


 Danger
	<p>Hazardous voltages are present in this electrical equipment during operation. Failure to properly maintain the equipment can result in death, severe personal injury or substantial property damage.</p>
	<p>The instructions contained in this chapter and on product labels have to be followed. The maintenance may only be carried out by suitably qualified personnel.</p>
	<p>Before beginning work, de-energize the panel and secure the de-energized state during work (according to EN 50 110-1, DIN VDE 0105-100 and BGV A2). Observe the Five Safety Rules:</p> <ul style="list-style-type: none"> - Disconnecting - Ensure that devices cannot be accidentally restarted. - Verify isolation from the supply. - Earthing and short-circuiting - Covering or providing barriers to adjacent live parts <p>Disconnect the equipment from the supply. Use only authorized spare parts in the repair of the equipment. The specified maintenance intervals as well as the instructions for repair and exchange must be strictly adhered to prevent injury to personnel and damage to the switchboard.</p>

The user must set inspection intervals for the circuit-breaker depending upon its operating conditions :

- minimum once a year
- after heavy switch-offs
- after tripping by the electronic overcurrent release
- down-stream circuit-breakers must also be checked

During the inspection and or after 1000 rated current switch-offs must be checked: (max. operation corresponding to catalogue information):

- Arc chute and contact system
- Electrical and mechanical function of the circuit-breaker
- The functioning of the ON and OFF switching
- Check main and control circuit, function and tightness of connection.
- Settings of the electronic overcurrent releases to be checked for plausibility and against the system circumstances, and if necessary corrected.

After reaching the end of the life span of the circuit-breaker/ exchanged parts are to be disposed of by the user to the valid legal requirements.

Withdrawable units with arc chute covers are to be exchanged at the latest after three short-circuits in the circuit-breaker.

The arc chutes and the contact system must be replaced depending upon their condition, but latest after 10 000 switching operations.

Depending on the circuit-breaker stress it may also be necessary to replace the operating system after 10 000 switching operations.

Note

For the maintenance of your circuit-breaker our After Sales Service can be used.

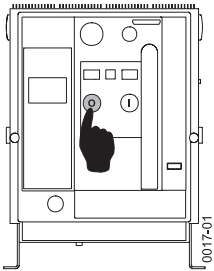
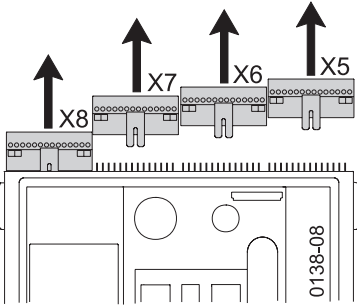
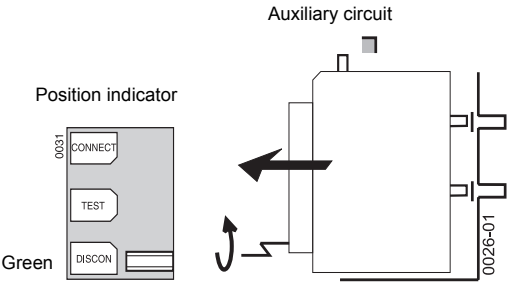
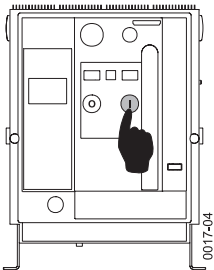
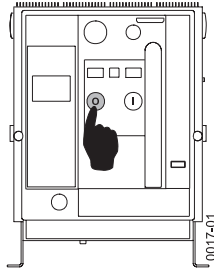

To contact After Sales Service: → chapter 26.

Contacts should be changed according to condition but at the latest after

- 10 000 operations for IZM(IN).1-... and IZM(IN).2-...;
- 5 000 operations for IZM(IN).3-...;
- 1 000 operations for IZM(IN).2-... and IZM(IN).3-...; at 1000 V operation

24.1 Preparation for maintenance

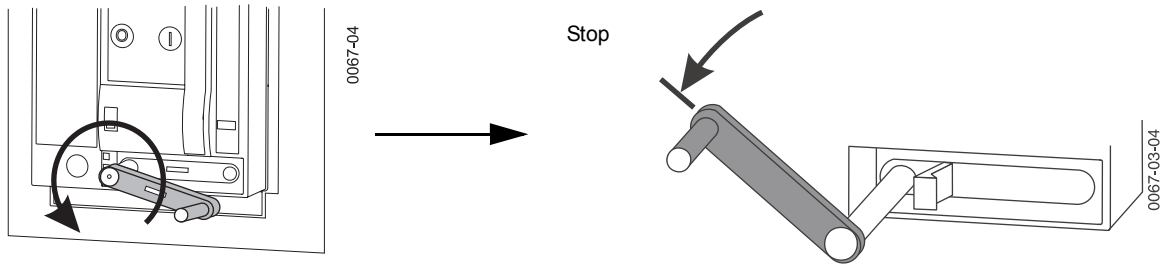
24.1.1 Switch off and discharge the spring

	Fixed-mounted circuit-breaker	Withdrawable units
1 OFF		
2 Disconnect auxiliary circuits		
3 ON		
4 OFF		
5 Indications		

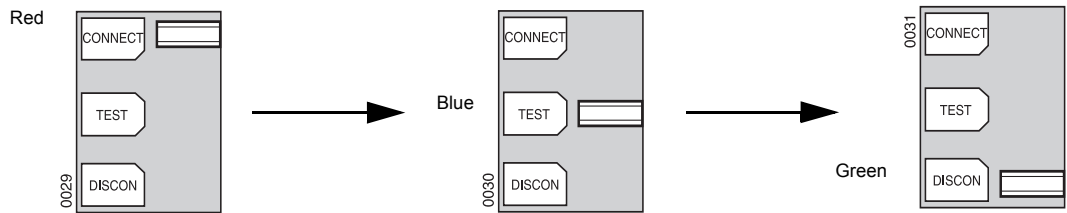
24.1.2 Remove the circuit-breaker from the withdrawable unit

Crank the circuit-breaker into disconnected position

- Switch off (→ page 6 – 5)
- Unclamp and withdraw racking handle (→ page 6 – 3)



Position indicator



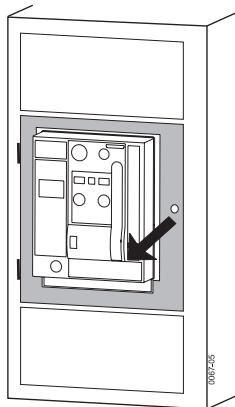
Inserting racking handle



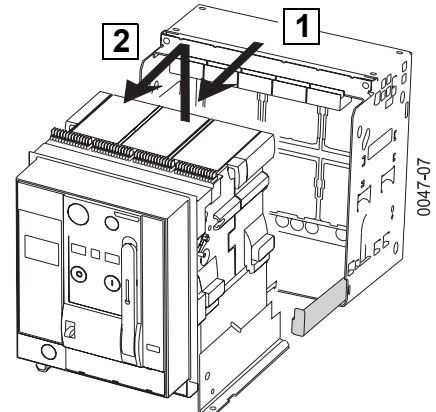
CAUTION

Do not turn the crank handle beyond the stop!
Otherwise the racking mechanism will be damaged.

