B784

Assembly, Operating and Maintenance Instructions for

DRIESCHER - Air-Insulated Medium-Voltage Switchgears

- Type W 36 - 901221
- Type W 36 - 901226
- Rated voltage 36 kV
- Rated currents 630 A / 1250 A

Driescher Moosburg
switching • electricity • safety
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W 36

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Warning

During the operation of these electrical switchpanels certain parts are inevitably exposed to dangerous voltage and mechanical parts may move very quickly, also via remote control. There is a risk of serious injury to the body or to property if the warning instructions are not correctly observed.

Only appropriately trained personnel are to work on this equipment or in the vicinity thereof.
These persons are to be completely familiar with all warnings as well as repair and maintenance measures as specified in these operating instructions.
Correct transport and appropriate storage, mounting and assembly as well as the correct operation and maintenance are prerequisites for the satisfactory and safe operation of this equipment.

Design of Sections

Design of Sections

The air-insulated medium-voltage switching sections of type W 36 are in compartment-type design.
The supporting structure of a section consists of welded and lacquered composite material.
On its front side, each section is equipped with a single-wing solid-sheet door, the door stop being on the right-hand side or left-hand side, alternatively. The shutter in front of the busbar compartment is either bolted or designed as a door leading to a relay box installed behind it.
Cables to be connected are run from below into the sections, and laid onto adjustable two-dimensional cross-arms.

Encapsulation and Compartmentalisation

Each section has a rear panel bolted to it which is made of galvanised sheet steel.
Each section comes compartmentalised with glass-fibre-reinforced plastic panels as standard, including cable glands, sideways as against its neighbouring sections.

Technical Data

In terms of design and dielectric strength, the air-insulated sections are in conformity with EN 62271-200.
Both function and dielectric strength of the devices installed are in conformity with EN 62271-1.

The technical data for the switches installed are contained in:
- Brochures *741* and *746* for circuit breakers
- Brochure *729* for switch-disconnectors
- Brochure *731* for disconnectors and earthing switches

Operating conditions

The sections of types W 36 - 901221 and 901226 are suitable for installation in electrical operating areas that may be entered only by professional personnel and persons having received specific instructions.
The sections are suitable for use under normal environmental operating conditions up to a site altitude of 1000 m above mean sea level.
In accordance with DIN VDE and EN, the reduction factor may be neglected for site altitudes of up to 1000 m.
For site altitudes exceeding 1000 m, rated insulation levels shall be corrected accordingly in planning.
The sections are suitable for environmental operating conditions in accordance with climatic category 12:
Ambient air temperature: -5° to +40° C, which is equivalent to normal service conditions in accordance with EN 62271-1.

Shipping, Transport and storage

Delivery condition
The individual panels or units are usually fully preassembled at the manufacturing factory.

Transportation on the site
There are transporting lugs on the top of the switch panels or units. These must be removed again after installation. To transport the panels using lifting tackle please proceed as shown in *Fig. 1*.

For transportation using a shovel loader it is necessary to insert pallets or square timber beneath, which are then taken up by the lifting arm as shown in *Fig. 2*.

Storage
The switch panels must be appropriately stored in a dry, well-vented area and protected against contamination.

All W 36 panels must be transported as shown in *Fig. 1*.
The minimum distance of 1m between panel upper edge and lifting hook (*see Fig. 1*) must be observed with all panel types.

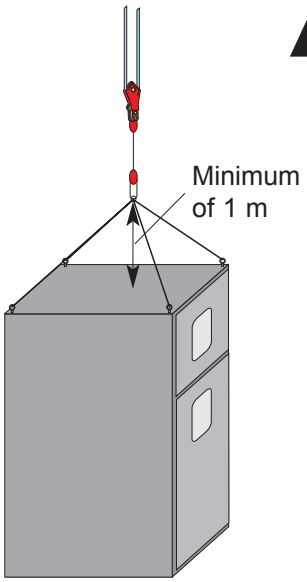


Fig. 1:
Transportation of an individual panel

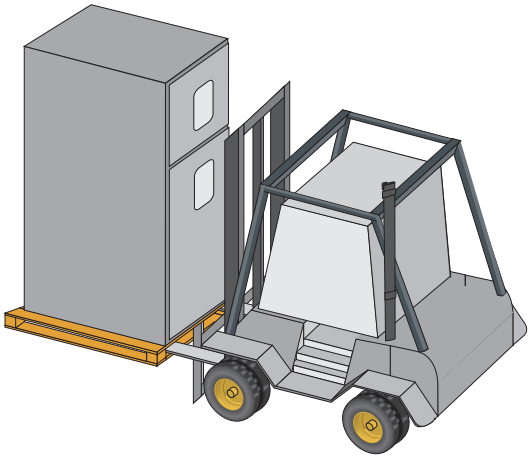


Fig. 2: Loading an individual panel using shovel loader (lifting arms take up panel end)

