on/off	—	—	✓	✓
ST: Short-time delay short-circuit protection (Short time), S-tripping	✓	✓	✓	✓
Short-time can be switched ON/OFF	—	—	✓	✓
Short-time delay short-circuit protection to I^2t	—	—	✓	✓
INST: Instantaneous short-circuit protection (Instantaneous), I-tripping	✓ ¹⁾	✓ ¹⁾	✓	✓
Instantaneous can be switched on/off	—	—	✓	✓
N: Neutral conductor protection (N Neutral), N-tripping	—	✓	✓	✓
Neutral conductor protection can be switched on/off	—	✓	✓	✓
GF: Ground-fault protection, G-tripping	—	✓	—	✓
Ground-fault characteristic can be switched to I^2t	—	—	—	✓
Ground-fault alarm	—	—	—	✓
Load monitoring	—	—	✓	✓
Leading signal "L-tripping"	—	—	✓	✓
Motor protection function	✓	✓	✓	✓
Alphanumerical display	✓	✓	✓	✓
Communication via Modbus RTU	—	—	○	○
Metering function	—	—	○	○
Parameterization by rotary coding switches	✓	✓	✓	✓
Remote parameterization of additional functions	—	—	✓	✓
Provision for connecting to an external 24 V DC power supply	—	—	○ ²⁾	○ ²⁾

- ✓ Standard
- Optional
- Not available
- ¹⁾ Fixed
- ²⁾ Only available for communication

6.2 ETU35WT



- 1) The reason for tripping is stored for at least two days provided that the electronic trip unit was active for at least 20 minutes prior to tripping.

NOTICE

To protect the electrostatically-sensitive devices, the enclosed protective cap must be placed on the test socket.

Before the protective cap is removed, the breakers must be connected to ground, and the operators must have the same potential.

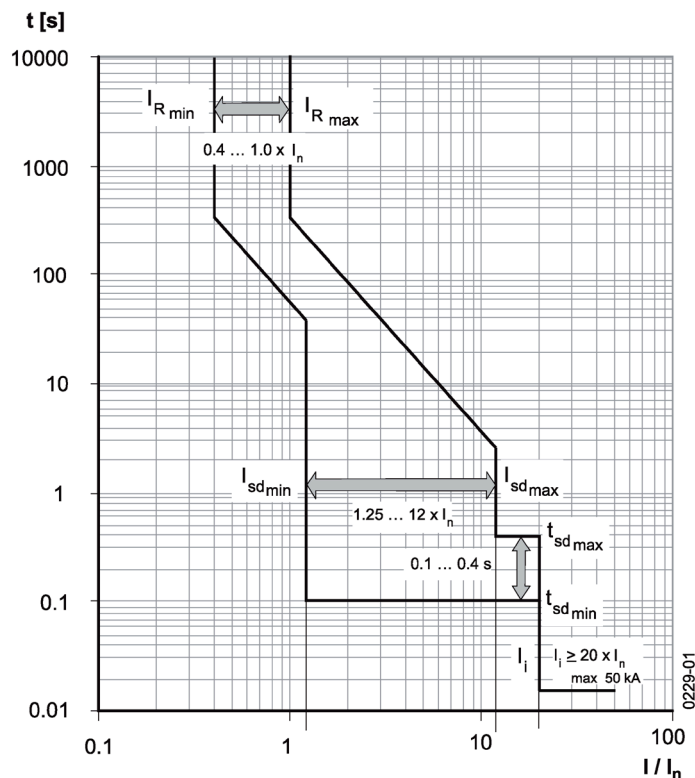
Protection functions

- LT: Overload protection (Long time), L-tripping (Page 65)
- ST: Short-time delay short-circuit release (Short time), S tripping (Page 66)
- INST: Instantaneous short-circuit release (Instantaneous), I-tripping (Page 67)

Characteristic curves

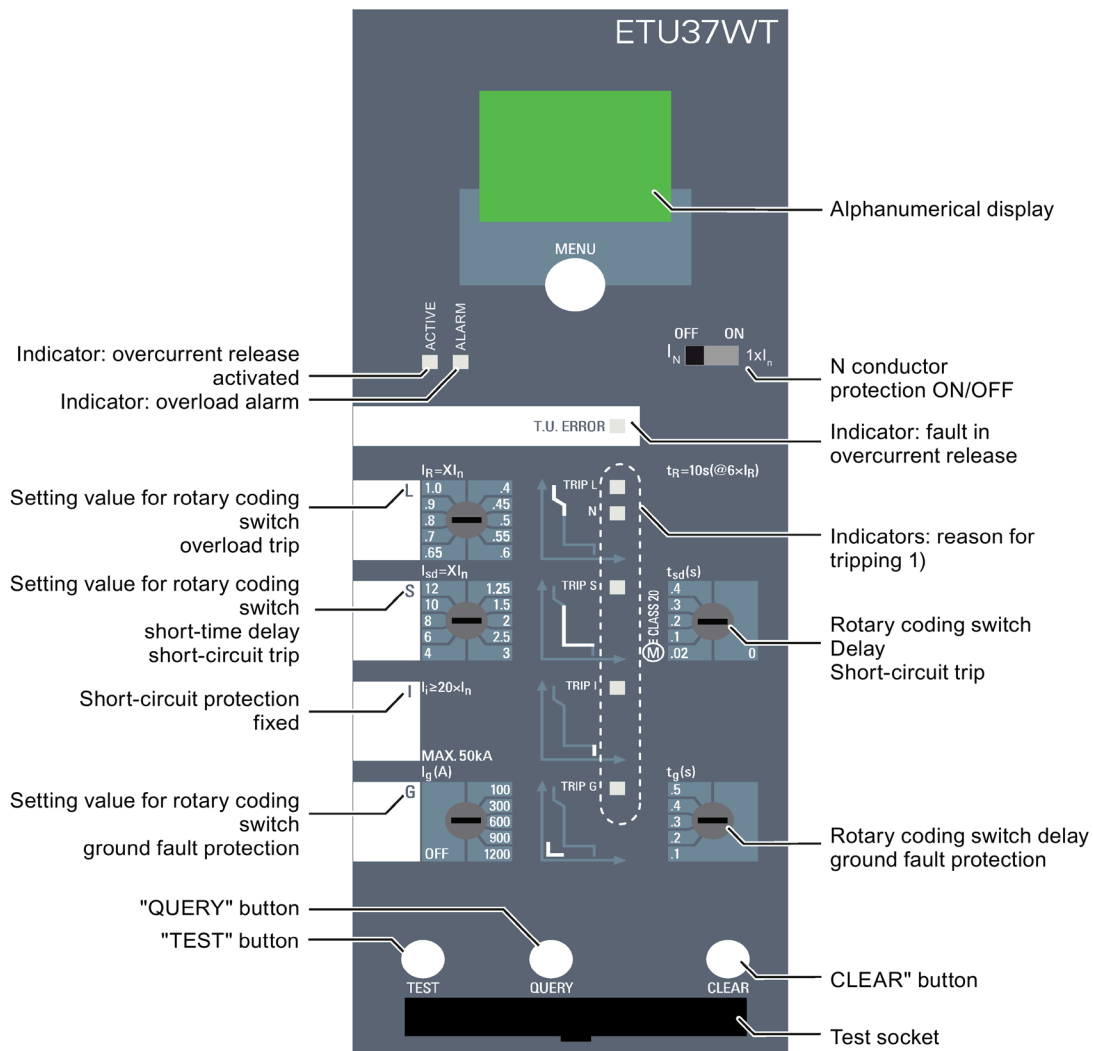
The diagram below only shows the setting ranges of the different parameters. Tolerance ranges are not taken into account here.

L, S, I tripping operation



With a one-pole load in the lowest rated current range, the response times of the short-circuit release can increase by approx. 10 % and the tripping times by approx. 15 % with respect to the characteristic curve.

6.3 ETU37WT



- 1) The reason for tripping is stored for at least two days provided that the electronic trip unit was active for at least 20 minutes prior to tripping.

NOTICE

To protect the electrostatically-sensitive devices, the enclosed protective cap must be placed on the test socket.

Before the protective cap is removed, the breakers must be connected to ground, and the operators must have the same potential.

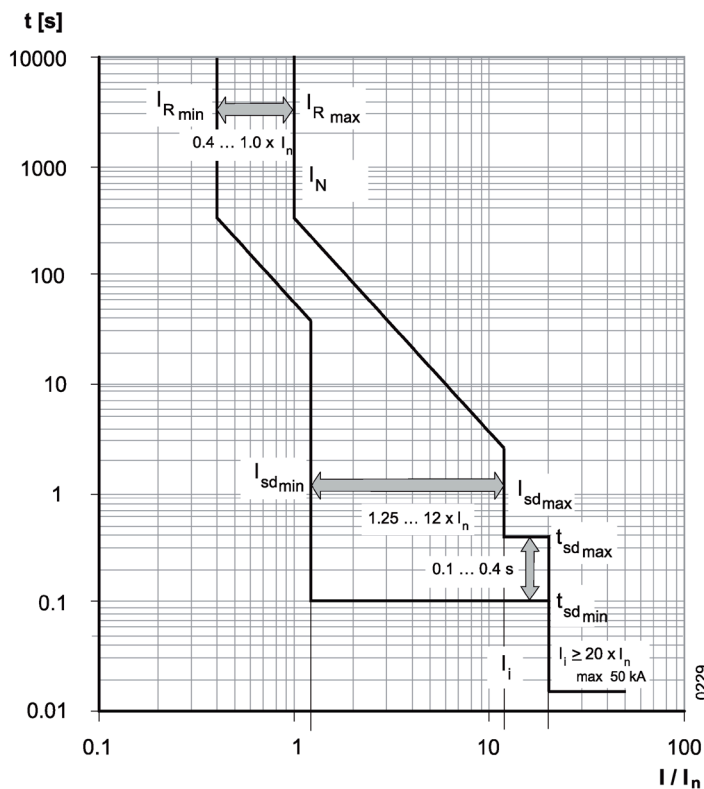
Protection functions

- LT: Overload protection (Long time), L-tripping (Page 65)
- ST: Short-time delay short-circuit release (Short time), S tripping (Page 66)
- INST: Instantaneous short-circuit release (Instantaneous), I-tripping (Page 67)
- GF: Ground-fault protection (Ground-fault), G-tripping (Page 67)
- N: Neutral conductor protection (Neutral), N-tripping (Page 68)

Characteristic curves

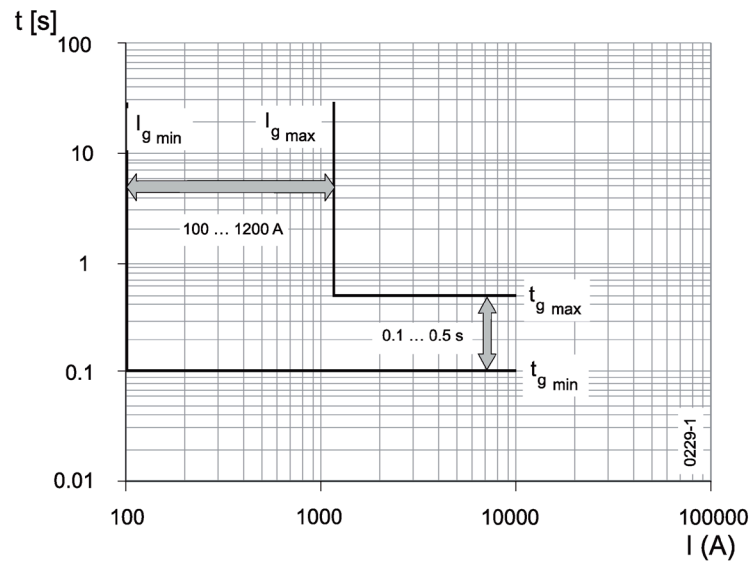
The diagram below only shows the setting ranges of the different parameters. Tolerance ranges are not taken into account here.

L, S, I, N tripping operation



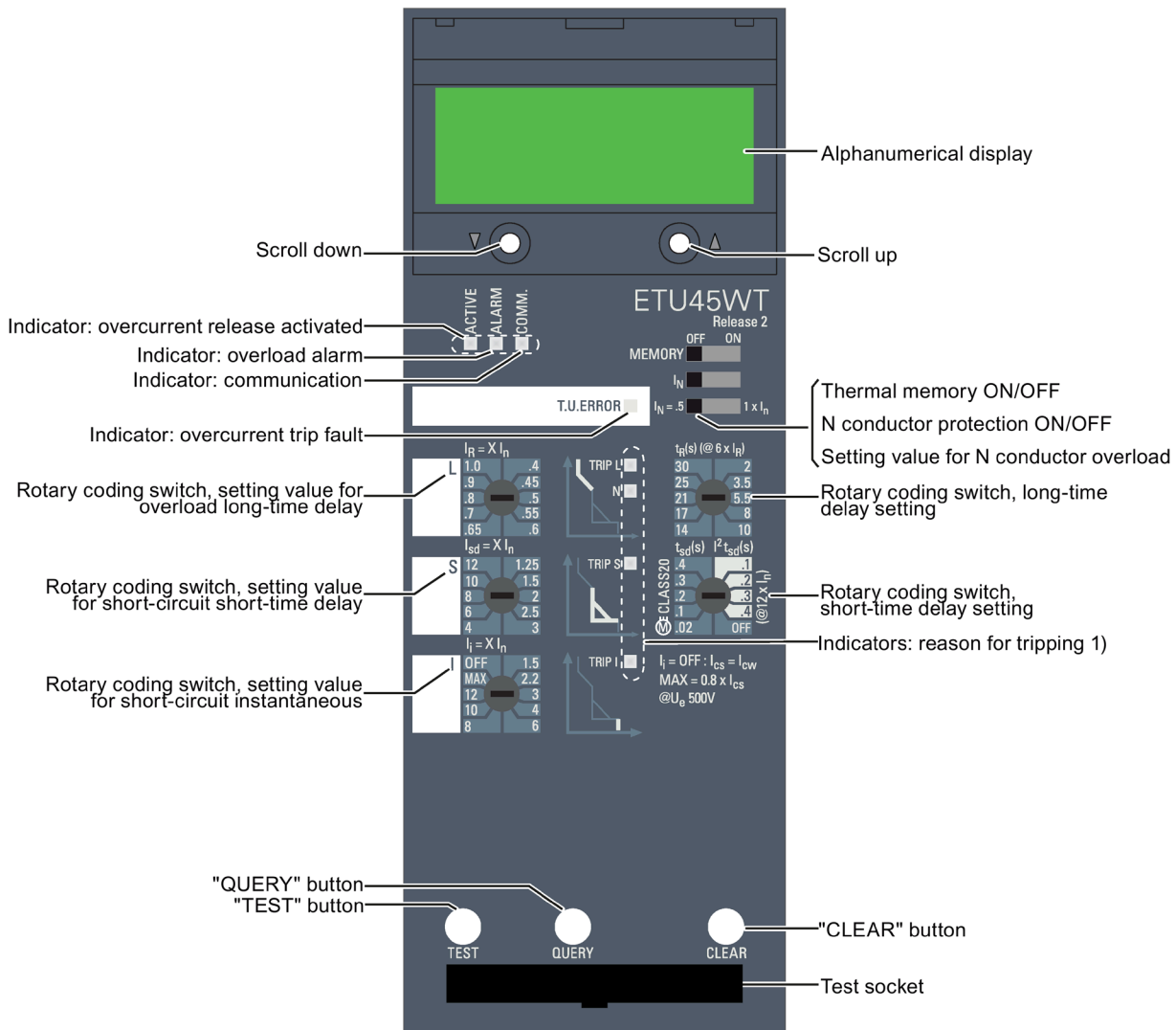
With a one-pole load in the lowest rated current range, the response times of the short-circuit release can increase by approx. 10 % and the tripping times by approx. 15 % with respect to the characteristic curve.

G tripping operation



Due to the activation limits of 150 A (FSI) and 200 A (FSII), a ground fault response value of 100 A cannot be ensured with a one-phase load. In this case, the minimum response value is $I_g = 300$ A.

6.4 ETU45WT



1) The reason for tripping is stored for at least two days provided that the electronic trip unit was active for at least 20 minutes prior to tripping.

NOTICE

To protect the electrostatically-sensitive devices, the enclosed protective cap must be placed on the test socket.

Before the protective cap is removed, the breakers must be connected to ground, and the operators must have the same potential.

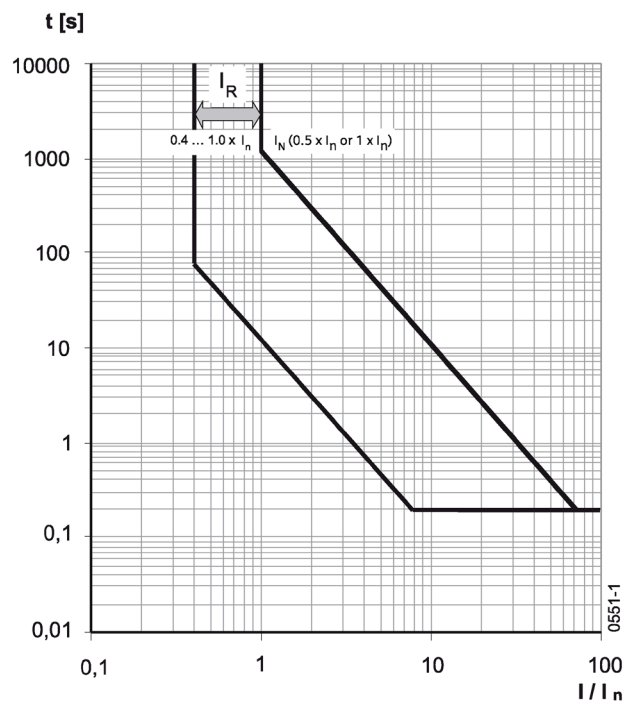
Protection functions

- LT: Overload protection (Long time), L-tripping (Page 65)
- ST: Short-time delay short-circuit release (Short time), S tripping (Page 66)
- INST: Instantaneous short-circuit release (Instantaneous), I-tripping (Page 67)
- N: Neutral conductor protection (Neutral), N-tripping (Page 68)

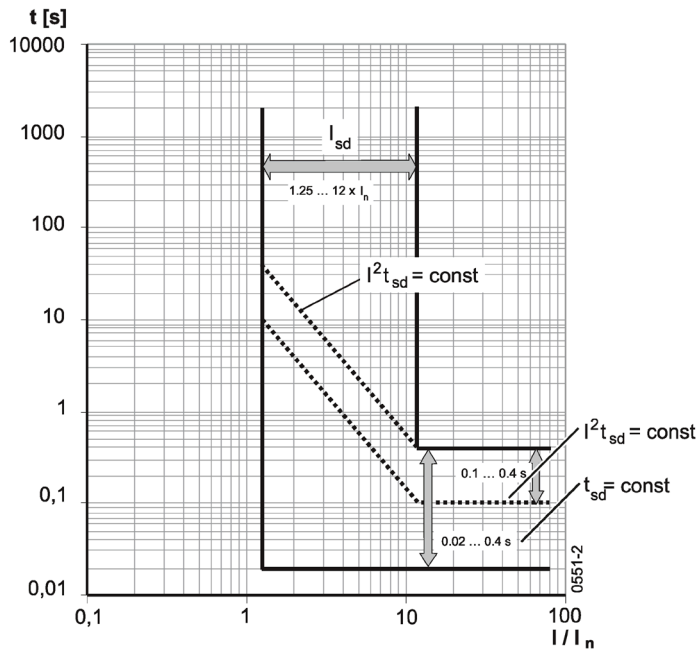
Characteristic curves

The diagram below only shows the setting ranges of the different parameters. Tolerance ranges are not taken into account here.

L, N tripping operation

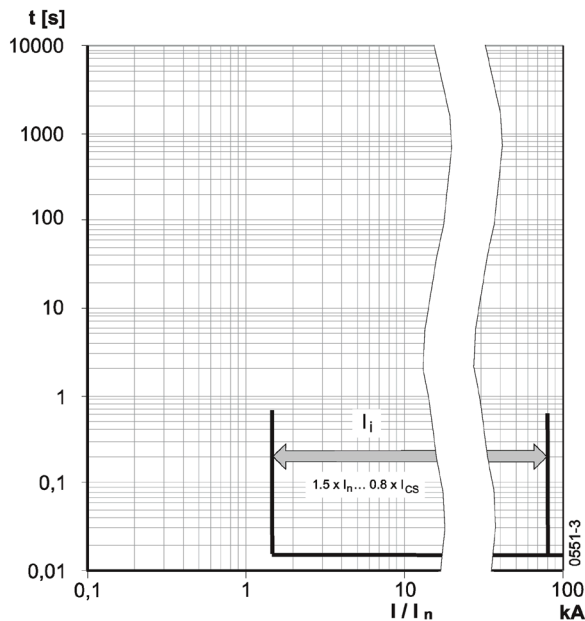


S tripping operation



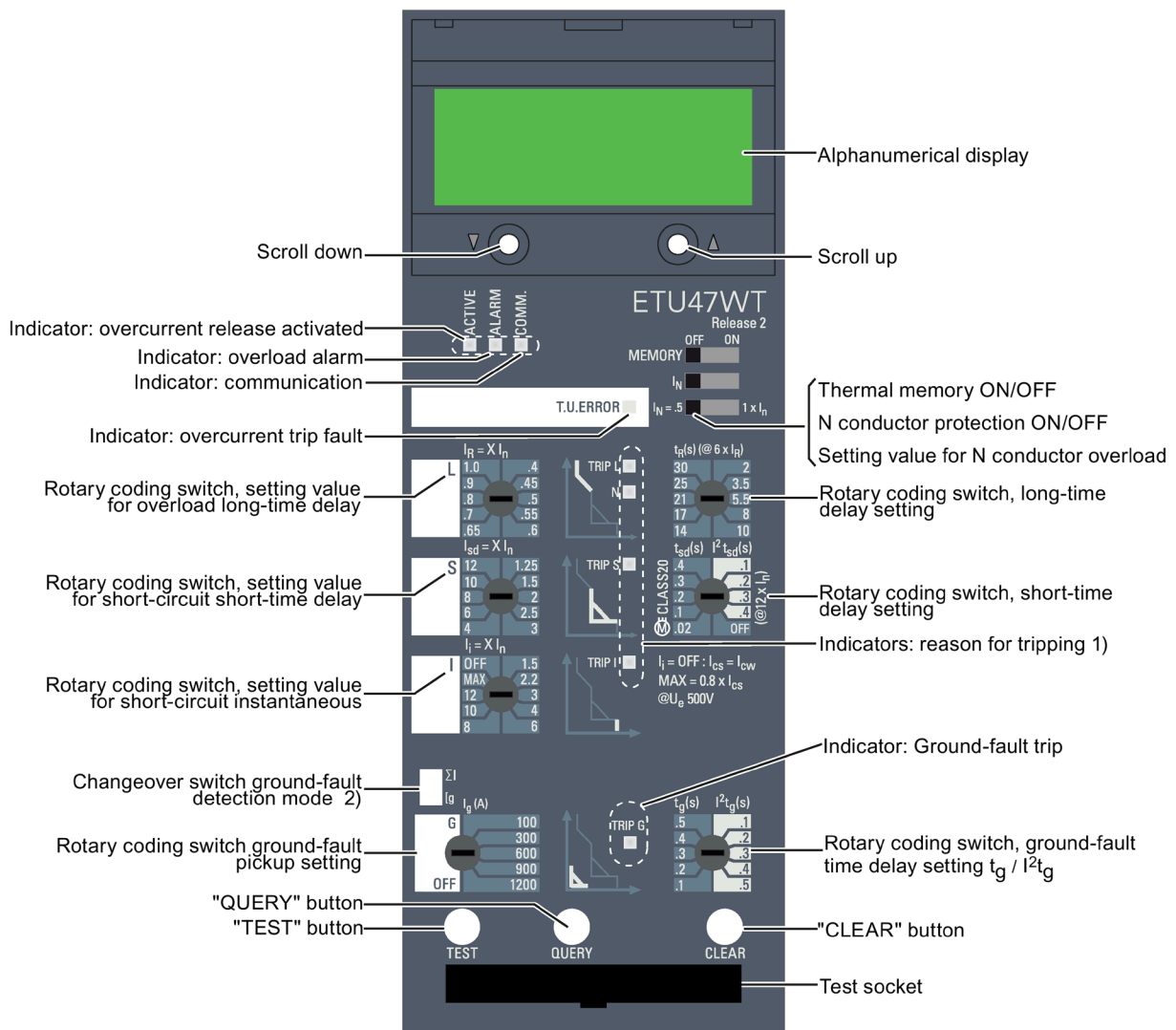
With a one-pole load in the lowest rated current range, the response times of the short-circuit release can increase by approx. 10 % and the tripping times by approx. 15 % with respect to the characteristic curve.

I tripping operation



With a one-pole load in the lowest rated current range, the response times of the short-circuit release can increase by approx. 10 % and the tripping times by approx. 15 % with respect to the characteristic curve.

6.5 ETU47WT



- 1) The reason for tripping is stored for at least two days provided that the electronic trip unit was active for at least 10 minutes prior to tripping.
- 2) The changeover switch is on the side of the ETU.

NOTICE

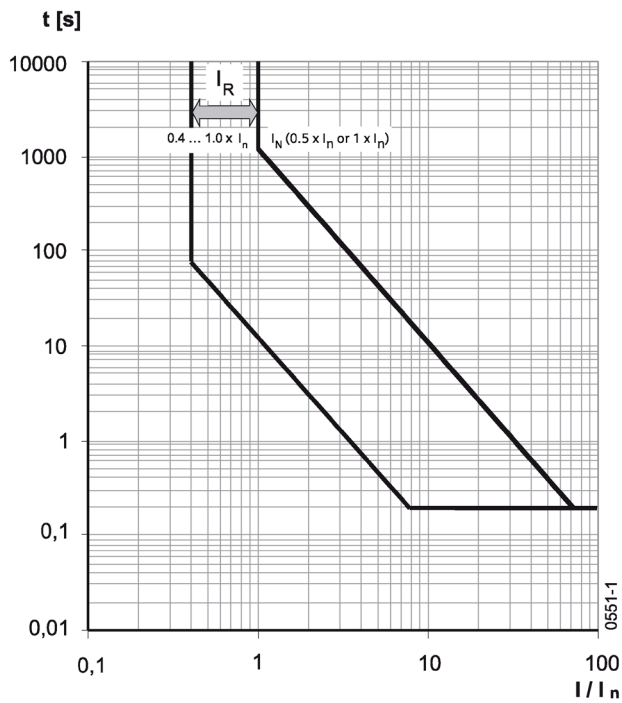
To protect the electrostatically-sensitive devices, the enclosed protective cap must be placed on the test socket.

Before the protective cap is removed, the breakers must be connected to ground, and the operators must have the same potential.

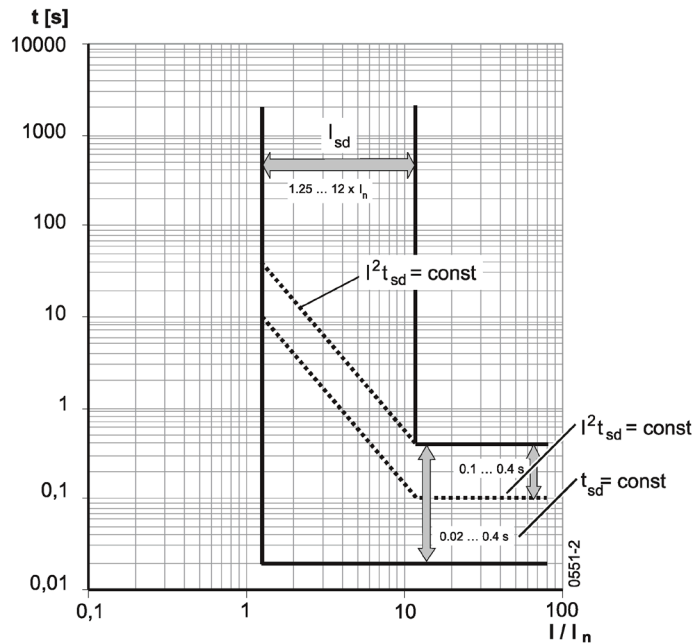
Protection functions

- LT: Overload protection (Long time), L-tripping (Page 65)
- ST: Short-time delay short-circuit release (Short time), S tripping (Page 66)
- INST: Instantaneous short-circuit release (Instantaneous), I-tripping (Page 67)
- GF: Ground-fault protection (Ground-fault), G-tripping (Page 67)
- N: Neutral conductor protection (Neutral), N-tripping (Page 68)

L, N tripping operation

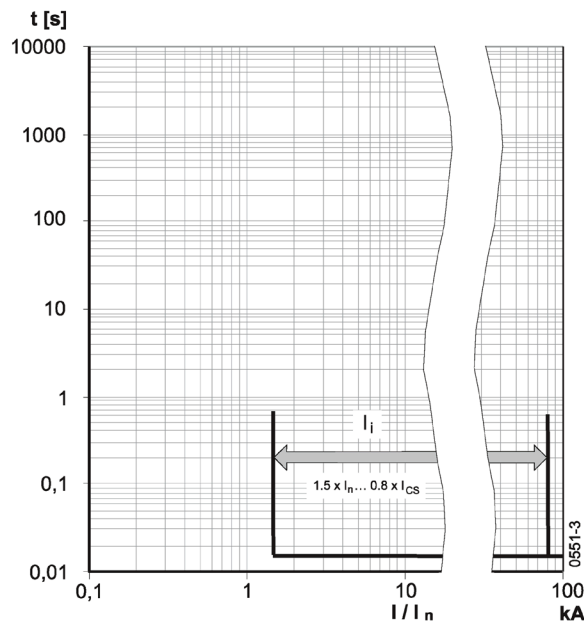


S tripping operation



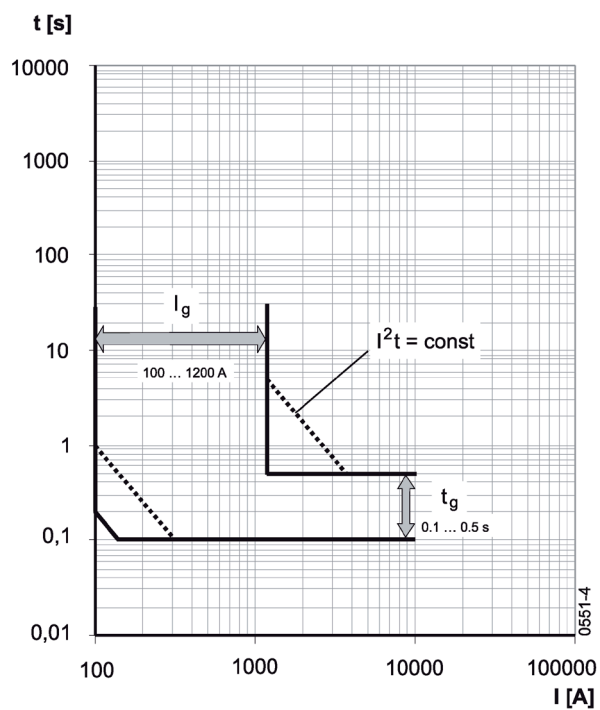
With a one-pole load in the lowest rated current range, the response times of the short-circuit release can increase by approx. 10 % and the tripping times by approx. 15 % with respect to the characteristic curve.

I tripping operation



With a one-pole load in the lowest rated current range, the response times of the short-circuit release can increase by approx. 10 % and the tripping times by approx. 15 % with respect to the characteristic curve.

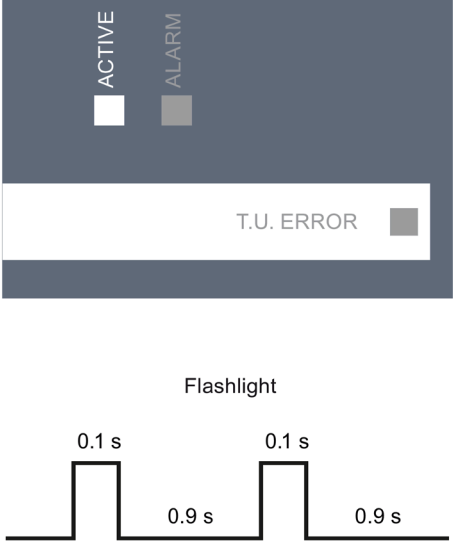
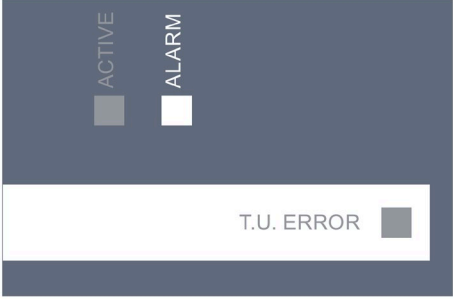

G tripping

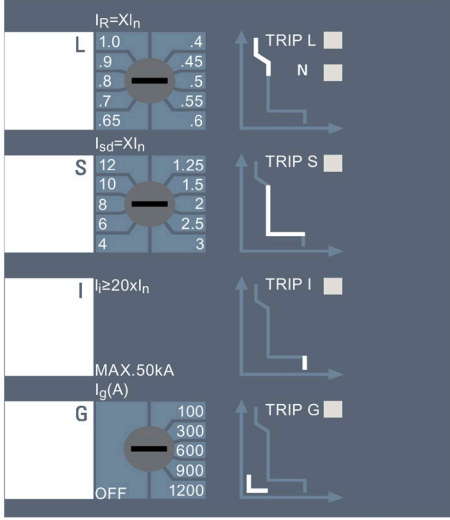
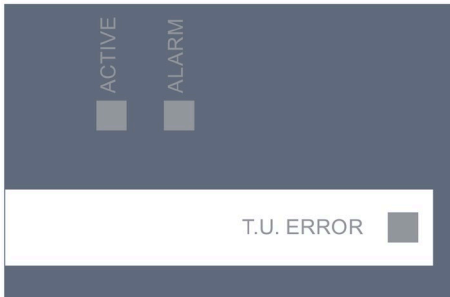


Due to the activation limits of 150 A (FSI) and 200 A (FSII), a ground fault response value of 100 A cannot be ensured with a one-phase load. In this case, the minimum response value is $I_g = 300$ A.

6.6 Indicators on the ETU

The indicators provided depend on the electronic trip unit type.

<p>Electronic trip unit is activated $I > I_{min}$ I_{min}: 150 A for frame size I 200 A for frame size II</p>	 <p>Flashlight</p> <p>0.1 s 0.1 s 0.9 s 0.9 s</p>
<p>Overcurrent alarm Continuous light, if $I \geq I_R$</p>	
<p>Communication active Another CubicleBUS participant has been recognised and communication started.</p>	

<p>Protection function has tripped (overcurrent)</p> <ul style="list-style-type: none"> Indicator lights up when the "QUERY" button is pressed Only one reason for tripping is displayed Only the last reason for tripping is displayed 	 <p>The panel displays four current settings sections, each with a rotary selector and a TRIP indicator:</p> <ul style="list-style-type: none"> L ($I_R = X I_n$): Values 1.0, .9, .8, .7, .65, .4, .45, .5, .55, .6. TRIP L indicator. S ($I_{sd} = X I_n$): Values 12, 10, 8, 6, 4, 1.25, 1.5, 2, 2.5, 3. TRIP S indicator. I ($I_t \geq 20 x I_n$): MAX. 50kA. TRIP I indicator. G ($I_g(A)$): Values 100, 300, 600, 900, 1200, OFF. TRIP G indicator.
<p>T.U. ERROR LED</p> <p>1st T.U. Error flashes: The protection function is restricted; the protection parameters are reset to the minimum values. Cause:</p> <ul style="list-style-type: none"> Electronic trip unit defective <p>2nd T.U. Error lights up continuously: The protection function is not ensured. Cause:</p> <ul style="list-style-type: none"> Electronic trip unit defective 	 <p>The panel shows two indicators at the top: ACTIVE and ALARM. Below them is a large white area with the text "T.U. ERROR" and a small grey square indicator to its right.</p>

6.7 Protection functions

6.7.1 Basic protection functions

The protection functions of the electronic trip unit are available without an additional auxiliary voltage. The required energy is supplied via current transformers integrated in the Circuit Breaker.

To evaluate the currents, the RMS value is calculated by the electronic components of the electronic trip unit.

The individual functions are parameterized by means of rotary coding switches.

Note

Tolerances for the setting currents

L: tripping operations between 1.05 and $1.2 \times I_R$

S: - 0 %, + 20 %

I: - 0 %, + 20 %

G: - 0 %, + 20 %

Tolerances for the tripping times

L: - 20 %, + 0 % for I^2t characteristic

S: - 0 %, + 60 ms or - 0 %, + 10 % for characteristic with fixed delay time

I: < 50 ms

G: - 0 ms, + 60 ms or - 0 %, + 10 % for characteristic with fixed delay time

6.7.2 LT: Overload protection (Long time), L-tripping

The setting value I_R determines the maximum continuous current at which the Circuit Breaker can operate without tripping. The time-lag class t_R determines for how long an overload can be present without causing a trip.

Setting values for I_R	
ETU35WT ... ETU47WT	$I_R = (0.4 / 0.45 / 0.5 / 0.55 / 0.6 / 0.65 / 0.7 / 0.8 / 0.9 / 1.0) \times I_n$

Setting values for t_R	
ETU35WT, ETU37WT	$t_R = 10 \text{ s (at } 6 \times I_R)$
ETU45WT, ETU47WT	$t_R = 2 / 3.5 / 5.5 / 8 / 10 / 14 / 17 / 21 / 25 / 30 \text{ s (at } 6 \times I_R)$

The tripping characteristic curve exhibits an I^2t characteristic.

When the motor protection function is active, a different t_R setting applies (see next page).

6.7.3 ST: Short-time delay short-circuit release (Short time), S tripping

With the electronic trip units, tripping caused by a short-circuit current I_{sd} can be delayed by t_{sd} .

This enables selectivity with respect to short-circuit protection in switchgear with more than one grading level.

Setting values for I_{sd}	
ETU35WT ... ETU47WT	$I_{sd} = (1.25 / 1.5 / 2 / 2.5 / 3 / 4 / 6 / 8 / 10 / 12) \times I_n$

Setting values for t_{sd}	
ETU35WT, ETU37WT	$t_{sd} = 0 / 0.02(M)^{1)} / 0.1 / 0.2 / 0.3 / 0.4 \text{ s}$
ETU45WT, ETU47WT	$t_{sd} = 0.02(M)^{1)} / 0.1 / 0.2 / 0.3 / 0.4 \text{ s}; \text{ OFF}$

1) The delay time 0.02 s is not a grading time.

In this setting, the motor protection function is activated.

With the setting value $t_{sd} = 0 \text{ s}$, the ETU35WT and ETU37WT electronic trip units can support instantaneous short-circuit protection with a variable response value that is lower than the fixed response value I_n .

The "OFF" setting for the ETU45WT and ETU47WT electronic trip units is used to deactivate short-time delay short-circuit protection.

The ETU45WT and ETU47WT electronic trip units support switching to a I^2t characteristic.

Motor protection function

A special protection function for electromotive drives is activated with the Circuit Breaker setting $t_{sd} = \textcircled{M}$ (0.02 s). This prevents the short-time delay short-circuit release from responding to the inrush peak of electric motors. At the same time, phase-failure protection is activated and the time constant for the internal, arithmetic simulation of the warming and cooling process is switched from plant protection to motor protection.

ETU35WT and ETU37WT:

When motor protection is active, the time-lag class is also set in such a way that, regardless of the default setting $t_R = 10 \text{ s}$, the tripping time for overload protection is $11.2 \text{ s} @ 7 \times I_R$, which means that it lies within the tolerance band of class 20 ($6 < t_p \leq 20 \text{ s}$).

ETU45WT and ETU47WT:

When motor protection is active, the time-lag class is not influenced automatically. For reaching the tripping time for overload protection in the tolerance band of class 20 set the parameter $t_R = 17 \text{ s}$.

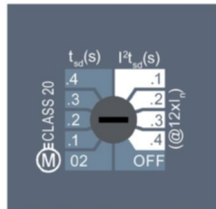
Short-time characteristic

The ETU45WT and ETU47WT electronic trip units support switching from a constant delay time to an I^2t characteristic. The delay time thus becomes dependent on the short-circuit current when the I^2t_{sd} value is constant, thereby improving selectivity with downstream fuses.

In this case, the setting options for the time-lag class change as follows:

Setting values for t_{sd}	
ETU45WT, ETU47WT	$t_{sd} = 0.1 / 0.2 / 0.3 / 0.4 \text{ s (at } 12 \times I_n)$

You can switch to the I^2t_{sd} -dependent characteristic using the t_{sd} rotary coding switch by setting it to one of the white values.



6.7.4 INST: Instantaneous short-circuit release (Instantaneous), I-tripping

When the setting value I_i is exceeded, this causes the Circuit Breaker to trip instantaneously.

Setting values for I_i	
ETU35WT, ETU37WT	$I_i \geq 20 \times I_n$ (fixed) MAX = 50 kA
ETU45WT, ETU47WT	OFF ¹⁾ $I_i = (1.5 / 2.2 / 3 / 4 / 6 / 8 / 10 / 12 \times I_n)$ MAX = $0.8 \times I_{cs}$

- ¹⁾ When the I tripping operation is deactivated, the breaking capacity of the Circuit Breaker drops to $I_{cs} = I_{cw}$.
- With the ETU45WT and ETU47WT electronic trip units, short-time delay (setting $t_{sd} = \text{OFF}$) and instantaneous ($I_i = \text{OFF}$) short-circuit protection cannot be deactivated simultaneously.
- If the setting $I_i = \text{OFF}$ is chosen when $t_{sd} = \text{OFF}$, the system automatically corrects itself to $I_i = 1.5 \times I_n$.

6.7.5 GF: Ground-fault protection (Ground-fault), G-tripping

If the electronic trip unit is equipped with a ground fault protection function, this can protect consumers against excessive ground fault currents.

Ground fault detection can be implemented in two ways:

- By means of vectorial summation of the currents of the external conductors and N conductor
- For ETU47WT: direct measurement of the ground fault current with a separate transformer 1200 A : 1 A

In conjunction with the delay time setting t_g , the response value I_g defines the disconnection of ground faults.

Setting values for I_g	
ETU37WT, ETU47WT	$I_g = 100 / 300 / 600 / 900 / 1200 \text{ A}$

Setting values for t_g	
ETU37WT, ETU47WT	$t_g = 0.1 / 0.2 / 0.3 / 0.4 / 0.5 \text{ s}$

The ETU47WT electronic trip unit supports switching to a I^2t characteristic.

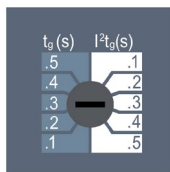
Ground-fault characteristic

Ground fault protection for the ETU47WT electronic trip unit supports switching from a constant delay time to an I^2t characteristic.

This results in a tripping characteristic with a current-dependent delay time when the I^2t_g value is constant and, in switchgear with more than one grading level, improves selectivity with respect to ground fault protection.

Setting values for t_g	
ETU47WT	$t_g = 0.1 / 0.2 / 0.3 / 0.4 / 0.5 \text{ (at } 3 \times I_g)$

You can switch to the I^2t_g -dependent characteristic using the t_g rotary coding switch (ETU47WT) by setting it to one of the white values.



6.7.6 N: Neutral conductor protection (Neutral), N-tripping

The ETU37WT ... ETU47WT electronic trip units allow the neutral conductor to be protected against overload. A current transformer for the neutral conductor (which can be retrofitted if necessary) is required for this purpose.

With respect to tripping, the same time-lag class t_R as that for the overload trip applies.

Setting values for I_N	
ETU37WT	$I_N = I_N; \text{ OFF}$
ETU45WT, ETU47WT	$I_N = (0.5 / 1.0) \times I_N; \text{ OFF}$

6.8 Additional functions

6.8.1 Phase-failure protection

When the Circuit Breaker setting is $t_{sd} = \textcircled{M}$ (0.02s), phase-failure protection is activated.

If the operational current on the phase with the lowest load is 50% less than the operational current of the phase with the highest load when phase-failure protection is active, the setting value I_R is automatically reduced to 80%. If the three phase currents do not differ by more than 50% with respect to each other, the setting value I_R applies.

6.8.2 Thermal memory (can be switched on/off)

The ETU45WT and ETU47WT electronic trip units enable the internal, arithmetic simulation of the thermal processes in downstream plants and consumers to continue even when the Circuit Breaker is open. This helps ensure effective protection against thermal overload even with frequent closing/opening operations and fluctuating loads.

Response in overload range:

- Above $1.125 \times I_R$: the system heats up strictly in accordance with the characteristic curve.

Response in the rated current range:

- Below $1.125 \times I_R$: no heating.
- The system cools down in accordance with the exponential function with a time constant of $18 \times t_R$ for plant protection or $10 \times t_R$ for motor protection.

Response when `_ParaSwitchTherm = ON`:

When the thermal memory is switched on, the thermal history is taken into account:

- After a tripping operation, the thermal memories of the phases are defaulted with the equivalent of heat of the warmest phase reduced to 90% (enables reactivation).
- The system cools down in accordance with the exponential function with a time constant of $18 \times t_R$ for plant protection or $10 \times t_R$ for motor protection.

Upon reactivation, the cooling during the deactivation phase is simulated by the software over max. 60 minutes.

Response when `_ParaSwitchTherm = OFF`:

When the thermal memory is switched off, the thermal history is not taken into account:

- Upon activation, the release always starts with heat memory ZERO.
- After a tripping operation, the thermal memories of the phases are set to ZERO.

The thermal memory can be activated by means of a slide switch (ETU45WT, ETU47WT).



6.9 Menus on the ETU35WT ETU37WT display

When you press the menu button briefly (< 1 s), you can switch from one menu to another. The following consecutive menu displays can be selected:

I1
... A

Current in phase L1

I2
... A

Current in phase L2

I3
... A

Current in phase L3

IN
... A

Current in neutral conductor
(for ETU37WT only)

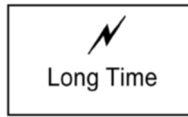
IG
... A

Ground fault current
(for ETU37WT only)

Imax
... A

Current of phase with highest load of L1, L2, L3, and N

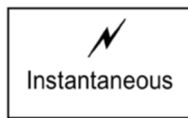
The reason for tripping is displayed during a tripping operation.



LT tripping operation



ST tripping operation



INST tripping operation



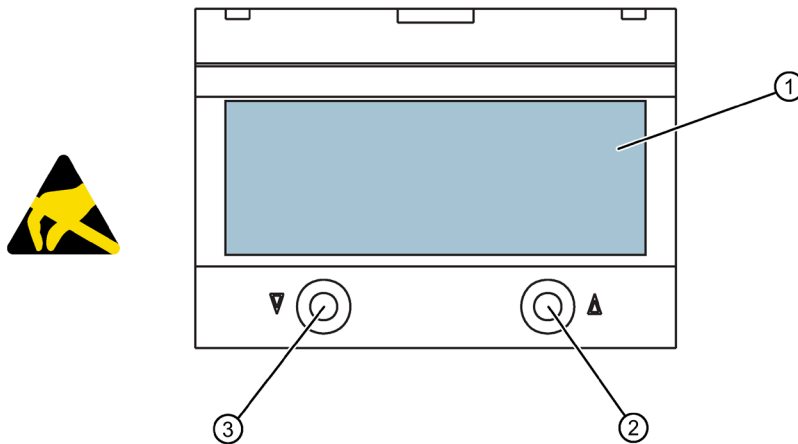
N tripping operation
(for ETU37WT only)



Ground-fault tripping
(for ETU37WT only)

6.10 Alphanumeric display of ETU45WT and ETU47WT

Design



- ① Screen (4 lines with 20 characters each)
- ② Up-key
- ③ Down-key

6.10.1 Modifying the displays inclination

At the factory, the alphanumeric display is installed with a downward inclination. However, it can be turned by 180°; the display is then inclined upwards.

! DANGER

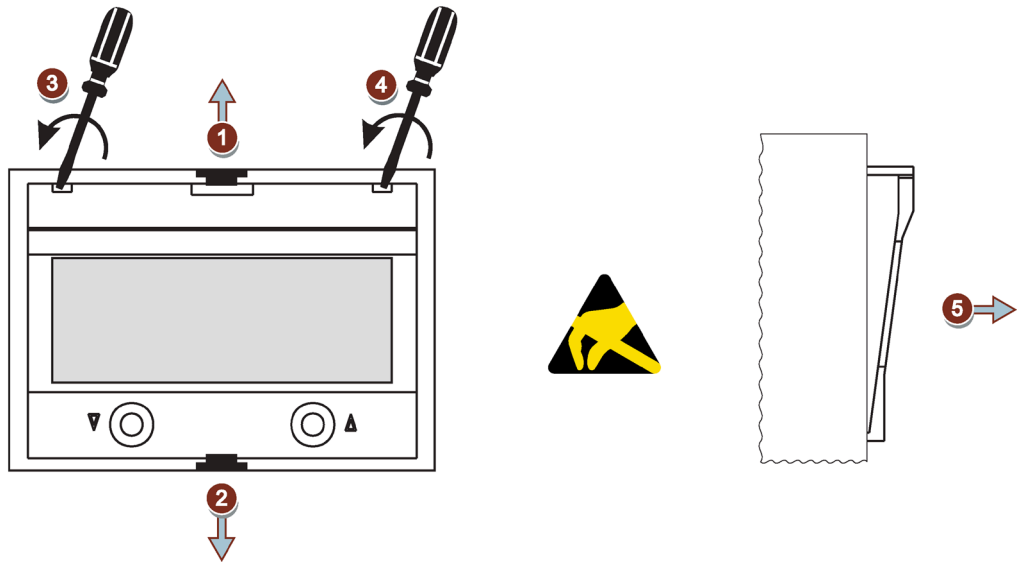
Hazardous voltage!

Will cause death, serious personal injury, or equipment / property damage.

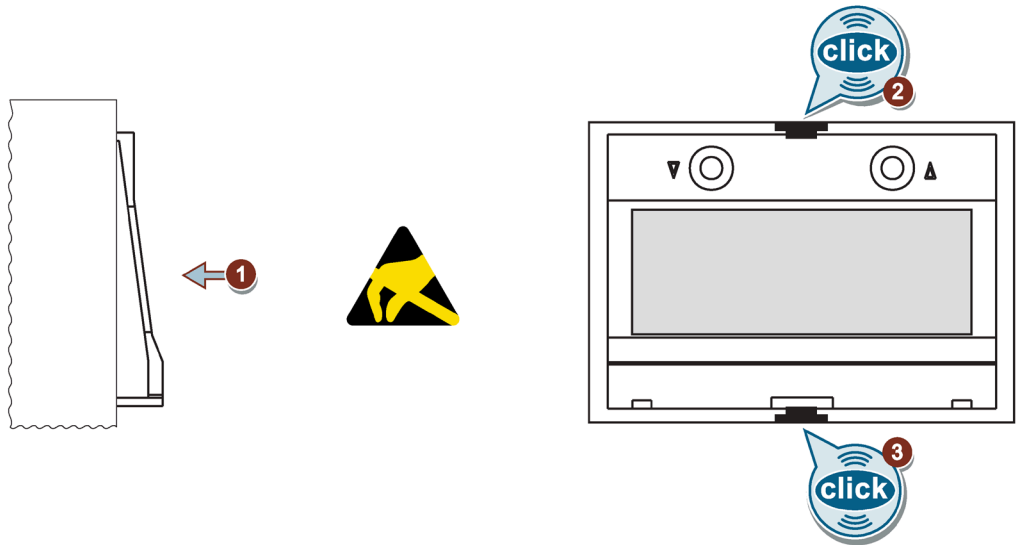
Disconnect power before working on this equipment.

- Switch off and discharge the storage spring
- Switch off external 24 V DC voltage supply, if applicable
- Remove trip unit sealing cap

Removing the display



Installing the display turned by 180° and latching it tight

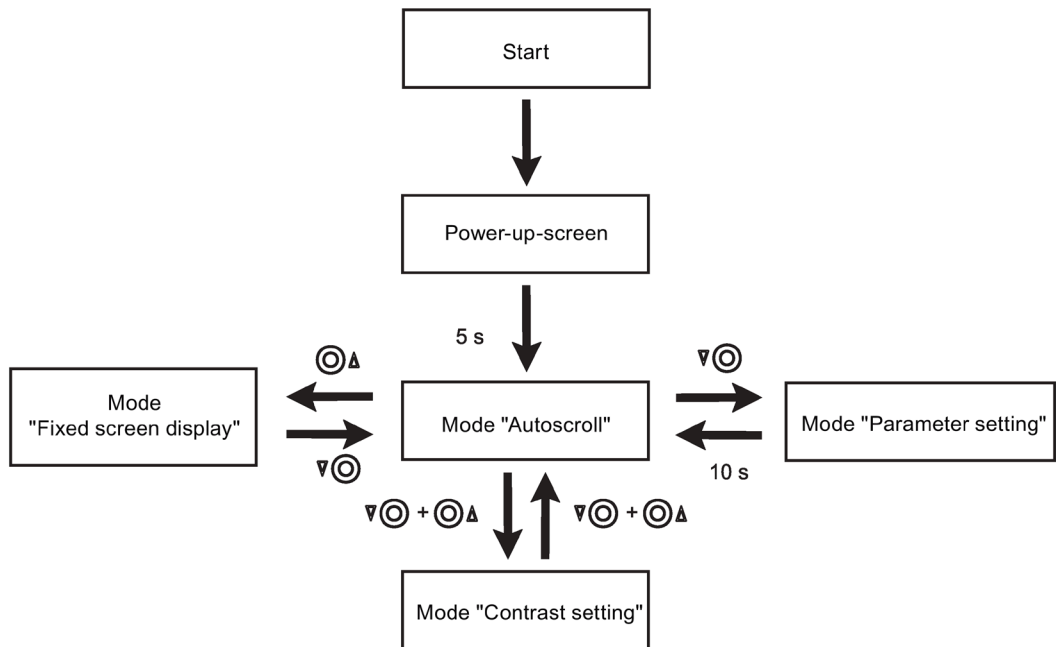


Switch on external 24 V DC voltage supply, if applicable

6.10.2 Menu structure

After the supply voltage has been applied, the display changes from "Power-up screen" to "Autoscroll" mode after about 5 s. Thereafter, further modes can be accessed by means of the two buttons.

Overview



"Autoscroll" mode

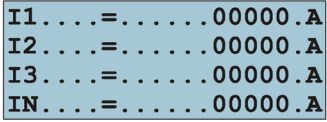
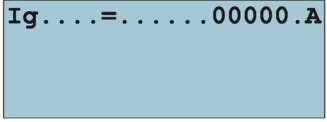
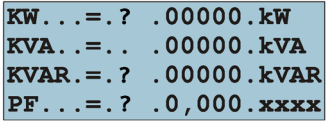
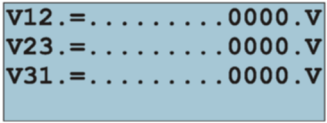
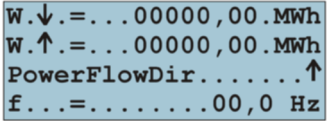
During normal operation, the display is in "Autoscroll" mode

To access Autoscroll mode, press the following button(s)	
In mode "Fixed screen display"	▽ ◎
In mode "Tripping counter reset"	▽ ◎ or ◎ ▽
In mode "Contrast setting"	▽ ◎ + ◎ ▽
In mode "Parameter setting"	Do not press any button for 10 seconds
In mode "Tripping info"	




In this mode, the display automatically changes to the next screen every 5 seconds.

If there is no metering module available, the display changes continuously between the screens 1 and 2.


If there is a metering module available, a total of five screens are displayed in "Autoscroll" mode.

Screens displayed in the "Autoscroll" mode	
without metering module	
Screen 1 	Current I ₁ Current I ₂ Current I ₃ Current I _N
Screen 2 	Ground-fault current I _g (A value is only displayed if a ground-fault protection module is fitted.)
with metering module installed, additionally	
Screen 3 	Active power P Apparent power S Reactive power Q Power factor
Screen 4 	Voltage U ₁₂ Voltage U ₂₃ Voltage U ₃₁
Screen 5 	Energy (positive direction) Energy (negative direction) Present direction of energy flow Frequency

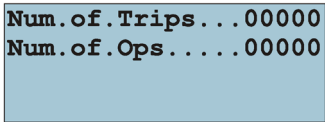
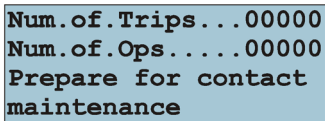
NOTICE
The data to be displayed are updated every time the screen page is set up again. No updates take place when a screen page is being displayed.




Button functions in the "Autoscroll" mode	
	Display is frozen Switchover to mode "Fixed screen display"
	Change to mode "Parameter setting"
	Change to mode "Contrast setting"

Mode "Fixed screen display"

To access "Fixed screen display" mode, press the following button:	
In "Autoscroll" mode	


In this mode, maintenance information is provided with the number of Circuit Breaker trips and switching operations as well as with maintenance instructions. The information displayed depends on the number of Circuit Breaker trips operations.


Screen 6 	Number of tripping operations Number of switching operations
	Number of tripping operations Number of switching operations Maintenance instructions

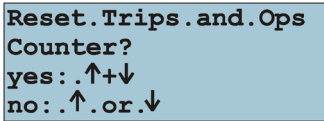
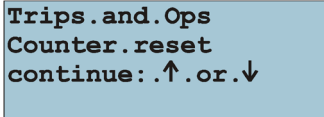
Button functions in mode "Fixed screen display"	
	Change to next higher screen level
	Change to "Autoscroll" mode
If screen 6 is displayed 	Change to mode "Tripping counter reset"







Submode "Tripping counter reset"

This mode offers the possibility to reset the counter for the trips and the switching operations to zero.