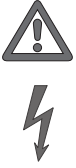
Open control panel door



Pull circuit-breaker to maintenance position and remove



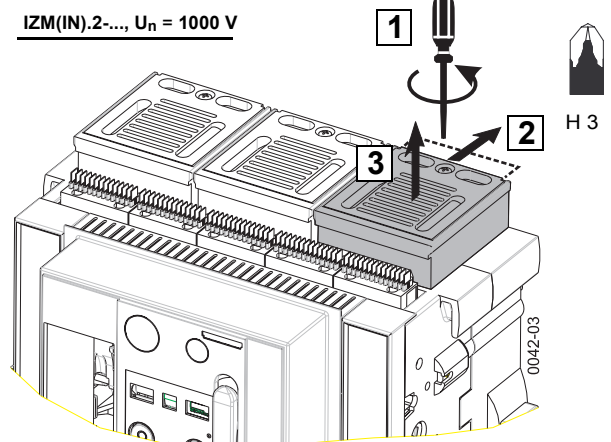
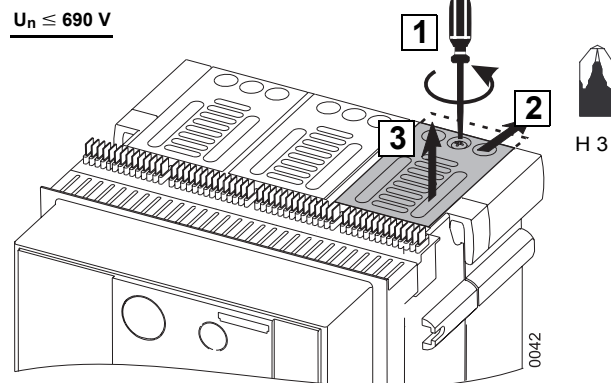
24.2 Checking arc chutes

WARNING	
	<p>Before beginning to work, de-energize the panel and secure the de-energized state during work (according to EN 50110-1, DIN VDE 0105-100 and BGV A2).</p> <p>Observe the Five Safety Rules:</p> <ul style="list-style-type: none"> - Disconnecting - Ensure that devices cannot be accidentally restarted. - Verify isolation from the supply. - Earthing and short-circuiting - Covering or providing barriers to adjacent live parts <p>Disconnect the equipment from the supply.</p>

24.2.1 Removing arc chutes

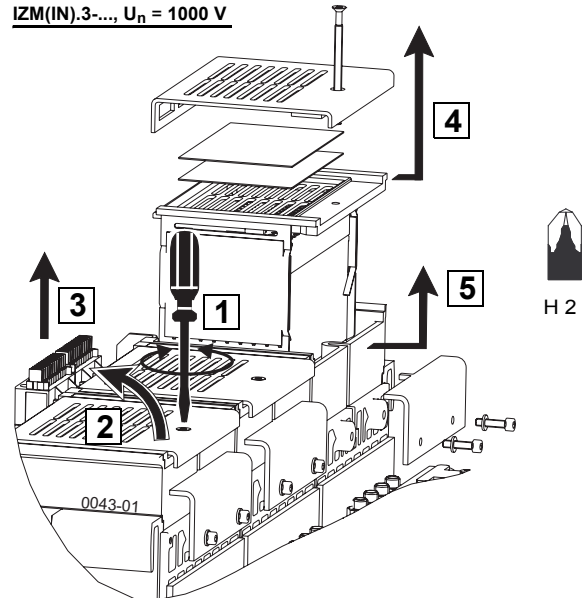
- Switching off and discharging the spring (→ page 24 – 2)
- Move withdrawable circuit-breaker to maintenance position (→ page 24 – 3)

CAUTION	
<p>Risk of breaking! Do not place the arc chute vertically on the insulating walls, but lay it on the side.</p>	



- 1 Turn out the screw about 15 mm, don't take it out
- 2 Push the cover back
- 3 Take out the arc chute; in the 1000 V version, with intermediate unit

IZM(IN).3-..., $U_n = 1000 \text{ V}$



- 1 Screw out screw approx. 15 mm, do not remove; IZM(IN).3-...: screw completely out
- 2 Slide cover back; IZM(IN).3-...: carefully lift cover
- 3 Remove cover
- 4 Slide arcing chamber backwards and remove
- 5 Slide divider backwards and remove

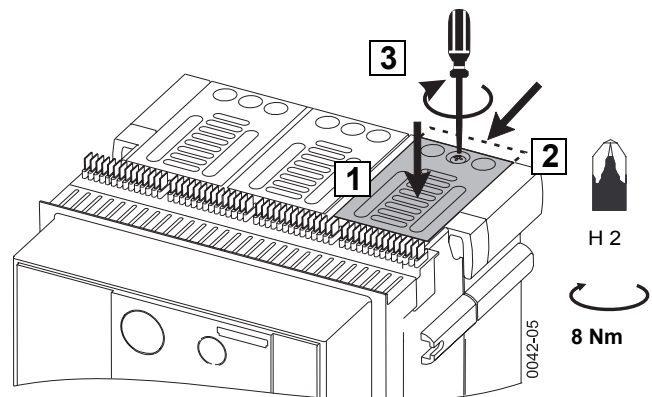
24.2.2 Visual inspection

In the case of heavy wear (burnout on arc splitter plates), replace the arc chutes.

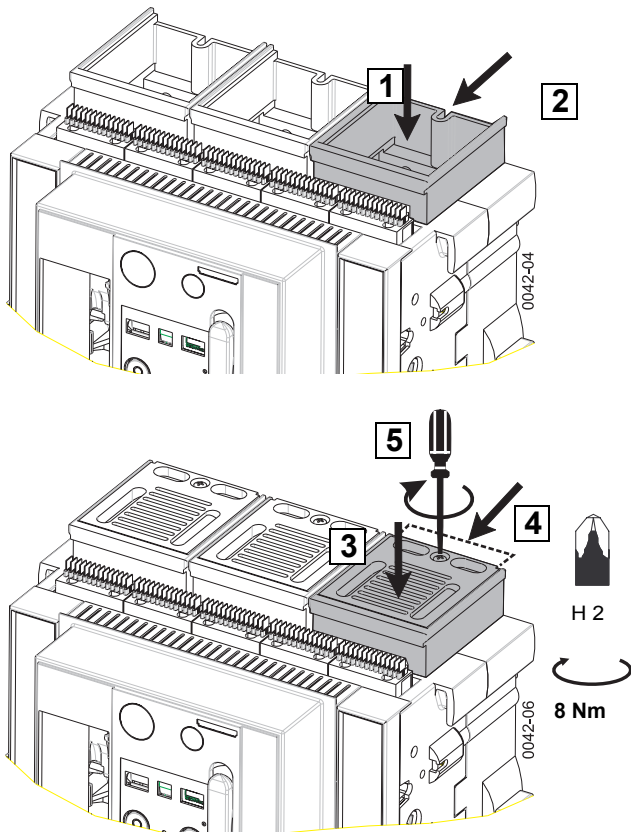
Part nos on request.

24.2.3 Installing arc chutes

Circuit-breakers with rated voltages up to 690 V

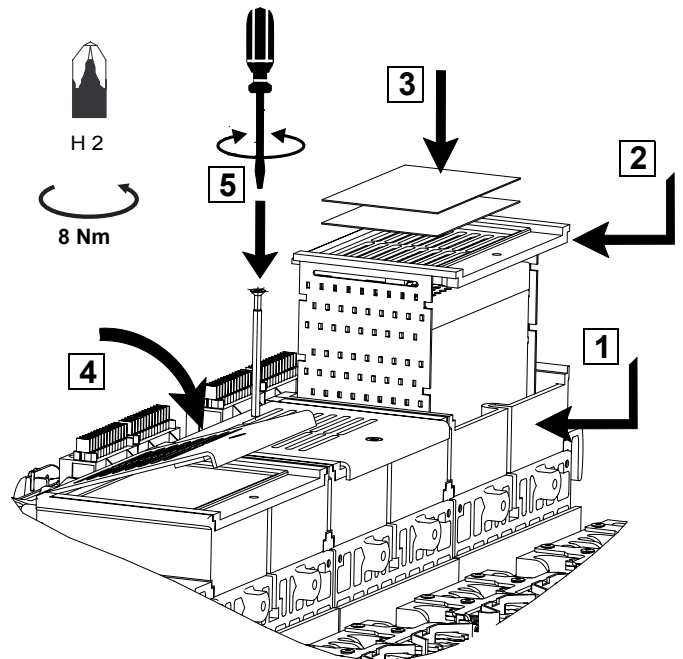


Circuit-breakers for 1000 V rated voltage






- 1 Install intermediate unit
- 2 Shift intermediate unit
- 3 Insert arc chute, push cover back before doing so
- 4 Push cover to the front
- 5 Tighten the screw



Circuit-breaker BGIII for 1000 V rated voltage



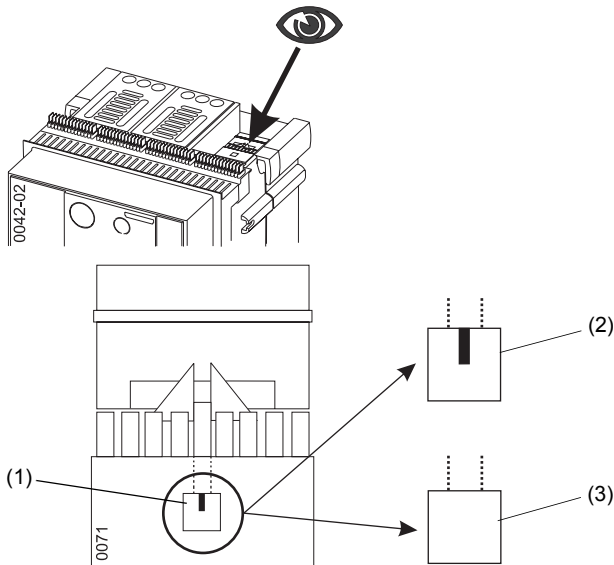
- 1 Fit intermediate piece and slide forward
- 2 Fit arcing chamber and slide cover forward
- 3 Fit sieves (2x) in arc chute extension
- 4 Fit sheet steel cover
- 5 Insert and tighten screws

24.3 Check contact wear

	Danger
	Hazardous voltage!
	Can cause death or serious personal injury as well as damage to device and equipment.
	Before working on this device the system must be switched off.

