

VR2D 72.5-550 kV Pantograph disconnecter

HV Switching



We know how

Our range of pantograph disconnectors is designed to ensure the best performances and reliability, which are the result of our 60-year old experience. Over 100,000 disconnectors installed in more than 100 countries worldwide are the guarantee of best-buys.



The VR2D pantograph disconnector

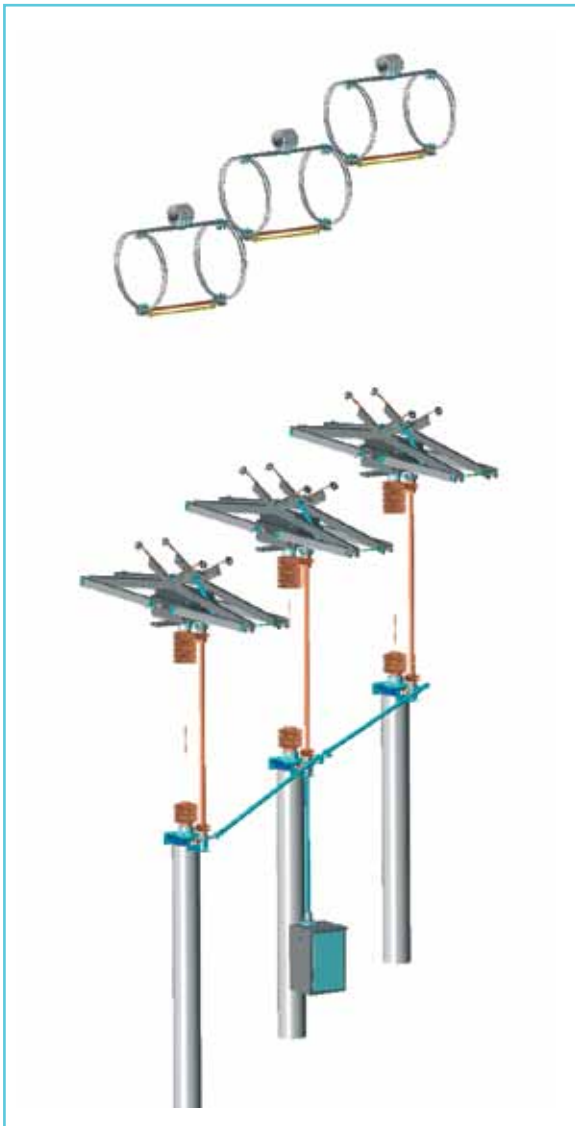
The VR2D disconnector is composed of three poles operated simultaneously either by a single operating mechanism and mechanical linkages between the poles, or by one single operating mechanism for each pole.

The pantograph is generally used as a “busbar disconnector”, since it allows very reduced phase-to-phase clearances for feeder/transformer bays and stands just beneath the main busbar: no other AIS solution is more compact and efficient.

The short time current withstand reaches exceptional values, due to the geometry of the switch : in case of short-circuit, the electrodynamic forces act on the parallel profiles to increase the contact pressure.

The insulating columns used for the VR2D comply with the IEC or the ANSI Standards. Special heights and creepage distances are also available upon request.

Like all our models, the VR2D complies with the latest international standards (IEC, ANSI), but can also be customised according to customers' particular specifications.



Earthing switch

Integrated earthing blades are available for mounting on each pole, with the same short-time current withstand capability.

The earthing switch is actuated by the same types of operating mechanisms as the disconnector, either manually or electrically, either single- or 3-pole. It can be electrically and/or mechanically interlocked with the main switch.

Construction features

The arms of each pole are made of drawn aluminium tubes, with the silver-plated jaws bolted at their ends.

According to the rated voltage, the current path at hinged points is ensured by copper braids or by selfcleaning, maintenance-free rotary contacts, with silverplated "fingers", individually loaded by stainless steel springs.

According to the rated voltage, the current path at hinged points is ensured by self-aligned and maintenance-free rotary contacts, with silver-plated slides, individually loaded by stainless steel springs.

The arms are ideally balanced to ensure a smooth, low energy demanding motion. All the hardware of the live part is made of stainless steel.