 CAUTION
If the counter is reset without contact maintenance having been performed, the maintenance information displayed will not correspond to the actual condition of the contacts. This can destroy the contacts.

To access "Tripping counter reset mode", press the following button(s)	
In the mode "Fixed screen display", when screen 6 is displayed	

Screens displayed in mode "Tripping counter reset"	
Screen 1 	This screen is used for safety queries. Reset the counter after contact maintenance only!
Screen 2 	Counter reset for trips and switching operations confirmed.


Button functions in mode "Tripping counter reset"	
If screen 1 is displayed	
 or 	Cancelling, no counter reset to zero Change to "Autoscroll" mode
 + 	Counter reset to zero Change to screen 2
If screen 2 is displayed	
 or 	Change to "Autoscroll" mode

Mode "parameter setting"

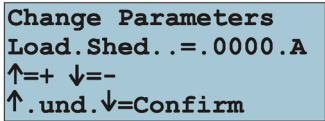
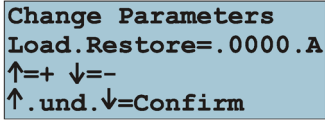
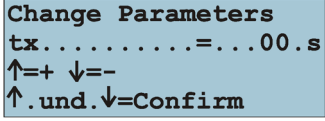
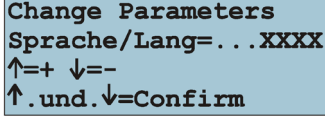
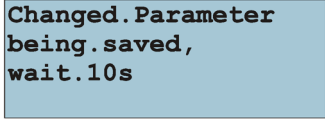
 CAUTION
Adjust parameters only when the Circuit Breaker is switched off. If the parameters are modified with the Circuit Breaker switched on, this can trip the Circuit Breaker unintentionally.

In this mode, the following parameters can be adjusted:




- load shedding
- load restore
- delay time for load shedding/load restore
- language setting for display

To access "Parameter setting" mode, press the following button(s):	
In "Autoscroll" mode	

6.10 Alphanumeric display of ETU45WT and ETU47WT


Screens displayed in the mode "Parameter setting"	
Screen 1 	Setting Load shedding
Screen 2 	Setting Load restore
Screen 3 	Setting Delay time Load shedding/load restore
Screen 4 	Setting Display language XXXX may be ENGL for english or DEUT for german (Remark: this is not available for Chinese version.)
Screen 5 	Parameter settings are being changed, switches to "Autoscroll" mode after 10 seconds

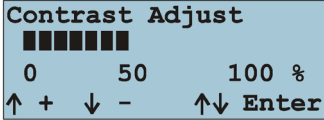
NOTICE
When screen 1, 2, 3 or 4 is displayed and no key is pressed within 10 seconds, mode "Parameter setting" is canceled. Any parameter changes performed are not accepted. Display switches back to "Autoscroll" mode




Button functions in mode "Parameter setting"	
	Increases the set value
	Reduces the set value
	Confirms the set value Switches to the next screen

Mode "Contrast setting"

In this mode, the contrast of the display can be adjusted.

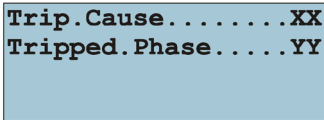
To access "Contrast setting" mode, press the following button(s):	
In "Autoscroll" mode	


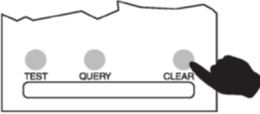
Screens displayed in the mode "Contrast setting"	
Screen 1 	Contrast setting The longer the bar, the higher the contrast

Button functions in mode "Contrast setting"	
	Increases the contrast
	Reduces the contrast
	Accepts the contrast, switch to the "Autoscroll" mode

Screen "Tripping info"

In this mode, there is an automatic change as soon as there is a tripping, provided that an external 24 V DC voltage supply has been connected.

Screens displayed in the mode "Tripping info"	
	Tripping type Phase affected XX may be: L, S, I, G, N YY may be: L1, L2, L3, N

Button functions in the mode "Tripping info"	
	Display of maintenance instructions If pressed again: Return to the mode "Tripping info"
	Press CLEAR-button Switches to "Autoscroll" mode

Screen "Display parameter changes"

The display automatically switches to this mode when a parameter has been changed via the rotary coding switches, provided an external 24 V DC voltage supply has been connected.

Screens displayed in mode "Display parameter changes"	
Parameter changed: xxxxxxx.=...00000.yyy	Display of the changed value N

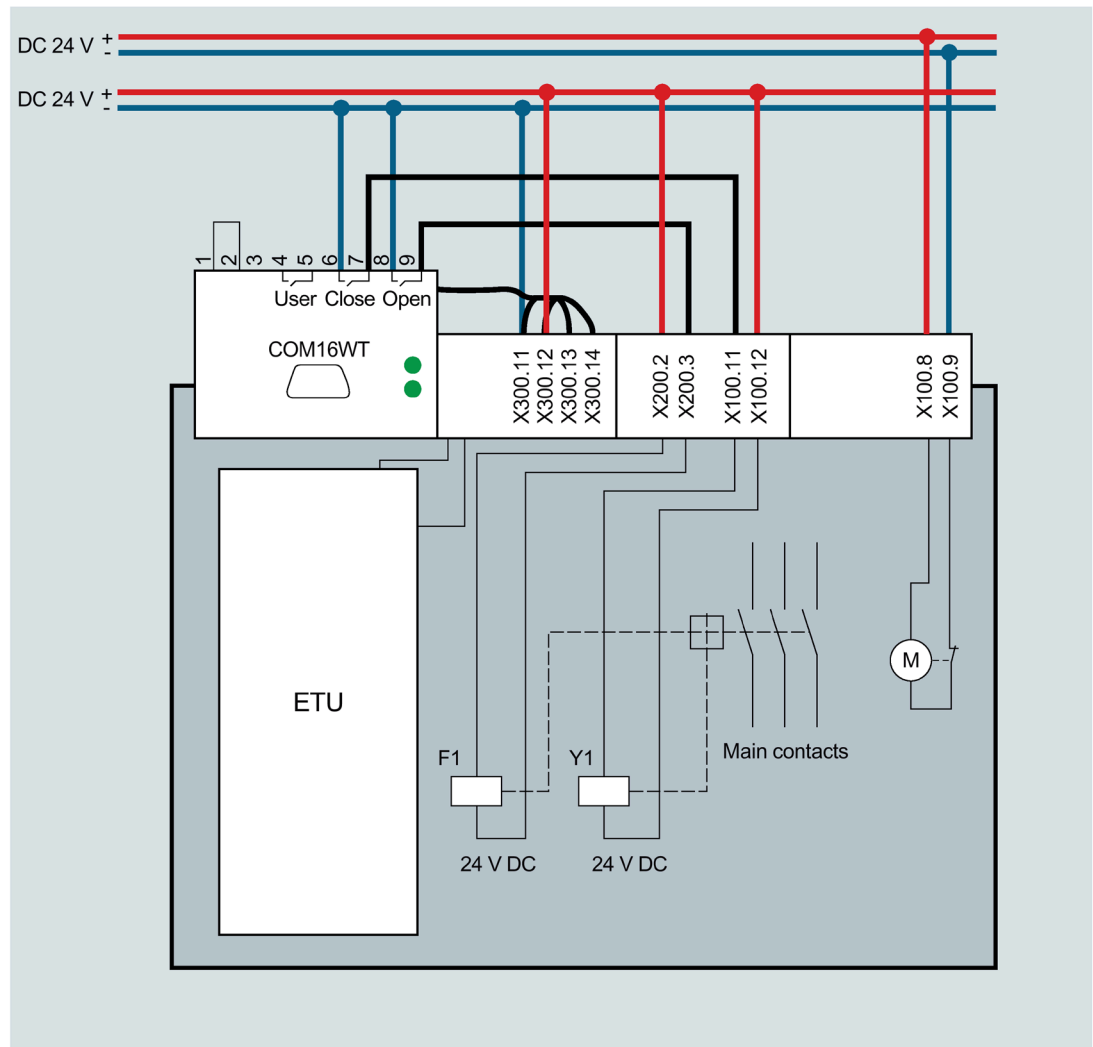
Technical data with values and units that can be displayed in screen 1		
Changed data	Displayed values	Unit
IR.....=...00000.YY	LT pickup value in primary amperes	A
ISD.....=...00000.YY	ST pickup value in primary amperes	A
Ii.....=...00000.YY	IN pickup value in primary amperes	A
Ig.....=...0000.YY	GF pickup value in primary amperes	A
Ig.ala.=...0000.YY	GF alarm pickup value in primary amperes	A
tg.....=.....000.YY	GF delay: 100 200 300 400 500	ms
I²tg..=.....000.YY	GF I ² t delay: 100 200 300 400 500	ms
I²tR..=.....000.YY	LT I ² t delay: 2 3.5 5.5 8 10 14 17 21 35 30	s
tSD.....=.....000.YY	ST delay: 20 100 200 300 400	ms
I²tSD.=.....000.YY	100 200 300 400	ms
th.mem.=.....000....	ON OFF	..
IR	Current for overload tripping	
ISD	Current for short-time delayed short-circuit tripping	
Ii	Current for instantaneous short-circuit tripping	
Ig	Current for ground-fault protection tripping (this is only displayed if there is a ground-fault protection module available)	
Ig alarm	Response current for ground-fault protection alarm indicator (this is only displayed if a ground-fault protection module is installed)	
tg	Delay time for ground-fault protection (this is only displayed if a ground-fault protection module is installed)	
I ² tg	Inverse-time delay (I ² t-dependent) of ground-fault protection (this is only displayed if a ground-fault protection module is installed)	
I ² tR	Inverse-time delay (I ² t-dependent) for overload tripping	
tSD	Delay time of short-circuit tripping	
I ² tSD	Inverse-time delay (I ² t-dependent) for short-circuit tripping	
th mem	Indicates whether thermal memory is on / off	

Button functions in mode "Display parameter changes"

The changed value is displayed for 4 seconds. The display then switches back to the previous mode.

6.11 Communication

The figure below shows how COM16WT contacts for ON and OFF must be wired to allow switching the beaker on/off. This figure only applies for ON and OFF solenoids with DC 24 V!



Wiring of COM16WT at DC 24 V

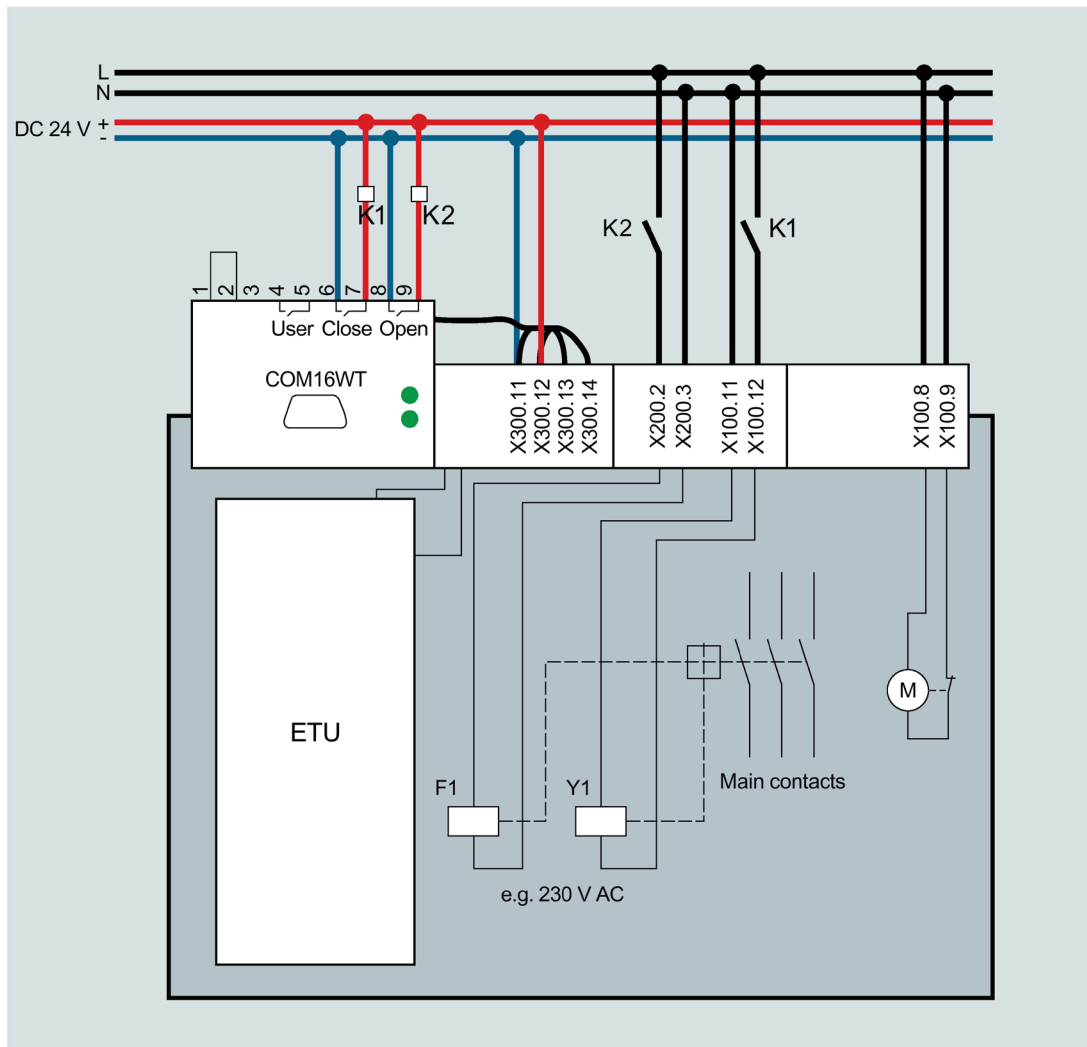
CAUTION

The external power supply, used for electronic components, shall not be used to supply the motor operating mechanism!

The COM outputs are using a flyback diode. Please note the polarity of the outputs.

The figure below shows the wiring if contacts are installed with voltages not equal to DC 24 V.

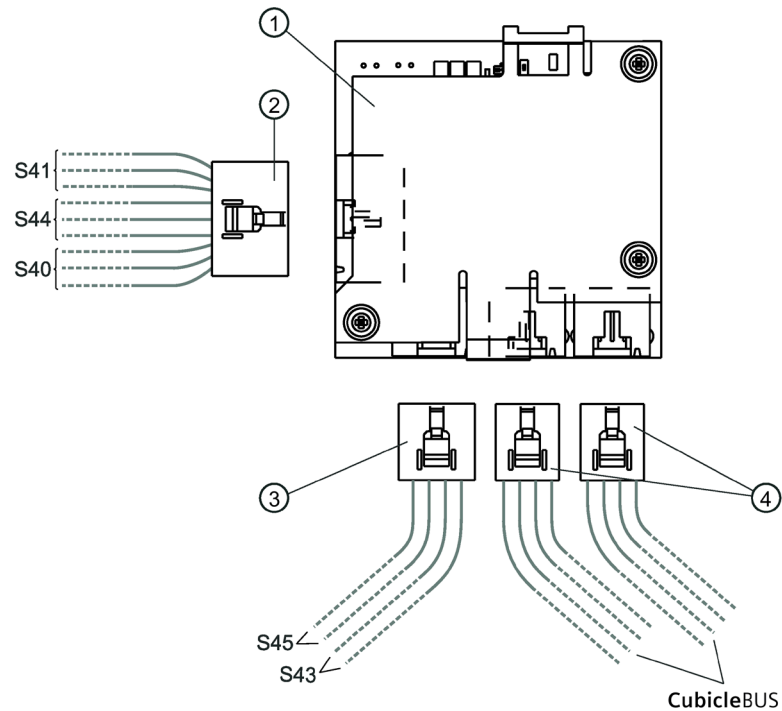
- Coupling relays must be used.
- If F1 is not used for switching off, alternative F2 can be used.



Wiring of COM16WT at voltage not equal to DC 24 V

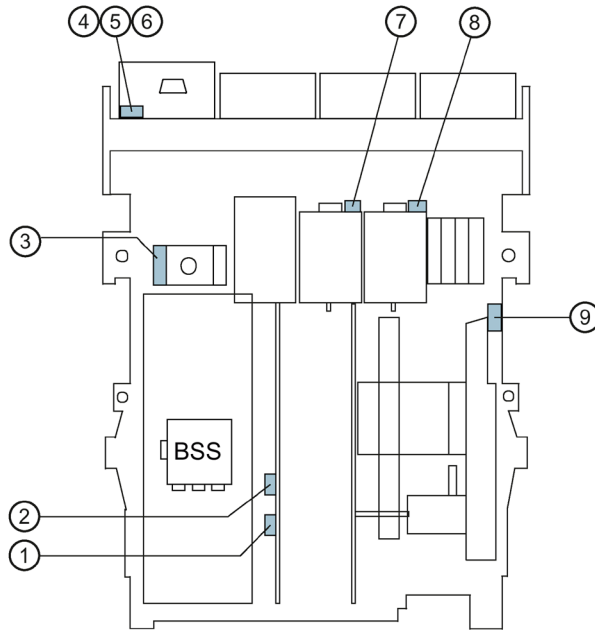
6.12 Breaker Status Sensor (BSSWT)

For collecting Circuit Breaker status information via signaling -switches and transmitting these data to the **CubicleBUS**.



- ① BSSWT module
- ② Microswitches connecting cable for S40, S41, S44
- ③ Microswitches connecting cable for S43, S45
- ④ BSSWT connecting cable for CubicleBUS

Signaling switches for BSSWT



- ① Signaling switch spring charged S41
- ② Signaling switch ready-to-close S40
- ③ Trip signaling switch S45
- ④ Signaling switch connected position S46
- ⑤ Signaling switch test position S47
- ⑥ Signaling switch disconnected position S48
- ⑦ Signaling switch S43 auxiliary release (F2)
- ⑧ Signaling switch S43 auxiliary release (F1/F3/F8)
- ⑨ Signaling switch ON-OFF position S44

Note

Signaling switch S43 for auxiliary release (F2) only available when there is no auxiliary release F1/F3/F8 existed.

Article No. for spare part

Description	Article No.
BSSWT module	3WT9844-0AT00

6.13 COM16WT module

Interface adapter for:

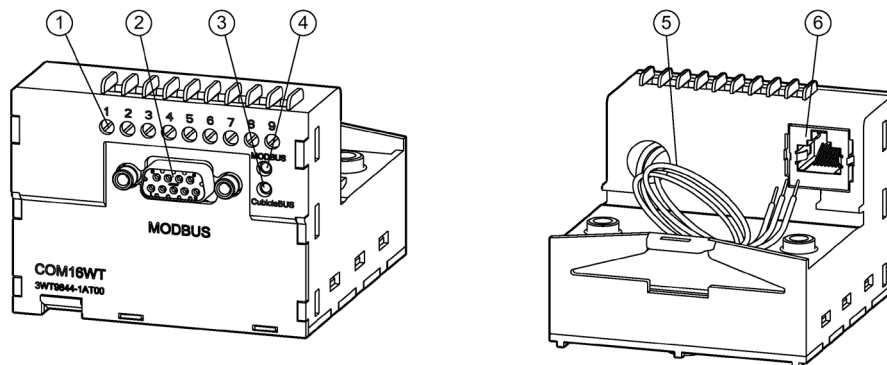
- converting **CubicleBUS** signals to Modbus signals and vice versa
- on draw-out Circuit Breakers: detecting the Circuit Breaker position in the guide frame with the signaling switches S46, S47 and S48, and emitting the corresponding signals on the **CubicleBUS** and the Modbus.
- providing special functions by additional inputs and outputs (e.g. to control the Circuit Breaker and for parameterization)

Further Information is given in the manual "3WT Circuit Breakers with communication capability - Modbus".

Note

This is a product for environment A. In residential environment this device can cause unwanted radio interferences. In this case the user can be put in charge to perform special measures.

View



- ① Connection terminals for additional inputs and outputs to provide special functions
- ② SUB-D plug, 9-pole, for Modbus connection
- ③ **CubicleBUS** LED
- ④ Modbus-LED
- ⑤ Connecting cables to hand plug X300
- ⑥ **CubicleBUS** connection for the terminating resistor (120 Ohm, 0,5 W). The terminator must be used to avoid interference on the **CubicleBUS**.

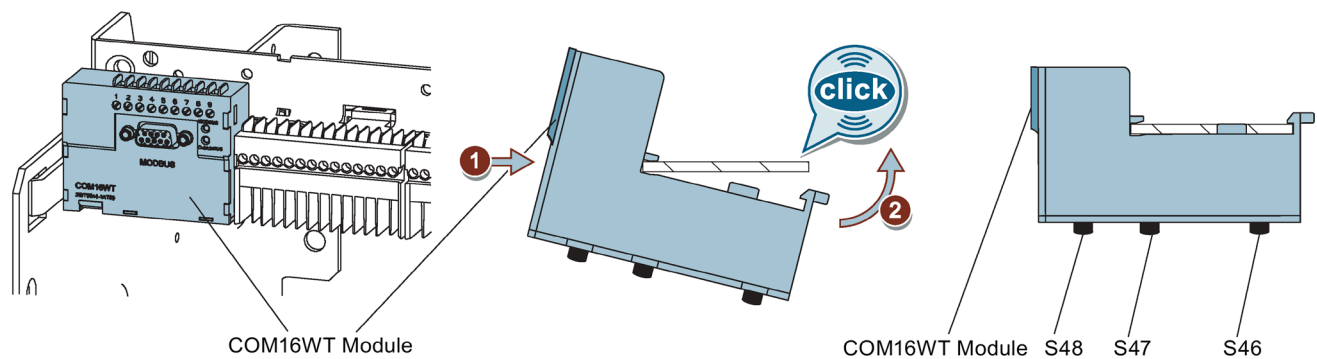
Indications

LED	Indication	Significance
Modbus	Off	No voltage at COM16WT
	Green	Modbus communication operating
	Red	Bus fault or bus not responding
CubicleBUS	Off	No CubicleBUS-modules found
	Green	CubicleBUS communication operating
	Green flashing	CubicleBUS participant found, but CubicleBUS connection inside Circuit Breaker disturbed
	Red	CubicleBUS faulty

Fitting COM16WT module on the guide frame

- Switch off open button and discharge the storage spring.
- Pull the breaker into maintenance position

See chapter Preparatory work (Page 104)



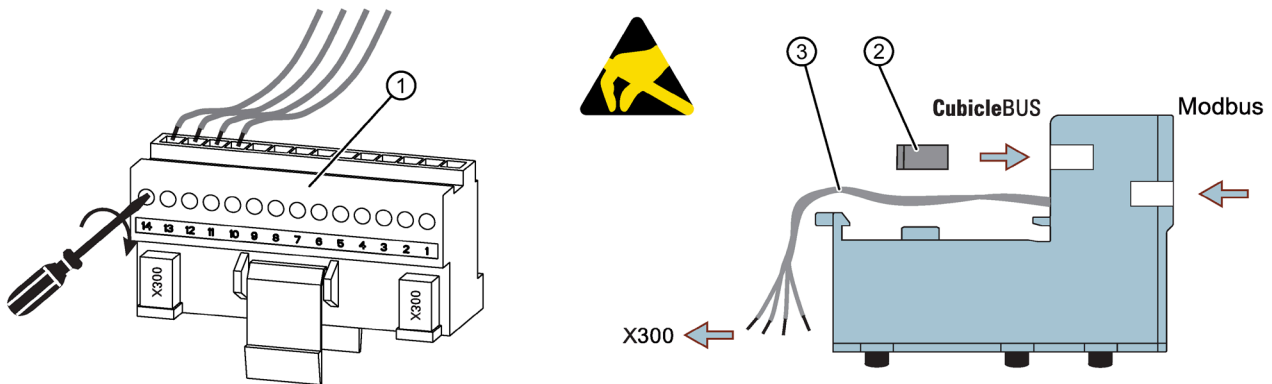
S46, S47 and S48: Signaling switches for detecting the Circuit Breaker position in the guide frame and transfer to Modbus and CubicleBUS.

Connecting wires

See chapter Overall circuit diagram (Page 263)

Note

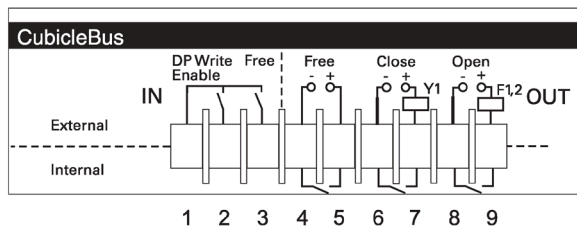
If necessary missing auxiliary terminals may be retrofitted (receptacle, auxiliary connectors and sliding contact module for guide frames). - See chapter Connecting the auxiliary conductor (Page 45)



- ① Hand plug X300
- ② Terminating resistor
- ③ Connecting cable to hand plug X300

Designation	Assignment	Terminal
314	CubicleBUS -	X300.14
313	CubicleBUS +	X300.13
312	24 V DC +	X300.12
311	24 V DC GND	X300.11

Connections for additional inputs and outputs



Further information about the application of these inputs and outputs is given in the manual "3WT Circuit Breakers with communication capability – Modbus".

Article No. for spare part

Description	Article No.
COM16WT	3WT9844-1AT00

6.14 Metering function

Trip unit ETU45WT and ETU47WT can be equipped with a metering function.

In addition to the values for the currents, the metering function provides data on voltages, powers, energy values, power factors and frequency through the **CubicleBUS**, for further processing.

This data can be shown on the display of the trip unit, transmitted to the Modbus through the COM16WT module and transferred to the outputs of external **CubicleBUS**-modules. Based on these data, conclusions can be drawn about the condition of the power system. To use the metering function an external 24 V auxiliary voltage supply is required.

The measurement accuracy of the voltage values can only be guaranteed by connecting the protective earth (PE) with the 24 V-GND ("-") of the external power supply voltage of the Circuit Breaker. The connection should be made directly on the output of the power supply and with at minimum 1.5 mm² of cable.

Furthermore, it is necessary to connect the N-conductor (at 3-poles breaker) for a proper voltage measurement.

Please see chapter External voltage supply (Page 90)

Measured parameter	Accuracy ¹⁾
Currents I_{L1} , I_{L2} , I_{L3} , I_N	± 1 %
Ground-fault current I_g (Measurement with external ground-fault transformer)	± 5 %
Line-to-line voltage U_{L12} , U_{L23} , U_{L31}	± 1 %
Neutral point voltages U_{L1N} , U_{L2N} , U_{L3N}	± 1 %
Present average of line-to-line voltage U_{avgD}	± 1 %
Present average of neutral point voltages U_{avgY}	± 1 %
Apparent power S_{L1} , S_{L2} , S_{L3}	± 2 %
Total apparent power	± 2 %
Active power P_{L1} , P_{L2} , P_{L3}	± 3 % @ $\cos\phi > 0.6$
Total active power	± 3 % @ $\cos\phi > 0.6$
Reactive power Q_{L1} , Q_{L2} , Q_{L3}	± 4 % @ $\cos\phi > 0.6$
Total reactive power	± 4 % @ $\cos\phi > 0.6$
Power factors $\cos\phi_{L1}$, $\cos\phi_{L2}$, $\cos\phi_{L3}$,	± 0.04
Power factor total $\cos\phi_{avg}$	± 0.04
Long-time average of currents I_{L1} , I_{L2} , I_{L3}	± 1 %
Long-time average of 3-phase current	± 1 %
Long-time average of active power in L_1 , L_2 , L_3	± 3 % @ $\cos\phi > 0.6$
Long-time average of active power 3-phase	± 3 % @ $\cos\phi > 0.6$
Long-time average of apparent power in L_1 , L_2 , L_3	± 2 %
Long-time average of apparent power 3-phase	± 2 %
Long-time average of reactive power 3-phase	± 4 % @ $\cos\phi > 0.6$
Energy consumed	± 3 %
Energy delivered	± 3 %
Reactive energy consumed	± 4 %
Reactive energy delivered	± 4 %

Frequency	± 0.1 Hz
Phase unbalance of current and voltage ²⁾	± 1 %

1) Definition of accuracy:

\pm (x % of measuring range + 2 LSD (Least Significant Digit) for one year after calibration

Reference condition:

Input current I: $I_{n \max} \pm 1\%$

Input voltage U: $U_n \pm 1\%$

Frequency f: 50 Hz

Power factor: $\cos\phi = 1$

Ambient temperature: $35\text{ °C} \pm 5\text{ °C}$

Auxiliary voltage: DC 24 V according DIN 19240 / EN 61131

Warm-up time: 2 hours

External fields: no

Metering range:

Current: 0.2 ... 1.2 $I_{n \max}$


Voltage: 0.8 ... 1.2 U_n

2) IEC-Definition:

Ratio of the largest difference between the phases and the most heavily loaded phase.

Switchgear insulation test

The following applies for switchgears with more than 4 Circuit Breakers with internal voltage tap: prior to the insulation test of the switchgear the internal voltage converters must each be disconnected from the metering function.

 WARNING
Always de-energize and ground equipment before working on this equipment.

- Switch off and discharge the storage spring
- Move draw-out Circuit Breaker to maintenance position
- Remove front panel
- Disconnect X50 at the metering function

After the insulation test the connecting cable at X50 has to be connected again.

- Connect plug X50 to metering function again
- Attach front panel

Then check the measured voltage values of the metering function by connecting line voltage in the switchgear.

Article No. for spare part

Description	Article No.
Metering function	3WT9844-5AT00

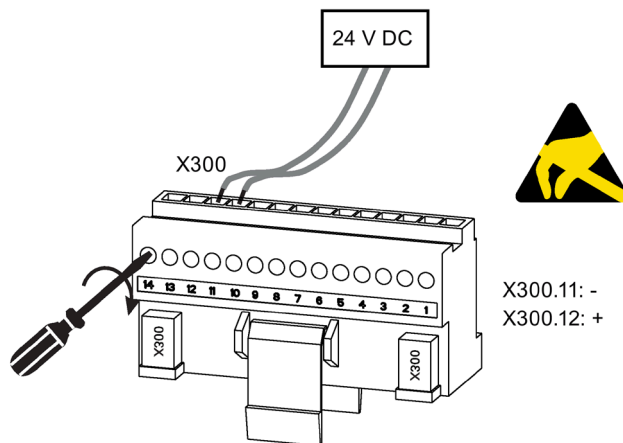
6.15 External voltage supply

The basic functions of the electronic trip units do not require auxiliary power supply.

To use the extended functions of the electronic trip units ETU45WT requiring data exchange through the **CubicleBUS**, an external 24 V DC voltage supply must be connected.

Connection

Connection to hand plug X300.



Requirements

The external voltage supply with 24 V DC must comply at least with the requirements of DIN 19240 / EN 61131. To prevent the 3WT system from EMC interferences, it is recommended to use a power supply of protection class II.

To supply power to a Circuit Breaker equipped with the maximum number of external **CubicleBUS**-modules possible, the Siemens power supply unit mentioned below can be used. If a second Circuit Breaker must be fed, a second power supply unit will be necessary, too.

When using voltage supply units from other manufacturers, the following conditions must be fulfilled:

- Primary-switched-mode power supply unit
- 24 V DC, $\pm 3\%$


EMC according for 24 V power supply:

IEC61000-4-4: 4 kV on main side;

IEC61000-4-5: 4 kV line-to-earth, 2 kV line-to-line.

Article number

Power supply	Article No.
LOGO! Power, Input: AC 100-240 V, output 24 V DC / 4 A	6EP3333-6SB00-0AY0

 CAUTION
The external power supply, used for electronic components, shall not be used to supply the motor operating mechanism!

Auxiliary release and auxiliary switches

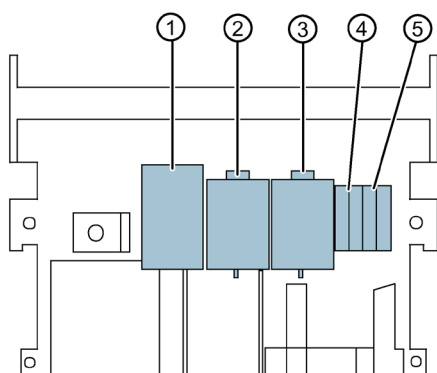
 **WARNING**

May result in death or serious injury.

Discharge storage spring before removing barriers / covers. - See chapter Preparatory work (Page 104)

7.1 Overview

Mounting location



- ① Closing coil Y1
- ② 2nd shunt release F2
- ③ 1st shunt release F1
or undervoltage release "r" F3
or undervoltage release "rc" F8
- ④ 1st auxiliary switches 2NO + 2NC
- ⑤ 2nd auxiliary switches 2CO
or 2nd auxiliary switches 2NO + 2NC
or 2nd auxiliary switches 3NO + 1NC
or 2nd auxiliary switches 4NO

See chapter Terminal diagrams (Page 266)

Article No.

Description		Article No.
Closing coil Y1; 2 nd shunt release F2; 1 st shunt release F1	DC 24 V	3WT9851-1JB00
	DC 110 ... 125 V; AC 50/60 Hz 110 ... 127 V	3WT9851-1JH00
	DC 220 ... 250 V; AC 50/60 Hz 220 ... 240 V	3WT9851-1JK00
Undervoltage release "r" F3	DC 24 V	3WT9853-1JB00
	DC 110 ... 125 V; AC 50/60 Hz 110 ... 127 V	3WT9853-1JH00
	DC 220 ... 250 V; AC 50/60 Hz 220 ... 240 V	3WT9853-1JK00
	AC 50/60 Hz 380 ... 415 V	3WT9853-1JM00
Undervoltage release "rc" F8	DC 110 ... 125 V; AC 50/60 Hz 110 ... 127 V	3WT9855-1JH00
	DC 220 ... 250 V; AC 50/60 Hz 220 ... 240 V	3WT9855-1JK00
	AC 50/60 Hz 380 ... 415 V	3WT9855-1JM00
2 nd auxiliary switches 2CO		3WT9816-1CE00
2 nd auxiliary switches 2NO + 2NC		3WT9816-1CD00
2 nd auxiliary switches 3NO + 1NC		3WT9816-1CF00
2 nd auxiliary switches 4NO		3WT9816-1CG00

7.2 Setting the delay time of the undervoltage release

Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

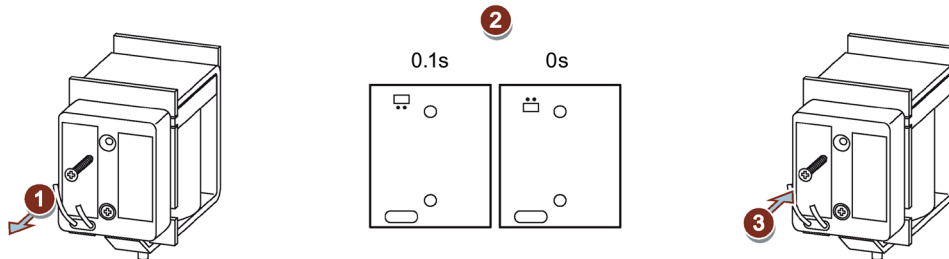
See chapter Preparatory work (Page 104)

- Removing the operating device

See chapter Removing the operating device (Page 132)

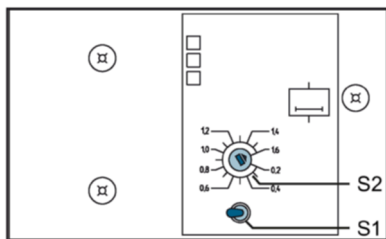
Setting

Undervoltage release "r" F3



1. Remove the cap.
2. Set the jumper.
3. Re-attach the cap.

Undervoltage release "rc" F8



- S1 Select the range.
S2 Set the delay time t_d .

Final work

- Install front panel
- Fit auxiliary connectors
- Connect wires to auxiliary connector
- Move the draw-out Circuit Breaker into the test position

Commissioning

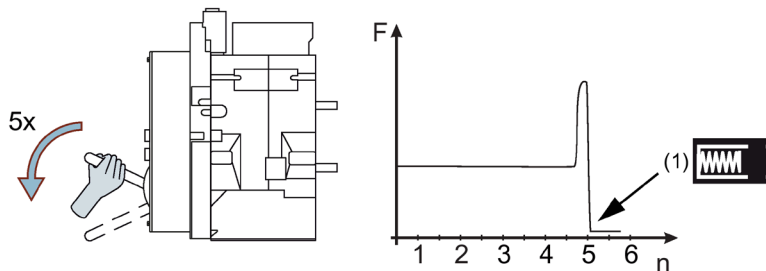
8.1 Charging the stored-energy spring mechanism

WARNING

Can cause injury.

When the Circuit Breaker has been removed from the system with an unloaded stored-energy spring mechanism, it must be placed on a stable surface (e.g. on a workbench during maintenance).

8.1.1 Charging manually



F Actuating force

n Number of strokes

(1) Stored-energy spring mechanism charged

NOTICE

To charge the stored-energy spring mechanism, grasp the charging lever securely and move it as far as it will go. Make sure that each movement is as smooth as possible. The fifth stroke must be made as far and as smoothly as the previous four strokes, even though the force required to actuate the lever increases considerably. Once the stored-energy spring mechanism has been fully charged, the charging lever can be moved without resistance.

8.1 Charging the stored-energy spring mechanism

8.1.2 Charging with a motor operating mechanism



This occurs automatically once the control voltage has been applied (the motorized operating mechanism is shut down as soon as charging is complete).

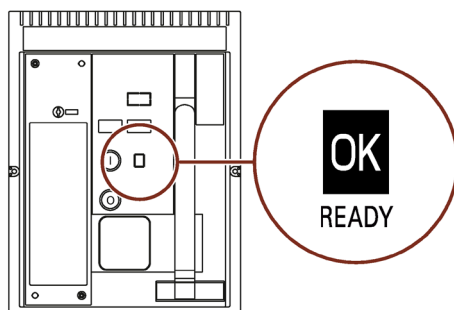
Article No.

Description	Article No.
Motorized operating mechanism, DC 24 V	3WT9832-1JB00
Motorized operating mechanism, DC 110 ... 125 V; AC 50/60 Hz 110 ... 127 V	3WT9832-1JH00
Motorized operating mechanism, DC 220 ... 250 V; AC 50/60 Hz 220 ... 240 V	3WT9832-1JK00

8.2 Preparing for operation

Commissioning checklist	
Arc chutes attached	✓
Circuit Breaker is OFF	✓
Electronic trip unit is installed and RESET pressed	✓
Operating values on the electronic trip unit are set	✓
Auxiliary and control voltages are applied (for rated values, see the rating plate)	✓
The main conducting paths are de-energized	✓
Cabinet door is closed	✓
Stored-energy spring mechanism is charged	✓
Withdrawable Circuit Breaker in connected position	✓

Conditions (depending on version)		
Undervoltage release	Excited	✓
Shunt release	Not excited	✓
Electrical closing lockout	Not excited	✓
Mechanical reclosing lockout	Set to RESET	✓
Electrical interlocking for closing solenoid	Canceled	✓
Interlock	Not active	✓
Indicator	"ready to close" = OK	✓

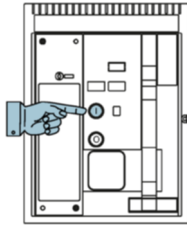


NOTICE

1. The Circuit Breaker must only be closed when the electronic trip unit has been installed (with the exception of non-automatic Circuit Breakers).
2. Never remove electronic trip units under load since this can damage the electronic trip unit / current transformer.

8.3 Closing operation

Mechanical ON



Indicators

Without motor operating mechanism:

Closed, Discharged



CONTACTS



SPRING



READY

With motor operating mechanism after approx. 20s:

Closed, Charged



CONTACTS



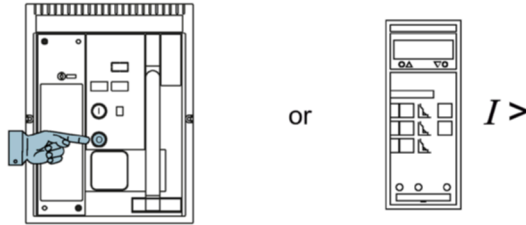
SPRING



READY

8.4 Opening operation

Mechanical OFF or tripping by electronic trip unit



Indicators

Without motor operating mechanism:

Open, Discharged



With motor operating mechanism:

Open, Charged



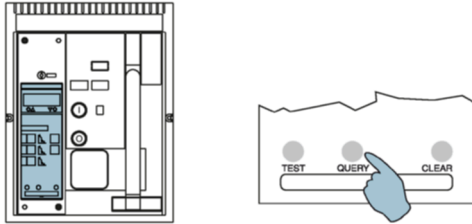
With motor operating mechanism, tripping by ETU:

Open, Charged, "Ready to Close" is not OK

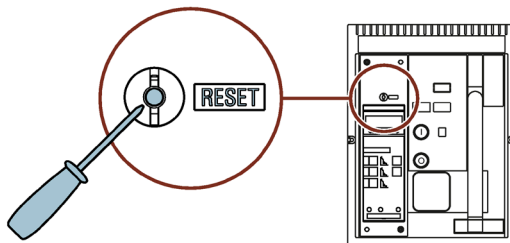


8.5 Recommissioning after opening operation by means of electronic trip unit

1. Find reason for tripping.



2. Identify and rectify the cause.
 - Check downstream load.
 - Check ETU settings.
3. After short-circuit trip, check the Circuit Breaker for any damage.
Inspect contact system for possible damage, see Maintenance (Page 103).
4. Open the transparent cover and reset the reclosing lockout.
5. Press RESET for tripped signaling.



6. Recommissioning as described above.
 - Charging the stored-energy spring mechanism (Page 97)
 - Closing operation (Page 100)

 **DANGER**




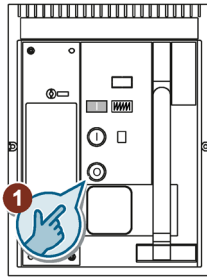



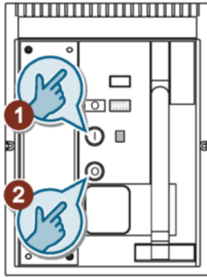



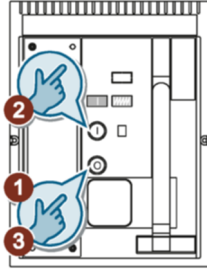



Hazardous voltage

During operation, certain Circuit Breaker components are subject to hazardous voltages or spring force. If you come into contact with live components, this can result in death or serious injury.

Maintenance must only be carried out by authorized personnel.

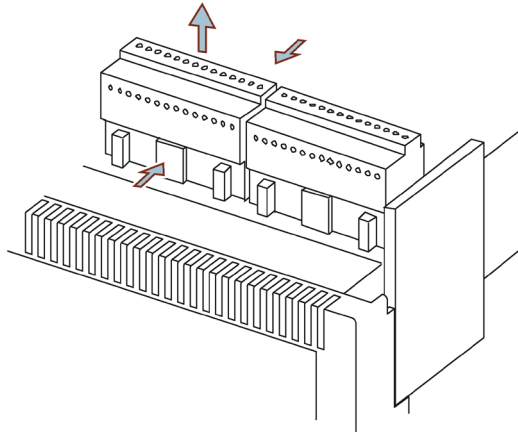
9.1 Preparatory work

Opening the Circuit Breaker and discharging the stored-energy spring mechanism

Possible status:	Actuating sequence:	
<p>Circuit Breaker CLOSED Stored-energy spring mechanism discharged</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CONTACTS</p> </div> <div style="text-align: center;">  <p>SPRING</p> </div> <div style="text-align: center;">  <p>READY</p> </div> </div>		<p>1. Open</p>
<p>Open Circuit Breaker Stored-energy spring mechanism charged</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CONTACTS</p> </div> <div style="text-align: center;">  <p>SPRING</p> </div> <div style="text-align: center;">  <p>READY</p> </div> </div>		<p>1. Closed 2. Open</p>
<p>Circuit Breaker CLOSED Stored-energy spring mechanism charged</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CONTACTS</p> </div> <div style="text-align: center;">  <p>SPRING</p> </div> <div style="text-align: center;">  <p>READY</p> </div> </div>		<p>1. Open 2. Closed 3. Open</p>
<p>Indications final status:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>CONTACTS</p> </div> <div style="text-align: center;">  <p>SPRING</p> </div> <div style="text-align: center;">  <p>READY</p> </div> </div>		

Disconnect auxiliary circuits

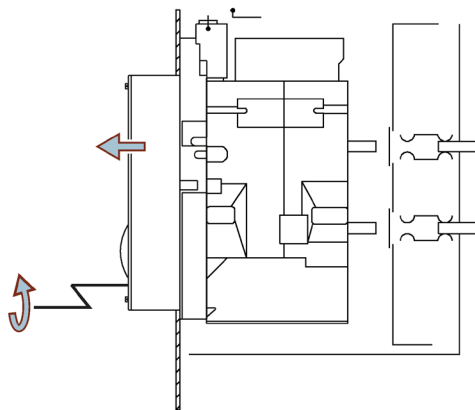
Fixed-mounted Circuit Breaker



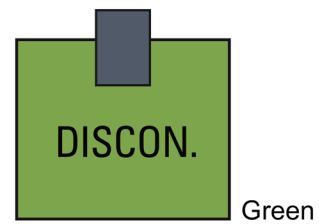
Remove the manual connector and take out the Circuit Breaker.

To remove the manual connector(s), push them up. Make sure that the connected cables are not bent.

Withdrawable Circuit Breaker

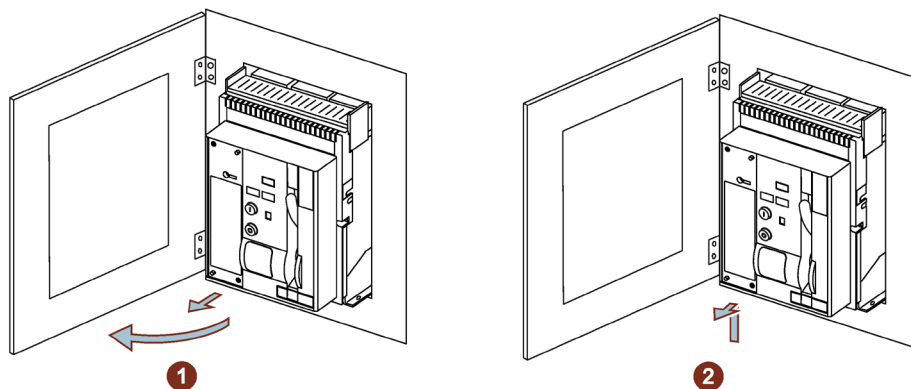


Disconnected position



Racking to the disconnection position

Pull Circuit Breaker to maintenance position and remove

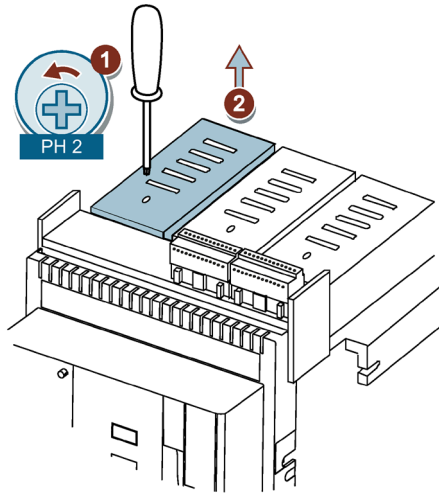


1. Set the Circuit Breaker to the maintenance position
2. Remove the Circuit Breaker.

Set the Circuit Breaker to the maintenance position and remove from the system.

9.2 Checking the arc chutes

- Every 12 months or after 1000 switching operations
- After serious shutdowns

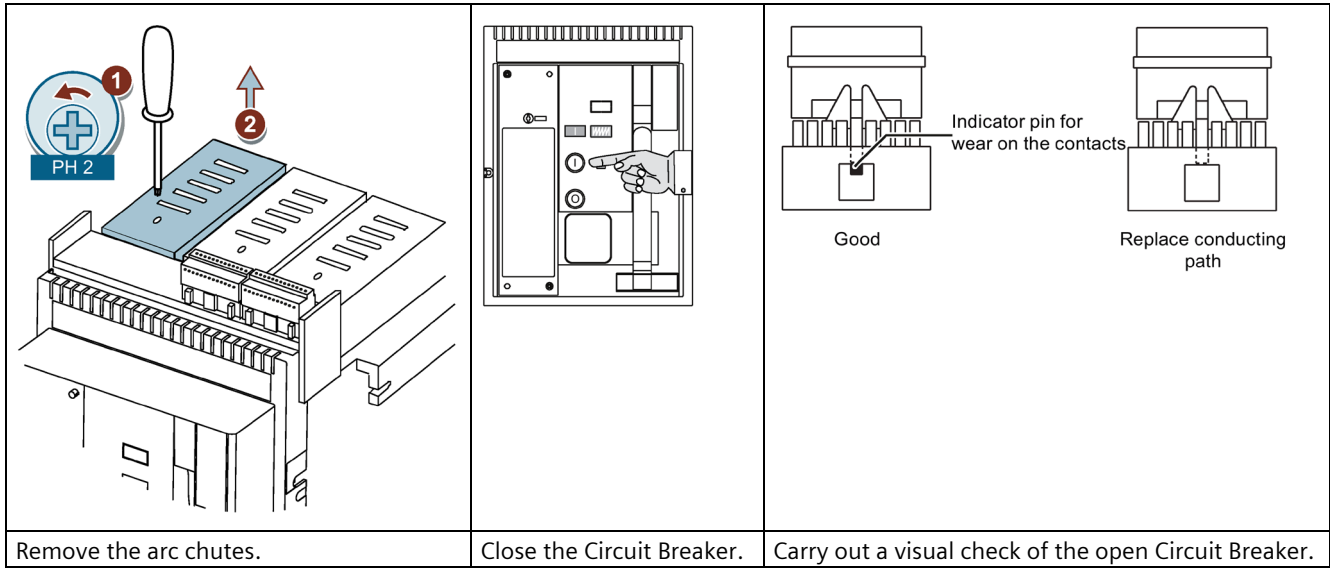


Remove the arc chutes.

If severe wear and tear is present (e.g. burns on the arc splitters), replace the arc chutes.

9.3 Checking the wear on the contacts

- Every 12 months or after 1000 switching operations
- After serious shutdowns



9.4 Replacing the conducting paths

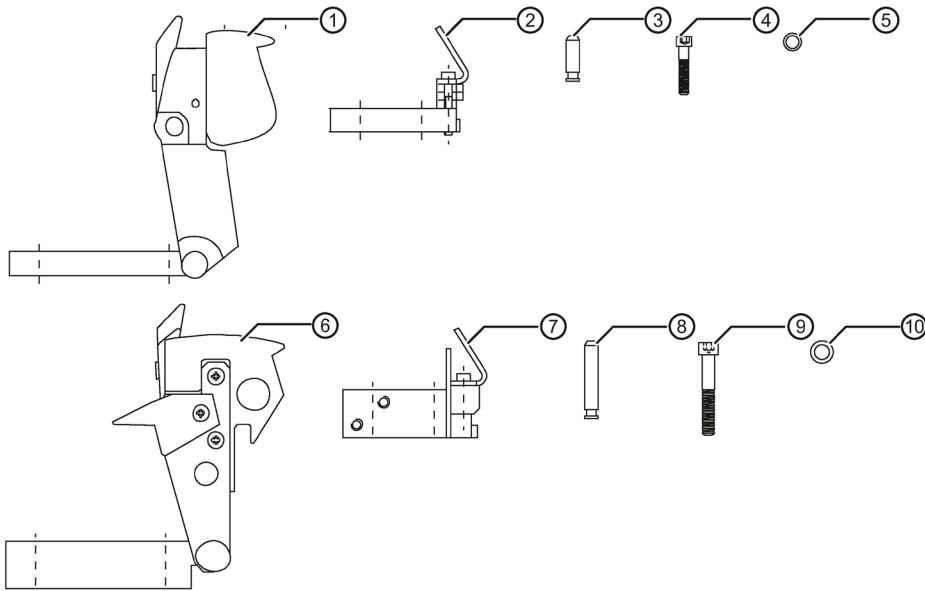
! DANGER

Hazardous voltage! Hazardous stored-energy spring mechanism

Before starting work, disconnect the device from the supply and ensure that it cannot be switched on. Only carry out work on the device when the Circuit Breaker is open and the stored-energy spring mechanism is discharged. Failure to do so can result in death, severe injury, or substantial material damage.

The devices must be installed and mounted by authorized personnel only.

Check the contents of the packaging



Frame size I

- | | | |
|---|-------------------------------------|----|
| ① | Contact carrier, cpl. | 1x |
| ② | Conducting path, fixed | 1x |
| ③ | Coupling bolt | 1x |
| ④ | Cylinder-head screw M6 x 30 DIN 912 | 4x |
| ⑤ | Strain washer 6 DIN 6796 | 4x |

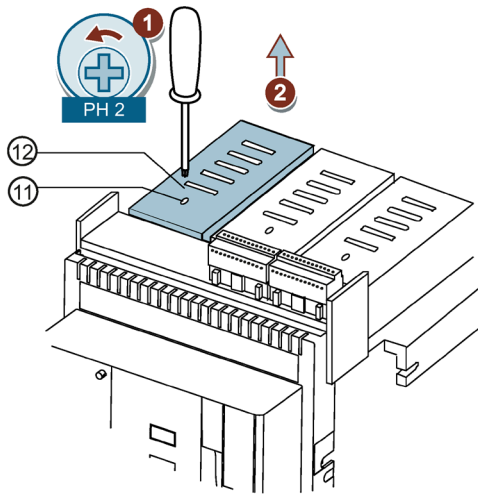
Frame size II

- | | | |
|---|-------------------------------------|----|
| ⑥ | Contact carrier, cpl. | 1x |
| ⑦ | Conducting path, fixed | 1x |
| ⑧ | Coupling bolt | 1x |
| ⑨ | Cylinder-head screw M8 x 50 DIN 912 | 4x |
| ⑩ | Strain washer 8 DIN 6796 | 4x |

Note:

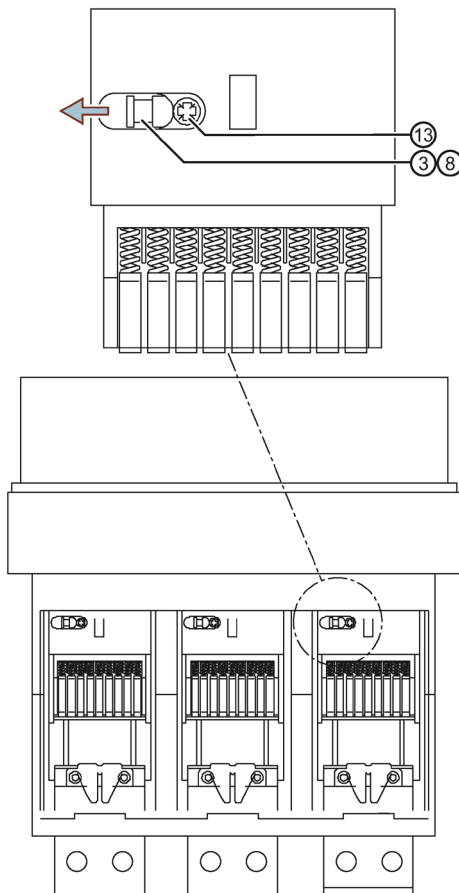
The shape of the connection bars on the contact carriers ① and ⑥ and on the conducting paths ② and ⑦ varies depending on the version you have ordered. The installation/mounting procedure is the same for all versions.

Unscrew arc chutes



- Remove the fixing screws ⑪ for the arc chutes ⑫.
- Lift off the arc chutes.

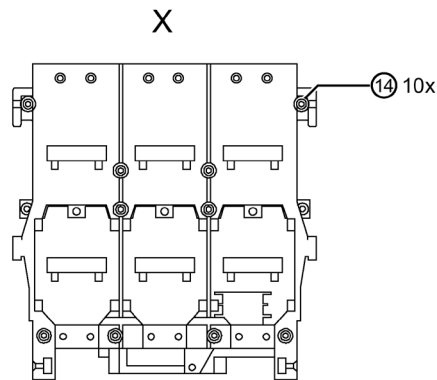
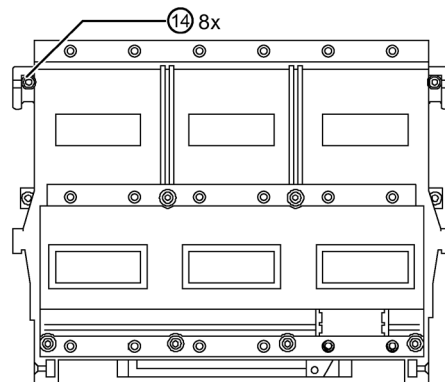
Disconnecting the contact carriers (frame sizes I and II)



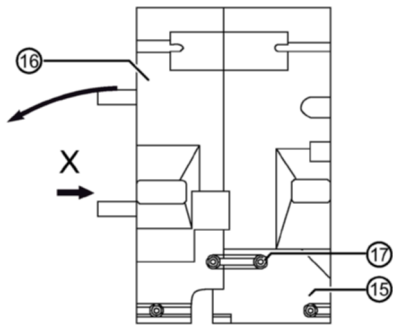
- Loosen the locking bolt ⑬ (do not remove completely).
- Press out the coupling bolt ③ or ⑧ by means of a screwdriver (as shown).

