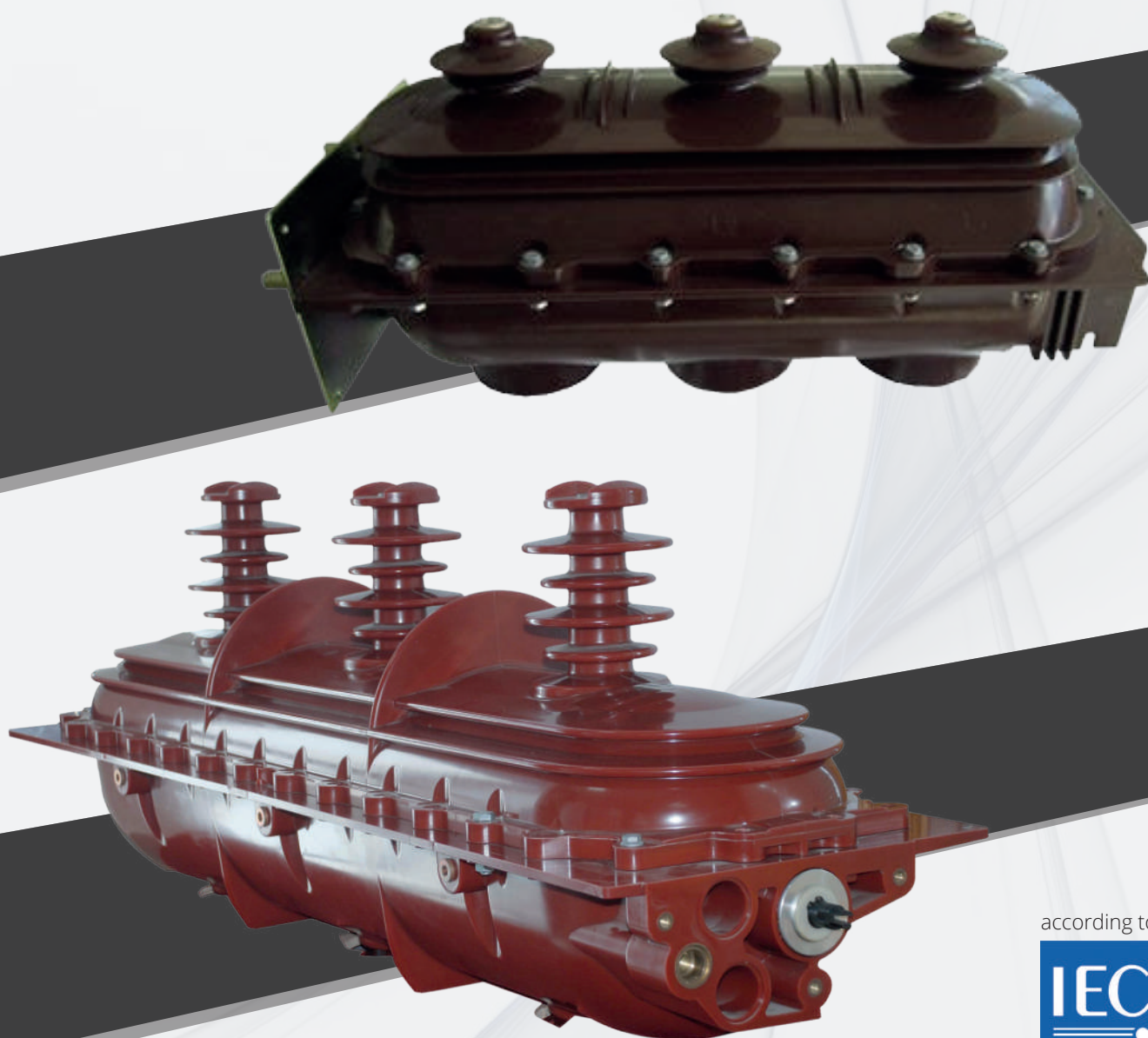


# MS SF6 Load Break Switch

Gas-insulated indoor load break switch  
for secondary distribution

12 kV - 24 kV - 36 kV



according to

**3B Energy** can propose a huge number of Products related to Energy sector. We are active in the whole world of Power Transmission and Distribution. Medium Voltage switchgears, Medium Voltage switches, Low Voltage PC, Low Voltage MCCs with fix and withdrawable units, Transformers, Cabinets; 3B Energy can propose a wide range of Products for fulfilling any request and need.

