

## DRIESCHER - Air-Insulated Medium-Voltage Switchgears

- Type W 24 - 901121
- Rated voltage 24 kV
- Rated current up to 1250 A



# W 24

ELEKTROTECHNISCHE WERKE  
FRITZ DRIESCHER & SÖHNE GMBH

D-85366 MOOSBURG • TEL. +49 87 61 6 81-0 • FAX +49 87 61 68 11 37  
<http://www.driescher.com> email: [Driescher@aol.com](mailto:Driescher@aol.com)



## DRIESCHER - 24 kV Switchgears

in compliance with DIN VDE 0670, Part 6 and IEC 60298

• 3

General, Operating conditions, Technical standards, Technical data

• 4

Description of the switch panels

• 5

Overview of the switch panel variants W 24 - 901121

• 6

Switch panel variants W 24 - 901121

• 10

Switch panel variants WL 24 - 901121

• 11

Relay boxes, Withdrawable plates, Auxiliary equipment, Weights

• 12

Production program

FORSCHUNGSGEMEINSCHAFT FÜR HOCHSPANNUNGS- UND HOCHSTROMTECHNIK E.V.  
Mannheim-Rheinau, Hallenweg 40

**FGH**

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akkreditiertes Prüflaboratorium gemäß DIN EN 45001 für die Bereiche  
DAT-P-020/92-00 Hochspannungsteile und -anlagen  
DAT-P-020/92-11 Hochspannungskabel  
DAT-P-020/92-20 Spannungsprüfung

Gerät: Teilgeschottete Schaltanlage für Innenraumaufstellung, Typ W24 901121-22, Nennspannung 24 kV, für Schwenkbrennschaltereinbau

Hersteller und Auftraggeber: Elektrotechnische Werke Fritz Driescher & Söhne GmbH, Driescherstraße 3, D - 85368 Moosburg

Prüfbestimmungen: VDE 0670 Teil 6 (03/94)

Prüfungen: Lichtbogenprüfung der genannten Feldtype nach Abschnitt 5.10B der o. B. VDE-Prüfbestimmung bei innerem Fehler und Zugänglichkeitsgrad A (nur für unterwiesene Personen):  
- mit den Nennwerten  
- Nenn-Stoßstrom 50 kA,  
- Nenn-Kurzzeitstrom 20 kA,  
- Stromflußdauer 1 s.  
- Prüfanordnung (insgesamt drei Felder in der rechten Raumnachbildungsecke stehend in einer Raumnachbildung mit 2,6 m Deckenhöhe und rechter Seitenwand;  
- Zündung des Lichtbogens  
-- im Kabelanschlußbereich,  
-- im Sammelschienenbereich.

Prüfresultat: Bewertung des Verhaltens der Schaltanlage bei inneren Lichtbögen nach den Beurteilungskriterien der o.B. Prüfbestimmungen:  
1. Türen und Abdeckungen öffneten sich nicht;  
2. keine Teile der Anlage sind weggefliegen;  
3. an den äußeren Wänden entstanden keine Löcher;  
4. es entzündeten sich keine vertikal angeordneten Indikatoren;  
5. es entzündeten sich keine horizontal angeordneten Indikatoren durch heiße Gase;  
6. keine Beeinträchtigung der Wirkung der Erdverbindungen.

Mannheim, 24. Februar 1997

FORSCHUNGSGEMEINSCHAFT FÜR HOCHSPANNUNGS- UND HOCHSTROMTECHNIK E.V.

Prüfer: *[Signature]*  
Versuchsleiter: *[Signature]*  
Hartzl

Ort und Datum der Prüfung: FGH-LVF Mannheim-Rheinau, 15. Oktober 1996  
Blätter gesamt: 28 (darin: 13 Bilder 2 Oszillogramme)

## General

The metal-enclosed, air-insulated medium-voltage switchgears, Type W 24 can be universally applied:

They range from the compact ring cable switchgears up to complex power distribution switchgears.

Tailored to meet the needs of networks of public utilities and power supply companies in industry and municipal buildings.

These medium-voltage switchgears meet the specific requirements put by the user in full and ensure a satisfactory power distribution.

**The switch panels of Type W 24 - 901121 measure 900 mm in width, 1100 mm in depth and 2100 mm in height.**

They are available as individual panels or as a switchgear unit, the equipment and panel sequence of which can be selected by the customer.

The switch panels are type-tested in compliance with DIN VDE 0670, Part 6 including Pehla directive no. 4.

## Operating Conditions

The switch panels of Type W 24 are installed in closed electrical operating areas which are only to be entered by skilled personnel and appropriately instructed persons.

The equipment can be used at an altitude of up to 1000 m above sea level.

For installations above an altitude of 1000 m the rated insulating level of the switchgear must be corrected accordingly. The switch panels are designed for use under normal operating conditions in compliance with the standard DIN VDE 0670, Part 1000 (IEC 60694).

## Technical Standards

The design of the air-insulated switch panels corresponds to the specifications of the DIN VDE 0670, Part 6 (IEC 60298). The resistance to accidental arcs of the switch panels has been determined at 16, 20, 25 and 31.5 kA; 1 s, by and independent testing

institute. The installed switchgear equipment is designed in compliance with DIN VDE 0670, Part 1000 (IEC 60694).