Note:

With frame size II, the locking bolt ⑬ with cover must be removed completely.

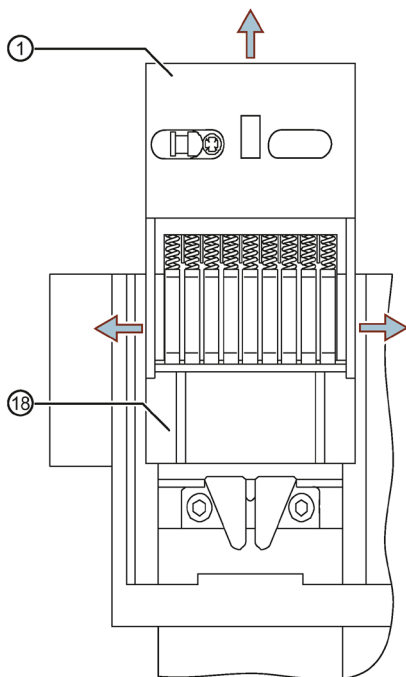
Removing the rear housing panel**Frame size I****Frame size II**

Frame sizes I and II



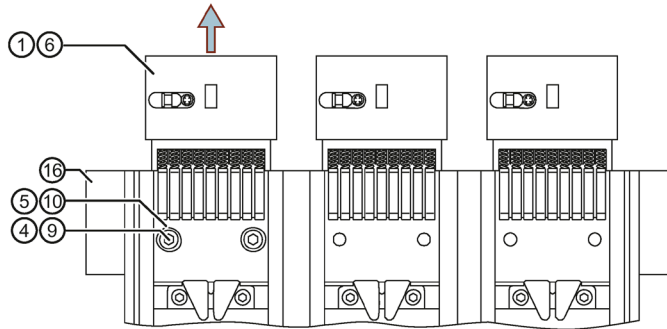
- Remove the cylinder-head screws ⑭.
- Unscrew the countersunk head screws ⑰ on the support bracket ⑮ of the rear panel ⑯.
- Loosen the countersunk head screws ⑰ of the support bracket ⑮ (do not remove completely).
- Open the rear panel of the Circuit Breaker ⑯ (as shown).

Removing the insulation (frame size I)



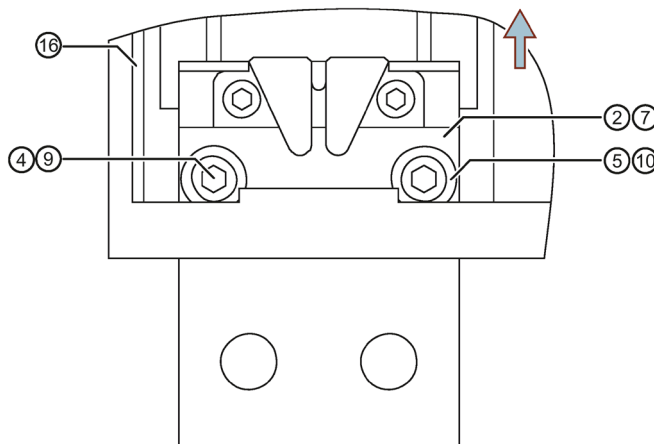
- Lift the contact carrier ① up.
- Pull the insulation ⑱ forward (push the side walls of the insulation ⑱ outward slightly).

Removing the contact carriers (frame sizes I and II)



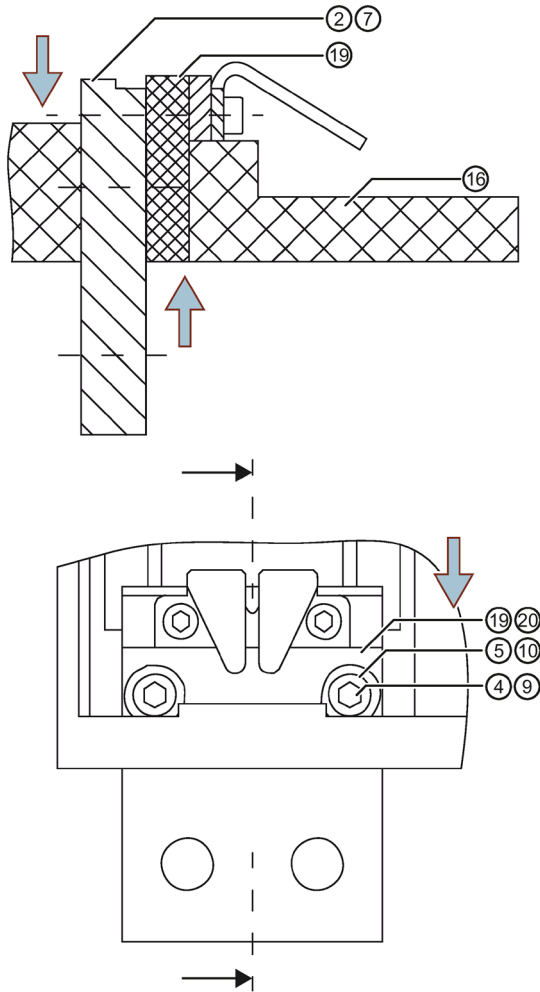
- Lift the contact carrier ① or ⑥ up.
- Unscrew the cylinder-head screw ④ or ⑨ with strain washer ⑤ or ⑩.
- Remove the contact carrier ① or ⑥ from the rear housing panel ⑬ (as shown).

Removing the conducting paths (frame sizes I and II)



- Unscrew the cylinder-head screws ④ or ⑨ with strain washers ⑤ or ⑩.
- Remove the conducting path ② or ⑦ from the rear housing panel ⑬ (as shown).

Installing the conducting path (frame sizes I and II)

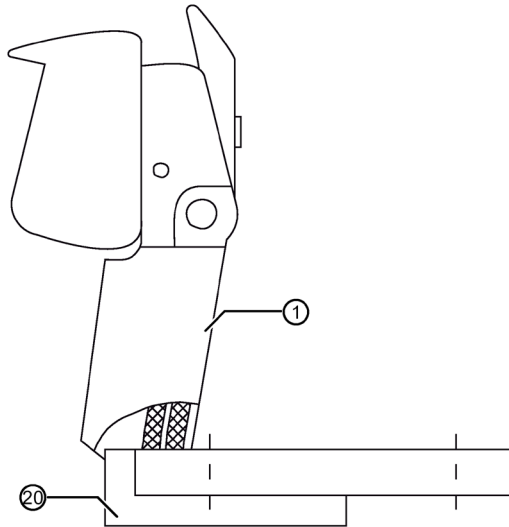


- Push the conducting path ② or ⑦ into the rear housing panel ⑩ from above.
- Push the spacer ⑱ or ⑳ into the rear housing panel ⑩ from below as far as it will go.
- Secure the conducting path ② or ⑦ and spacer ⑱ or ⑳ with cylinder-head screws ④ or ⑨ and strain washers ⑤ or ⑩ to the rear housing panel ⑩ (tighten by hand only).

Note:

The spacer (19 or 20) is not required for versions other than 3WT9821-0AA00.

Attaching the spacer (frame size I)

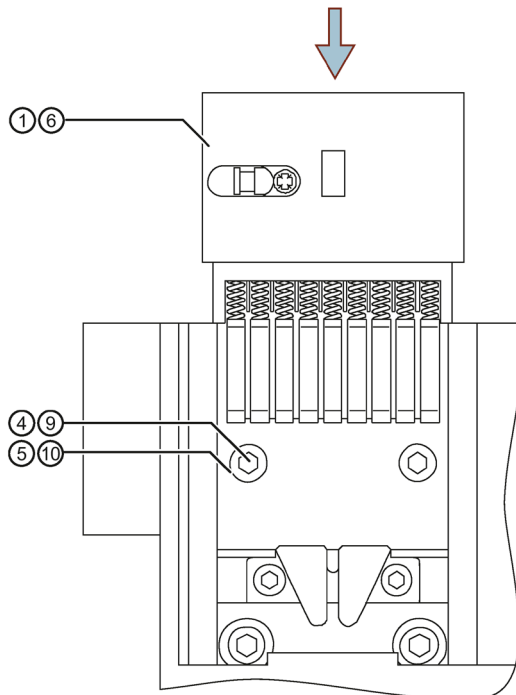


- Attach the spacer ⑳ to the contact carrier ① (as shown).

Note:

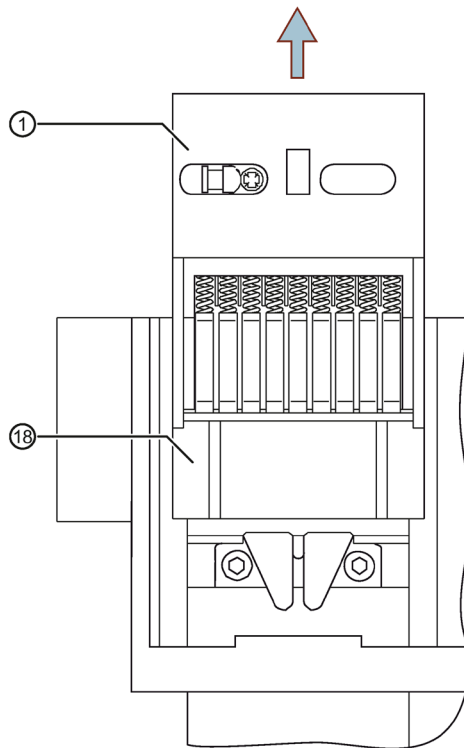
The spacer ⑳ is not required for versions other than 3WT9821-0AA00.

Installing the contact carriers (frame sizes I and II)



- Insert the contact carrier ① or ⑥ (if necessary, with spacer ⑳) into the rear housing panel ⑯ and secure with cylinder-head screws ④ or ⑨ and strain washers ⑤ or ⑩ (tightening torque: 8 ± 1 Nm ④; 12 ± 1 Nm ⑨)

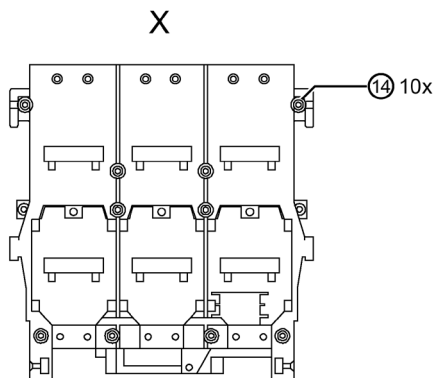
Installing the insulation (frame size I)



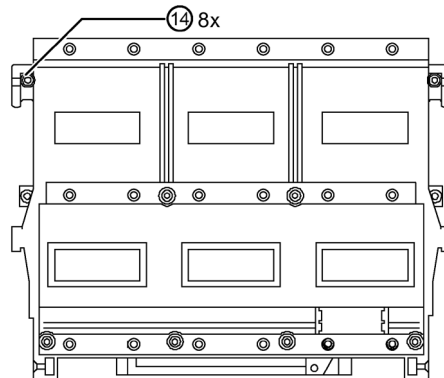
- Lift the contact carrier ① up.
- Attach the insulation ⑱ to the contact carrier ① (must audibly engage).

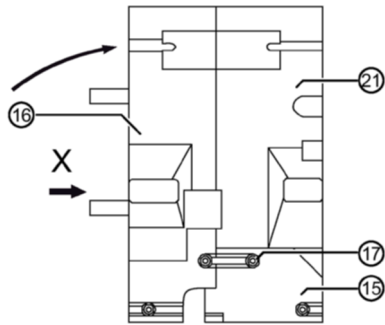
Removing the rear housing panel

Frame size I



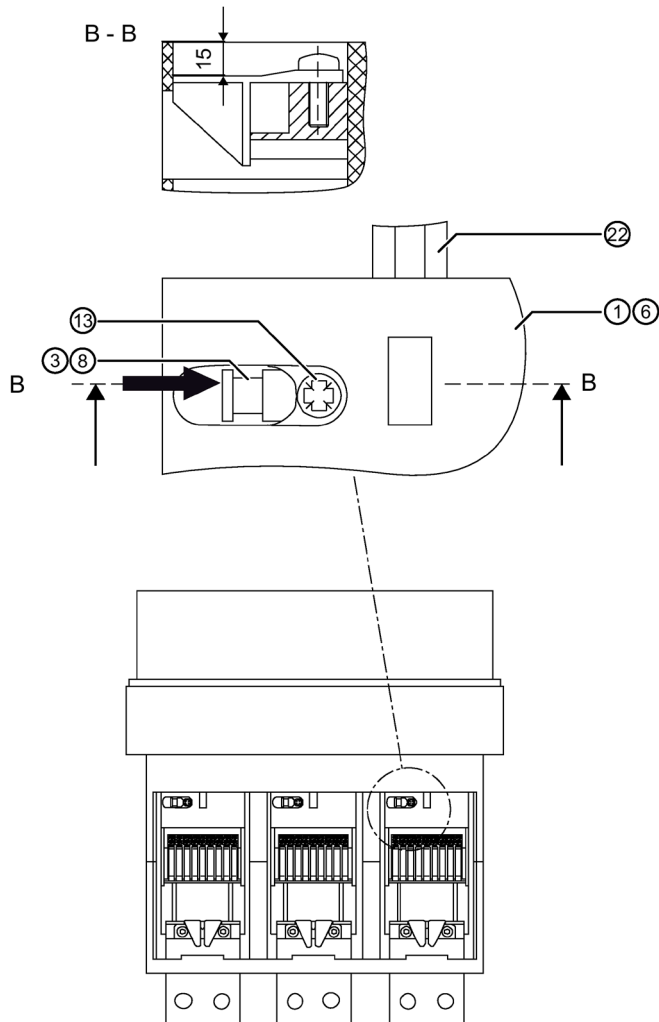
Frame size II



Rear housing panel: frame sizes I and II

- Place the rear housing panel ⑯ up against the housing. ⑳ When doing so, make sure that you do not trap any cables.
- Secure the support bracket ⑮ and housing ㉑ or rear housing panel ⑯ by means of countersunk head screws ⑰ (tightening torque: 6 ± 1 Nm).
- Secure the cylinder-head screws ⑭ (tightening torque: 10 ± 1 Nm).

Connecting the contact carriers (frame sizes I and II)

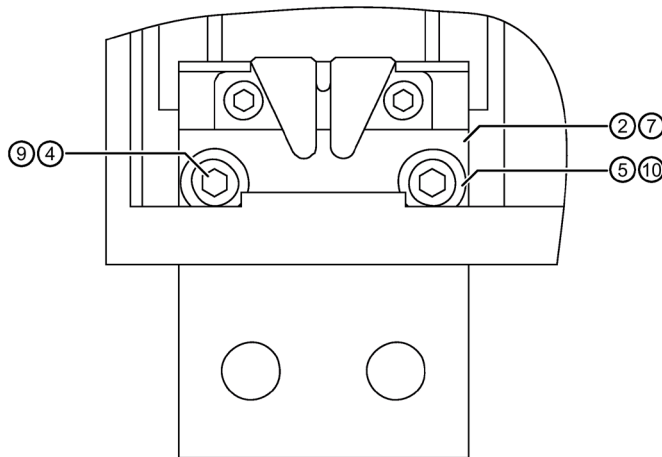


- Press the contact carrier ① or ⑥ toward the coupling clips ② (as shown). When doing so, make sure that the coupling clips ② fully accommodate the contact carrier ① or ⑥.
- Insert the coupling bolt as shown (③ or ⑧) by means of a screwdriver (to the right).
- Secure the coupling bolt ③ or ⑧ by means of a locking bolt ⑬ (tightening torque: 2 ± 0.3 Nm).

Note:

With frame size II as of 09/95, the locking bolt ⑬ (with cover) must be screwed in again (tightening torque: 2 ± 0.3 Nm).

Final installation of the conducting path (frame sizes I and II)

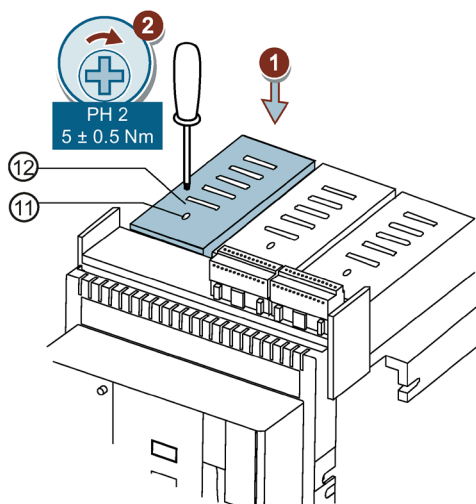


⚠ CAUTION

Hazardous stored-energy spring mechanism

- Charge the stored-energy spring mechanism and close the Circuit Breaker.
- Close the Circuit Breaker, making sure that you take the necessary precautions.
- Secure the cylinder-head screws ④ or ⑨ with strain washers ⑤ or ⑩ (tightening torque: frame size I 8 ± 1 Nm, frame size II 12 ± 1 Nm)

Attaching the arc chutes



- Attach the arc chutes ⑫.
- Secure the arc chutes ⑫ by means of fixing screws ⑪.

Functional test

Mechanical functional test

- Charge the stored-energy spring mechanism manually.
- Close.
- Open.
- Check the indicator for wear on the contacts again.

9.5 Internal self-test of the electronic trip unit function

For commissioning and checking the function of the device.

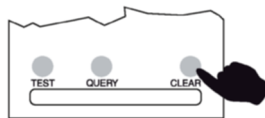
Requirements

- The release is activated by means of:
operational current
- The current is not in the overload range
→ for indicators, see (Indicators on the ETU (Page 63))

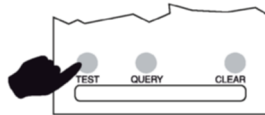
Internal self-test of Circuit Breaker without tripping operation

Normal operation of the Circuit Breaker is not affected.

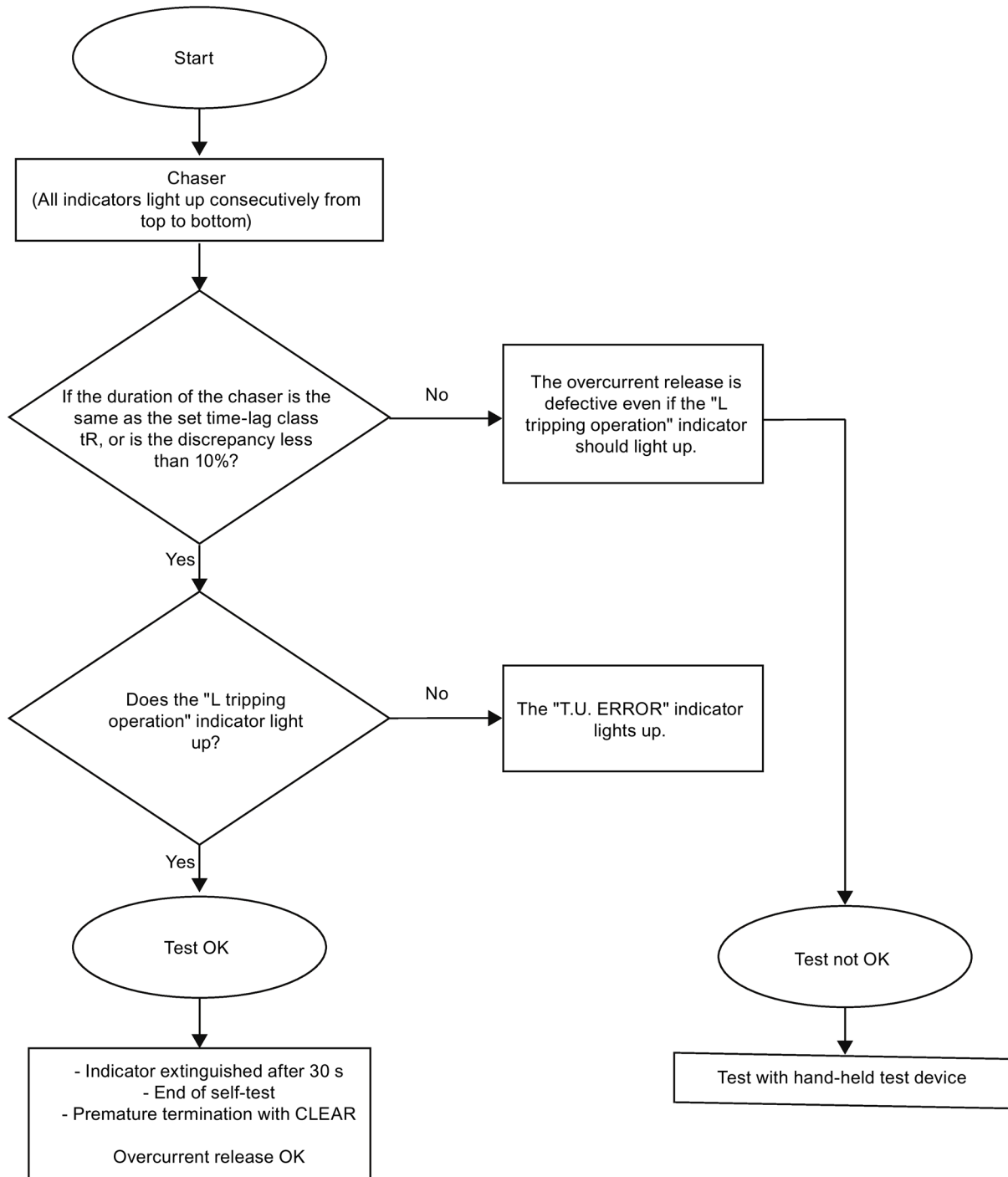
The test can be terminated at any point with "CLEAR".



Start the self-test.



Self-test procedure



9.6 Internal self-test of Circuit Breaker with tripping operation

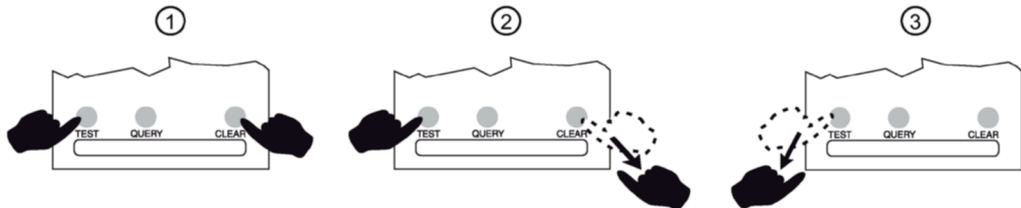
Note

The internal self-test with tripping operation must only be carried out when the downstream circuits have been shut down.

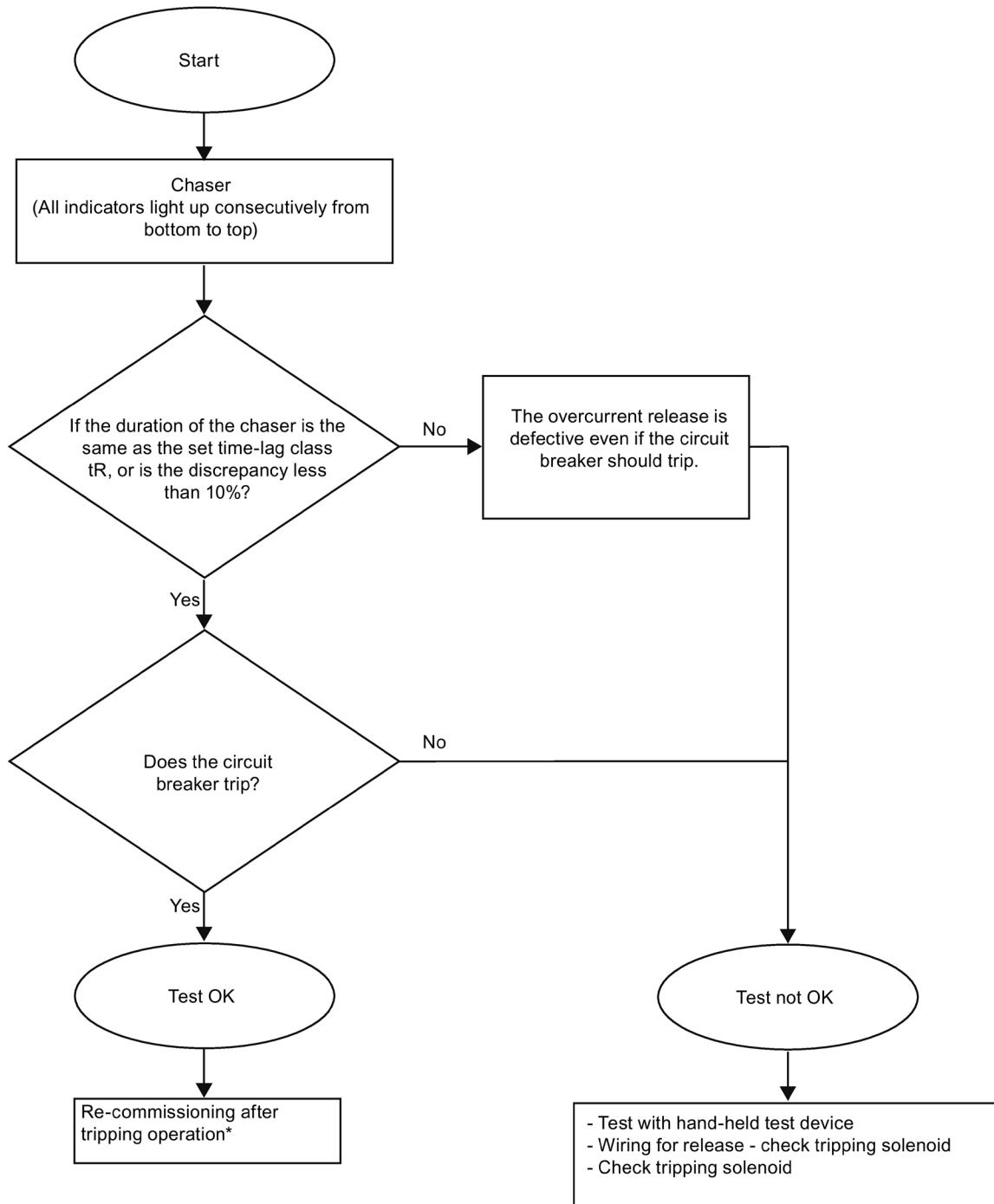
The test can be terminated at any point with "CLEAR".



Start the self-test.



Self-test procedure



See also

Recommissioning after opening operation by means of electronic trip unit (Page 102)

9.7 Replacing the electronic trip unit

Removal

See Removing the operating device (Page 132)

NOTICE

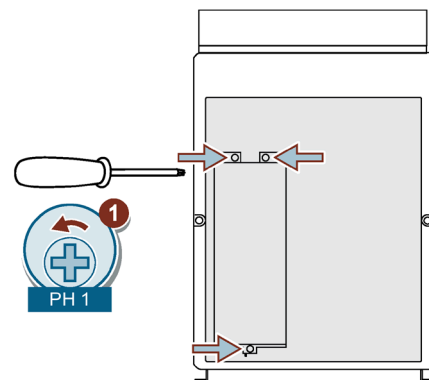
Retrofitting for the electronic trip unit is only permissible by Siemens customer service specialists.

Removal

Note the current electronic trip unit settings.



Remove the nuts and washers.

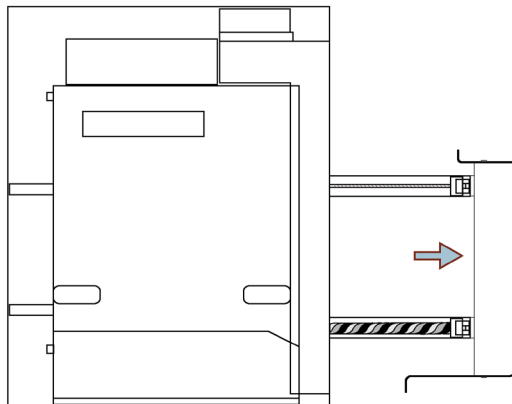


Note

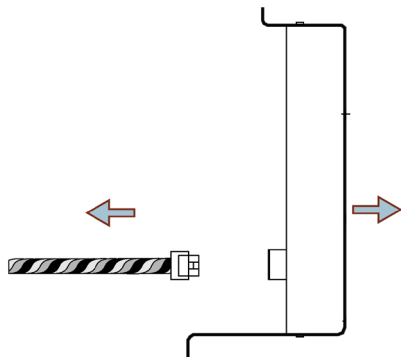
Carefully pull the release forward.

Make sure that you do not damage the cable harness.

9.7 Replacing the electronic trip unit

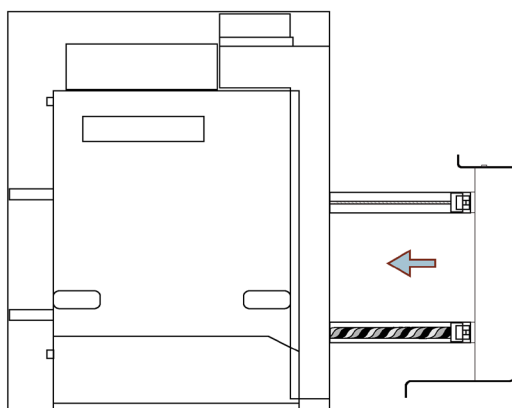


Remove the connector (press the release buttons).

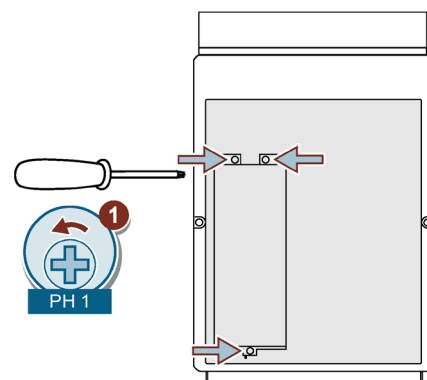


Installation

Remove the connector.



Secure the release.



See Installing the operating device (Page 133)

Test

Note

After the ETU replacement, the Circuit Breaker must be tested with the hand-held test device. A CT test and a Trip test.

See Hand-held test device (Page 134)

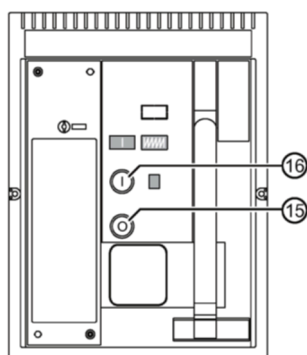
9.7 Replacing the electronic trip unit

Accessories

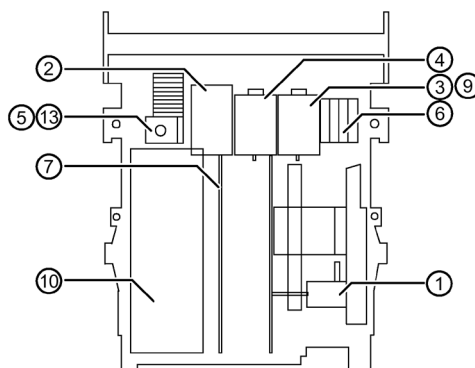
10.1 Accessories

Version specific

Operator panel



Circuit Breaker, operator panel removed



For closing operation

①	Motorized operating mechanism -M
②	Closing solenoid -Y1

For opening operation

③	Shunt release -F1
④	Shunt release -F2
⑤	Tripping solenoid -F5

For monitoring

⑥	Auxiliary switch for switching position indication -S1 ... S6, S60, S61
⑦	Ready-to-close signaling switch -S7
⑨	Undervoltage release -F3
⑨	Undervoltage release with delay -F8
⑩	Electronic trip unit -A1

For interlocking

⑬	Reclosing lockout -F5 with tripped signaling contact -S11
⑮	Key-operated pushbutton "OFF"
⑯	Pushbutton "ON" (mechanical)

10.2 Accessories - general

The following sections describe the accessories available for 3WT. In some cases, the front cover and manual connector may have to be removed. If a withdrawable Circuit Breaker is used, it must be set to the maintenance position. The different activities are described in the following sections.

DANGER

Hazardous voltage

Hazardous stored-energy spring mechanism

Before starting work, the device must be disconnected from the supply and protected against reactivation.

Only carry out work on the device when the Circuit Breaker is shut down and the stored-energy spring mechanism is discharged.

Failure to do so can result in death, severe injury, or substantial material damage.

The devices must be installed and mounted by qualified, authorized personnel only.

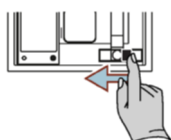
10.2.1 Removing the operating device

Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

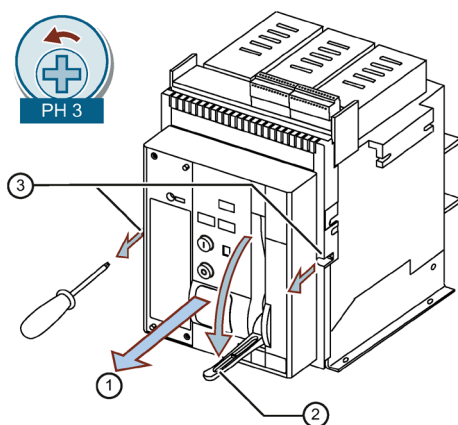
See chapter Preparatory work (Page 104)

Removing the operator panel



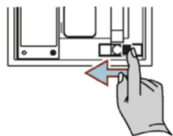
Note

For withdrawable Circuit Breakers: first close the racking hole, then remove the operator panel.



- Remove the fixing screws ③ (2 x), tool: cross-tip screwdriver (size 3).
- Move the charging lever ② until you feel resistance.
- Remove the front cover ① by lifting it up and forward.
- Set down the front cover so that its inside is facing down.

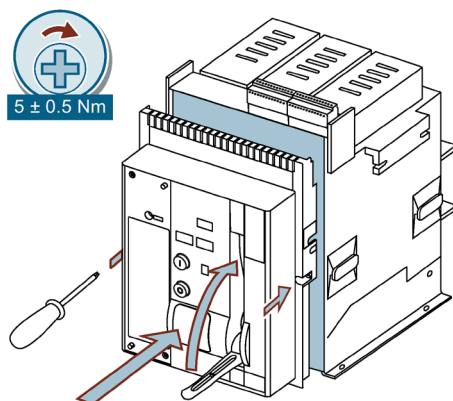
10.2.2 Installing the operating device



Note

For withdrawable Circuit Breakers: first close the racking hole, then attach the operator panel.

Attaching the operator panel



- Attach the front cover (operator panel) by following the above steps in reverse order. When doing so, push the clamping lever forward until you feel resistance and attach the front cover from above. The fixing screws are tightened to 5 Nm.

Final steps

- Fixed-mounted Circuit Breaker: connect the manual connector. When doing so, make sure that you do not trap any cables.
- Withdrawable Circuit Breaker: rack to the test position (from disconnected position to test position: approx. 22 rotations of the racking handle).

10.3 Hand-held test device

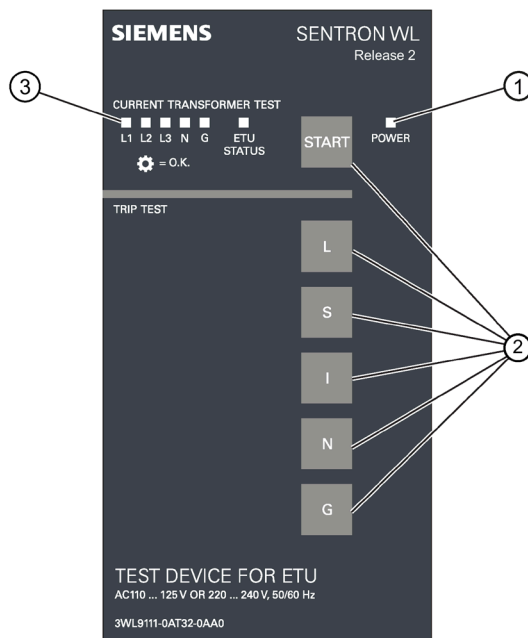
The hand-held test device is used to check that the following devices function properly:

- Electronic trip unit
- Energy and current transformer
- Tripping solenoid F5
- Measured value display

Article No.

Description	Article No.
Manual function tester for electronic trip unit	3WL9111-0AT32-0AA0

View



- ① LED for indicating the operating voltage
- ② Control keys
- ③ 6 LEDs for indicating the test results

Preparatory work

- Open and disconnect the Circuit Breaker.
- Note the setting values of the electronic trip unit.
- Deactivate ground fault protection (if available) on the electronic trip unit ($I_g = \text{OFF}$).
- Setting value $I_R = 1.0 I_n$
- Remove the cover cap from test socket X25 on the ETU.

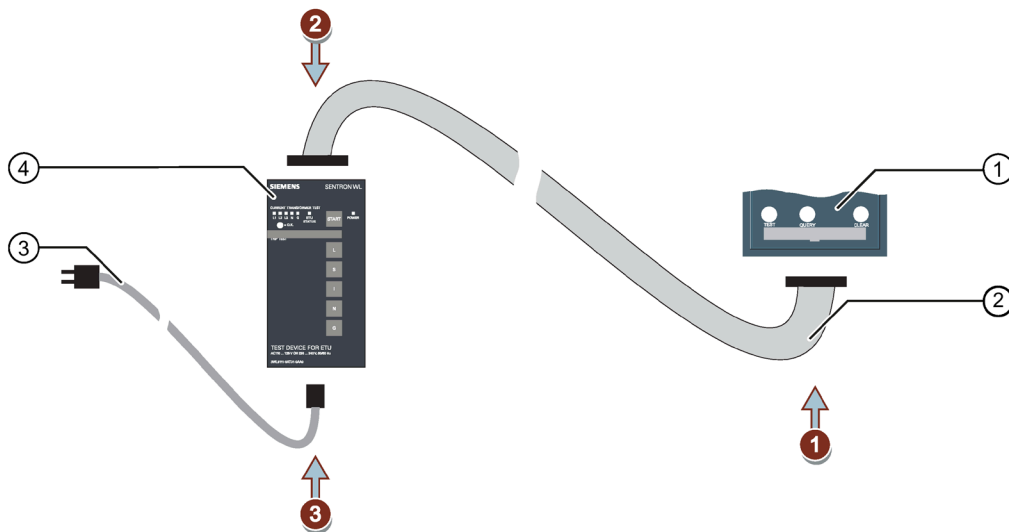
! CAUTION

If the hand-held test device is used while the Circuit Breaker is closed, this can cause false tripping and destroy the hand-held test device.

Connection

Note

Malfunctions and incorrect test results can occur if the connection sequence is not followed.



- ① Test socket on the electronic trip unit
- ② Cable with SUB D (40 pole) (hand-held test device) to plug connector (40 pole)
- ③ Power supply
- ④ Hand-held test device

10.3 Hand-held test device

Power supply

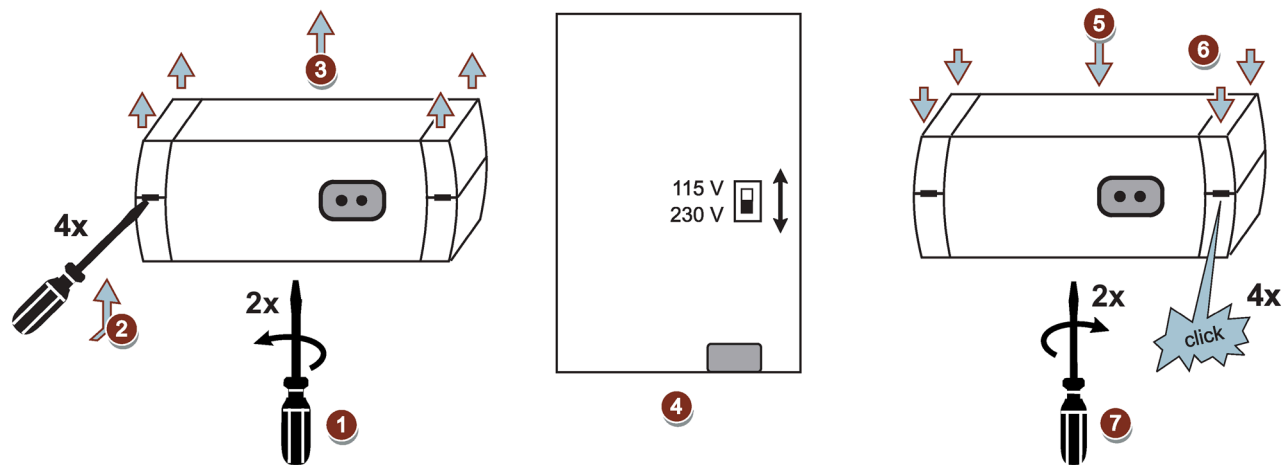
The hand-held test device is supplied from an AC voltage network:

- 220 ... 240 V 50/60 Hz
- 110 ... 125 V 50/60 Hz

Factory setting: 220 ... 240 V

The selector switch is located on the circuit board within the hand-held test device.

Switching the line voltage



Operation

When the power supply is connected, the status test starts automatically with the querying of different electronic trip unit components and parameters. If the status test is successful, the "ETU STATUS" LED lights up (continuous light). If the test is not successful, this means that the electronic trip unit or one of its components is either defective or has not been installed.

Indicator	Meaning
1 x short, pause	Test device defective
2 x short, pause	Electronic trip unit defective
4 x short, pause	<ul style="list-style-type: none"> • Parameters set incorrectly • Current transformer incorrectly terminated
5 x short, pause	<ul style="list-style-type: none"> • Tripping solenoid F5 incorrectly connected or defective • Electronic trip unit defective

The status test can be repeated at any time by means of the "START" button (press for at least 3 s). The status test can also be carried out on electronic trip units that have already been activated. In this case, note that the "ETU STATUS" LED may flash twice briefly when the result of the status test is signaled even if no fault is present. To be on the safe side, the electronic trip unit should be deactivated and the status test repeated.

Testing the transformers

To test the energy and current transformers, press the "START" button (for less than 2 s).



If the LED lights up, this means that the transformer is functioning properly. If the LED flashes, the transformer is either not installed, incorrectly connected, or defective.

Result of the N transformer test

If the LED flashes (1 s ON, 1 s OFF), this signals a fault with the measuring transformer of the neutral conductor. This might be because a measuring transformer has not been installed (e.g. no external neutral conductor transformer connected), or it has been connected incorrectly, or is defective.

If the LED starts flashing quickly (0.5 s ON, 0.5 s OFF), this signals a fault with the energy transformer of the neutral conductor. This might be because an energy transformer has not been installed (e.g. when an external neutral conductor transformer is connected), or it has been connected incorrectly, or is defective.

Testing the tripping function

- Charge the stored-energy spring mechanism manually.
- Close the Circuit Breaker

To test the tripping function, press either "L", "S", "I", "N", or "G".



The Circuit Breaker trips after the set delay time plus 2 seconds. The reason for tripping can be queried via the "QUERY" button on the electronic trip unit. To do so, the electronic trip unit must have been active for at least 20 minutes. If the Circuit Breaker does not trip, the electronic trip unit is either not equipped with the relevant protection function or is defective.

Testing the measured value display

After the tripping test, the capability of the system to store the reasons for tripping must be tested via the "QUERY" button when the ETU is deactivated.

To test the measured value display, press "I" and "N" simultaneously.



Over a period of 30 s, a current is simulated in L1, L2, L3, N, and G consecutively via the measuring transformer. The LEDs of the corresponding transformers flash. The test is considered successful when current is displayed at the relevant point.

Activating the electronic trip unit

To activate the electronic trip unit, press "N" and "G" simultaneously.



The electronic trip unit remains active until you press a different button.

This function can be used, for example, to test the signaling of the "T.U. Error" LED if the status test ended with the fault "Electronic trip unit defective".

Subsequent steps

- Restore the setting values you noted down.
- Place the cover cap on test socket X25.

10.4 External transformer for neutral conductors

10.4.1 External transformer for neutral conductors (for ETU37WT ... ETU47WT)

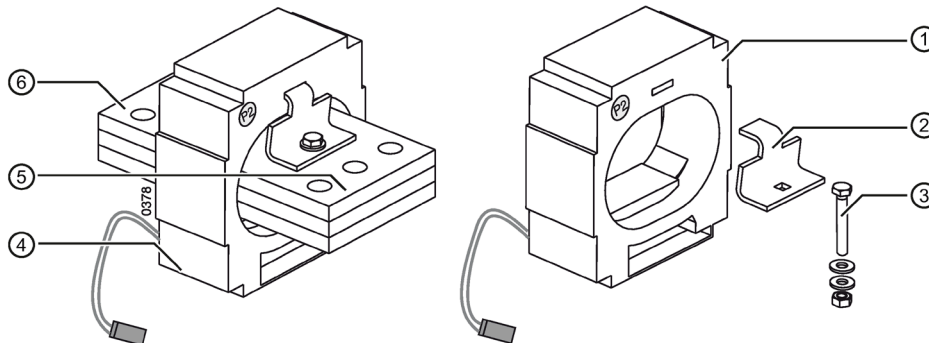
Note

The secondary connection cables from the neutral conductor transformer to the 3WT Circuit Breaker must be twisted.

Article No.

Description		Article No.
Current transformers for 3-pole Circuit Breakers, external neutral conductor with copper busbars	Size I	3WL9111-0AA31-0AA0
	Size II	3WL9111-0AA32-0AA0
Current transformers for 3-pole Circuit Breakers, external neutral conductor without copper busbars	Size I	3WL9111-0AA21-0AA0
	Size II	3WL9111-0AA22-0AA0

External transformer for neutral conductors



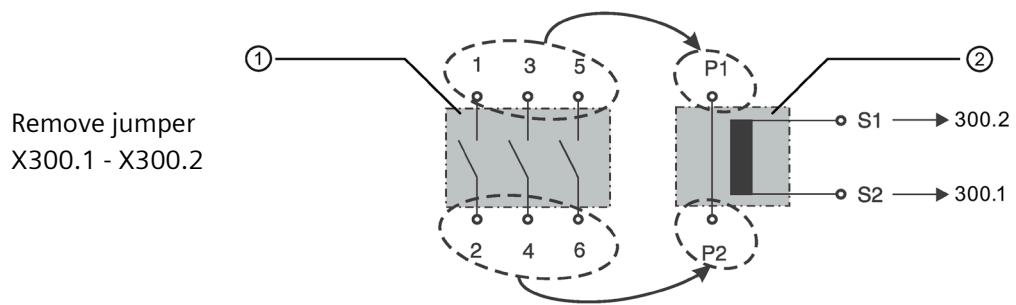
- ① Version for plant-side copper bar
- ② Mounting bracket
- ③ M6 bolt with washers and nut
- ④ Version with copper connection elements
- ⑤ Connection P2
- ⑥ Connection P1

Assignment of connections

This assignment ensures that the current in the Circuit Breaker and external N transformer flows in the same direction.

Note

Any missing auxiliary current connections (secondary disconnect, auxiliary supply connector, sliding contact module for guide frame) can be retrofitted if required.



- ① Main circuit
- ② External N transformer

External transformer for neutral conductors - dimension drawings

Frame size I



Frame size II

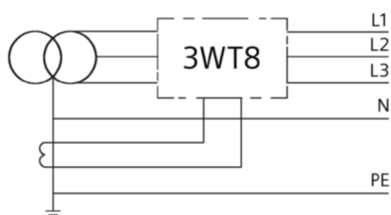


10.4.2 External ground fault current transformer (only for ETU47WT)

The ground fault protection can use an external current transformer with the following properties:

- Primary current: 1200A
- Secondary current: 1A
- Accuracy: Class 1
- Breaker internal burden: 0.11 Ohm

Examples



3 pole Circuit Breaker with current transformers "Y" connected with the star point of the transformer grounded.

Connection

The external ground fault current transformer has to be connected to **X100.6** and **X100.7**.

Note

Any missing auxiliary current connections (secondary disconnect, auxiliary supply connector, sliding contact module for guide frame) can be retrofitted if required)

10.5 Retrofitting the internal N transformer

Article No.

Description	Article No.
Internal N transformer, Size I	3WT9843-1RE00
Internal N transformer, Size II	3WT9843-2RE00

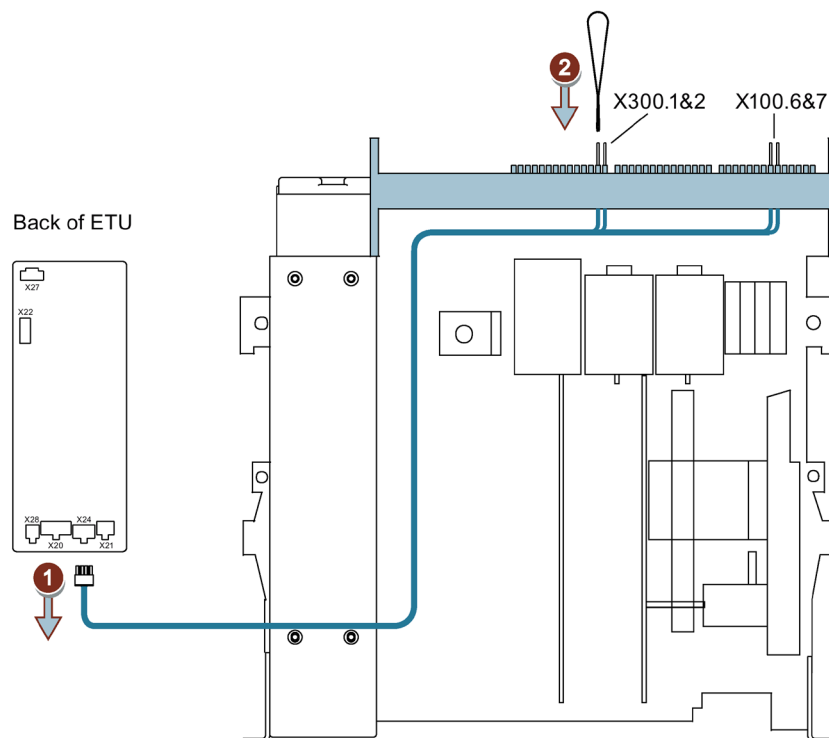
Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

See chapter Preparatory work (Page 104)

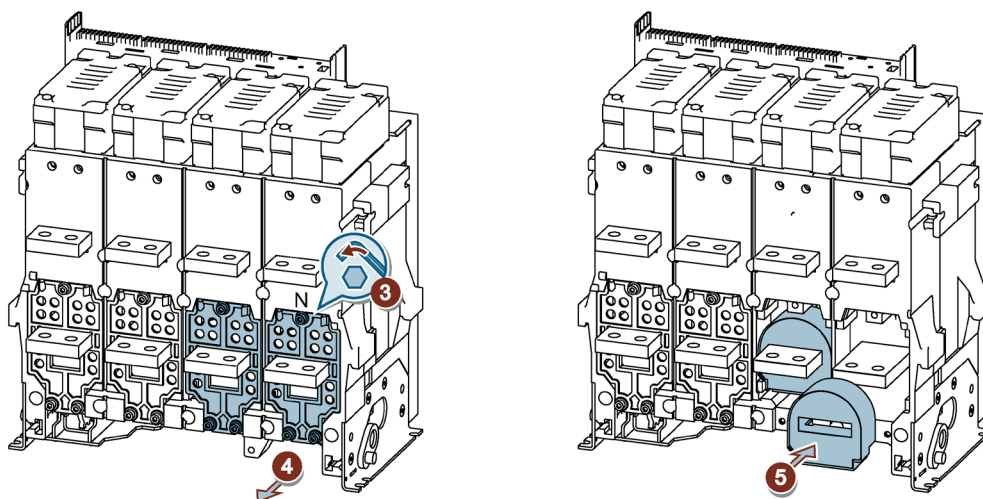
Retrofitting the internal N transformer

- Remove the electronic trip unit (for details, see Replacing the electronic trip unit (Page 125)).

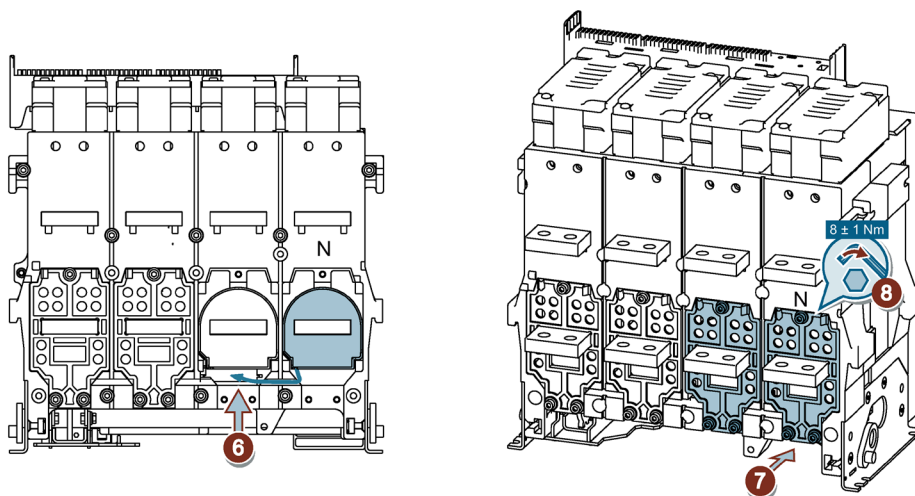


1. Unplug the connector from X24. Removing the cable harness from the electronic trip unit
2. Remove the cable from terminals 1 & 2 of plug connector X300 and terminals 6 & 7 of plug connector X100.

10.5 Retrofitting the internal N transformer

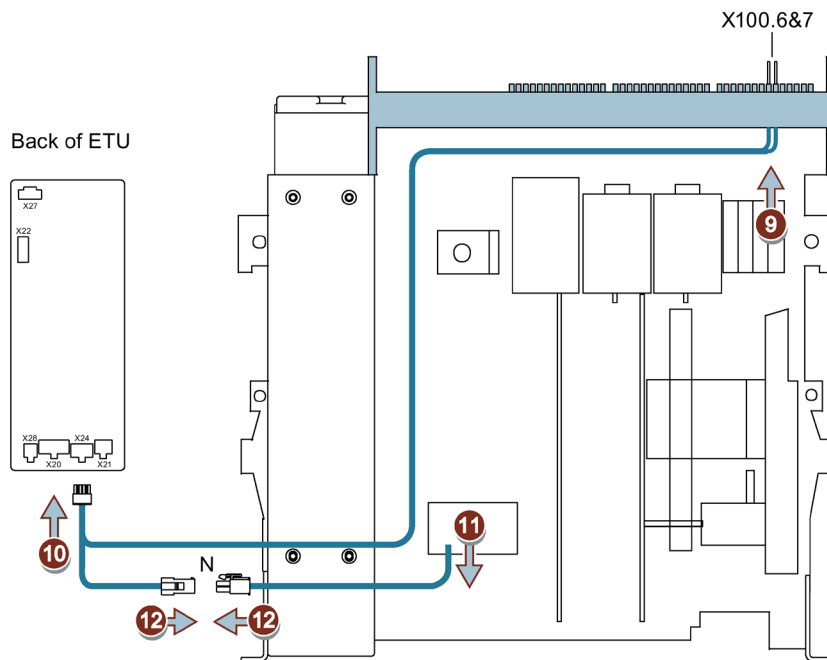


3. Remove the screws.
4. Remove the transformer covers on the N conductor connection and phase L3
5. Installing the N transformer



6. Insert the connector from the transformer connection into the cable compartment.
7. Attach the transformer cover.
8. Secure with screws (tightening torque: 8 ± 1 Nm).

10.5 Retrofitting the internal N transformer



9. Insert terminals into X100.6 & 7 of plug connector.
10. Plug the connector into X24 of ETU.
11. Pull out the connector of the N transformer in the Circuit Breaker.
12. Plug the connector for the cable harness into the connector for the N transformer and place them in the cable duct.

Subsequent steps

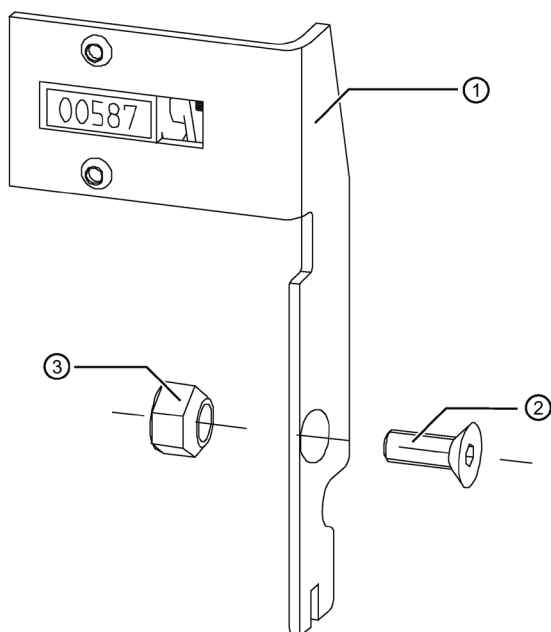
- Place the electronic trip unit down in front of the Circuit Breaker.
- Connecting the connectors on the electronic trip unit (X20, X21 and X28, etc.).
- Install the electronic trip unit (for details, see Replacing the electronic trip unit (Page 125)).

10.6 Counting mechanism

Article No.