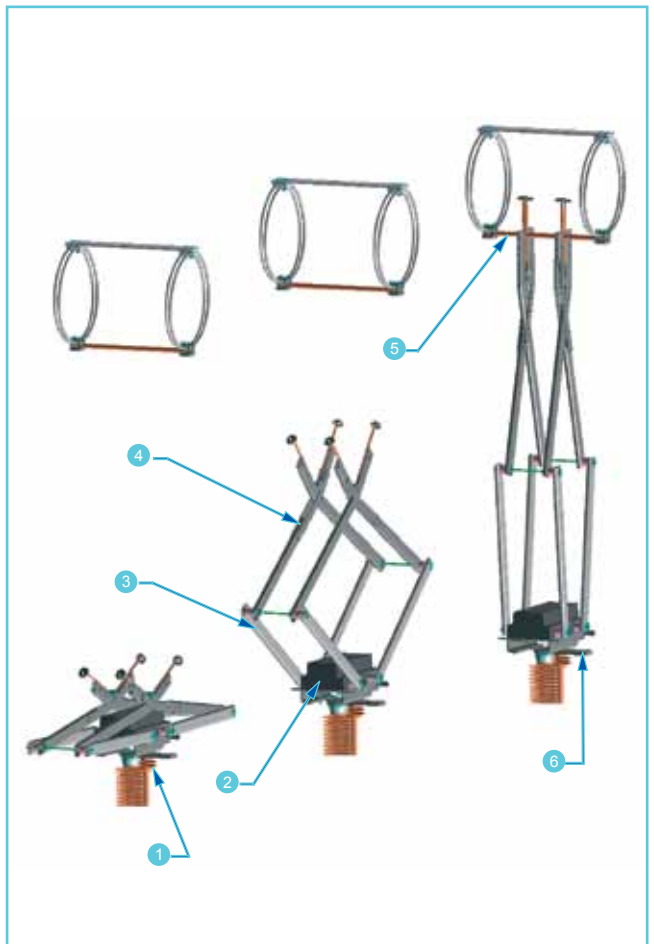
The fixed contact consists of a silver-plated copper tube, hung to the upper busbar through flexible aluminium loops ensuring the best alignment, even in case of unexpected motion of the upper busbar. This also allows for an easy adjustment of the position of the fixed contact, whatever the height of the upper busbar. The connector to the upper busbar can be supplied upon request.

The HV terminals are made of robust aluminium-alloy plates. Their location allows an easy bypass of the disconnector, if needed. The connector to the upper busbar can be supplied upon request.

Where necessary, suitable shields protect the main circuit from the corona effect.

The base plate is made of hot-dip galvanized steel. The bearings are sealed and guaranteed to ensure maintenance-free operation for the whole life of the equipment.

The whole design and manufacturing process is ruled by ISO 9001 certified procedures, to guarantee a perfect reproducibility of performances from type-testing to the series production.



Operating principle

The base plate supports the post insulator on which the upper frame is bolted. The rotating insulating rod (driving insulator), which operates the arms is directly connected to the operating mechanism.

From the open position, the insulating rod (1) rotates to move the arms through the geared system inside the upper frame (2). The lower arms (3) raise together and close the jaws of the upper arms (4) on the fixed contact bar (5). After having reached the final closed position, the moving part is locked by a dead-point passing, preventing any accidental opening.

The flat HV terminals (5) are as per the next page figure. Custom terminals are also available upon request.

Ratings and dimensions

The values in the table refer to IEC standards, unless explicit reference to ANSI is made; for missing ANSI ratings, refer to C37.32

| Rated voltage | U_r (kV) | 72.5 | 123 | 145 | 170 | 245 | 300 | 362 | 420 | 550 | |
|---|------------------------------|-------------------------|-----|-----|-----|-------------------------|------|----------------|----------------|----------------|----------------|
| Rated power-frequency withstand voltage | TE U_d (kV) | 140 | 230 | 275 | 325 | 395 | 460 | 380 | 450 | 520 | 620 |
| | AID U_d (kV) | 160 | 265 | 315 | 375 | 460 | 530 | 435 | 520 | 610 | 800 |
| Rated lightning impulse withstand voltage | TE U_p (kV _p) | 325 (IEC) 350 (ANSI) | 550 | 650 | 750 | 950 (IEC) 900 (ANSI) | 1050 | 1050 | 1175 | 1425 | 1550 |
| | AID U_p (kV _p) | 375 | 630 | 750 | 860 | 1050 | 1200 | 1050 (+170) | 1175 (+205) | 1425 (+240) | 1550 (+315) |
| Rated switching impulse withstand voltage | TE U_s (kV _p) | - | - | - | - | - | - | 850 | 950 | 1050 | 1175 |
| | AID U_s (kV _p) | - | - | - | - | - | - | 700 (+245) | 800 (+295) | 900 (+345) | 900 (+450) |