The degree of protection of the switch panels corresponds to IP 3X.

## Technical Data

Rated voltage	$U_r$ 24 kV	Rated short-circuit duration	$t_k$ 1 s
Rated lightning impulse withstand voltage	$U_p$ 125 kV	Rated frequency	$f_r$ 50 Hz
Rated short-time withstand voltage	$U_d$ 50 kV		

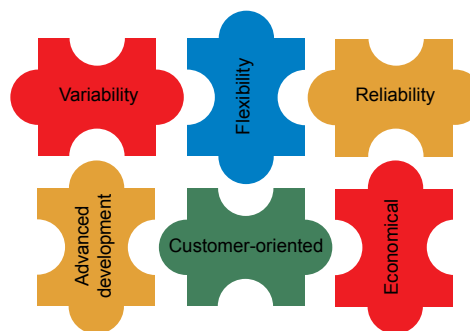
Technical data for the installed switchgear equipment	Rated (operating) current $I_r$	Rated short-time current $I_k$	Rated peak current $I_p$
Panels with switch-disconnector H 27	400 A and 630 A	up to 20 kA	up to 50 kA
Panels with switch-disconnector H 22	630 A and 1250 A	up to 30 kA	up to 75 kA
Panels with circuit breaker V 625 or V 1225	630 A and 1250 A	25 kA	63 kA

Technical data on the installed switchgear equipment are available for

- Switch-disconnector H 22 in list 722
- Switch-disconnector H 27 in list 727
- Earthing and disconnecting switches in list 731
- Circuit breakers in list 745

## Benefits

- **Flexible**, based on the combination possibility with panel type D 24
- **Safe and reliable** through the high quality of our products
- **Economical** based on continuous further development
- **Compact dimensions**
- **Easy handling**
- **Minimum amount of maintenance**



## Description of the Switch Panels

### Design

The air-insulated medium-voltage switch panels of Type W 24 - 901121 are metal-encapsulated.

The switch panel frame is made of a screwed, hot-galvanized composite structure.

The front of the switch panels has a single-wing door of steel plate with the door hinge optionally on the right or left. A window of compound glass is inserted in the door.

The cover in front of the bus bar area is either screwed on or designed as a door for the relay box positioned behind it.

Each switch panel has a screwed on rear panel of galvanized sheet metal.

Connecting cables are conducted into the switch panels from below and are mounted on cross rails which can be adjusted in two dimensions.

The doors and covers of the switchgear are painted in structural paint (available in different colours according to the customer's request).

### Equipment

The switch panels of Type W 24 are available in the following versions:

- Cable switch panel           Type WK 24
- Transformer feeder panel   Type WT 24
- Measuring switch panel    Type WM 24
- Bus sectionalizer panel    Type WÜ 24
- Circuit-breaker panel       Type WL 24

The switch panels are optionally designed with a bus bar compartment which is either open or closed at the side.

Pressure relief can be in upward or downward direction.

Switch panels equipped with switch-disconnectors can optionally be fitted with an earthing switch.

In circuit-breaker panel, Type WL 24, there is also an integrated bus disconnector in addition to the circuit breaker.

It is also possible to equip these panels with a set of current and voltage transformers as well as with an earthing switch.

The relay boxes extend over the entire width of the switch panels. These measure 265 mm in depth and are available in 3 different heights (455, 635 and 815 mm, see Page 11).

The optional interlocking features of the devices practically rule out any incorrect operation.

All installed switchgear equipment can be operated manually or via motor-operated mechanism with closed panel door.

Special measuring panels equipped with current and voltage transformers complete the program.

Earthing switches or spherical fixed points are available for earthing and short-circuiting.

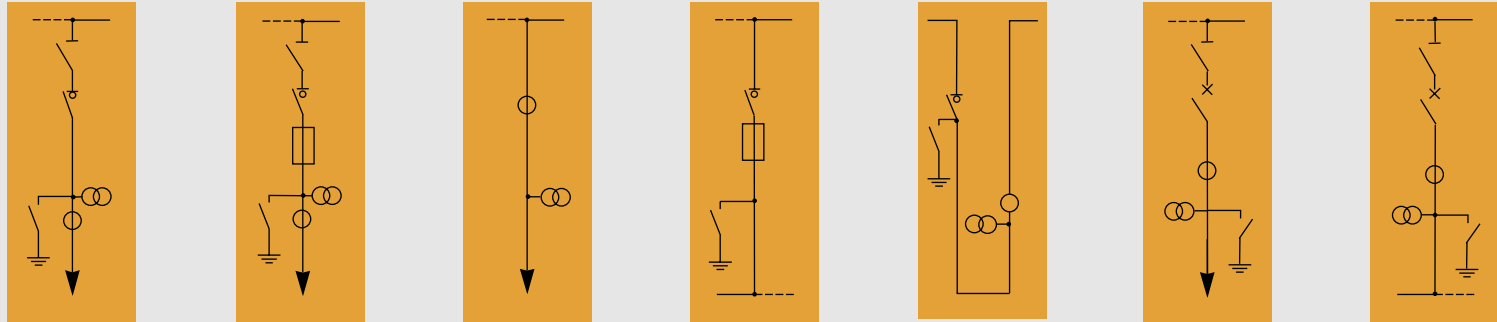
An insulating protective plate can be inserted when the panel door is closed.