Description	Article No.
5-digit operating cycles counter	3WT9864-OCA00

Check the contents of the packaging



①	Counting mechanism, complete	1x
②	DIN 7991 countersunk screw M6 x 16 - 8	1x
③	Conical nut	1x

Preparatory work

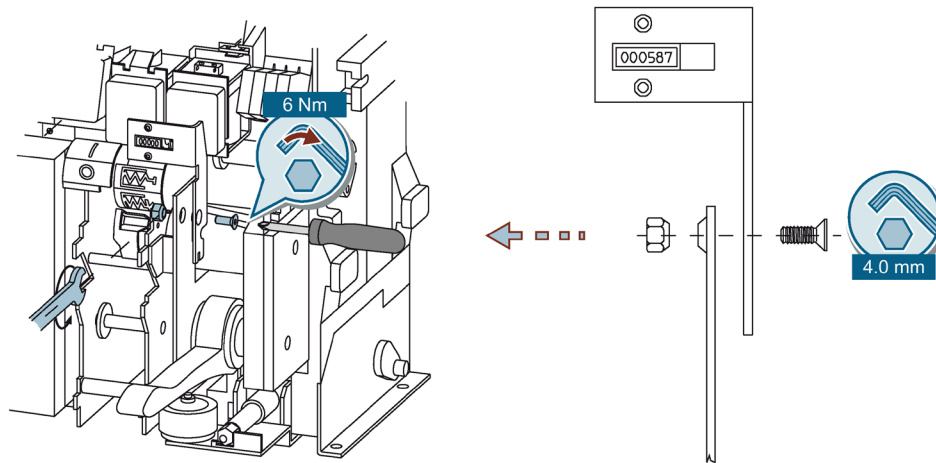
- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

See chapter Preparatory work (Page 104)

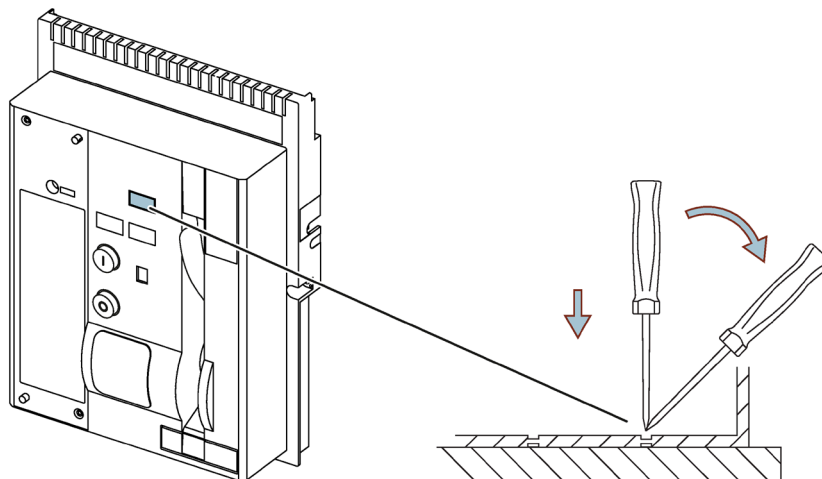
Removing the operating device

Removing the operating device (Page 132)

Installing the counting mechanism



Installing the display window



- Place the operator panel onto a wooden board (make sure that it is in full contact with the surface) near the outline to be cut out.
- Use a screwdriver to cut out the groove base from the pre-pressed groove.

Functional check

Charge the stored-energy spring mechanism and watch the counting mechanism. Once the charging process is complete, the counting mechanism is incremented by one.

CAUTION

Taking the necessary precautions, close and open the Circuit Breaker to discharge the stored-energy spring mechanism.

Installing the operating device

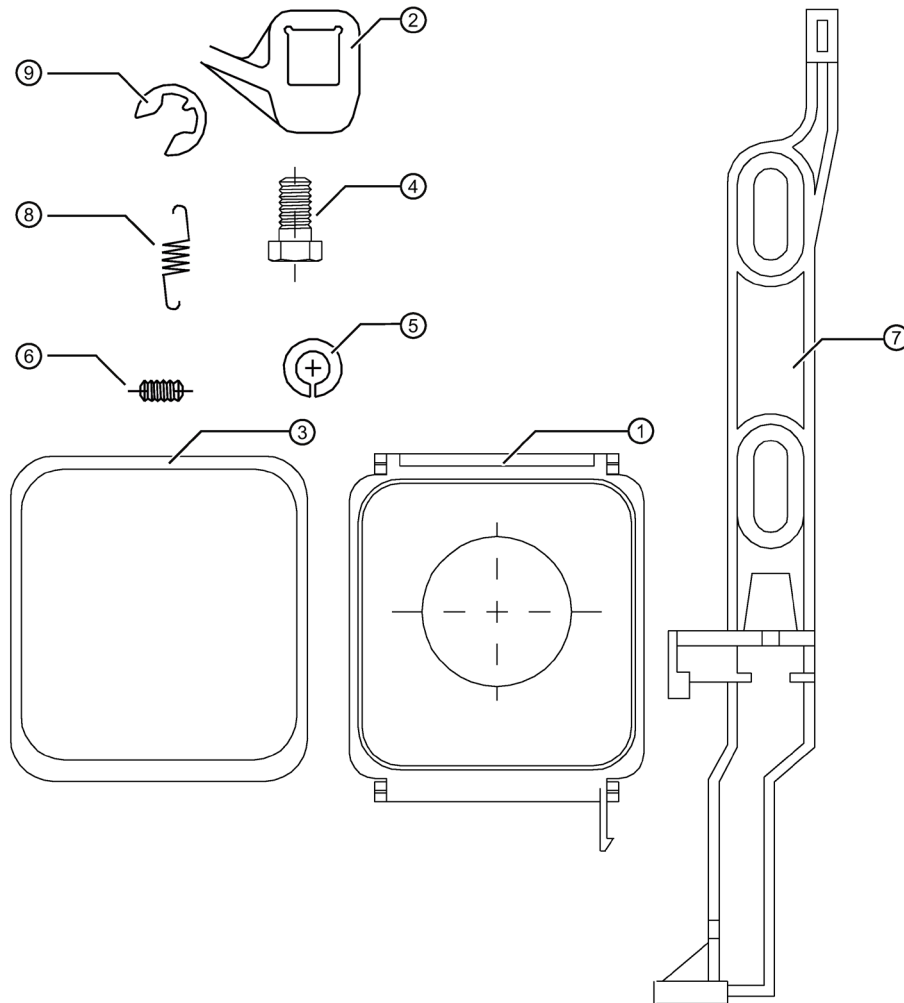
Installing the operating device (Page 133)

10.7 Castell lock

Article No.

Description	Article No.
Mounting set for 3WT lock or CASTELL lock	3WT9863-6JE00

Check the contents of the packaging



①	Housing	1x
②	Latch	1x
③	Seal	1x
④	Hexagon socket-head screw M 6x10 ISO 4017	1x
⑤	Spring washer A6 DIN 128	2x
⑥	Threaded pin M 4x8 ISO 7435	1x
⑦	Door slider (metal)	1x
⑧	Door slider spring	1x
⑨	Lock washer	2x

Note

The following components must be ordered from the relevant manufacturer: Castell lock interlock, version FS2.

⚠ CAUTION

The plastic door slider (if have) must be replaced by the metal door slider in this package.

Preparatory work

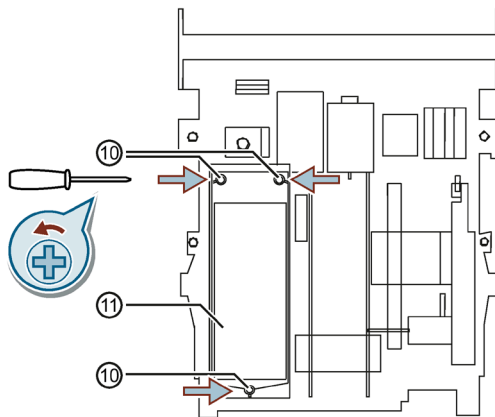
- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

See chapter Preparatory work (Page 104)

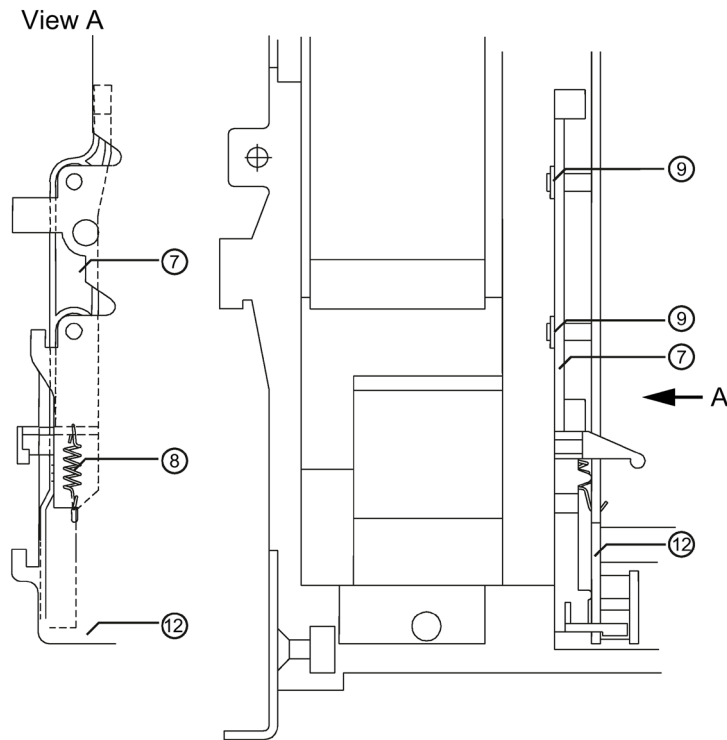
Removing the operating device

See chapter Removing the operating device (Page 132)

Installing the door slider (if not already installed)

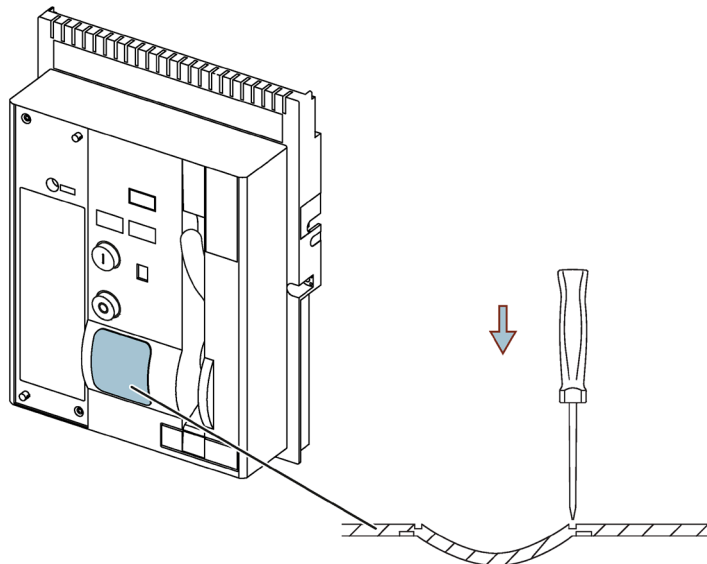


- Remove the screws ⑩ for the electronic trip unit ⑪.
- Remove the electronic trip unit ⑪.



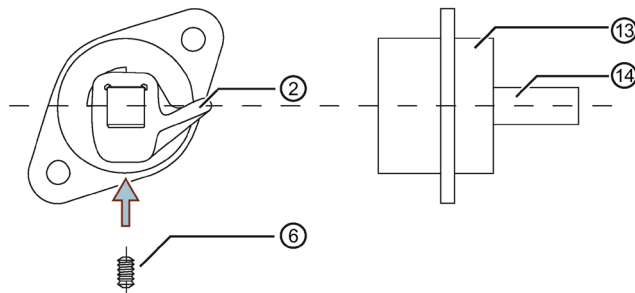
- Place the door slider spring ⑧ with the off-center eye in the side panel of the operating mechanism ⑫.
- Place the door slider spring ⑧ with the center eye in the door slider ⑦ using a small screwdriver (see diagram).
- Place the door slider ⑦ with the door slider spring ⑧ on the side panel of the operating mechanism ⑫ and secure it by means of the lock washers ⑨.
- Install the electronic trip unit ⑪. When doing so, make sure that you do not trap any cables.

Preparing the operator panel



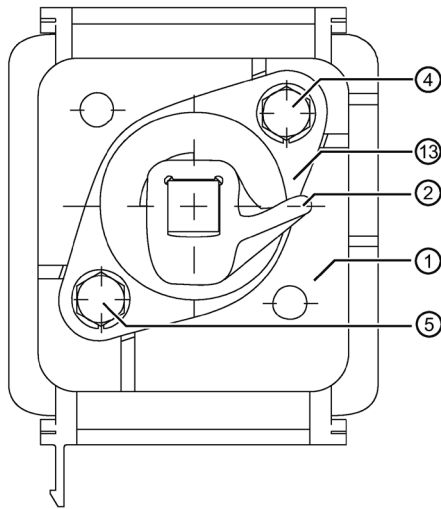
- Place the operator panel on a stable surface near the outline to be cut out.
- Use a hammer and screwdriver to cut out the groove base from the pre-pressed groove.
- File the edges of the cutout.

Preparing the Castell / fortress lock



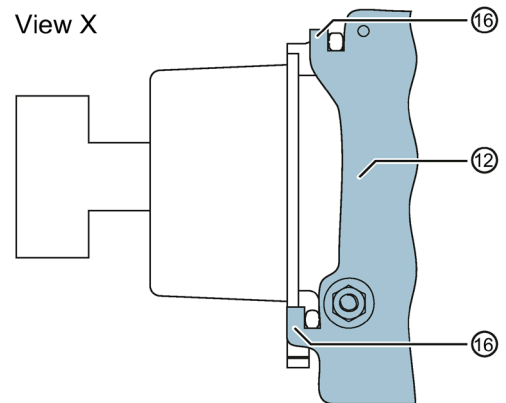
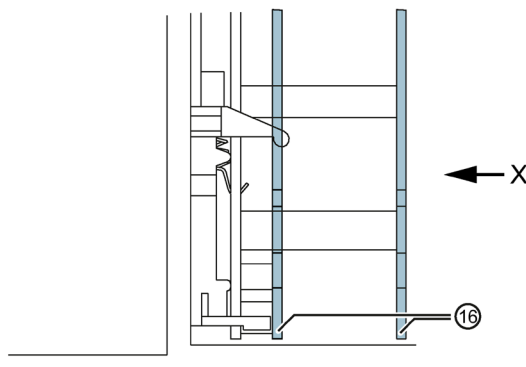
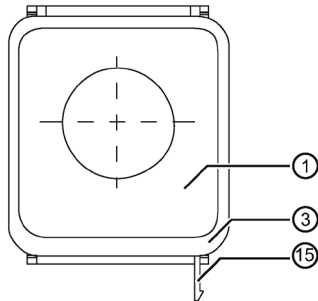
- Remove the key.
- Attach the latch (2) as far as it will go onto the square section (14) of the lock (13).
- Secure the latch (2) by means of a threaded pin (6).

Installing the Castell / fortress lock in the housing



- Attach the lock ⑬ with latch ② to the housing ①.
- Screw the lock ⑬ onto the housing ① by means of a hexagon socket-head screw ④ and spring washer ⑤.

Installing the housing

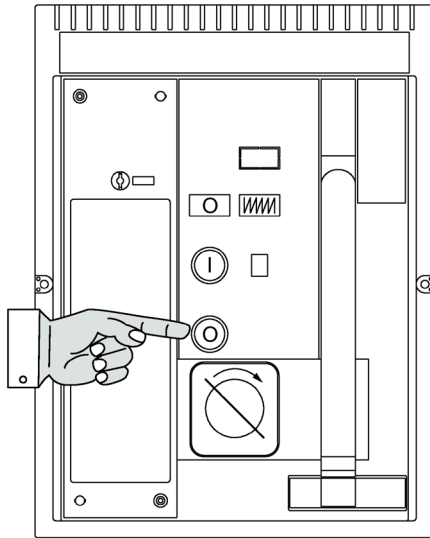


- Push the seal ③ over the housing ①. When doing so, make sure that the wide edge of the seal is on the lower part of the housing.
- Place the housing ① with lock ⑬ into the clips ⑯ on the side panel of the operating mechanism ⑫. The locking pin ⑮ must audibly engage.

Installing the operating device

Installing the operating device (Page 133)

Functional check



While pressing the OFF button, turn the key clockwise to the locking position.

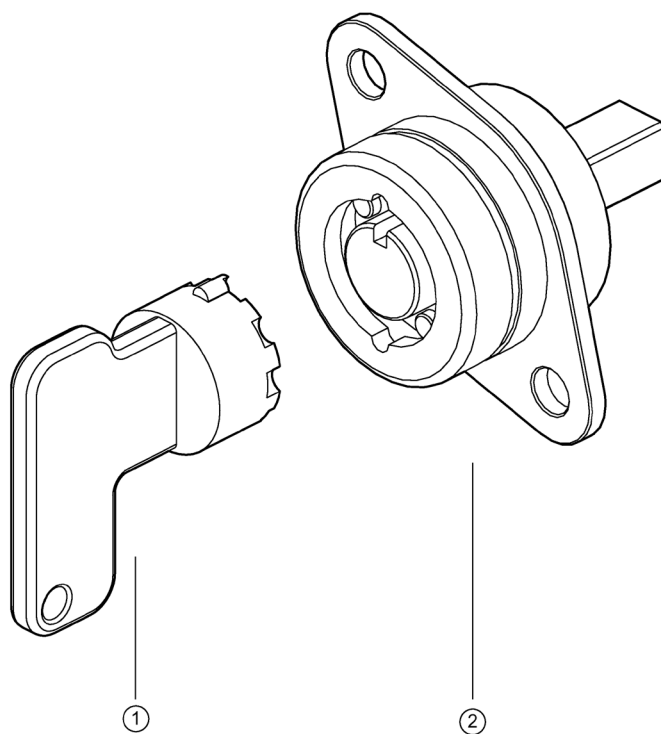
- Remove the key.
- The Circuit Breaker cannot close when in this position.

10.8 3WT lock (set), 3 locks with 2 keys

Article No.

Description	Article No.
Interlocking systems, 3WT lock (set), 3 locks with 2 keys	3WT9863-7JE00

Check the contents of the package



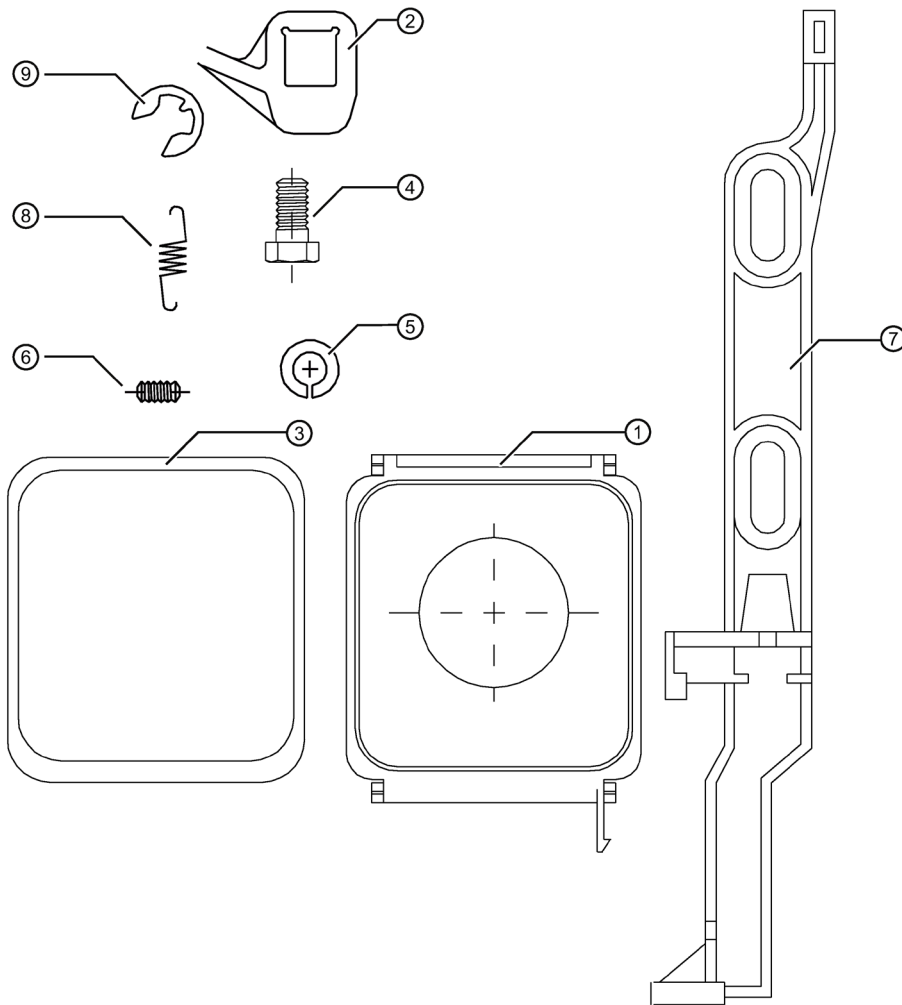
①	Key	2x
②	Lock	3x

Note

The setup package (Assembly kit for Castell / fortress lock) used for 3WT lock (set) needs to be ordered separately. The article number as spare part: 3WT9863-6JE00.

Setup package for 3WT lock (set)

Check the contents of the package



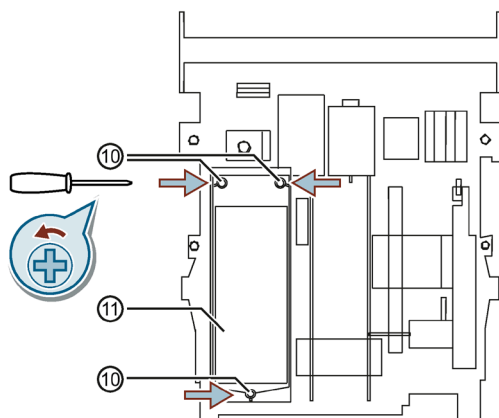
①	Housing	1x
②	Latch	1x
③	Seal	1x
④	Hexagon socket-head screw M 6x10 ISO 4017	1x
⑤	Spring washer A6 DIN 128	2x
⑥	Threaded pin M 4x8 ISO 7435	1x
⑦	Door slider (metal)	1x
⑧	Door slider spring	1x
⑨	Lock washer	2x

⚠ CAUTION
 The plastic door slider (if have) must be replaced by the metal door slider in this package.

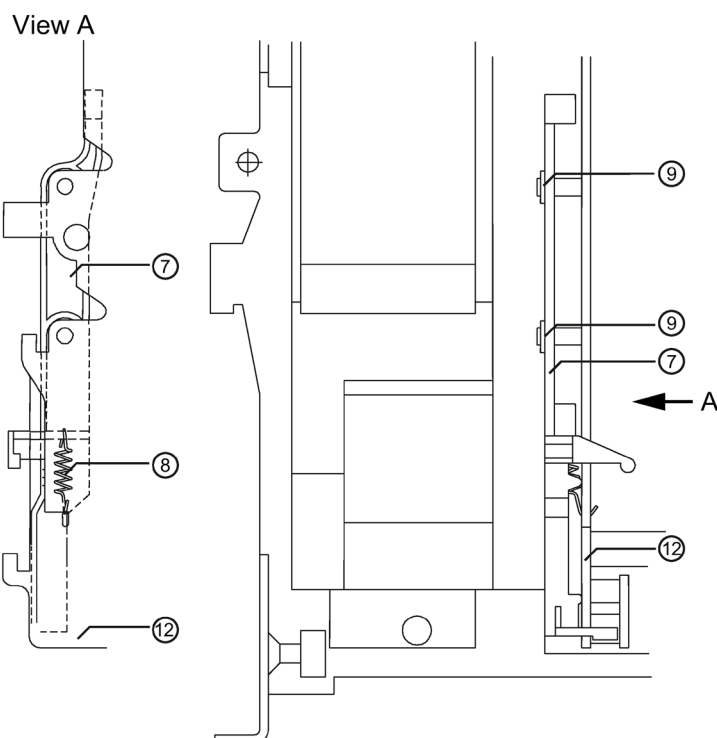
Removing the operating device

Removing the operating device (Page 132)

Installing the door slider (if not already installed)



- Remove the screws ⑩ for the electronic trip unit ⑪.
- Remove the electronic trip unit ⑪.

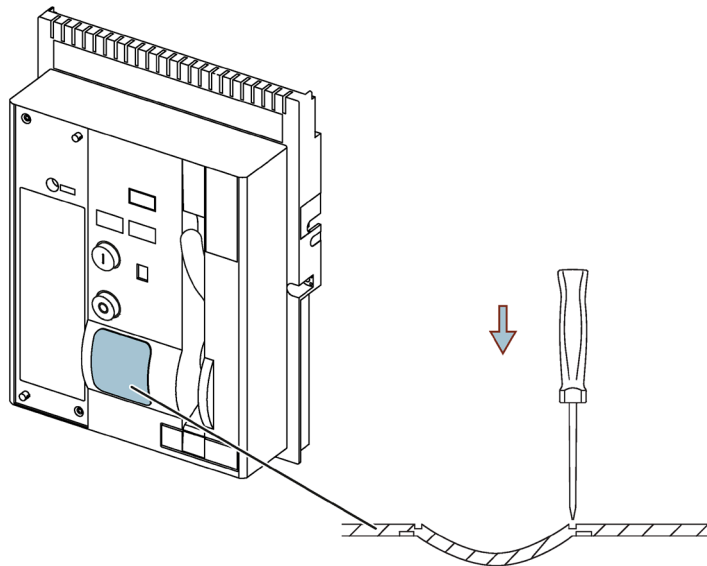


- Place the door slider spring ⑧ with the off-center eye in the side panel of the operating mechanism ⑫.
- Place the door slider spring ⑧ with the center eye in the door slider ⑦ using a small screwdriver (see diagram).

10.8 3WT lock (set), 3 locks with 2 keys

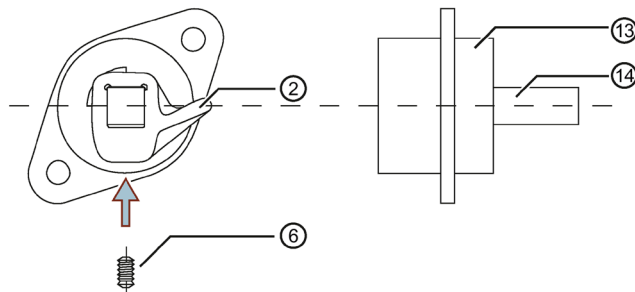
- Place the door slider ⑦ with the door slider spring ⑧ on the side panel of the operating mechanism ⑫ and secure it by means of the lock washers ⑨.
- Install the electronic trip unit ⑪. When doing so, make sure that you do not trap any cables.

Preparing the operator panel



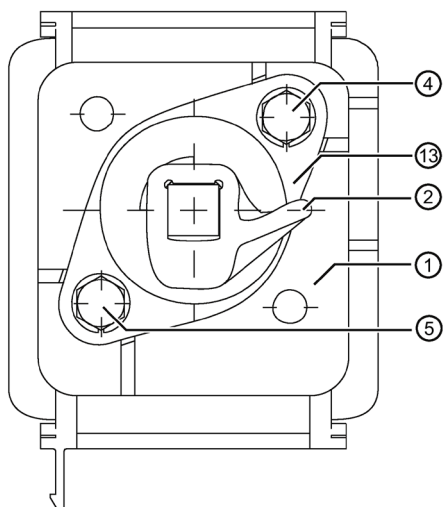
- Place the operator panel on a stable surface near the outline to be cut out.
- Use a hammer and screwdriver to cut out the groove base from the pre-pressed groove.
- File the edges of the cutout.

Preparing the 3WT lock



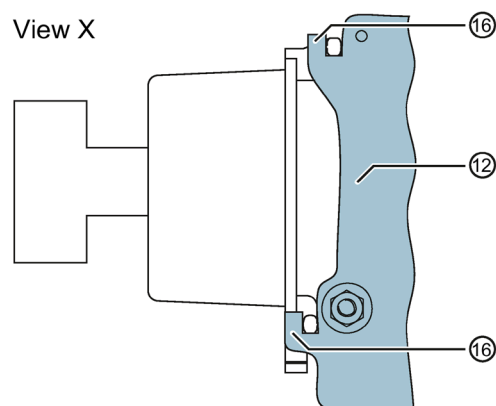
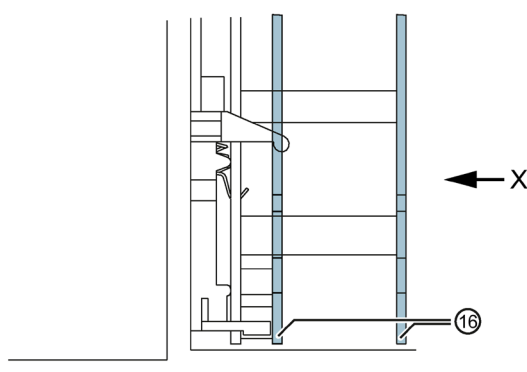
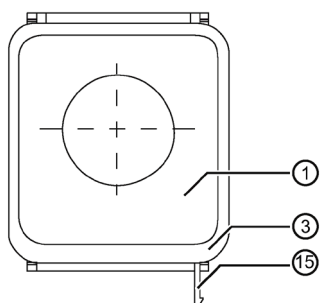
- Remove the key.
- Attach the latch ② as far as it will go onto the square section ⑭ of the lock ⑬.
- Secure the latch ② by means of a threaded pin ⑥.

Installing the 3WT lock in the housing



- Attach the lock ⑬ with latch ② to the housing ①.
- Screw the lock ⑬ onto the housing ① by means of a hexagon socket-head screw ④ and spring washer ⑤.

Installing the housing



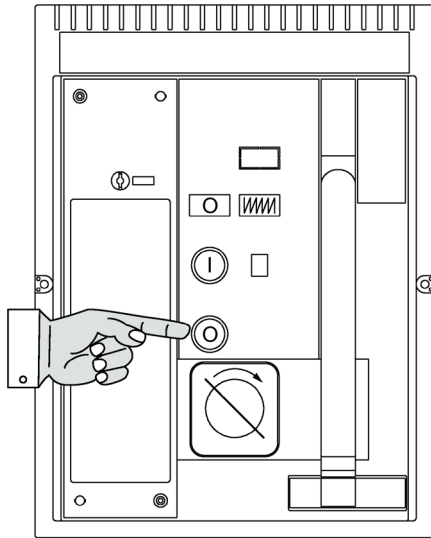
10.8 3WT lock (set), 3 locks with 2 keys

- Push the seal ③ over the housing ①. When doing so, make sure that the wide edge of the seal is on the lower part of the housing.
- Place the housing ① with lock ⑬ into the clips ⑯ on the side panel of the operating mechanism ⑫. The locking pin ⑮ must audibly engage.

Installing the operating device

Installing the operating device (Page 133)

Functional check



While pressing the OFF button, turn the key clockwise to the locking position.

- Remove the key
- The Circuit Breaker cannot close when in this position.

10.9 Mechanical interlock

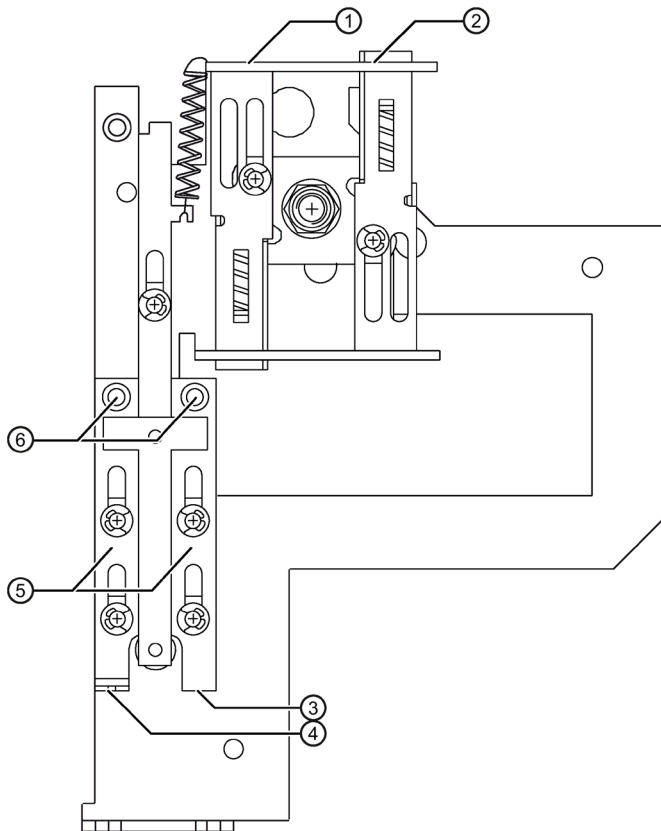
10.9.1 Information about mechanical interlock

Note

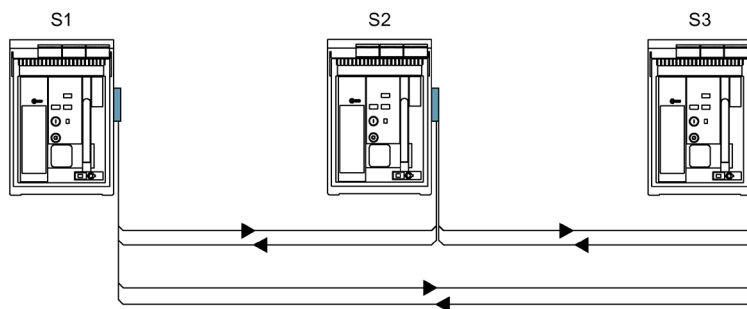
To ensure that the interlock functions properly, the following minimum switchgear requirements must be fulfilled:

1. Bowden wires must be laid so that they are as straight as possible.
 2. The bending radii of the Bowden wire must be > 500 mm.
 3. The total bending angle across the length of the Bowden wire must not exceed 540° .
 4. If the Circuit Breakers to be interlocked are arranged vertically, the interlock mechanisms must be aligned.
 5. Circuit Breakers to be interlocked must be arranged in such a way that 2 m or 4.5 m Bowden wires can be properly laid in accordance with the conditions specified in points 1. - 4.
 6. The Bowden wires must be secured before the interlock is adjusted (e.g. cable ties).
 7. When choosing the switchgear compartment, make sure that it provides sufficient room for adjusting the interlock.
 8. Openings and cutout sections in system elements must be designed in such a way that the direction of the Bowden wires is not changed and that the wires are not obstructed when they are routed.
-

Mechanical interlock module



- ① Output 1
- ② Output 2
- ③ Input 2
- ④ Input 1
- ⑤ Index brackets
- ⑥ The cylinder-head screws with strain washers

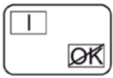
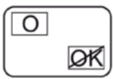
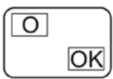


The mechanical interlock module can be used for two or three Circuit Breakers. The following designations apply in the configuration instructions below:

- $O_{1/2}$: Output information $1/2$
- $I_{1/2}$: Input information $1/2$
- $S_{1/2/3}$: Circuit Breaker $1/2/3$

If the output information 1 of Circuit Breaker 1 is interconnected with the input information 2 of Circuit Breaker 2, for example, the following abbreviations are used:

$S_1 O_1 - S_2 I_2$

	The statuses of the Circuit Breakers are indicated on the operator panel as follows:
	Circuit Breaker CLOSED
	Circuit Breaker OPEN and not ready to CLOSE (interlocked)
	Circuit Breaker OPEN and ready to CLOSE (not interlocked)

Configuration: Two Circuit Breakers back to back

Description:

A Circuit Breaker can only be closed when the other is open.

Required equipment:

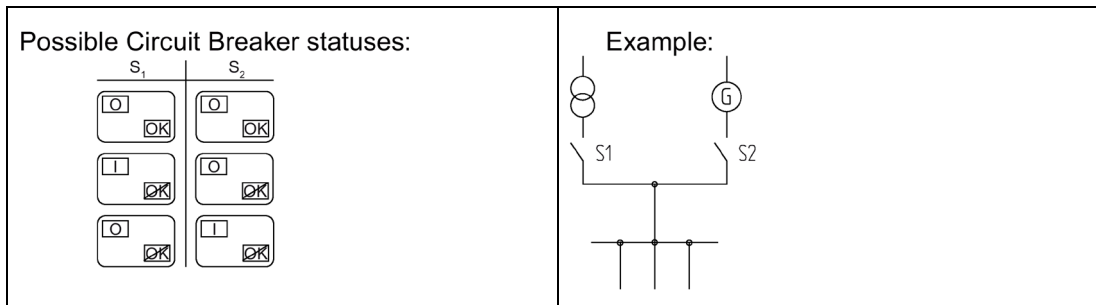
Each Circuit Breaker is equipped with an interlocking module and a Bowden wire.

Terminals for the Bowden wires:

1. Bowden wire: $S_1 O_1 - S_2 I_1$
2. Bowden wire: $S_1 I_1 - S_2 O_1$

Note

The cylinder-head screws with strain washers must be screwed into the index brackets at the following terminals: $S_1 I_1$; $S_2 I_1$.



In certain configurations, additional Bowden wires are required.

Please see chapter Installing Bowden wire (Page 180)

Configuration: Three Circuit Breakers stacked

Description:

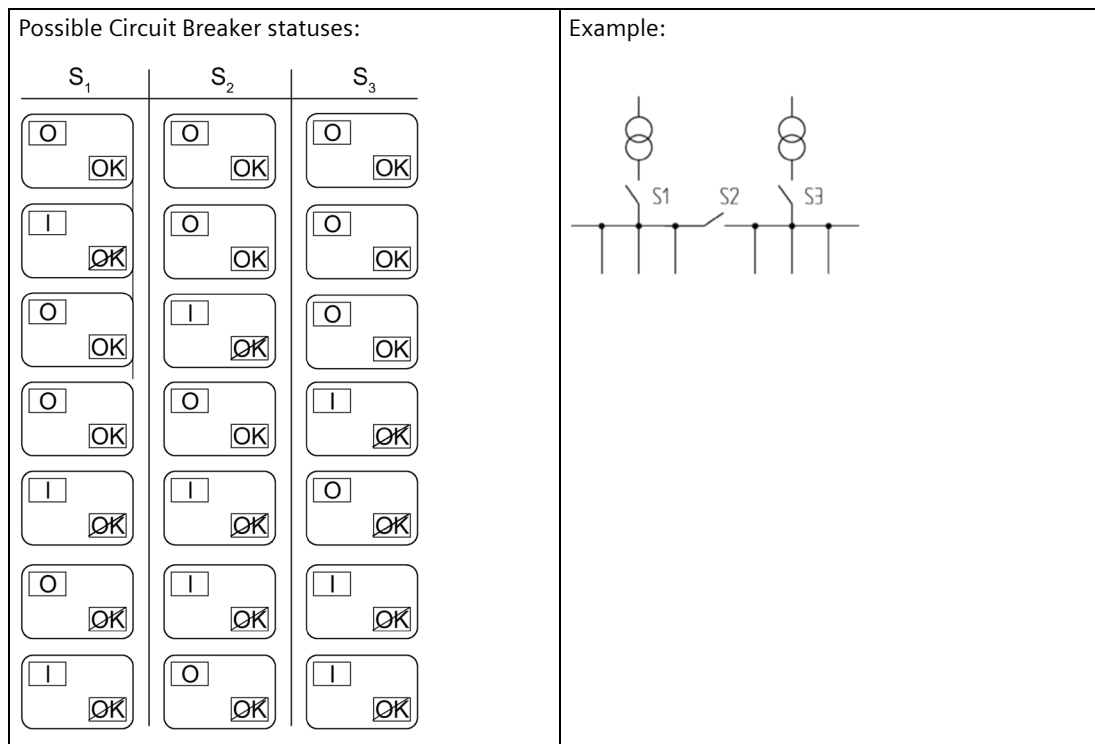
Any two Circuit Breakers can be closed at any time, with the third interlocked.

Required equipment:

Each Circuit Breaker is equipped with an interlocking module and a Bowden wire. Three additional Bowden wires must be ordered separately.

Terminals for the Bowden wires:

1. Bowden wire: S₁ O₁ - S₂ I₁
2. Bowden wire: S₁ O₂ - S₃ I₁
3. Bowden wire: S₂ O₁ - S₁ I₂
4. Bowden wire: S₂ O₂ - S₃ I₂
5. Bowden wire: S₃ O₁ - S₁ I₂
6. Bowden wire: S₃ O₂ - S₂ I₂



Configuration: Three Circuit Breakers stacked

Description:

When one Circuit Breaker is closed, the other two cannot be closed.

Required equipment:

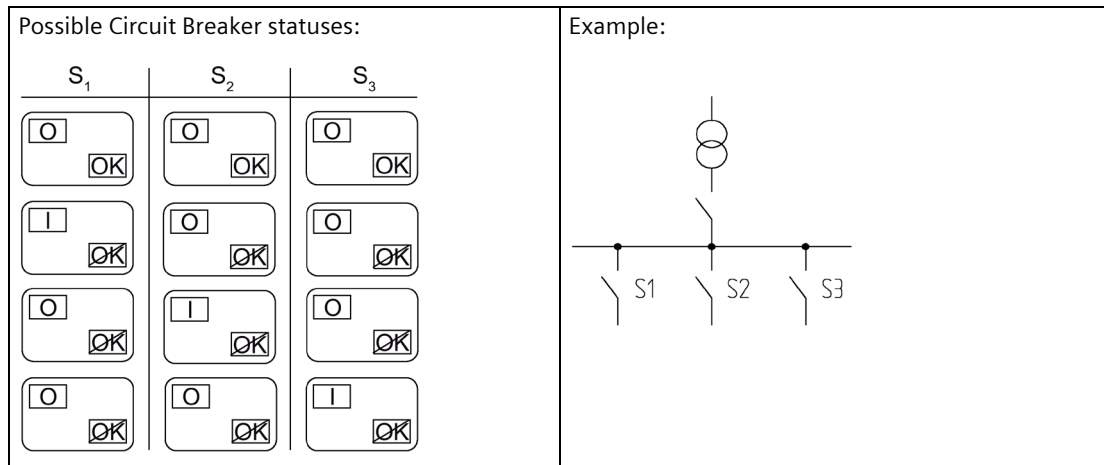
Each Circuit Breaker is equipped with an interlocking module and a Bowden wire. Three additional Bowden wires must be ordered separately.

Terminals for the Bowden wires:

1. Bowden wire: S₁O₁ - S₂I₁
2. Bowden wire: S₁O₂ - S₃I₁
3. Bowden wire: S₂O₁ - S₁I₁
4. Bowden wire: S₂O₂ - S₃I₂
5. Bowden wire: S₃O₁ - S₁I₂
6. Bowden wire: S₃O₂ - S₂I₂

Note

The cylinder-head screws with strain washer must be screwed into the index brackets at the following terminals: S₂I₁, S₃I₁, S₁I₁, S₃I₂, S₁I₂, S₂I₂.



Configuration: Three Circuit Breakers back to back

Description:

Two Circuit Breakers can be closed/opened independently of each other, with the third only ready to be closed when the other two are open. If the third Circuit Breaker is closed, the other two cannot be closed.

Required equipment:

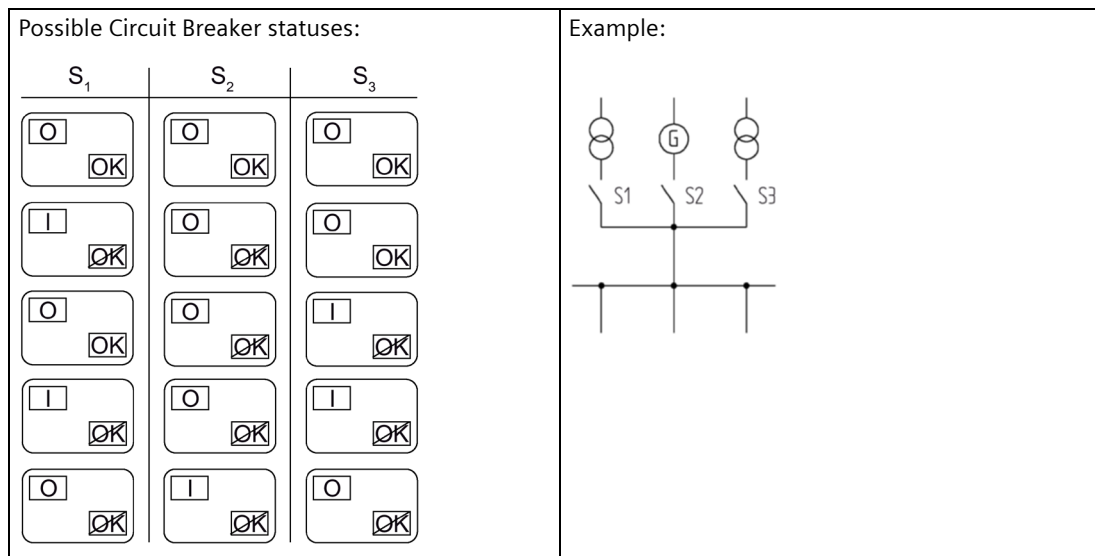
Each Circuit Breaker is equipped with an interlocking module and a Bowden wire. The Bowden wire must be ordered separately.

Terminals for the Bowden wires:

1. Bowden wire: S₁O₁ - S₂I₁
2. Bowden wire: S₂O₁ - S₁I₁
3. Bowden wire: S₂O₂ - S₃I₁
4. Bowden wire: S₃O₁ - S₂I₂

Note

The cylinder-head screws with strain washer must be screwed into the index brackets at the following terminals: S₂I₁, S₁I₁, S₃I₁, S₂I₂.



Configuration: Three Circuit Breakers, of which two are back to back

Description:

One Circuit Breaker can be closed/opened independently of the other two. The two other Circuit Breakers are mutually exclusive, that is, one can only be closed when the other is open.

Required equipment:

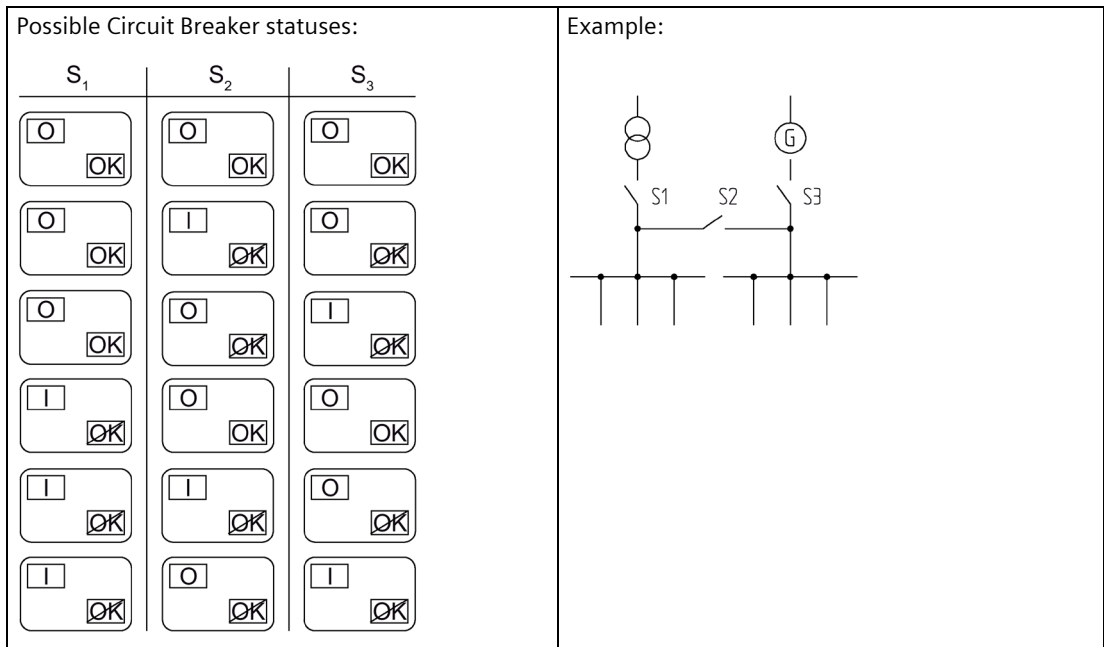
Two of the three Circuit Breakers are each equipped with an interlocking module and a Bowden wire.

Terminals for the Bowden wires:

1. Bowden wire: S₂O₁ - S₃I₁
2. Bowden wire: S₃O₁ - S₂I₁

Note

The cylinder-head screws with strain washers must be screwed into the index brackets at the following terminals: S₃I₁, S₂I₁.

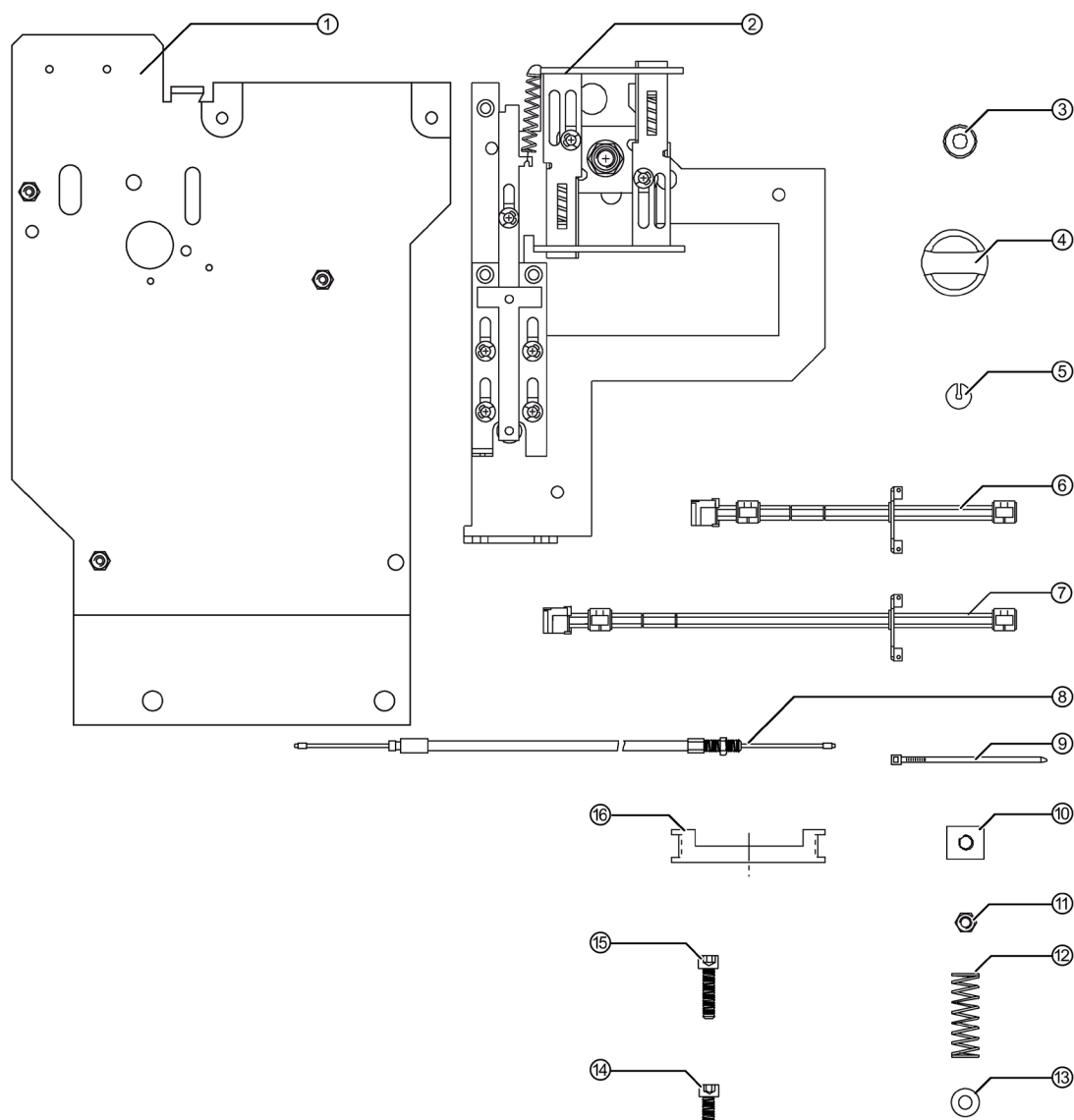


10.9.2 Mechanical interlock of fixed-mounted Circuit Breakers

Article No.

Description	Article No.
Mutual mechanical interlock for fixed-mounted Circuit Breaker	3WT9866-3JA00

Check the contents of the packaging



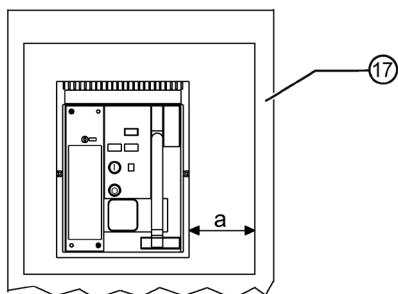
Parts list

①	Fixed mounting plate	1x	⑨	Cable tie	1x
②	Interlocking module	1x	⑩	Insertable nut M6	2x
③	Spring bush	1x	⑪	Setnut M6	1x
④	Control unit	1x	⑫	Compression spring	1x
⑤	Slotted washer	1x	⑬	Strain washer 6 DIN 6796	9x
⑥	Auxiliary shaft, cpl. frame size 1	1x	⑭	Cylinder-head screw M6 x 12 DIN 912	5x
⑦	Auxiliary shaft, cpl. frame size 2	1x	⑮	Cylinder-head screw M6 x 25 DIN 912	4x
⑧	Bowden wire	1x	⑯	Part cover	1x

Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits

See chapter Preparatory work (Page 104)



The minimum distance (a) required between the Circuit Breaker and cabinet unit ⑰ is as follows:

- For frame size 1 : a = 150 mm
- For frame size 2 : a = 200 mm

If necessary, remove the Circuit Breaker.

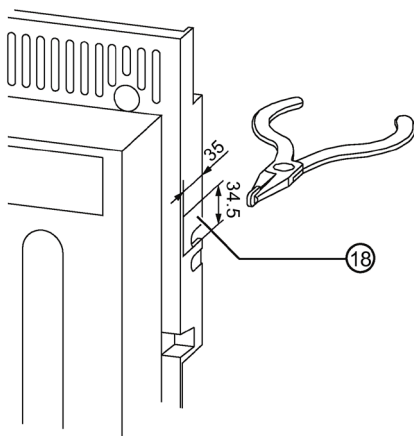
Note

If the module is already installed, continue with "Information about mechanical interlock". - See chapter Information about mechanical interlock (Page 161)

Removing the operating device

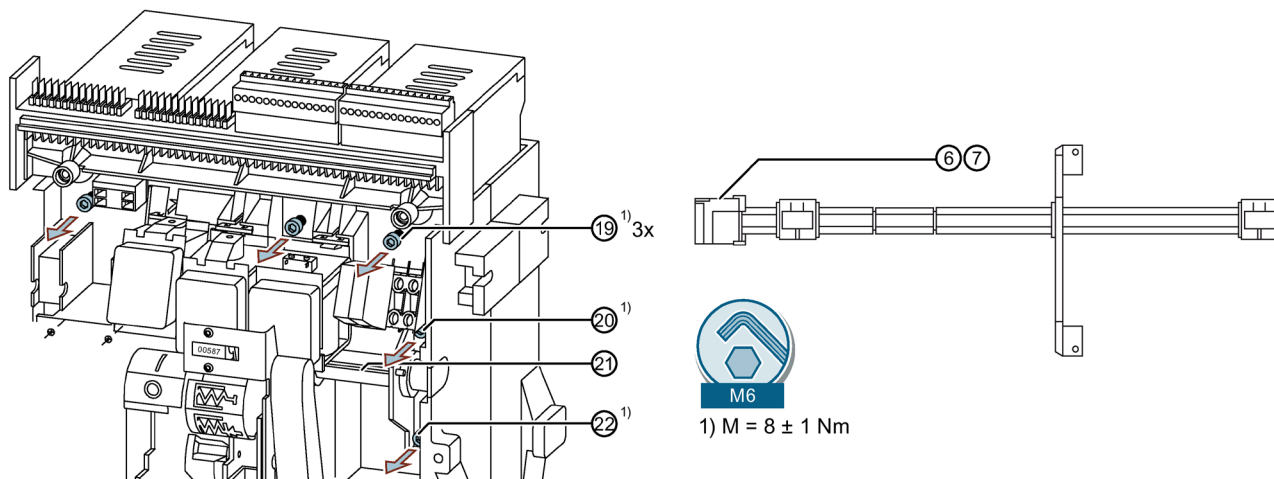
Removing the operating device (Page 132)

Preparing the operator panel



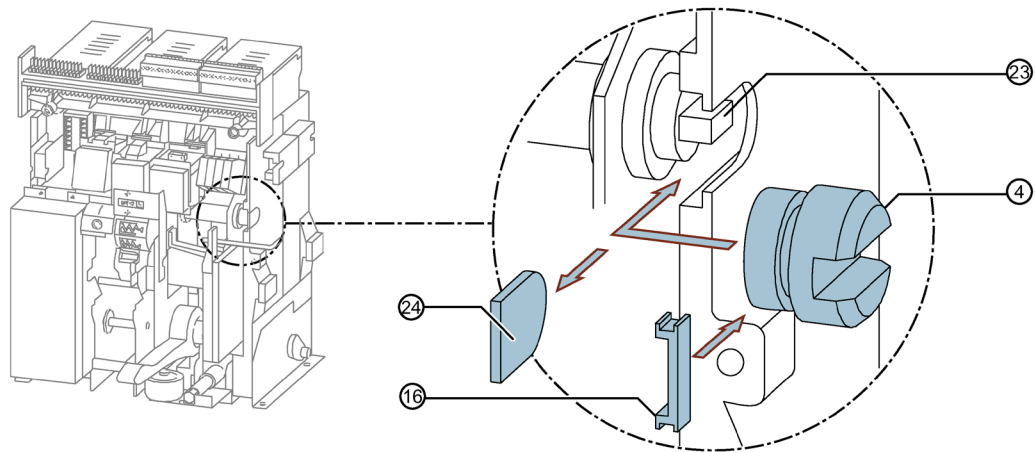
- Cut out a sub-shaft hole outline ⑱ using snipe-nose pliers.
- With frame size 2, the sub-shaft hole outline ⑱ must also be cut out of the cover.
- File the cutout edges to fit the sub-shaft hole outline ⑱.