Weights

Type	Designation	Weight approx. kg	Drawing-no.
WK 36 - 901221- 29	Cable panel	300	HA2 - 70785
WT 36 - 901221- 29	Transformer feeder panel	320	HA2 - 70785
WM 36 - 901221	Measuring panel	380	HA2 - 70785
WK 36 - 901226 - 29	Cable panel	320	HA2 - 70789
WT 36 - 901226 - 29	Transformer feeder	340	HA2 - 70789
WM 36 - 901226	Measuring panel	400	HA2 - 70789
WÜ 36 - 901226 - 29	Bus sectionalizer panel	350	HA2 - 70789
WL 36 - 901226 - 616	Circuit-breaker panel	750	HA2 - 70789
WH 36 - 901226	Riser panel	230	HA2 - 70789

Installation

Floor properties

A level floor is sufficient.
Compensate any irregularities. Make sure to avoid any distortion of the panels!

Floor openings

The openings can also be continuous along the length of the switchgear.

Securing the panels

The switch panels can be bolted directly to the floor of the building or bolted to an iron frame in the floor. The panels can also be installed on an elevated floor.

Side view of floor mounting

Top view of floor mounting

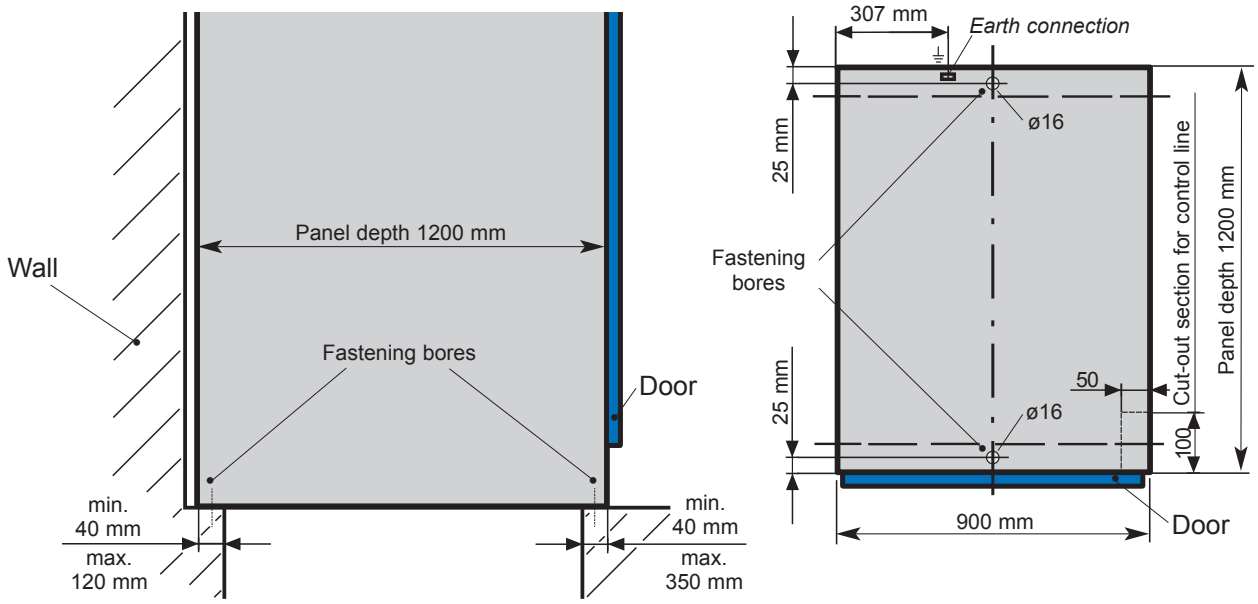


Fig. 3: Floor opening

Bolting switch panels together

Bolting of the panels

The housings are bolted at the front and rear with 11x M8 x 30 screws DIN 933, washers DIN 125 and nuts DIN 934 (*Fig. 4*).
The corresponding screws, nuts and washers are provided as accessories.