It is possible to install corresponding surge voltage protectors in the panel, if required.

All switch panels are designed with central locking and double-bit key.

There are additional locking features available using profile cylinders or padlocks, if required.

# Air-Insulated Medium-Voltage Switch Panels 24 kV Type W 24 - 901121



Switch Panel Type W 24 - 901121	Cable panel (WK) Fig. Bild 2,3	Transformer feeder panel (WT) Fig. 11,12,13	Measuring panel (WM) Fig. 7,8,9,10	Bus sectionalizer panel (WÜ) Fig. 4	Bus sectionalizer /Measuring panel (WÜM) Fig. 5,6	Circuit-breaker panel (WL) Fig. 14,17	Circuit-breaker bus sectionalizer panel (WÜL) Fig. 15,16
Disconnecting switch	*	*	-	-	-		
Switch-disconnector / Circuit breaker	H 22 EA/EK	H 22 SEA	-	H 22 EK/EA/SEA	H 27 EK/EA/SEA	V625 BKF/KUF	V625 BKF/KUF
Earthing switch				**			
Current transformer				-			
Voltage transformer				-			-

= optional

- = not possible

\* not possible with current or voltage transformers

\*\* not possible with switch-disconnector H 22 SEA

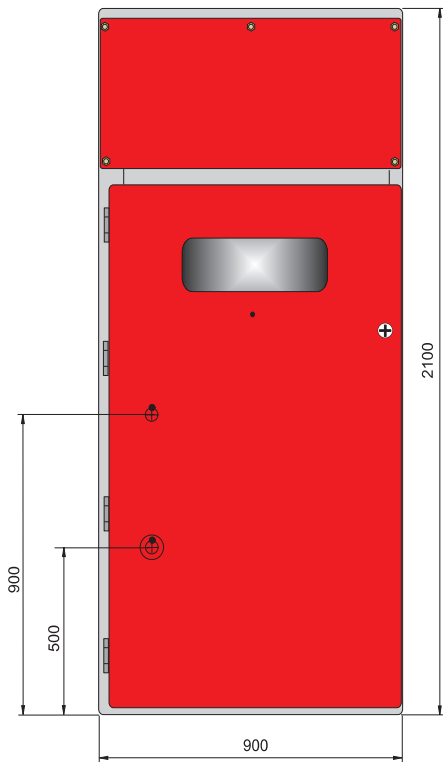


Fig. 1: 24 kV Switch panel

**24 kV switch panel in compliance with drawing HA 1-071556**

- Rated voltage 24 kV
- Rated (operating) current 630 A and 1250 A
- Rated insulation level 125 kV
- Resistance to accidental arcs 16, 20, 25 and 31.5 kA; 1 s

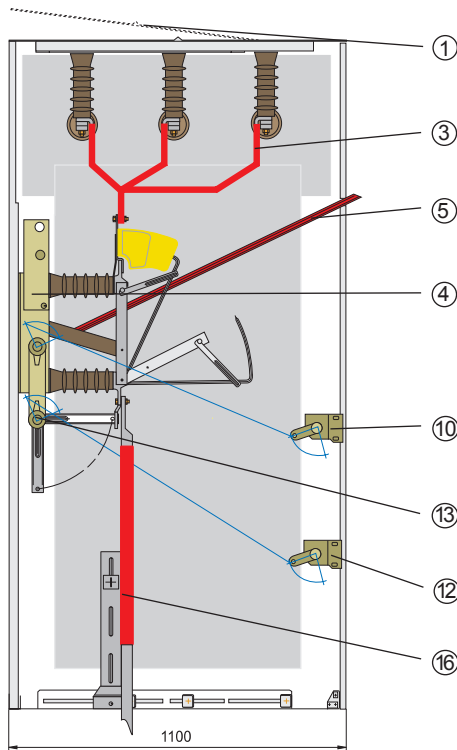


Fig. 2: 24 kV Cable panel with switch-disconnector H 22

- ① Pressure relief plate
- ② Relay box
- ③ Bus terminal
- ④ Switch-disconnector H 22
- ⑤ Withdrawable plate \*
- ⑥ Switch-disconnector H 27
- ⑦ Current transformer
- ⑧ Voltage transformer
- ⑨ Vakuuc circuit-breaker
- ⑩ Position indicator and actuation of load-break switch
- ⑪ Position indicator and actuation of disconnecting switch
- ⑫ Position indicator and actuation of earthing switch
- ⑬ Earthing switch
- ⑭ Disconnecting switch
- ⑮ HV-HBC fuse
- ⑯ Cable terminal