	WARNING
	Can cause death or personal injury.
	Before removing any covers and the operating panel of the circuit-breaker be sure to discharge the storage spring. (→ page 24 – 2)

- Switching off and discharging the spring (→ page 24 – 2)
- Move withdrawable circuit-breaker to maintenance position (→ page 24 – 3)
- Charge the spring manually (→ page 6 – 4)
- Switch on (→ page 6 – 5)
- Remove arc chutes (→ page 24 – 4)







- (1) Indicator pin
- (2) Indicator pin visible
- (3) Indicator pin no longer visible

If the display pin is no longer visible the contact system must be exchanged.

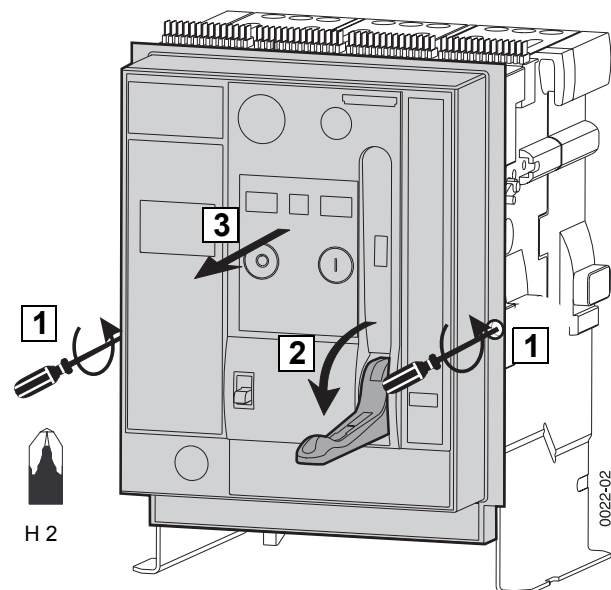
For the visual check with fixed circuit-breakers a mirror may have to be used.

24.4 Replacing pole assembly

	Danger
	Hazardous voltages are present in this electrical equipment during operation.
	Failure to properly maintain the equipment can result in death, severe personal injury or substantial property damage.
	The instructions contained in this chapter and on product labels have to be followed.
	The maintenance may only be carried out by suitably qualified personnel.
	Before beginning work, de-energize the panel and secure the de-energized state during work (according to EN 50 110-1, DIN VDE 0105-100 and BGV A2).
	Observe the Five Safety Rules:
	– Disconnecting
	– Ensure that devices cannot be accidentally restarted.
	– Verify isolation from the supply.
	– Earthing and short-circuiting
	– Covering or providing barriers to adjacent live parts
	Disconnect the equipment from the supply.
	Use only authorized spare parts in the repair of the equipment.
	The specified maintenance intervals as well as the instructions for repair and exchange must be strictly adhered to to prevent injury to personnel and damage to the switchboard.

- Switching off and discharging the spring (→ page 24 – 2)
- Remove the circuit-breaker from the withdrawable unit (→ page 24 – 3)
- Remove fixed-mounted circuit-breaker

24.4.1 Remove front panel



24.4.2 Remove arc chutes

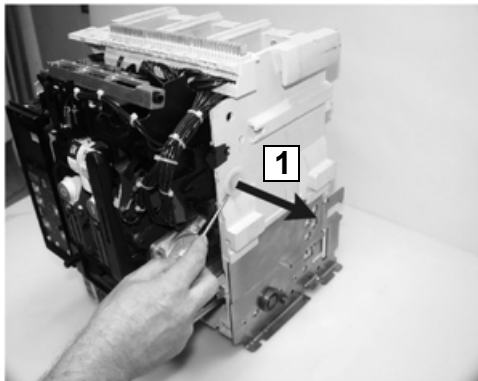
(→ page 24 – 4)

24.4.3 Removing pole assemblies

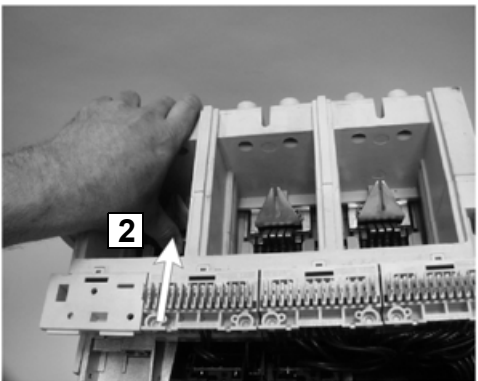
Mounting switching shaft retainer

CAUTION

Block switching shaft in any case!
Otherwise the operating system will be de-adjusted and it will be necessary to have it repaired in the factory.

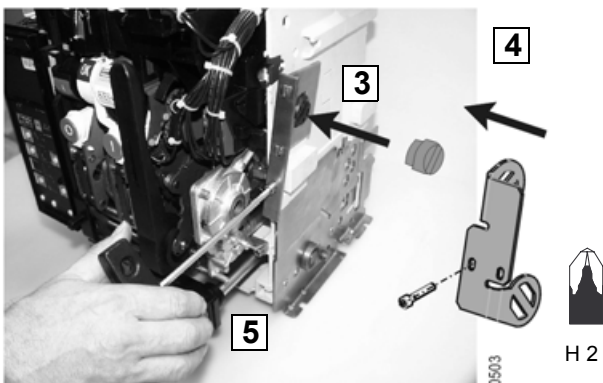


0501



0502

- 1 Remove cover
- 2 Press contacts together and hold them

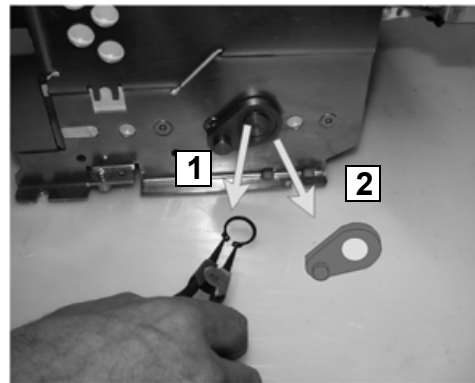


0503

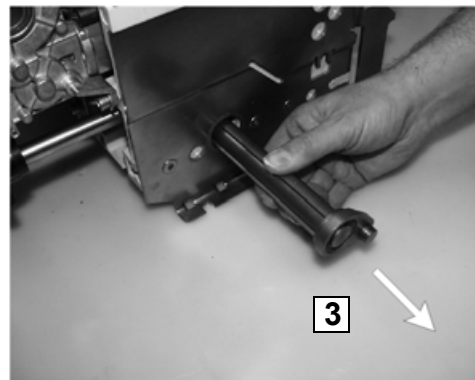
H 2

- 3 4 5 Mount and fix switching shaft retainer

For withdrawable circuit-breakers only: removing racking shaft



0514




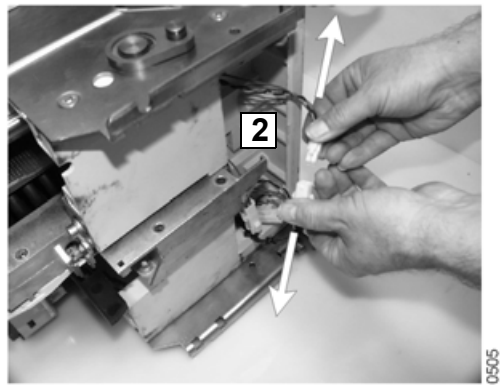
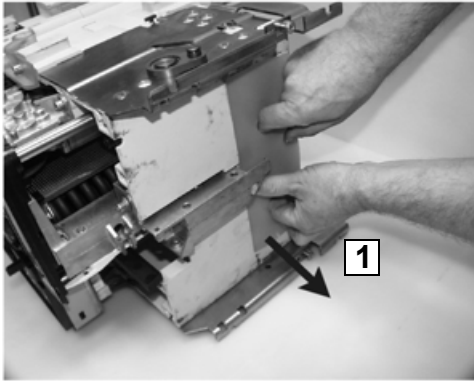
0528-1