This bolting ist **not** a earth connection !

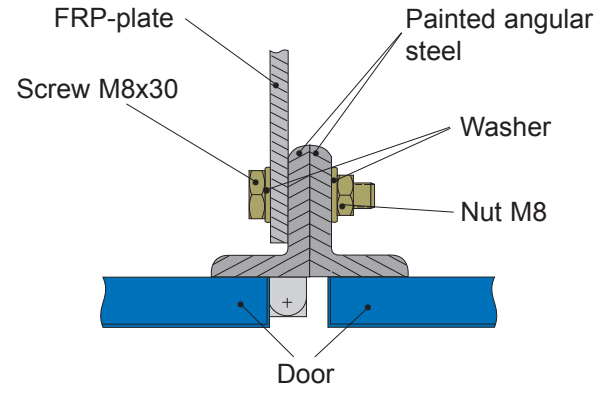


Fig 4: Bolting of the panels

IInstallation of busbars

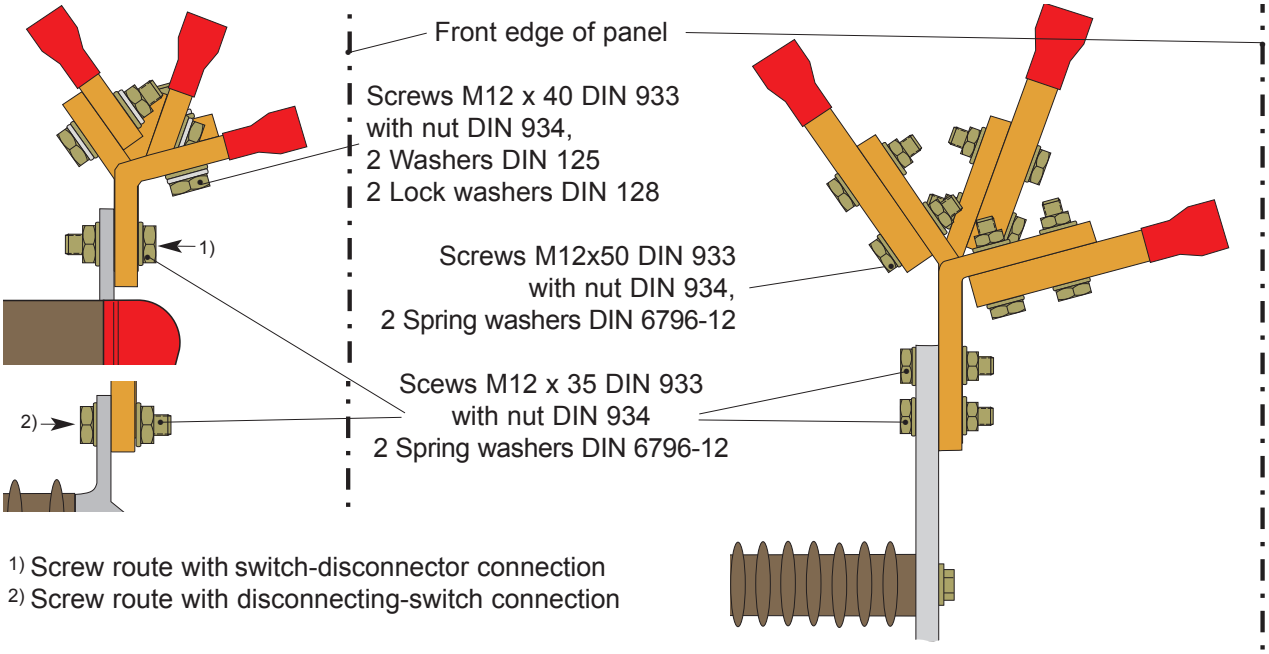
Start the installation of the busbars at the right or left end switch panel and always pay attention to the same phase sequence within the panels.
The lead-in openings must be mounted on the busbars prior to installation.

Connection of Busbar

In accordance with *fig. 5*, busbars will be butt-jointed from section to section, and bolted to each other directly at the upper terminal of the switch pole.

Arcing chambers must not be distorted because otherwise centric striking of the contact blades into the arcing chambers will no longer be ensured.
When tightening the nut (torque, 75 Nm), terminal screws should be held up using a second wrench.

Note: Prior to the installation of the busbars, their contact surfaces shall be freed from extraneous substances, and lubricated (using Vaseline, white). Thereafter, the busbars shall be bolted to each other, so as to render them directly contacting.