Installing the auxiliary shaft in the Circuit Breaker



- Remove the motorized operating mechanism (if installed).
- Remove the second auxiliary switch (if installed).
- Unscrew and remove the fixing screw ⑳ from the underside of the bearing plate.
- Unscrew the cylinder-head screws ⑲ (turn three or four times only) and loosen the mounting plate (for frame size 1 only).
- Unscrew and remove ⑳ the fixing screw from the top of the bearing plate.
- Remove the bearing plate with auxiliary shaft ㉑.
- Attach the control unit (see below).
- Install the auxiliary shaft, cpl. ⑥ or ⑦ in the same position as the old one.
- Complete the Circuit Breaker by carrying out the above steps in reverse order.

Attaching the control unit

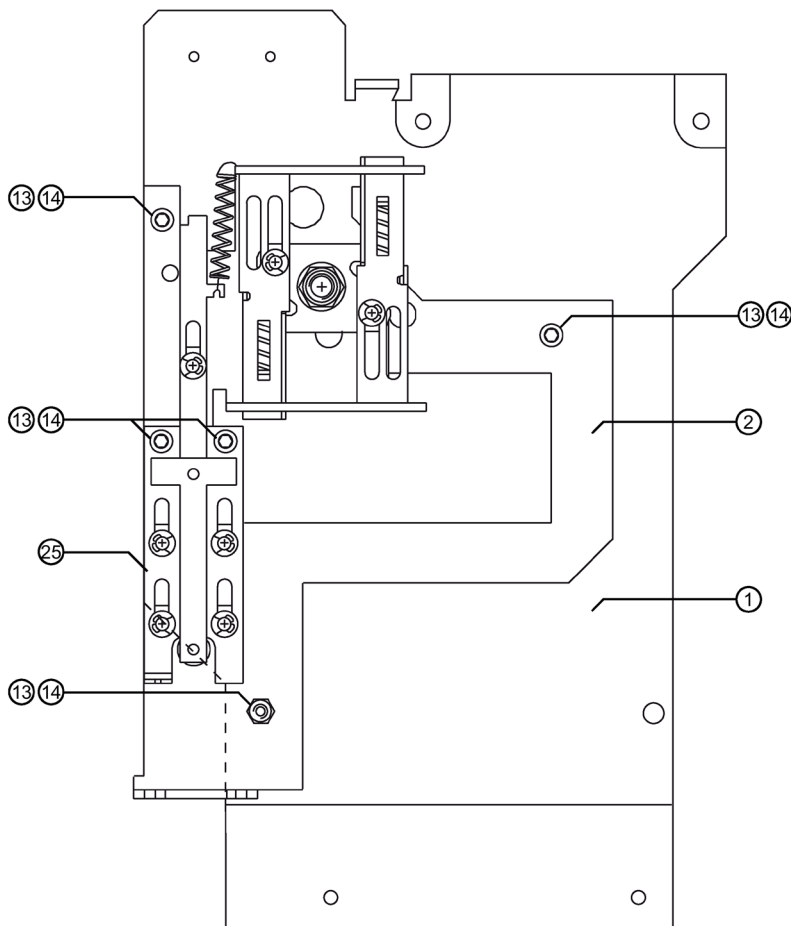


- Remove the cover ②④ and attach the control unit ④ to the breaker shaft ②③ (must audibly engage).
- Attach the part cover ①⑥ to the operator panel.

Installing the operating device

Installing the operating device (Page 133)

Installing the interlocking module

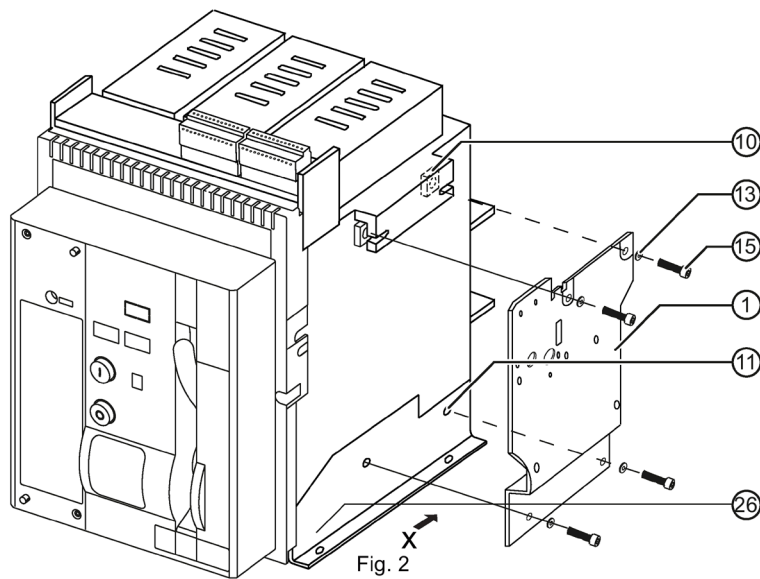


- Place the interlocking module ② against the fixed mounting plate ①.
- Secure the interlocking module ② and fixed mounting plate ① by means of cylinder-head screws ⑭ and strain washers ⑬ (tightening torque: 8 ± 1 Nm).
- Depending on the configuration, screw the cylinder-head screw ⑭ with strain washer ⑬ into the index brackets ⑳ (tightening torque: 8 ± 1 Nm).

Installing the fixed mounting plate

Note

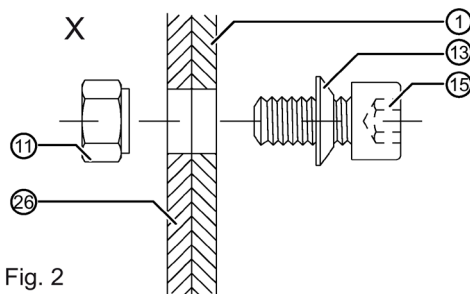
Shown here without interlocking module



- Push the insertable nuts ⑬ into the openings provided.
- Insert the setnuts ⑪ with cylinder-head screw ⑮ into the support brackets ⑳ (without fixed mounting plate ①).
- Remove the cylinder-head screws ⑮ again.
- Place the fixed mounting plate ① onto the Circuit Breaker and secure by means of cylinder-head screws ⑮ and strain washers ⑬ (tightening torque: 8 ± 1 Nm).

Note

Position the strain washers only as shown.



Installing Bowden wire

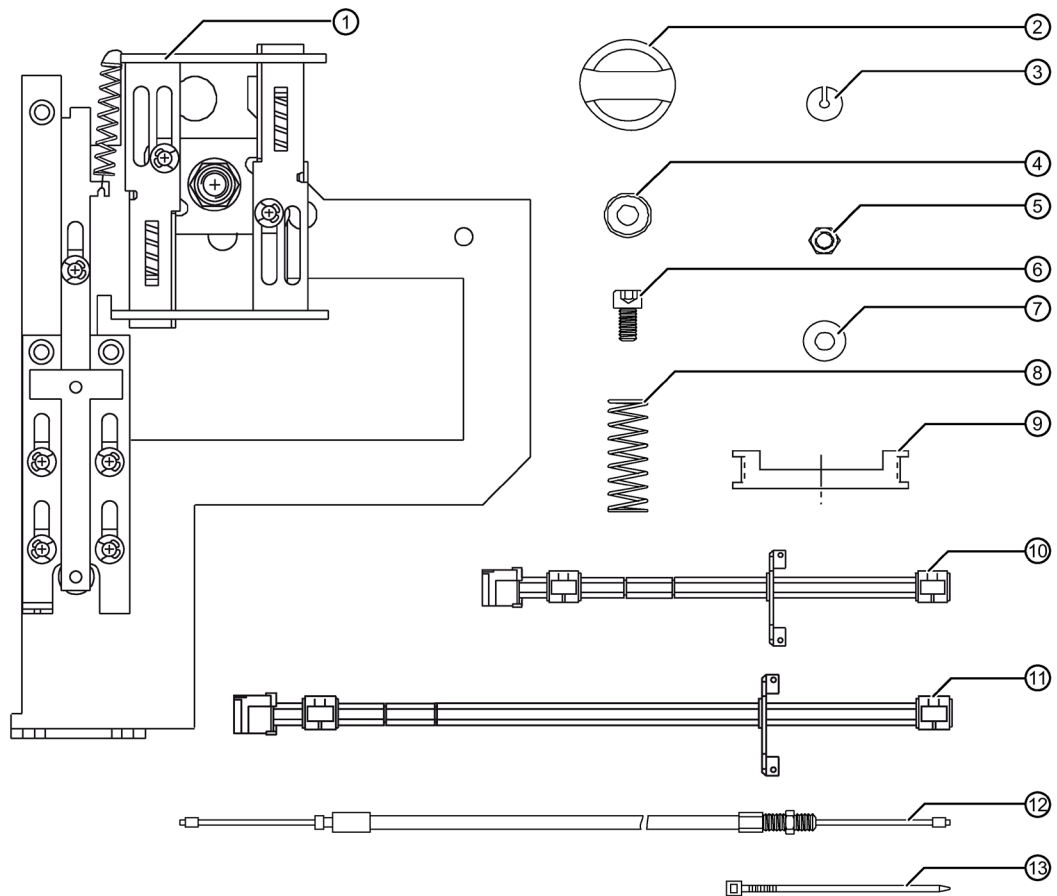
Installing Bowden wire (Page 180)

10.9.3 Mechanical interlock of withdrawable Circuit Breakers

Article No.

Description	Article No.
Mutual mechanical interlock for withdrawable Circuit Breaker	3WT9866-4JA00

Check the contents of the packaging



Parts list

①	Interlocking module	1x
②	Control unit	1x
③	Slotted washer	1x
④	Spring bush	1x
⑤	Setnut M6	3x
⑥	Cylinder-head screw M6 x 12 DIN 912	5x
⑦	Strain washer 6 DIN 6796	5x
⑧	Compression spring 1 x 12.5 x 55.5 DIN 2098	1x
⑨	Part cover	1x
⑩	Auxiliary shaft, cpl. frame size 1	1x
⑪	Auxiliary shaft, cpl. frame size 2	1x
⑫	Bowden wire	1x
⑬	Cable tie	1x

Preparatory work

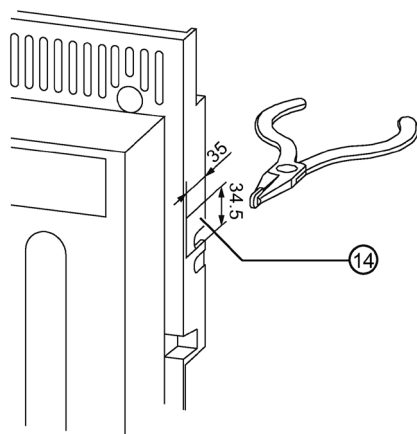
- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

Preparatory work (Page 104)

Removing the operating device

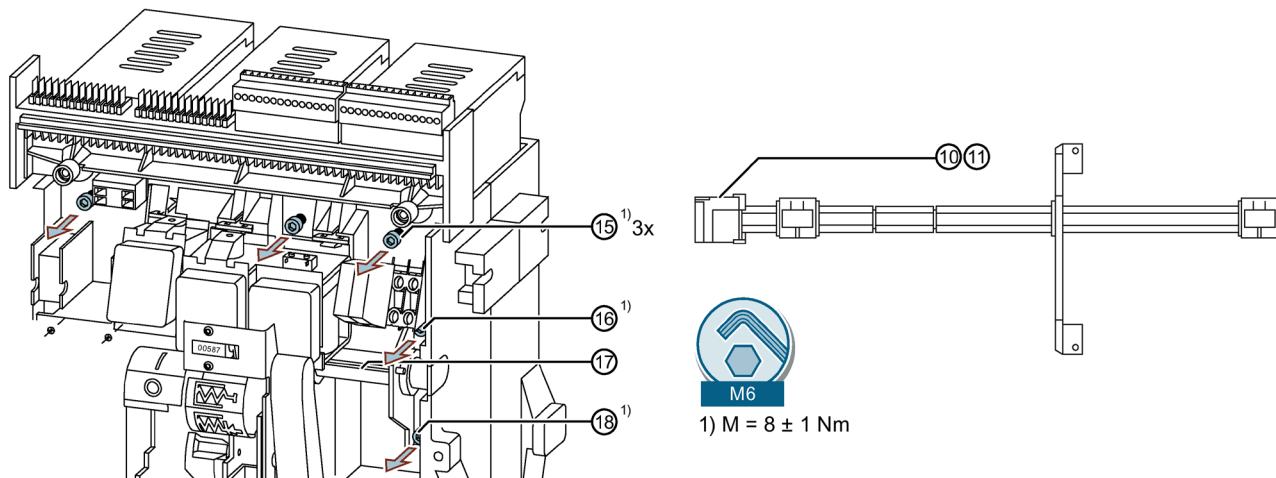
Removing the operating device (Page 132)

Preparing the operator panel



- Cut out a sub-shaft hole outline (14) using snipe-nose pliers.
- With frame size 2, the sub-shaft hole outline (14) must also be cut out of the cover.
- File the cutout edges to fit the sub-shaft hole outline (14).

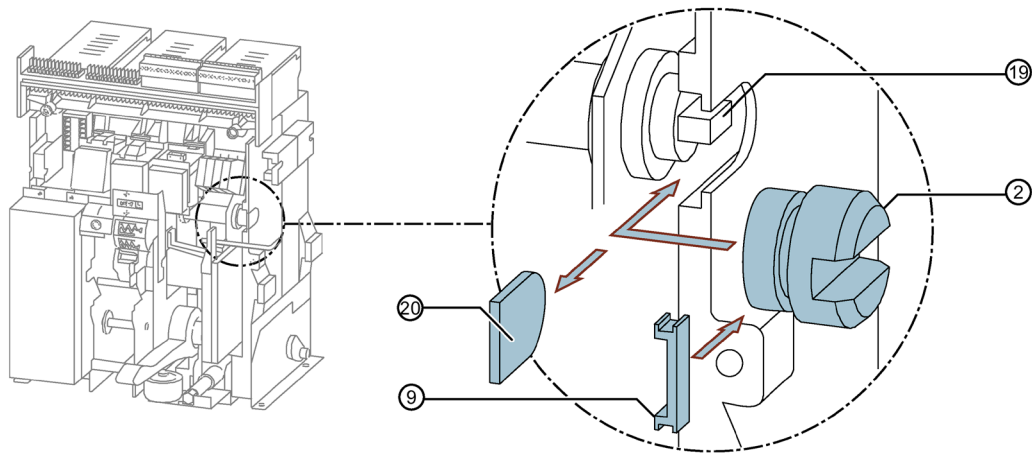
Install auxiliary shaft in Circuit Breaker



10.9 Mechanical interlock

- Remove the motorized operating mechanism (if installed).
- Remove the auxiliary switches (if installed).
- Unscrew and remove the fixing screw ⑱ from the underside of the bearing plate.
- Unscrew the cylinder-head screws ⑮ (turn three or four times only) and loosen the mounting plate (for frame size 1 only).
- Unscrew and remove the fixing screw ⑰ from the top of the bearing plate.
- Remove the bearing plate with auxiliary shaft ⑰.
- Attach the control unit
- Install the auxiliary shaft, cpl. ⑩ or ⑪ in the same position as the old one.
- Complete the Circuit Breaker by carrying out the above steps in reverse order.

Attaching the control unit



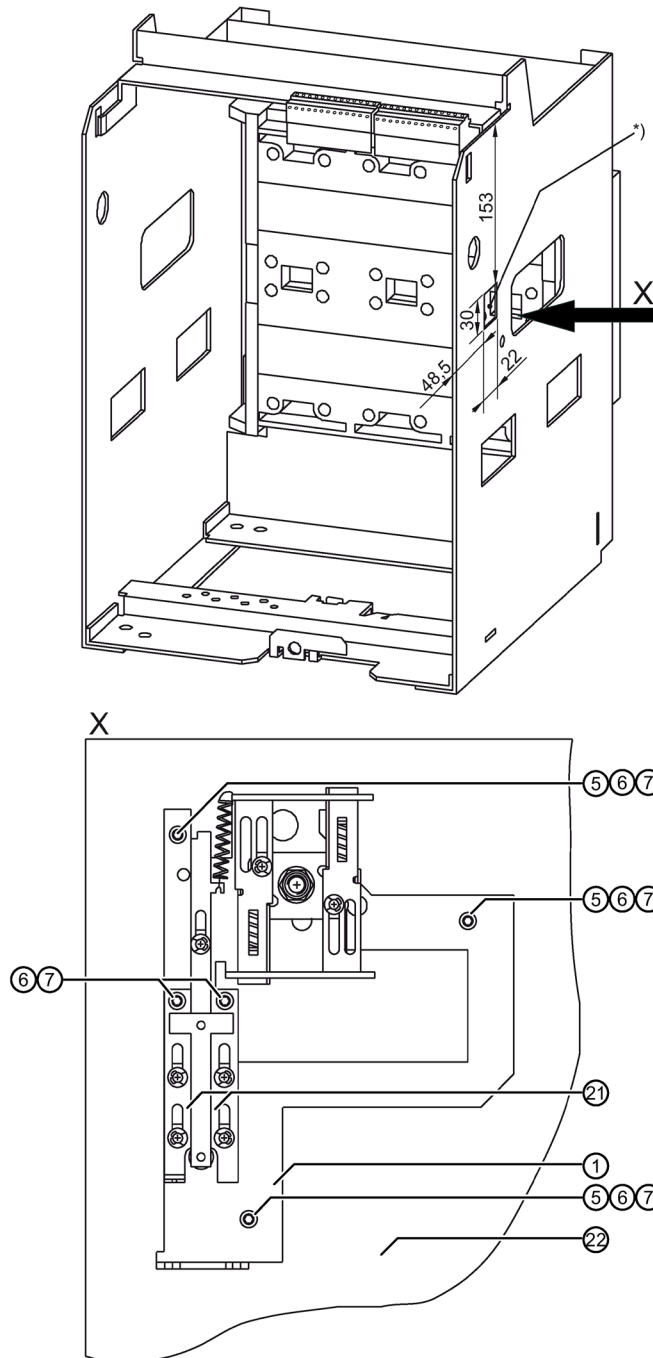
Remove ⑳ the cover and attach the control unit ② to the breaker shaft ⑲ (must audibly engage).

- Attach the part cover ⑨ to the operator panel.

Installing the operating device

Installing the operating device (Page 133)

Install interlocking module



Place the interlocking module ① against the guide frame ②.

- Secure the interlocking module ① and guide frame ② by means of cylinder-head screws ⑥, strain washers ⑦, and setnuts ⑤ (tightening torque: 8 ± 1 Nm).
- Depending on the configuration, screw the cylinder-head screw ⑥ with strain washer ⑦ into the index brackets ⑳ (tightening torque: 8 ± 1 Nm).

*) If a 30 x 22 mm cutout is not provided, you must create it yourself.

Installing Bowden wire

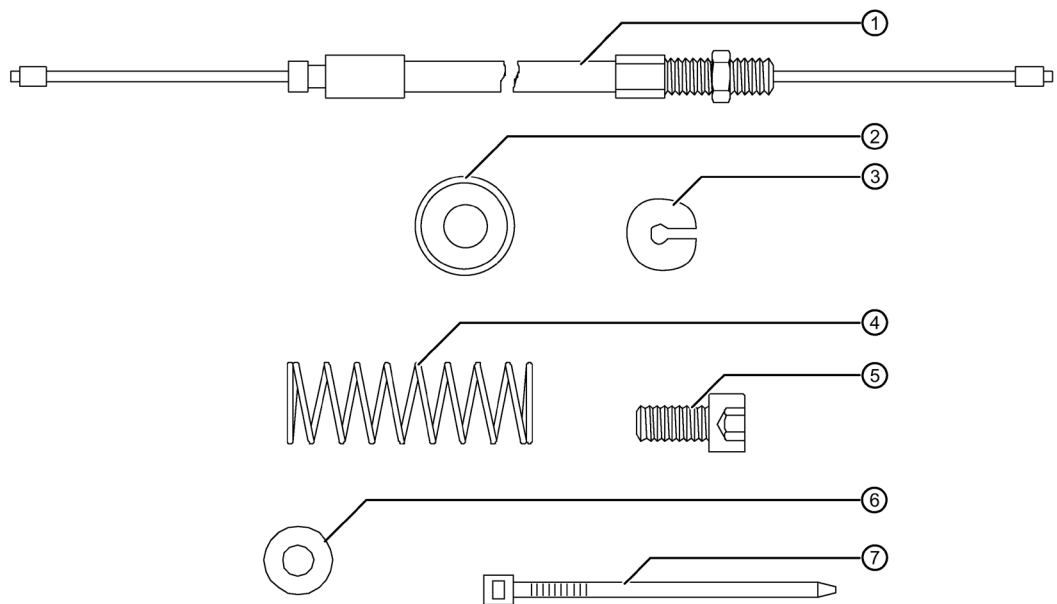
Installing Bowden wire (Page 180)

10.9.4 Installing Bowden wire

Article No.

Description	Article No.
Bowden wire (2 m)	3WT9866-8JA00
Bowden wire (3 m)	3WT9866-8JA01
Bowden wire (4.5 m)	3WT9866-8JA02

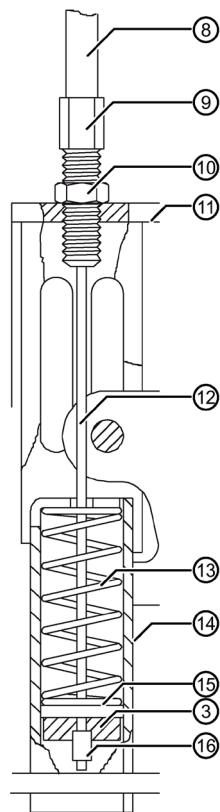
Check the contents of the packaging



①	Bowden wire	1x
②	Spring bush	1x
③	Slotted washer	1x
④	Compression spring 1 x 12.5 x 55.5 DIN 2098	1x
⑤	Cylinder-head screw M6 x 12 DIN 912	1x
⑥	Strain washer 6 DIN 6796	1x
⑦	Cable tie	1x

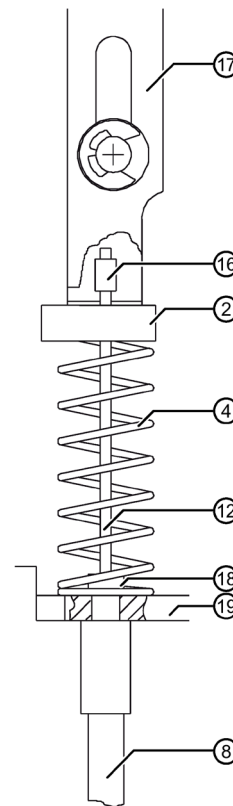
Inserting and adjusting the Bowden wire

Terminal O1 ; O2



- Push Bowden wire ⑫ with nipple ⑯ through angle plate ⑭, compression spring ⑬, and insertable plate ⑮.
- Secure Bowden wire ⑫ and nipple ⑯ by means of slotted washer ③.
- Screw adjusting screw ⑨ with lock nut ⑩ into plate ⑪.
- When the Bowden wire is attached on both sides, the sheath ⑧ must have approx. 1 mm clearance. If necessary, adjust with adjusting screw ⑨.
- Fix the setting by means of the lock nut ⑩.

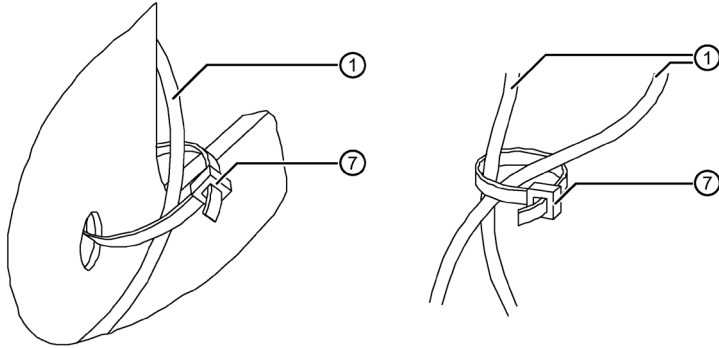
Terminal I1 ; I2



- Push the compression spring ④ and spring bush ② over the tube holder ⑱ and sheath ⑧.
- Place the Bowden wire ⑫ with nipple ⑯ into the index brackets ⑰.
- Place the spring bush ② onto the index brackets ⑰.
- Press the compression spring ④ between the spring bush ② and plate ⑲.
- Push the tube holder ⑱ into the plate ⑲.

Installing the Bowden wire

- Bowden wires ① must be installed in such a way that they are not bent excessively (large bending radii).
- Secure Bowden wires ① by means of cable ties ⑦.
- Minimum permissible bending radius: $R = 50 \text{ mm}$. This bending radius is only permitted a maximum of six times for each Bowden wire. The remaining bending radii should be as large as possible.



! WARNING

If a mechanical Circuit Breaker interlock is installed, two or more Circuit Breakers **must not be closed simultaneously** by electrical or mechanical means.

The delay between the close commands must be at least 100 ms.

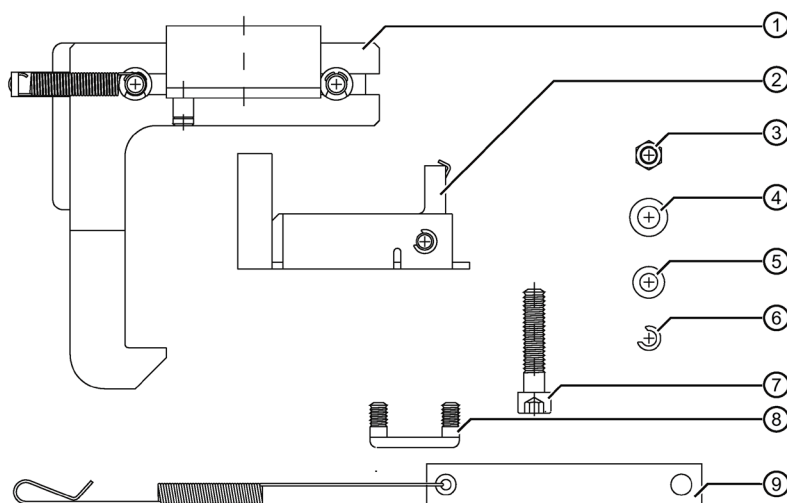
10.10 Door interlock

10.10.1 Door interlock for fixed-mounted Circuit Breaker

Article No.

Description	Article No.
Door interlock for fixed-mounted Circuit Breaker	3WT9867-2JA00

Check the contents of the packaging



①	Interlocking module	1x
②	Catch	1x
③	Hexagon nut M5, DIN 934	2x
④	Strain washer 6, DIN 6796	1x
⑤	Washer 5.3, DIN 125	2x
⑥	Lock washer 5, DIN 6799	1x
⑦	Hexagon socket-head screw M6x30, DIN 912	1x
⑧	Clip	1x
⑨	Tension spring with lug	1x

Preparatory work

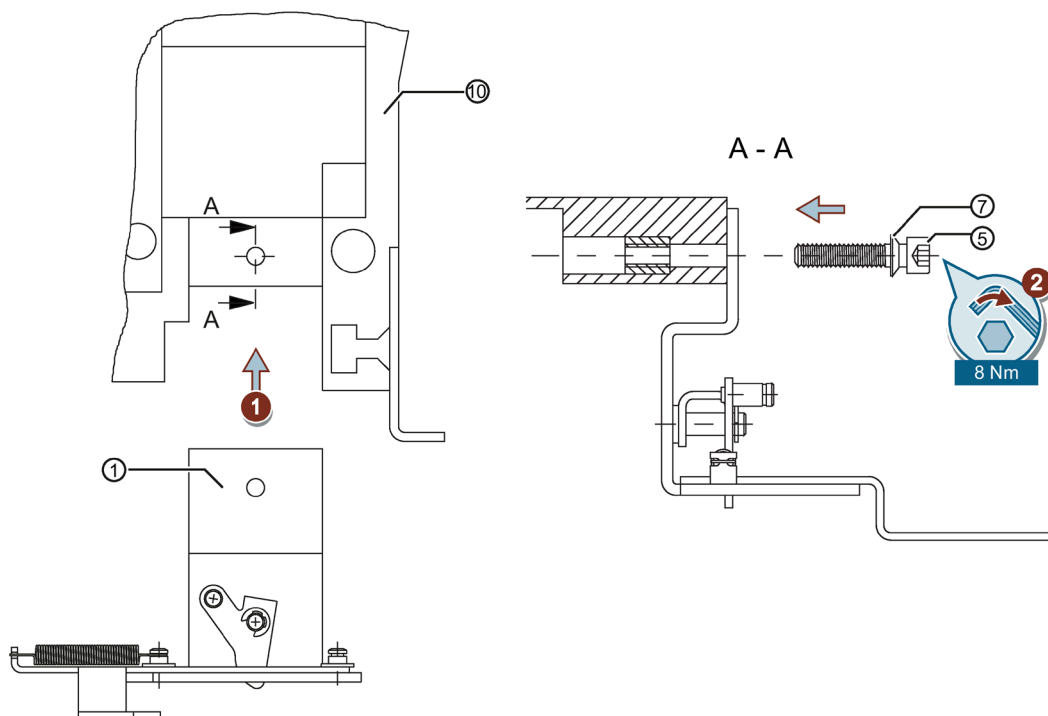
- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

See chapter Preparatory work (Page 104)

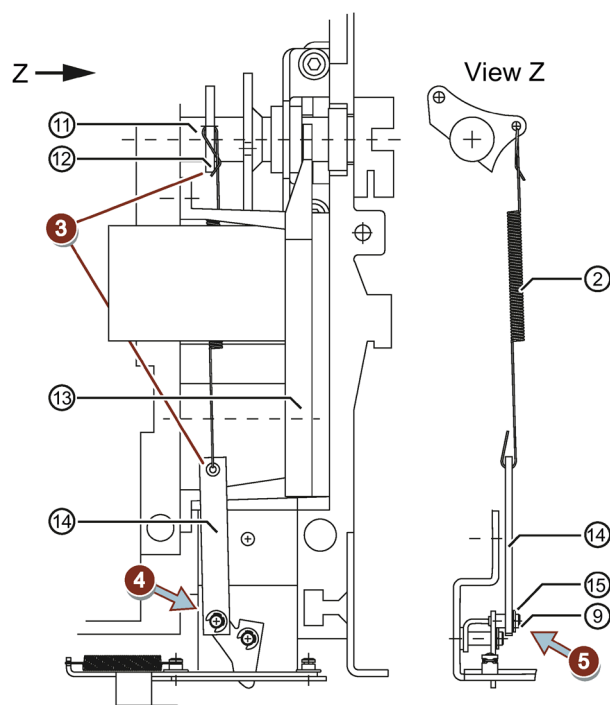
Removing the operating device

See chapter Removing the operating device (Page 132)

Installing the interlocking module



1. Push the interlocking module ① in front of the plastic front panel ⑩ of the Circuit Breaker.
2. Secure the module (8 ± 1 Nm). Note the position of the strain washer ⑦.

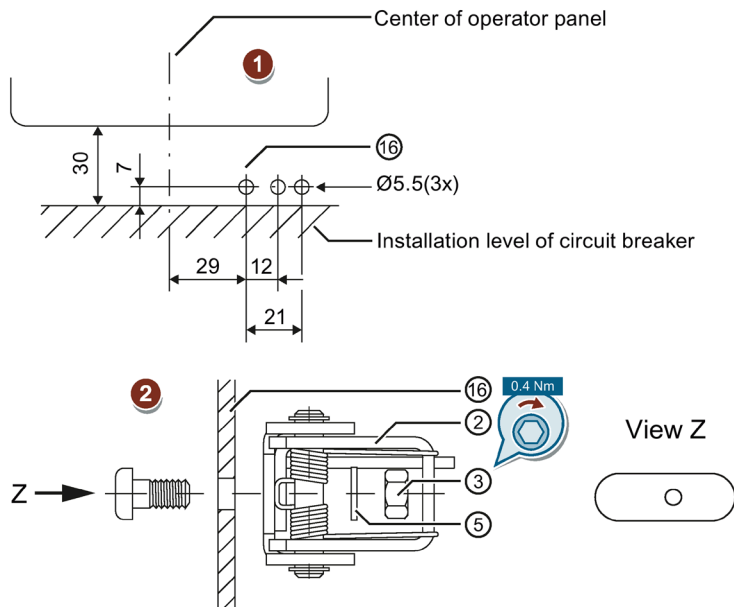


- 3 Insert the tension spring ② with lug ⑭ behind the geared motor ⑬. Place the tension spring ② in the lever ⑫ of the breaker shaft ⑪.
- 4 Place the lug ⑭ on the pin ⑮.
- 5 Secure the lug ⑭ by means of the lock washer ⑨.

Installing the operating device

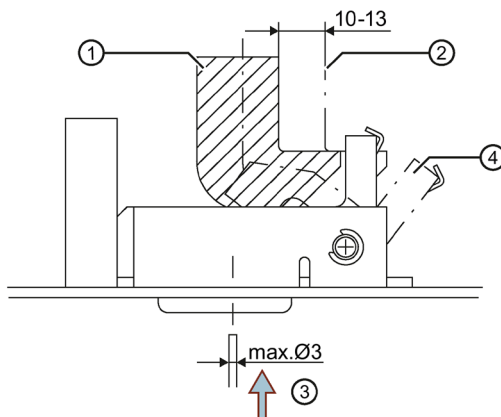
Installing the operating device (Page 133)

Install the catch in the cabinet door



1. Drill holes with a diameter of 5.5 mm in the cabinet door (16).
2. Screw on the catch (2) (tightening torque for component (3): 0.4 Nm).

Functional check



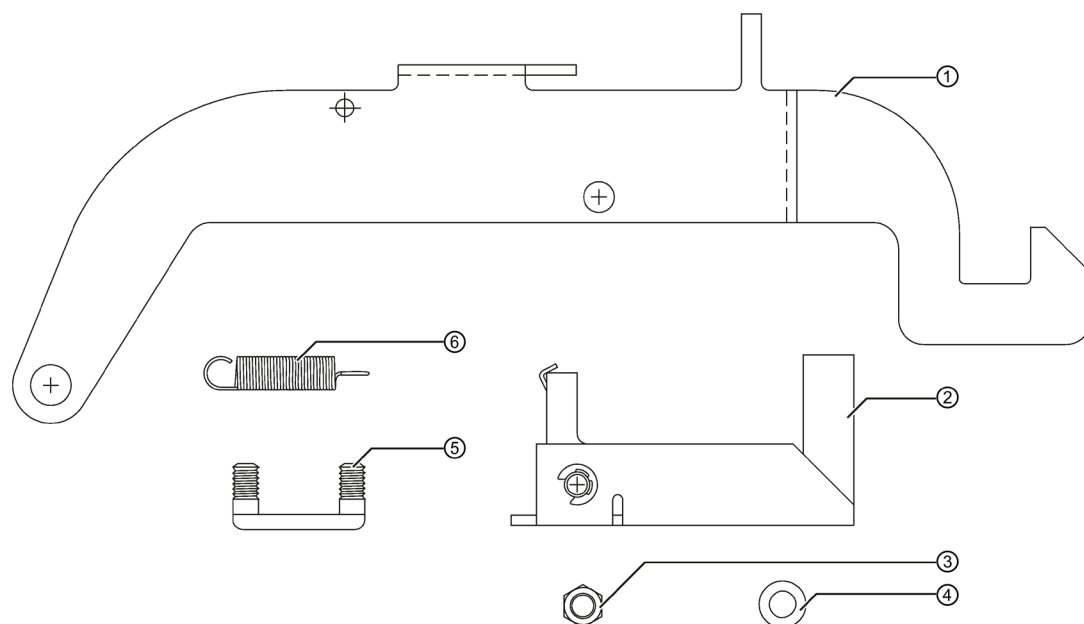
1. Position with Circuit Breaker OPEN
2. Position with Circuit Breaker CLOSED
3. Override
4. Position in overruled condition

10.10.2 Door interlock for guide frame

Article No.

Description	Article No.
Door interlock for withdrawable Circuit Breaker	3WT9867-1JC00

Check the contents of the packaging



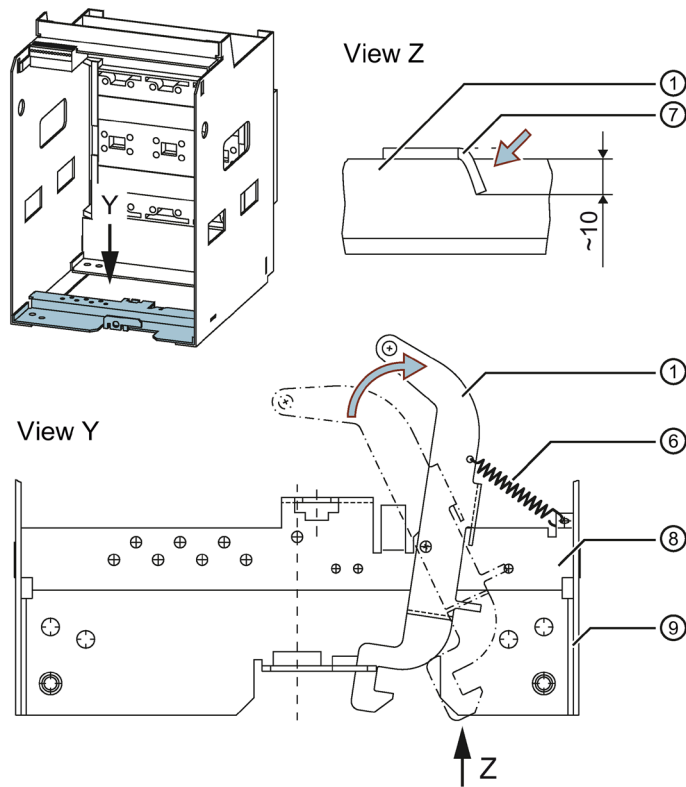
①	Bolt	1x
②	Catch	1x
③	Hexagon nut M5, DIN 934	2x
④	Washer 5.3, DIN 125	2x
⑤	Clip	1x
⑥	Tension spring	1x

Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

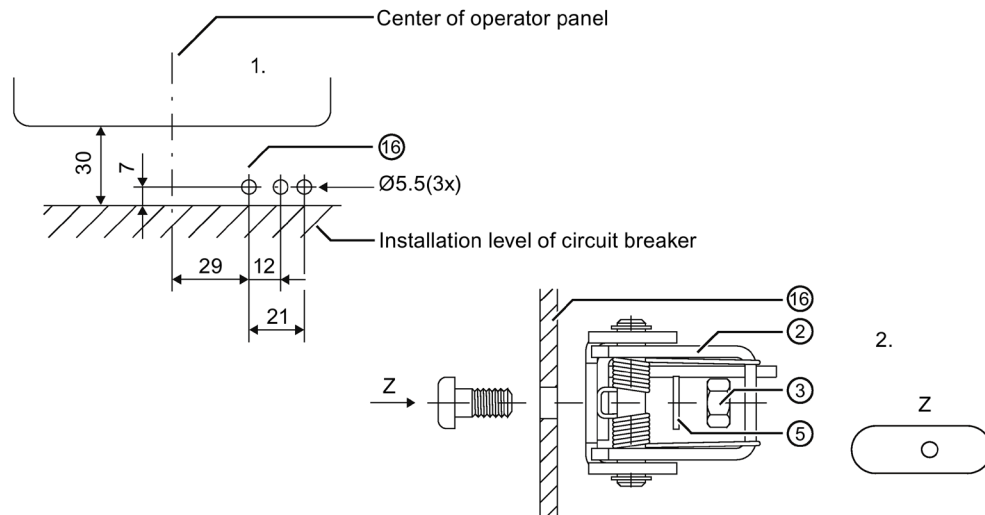
See chapter Preparatory work (Page 104)

Installing the bolt in the guide frame



- Place the bolt 1 on the crossmember ⑧ of the guide frame ⑨.
- Position the bolt approx. 90° to the crossmember.
- Bend down the metal lugs ⑦ on the bolt.
- Place the tension spring ⑥ in the bolt ① and crossmember ⑧.

Install the catch in the cabinet door



1. Drill holes with a diameter of 5.5 mm in the cabinet door ⑯.
2. Screw on the catch ② (tightening torque for component ③: 0.4 Nm).

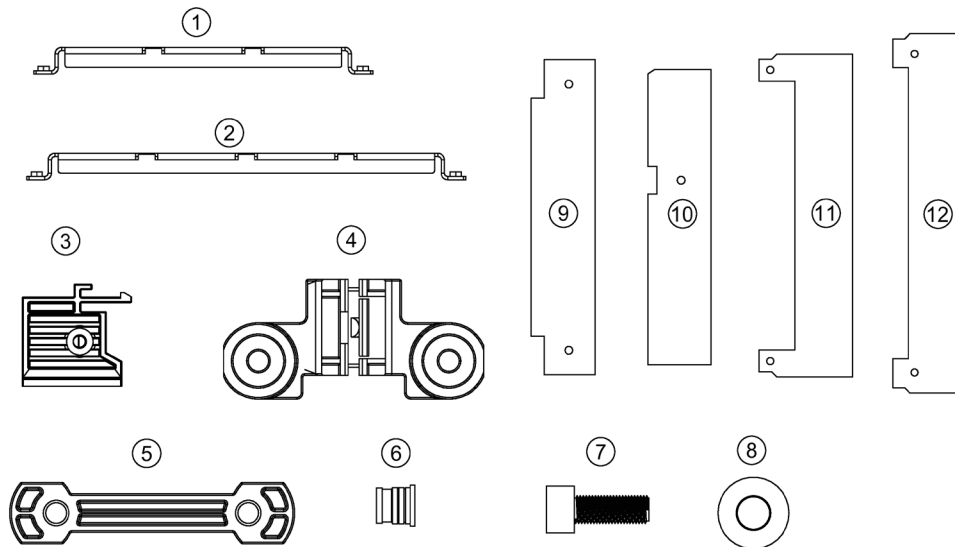
Functional check

This can only be carried out once the Circuit Breaker has been installed.
The switchgear door is interlocked after approx. 4 rotations of the racking handle from the test position toward the connected position.

10.11 Phase barrier

The phase barrier is an accessory of the Circuit Breaker which is used for phase short circuit isolation. It provides necessary guide slots and installs fixed interface on the rear wall of the fixed-mounted Circuit Breaker and guide frame.

Check contents of package



Item	Description	Fixed-mounted breaker				Withdrawable breaker			
		Size I – 3P	Size I – 4P	Size II – 3P	Size II – 4P	Size I – 3P	Size I – 4P	Size II – 3P	Size II – 4P
①	Cross beam I - 3 pole					2X			
②	Cross beam I - 4 pole						2X		
③	Clip for withdrawable					4X	6X		
④	Clip	4X	6X	2X	3X			4X	6X
⑤	Fastener							4X	6X
⑥	Insert nut	4X	6X						
⑦	Socket cap screw M6x16	4X	6X			4X	4X	8X	12X
⑧	Clamping washer	4X	6X			4X	4X	8X	12X
⑨	Phase plate	2X	3X						
⑩	Phase plate			2X	3X				
⑪	Phase plate					2X	3X		
⑫	Phase plate							2X	3X

10.11.1 Phase barrier for fixed-mounted Circuit Breaker

Article No.

Description	Article No.
Phase barrier for fixed-mounted Circuit Breaker, Size I, 3P	3WT9831-0AA00
Phase barrier for fixed-mounted Circuit Breaker, Size I, 4P	3WT9831-0AC00
Phase barrier for fixed-mounted Circuit Breaker, Size II, 3P	3WT9831-0AE00
Phase barrier for fixed-mounted Circuit Breaker, Size II, 4P	3WT9831-0AG00

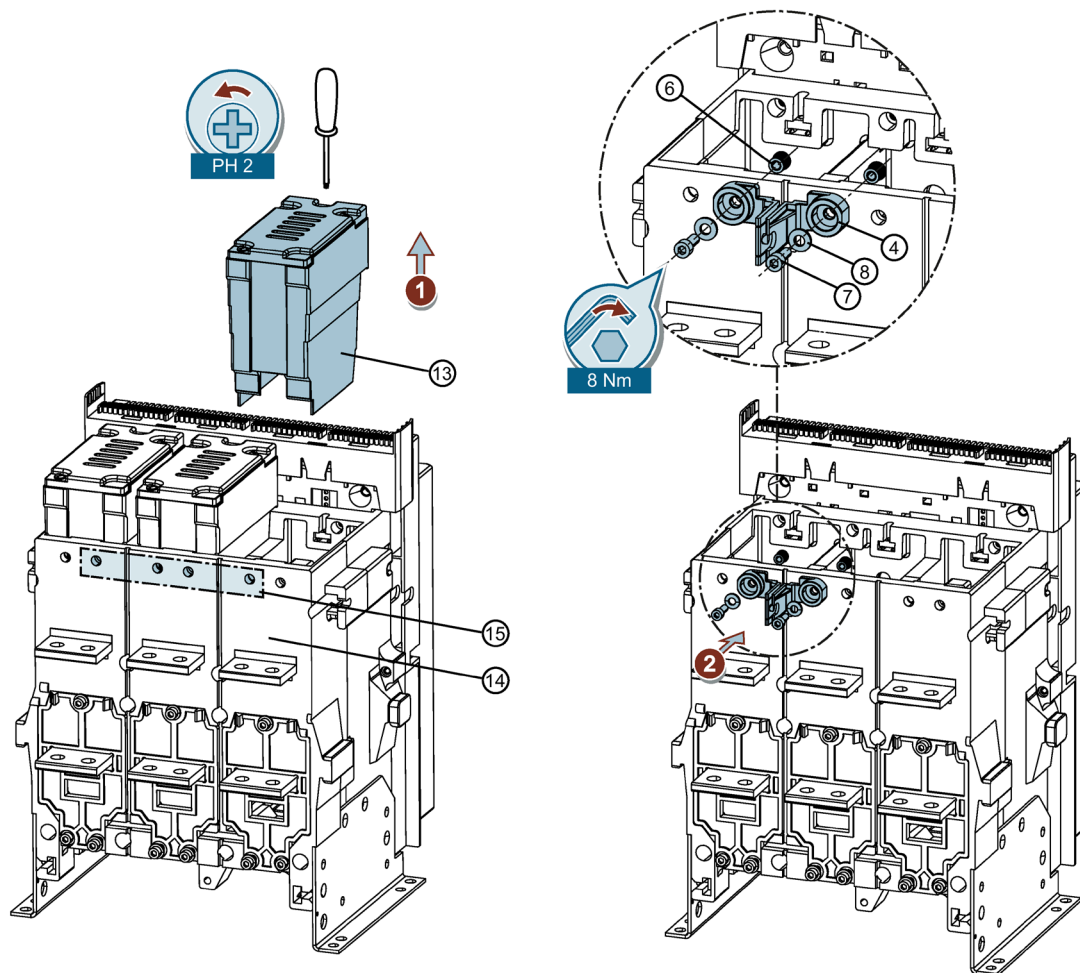
Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

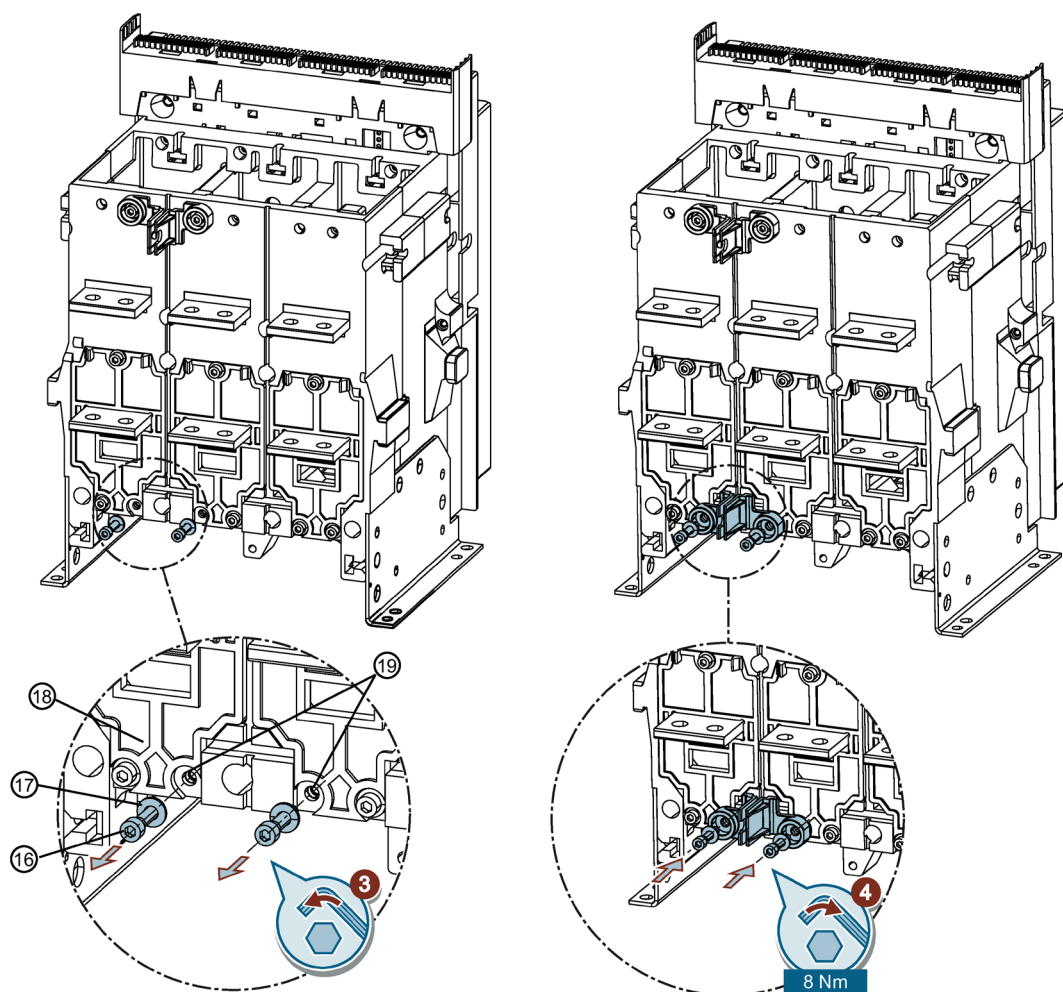
Preparatory work (Page 104)

Assembly (size I)

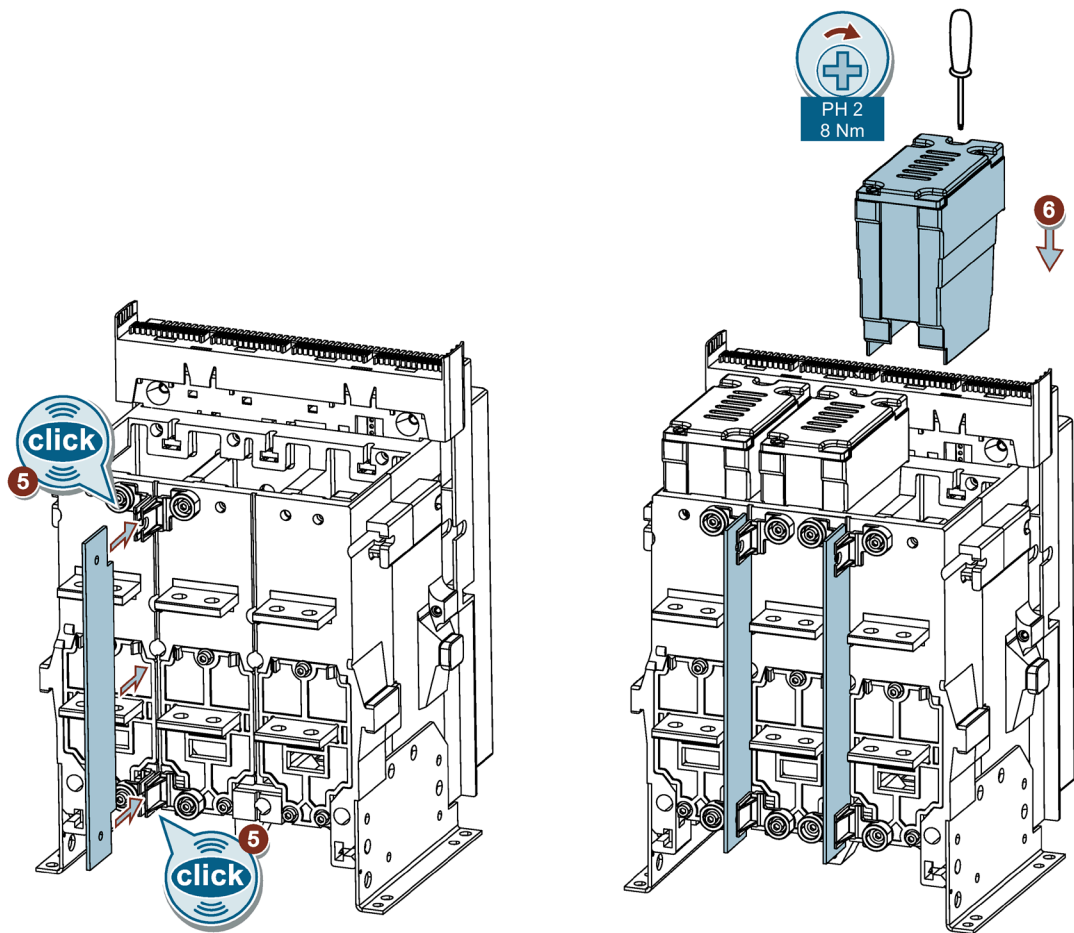
Take 3-pole as an example:



1. Take out the arc chute ⑬.
2. Place the insert nut ⑥ into the corresponding hole ⑮ on the rear wall ⑭, and then use allen wrench, socket cap screw ⑦ and clamping washer ⑧ to fix the clip ④ to the upper end of the rear wall ⑭.



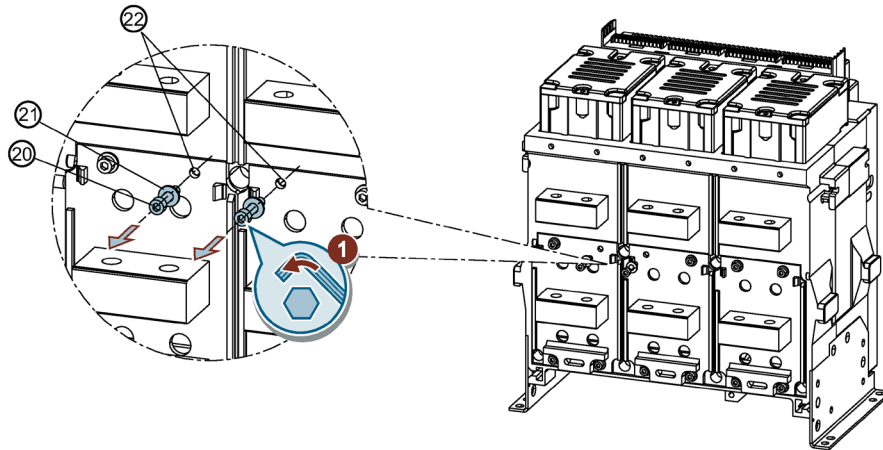
- 3 Take out the fasteners ⑯⑰ of the corresponding CT cover ⑱, as shown in the diagram.
- 4 Take out the fasteners ⑯⑰ of the corresponding CT cover ⑱, as shown in the diagram.



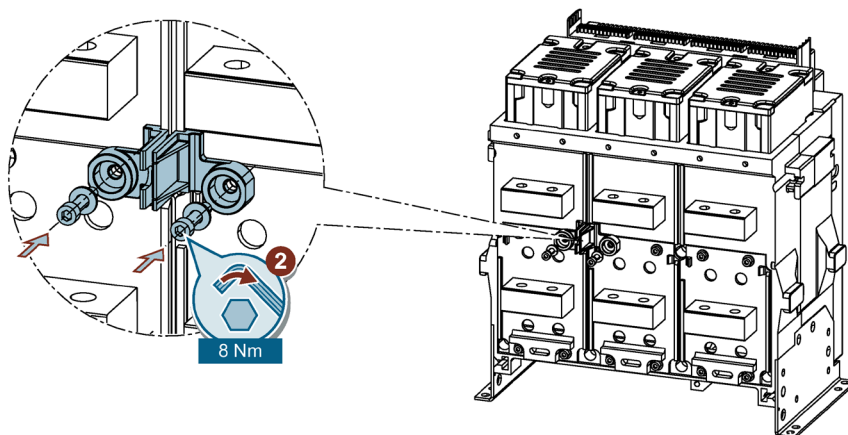
- 5 Insert the phase plate ⑪, which is fixed in the correct position when you hear the "click" sound, which ensures that the upper and lower hole of phase plate should be both placed within the clip point. Pay attention that the placement direction of both upper and lower clips should be the same as in the diagram.
- 6 Install the arc chute ⑬ into to the Circuit Breaker again and fix it as shown in the diagram.