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**3B Energy** is very active and smart in assisting customers for finding Solutions related to Energy sector. We can support the customer during engineering phase of the plant, during purchasing steps, for the supply and after-sales services. 3B Energy is a real "turnkey" Solution provider; Package Substations, Transformer Substations, Mobile Cabinets; we can propose a complete solution set for letting the customer have one player only for his whole plant.

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**3B Energy** can propose a complete and detailed list of Services which can cover each step of Engineering phase. Our technical staff is highly expert and professional and can support the customer starting from the base design of a single component till a complete apparatus for electrical application. We can design and project every component the customer may need: a single contact or a complete switching device, we can develop and engineer the technology for any product or application of Energy sector

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### GENERAL

The MS is a 12kV, 24 kV and 36 kV medium voltage load break switch and is designed for indoor or outdoor medium voltage switchgear panels.

The MS epoxy resin enclosure can provide good insulation and resistance to moisture and environmental pollution. The insulating housing is composed of upper shell and lower shell. It is tightly closed and filled with SF6 gas as insulation and arc quenching medium.

### Safety

- ✔ -The epoxy resin enclosure is anti-corrosion, low leakage rate
- ✔ -With viewing window
- ✔ -With pressure release channel
- ✔ -Optional gas pressure meter

### Economy

- ✔ -High cost performance
- ✔ -Low maintenance cost, 5000 times mechanical life
- ✔ -Long service life, working for at least 30 years

### Compactness and convenience

- ✔ -Simplified design
- ✔ -Small volume, reduced dimensions and weights
- ✔ -Simple to incorporate
- ✔ -Convenient installation and operation

### Reliability

- ✔ -Mature technology
- ✔ -Wide application
- ✔ -A three position switch to prevent incorrect operating

### The SF6 gas

A non-inflammable gas. SF6 is an inert gas and does not sustain combustion. The seal and the for-life lubrication of the rotary seals is provided by an oil film. In the MV circuit breaker field, for example, on more than 20000 SF6 switchgears units installed by the French electrical utility (EDF) the annual fault rate related to seal problems is less than 0.05%.

### A very stable gas:

The high stability of SF6 gas is due to the 6 covalent bonds of its molecule.

### An insulating gas:

The dielectric strength of SF6 gas is superior to that of most known media, reaching 5 times that of air at a pressure of a few tenths of Mpa.

### A breaking gas:

SF6 is "the" breaking gas offering a number of advantages:

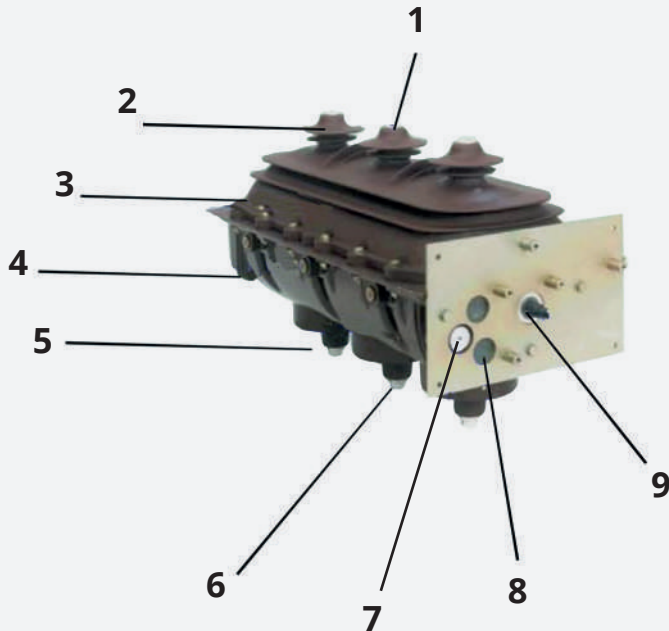
- high capacity for carrying the heat produced by the arc. The arc is rapidly cooled by convection during arcing
- High radial thermal conduction and high electron capturing capacity; when the current passes through zero: 5 the SF6 permits rapid heat exchange from the center of the arc towards the exterior, 5 the fluorine atoms, which are highly electro-negative, act veritable "traps" for electrons; since it is the electrons which are mainly responsible for electric conduction in the gas, the gap between the contacts at current zero.