- 1 Remove retaining ring
- 2 Remove crank
- 3 Pull out racking shaft on the other side

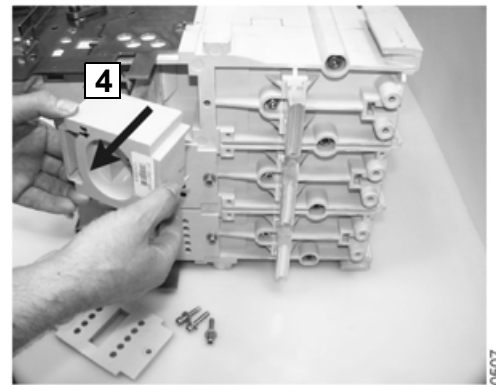
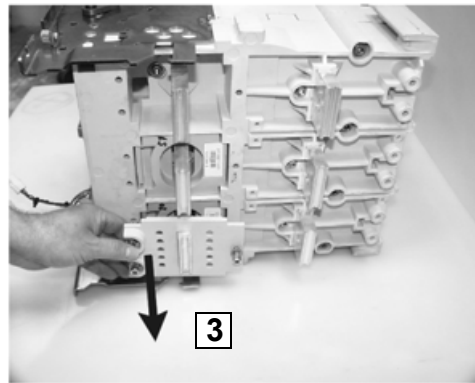
Removing current transformers

Lay circuit-breaker on the left side

CAUTION
 <p>The operating shaft on the right hand side may not change its position with the following steps!</p>

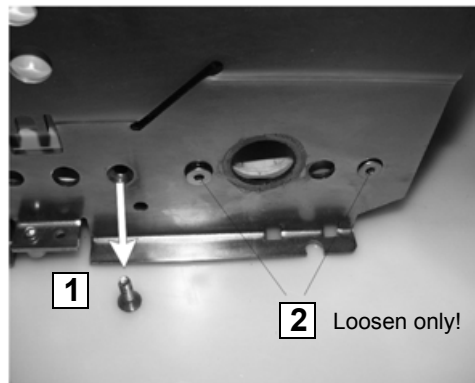


- 1 Remove cover of cable duct
- 2 Detach connectors



- 3 Remove current transformer covers
- 4 Remove current transformers

IZM(IN).1-.../IZM(IN).2-... loosen circuit-breaker feet



- 1 Place circuit-breaker in upright position, undo both circuit-breaker feet, remove screw
- 2 Loosen only these screws!

IZM(IN).1-...: only one screw used



Size 5

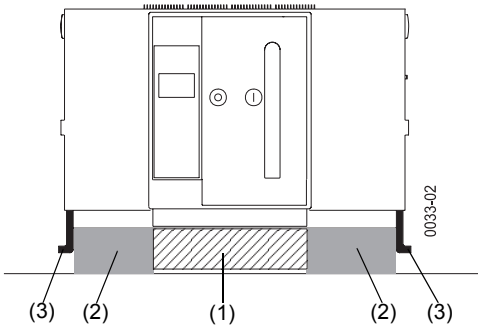


Size 4

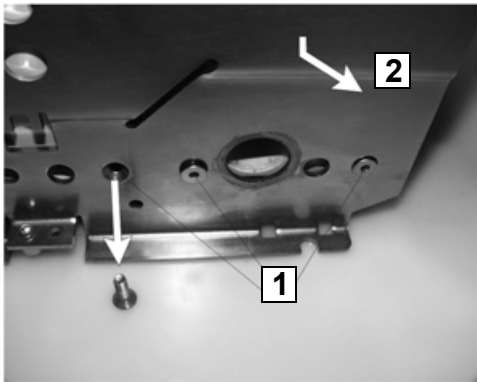
IZM(IN).3-... Removing circuit-breaker feet

CAUTION

Before removing the screws place the circuit-breaker on a suitable support so that the feet are free.

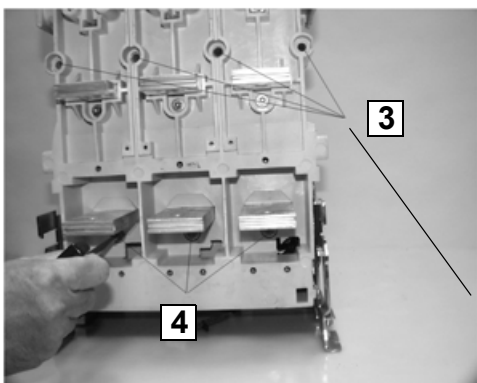


- (1) Free area
- (2) Suitable support
- (3) Circuit-breaker feet



- 1 Remove screws
- 2 Remove circuit-breaker feet

Removing rear wall

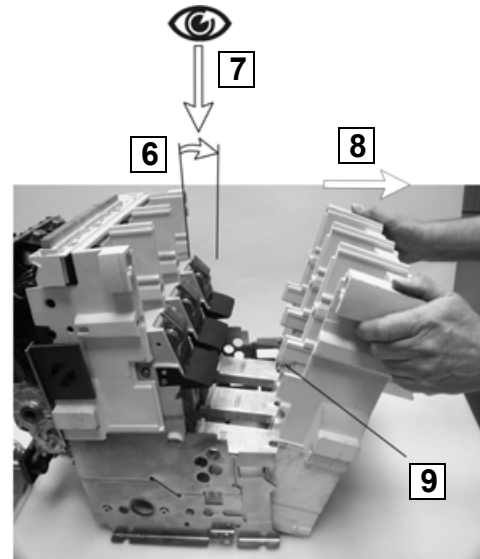


- 3 Remove upper screws
- 4 Remove lower screws



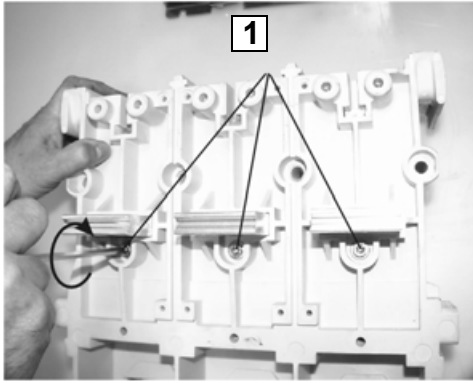
Size 6

IZM(IN).3-... only
Size 8



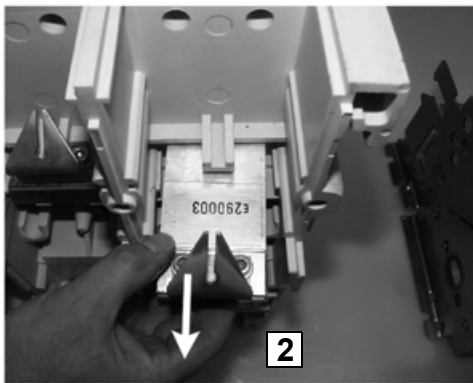
- 5 Support circuit-breaker
- 6 Remove rear wall carefully until the end position retaining springs can be seen
- 7 Note the position of the end position retaining springs
- 8 Remove rear wall
- 9 Remove end position retaining springs