TE : To Earth

AID : Across the Isolating Distance

| | | | | | | | | | | | |
|------------------------------------|--------------------------|--|--|--|--|--|--|--|--|--|--|
| Rated continuous current | I_r (A) | up to 5000 IEC / ANSI (depending on rated voltage) | | | | | | | | | |
| Rated short-time withstand current | I_k (kA) | up to 63 / 3s (depending on rated current) | | | | | | | | | |
| Rated peak withstand current | I_p (kA _p) | up to 160 (depending on rated current) | | | | | | | | | |

| Dimensions (mm) | A | +15/-10 | 1175 | 2100 | 2350 | 2670 | 3435 | 3435 | 3435 | 3688 | 4550 | 4975 |
|-----------------|---|----------|----------|-----------|------|------|------|------|-------|------|-----------|------------|
| B | | | 1090 | 1390 | 1670 | 1870 | 2270 | 2470 | 2820 | 2820 | 3570 | 3870 |
| C | | | 325 ± 5 | 800 ± 200 | | | | | | | 900 ± 100 | 1000 ± 100 |
| D | | | 770 | 1220 | 1500 | 1700 | 2100 | 2300 | 2650 | 2650 | 3350 | 3650 |
| E | | | 440 | 940 | 1090 | 1240 | 1635 | 1635 | 1635 | 1910 | 1900 | 2300 |
| F | | | 640 | 1100 | | | | | | | 1100 | 1200 |
| G | | ≤ 2500 A | 0 | 205 | | | | | | | 0 | 0 |
| | | > 2500 A | - | 0 | | | | | | | 0 | 0 |
| H | | | 500 | | | | | | 630 | 720 | 980 | 980 |
| J | | | 4(20x38) | | | | | | 4 Ø22 | | 8 Ø18 | 8 Ø18 |
| K | | | - | | | | | | - | | Ø300 | Ø300 |
| L | | | 550 | | | | | | 320 | | - | - |
| M | | | 180 | | | | | | 220 | | - | - |

Reliability and maintenance

Due to lifetime greased or self-lubricated hinges and to self-wiping contacts, the maintenance of VR2D metallic parts is ensured by their own motion.

The use of corrosion-free or treated materials for all components ensures an exceptional reliability over many years of service.

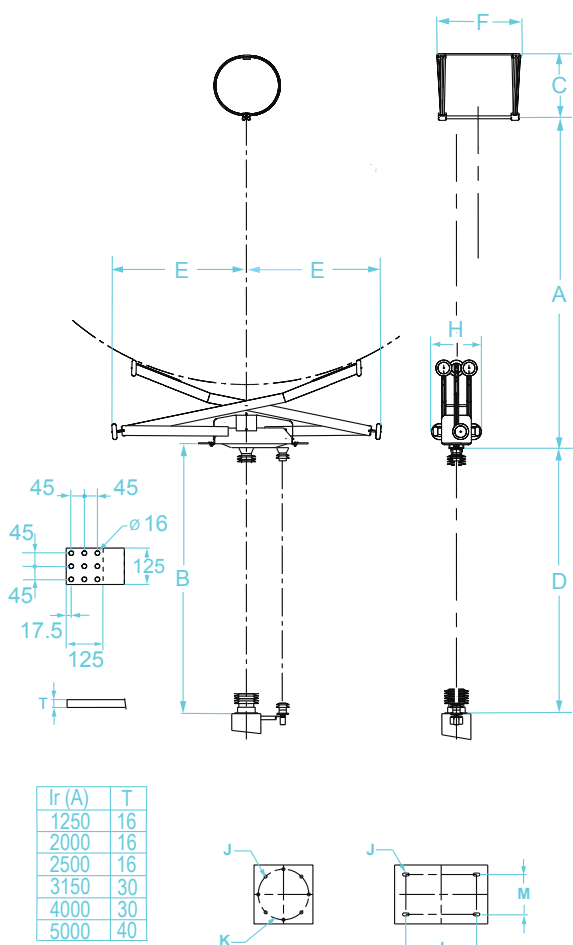
The mechanical endurance performance exceeds the IEC standard requirements.

Optional devices

Upon request, the disconnector can be equipped with a bus-transfer current switching device compliant with IEC 62271-102 (Annex B).

The integrated earthing switch can also be fitted with optional induced current switching devices compliant with IEC 62271-102 (Annex C).

For operation under severe ice conditions (up to 20 mm), ice shields are available for protection of the equipment (where needed).



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