### Very low maintenance

The electrical contacts, housed in a sealed for-life enclosure, require no special maintenance. The operating mechanism requires only minimum maintenance at intervals depending on the conditions of use. Under normal operating conditions, no preventive maintenance is required before 10.000 operations or 10 years of service.



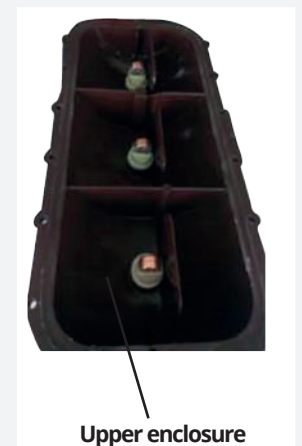
### Description switch unit



1. Upper fixed contact
2. Umbrella skirt
3. Upper enclosure
4. Earthing contact
5. Lower enclosure
6. Lower Fixed contact
7. Gas pressure meter valve
8. Inspection window
9. Operation shaft

### Epoxy resin enclosure

MS epoxy resin enclosure is a sealed system. The upper and lower housing are closed and screwed together. Each screw is turned with a balanced force to ensure a good sealing system. This feature establishes a more reliable dynamic thermal stability



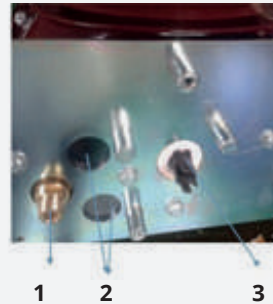
The pressure relief valve is located at the rear of the gas tank. It relieves interior pressure when SF6 gas is over-pressure resulted from an arc fault.



### MS

Inspection windows, gas pressure valve, movable fit and mental plate are sealed to enclosure by O ring, lubricating oil and fastening screws to avoid looseness and leak. All these complete a integrated sealing system.

1. Gas pressure meter valve
2. Inspection windows
3. Movable fit

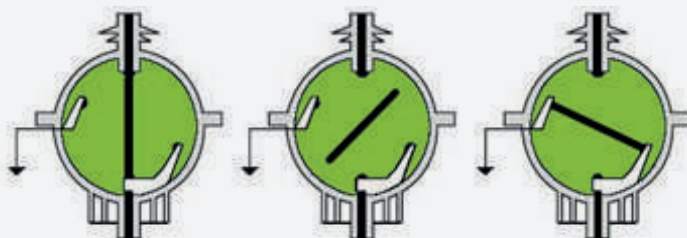
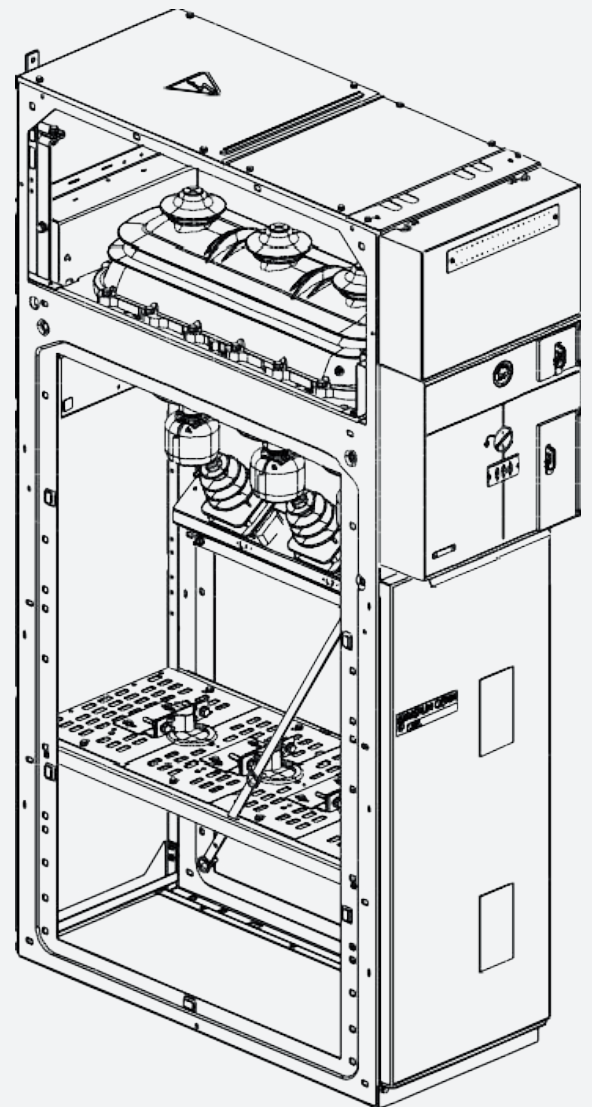