\* The FGP withdrawable plate can be inserted with switched off switchgear

## Switch Panels Type W 24 - 901121

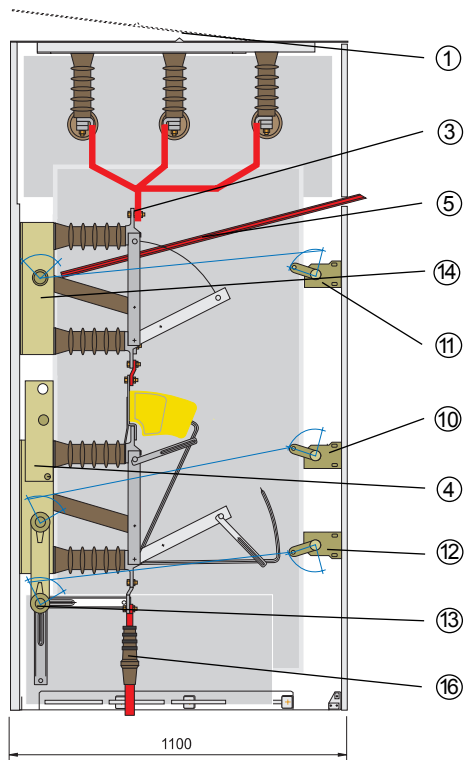


Fig. 3: 24 kV Cable panel with disconnecting switch and switch-disconnector H 22

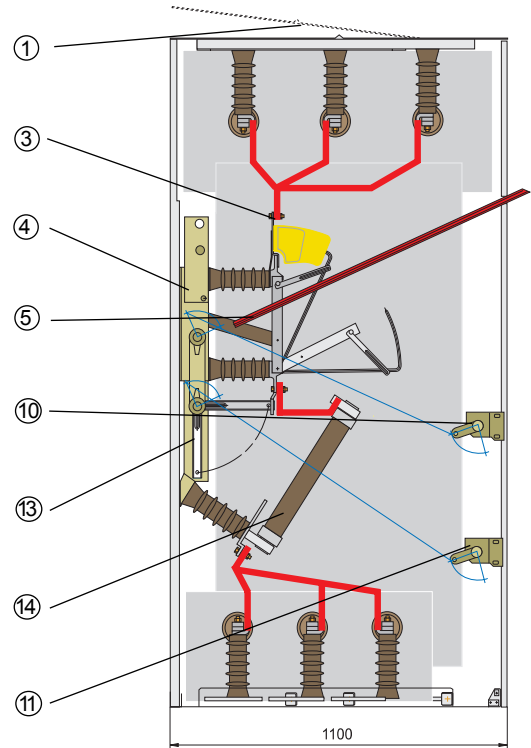


Fig. 4: 24 kV Bus sectionalizer panel with fuse switch-disconnector H 22 SEA

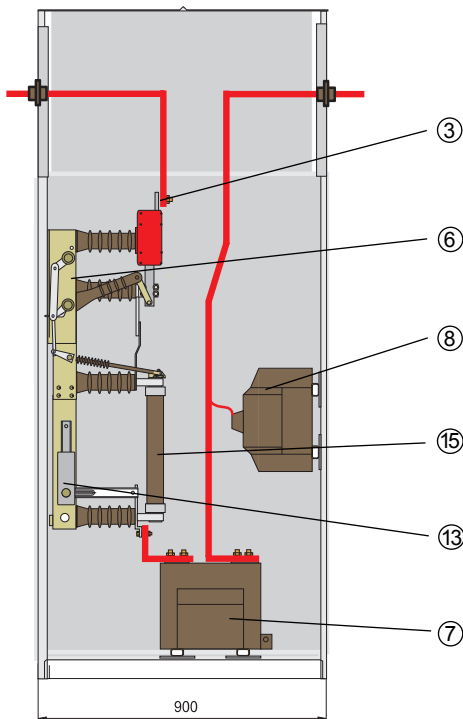


Fig. 5: 24 kV Bus sectionalizer/Measuring panel with fuse switch-disconnector H 27 SEA\*

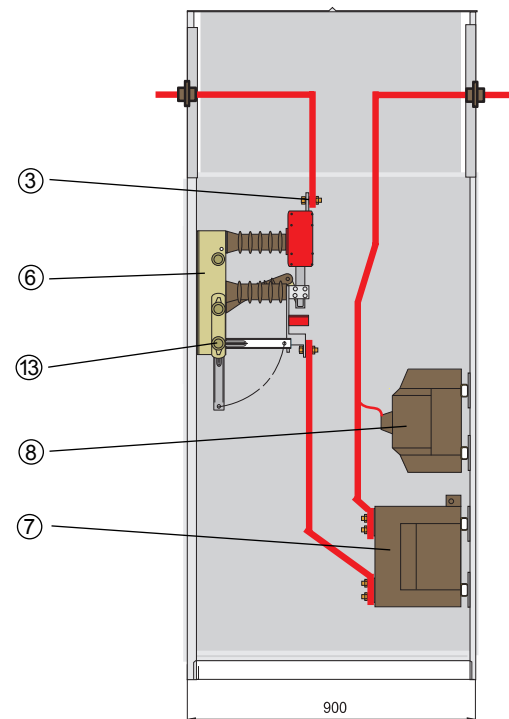


Fig. 6: 24 kV Bus sectionalizer/Measuring panel with switch-disconnector H 27 EK/EA\* (also possible without switch-disconnector)