1) Screw route with switch-disconnector connection
2) Screw route with disconnecting-switch connection

Version 630 A **Version 1250 A**

Fig. 5: Connecting the busbars

Terminating element

For the terminating element of a switchgear the end panels lateral are bolted to a sheet steel end cassette.

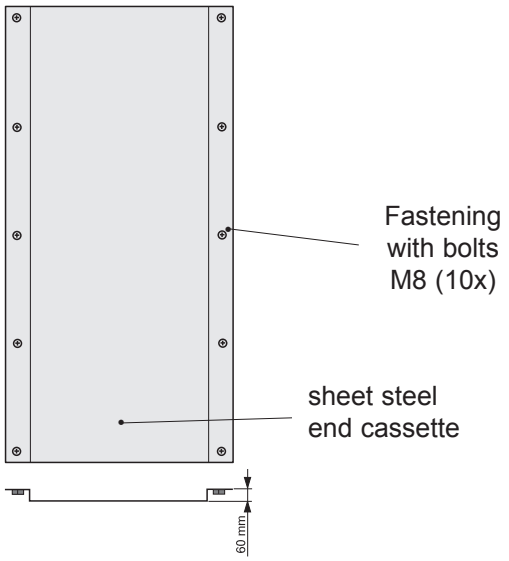


Fig. 6: Assembly terminating element

Connection to the station earth

The switchgear over the corridor iron framework get earthed (switchgear welded on or screwed together with contact plates) it suffices if the station earth is attached once per plant. With switchgear lengths of over 10 m, connect at least twice at places as far away from each other as possible (DIN VDE 0141).

The panel bolted joint ist **not** a earth connection !

Earthing of Cable

Earthing of the cable sheath is to be carried out at the galvanised cross-arm for cable fastening.

Earthing with earthing and short-circuit accessories

For this purpose, an earthing screw can be found on the enclosure of each section.
The spherical terminal studs are located on the cable terminal units or on the busbars.

Cable Fixing and Cable Connection

Cable fastening and sealing-end fastening as well as cable connection are to be carried out using the galvanised sealing-end supports adjustable for height and depth, in accordance with Illustration 7.
When connecting the cables, please ensure that neither tensile forces, axial thrust, nor torsional stress occur at the contact terminals. 75 Nm tightening torque for the screw connection.

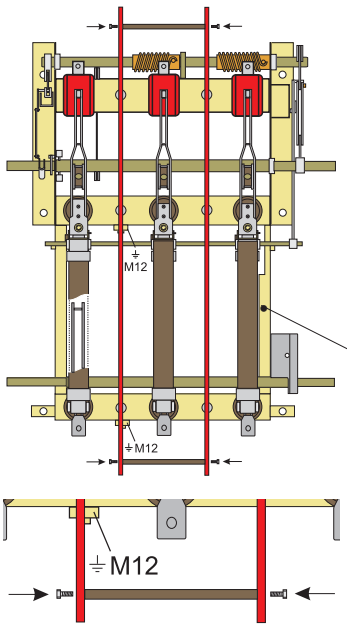
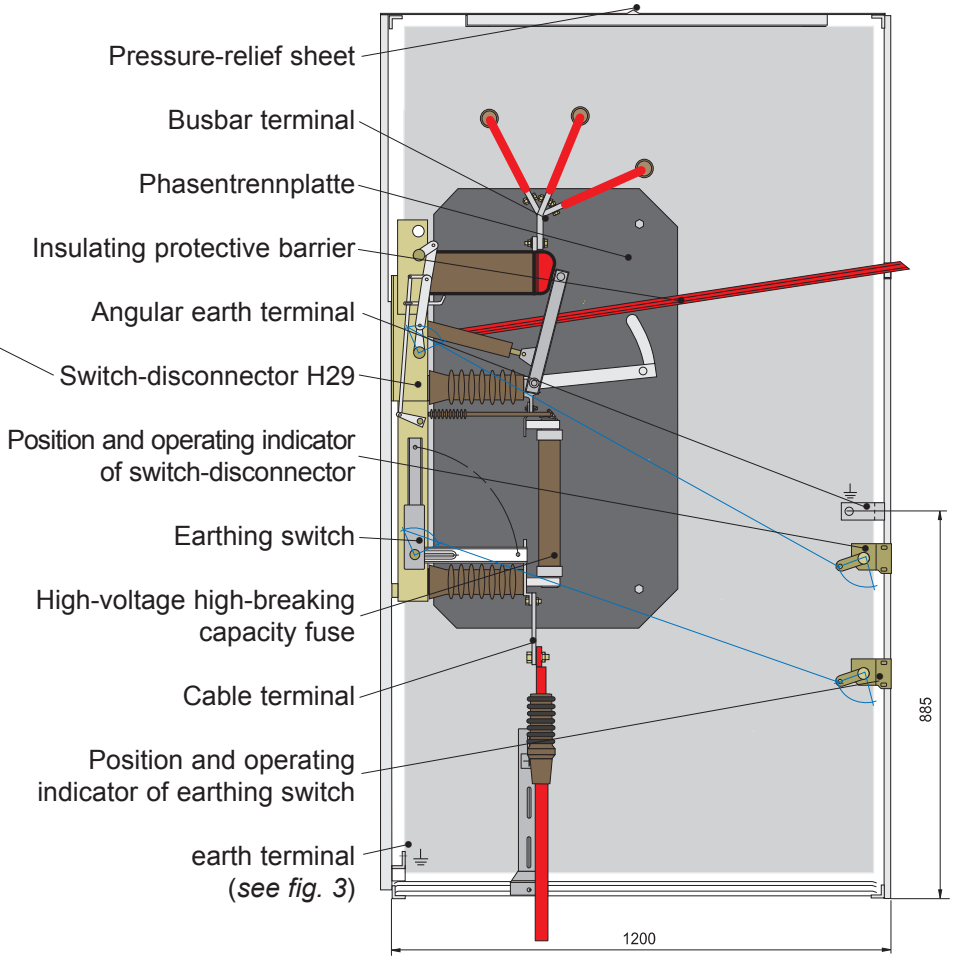