### Interlocking System

MS switch, together with operating mechanism and panel system. The switch has three positions:

- close
- open
- earth

Interlocking function exists between these three positions to prevent fault operation. Only when the switch is earthed, the panel door can be opened. And when the panel door is open, the switch is earthed only and no operation is permitted.



Closed

Open

Earthed

### Accessories of MS

Item	Unit	Rating		
Rated voltage	KV	12	24	36
Rated frequency	Hz	50/60		
Rated current	A	630		
Rated load breaking current	A	630		
Rated cable charging breaking current	A	10		
Rated short circuit making current	KA	50		
Peak withstand current	KA	50		
Rated short circuit withstand current	KA	25		
Rated short circuit duration	S	1		
Power frequency withstand voltage,phase to phase/phase to ground (effective value)	KV	28	50	70
Power frequency withstand voltage,interrupting gap (effective value)	KV	32	60	82
Lightning impulse withstand voltage,phase to phase/phase to ground	KV	75	125	170
Lightning impulse withstand voltage,interrupting gap	KV	85	145	195
Mechanical life	Times	≥5000	≥2000	
Protection degree		IP3X		

### Service conditions:

Altitude	≤2000 m
Surrounding temperature	-10 ~+45 Celsius
Relative humidity	Average daily should not be more than 95% Average monthly should not be more than 90%
No obvious dust, smoke, corrosive or flammable gas, vapour or salt pollution	
No frequent strenuous vibration	
*** Pls contact us if you have a different request	



## General description of mechanism

There are two types of operating mechanisms:  
the single spring device and the double spring device.  
Motor operation can be added to both types of operating mechanisms.

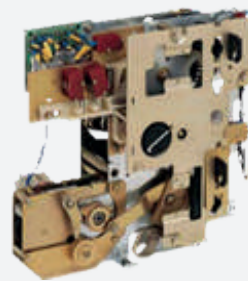
Single spring device



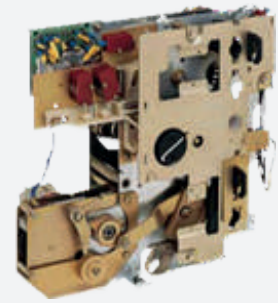
Double spring device



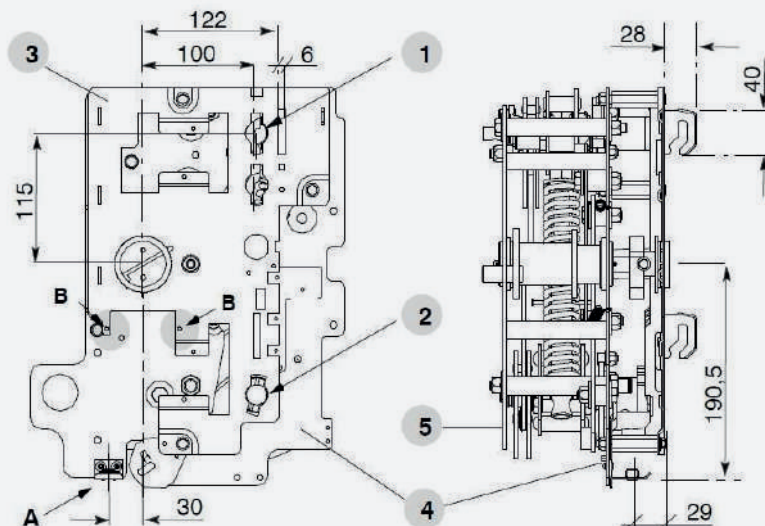
Single spring device with motor operation