\* The switchgear device H 27 can also be installed on the right

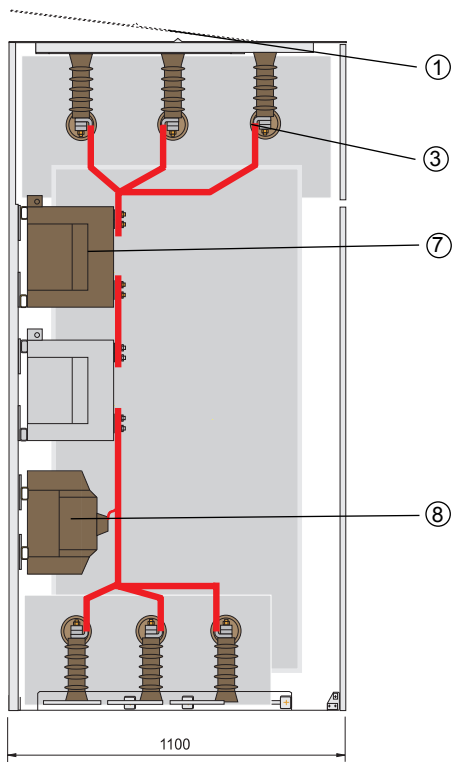


Fig. 7: 24 kV Measuring panel

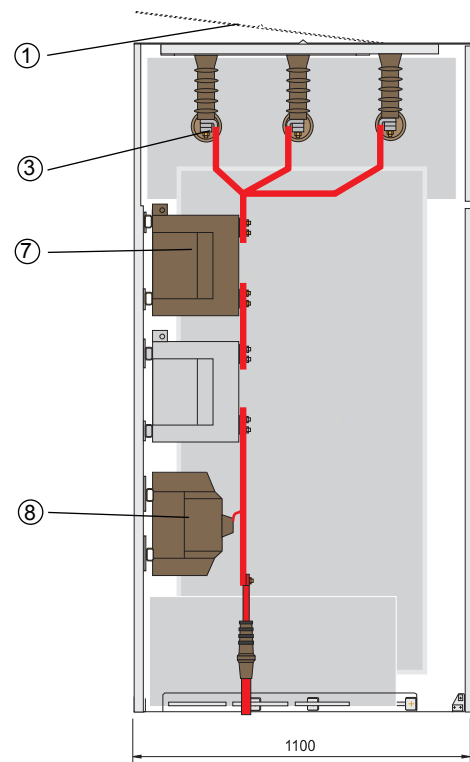


Fig. 8: 24 kV Measuring panel with cable terminal

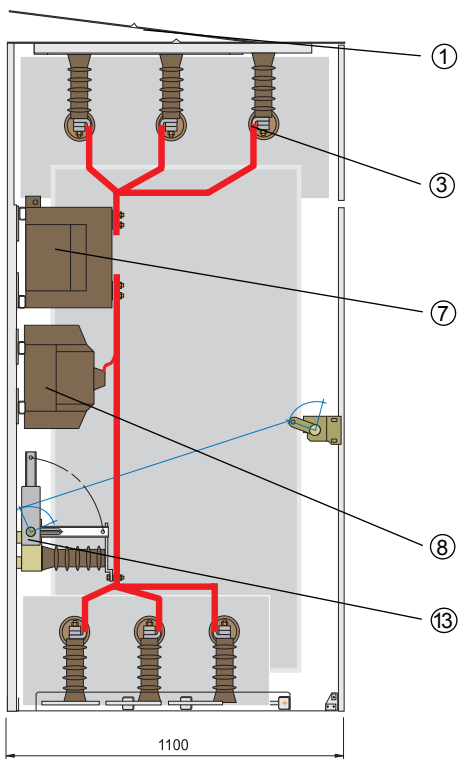


Fig. 9: 24 kV Measuring panel with earthing switch at the bottom

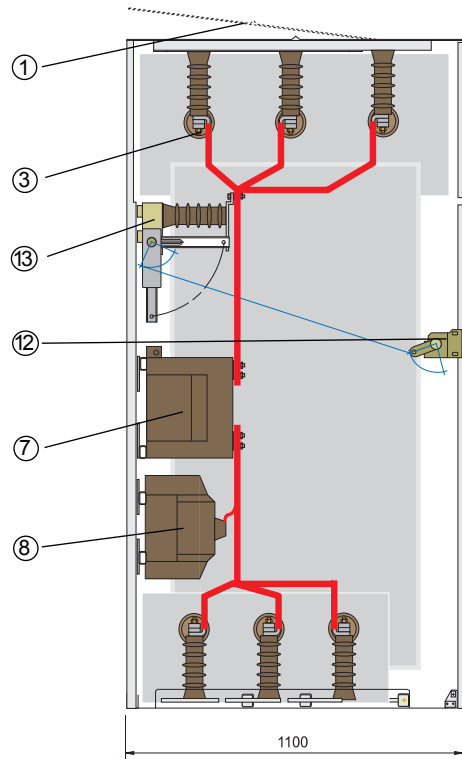


Fig. 10: 24 kV Measuring panel with earthing switch at the top