Removing upper fixed contacts



Size 5

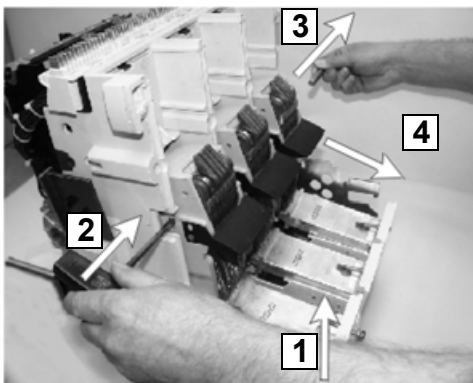
0512



0513

- 1 Remove bolts and nuts
- 2 Remove fixed contact

Removing lower moving contacts

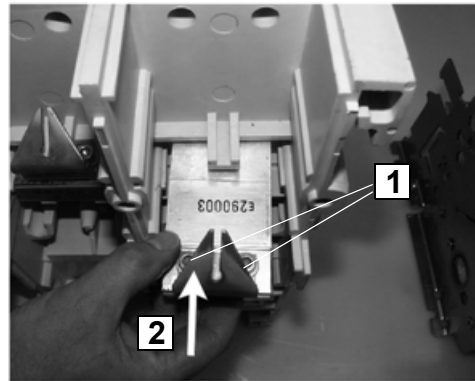


0516-1

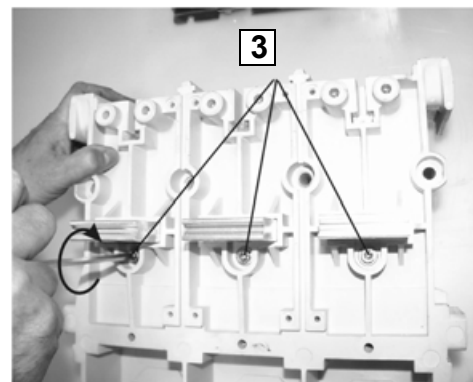
- 1 Support connecting bars
- 2 Press coupling bolt out
- 3 Take coupling bolt out
- 4 Remove pole assemblies

24.4.4 Installing pole assemblies

Installing upper fixed contacts in rear wall



0513-1

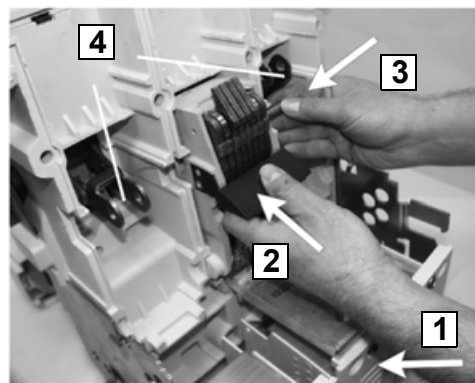


0512

- 1 **Only IZM(IN).1-...:** Undo screws of guide horns
- 2 Mount contact and insert square nut in recess
- 3 Fix contacts
Re-tighten screws of guide horns with 15 Nm
Only IZM(IN).1-...: press guide horn tight and tighten with 15 Nm

Installing lower moving contacts

Clean and grease bearings and coupling bolts before assembly.



0518

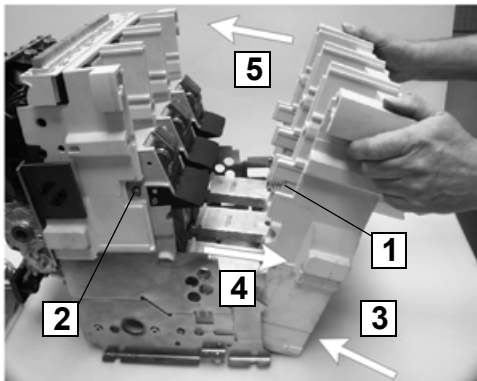
- 1 Mount supports for connecting bars
- 2 Mount central pole assembly
- 3 Insert coupling bolt
- 4 Mount external pole assemblies

Installing rear wall

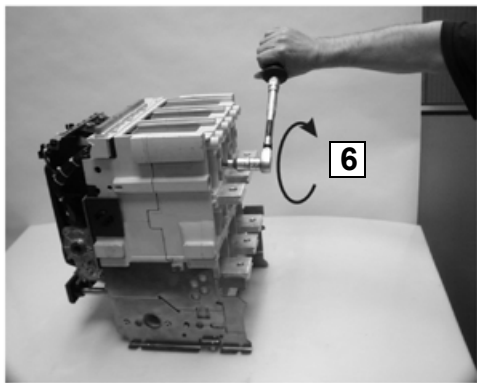
(First, remove supports for pole assemblies)

ATTENTION

Do not squeeze the cables of the transformer cable harness!

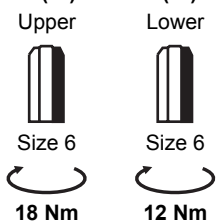


- 1 Insert end position retaining springs
- 2 Observe central seat of coupling bolts
- 3 Mount rear wall
- 4 Insert connecting bars
- 5 Place rear wall and circuit-breaker housing together

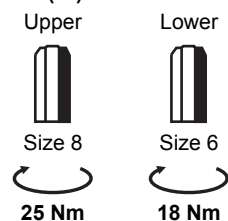


- 6 Screw tight at the bottom first, starting in the middle; short screws lower, long screws upper

IZM(IN).1-.../IZM(IN).2-...



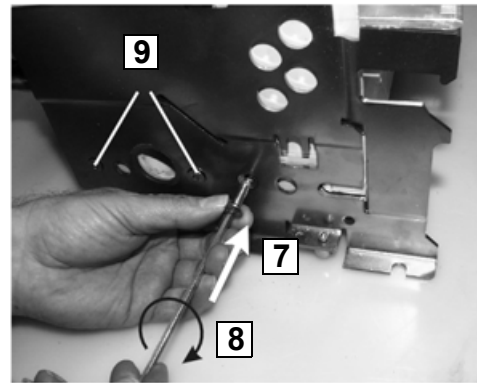
IZM(IN).3-...



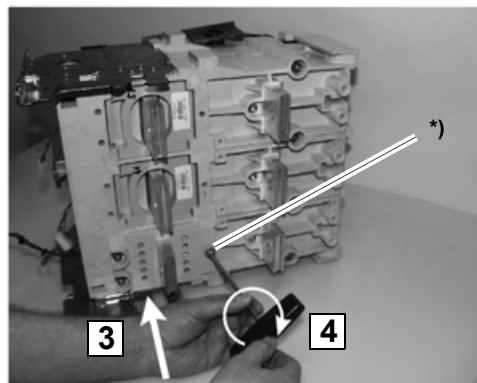
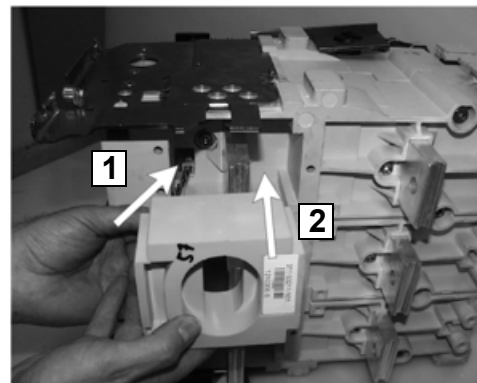
Function test:

The contacts must allow themselves to be completely pressed against each other and thereafter must return to their original position automatically. Otherwise, loosen the rear wall and check, if the position of the end position springs is correct.

Tightening circuit-breaker mounts



Installing current transformers



- 1 Lay circuit-breaker on the side, insert connecting wire
- 2 Insert CT
- 3 Fit transformer covers
- 4 Fasten the screws

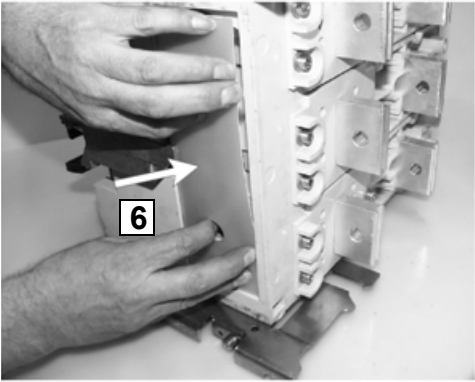
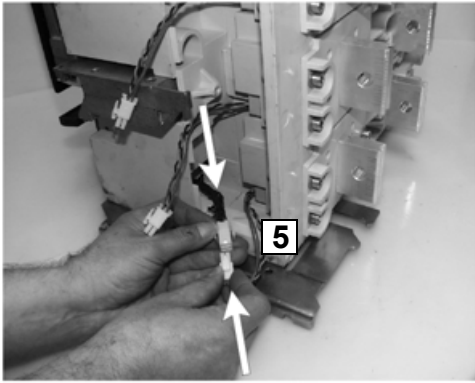
*) Self-tapping screw only 5 Nm

CAUTION

When using self-tapping screws don't damage the screw thread!