Assembly (size II)

Take 3-pole as an example:

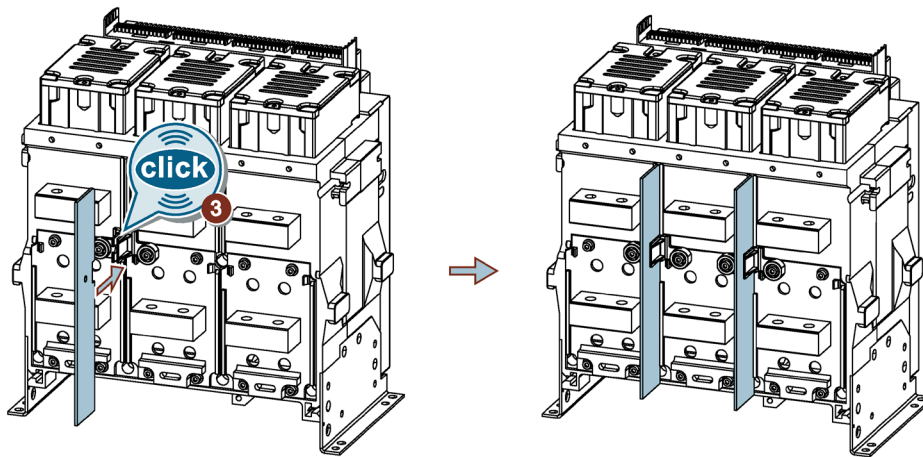


1. Take out the fasteners 20 21 of the CT cover, as shown in the diagram.



2. Use the fasteners 20 21 to fix the clip 4 to the corresponding mounting hole 22 of the CT cover, as shown in the diagram.

10.11 Phase barrier



3. Insert the phase plate ⑫, that is fixed in the correct position when you hear the "click" sound, which ensures that the upper and lower hole of phase plate should be both placed within the clip point. Pay attention that the placement direction of both upper and lower clips should be the same as in the diagram.

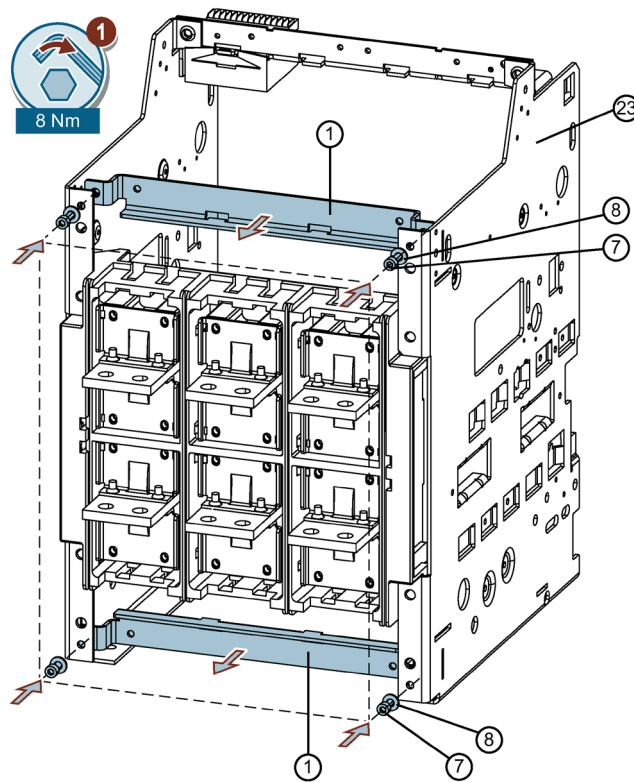
10.11.2 Phase barrier for guide frame

Article No.

Description	Article No.
Phase barrier for withdrawable Circuit Breaker, Size I, 3P	3WT9831-0AB00
Phase barrier for withdrawable Circuit Breaker, Size I, 4P	3WT9831-0AD00
Phase barrier for withdrawable Circuit Breaker, Size II, 3P	3WT9831-0AF00
Phase barrier for withdrawable Circuit Breaker, Size II, 4P	3WT9831-0AJ00

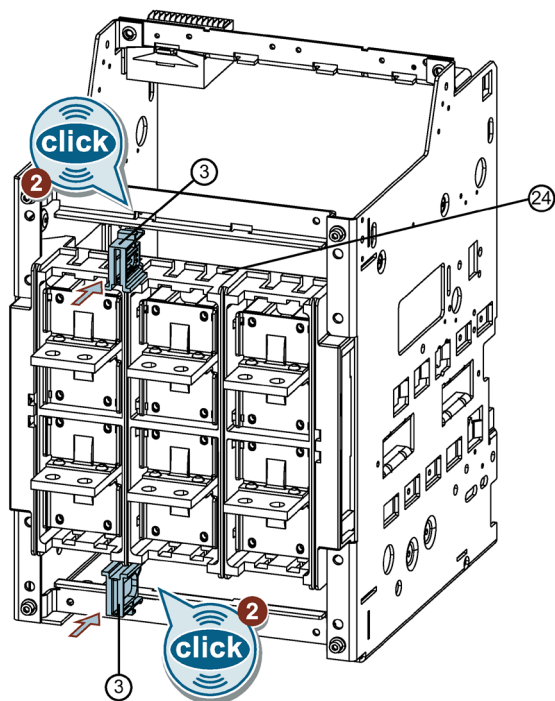
Assembly for size I

Take 3-pole as an example:

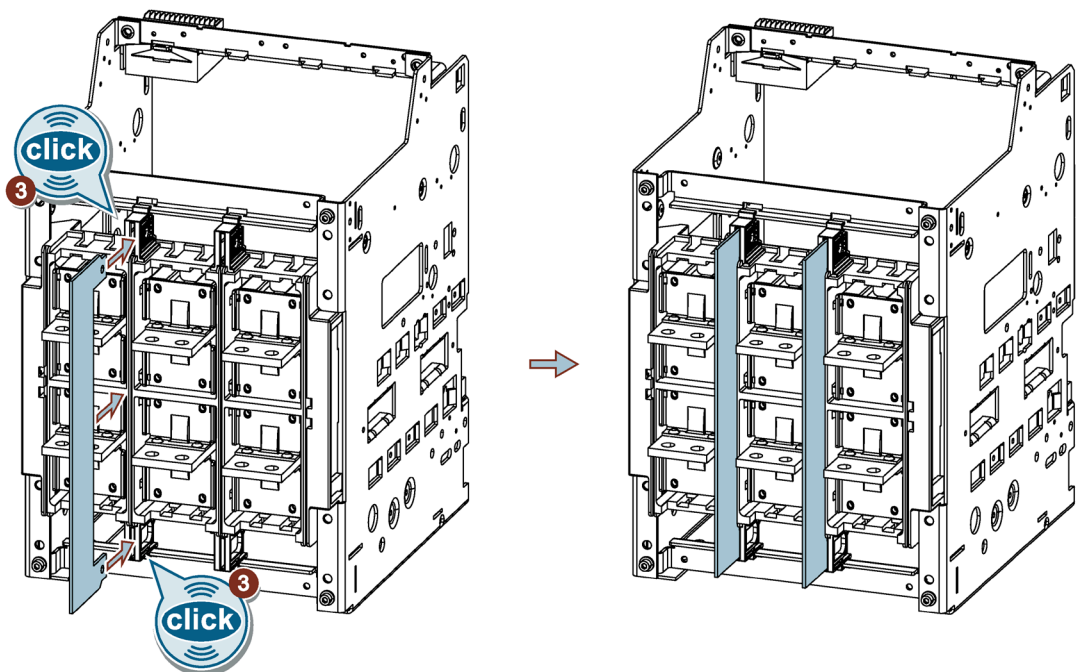


- 1 Use fasteners ⑦⑧ to fix the cross beam ① to the upper and bottom location of the guide frame ②③.
See in the diagram, and pay attention to the difference of placement direction for the upper and lower cross beam.

10.11 Phase barrier



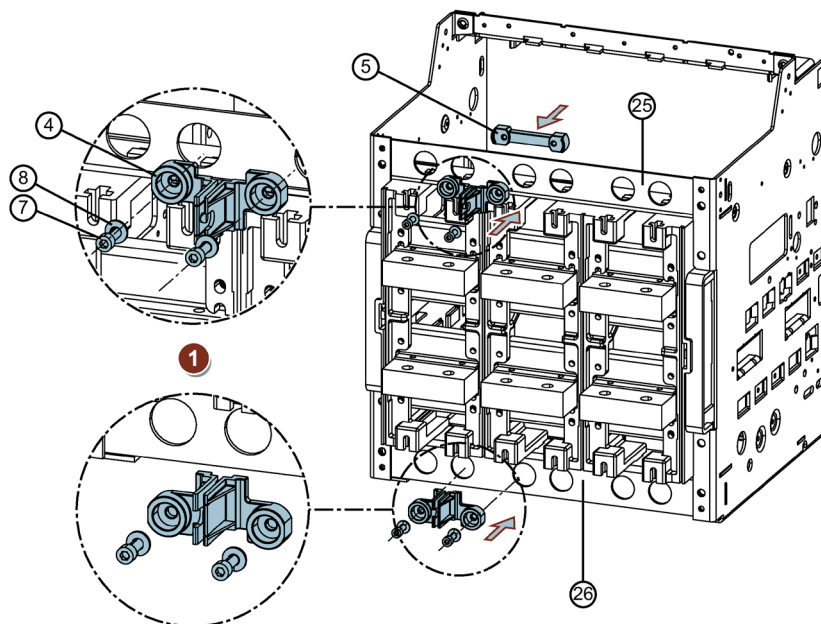
- 2 Insert the clip (3) to the location between cross beam and rear wall (24) of guide frame, see the diagram, and it is fixed in the correct position when you hear the "click" sound. Pay attention to the placement direction of clip (3).



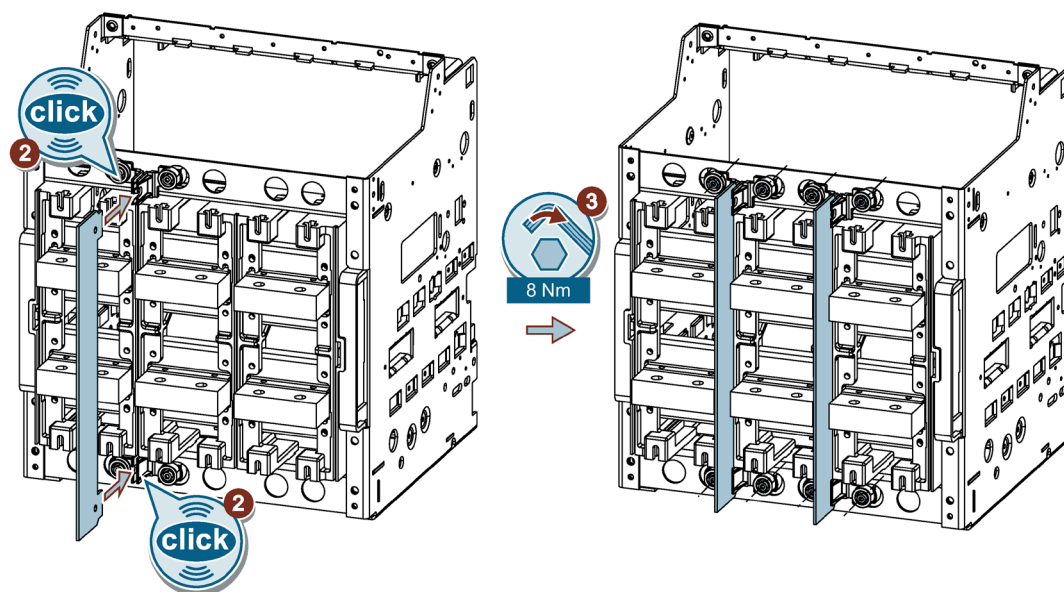
3. Insert the phase plate (9), which is fixed in the correct position when you hear the "click" sound, which ensures that the upper and lower hole of phase plate should be both placed within the clip point.

Assembly for size II

Take 3-pole as an example:



- 1 Use socket cap screw (7), clamping washer (8) and fastener (5) to install the clip (4) to the upper and bottom supporting angle (25) (26) of the guide frame. Just keep them in connection, with no need to fasten them. Pay attention to the placement direction of the clip, as shown in diagram.



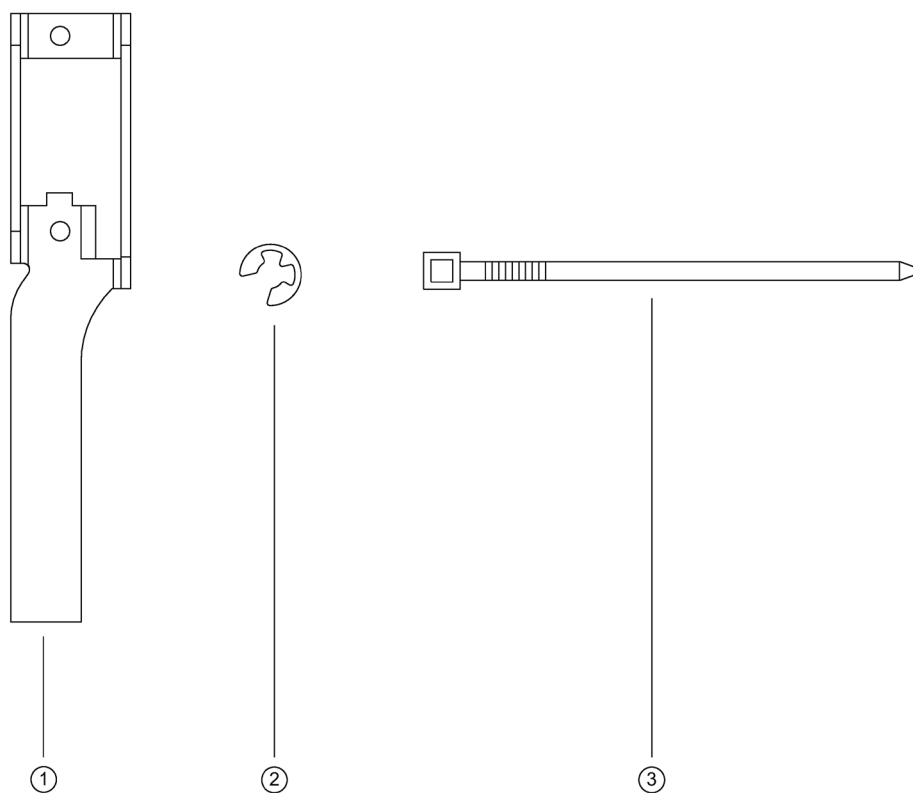
2. Insert the phase plate (10), which is fixed in the correct position when you hear the "click" sound, which ensures that the upper and lower hole of phase plate should be both placed within the clip point.
3. Fasten the screw which is for installing the clip.

10.12 Automatic mechanical resetting device after overcurrent tripping

Article No.

Description	Article No.
Automatic mechanical resetting device after overcurrent tripping	3WT9888-2JA00

Check contents of package



- | | |
|----------------------------|-----|
| ① Leaf spring | 1 X |
| ② Lock washer DIN 6799 - 4 | 4 X |
| ③ Cable binders | 2 X |

! DANGER**Hazardous voltage****Hazardous stored-energy spring mechanism**

Before starting work, the device must be disconnected from the supply and protected against reactivation.

Only carry out work on the device when the Circuit Breaker is shut down and the stored-energy spring mechanism is discharged.

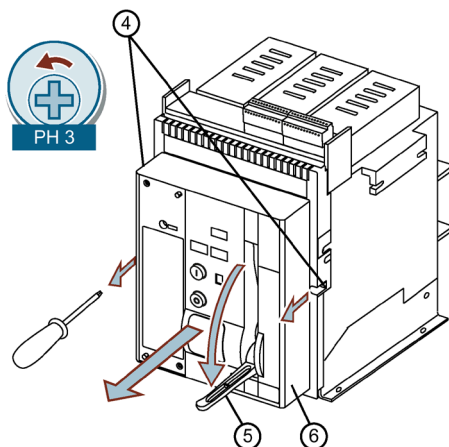
Failure to do so can result in death, severe injury, or substantial material damage.

The devices must be installed and mounted by qualified, authorized personnel only.

Preparatory work

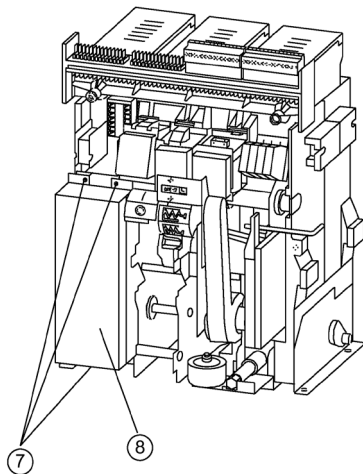
- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

See chapter Preparatory work (Page 104)

Removing control panel

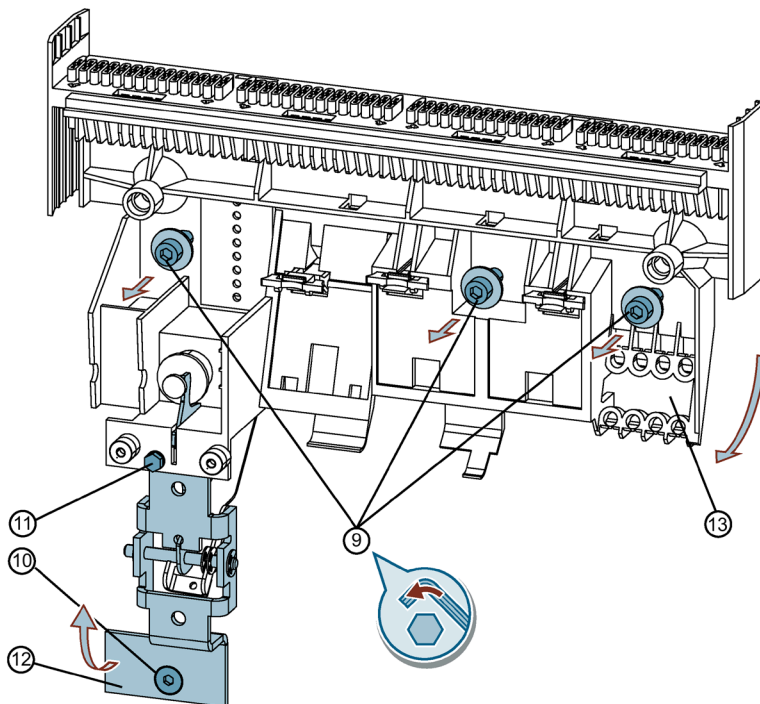
- Undo fixing screws ④
- Swivel the hand lever ⑤ forward
- Extract the control panel ⑥ towards you

Dismantling the electronic trip unit



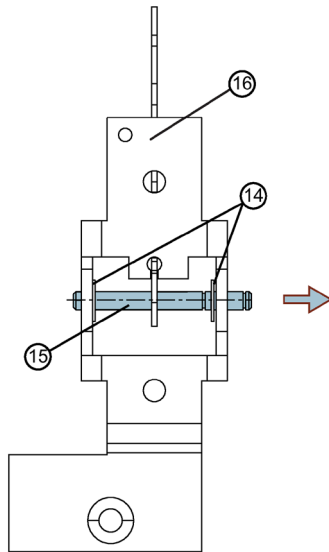
- Undo screws ⑦ and tilt the electronic trip unit ⑧ out sideways.
- If necessary, cut through the cable binders.

Dismantling the fixing bracket

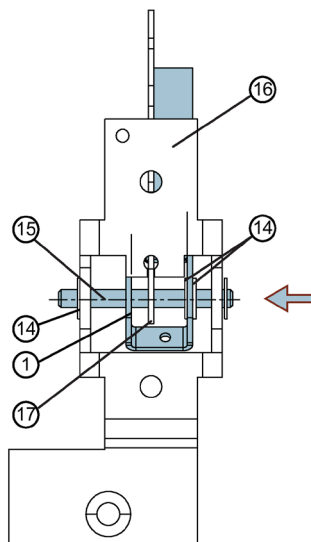


- Undo socket-head screws ⑨ by 3 to 4 turns and loosen the mounting plate.
- Undo hexagon socket-head screw ⑩ and thread rolling screw ⑪ of fixing bracket ⑫.
- Lift mounting plate ⑬.
- Remove fixing bracket ⑫ as shown.

Fitting the leaf spring

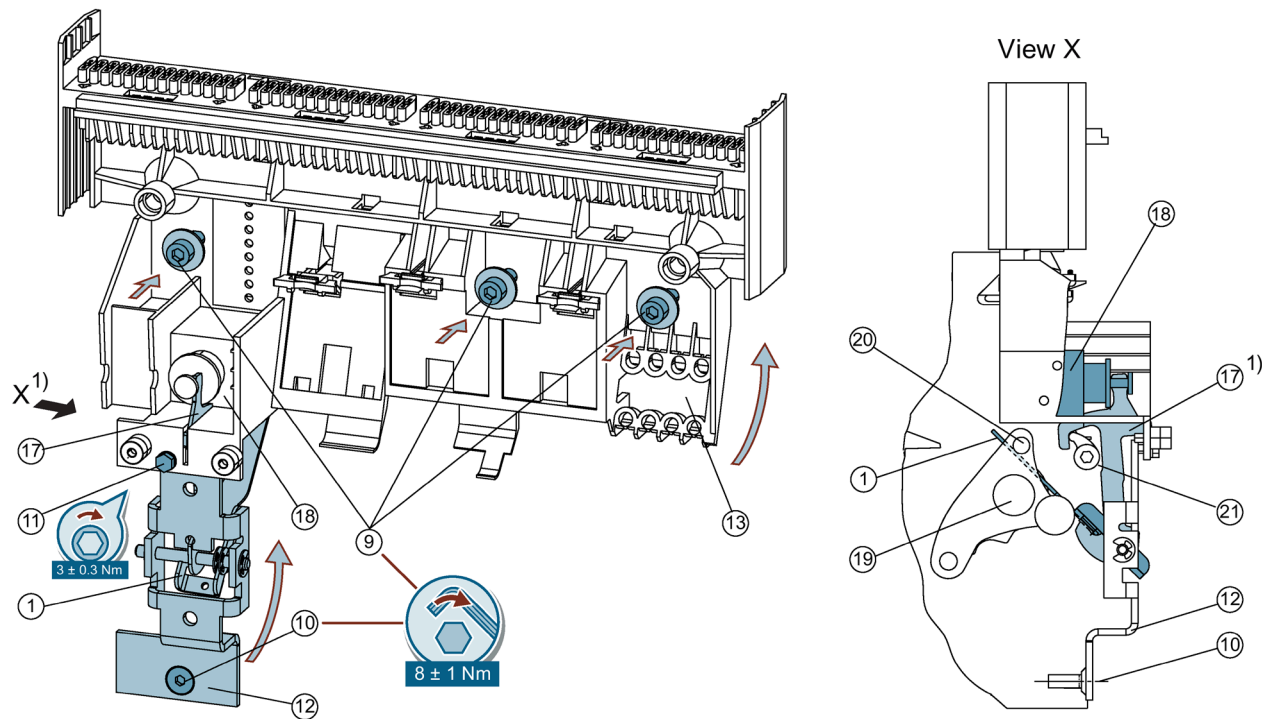


- Remove the lock washers ⑭.
- Pull axle ⑮ out of the fixing bracket ⑯.



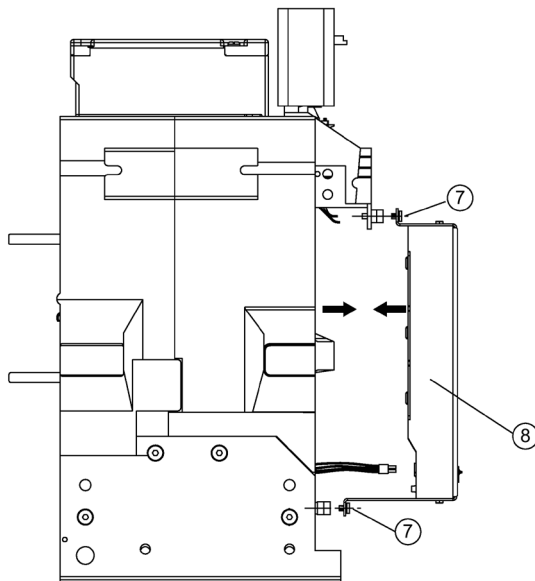
- Push axle ⑮ as shown through leaf spring ①, lever ⑰ and fixing bracket ⑯ and secure with lock washers ⑭.

Fitting the fixing bracket



- Lift mounting plate ⑬
 - Place fixing bracket ⑫ with leaf spring ① against Circuit Breaker as shown, making sure that leaf spring ① is positioned between breaker shaft ⑱ and cam ⑳ (see view X). The lever ⑰ must be in contact with the tripping solenoid ⑱ and be positioned above the driver pin ㉑ as shown.
 - Fasten hexagon socket-head screw ⑩ (tightening torque $8 \text{ Nm} \pm 1 \text{ Nm}$) and thread rolling screw ⑪ (tightening torque $3 \text{ Nm} \pm 0.3 \text{ Nm}$) on fixing bracket ⑫.
 - Fasten mounting plate ⑬ with socket-head screws ⑨ (tightening torque $8 \text{ Nm} \pm 1 \text{ Nm}$).
- 1) **Caution:** The lever ⑰ must beat the right side of the tripping solenoid as shown.

Installing the electronic trip unit



- Place electronic trip unit ⑧ against Circuit Breaker, making sure that no cables are pinched.
- Fix electronic overcurrent relay ⑧ to Circuit Breaker by means of screws ⑦ (tightening torque 3 Nm + 0.3 Nm).

Installing the operating device

See Installing the operating device (Page 133)

Test

Note

After installation you must test the Breaker (ETU) with the hand-held tester.

See Hand-held test device (Page 134)

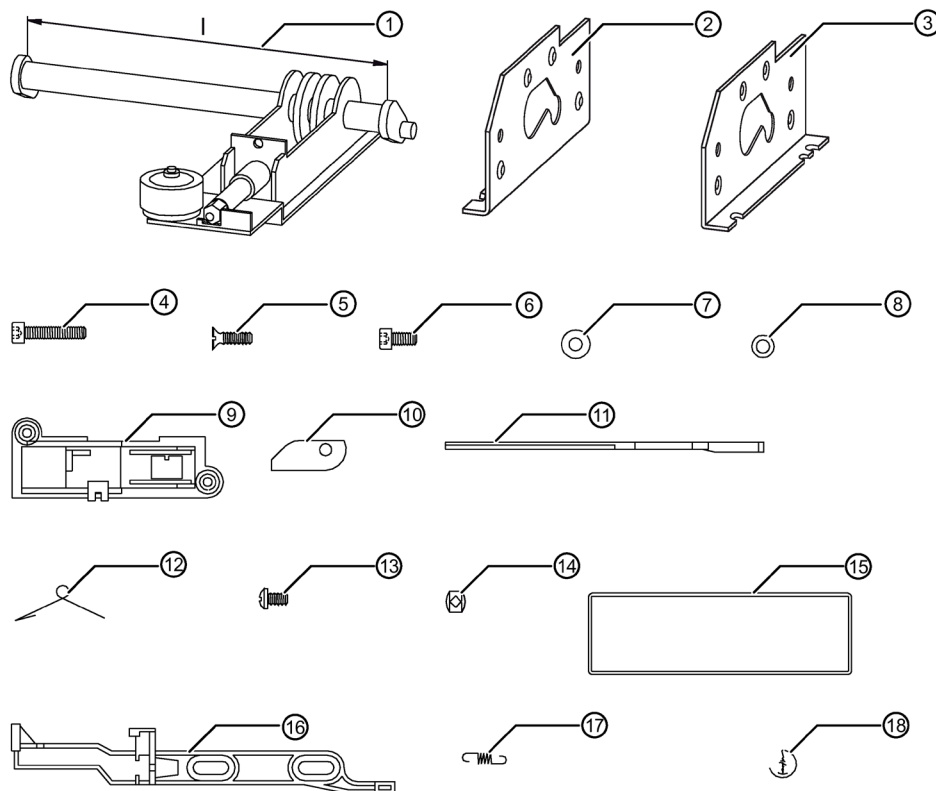
10.13 Switching from fixed-mounted Circuit Breakers to withdrawable Circuit Breakers

Article No.

Description		Article No.
Conversion set from fixed-mounted to withdrawable version	Size I, up to 1600 A, 3P	3WT9888-0GA00
	Size I, up to 1600 A, 4P	3WT9888-0HA00
	Size II, up to 3200 A, 3P	3WT9888-0KA00
	Size II, up to 3200 A, 4P	3WT9888-0LA00

10.13 Switching from fixed-mounted Circuit Breakers to withdrawable Circuit Breakers

Check the contents of the packaging



①	Positioning actuator	1x
②	Angle bracket (left)	1x
③	Angle bracket (right)	1x
④	Hexagon socket-head screw M6x30 DIN 912	1x
⑤	Countersunk screw M6x20 DIN 7991	8x
⑥	Hexagon socket-head screw M6x12 or similar, DIN 912	FS I 2x, FS II 3x
⑦	Strain washer 6 DIN 6796	1x
⑧	Washer 6,4 DIN 433	FS I 1x, FS II 2x
⑨	Insert	1x
⑩	Lever	1x
⑪	Slide switch	1x
⑫	Leg spring	1x
⑬	Plastite screw 6. 19x10	2x
⑭	DUOCLIPS 4SXN 10	1x
⑮	Adhesive label	1x
⑯	Door slider	1x
⑰	Door slider spring	1x
⑱	Lock washer DIN 6799-5	2x

Note

The components are shown in simplified form.

Article number	Frame size	Number of poles	Dimension "I" (Part 1)
3WT9888-0GA00	I	3	281
3WT9888-0KA00	II	3	381
3WT9888-0HA00	I	4	371
3WT9888-0LA00	II	4	501

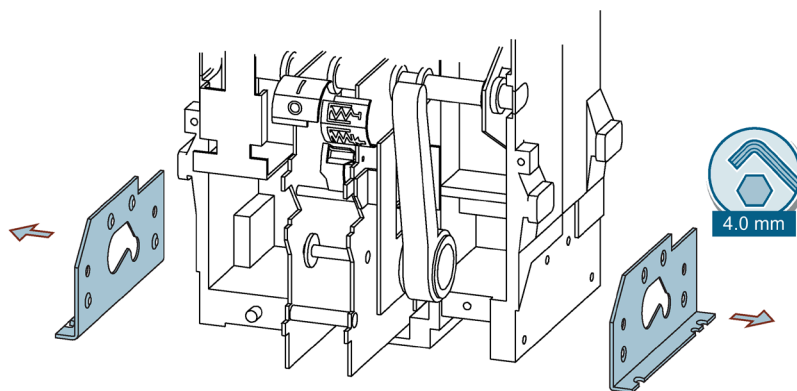
Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits

See chapter Preparatory work (Page 104)

Removing the operating device

Removing the operating device (Page 132)

Unscrewing the angle bracket**Attaching the positioning actuator**

- Place the Circuit Breaker on its back.
Important: place it on a soft surface.
The underside of the Circuit Breaker should ideally point to the installation engineer.
- Push the angle bracket ② and ③ over the shaft ends ② and ④ of the positioning actuator and position up against the Circuit Breaker housing.

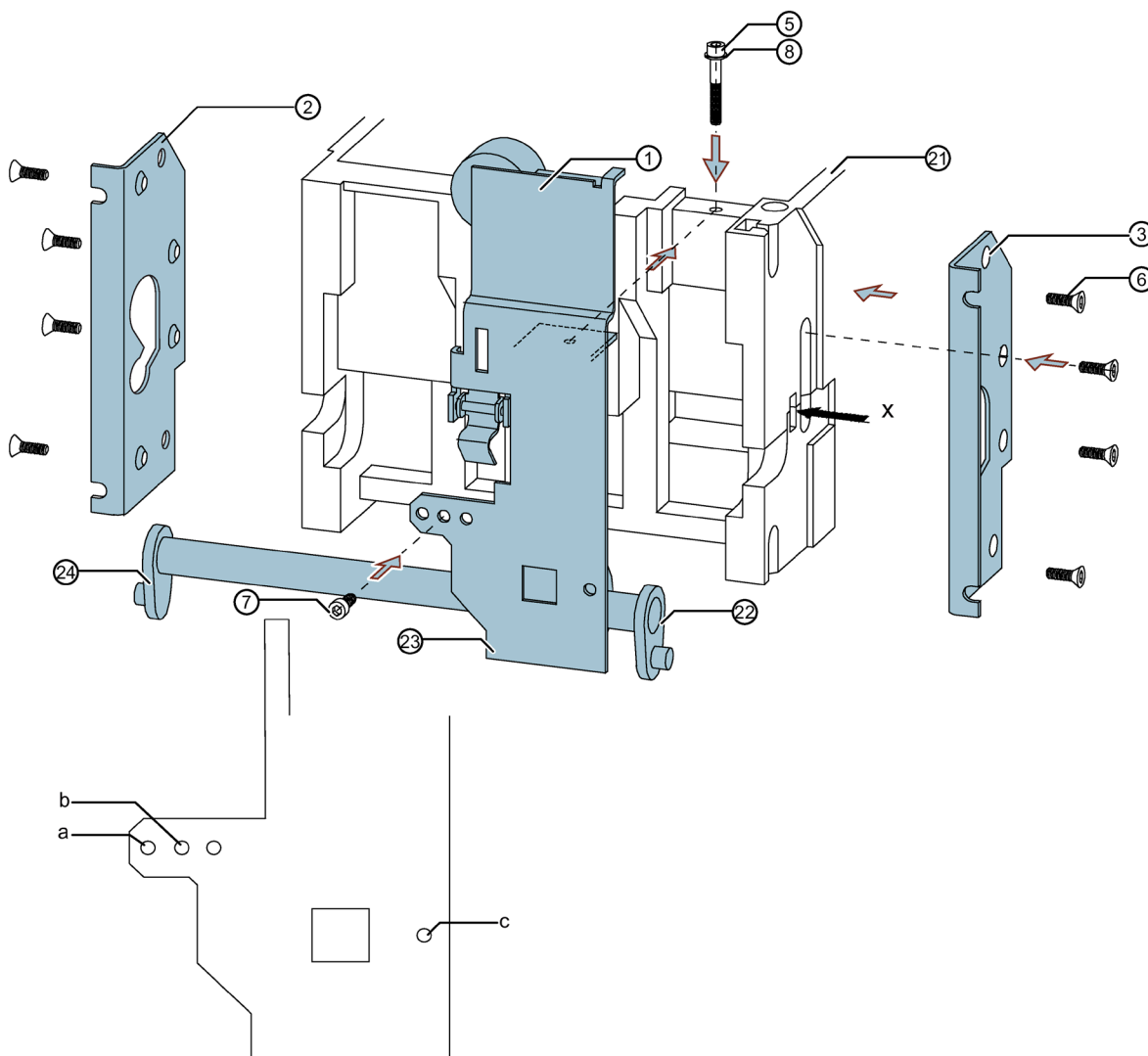
10.13 Switching from fixed-mounted Circuit Breakers to withdrawable Circuit Breakers

- Insert the positioning actuator ① in the Circuit Breaker ⑳ and secure by means of the screw ④ and strain washer ⑧ (tighten by hand only).
- Secure the angle brackets ② and ③ by means of the screws ⑤ (tightening torque: 8 ± 1 Nm).
- Fix the positioning actuator securely by means of the screw ④ (tightening torque: 8 ± 1 Nm).
- Screw the coding screws ⑥ for the rated current coding into the base plate ㉓ of the positioning actuator ①.

Note

The coding screws are thread-shaped screws, which means that they require a higher tightening torque. For the arrangement of the coding screws, see the diagram below. Tightening torque: 8 ± 1 Nm

- Place the Circuit Breaker in an upright position again.



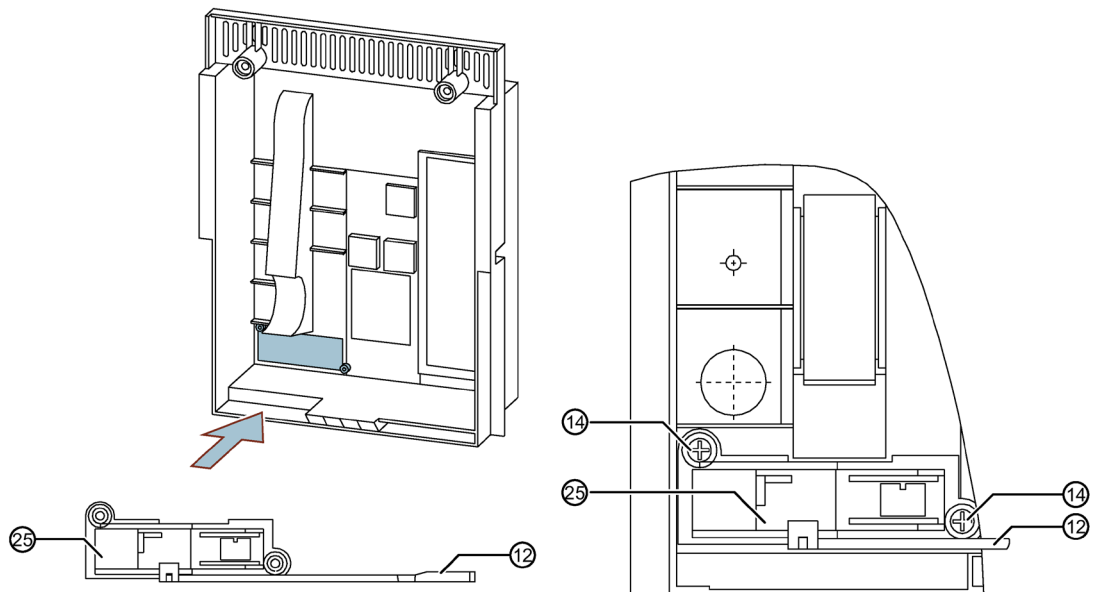
10.13 Switching from fixed-mounted Circuit Breakers to withdrawable Circuit Breakers

Coding scheme

Rated current	Frame size	Coding screw in hole
≤ 1250 A, N/S ¹⁾	I	a
1600 A, N	I	a
1600 A, S	I	b
630 - 2500 A	II	a
3200 A	II	c

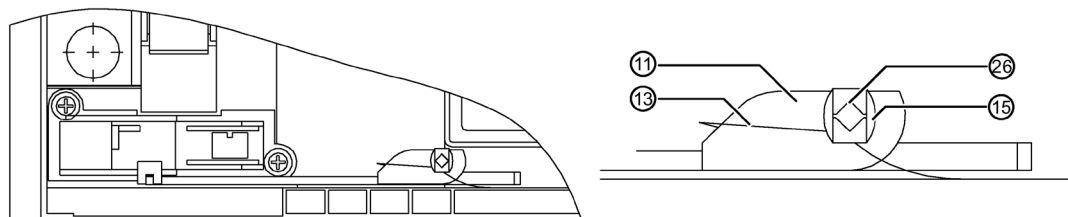
1) N: Circuit Breakers with normal breaking capacity.
S: Circuit Breakers with standard breaking capacity.

- Insert the shutter 25 and slide switch 12 into the cutout of the operator panel together from inside and secure by means of screws 14.



- Make sure that the shutter 25 can move without hindrance and leave it closed.
- Place the lever 11 and leg spring 13 onto the pins 26 of the operator panel.
- Place the bent leg 13 over lever 11 so that leg 13 can be moved by lever 11.
- Secure both parts by means of DUOCLIPS 15.

Important: The lever 11 must rotate without hindrance.

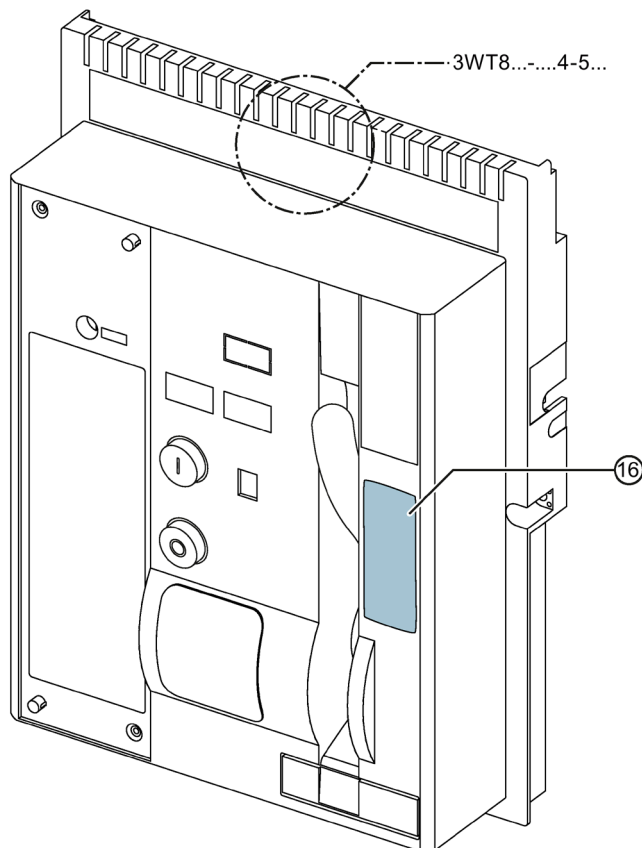


Attaching the adhesive label and changing the rating plate.

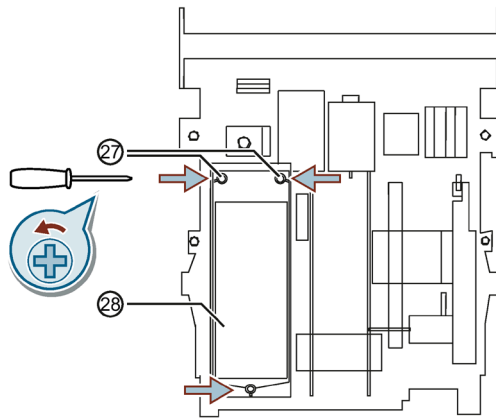
Stick the label ⑩ onto the front of the operator panel.

Changing the rating plate:

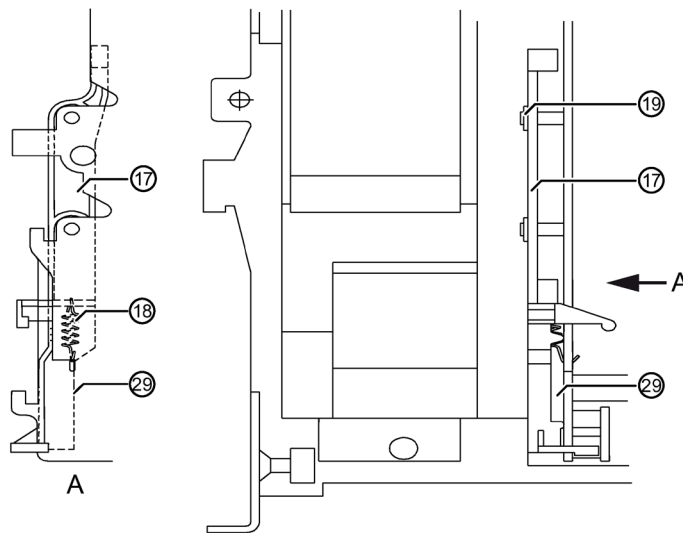
Change the 12th digit of the MLFB to "4" and the 13th to "5" (use an indelible marker).

**Installing the door slider (if not already installed)**

- Remove the screws ⑳ for the electronic trip unit. ㉑
- Remove the electronic trip unit. ㉒



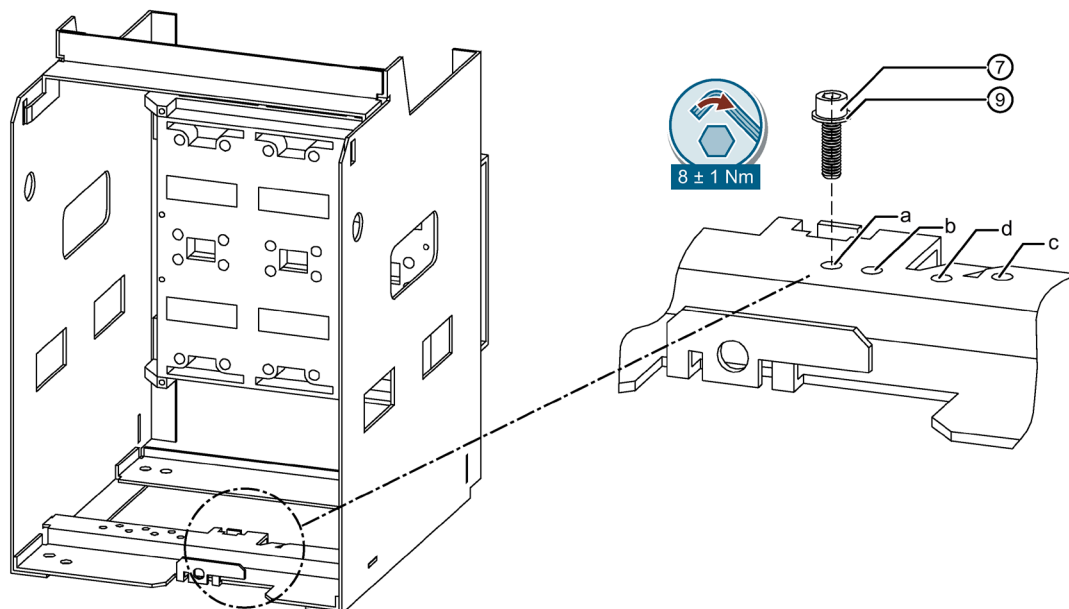
- Place the door slider spring ⑱ with the off-center eye in the side panel of the operating mechanism.⑳
- Place the door slider spring ⑱ with the center eye in the door slider ⑰ using a small screwdriver (see diagram).
- Place the door slider ⑰ with the door slider spring ⑱ on the side panel of the operating mechanism ㉑ and secure it by means of the lock washers ⑲.
- Attach the electronic trip unit ㉒. When doing so, make sure that ㉒ you do not trap any cables.



Installing the operating device

Installing the operating device (Page 133)

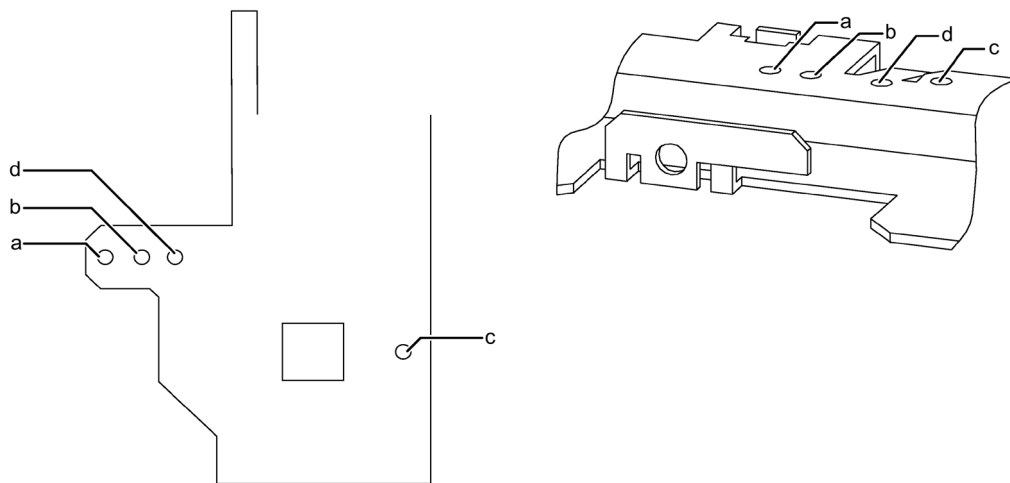
Encoding in the guide frame



Coding scheme

Rated current	Frame size	Coding screws in hole
≤ 1250 A, N/S	I	b
1600 A, N	I	b
1600 A, S	I	a
630 - 2500 A	II	b + c
3200 A	II	a + b
3800 A	II	a + c
4000 A	II	a + d

Summary of coding for Circuit Breaker and guide frame



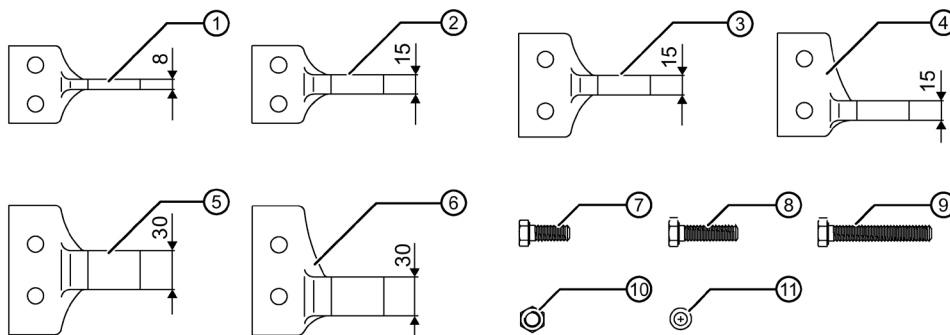
FS	Rated current	Coding							
		Circuit Breaker				Withdrawable part			
		a	b	c	d	a	b	c	d
I	≤ 1250 A, N/S	●	○			○	●		
	1600 A, N	●	○			○	●		
	1600 A, S	○	●			●	○		
II	630 - 2500 A	●	○	○	●	○	●	●	○
	3200 A	○	○	●	●	●	●	○	○
	3800 A	○	●	○	●	●	○	●	○
	4000 A	○	●	●	○	●	○	○	●

10.14 Vertical connections for fixed-mounted Circuit Breaker

Article No.

Description		Article No.
Vertical connection for fixed-mounted Circuit Breaker	Size I, up to 1250 A, N/S class; 1600 A, N class	3WT9821-7AC00
	Size I, 1600 A, S class	3WT9821-7BC00
	Size II, up to 2500 A, 3P	3WT9821-7DA00
	Size II, up to 2500 A, 4P	3WT9821-7DB00
	Size II, 3200 A, 3P	3WT9821-7FA00
	Size II, 3200 A, 4P	3WT9821-7FB00

Check the contents of the packaging



- ① Connection piece
- ② Connection piece
- ③ Connection piece
- ④ Connection piece
- ⑤ Connection piece
- ⑥ Connection piece
- ⑦ Hexagon-head screw M12 x 30 DIN933
- ⑧ Hexagon-head screw M12 x 45 DIN931
- ⑨ Hexagon-head screw M12 x 80 DIN931
- ⑩ Hexagon nut ISO 4032-M12
- ⑪ Strain washer 12 DIN6796

Article number	Frame size / no. of poles	Rated current A	Number of items											
			1	2	3	4	5	6	7	8	9	10	11	
3WT9821 - 7AC00	I / 3 I / 4	≤ 1250 A, N/S 1600 A, N	1							2			2	4
3WT9821 - 7BC00	I / 3 I / 4	1600 A, S		1							2		2	4

10.14 Vertical connections for fixed-mounted Circuit Breaker

Article number	Frame size / no. of poles	Rated current A	Number of items										
			1	2	3	4	5	6	7	8	9	10	11
3WT9821 - 7DA00	II / 3	≤ 2500 A			1	2				6		6	12
3WT9821 - 7DB00	II / 4				1	3				8		8	16
3WT9821 - 7FA00	II / 3	3200 A					1	2			6	6	12
3WT9821 - 7FB00	II / 4						1	3			8	8	16

Note

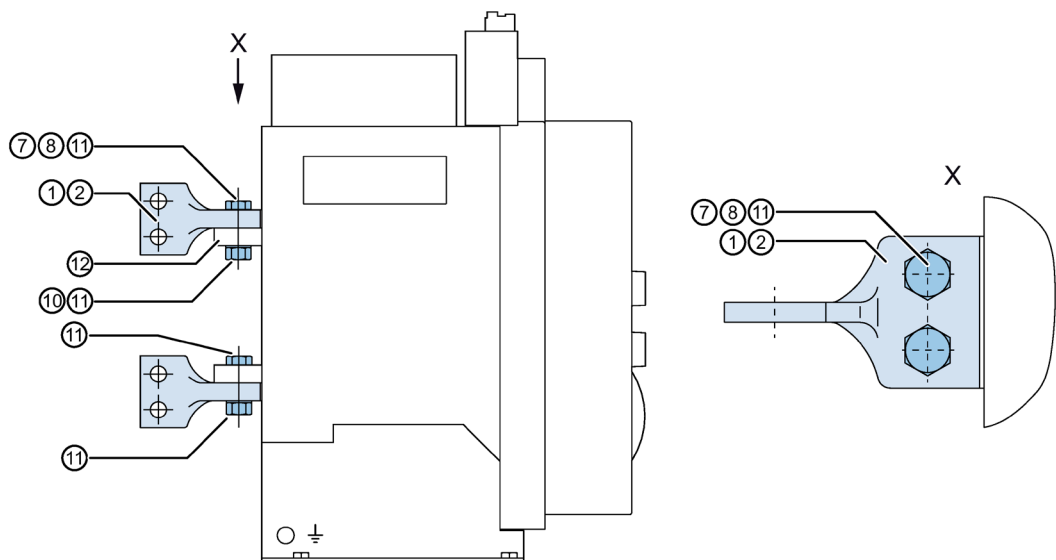
Please order the number of connecting bars as required for the application.

Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits

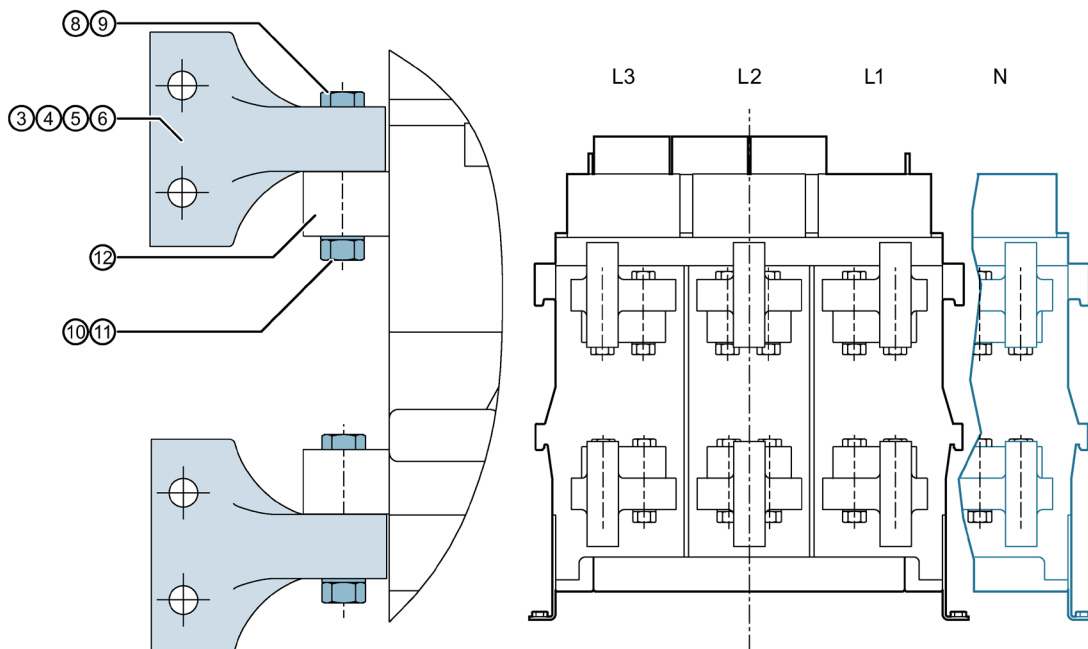
See chapter Preparatory work (Page 104)

Installing the connection pieces (frame size I)



Place the connection piece ① or ② on the connection bar ⑫ as shown and secure by means of a hexagon socket-head screw ⑦ or ⑧, strain washer ⑪ and hexagon nut ⑩ (tightening torque: 70 ± 7 Nm).

Installing the connection pieces (frame size II)



Place the connection pieces ③ and ④ or ⑤ and ⑥ on the connection bar ⑫ as shown and secure by means of a hexagon socket-head screw ⑧ or ⑨, strain washer ⑪ and hexagon nut ⑩ (tightening torque: 70 ± 7 Nm).

Note

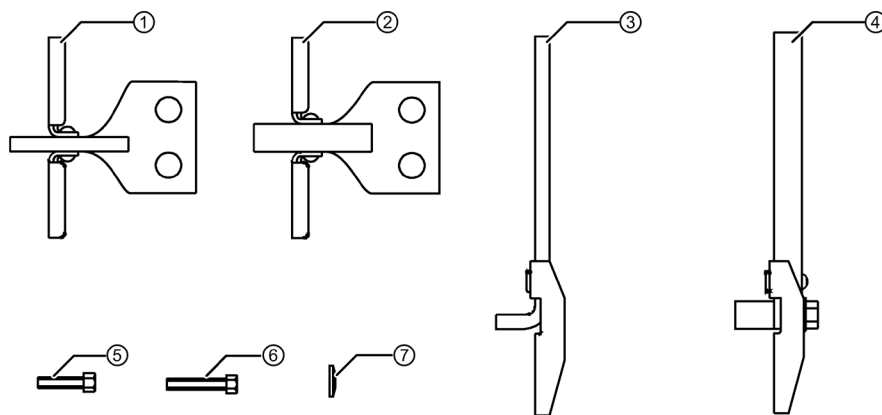
Make sure that connection pieces ③ and ④ or ⑤ and ⑥ (symmetrical and asymmetrical) are mounted in the correct position. The 3-pole version does not have the outer connections on the right.

10.15 Connection bars for guide frame (frame size I)

Article No.