## Switch Panels Type W 24 - 901121

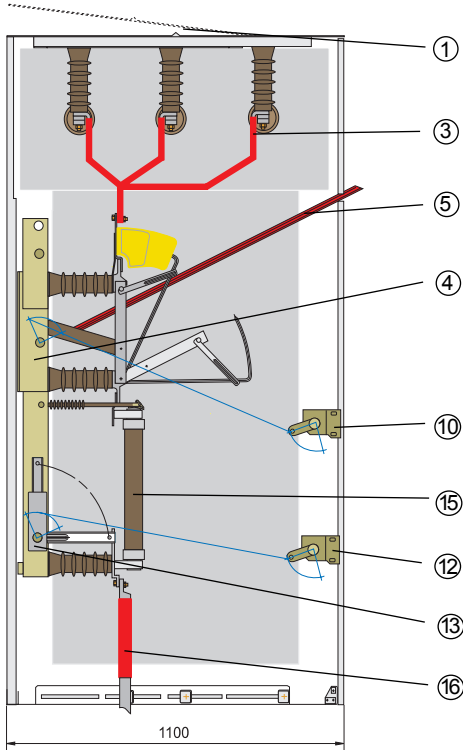


Fig. 11: 24 kV Transformer feeder panel with switch-disconnector H 22 SEA

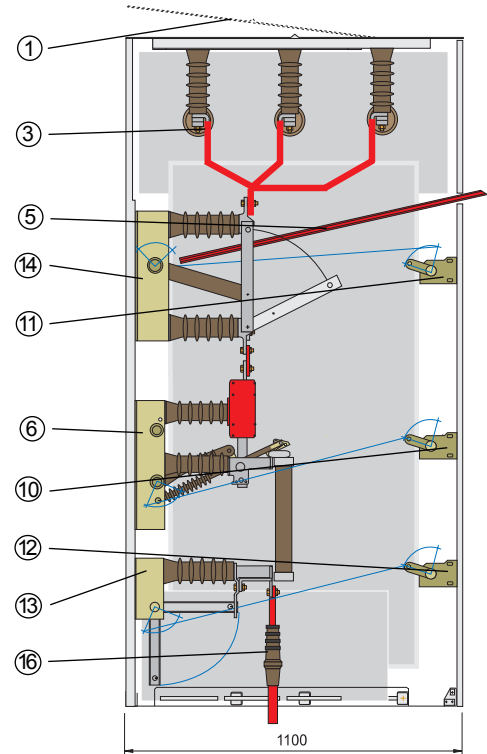


Fig. 12: 24 kV Transformer feeder panel with switch-disconnector H 27 SuT

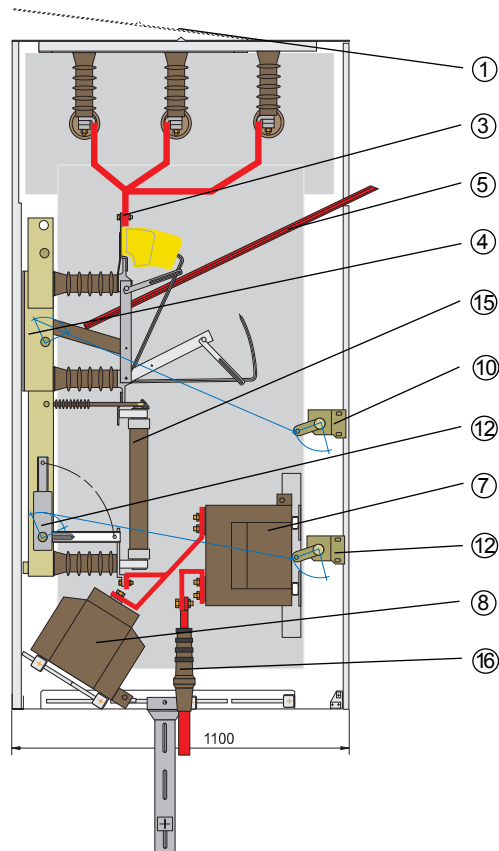


Fig. 13: 24 kV Transformer feeder panel with switch-disconnector H22 SEA as well as current and voltage transformer