Insert the screws as follows:

- Insert screw
- turn by hand anti-clockwise until the screw-thread is found
- screw in
- using torque wrench fix to 5 Nm.



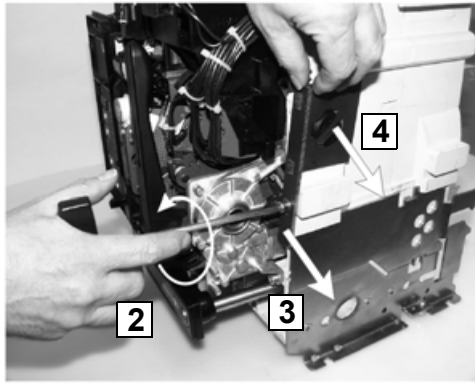
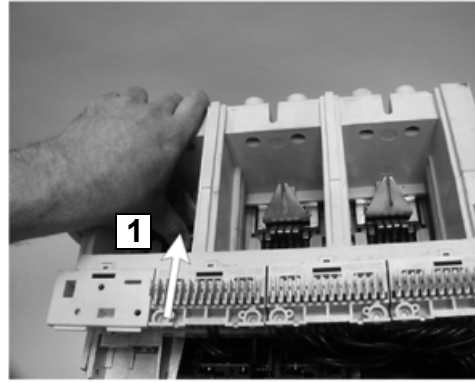
- 5 Establish plug connections
- 6 Mount cable duct covers

CAUTION

The completeness and stability of the plug connection must be assured!

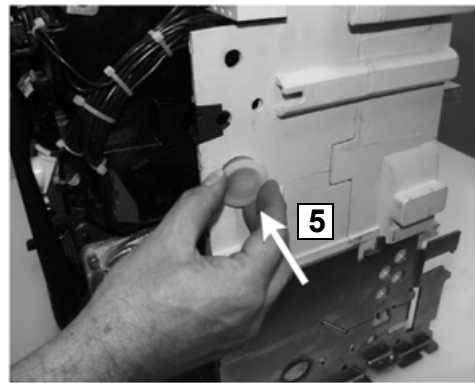
This is only by correct contact of the plug connector.

Removing switching shaft retainer



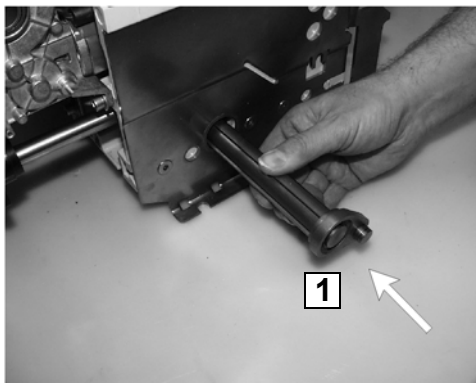
H 2

- 1 Place circuit-breaker in upright position, press contacts together and hold them
- 2 Detach switching shaft retainer
- 3 Remove switching shaft retainer
- 4 Remove driver

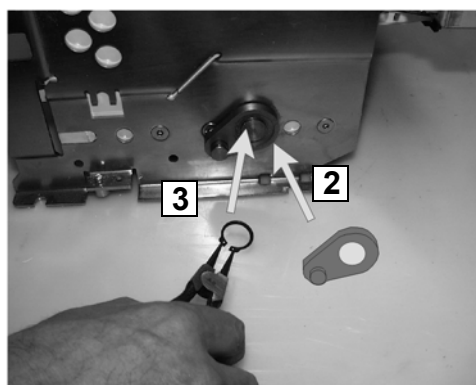


- 5 Mount cover

For withdrawable circuit-breakers only: Installing racking shaft



0528

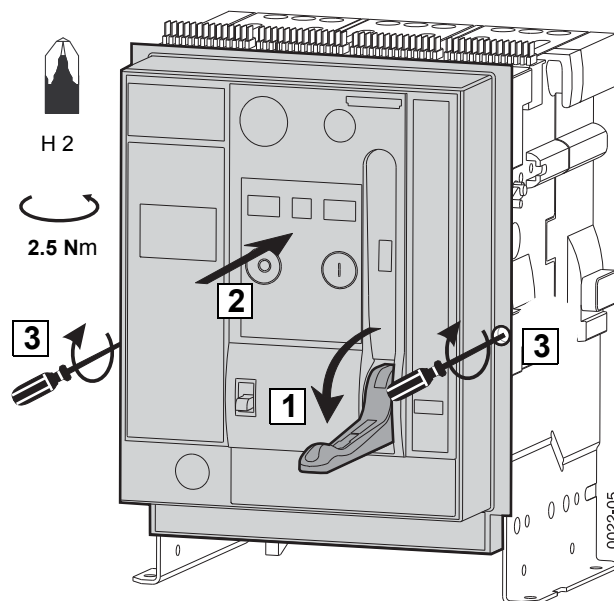


0514-1

- 1 slide in
- 2 Fit crank
- 3 and secure

24.4.5 Article numbers on request

24.4.6 Fitting front panel



24.4.7 Mechanical function test

- Charge the spring manually (→ page 6 – 4)
- Switch on (→ page 6 – 4)
- Switch off (→ page 6 – 5)
- Recheck contact wear indicator (page 24 – 6)

24.4.8 Fitting arc chutes

(→ page 24 – 4)

24.5 Replacing operating system

The circuit-breaker operating system must be replaced by Eaton After Sales Service specialists.

To contact After Sales Service: → chapter 26.

25.1 Disposal of IZM circuit-breakers

Eaton circuit-breakers are environmentally compatible products that are manufactured predominately from recyclable materials.

For disposal we recommend disassembly/dividing into the following material groups:

- **Metal:** to recycle as mixed scrap.
- **Plastic:** for disposal as industrial waste for thermal recycling.
- **Electronic, insulated cable, motors:** Recycling via electrical waste recycler.

Due to the long life span of Eaton circuit-breakers, it is possible that when decommissioning the disposal instructions are no longer up to date or that national regulations specify other disposal methods.

Your local Eaton branch can answer your disposal questions.

Our After Sales Service personnel are available for maintenance or refitting of your circuit-breakers.

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www.moeller.net/aftersales

Note

Copy the formular on the next page. Do not remove page.

IZM Circuit-Breaker

Change or replacement of the XZM

Announcement of circuit-breaker modification

Moeller GmbH
 After Sales Service
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Customer:

IZM Circuit-Breaker:

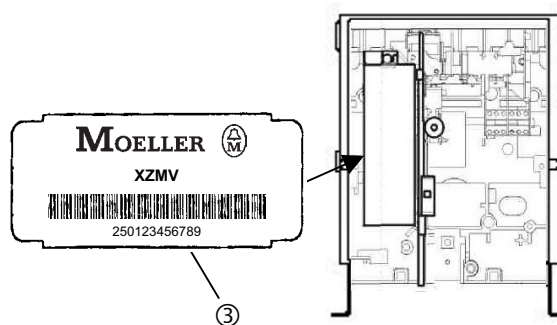
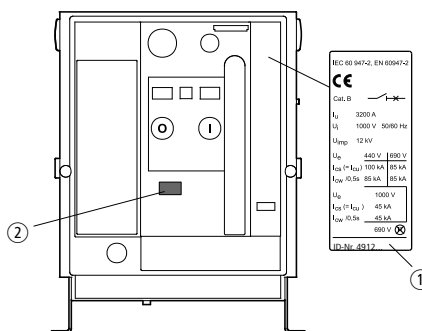
ID No.:	①
Typ:	②
ID No. of the XZM:	③

Replaced by XZM:

ID No. of the XZM:	③
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Function test:

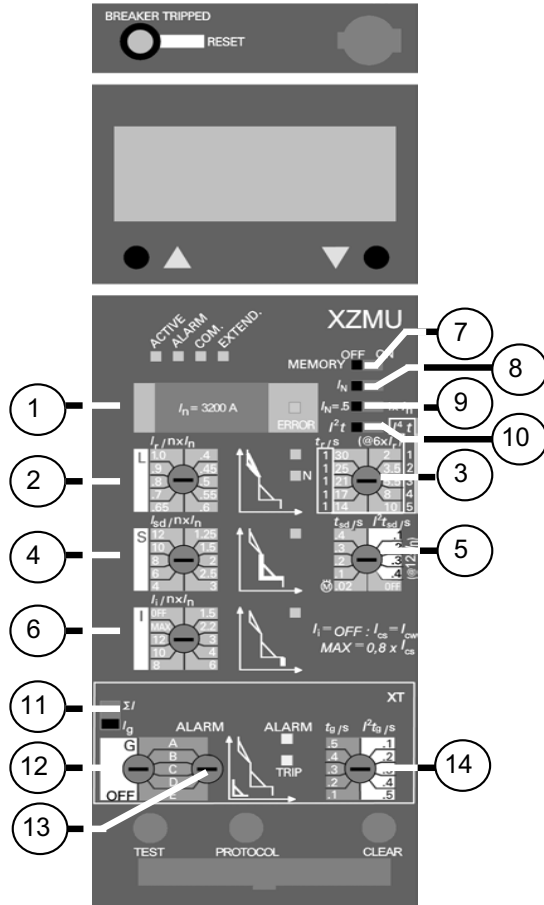
	Test passed: Yes / No [Test device, IZM-XPB]
Transformer test	L1
	L2
	L3
	N
	G
Trip out test	L
	S
	I
	N
	(Settings: Ig= OFF necessary) G



Name:	Department:
Date of training:	Place of IZM assembly training:
Date:	Signature:

IZM Circuit-Breaker

ID-number:



e.g. XZMU with IZMU-XT(A) and Display

	see (X)	XZMA	XZMV	XZMV+XT	XZMU	setting values
rated current	1	$I_{n \max}$	✓	✓	✓	$I_n =$ A
L Overload protection						
Current settings	2	✓	✓	✓	✓	$I_R =$ x I_n
Delay	3	fix	fix	fix	✓	$t_R =$ s
Characteristic	10				✓	<input type="checkbox"/> $I^2 t$ <input type="checkbox"/> $I^4 t$
Thermal memory	7				✓	<input type="checkbox"/> OFF <input type="checkbox"/> ON
Fixed instantaneous, short time delay						
S Fixed instantaneous, short time delay						
Current settings	4		✓	✓	✓	$I_{sd} =$ x I_n
Short time delay, fix or	5		✓	✓	✓	$t_{sd} =$ s
Short time delay, $I^2 t_{sd}$	5				✓	$t_{sd} =$ s
ZSI-module IZM-XEM-ZSI	extern				o	<input type="checkbox"/> YES <input type="checkbox"/> NO
I Instantaneous short-circuit protection						
Current settings	6	✓	fix	fix	✓	$I_I =$ x I_n
N Neutral conductor protection						
active / inactive	8			✓	✓	<input type="checkbox"/> OFF <input type="checkbox"/> ON
Current settings	9				✓	$I_N =$ x I_n
G Earth-fault protection						
Method of current detection	11				o	<input type="checkbox"/> ΣI <input type="checkbox"/> ext.transformer
Current settings TRIP	12			✓	o	$I_g =$ A
Current settings ALARM	13				o	$I_g =$ A
Short time delay, fix or	14			✓	o	$t_g =$ s
Short time delay, $I^2 t_g$	14				o	$t_g =$ s

✓ ... Standard
o ... Option

27 Abbreviations

A_{1/2}	Output information _{1/2} (Mutual mechanical interlocking)	IEC	International Electrotechnical Commission
AC	Alternating current	I_g	Earth-fault protection response value
AMP	AMP Incorporated, Harrisburg	I_i	Setting value for non-delayed short-circuit trip
ANSI	American National Standard Institute	I_{IT}	Individual pole short-circuit test current (IT systems)
AWG	American Wire Gauge	I_n	Rated current (Rating plug value)
Break Contact	Normally closed contact	I_N	N-conductor protection setting value
BSS	Breaker Status Sensor	I_r	Setting value for the current dependent delayed overload trip
COM.	Communication	I_{sd}	Setting value of the short-time delayed short-circuit trip
COM-DP	Communication module	I_{THD}	Distortion factor of current
CONNECT	Connected position	I_u	Max. rated current of the circuit-breaker
CR	Closing release	L1	Phase 1
DAC	Digital Analog Converter	L2	Phase 2
DC	Direct current	L3	Phase 3
DIN	German Industry Standard – Organization responsible for industrial standardization in the Federal Republic of Germany	L-trip	Delayed current dependent overload trip
DISCON	Disconnected position	LED	Light emitting diode
E_{1/2}	Input information _{1/2} (Mutual mechanical interlocking)	N/C	Normally closed contact (break contact)
DF	Duty factor	N	Neutral conductor
ESD	Electrostatic sensitive device	N tripping	Trip caused by overcurrent in the N-conductor
EN	European standard	N/O	Normally open contact (make contact)
ERROR	Trip unit error	N transformer S1	Neutral conductor transformer connection S1
EXTEND.	Extended protective function	N transformer S2	Neutral conductor transformer connection S2
F5	Tripping magnet	N/C	Normally closed contact
G alarm	Earth fault alarm	PG	Parameter assignment module
G tripping	Earth-fault trip	S	Normally open contact
G transformer S1	Earth-fault trip transformer connection S1 (k)	S_{1/2/3}	Circuit-breaker _{1/2/3} (Mutual mechanical interlocking)
G transformer S2	Earth-fault trip transformer connection S2 (l)	S1	Contact position-driven auxiliary switch
I/O	Input/Output module	S2	Contact position-driven auxiliary switch
I²_t	Current dependency of the delay time, according to the formula where the current squared multiplied by time is a constant	S3	Contact position-driven auxiliary switch
I²_{t_g}	Setting value of the current dependent delay time of the ground fault trip	S4	Contact position-driven auxiliary switch
I²_{t_{sd}}	Setting value of the current dependent delay time of the short-circuit trip	S7	Contact position-driven auxiliary switch
I⁴_t	Current dependency of the delay time, according to the formula where the current to the power of four multiplied by time is a constant	S8	Contact position-driven auxiliary switch
I_{ab}	Load shedding response value	S11	Motor end position switch
I_{an}	Load acceptance response value	S13	Cut-off switch for remote-reset
I_{avg}	Present average of current	S14	Cut-off switch for overexcited shunt release XA (fast operation)
I_{avglit}	Long term average of current	S15	Cut-off switch for overexcited closing release XE (fast operation)
I-trip	Instantaneous short-circuit tripping	S30	Signalling switch for disconnected position
I_{cs}	Rated short-circuit breaking capacity	S31	Signalling switch for test position
I_{cu}	Rated ultimate short-circuit breaking capacity	S32	Signalling switch for test position
I_{cw}	Rated short-time withstand current	S33	Signalling switch for connected position
ID	Identity number	S34	Signalling switch for connected position
		S35	Signalling switch for connected position
		S40	BSS-signalling switch for "ready-to-close"
		S41	BSS-signalling switch for "storage spring charged"
		S42	BSS-signalling switch for 1 st voltage release
		S43	BSS-signalling switch for 2 nd voltage release
		S44	BSS-signalling switch for "main contacts ON/OFF"