Description		Article No.
Vertical connection for guide frame	Size I, up to 1250 A, N/S class; 1600 A, N class	3WT9823-3AA00
	Size I, 1600 A, S class	3WT9823-3BA00
Front connection for guide frame	Size I, up to 1250 A, N/S class; 1600 A, N class	3WT9823-1AA01
	Size I, 1600 A, S class	3WT9823-1BA01

Check the contents of the packaging



- ① Vertical connection \leq 1250 A, N/S; 1600 A, N
- ② Vertical connection 1600 A, S
- ③ Front connection with DIN hole pattern \leq 1250 A, N/S; 1600 A, N
- ④ Front connection with DIN hole pattern 1600 A, S
- ⑤ Hexagon bolt ISO 4017-M6x25-8.8
- ⑥ Hexagon bolt ISO 4017-M6x35-8.8
- ⑦ Strain washer 6 DIN 6796

Parts list

Article number	Rated current	Connection type	Quantity						
			1	2	3	4	5	6	7
3WT9823-3AA00	\leq 1250 A, N/S; 1600 A, N	Vertical connection	1				4		4
3WT9823-3BA00	1600 A, S	Vertical connection		1			4		4
3WT9823-1AA01	\leq 1250 A, N/S; 1600 A, N	DIN front connection			1		2	2	4
3WT9823-1BA01	1600 A, S	DIN front connection				1	2	2	4

Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

See chapter Preparatory work (Page 104)

Installing the connection bars

1. Unscrew any connection pieces. To do so, unscrew the fixing screws ⑤ or ⑥ and remove the connection pieces from the finger clusters ⑧. When doing so, make sure that you do not pull the finger clusters out of the rear panel ⑨.
2. Insert the new connection pieces as shown in Fig. 1 and Fig. 2 and secure them by means of the enclosed screws and strain washers (tightening torque: 8 ± 1 Nm). See Fig. 1 for the fixing screw assignments; see Fig. 2 for the position of the strain washers.

NOTICE

If necessary, only insert finger clusters that have been removed in the position shown in Fig. 2, that is, the stop pin ⑩ must point toward the connection pieces.

All diagrams are simplified.

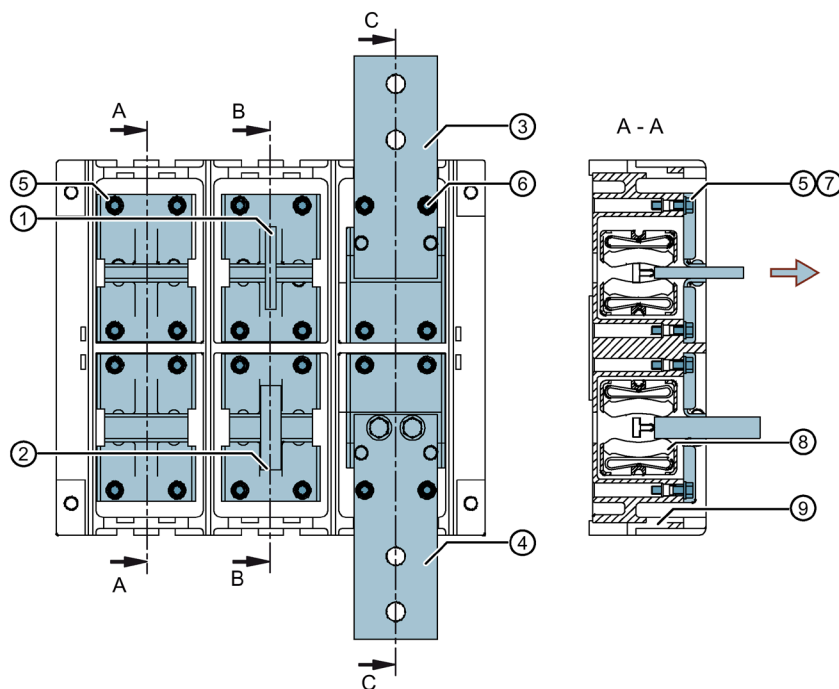


Fig. 1: Rear panel of guide frame, rear view, possible connection types

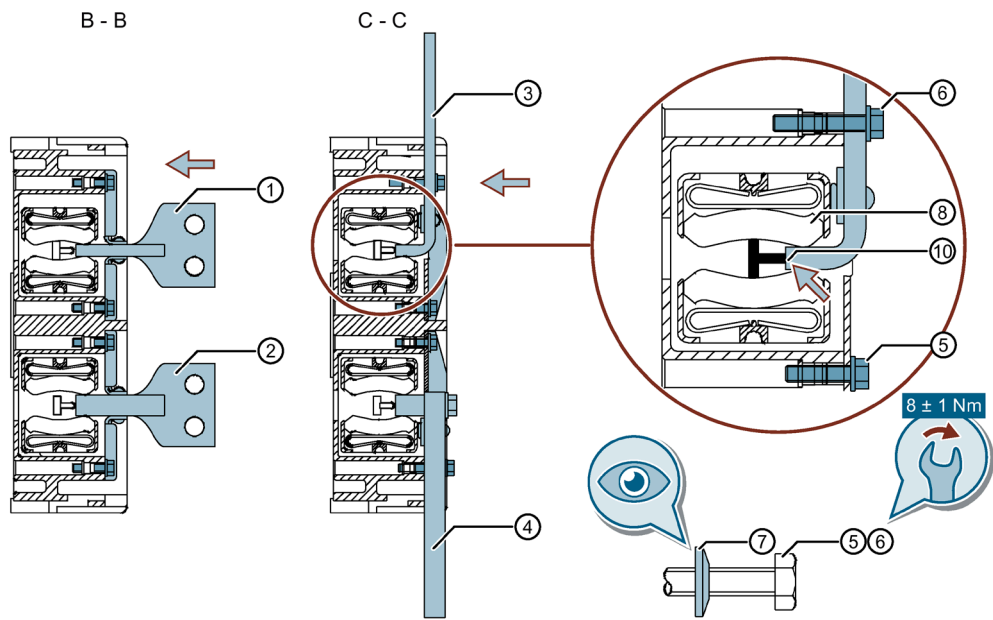


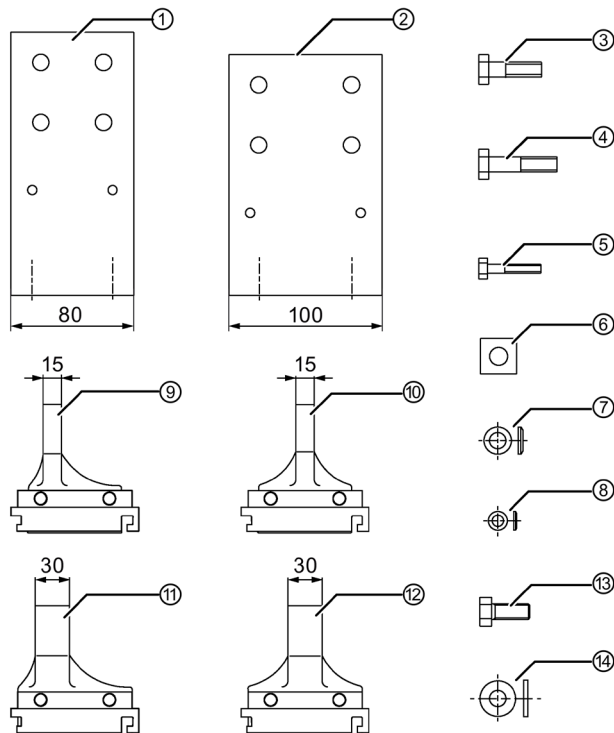
Fig. 2: Position of the finger clusters

10.16 Connection bars / connection pieces for guide frame version FS II

Article No.

Description		Article No.
Vertical connection for guide frame	Size II, up to 2500 A, 3P	3WT9823-4AB00
	Size II, up to 2500 A, 4P	3WT9823-4AC00
	Size II, 3200 A, 3P	3WT9823-4BB00
	Size II, 3200 A, 4P	3WT9823-4BC00
Front connection for guide frame DIN double hole	Size II, up to 2500 A	3WT9823-1DA01
	Size II, 3200 A	3WT9823-1EA01

Check the contents of the packaging



- ① Connection bar \leq 2500 A, DIN hole pattern
- ② Connection bar 3200 A, DIN hole pattern
- ③ Hexagon bolt DIN 933-M10x40-8.8
- ④ Hexagon bolt DIN 931-M10x55-8.8
- ⑤ Hexagon bolt ISO 4017-M6x40-8.8
- ⑥ Square nut M6
- ⑦ Clamping washer DIN 6796-10-FSt
- ⑧ Clamping washer DIN 6796-6-FSt
- ⑨ Connection piece \leq 2500 A
- ⑩ Connection piece \leq 2500 A
- ⑪ Connection piece 3200 A
- ⑫ Connection piece 3200 A
- ⑬ Hexagon bolt ISO 4017-M6x16-8.8
- ⑭ Washer EN ISO 7093-6.4

Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

See chapter Preparatory work (Page 104)

10.16 Connection bars / connection pieces for guide frame version FS II

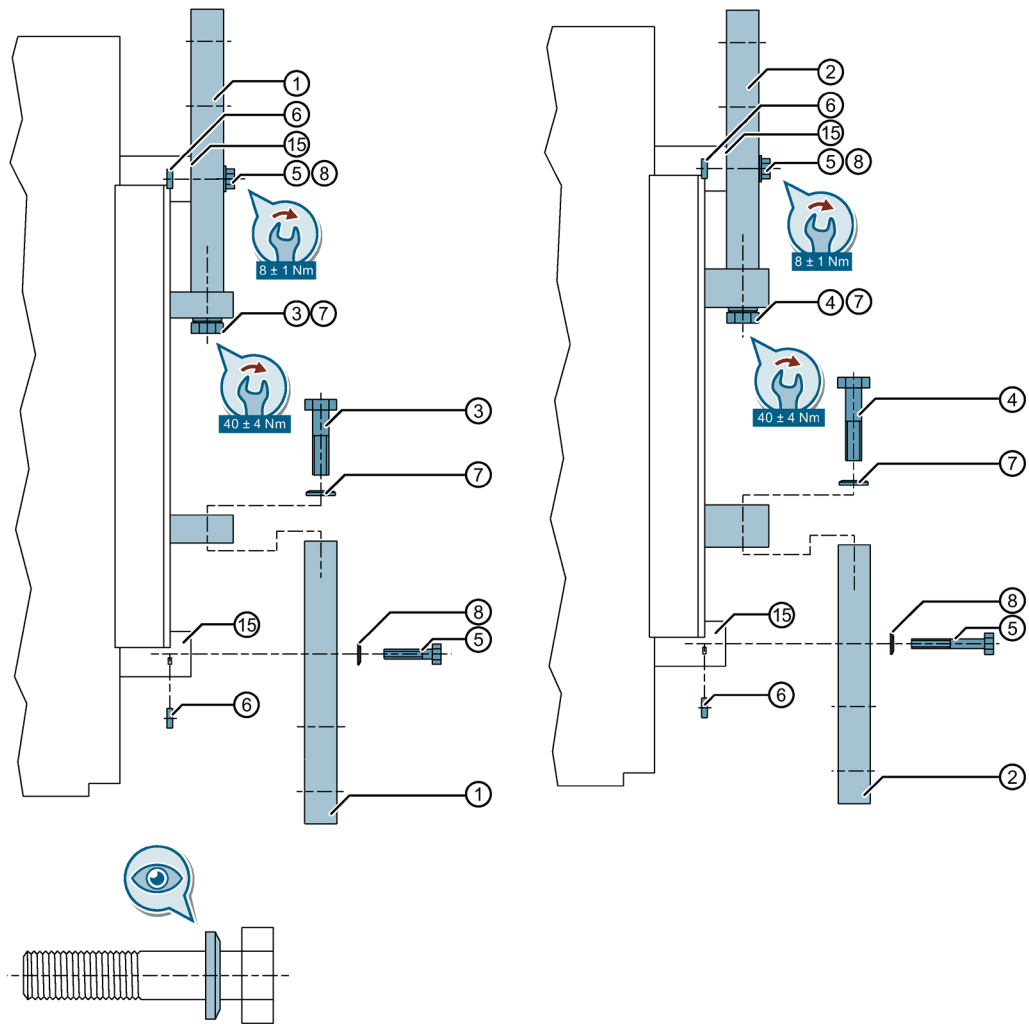
Quantity of parts

Article number of packing unit	Part no.													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
3WT9823 - 1DA01	1		2		2	2	2	2						
3WT9823 - 1EA01		1		2	2	2	2	2						
3WT9823 - 4AB00								12	2	1			12	6
3WT9823 - 4AC00								16	3	1			16	8
3WT9823 - 4BB00								12			2	1	12	
3WT9823 - 4BC00								16			3	1	16	

Installing the connection bars

Installation sequence:

1. Press the connection bars ① or ② in parallel onto the screw-on points ⑮ and tighten the screws ⑤ (tighten by hand only).
2. Tighten the screws ③ and ④ to 40 ± 4 Nm.
3. Tighten the screws ⑤ with ⑥ to 8 ± 1 Nm.



Note

Note the position of the strain washers.

Installing the connection pieces

1. Unscrew any connection pieces. To do so, unscrew the fixing screw ⑬ and remove the connection pieces with the finger clusters ⑯ (Fig. 1).
2. Insert the new connection pieces (Fig. 2) and secure them by means of the enclosed screws and strain washers (Fig. 3) (tightening torque: 8 ± 1 Nm).

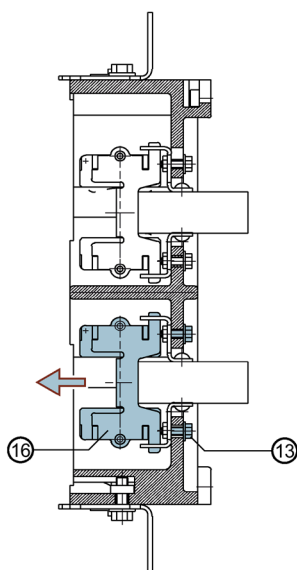


Fig. 1

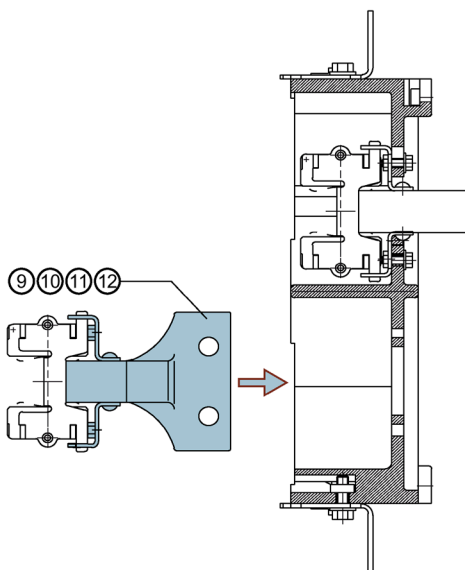


Fig. 2

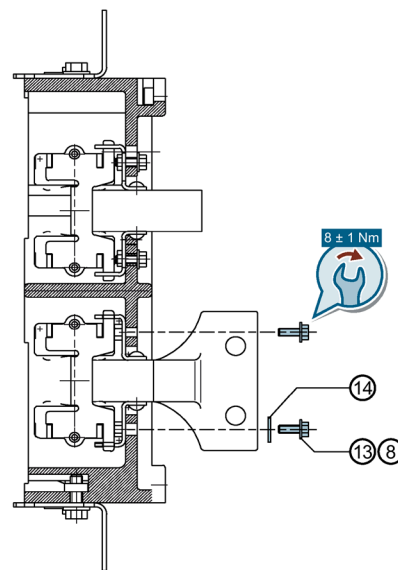
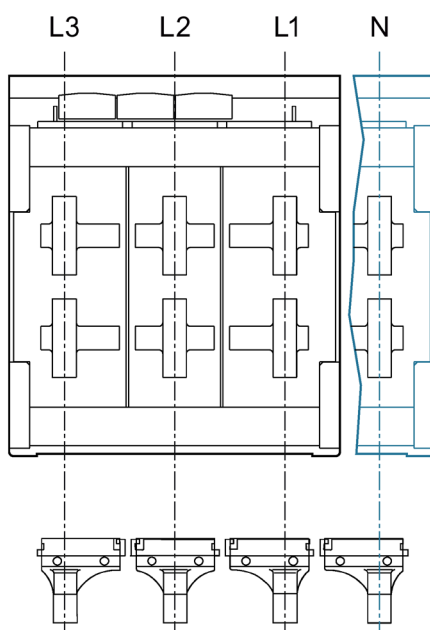


Fig. 3

Arrangement of the connection pieces

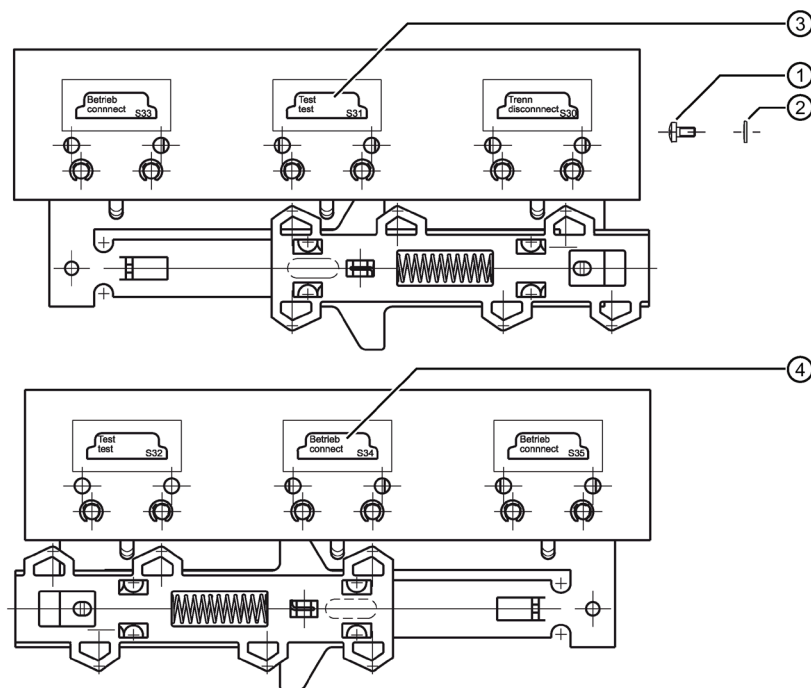


10.17 Position signaling switch for guide frame

Article No.

Description	Article No.
Position signaling switch module (For withdrawable Circuit Breaker only)	3WT9884-1JC10

Check the contents of the packaging (position signaling switch without intermediate terminal)



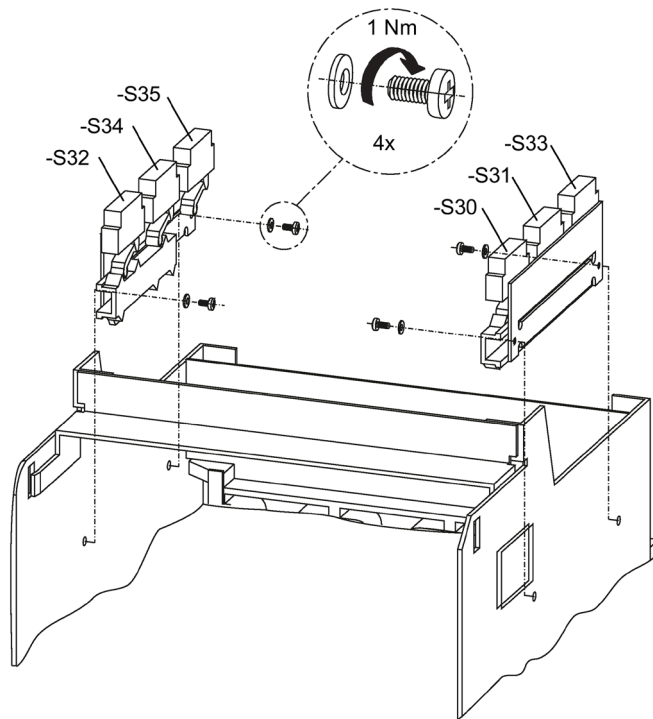
①	Screw	4 x
②	Washer	4 x
③	Position signaling switch module	1 x
④	Position signaling switch module	1 x

Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

See chapter Preparatory work (Page 104)

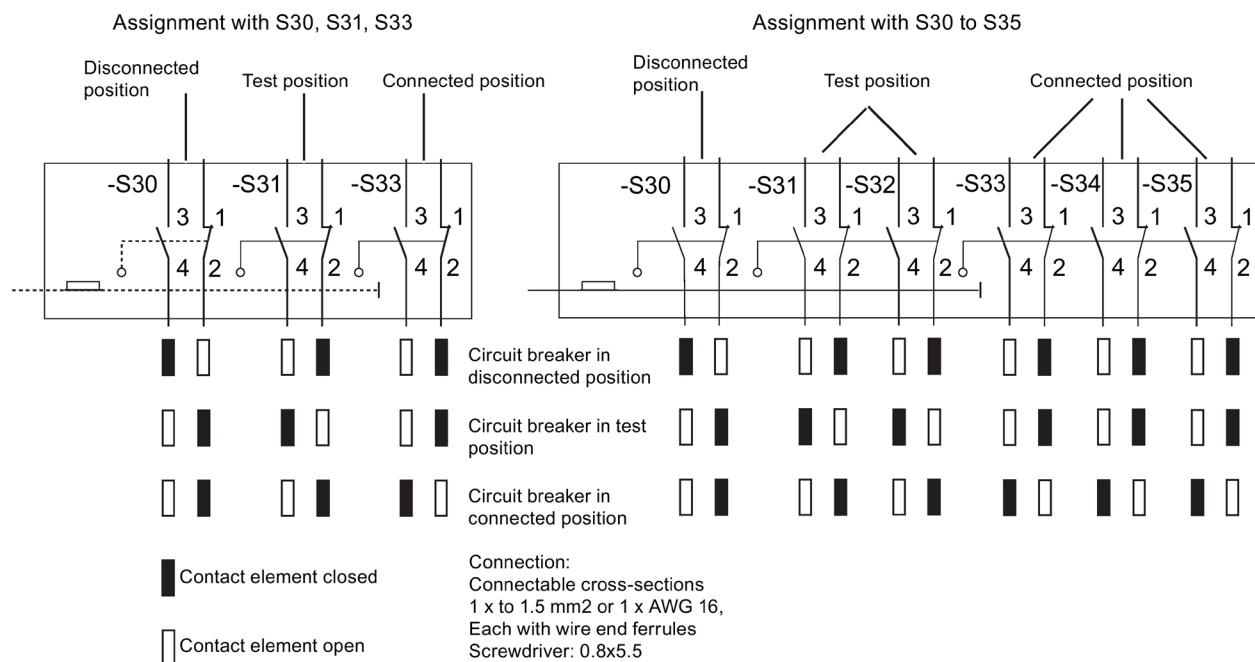
Installing the position signaling switch without intermediate terminal



Cross-tip screwdriver (size 2)

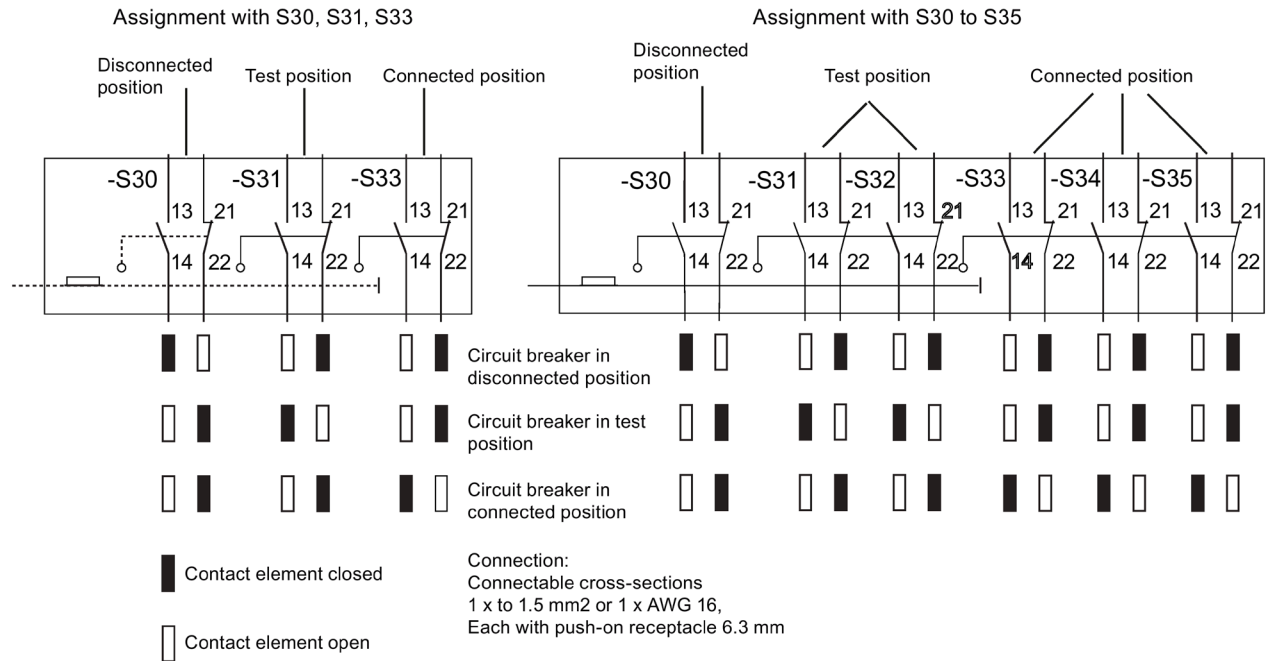
Connecting the position signaling switch without intermediate terminal

Circuit diagrams



Connecting the position signaling switch (article number 3WT9884-1JC10)

Circuit diagrams

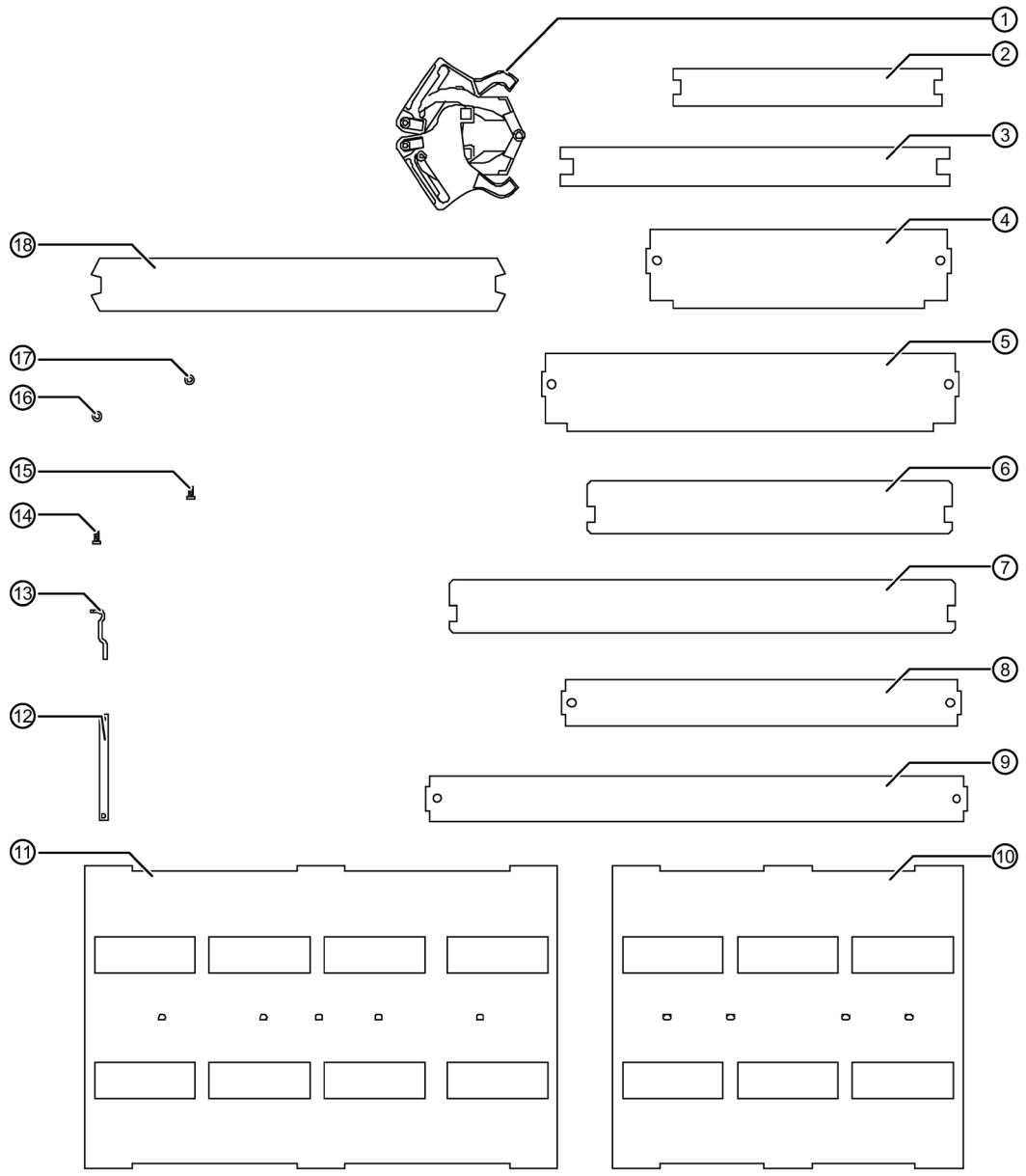


10.18 Shutters

Article No.

Description		Article No.
Shutters	Size I, 3P	3WT9884-3CA00
	Size I, 4P	3WT9884-3DA00
	Size II, 3P	3WT9884-3CB00
	Size II, 4P	3WT9884-3DB00

Check the contents of the packaging for frame sizes I and II



	Frame size	I	I	II	II
	Number of poles	3	4	3	4
	Article number 3WT 9884	3CA00	3CB00	3DA00	3DB00
①	Control mechanism	2	2	2	2
②	Shutters	1			
③	Shutters		2		
④	Cover	2			
⑤	Cover		2		
⑥	Shutters			2	
⑦	Shutters				2

⑧	Cover			2	
⑨	Cover				2
⑩	Insulating plate			1	
⑪	Insulating plate				1
⑫	Cover strip	3	5		
⑬	Hook	2	2	2	2
⑭	Pan-head screw M 4 x 8 ISO 7045	2	2	2	2
⑮	Plastite screw 6- 19 x 10	8	8	4	5
⑯	Washer 4,3 DIN 125			4	5
⑰	Strain washer 4 DIN 6796	2	2	2	2
⑱	Shutters	1			

Note

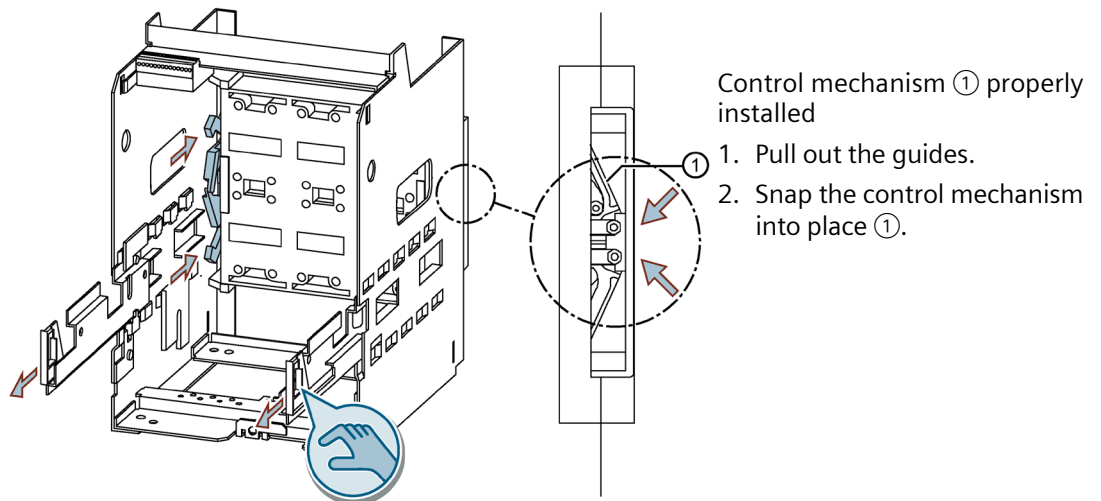
These operating instructions apply to 3 and 4-pole guide frames.

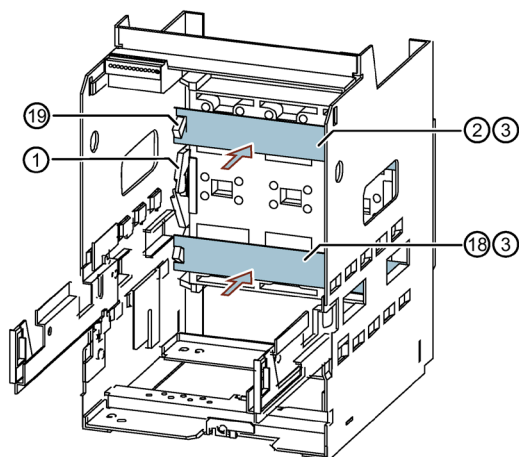
Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

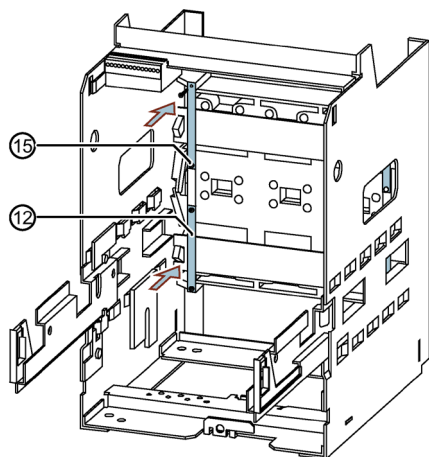
See chapter Preparatory work (Page 104)

Installing the shutter - work sequence for frame size I

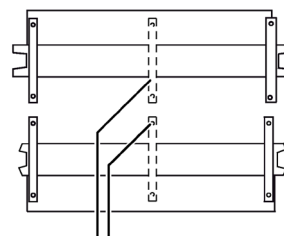




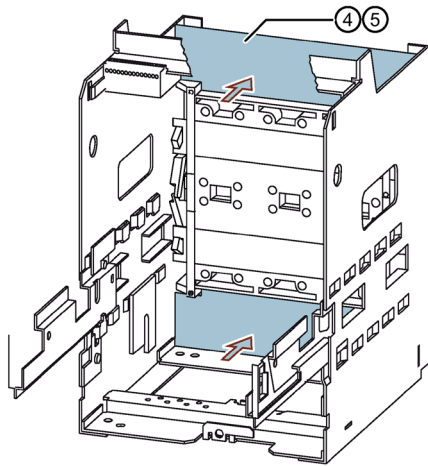
Place the shutter ②③⑱ on the lever ⑲ of the control mechanism ①.



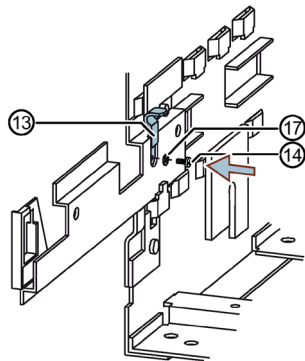
Screw on the cover strip ⑫.



For 4-pole version only

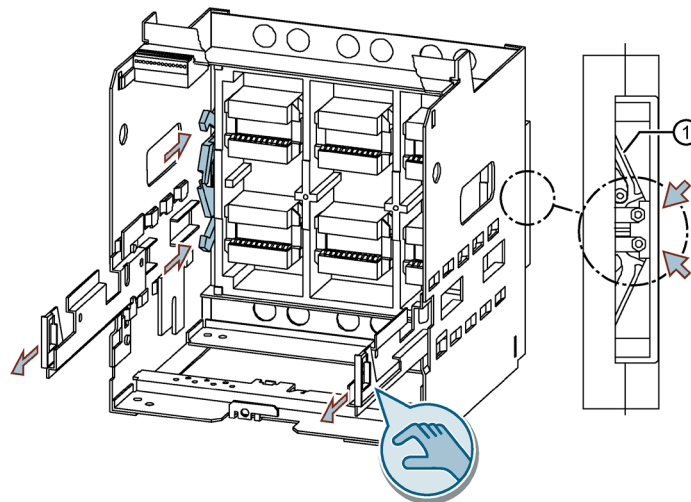


Attach the upper and lower covers ④⑤.



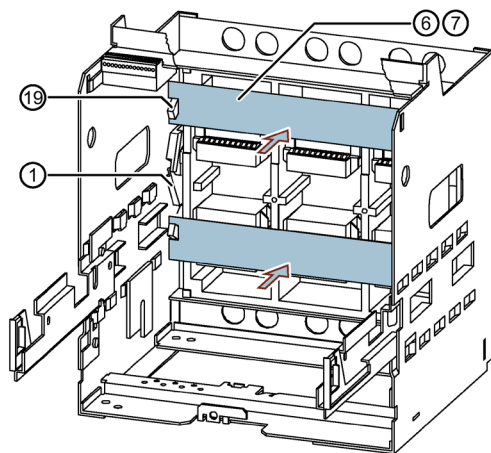
Screw the hook ⑬ onto the guides.

Installing the shutter - work sequence for frame size II

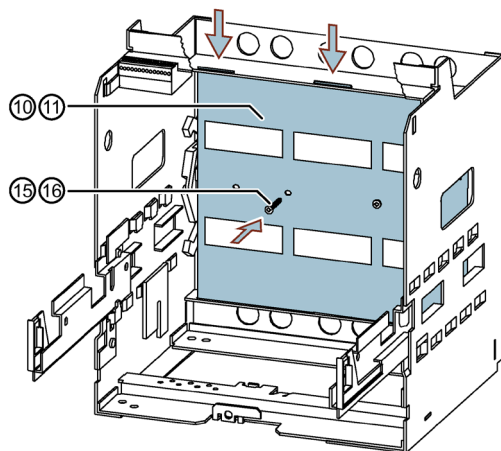


Control mechanism ① properly installed

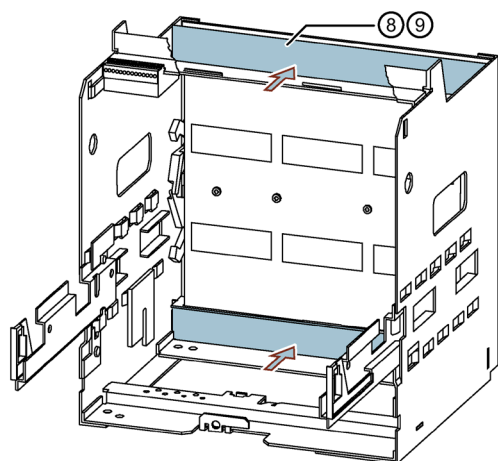
1. Pull out the guides.
2. Snap the control mechanism into place ①.



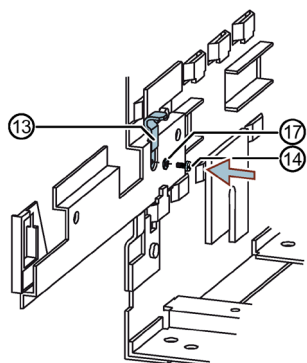
Place the shutter ⑥⑦ on the lever ⑲ of the control mechanism ①.



Attach the insulation plate ⑩⑪ and secure.

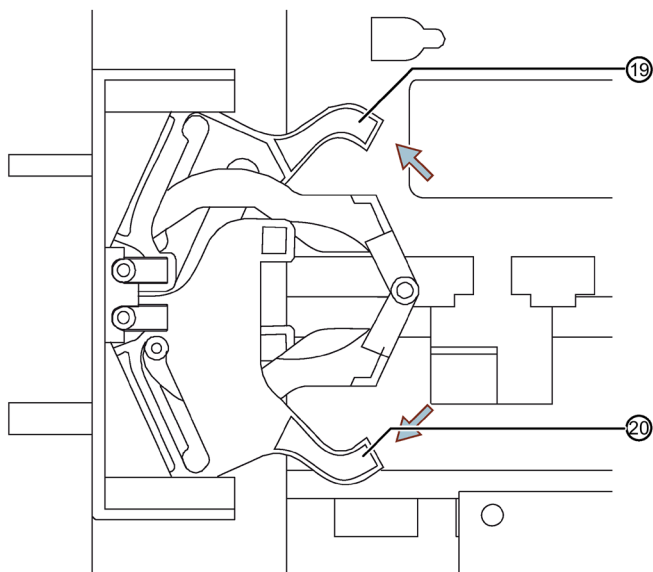


Attach the upper and lower cover ⑧⑨.



Screw the hook ⑬ onto the guides.

Functional check: frame sizes I and II



Move the upper and lower lever ⑲ and ⑳ in the direction of the arrow until the shutter is open fully. When you let go of the levers, the shutters should close automatically.

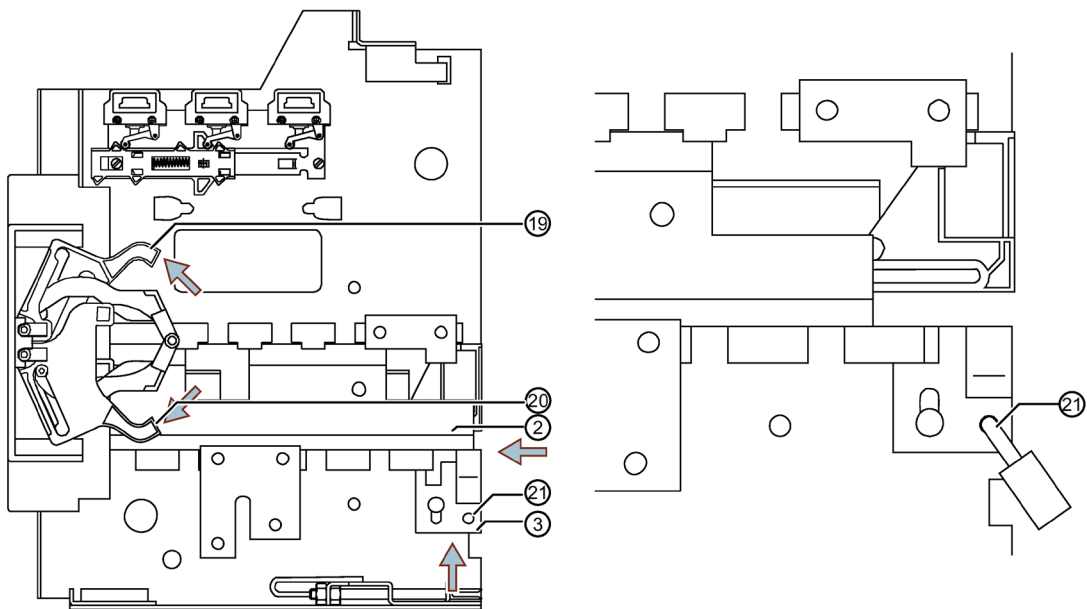
Locking the shutter: frame sizes I and II

Note

The following options are available:

- Both shutters closed
- The top shutter open
- The lower shutter open
- Both shutters open

Two padlocks are required here for each shutter.
These must be provided by the customer.



1. Both shutters closed:
 - Insert the guides ② as far as they will go.
 - Push the bolt ③ up as far as it will go.
 - Place the padlocks ② in the holes and lock.
2. Upper shutter open:
 - Push the upper lever ⑱ up in the direction of the arrow.
 - Continue as described above (1).
3. Lower shutter open:
 - work sequence as described above (2).
4. Both shutters open:
 - Move the upper ⑱ and lower ⑳ lever in the direction of the arrow.
 - Continue as described above (1).

10.19 Arc chute cover

This is only valid for withdrawable air Circuit Breaker.

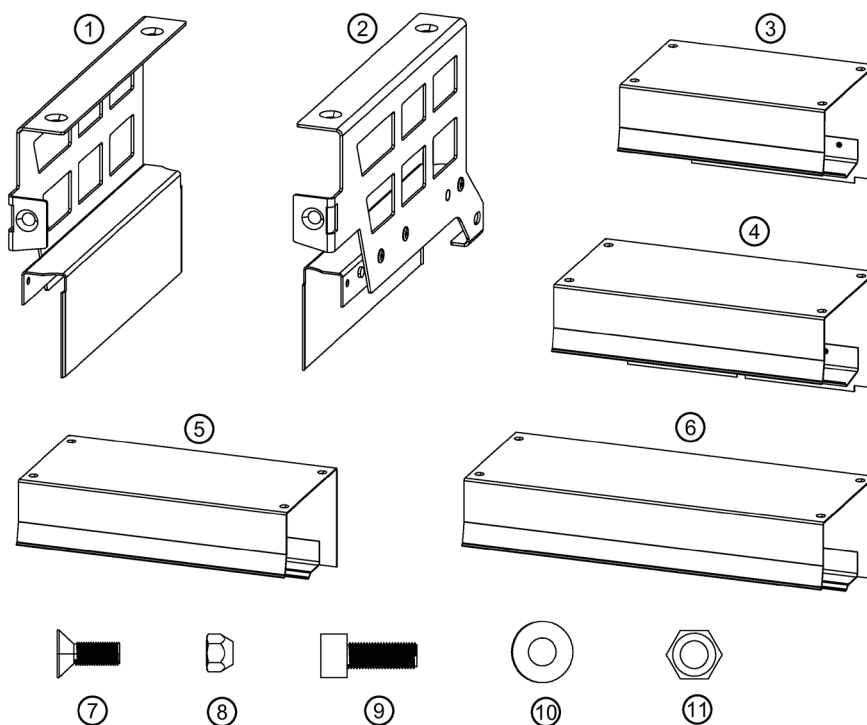
The cover for arc chute is an accessory for the guide frame, and it provides protection directly for the switching device above the air Circuit Breaker.

Article No.

Description		Article No.
Arc chute cover	Size I, 3P	3WT9811-0GA00
	Size I, 4P	3WT9811-0HA00
	Size II, 3P	3WT9811-0JA00
	Size II, 4P	3WT9811-0KA00
	Size II, 3200 / 4000 A, 3P with Z = A08 ¹⁾	3WT9811-0JA10
	Size II, 3200 / 4000 A, 4P with Z = A08 ¹⁾	3WT9811-0KA10

¹⁾ I_{cs} , I_{cu} , I_{cw} = 66 kA at 690 V

Check contents of package



Item	Description	Withdrawable Circuit Breaker			
		Size I – 3P	Size I – 4P	Size II – 3P	Size II – 4P
①	Side plate left, cpl	1X	1X	1X	1X
②	Side plate right, cpl	1X	1X	1X	1X
③	Protective cover	1X			
④	Protective cover		1X		
⑤	Protective cover			1X	
⑥	Protective cover				1X
⑦	Countersunk screw M 6X16	4X	4X	4X	4X
⑧	Conical nut M6	4X	4X	4X	4X
⑨	Socket cap screw M 6X16	2X	2X	2X	2X
⑩	Clamping washer	2X	2X	2X	2X
⑪	Hexagon nut M6	2X	2X	2X	2X

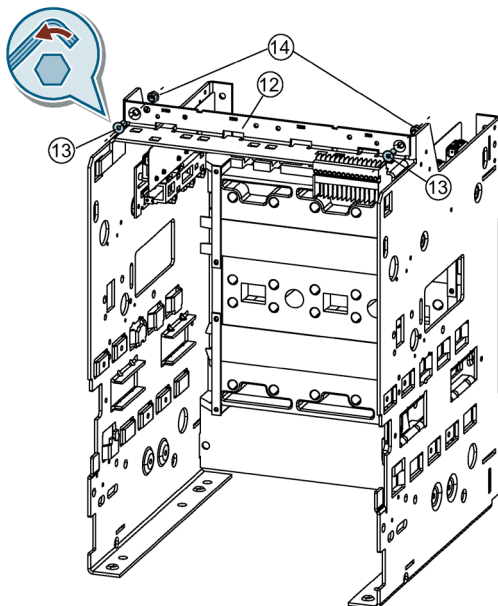
Preparatory work

- Opening the Circuit Breaker and discharging the stored energy springs
- Disconnect auxiliary circuits
- Pull Circuit Breaker to maintenance position and remove

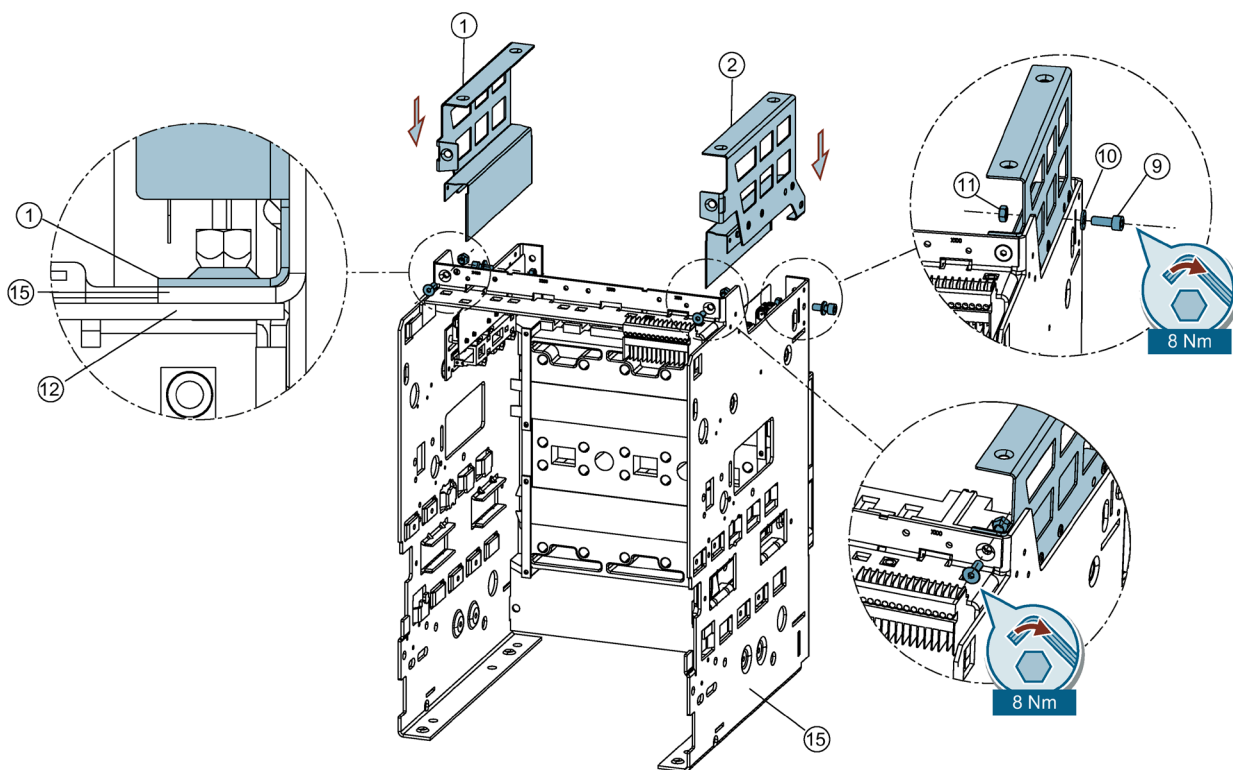
See chapter Preparatory work (Page 104)

Assembly

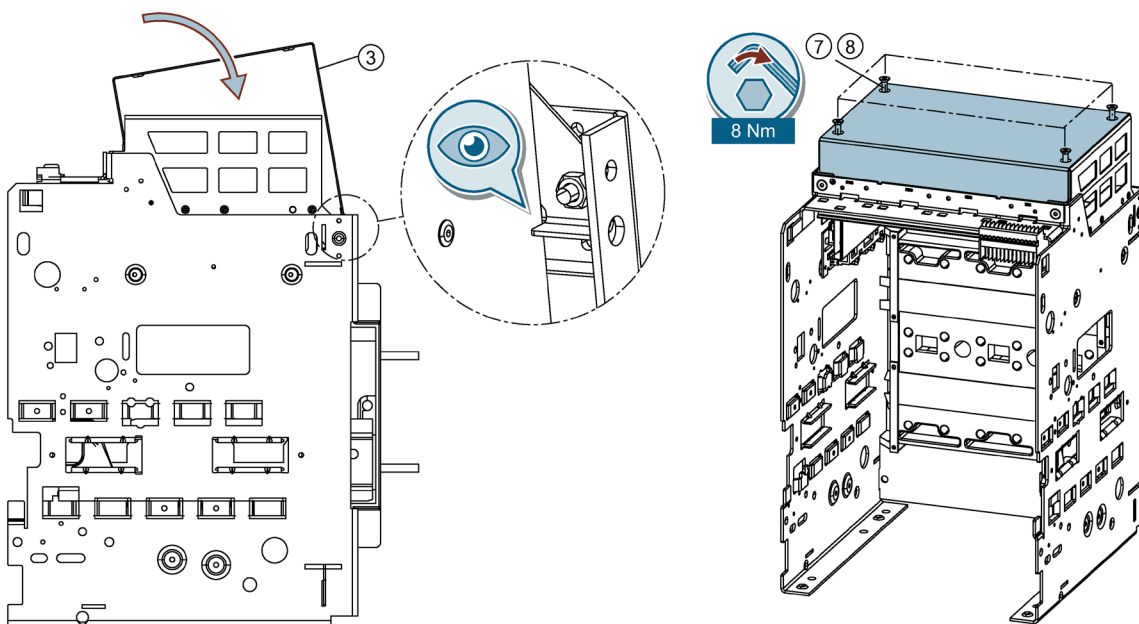
Take size 1, 3-pole as an example:



- Use allen wrench to dismantle the fasteners ⑬⑭ of the carrier beam ⑫ of the guide frame, and these fasteners will be kept for use in next steps.



- Take the left and right side plates ①② and insert them from above the Circuit Breaker.
- Use allen wrench, screw ⑨, washer ⑩ and nut ⑪ to fix the side plate to the guide frame.
- Use fasteners ⑬⑭ to fix the carrier beam and both left and right side plates.



10.19 Arc chute cover

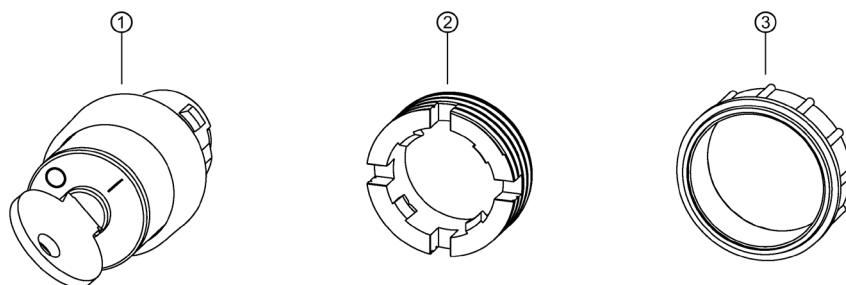
- Insert the upper protective cover ③ according to the diagram, making contact with both left and right side plate ①②. Pay attention that the protective cover should be placed to inside of side plate corner.
- Use countersunk screw M6x16 ⑦ and conical nut M6 ⑧ to fix the protective cover to both side plates.

10.20 Safety locking device

Article No.

Description	Article No.
Safety locking device instead of the OFF button	3WT9863-1JA00

Check the contents of the packaging



①	Safety lock	1x
②	Black ring	1x
③	White ring	1x

Preparatory work

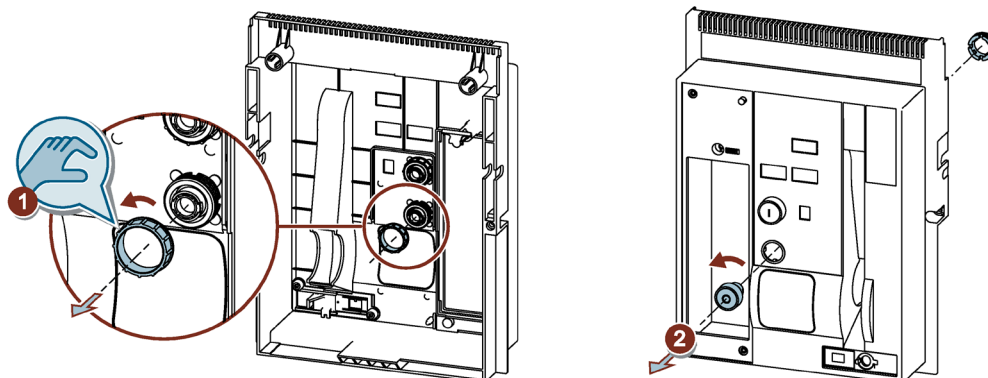
1. Open the Circuit Breaker and discharge the stored energy springs.
2. Disconnect auxiliary circuits.
3. Pull the Circuit Breaker to the maintenance position and remove it.