Fig. 7: Fixing the phase break plate with 2 plasticscrews with spacer



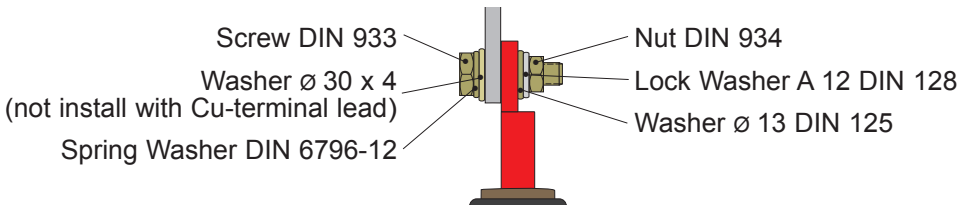


Fig. 8: Cable connection

Operation

General

The switchgear equipment can be operated with closed panel door by the specified operating mechanism.

W 36 Circuit-breaker panel

1. The disconnector ① is interlocked with the circuit-breaker.
2. To switch the circuit breaker on or off manually, move the release lever ⑤ up or down.
3. Read of the position of the circuit breaker at the position indicator ③ (0=Off, 1=On)
4. The stored energy mechanism position ④ indicates whether the breaker is in a charged state. In this case, the last operation is always an opening operation in order to be able to switch the circuit- breaker off in the event of control voltage failure.
5. The stored energy mechanism can be recharged using a crank if the supply voltage should fail ⑥ .
6. The total number of switching operations of the circuit-breaker can be read from counter ②.
7. Switch-disconnector ① and earthing switch ⑦ can be switched off using the rotary handle.