S45	BSS-trip signalling switch	XHIF	Signalling switch storage spring charged
S46	XCOM-DP-signalling switch for connected position	XHIS	Signalling switch 1 st voltage release
S47	XCOM-DP-signalling switch for test position	XHIS1	Signalling switch 2 nd voltage release
S48	XCOM-DP-signalling switch for disconnected position	XIKL	Shutter
S-trip	Short-time delayed short-circuit trip	XKL...	Auxiliary conductors
t_d	Undervoltage release delay time	XLKA-AV	Arcing chamber cover for withdrawable unit
TEST	Test position	XM	Motor
t_g	Delay time for the earth-fault release	XMP(H)	Measurement modules
t_r	Delay time for overload release (defined at $6 \times I_r$)	XMS	Motor cut-off switch
TRIP G	Reason for last trip due to earth-fault	XMV...	Mechanical interlocking
TRIP I	Reason for last trip due to short-circuit (non-delayed)	XOW	Automatic reset of the mechanical reclosing lockout
TRIP L	Reason for last trip due to overload in a main conductor	XPH	Hand-held test unit
TRIP N	Reason for last trip due to overload in a N-conductor	XPV	Emergency-Stop actuator
TRIP S	Reason for last trip was short-circuit (delayed)	XRP...	Rating plug
t_{sd}	Delay time of the short-circuit release	XRT	Door seal
t_x	Common load monitoring delay time	XSZ	Operations counter
U_e	Rated operational voltage	XT	Earth-fault protection
U_i	Rated insulation voltage	XTA	Earth-fault protection, alarm only
U_{imp}	Rated impulse withstand voltage	XTW	Mounting brackets for fixed mounted circuit-breakers
U_s	Rated control circuit voltage	XU	Undervoltage release
U_{THD}	Distortion factor of voltage	XUS	Fixed mounting conversion kit for withdrawable units
UVR	Undervoltage release (non-delayed)	XUV	Undervoltage release, delayed
UVR td	Undervoltage release (delayed)	XV...	Locking devices and interlocks
VDE	German association for electrical, electronic and information technologies	XW05U...	Voltage transformers
VR	Voltage release	XW(C)	Current transformer for N-conductor
VT	Voltage transformer	XZM...	Electronic trip unit, overcurrent release
WAGO	WAGO (Manufacturer of contacts in Munich)	ZSI	Module zone selective interlocking
X	Terminal designation		
X...	Name of accessories		
XA	1 st shunt release		
XA1	2 nd shunt release		
XAM	4-line display		
XATA...	Flange connection		
XAT(1)F...	Front connection		
XATV...	Vertical connection		
XAV...	Withdrawable unit		
XAVE	Reserve switch for withdrawable unit		
XCE	Coding facility for withdrawable unit		
XCOM-DP	Communication module		
XDT	Shrouding cover IP55		
XE	Closing release		
XEE	Electrical ON		
XEM	Expansion module		
XFR	Remote reset coil		
XHB(G)	Cover for setting buttons		
XHIA	Tripped signalling switch		
XHIAV1(2)	Position signalling switches for withdrawable unit		
XHIB	Signalling switch for ready-to-close		

Automatic reset of reclosing lockout

In order to re-establish the ready-to-close state immediately after an overcurrent tripping, an automatic mechanical reset unit is available as an option.

BSS module

Breaker Status Sensor – for collecting circuit-breaker status information via signalling switches and transmitting these data to the internal system bus.

Closing release

Electrical activation of the stored energy.

Coding of auxiliary connectors

To prevent interchanging the auxiliary wiring connections by mistake, the auxiliary connectors of the fixed-mounted circuit-breaker could be coded.

Communication module XCOM-DP

Interface adapter for:

- Converting the signals of the internal system bus to PROFIBUS-DP signals and vice versa
- Offer three potential free outputs for control functions (ON, OFF, 1 x free available)
- One input, freely usable for control information from the switchgear
Additional function for withdrawable circuit-breaker:
- Detecting the circuit-breaker position in the withdrawable technique by means of signalling switches S46, S47 and S48.

Electrical closing lockout, shunt release with 100 % duty ratio

For electrical interlocking of two or more circuit-breakers (closing interlock). The electrical switch-on interlock blocks against switching on of the circuit-breaker with a constant signal.

Electrical ON

Electrical operation of the charged spring via the closing release.

Guide rails

Are used to remove the circuit-breaker from the withdrawable unit.

I/O module

Input and output module

Internal system bus

Bus system close to the circuit-breaker for connection of the communication modules with each other and for connection to a panel bus (PROFIBUS-DP).

Communication modules are :

- Overcurrent release XZMU, XZMR und XZMD
- Metering module XMP und XMH
- Breaker Status Sensor XBSS
- Communication module XCOM-DP
- External expansion module XEM...
- Parameterisation module XEM-PG und XEM-PGE

Laminated contacts

Connect the main terminals of the circuit-breaker with the main terminals of the withdrawable technique.

Locking in OFF (Safe OFF)

With this additional function prevents closing of the circuit-breaker and fulfils the disconnection conditions in the OFF position according to IEC 60947.2.

- “Mechanical OFF” button pressed
- Main contacts open
- Crank handle of withdrawable circuit-breaker is inserted
- The various locking conditions are fulfilled

Mechanical reclosing lockout

After overcurrent trip the circuit-breaker is blocked against reclosing until the mechanical reclosing lockout is reset by hand. An optional automatic reset of the mechanical reclosing lockout is possible.

Motor operating mechanism

The geared motor charges the storage spring automatically as soon as voltage is applied to the auxiliary connections. After closing, the storage spring is automatically charged for the next closing operation.

Mutual mechanical interlocking

The simultaneous mechanical and electrical switch-on of two (or three) circuit-breakers is not possible. Various variations of mutual interlocking of the circuit-breakers are possible.

Normal auxiliary contact = Standard auxiliary contact

Actuation of the auxiliary switch depends on the switching status of the circuit-breaker/main contacts

Parameter assignment module

Makes it possible to parameterize, operate and observe the circuit-breaker without additional software by means of an input/output unit with browser features (e.g. a notebook).

Position indication

To display the circuit-breaker position in the withdrawable unit.

Position signalling switch

For remote display of the circuit-breaker position in the withdrawable unit.

Rating Plug

This module determines the setting range of the overload protection and consequently the short-circuit protection. Using this module the rated current of the circuit-breaker can be reduced (e.g. for a part commissioning).

Ready to switch on

The device is ready to switch on when:

- the circuit-breaker is in the OFF switch position
- the spring energy storage mechanism is charged
- the undervoltage release is energized
- the shunt release is de-energized
- the electrical manual reset is de-energized
- the reset button has been reset after an overcurrent trip
- the key switch is not set to OFF
- the crank handle is inserted
- mutual mechanical interlocking is not effective

Remote reset

Using the optional remote reset coil the electrical signal of the tripped signalling switch and the red reset pin can be reset.

Rogovski coil

Sensor for recording the current

Safe OFF

→ "Locking in OFF"

Shunt release

To switch off the circuit-breaker remotely and for locking against closing.

Shutter

Shutters are movable insulated plates that cover the main current conductors in the withdrawable unit (protection against direct contact).

Spring charging lever

The storage spring is charged by several pumping operations.

Storage spring

Module containing a spring as an energy store. The spring is charged by means of a manual lever or a motor and latched in charged condition. When the latches are released, the stored energy is transmitted to the pole, the circuit-breaker closes.

Supply transformers

Power supply for the overcurrent release.

Tool operation

Pushbuttons can only be pressed with a rod through a cover with a hole (\varnothing 6.35 mm).

Trip signalling switch

Group signal for overload, short-circuit and earth-fault tripping by micro-switch.

Undervoltage release

For remote switching and locking of the circuit-breaker. With the use of the circuit-breaker in Emergency-Stop circuits (to EN 60204-1) together with a separately arranged Emergency-Stop facility, short voltage dips should not cause the circuit-breaker to switch off. (e.g. motor start-up).

Undervoltage release (delayed)

For remote switching and locking of the circuit-breaker. Voltage dips should not cause a tripping of the circuit-breaker (e.g. switch-overs in the mains supply).

Voltage release

Undervoltage releases and shunt releases are available for use. To switch off the circuit-breaker remotely and for locking against closing.

Withdrawable unit coding device

To guard against the possibility that in a switchboard circuit-breakers of the same physical size but of different versions can be incorrectly inserted into the withdrawable units, circuit-breakers and withdrawable units can be fitted with a coding device.

Withdrawable unit rated current coding

A rated current coding is carried out before delivery. That means, every circuit-breaker can only be inserted into a withdrawable unit with the same rated current.

ZSI, zone-selective interlocking

The ZSI minimises considerably the stresses in the switchboard with a short delay time of 50 ms depending upon what position the short-circuit occurs.

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