See Preparatory work (Page 104)

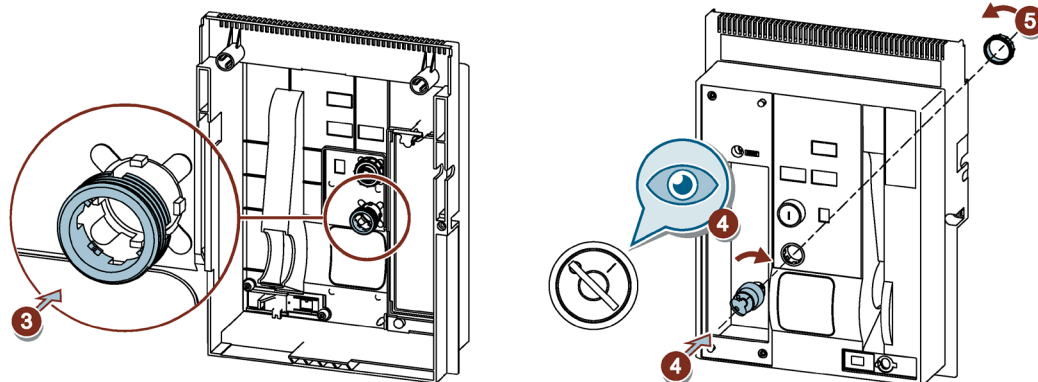
Removing the operating device

See Removing the operating device (Page 132)

Installing the safety locking device



1. Remove the white ring of the OFF button.
2. Contrarotate the OFF button a little, then remove the OFF button.

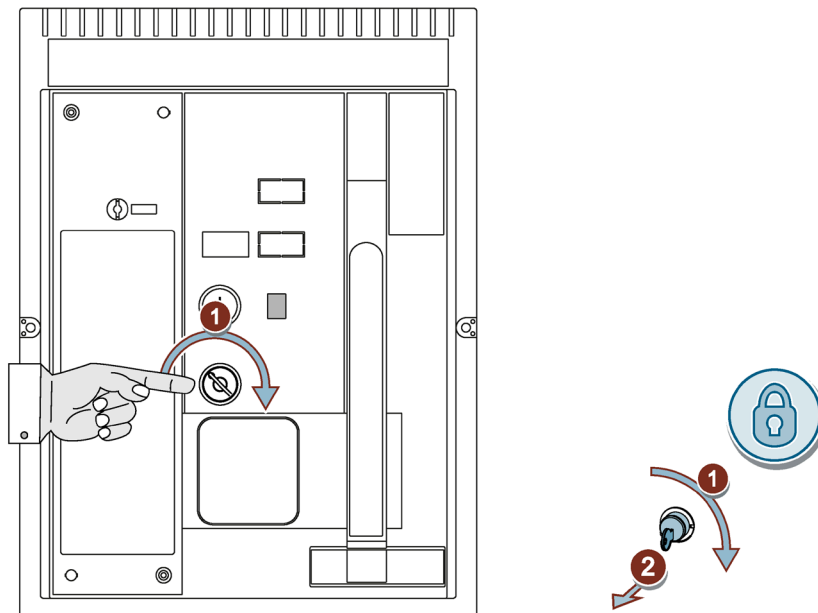


3. Install the black ring and hold it in position.
4. Insert the safety lock and rotate clockwise to the correct position.
5. Fix the safety lock with the white ring

Installing the operating device

See Installing the operating device (Page 133)


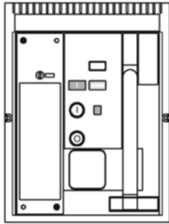
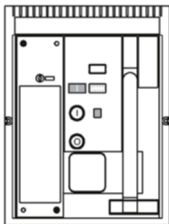
Functional check



1. Turn the key clockwise to the locking position.
2. Remove the key.

The Circuit Breaker cannot close when in this position.

Troubleshooting

Fixed-mounted Circuit Breaker	Withdrawable Circuit Breakers	Fault	Cause	Remedy
✓	✓	<p>The Circuit Breaker cannot be closed mechanically and/or electrically. (The Circuit Breaker is not ready to close, ready-to-close indicator )</p> 	The stored-energy spring mechanism has not been charged.	Charge the stored-energy spring mechanism.
✓	✓		The undervoltage release is not excited.	Connect the undervoltage release to the power supply.
✓	✓		Mechanical reclosing lockout active.	Rectify cause of overcurrent tripping and press RESET.
✓	✓		Electrical closing lockout active.	Remove the control voltage of the closing lockout. *)
✓	✓		Mechanical OFF pushbutton locked.	Enable the pushbutton. ²
✓	✓		Block against closing. ¹	Close the cabinet door.
✓	✓		Mechanical Circuit Breaker interlock active (accessories).	Open the interlocking Circuit Breaker or rack it to disconnected position. ²
✓	✓		Electronic trip unit not installed or installed incorrectly.	Install the electronic trip unit properly.
	✓		The Circuit Breaker is set to an intermediate position in the guide frame (note the position indicator).	Rack the Circuit Breaker to the disconnected, test, or operating position.
	✓		Shutter for racking handle opening not closed.	Close the shutter (to disconnected, test, or operating position).
✓	✓	<p>The Circuit Breaker cannot be closed by electrical means. (The Circuit Breaker is ready to close, ready-to-close indicator OK)</p> 	The operating voltage of the closing solenoid is incorrect or has not been applied.	Check that the voltage is correct or apply the voltage.
	✓		The Circuit Breaker is in the disconnected position in the guide frame.	Rack the Circuit Breaker to the test or operating position.
✓			The auxiliary supply connector has been unplugged.	Plug in the auxiliary supply connector.
	✓	The guide rails cannot be pulled out to install the Circuit Breaker.	The shutter is locked with one or two padlocks.	Remove the padlocks.

Fixed-mounted Circuit Breaker	Withdrawable Circuit Breakers	Fault	Cause	Remedy
	✓	The Circuit Breaker cannot be switched from the maintenance position to the disconnected position.	The positioning mechanism of the Circuit Breaker is not in the disconnected position (note the position indicator).	Rack the positioning mechanism to the disconnected position.
	✓		You have attempted to insert the Circuit Breaker in a guide frame with a different rated current.	Only use Circuit Breakers with the same rated current as the guide frame.
	✓		The Circuit Breaker and guide frame are encoded differently.	
	✓	When the Circuit Breaker is racked from the disconnected position to the test position, you encounter a high level of resistance as soon as you pass the disconnected position.	The Circuit Breaker was not inserted as far as it will go and the side latches are not yet engaged (warning: danger of destroying the device).	Push the Circuit Breaker to the disconnected position as far as it will go. The side latches must engage.
	✓	When you rack the Circuit Breaker from the disconnected position to the test position, it does not move for the first eight rotations.	No fault, due to the function	Continue racking
	✓	The racking handle cannot be inserted.	The OFF button has not been pressed.	Press the OFF button and, at the same time, move the slide switch to the right.
	✓		The cabinet door is not completely shut.	Close the cabinet door.
	✓		Racking handle opening locked with padlock(s).	Remove the padlock(s). ¹
✓		The cabinet door cannot be opened (door interlock as accessory).	When the Circuit Breaker is closed, this interlocks the cabinet door.	Open Circuit Breaker
	✓		The Circuit Breaker is in the operating position.	Rack the Circuit Breaker to the test position or disconnected position.
¹	Effective when the cabinet door is open (accessory).			
²	Note the following safety information:			

Note

Protective device

Override only if permissible under normal operating conditions.

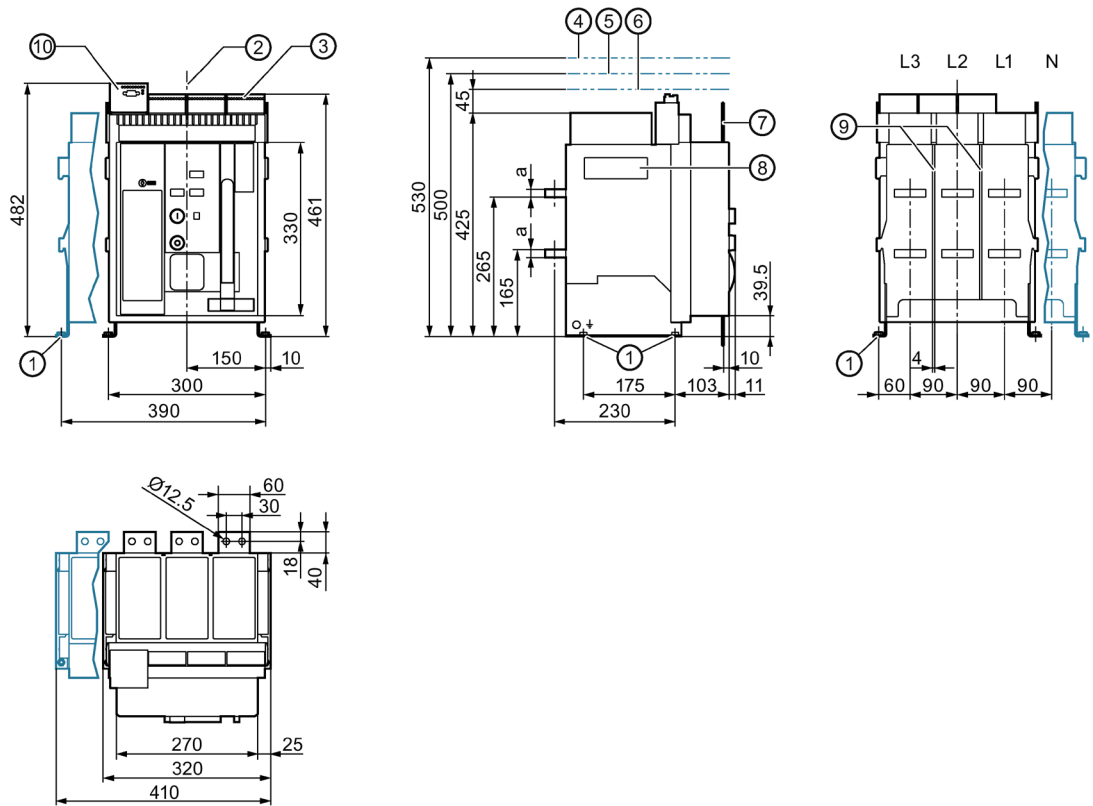
Dimension drawings

The dimensions are measured in unit of mm in this chapter.

12.1 Fixed-mounted Circuit Breaker, Frame size I, 3 pole and 4 pole

The broken contour at the side depicts the 4-pole version. For missing dimensions please see the drawing of horizontal connection.

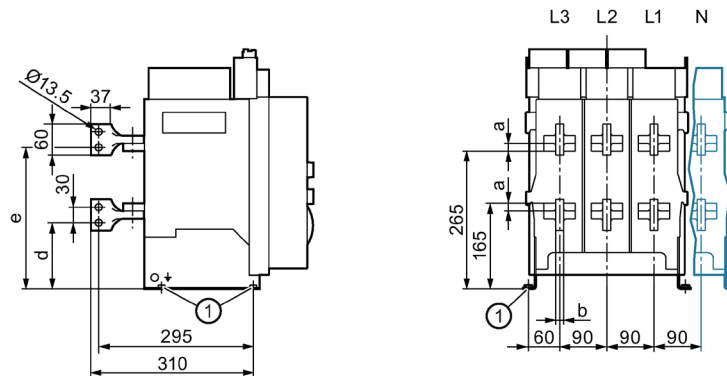
Horizontal connection



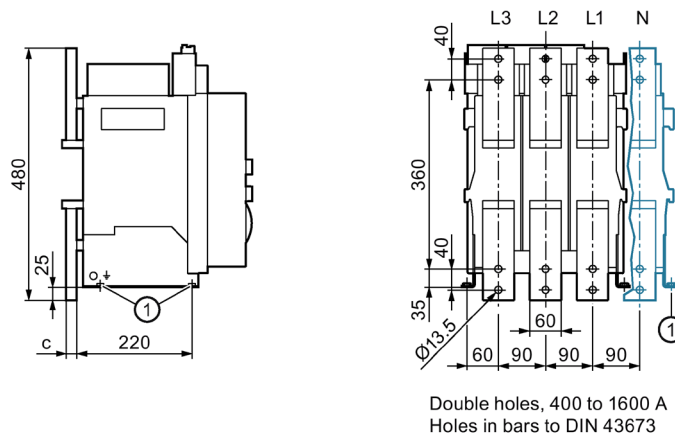
- ① Fixing points 4 x press nut M8
- ② Center line of operator panel
- ③ Auxiliary conductor connection system
- ④ Clearance for lifting out the arc chutes
- ⑤ Space for auxiliary supply connector
- ⑥ Space above arc chutes
- ⑦ Cabinet door
- ⑧ Countersunk handle
- ⑨ Slot (4 mm deep) for phase barriers
- ⑩ Communication Module (optional)

Rated current	a	b	c	d	e
≤ 1250 A, N / S	8	8	8	134.5	265.5
1600 A, N	8	8	8	134.5	265.5
1600 A, S	15	15	20	127.5	272.5

Vertical connection



Front connection



Safety distances

No additional safety distance from adjacent, grounded components is required above the Circuit Breaker (on fixed-mounted Circuit Breakers marked with "⑥").

The distance between the connection point and bar support must not exceed 250 mm

Up to a rated operating voltage of 440 V AC, the vertical bars (e.g. with front connection) must not be shielded if the busbar system is not located above the Circuit Breaker.

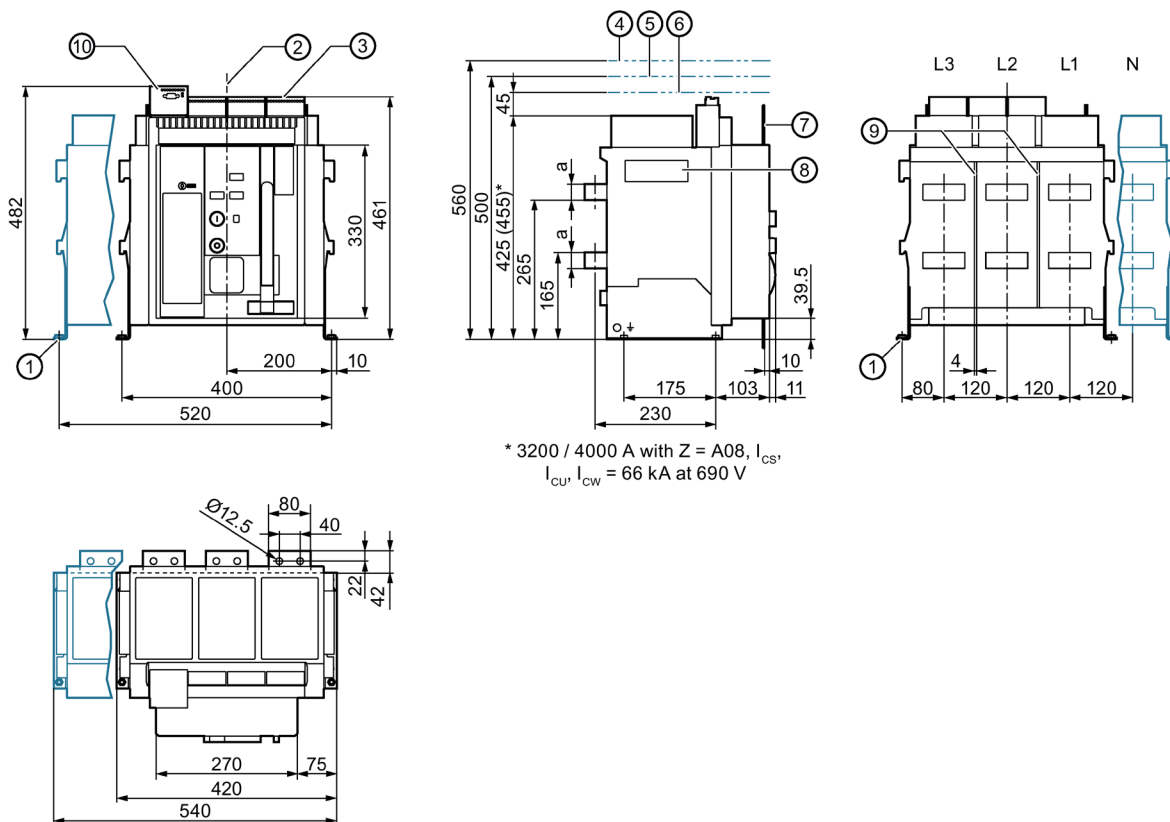
On the other hand, live, bare conductors and bars with voltages in excess of 440 V AC (if they are located above the Circuit Breaker and if the current is supplied from above) should be protected against flashover by means of phase barriers, bar covers, or arc chute covers (only use accessories for horizontal or vertical connections).

Optional electrical equipment directly above the Circuit Breaker (if arc chutes are not used) or next to the Circuit Breaker should be protected with a cover. Once you have installed additional phase barriers or covers, you must ensure that heat dissipation from the Circuit Breaker is not impeded.

12.2 Fixed-mounted Circuit Breaker, Frame size II, 3 pole and 4 pole

The broken contour at the side depicts the 4-pole version. For missing dimensions please see the drawing of horizontal connection.

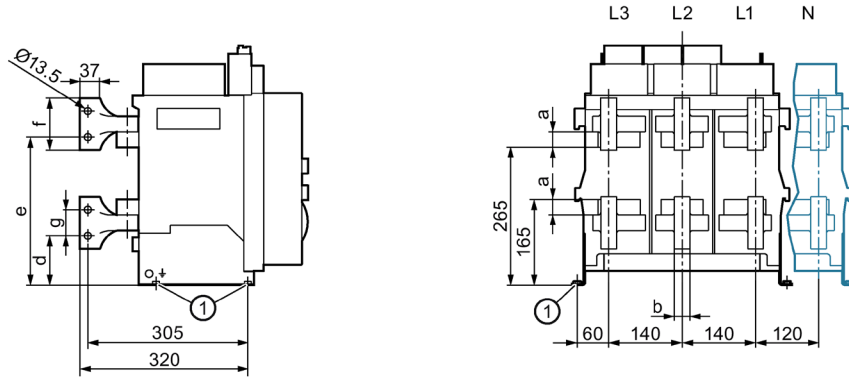
Horizontal connection



- ① Fixing points 4 x press nut M8
- ② Center line of operator panel
- ③ Auxiliary conductor connection system
- ④ Clearance for lifting out the arc chutes
- ⑤ Space for auxiliary supply connector
- ⑥ Space above arc chutes
- ⑦ Cabinet door
- ⑧ Countersunk handle
- ⑨ Slot (4 mm deep) for phase barriers
- ⑩ Communication Module (optional)

Rated current	a	b	c	d	e	f	g
630 - 2500 A	15	15	20	122.5	267.5	80	40
3200 A	30	30	20	95	285	100	50

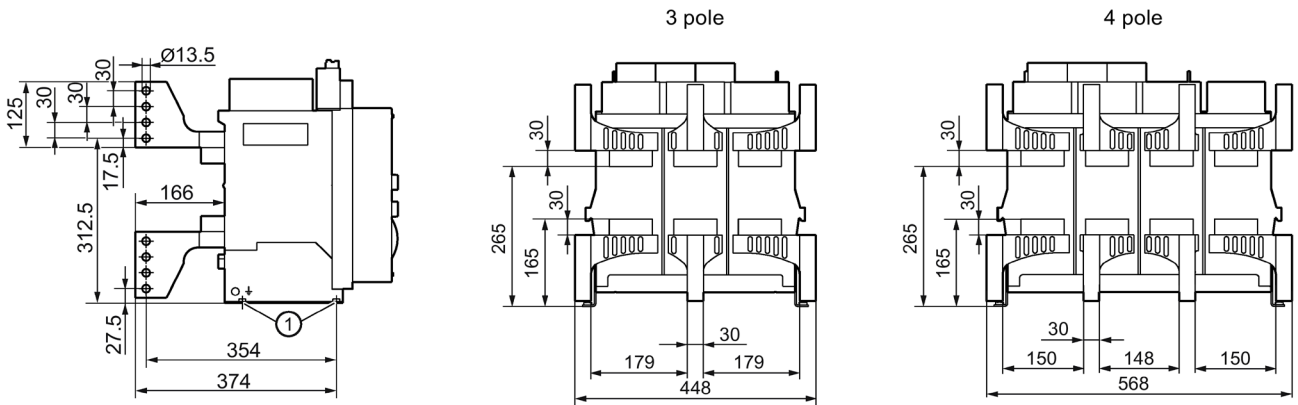
Vertical connection up to 3200 A



Vertical connection 4000 A

Only suitable for circuit breakers with the order number designation:

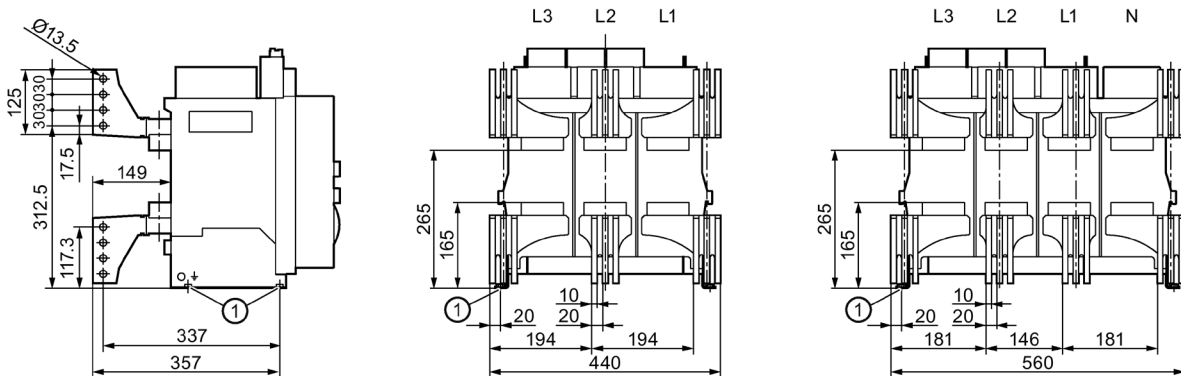
3WT840_ - _ _ _ _ 2 - _ _ _ _



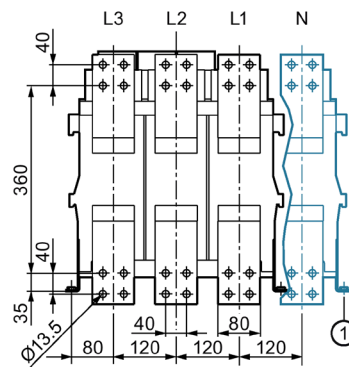
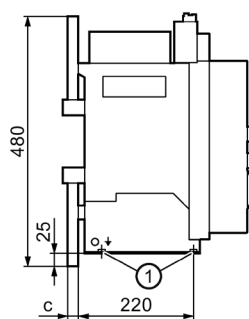
Vertical connection 4000 A

Only suitable for circuit breakers with the order number designation:

3WT840_ - _ _ _ _ 1 - _ _ _ _



Front connection

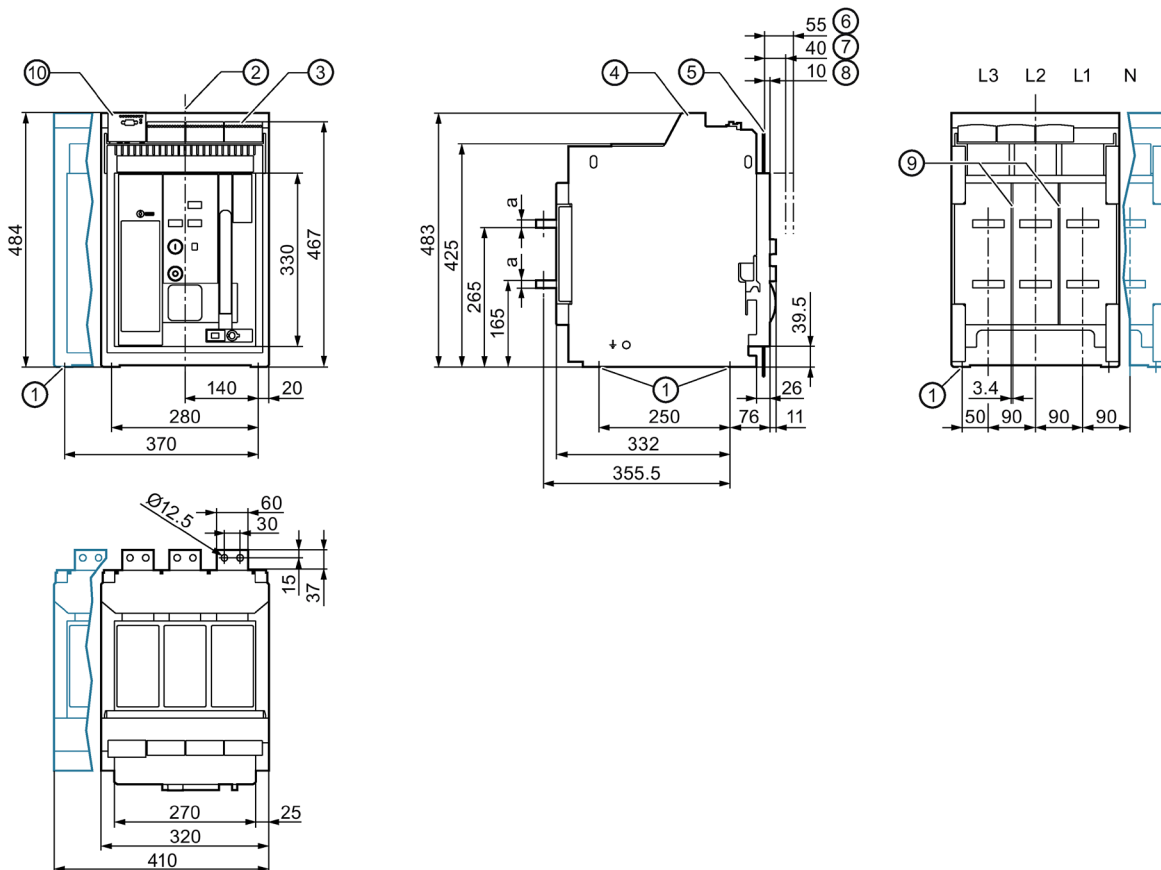


Double holes, 630 to 3200 A
Holes in bars to DIN 43673

12.3 Withdrawable Circuit Breaker, Frame size I, 3 pole and 4 pole

The broken contour at the side depicts the 4-pole version. For missing dimensions please see the drawing of horizontal connection.

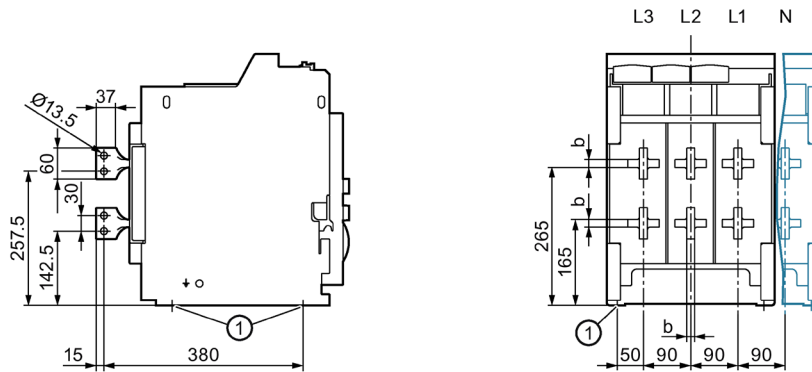
Horizontal connection



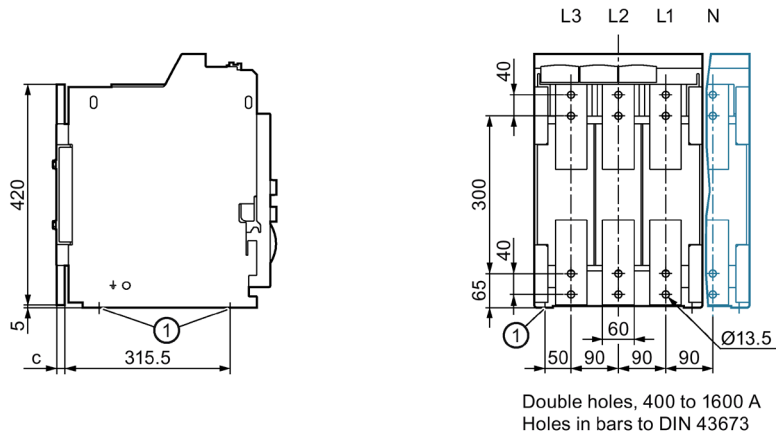
- ① Holes for securing the guide frame 4 x $\varnothing 9$
- ② Center line of operator panel
- ③ Auxiliary conductor connection system
- ④ Guide frame
- ⑤ Cabinet door
- ⑥ Disconnected position
- ⑦ Test position
- ⑧ Connected position
- ⑨ Slot (6 mm deep) for phase barriers
- ⑩ Communication Module (optional)

Rated current	a	b	c
≤ 1250 A, N / S	8	8	8
1600 A, N	8	8	8
1600 A, S	15	15	15

Vertical connection



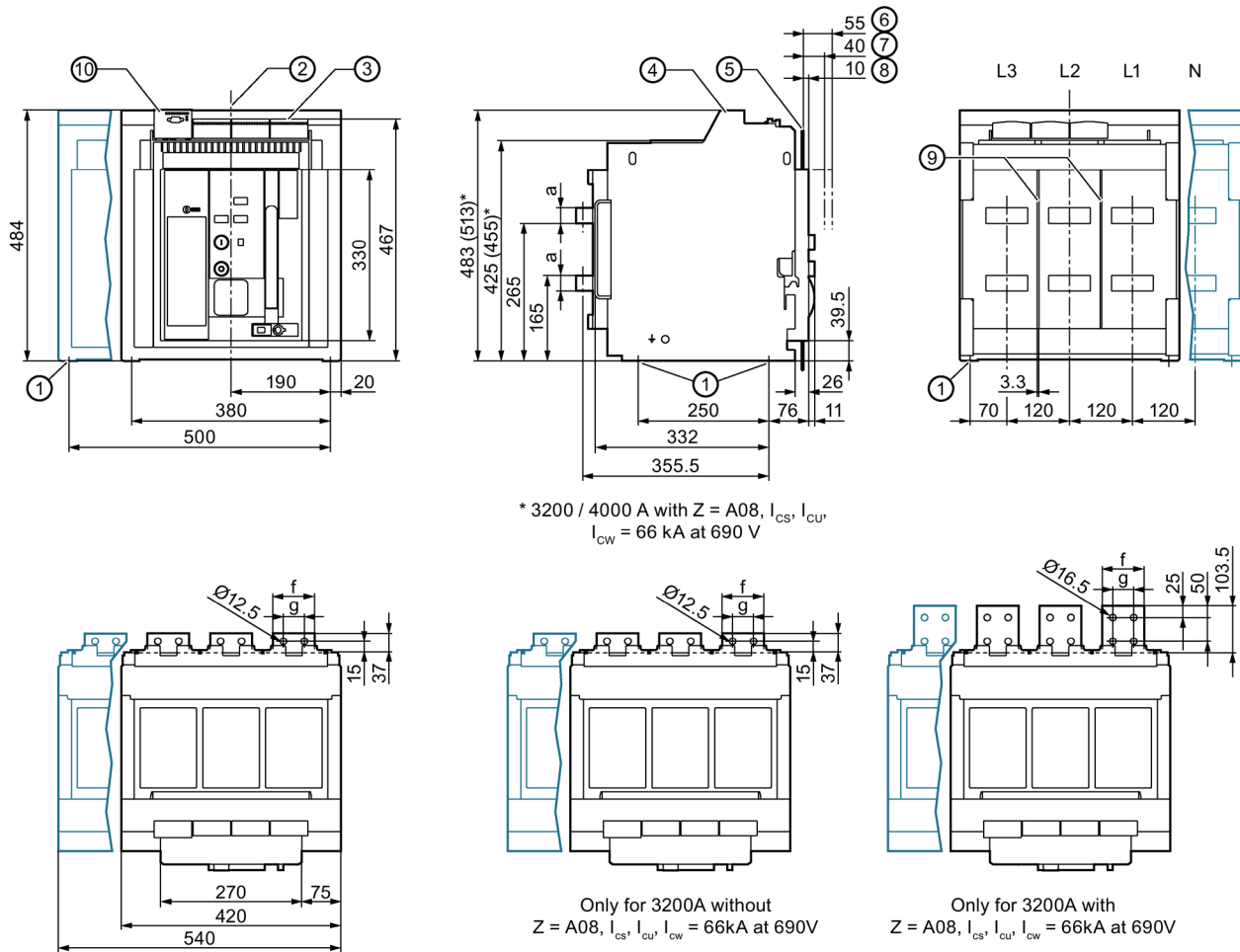
Front connection



12.4 Withdrawable Circuit Breaker, Frame size II, 3 pole and 4 pole

The broken contour at the side depicts the 4-pole version. For missing dimensions please see the drawing of horizontal connection.

Horizontal connection

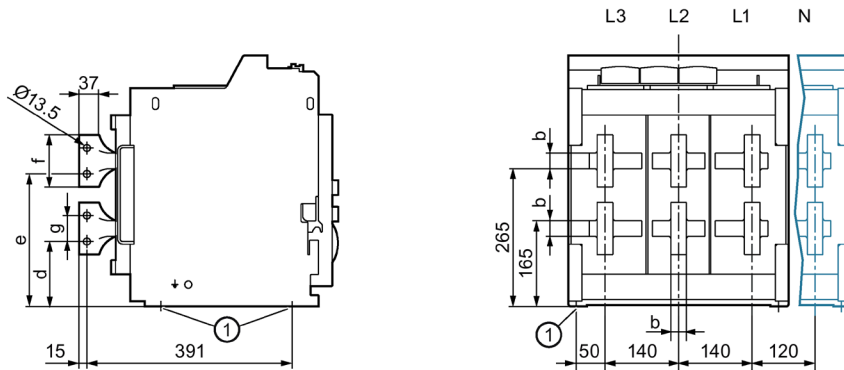


- ① Holes for securing the guide frame 4 x Ø9
- ② Center line of operator panel
- ③ Auxiliary conductor connection system
- ④ Guide frame
- ⑤ Cabinet door

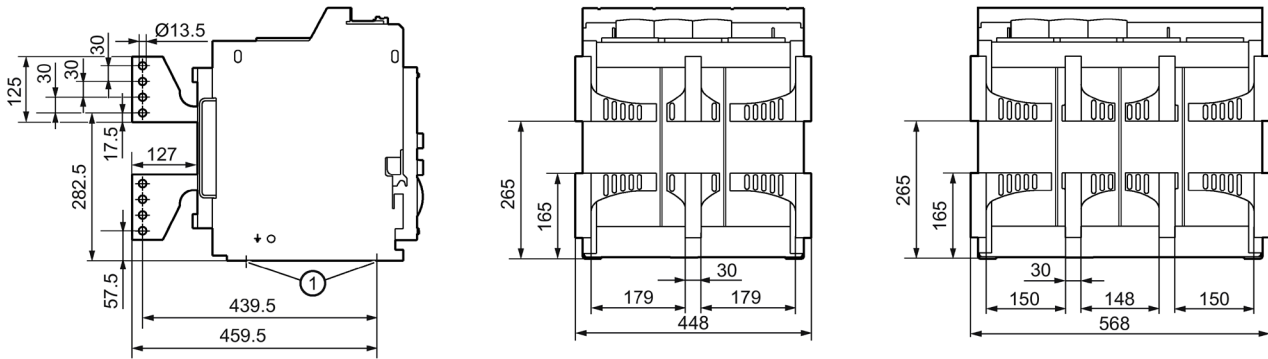
- ⑥ Disconnected position
- ⑦ Test position
- ⑧ Connected position
- ⑨ Slot (6 mm deep) for phase barriers
- ⑩ Communication Module (optional)

Rated current	a	b	c	d	e	f	g
630 - 2500 A	15	15	20	137.5	252.5	80	40
3200 A	30	30	20	125	255	100	50

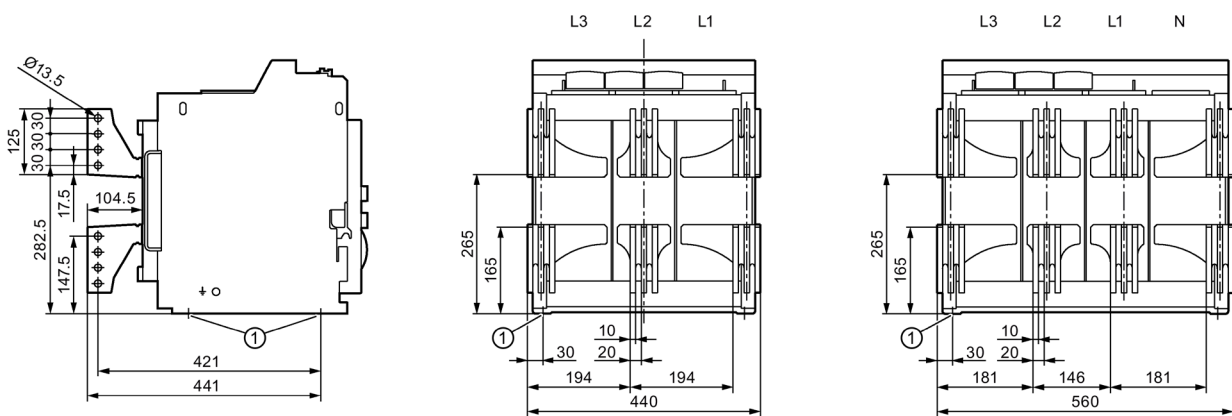
Vertical connection up to 3200 A



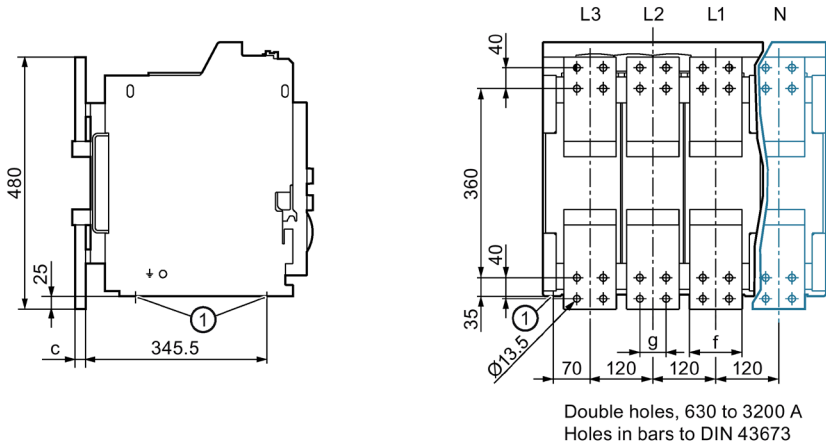
Vertical connection 3800 A



Vertical connection 4000 A



Front connection



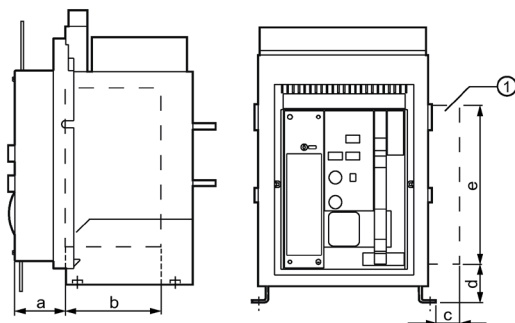
12.5 Accessories 3 pole / 4 pole

Mechanical interlock (1)

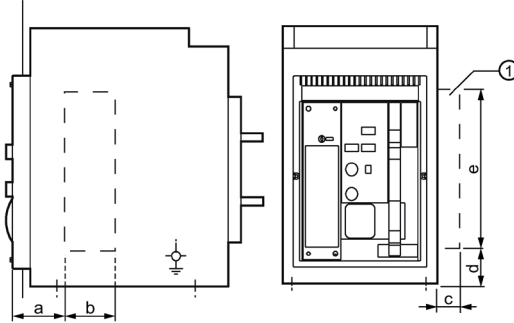
Interlocking device that prevents closing (2).

Comprising an interlock in the cabinet and an interlocking module with Bowden wire.

For fixed-mounted circuit breakers



For withdrawable circuit-breakers

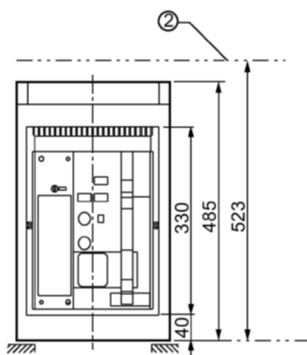


- ① Distance for interlocking module (without Bowden wire)

Distance for	a	b	c	d	e
(1)	90	90	50	65	270
(2)	58	215	10	250	115

Arc chute cover

For withdrawable Circuit Breakers only.

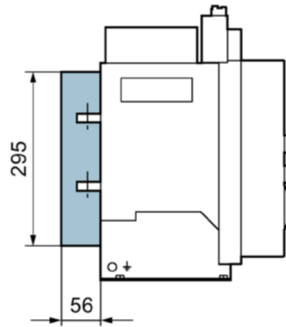


- ② The dimension of Circuit Breaker with arc chute cover

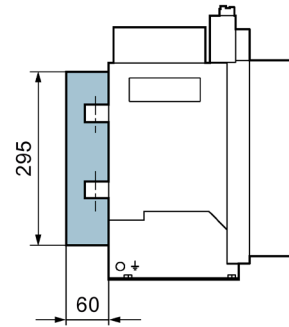
Phase barrier

For fixed-mounted Circuit Breakers

Frame size I

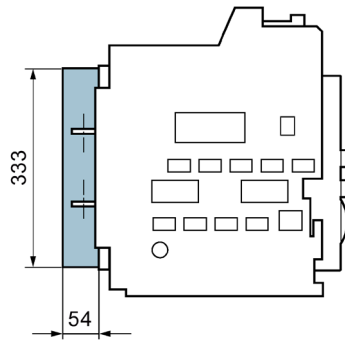


Frame size II

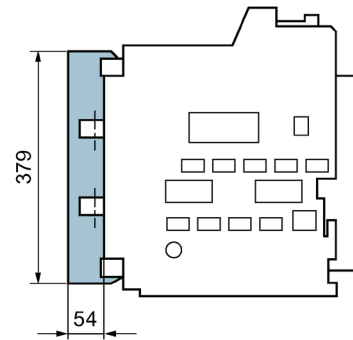


For withdrawable Circuit Breakers

Frame size I

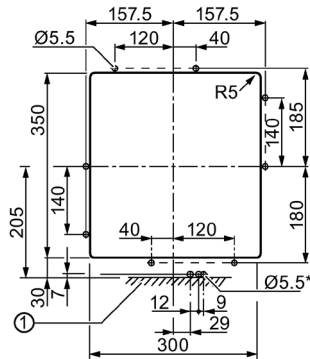


Frame size II



12.6 Door cutout 3 pole / 4 pole

Door cutout for operator panel with door sealing frame

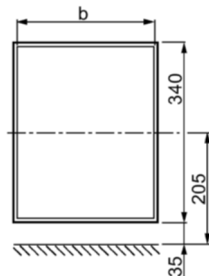


① Mounting surface

* 3 holes, diameter Ø 5.5 mm; only drill if door interlock is used

Door cutout with edge protection

Cutout after edge protection is attached

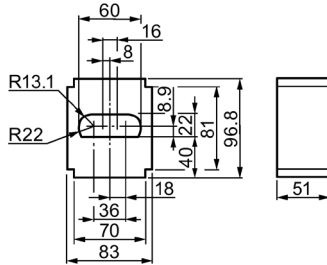


Cutout when Circuit Breaker is installed in cabinet and when door is in central position.

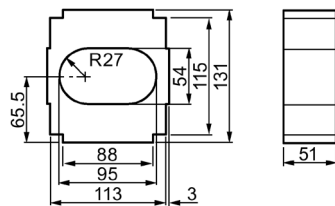
Width of cutout	Fixed-mounted Circuit Breaker b	Withdrawable Circuit Breaker b
400	275	292
500	275	290
600	275	288

12.7 Current transformer for N conductor

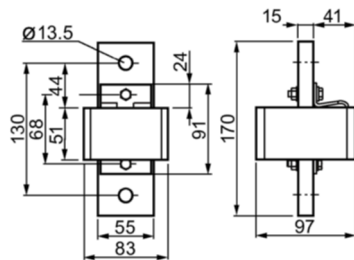
Frame size I, 3WL9 111-0AA21-0AA0



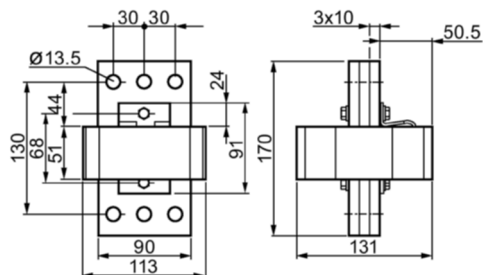
Frame size II, 3WL9 111-0AA22-0AA0



Frame size I, 3WL9 111-0AA31-0AA0



Frame size II, 3WL9 111-0AA32-0AA0



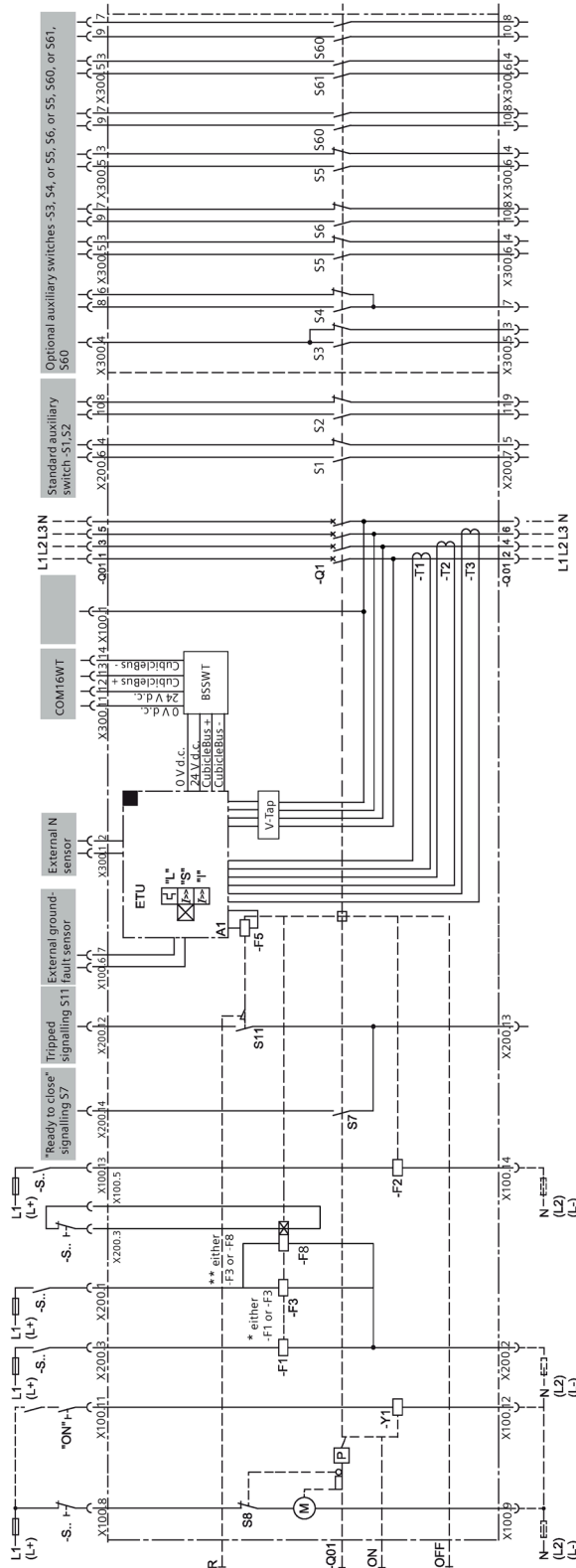
Circuit diagrams

13.1 Overall circuit diagram

Accessories in overall circuit diagram	
A1	Electronic trip unit
S1 / S2	1st auxiliary switch block
S3 / S4	2nd auxiliary switch block
S5 / S6	2nd auxiliary switch block
S5 / S60	2nd auxiliary switch block
S60 / S61	2nd auxiliary switch block
S7	Ready-to-close signaling contact
S11	Trip signaling
ON	Mechanical ON
OFF	Mechanical OFF
F1	Shunt release or electrical closing lockout
F2	Shunt release
F3	Undervoltage release
F8	Undervoltage release with delay
F5	Tripping solenoid
M1	Motor for charging stored-energy spring mechanism
P	Stored-energy spring mechanism
R	Display and reset plunger for overcurrent tripping
Q01	Spring charging lever for spring energy store
Q1	Main contacts
T1 / T2 / T3	Current transformers
X100 / X200 / X300 / X400	Connecting terminals
Y1	Closing solenoid
BSSWT	Breaker Status Sensor, BSSWT
V-Tap	V-Tap
COM16WT	Communication module COM16WT

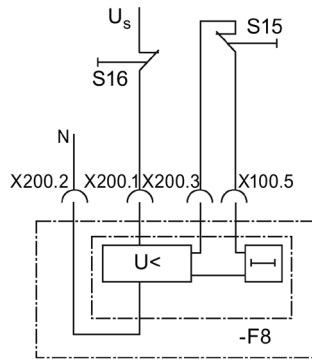
13.1 Overall circuit diagram

3WT8 with communication circuit diagram

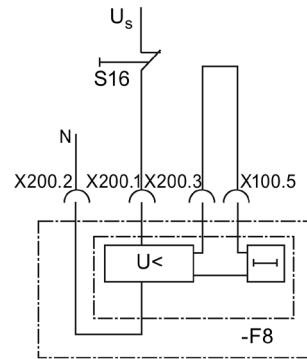


*) Only one shunt release (F1 or F3) in breaker
 **) Only one shunt release (F3 or F8) in breaker
 ***) Only for 3 pole breaker

13.2 Circuit diagram for undervoltage release with delay



Circuit for EMERGENCY OFF function
(instant OFF when S15 is open)



Circuit without EMERGENCY OFF function

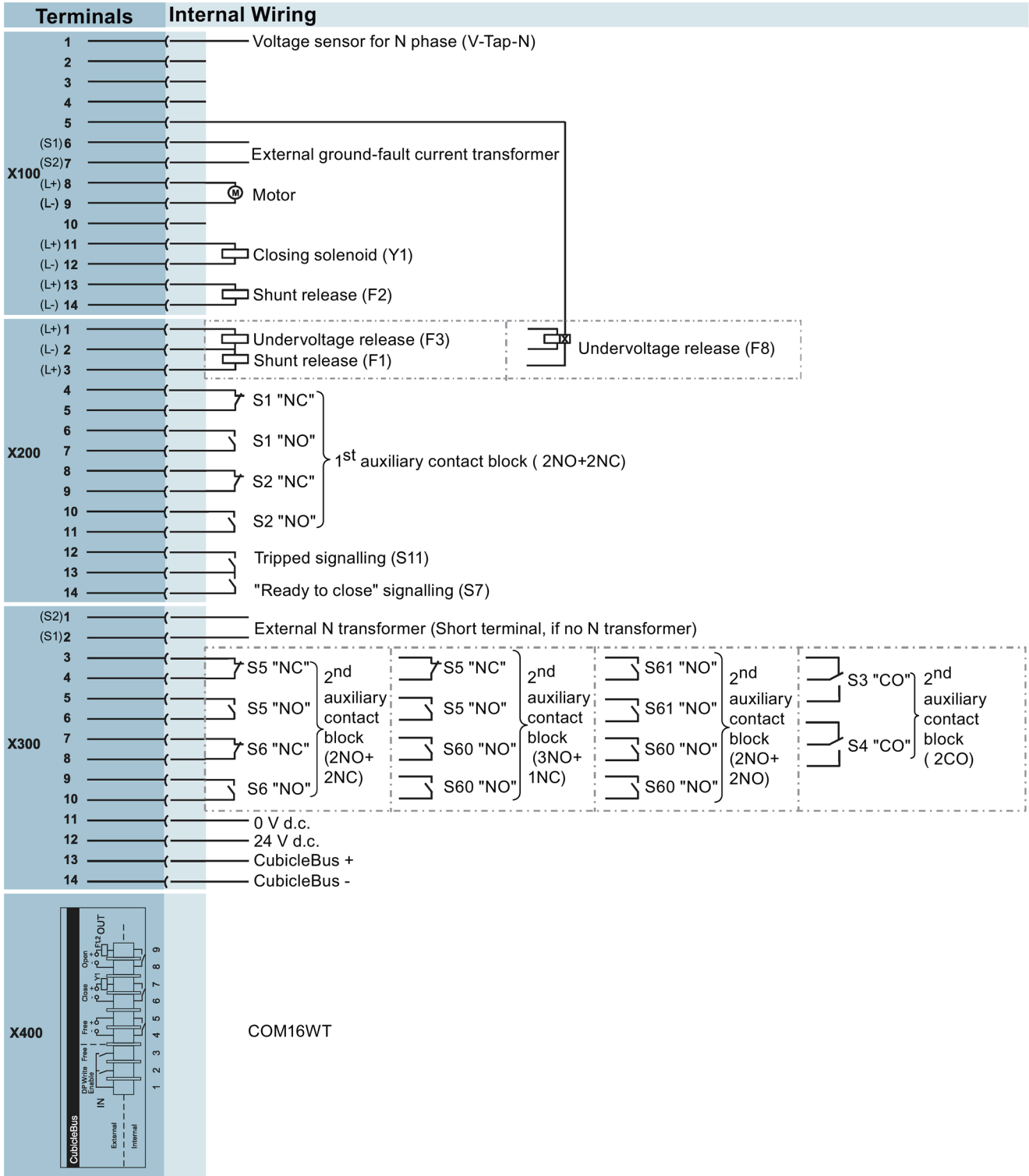
S15 = external instant OFF
S16 = external delayed OFF

13.3 Terminal diagrams

The following overview shows which part of the internal equipment is connected to which part of the contact blocks, i.e. this is a complete auxiliary & control wiring diagram of the Circuit Breaker.

A new generation of 3WT air Circuit Breakers, secondary terminals have been changed (terminal X100 1-7, terminal X300 3-14). Before using the drawings, be sure to confirm the version of the Circuit Breaker and wiring strictly according to the correct version. Connection errors may lead to equipment damage or personal injury! If you can't judge, please search "Siemens Low and Medium Voltage Download Center" through the web page, and "New Generation 3WT Air Circuit Breaker" in the download center.

Terminal assignment accessory



Glossary

Auxiliary trip unit

Undervoltage releases and shunt releases are available.

BSSWT

Breaker Status Sensor for 3WT for collecting Circuit Breaker status information via signalling switches and transmitting these data to the CubicleBUS.

Closing solenoid

Electrical closing of the energy in the spring energy store.

COM16WT

Communication module for 3WT.

Electrical closing lockout

This function is designed to electrically interlock two or more Circuit Breakers (closing lockout). The electrical closing lockout prevents the Circuit Breaker from closing with a continuous signal.

Energy transformer

Generates energy (power supply) for the internal supply of the electronic trip unit.

Finger contacts

These connect the main terminals on the Circuit Breaker to the main terminals on the guide frame.

Manual connector coding

The manual connectors can be coded to prevent the auxiliary conductor connectors from being connected incorrectly.

Mechanical interlock

This function supports different types of mechanical interlocking for Circuit Breakers.

Mechanical reclosing lockout

After overcurrent tripping, the Circuit Breaker is locked against reclosing until the mechanical reclosing lockout function has been manually reset.

Motorized operating mechanism

A geared motor automatically charges the stored-energy spring mechanism as soon as voltage has been applied to the auxiliary supply connections. After one closing operation, the stored-energy spring mechanism is automatically charged for the next closing operation.

Position indicator

This indicates the position of the Circuit Breaker (disconnected/test/operating position) in the guide frame.

Position signaling switch

This is used for remotely displaying the Circuit Breaker position in the guide frame.

powerconfig

Software for commissioning and service, free of charge available at:

www.siemens.com/powerconfig-download

powerconfig is used as a shared commissioning and maintenance tool for the Circuit Breakers with communication capability. It offers a standardized interface and a uniform operator control concept for the activities to be carried out, such as

- Parameterizing
- Operating
- Monitoring, and
- Diagnosing.

"3WT air Circuit Breaker with communication capability-Modbus", please see:

<https://support.industry.siemens.com>

Racking rail

Accommodates the Circuit Breaker in the guide frame.

Rated current coding

The rated current is coded in the factory, that is, each Circuit Breaker can only be used in a guide frame with the same rated current.

Safe OFF

This additional function prevents the Circuit Breaker from closing and fulfills the isolation condition in the OFF position to IEC 60947-2:

- "Mechanical OFF" button pressed
- Main contacts open
- Withdrawable Circuit Breakers: racking handle removed
- The various interlocking conditions are fulfilled

Shunt release (F1, F2)

For remotely opening the Circuit Breaker and blocking it against closing.

Shutters

Shutters are molded-plastic plates for covering live main conducting paths in the guide frame (shock-hazard protection). If the Circuit Breaker is racked to the disconnected position, the shutters are moved over the uncovered contact gaps.

Spring charging lever

The stored-energy spring mechanism is charged by means of a series of pump movements (five actuations of charging lever).

Stored-energy spring mechanism

Unit with spring energy store (mechanical energy). The spring is charged by means of the spring charging lever or motorized operating mechanism and maintained in a charged state by means of latches. When these latches are released, the stored energy is routed to the switching contact and the Circuit Breaker closes.

Switching position signaling switch

This auxiliary switch is actuated depending on the switching status of the Circuit Breaker.

Tripped signaling switch

Group signal for overload, short-circuit, and ground-fault tripping by means of microswitch.

Undervoltage release (delayed)

For remotely opening and interlocking the Circuit Breaker. Voltage dips must not cause the Circuit Breaker to open.

Undervoltage release (instantaneous/short-time delay)

For remotely opening and interlocking the Circuit Breaker as well as for using the Circuit Breaker in EMERGENCY OFF circuits (to EN 60204-1 / DIN VDE 0113 Part 1) in conjunction with a separate EMERGENCY OFF device. Brief voltage dips ($t_d < 80$ ms for instantaneous undervoltage release, $t_d < 200$ ms for short-time delay undervoltage release) must not cause the Circuit Breaker to open.

Use of tools

Buttons located under a cover and that can be accessed through a hole (diameter 6.35 mm) can only be actuated by means of a suitable rod.

Siemens AG
Siemensstr. 10
D-93055 Regensburg

Subject to change.
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