



VMX

Indoor Vacuum Circuit Breaker

The vertically isolated vacuum circuit breakers was introduced in 1985, in the well-established range of distribution switchgear of AREVA T&D. This principle combined the advantages of British and International operating practices with modern vacuum technology

The type VMX design utilises time tested mechanism and AREVA make contemporary technology interrupters. VMX panels have logged more operation hours in the field than any other design in the country, having a presence of three decades. The moving portion comprises a truck-mounted circuit breaker with operating mechanism and incorporates vacuum interrupters manufactured in-house by AREVA T&D.

MEETING EVERY SWITCHING NEEDS

It is suited for all industrial application specifically for public distribution. The VMX range of switchgear is very flexible and available in multiple configurations;

- > Standard AIS cubicle in single busbar or double busbar configuration for indoor applications
- > VMX truck housed in Kiosk with bushing or cable entry/exit for outdoor applications
- > VMX truck in skid mounted configuration for mining applications
- > VMX switchboard housed in an outdoor shell for outdoor board applications
- > Special low width cubicle having 540mm width – lowest in the country where space is constraint.

VMX range is the simple, robust & time tested equipment which is tested for internal arc. With simple operating mechanism and linkages VMX range is the most reliable switchgear. It uses breaker transfer principle for earthing which makes it safe. The trefoil arrangement allows lowest possible width (540mm). The in-house vacuum interrupter guarantees high life. It is a Metal Clad switchgear, fully insulated, dead front type with front door.



VMX has been designed to meet the requirement of IS-13118, IEC-56, IEC298 and other equivalent International Standards

Customer Benefits

- Simple, robust, time tested
- Tested for internal arc
- Reliable - simple operating mechanism and linkages
- Safety – uses breaker transfer principle for earthing
- In-house vacuum interrupter



Simple Design

Basic Construction

GENERAL DESCRIPTION

Circuit breaker

The vacuum circuit breaker conforming to IS-13118 & IEC-56 is contained in an epoxy resin construction with one interrupter per phase. The trefoil configuration is operated by an external operating mechanism via a robust linkage. The linkage is connected to a central lifting rod, which raises all three phases at once providing simultaneous closing. The terminal conductors carry replaceable self-aligning isolating sockets which, when in the raised position, make contact with plugs contained in fixed spout insulators.

Single busbar unit

The units are of fabricated steel construction with self-contained air insulated compartments for the busbar, current transformers and cables. The fixed spout insulator orifices are effectively covered by safety shutters, which are automatically opened and closed as the circuit breaker is raised to, or lowered from, the service position. It forms perfect metal clad switchgear.

Busbar and circuit earthing are achieved using well proven and safest breaker transfer principle, in the standard variation.

Vacuum Interrupter

AREVA manufactures the widest range of vacuum interrupters in the country, in their state of art plant in Kolkata. The interrupters, which is the heart of the circuit breaker is manufactured exactly as per design, processes and quality standard of our global principal. These interrupters have been used in variety of applications including circuit breakers, contactors, capacitor switching, out of phase switching, railway loco head applications etc. Interrupters manufactured in this factory are also exported to several countries including Europe.

Operating mechanisms

The type VMX design is available with hand charged or motor wound spring operated mechanism. For special applications like furnace duty we can provide magnetic actuators on request.



Wiring Panel & Instrument Chamber

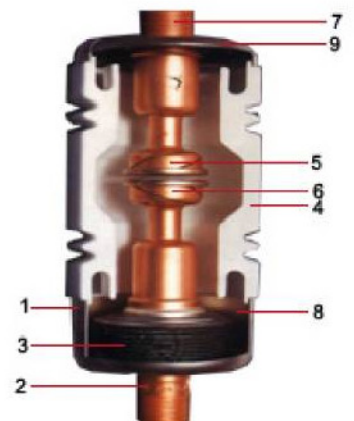
The units are supplied with a wiring panel which contains the secondary wiring terminations. For ease of access the panel is fitted with a hinged door. Ample accomodation is provided for instruments and reals above the wiring compartment.

Safety interlocks

Each switchgear unit is provided with a system of mechanical interlocks whcih automatically impose a fixed sequence of events designed to protect the equipment and the operator from the dangers of mal - operation

Brieflt the interlocks are provided to prevent:-
the circuit breaker from being closed unless it is in the fully raised or fully lowered position.
the circuit breaker being raised in the unit in any location other than the one indicated on the location selector mechanism
the circuit breaker from being raised or lowered unless the contact are open
the circuit breaker from being withdrawn or pushed into the unit unless it is in the fully lowered position
Interchanging of 630A & 1250A units

1. Bellow
2. Moving-Contact Stem
3. Moving-Contact Guide
4. Ceramic Body
5. Fixed Contact
6. Moving Contact
7. Fixed Contact-Stem
8. Moving End Cap
9. Fixed End Cap





MAINTENANCE

The maintenance policy of the equipment is based on IS-10118, which gives a general background to his subject. The vacuum interrupters do not need any maintenance. However the interrupters have to be replaced at the end of contact wear. The normal life of the interrupters is approximately 30,000 mechanical operations or 10,000 electrical operations at rated current. An operation counter is provided on the mechanism and this reading along with a contact gauge (supplied with each breaker) helps determine the remaining life of the interrupter. Normally, the life of the interrupter is more than the basic life of the overall circuit breaker.



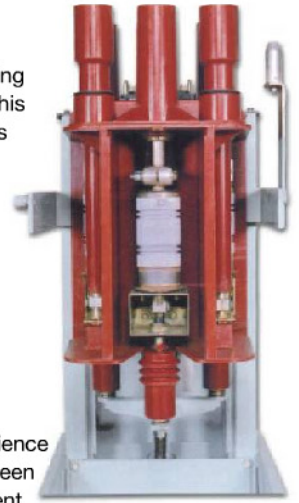
EXTENSIBILITY

Units can readily be extended on either side with a minimum of outage time, during the erection of extension units.