W 36 Transformer feeder panel or cable panel

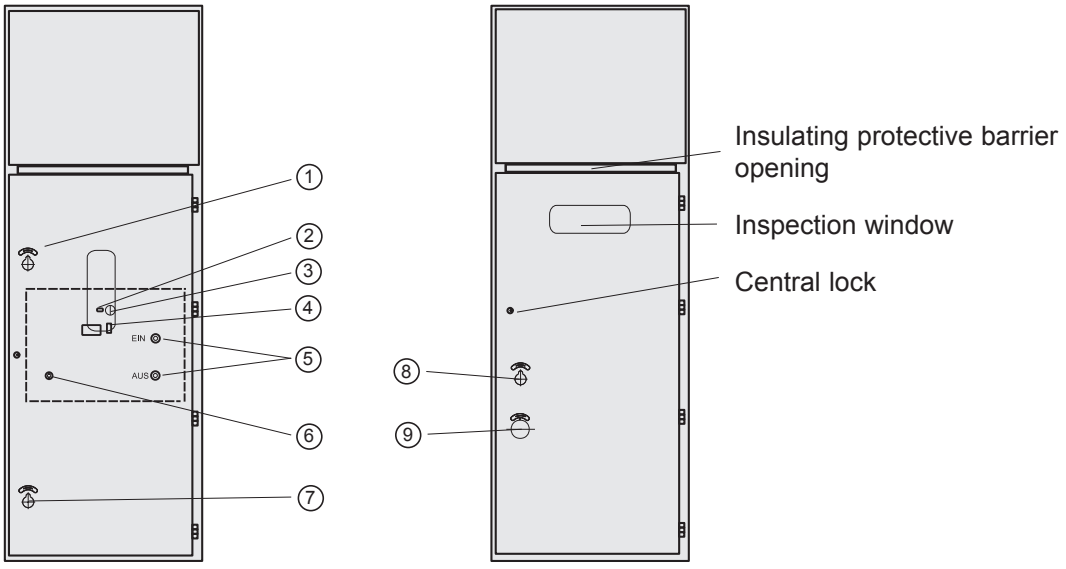
1. The switch-disconnector position can be seen through the window in the door.
2. The switch-disconnector ⑧ , as well as earthing switches ⑨ , can be switched on and off using the plug-on lever operating mechanism. The switching direction and the switch-disconnector and earthing switch positions are indicated.

Earthing switch and switch-disconnector can be interlocked upon request.

When switching off the switch-disconnector inserted in the transformer feeder panel always make sure to switch through 90° with the mounted lever, up to the stop. In non-manual release (fuse or shunt release) the operating mechanism remains in "ON" position and must first be manually moved into basic position "OFF" before switching on again.

Opening and closing the panel door

The door with central locking for the pressure-containing locks is opened and closed with a double-bearded key.



Circuit-breaker panel

Transformer feeder panel or cable panel

Fig. 9: Operation

After correct installation and connection of all cables and lines the switchgear is ready for operation. The individual functions, as required by the customer, are given in the project-specific documentation (specification, circuit diagrams).
Please observe that the supply voltage (auxiliary voltages) must be available for correct operation.

Inspection • Maintenance • Commissioning

General

Our products have been on the market for many years and thousands of these switchgears are used succesfully. We are able to say that the quality of our products is distinguished by a high level of ruggedness and operational safety and reliability. To guarantee that the requirements put to the switchgear are met and to avoid any possible power failures, appropriate maintenance, inspection and possible repair measures are necessary to provide a reliable power supply. The measures employed depend on the age of the switchgear, its operating frequency and the level of the operated currents.

Inspection and maintenance

In addition to an annual visual inspection, these measures should be carried out after approx. 10 years, even if the switches are not operated frequently and only under minimal load. Shorter intervals between inspections may be necessary in the event of negative impact from the environment, such as:

- corrosive atmospheres, air with a high dust content, damp plant facilities etc.
- high operating frequency

Disassembly as well as removal and installation of the switch (parts) are only to be carried out by DRIESCHER personnel or appropriately authorized skilled personnel, this being due in particular to the expertise required for the correct adjustment.

Commissioning

Commissioning of the plant is only to be carried out in dry condition.
Every switch is adjusted and tested before it leaves the factory. Nevertheless, each switch should be tested for satisfactory operation by carrying out several switching operations in de-energised condition. Please also observe the following operating instructions:

- *B746* for circuit breakers
- *B729* for switch-disconnector H 29
- *B731* for disconnecting switch and earthing switch

Inserting and Replacing HV-HBC Fuses

Switch off the switch-disconnector positioned above the HV-HBC fuse. Grasp the HV-HBC fuses with fuse tongs and insert in the fuse mounting contacts in such a way that the impact pin can actuate the release mechanism (observe marking on HV-HBC fuse).

To remove a fuse from the panel, get hold of it using fuse tongs and remove from the fuse mounting contacts. If a HV-HBC fuse has operated, the two other fuses should also be replaced due to the possibility of overcurrent ageing.

Insulating protective barrier

The insulating protective barrier prevents any impermissible approach or accidental contact of live parts. Insert the barrier with closed panel door if work is to be carried out on the panel and the system cannot be completely de-energised.
After closing the panel door the barrier can be pulled out again by pulling at the hole grip.

Service

Our skilled personnel are always available to assist you in the event of any malfunctions or queries regarding the compatibility, assembly or maintenance - also out of normal office hours.
Please always inform us about the data on the type plate.
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