## Switch Panels Type WL 24 - 901121

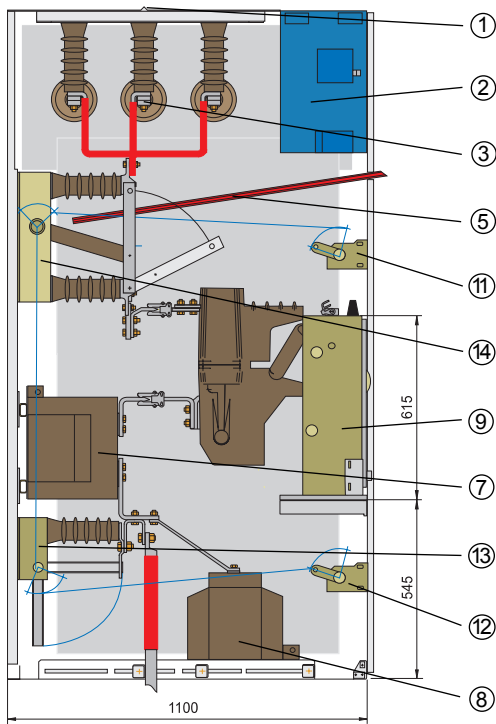


Fig. 14: Circuit-breaker panel in mobile stationary-mounted design

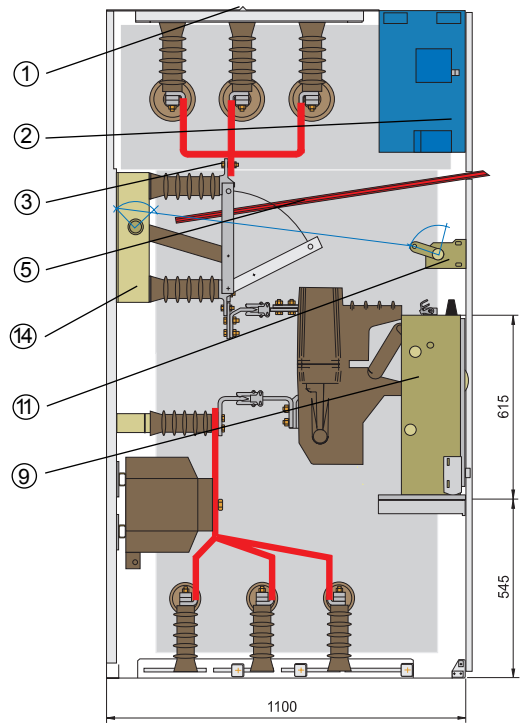


Fig. 15: Circuit-breaker bus sectionalizer panel in mobile stationary-mounted design

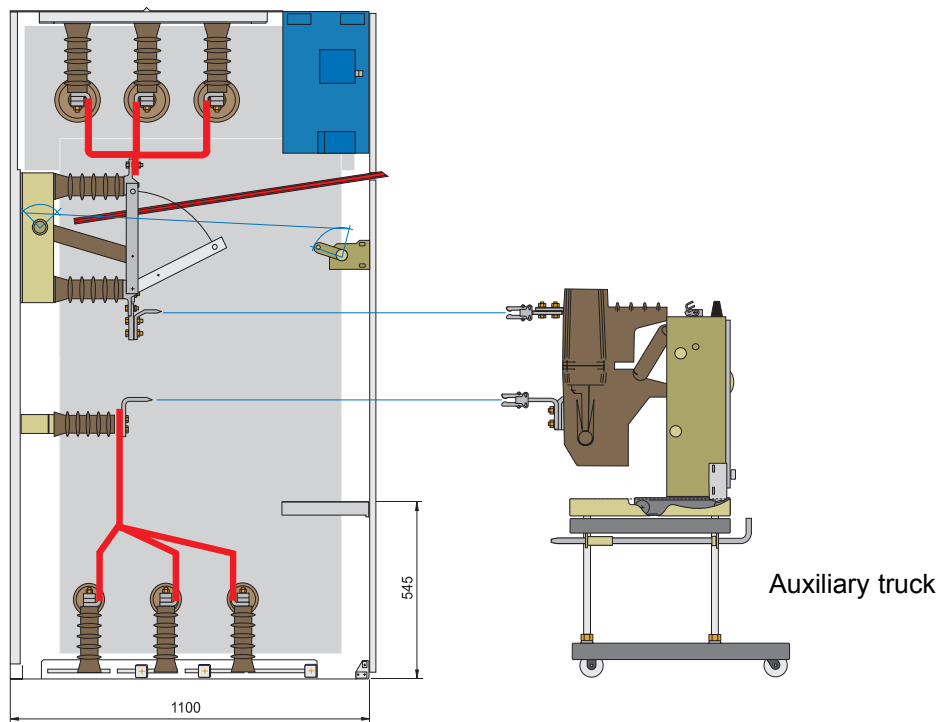


Fig. 16: Circuit-breaker bus sectionalizer panel in mobile stationary-mounted design