Double spring device with motor operation



## Description CIT mechanism



CIT

A Switch cover fastening

1. Earthing lever inlet

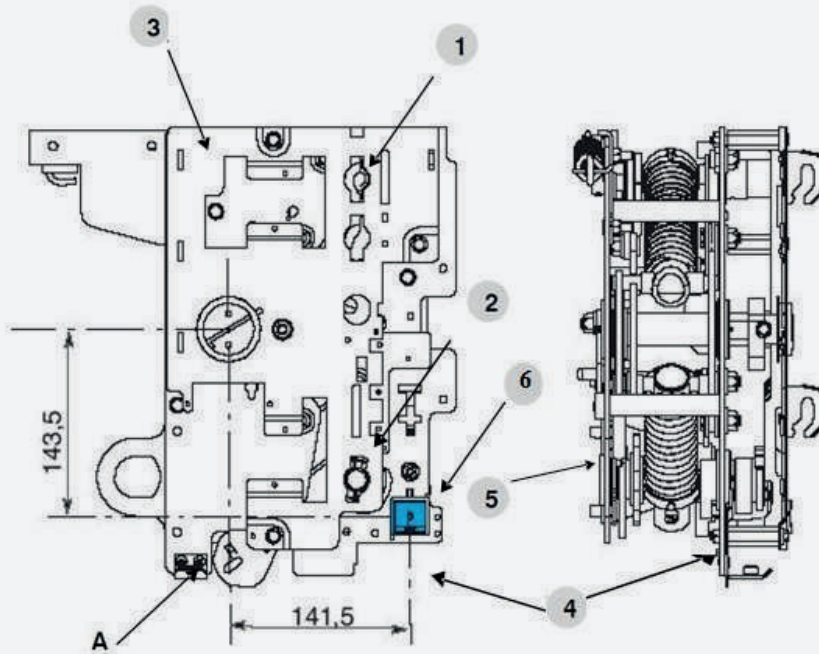
2. Switch lever

3. Multifunction plate

4. Front plate

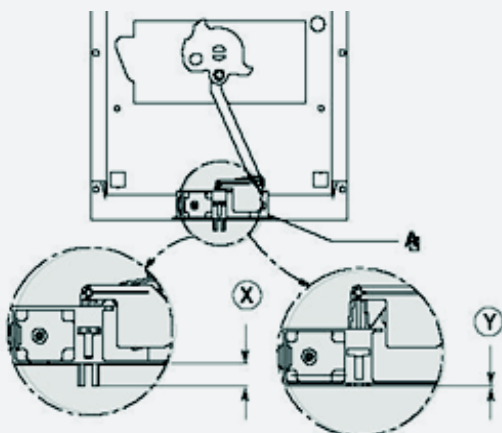
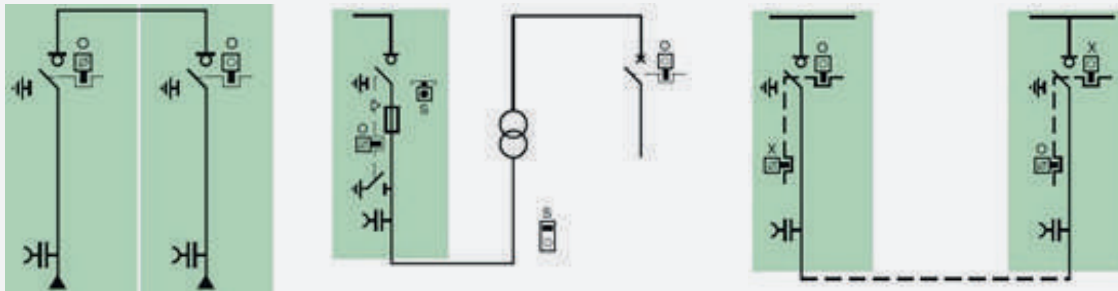
5. Rear plate

## Description C11 Mechanism



- C11
- A Switch cover fastening
  - 1. Earthing lever inlet
  - 2. Switch lever inlet
  - 3. Multifunction plate
  - 4. Front plate
  - 5. Rear plate
  - 6. Opening push-button