SPECIAL APPLICATION

The VMX breaker is suitable for standard operating duty as specified in relevant IS/IEC standards. This breaker is also suitable for special duties such as

- > auto reclosing duty
- > capacitance switching duty
- > low inductive current switching duty
- > furnace switching duty



ADVANTAGE

The knowledge gained over many years of experience in the field vacuum switchgear technology has been incorporated in the development of this equipment giving the following technical and economical advantages:-

- > Protection of the operator and plant
- > High reliability gives long life expectancy with long maintenance free periods
- > Capable of large number of operations including the switchgear of fault current

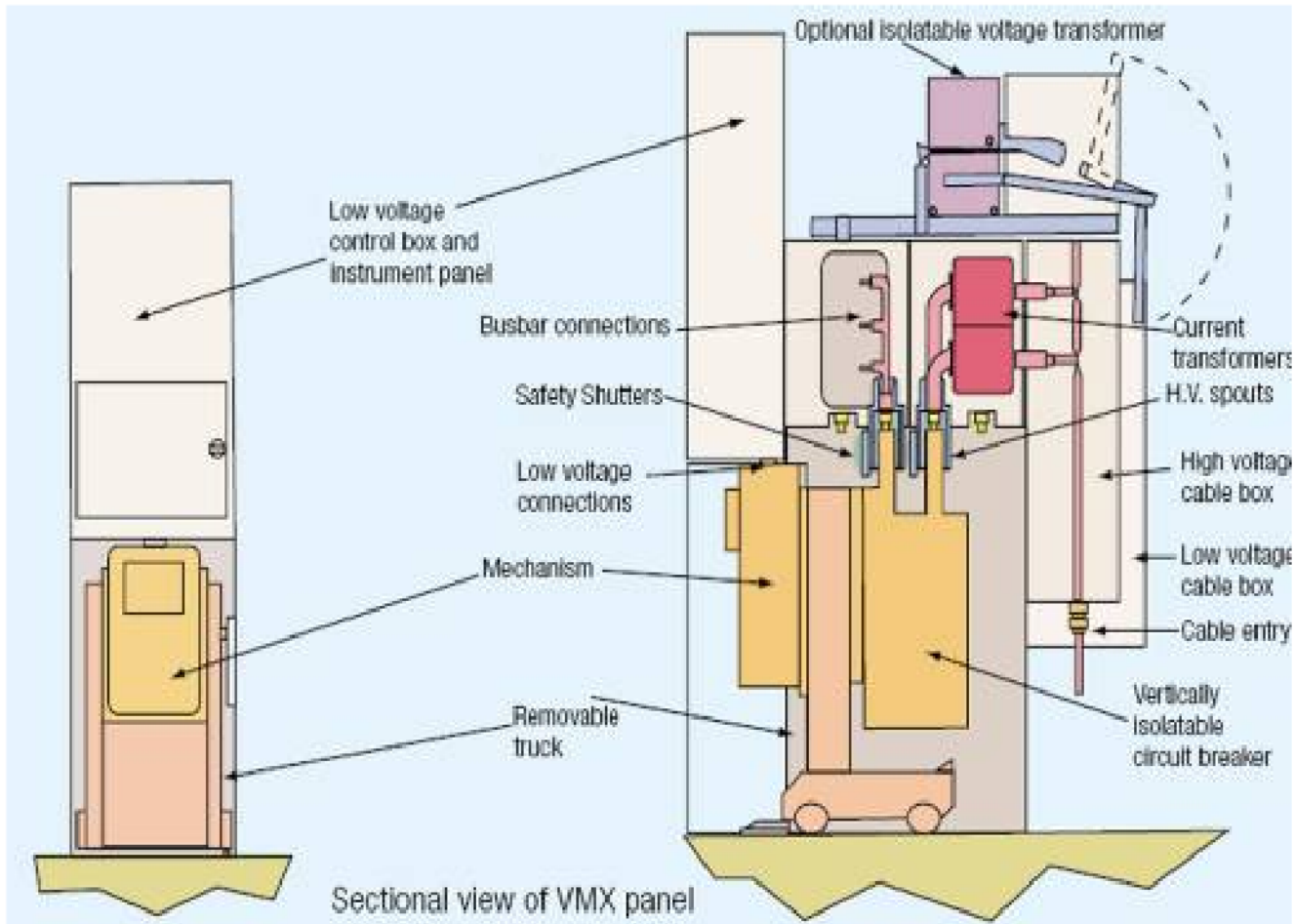
Approximate Weight (kg)

Type	Current Rating	Moving portion	Fixed portion
Standard VMX	630 A	260	585
Standard VMX	1250 A	310	711

Dimension (mm)

Product	Width	Depth Min	Height Min
Standard VMX*	606	1867	2000
Low width VMX#	540	1360	2000

Technical Specification	
Rated voltage	12kV
Rated continuous current	upto 1250 A
Rated frequency	50 Hz
Rated interrupting current	upto 26.3 kA (rms)
Rated making current	65.5 kA (p)
Rated short (3 sec.) current	26.3 kA (rms)
Operating duty	O-0.3 sec-CO-3 min – CO (Rapid auto reclosing duty on request)
Applicable standard	IEC 60056 IEC 56 (1987)/IS 13118 (1991)
Power frequency withstand voltage	28/35 kV (rms)
Impulse withstand voltage	75 k(p)
Busbar rating	upto 2000 A



Sectional view of VMX Panel

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