## Relay Boxes Type W 24 - 901121

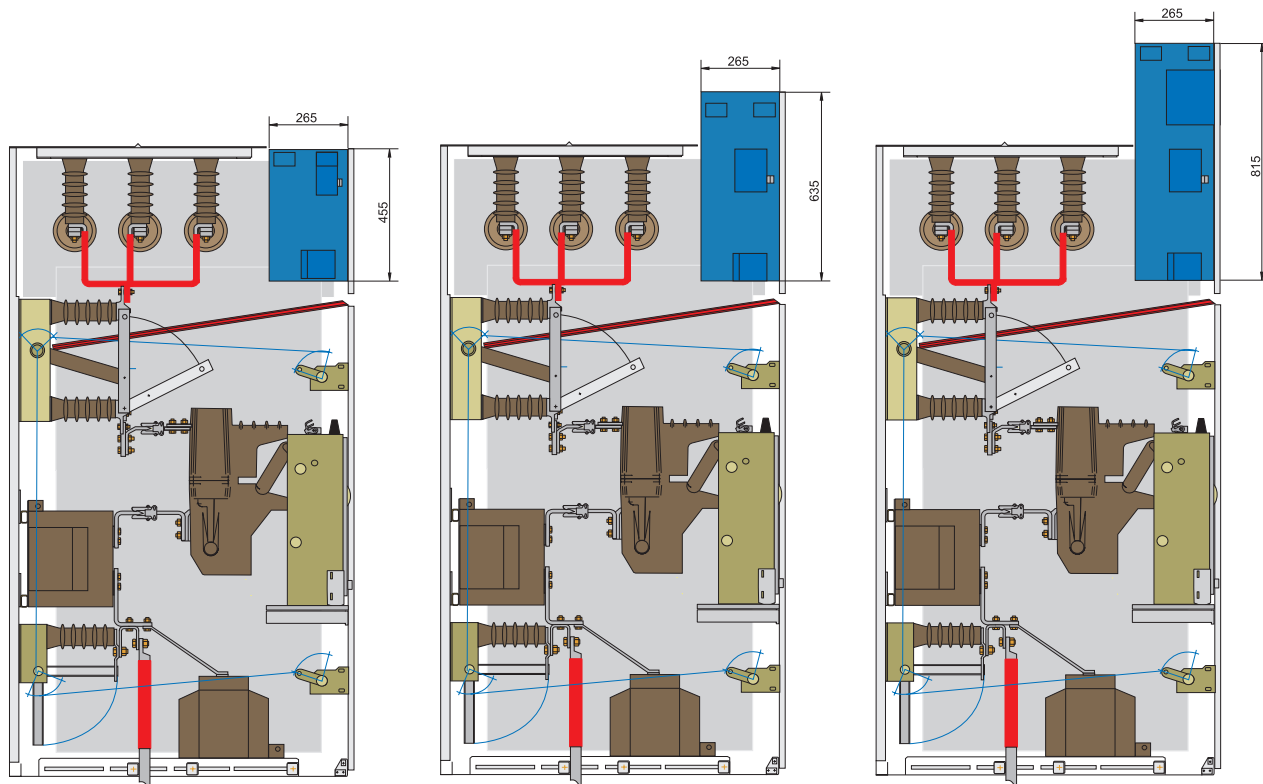


Fig. 17: Circuit-breaker panels with 3 variations of relay boxes

### Withdrawable Plates

The insulated protective plate is to prevent impermissible approach to live parts and unintentional contact with such parts. This plate is to be inserted with clo-

sed panel door when work is to be carried out on the switch panel and the system cannot be switched completely dead.

### Auxiliary Equipment

- Insulating protective plate in compliance with DIN VDE 0681 Part 8
- Panel illumination
- Capacitive voltage testing system in compliance with (E) DIN VDE 0682 Part 415
- Additional locking systems with profile cylinder and lockable operating mechanisms
- Short-circuit indicator
- Floor coverings

### Weights

Type	Designation	Weight approx. kg	Drawing-no.
WK 24-901121-22	Cable panel	245	HA 1 - 071556
WT 24-901121-22	Transformer feeder panel	275	HA 1 - 071556
WÜ 24-901121-22	Bus sectionalizer panel	300	HA 1 - 071556
WM 24-901121	Measuring panel	240	HA 1 - 071556
WÜM 24-901121-27	Bus sectionalizer / Measuring panel	290	HA 1 - 071556
WL 24-901121-V625/V1225	Circuit-breaker panel	350	HA 1 - 071556
WÜL 24-901121-V625/V1225	Circuit-breaker bus sectionalizer panel	330	HA 1 - 071556

**For assembly, commissioning and maintenance always proceed as specified in the appropriate instructions.**

**Our range of products includes:**

**Medium-voltage systems**

- Single-bus and duplicate-bus switchgear
- Non-withdrawable, withdrawable, and truck-type units
- Compact switchgear assemblies
- Custom-made models
- Industrial systems

**Medium-voltage switchgear**

- Indoor switches, disconnectors, and earthing switches (single and triple pole)
- Indoor circuit breakers (low oil content and vacuum)
- Outdoor switches (low oil content and vacuum)
- High-voltage high-breaking-capacity fuses

**Low-voltage systems**

- Open-framework design
- Enclosed break devices (up to 6,000 A)
- Cable and fixed-station distribution cabinets

**Low-voltage switchgear**

- Switch disconnectors
- Switch and fuse blocks
- Low-voltage high-breaking-capacity fuses

**Driving gear**

- Hand-operated and motor-operated mechanisms
- Indoor and outdoor driving gear

**Accessories**

- For medium and low voltages
- For station equipment
- Insulators (0.5 kV - 38.5 kV)
- Plastic and glass-reinforced plastic screening

Dimensions, weights, diagrams and descriptions in the list are non-binding. Subject to change without notice.

**switching • electricity • safely**

**ELEKTROTECHNISCHE WERKE  
FRITZ DRIESCHER & SÖHNE GMBH**

D-85366 MOOSBURG • TEL. +49 87 61 6 81-0 • FAX +49 87 61 68 11 37  
<http://www.driescher.com> email: [Driescher@aol.com](mailto:Driescher@aol.com)