## Interlocking in the Mechanism

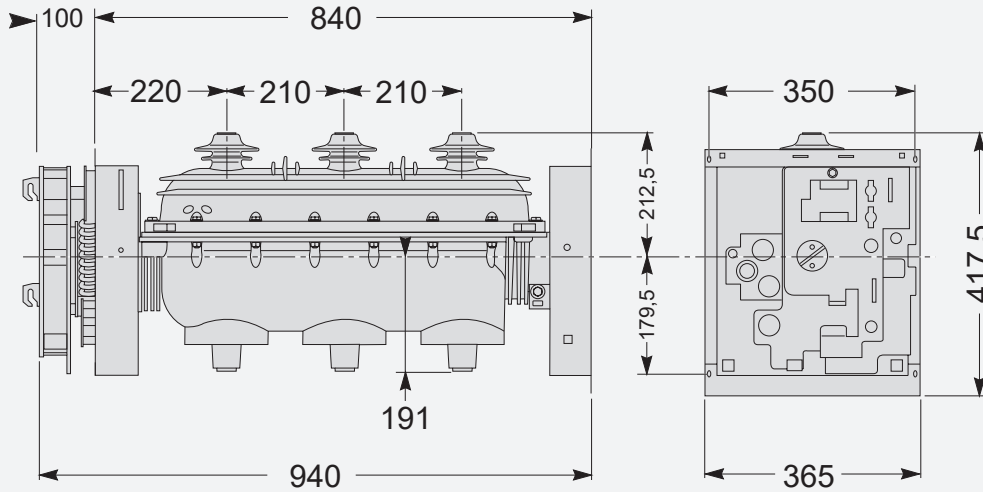


- When the switch disconnecter is closed the earthing circuit cannot be activated.
- When the earthing circuit is closed, the switch disconnecter in open position for the main circuit cannot be operated.
- Padlock provision to prevent tampering with the mechanism.
- The lower cover (door) can be opened only whilst the EC is closed.

### MS 12 MS 24

Side view

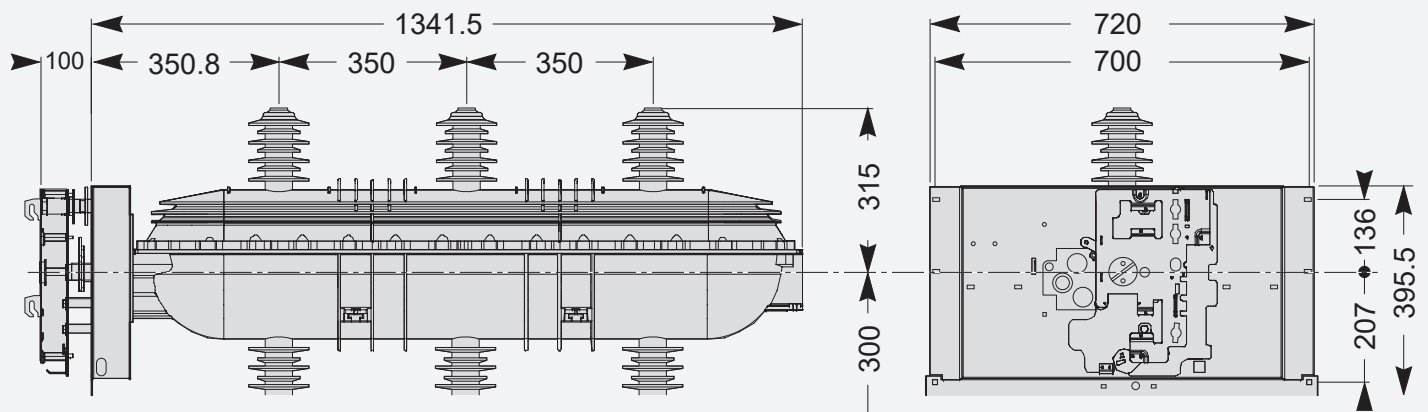
Front view



### MS 36

Side view

Front view



### Accessories of MS



Operating handle



Gas pressure gauge



Busbar field distributor



Busbar field distributor new type



lower Busbar field distributor new type



Voltage presence indicator



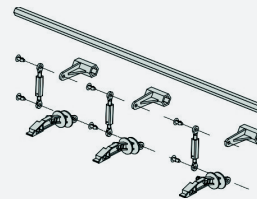
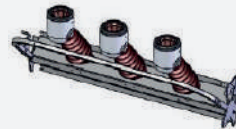
Coil



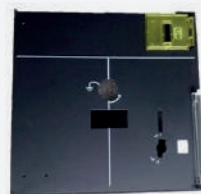
Capacitive divider



Earthing switch



Fuse trip system for fuse-switch



Mechanism cover



Switch body fixed plate









## Note

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