

# MV Indoor Air Insulated Switchgear, Model Unisafe MV Vacuum Circuit Breaker, Model VD4

Robust design and proven performance



**ABB**

# ABB – a global technology leader

ABB is a global leader in Power and Automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The ABB Group of companies operate in around 100 countries.

In India, ABB serves customers with the complete range of power and automation technologies. The company has a vast installed base, extensive manufacturing facilities and a countrywide marketing and service presence.

The Power Technologies division offers electric, gas and water utilities as well as industrial and commercial customers a wide range of products, systems and services for power generation, transmission and distribution. ABB's turnkey solution capabilities in the sector range from Electrical Balance of Plant (EBOP) for power plants, bulk power transmission, substations and complete electrification to utility automation and distribution systems.

The product offering covers a wide spectrum of technologies across the entire voltage range including indoor and outdoor circuit breakers, air and gas insulated switchgear, disconnectors, capacitor banks, reactive power compensators, power transformers, distribution transformers, instrument transformers, Compact Substations (CSS) and Ring Main Units (RMU).

## Advantage ABB

- ✓ 120 years of technology and innovation
- ✓ Unparalleled domain competence
- ✓ Vast global experience
- ✓ Total solution provider
- ✓ Large installed base
- ✓ Environment-friendly technologies



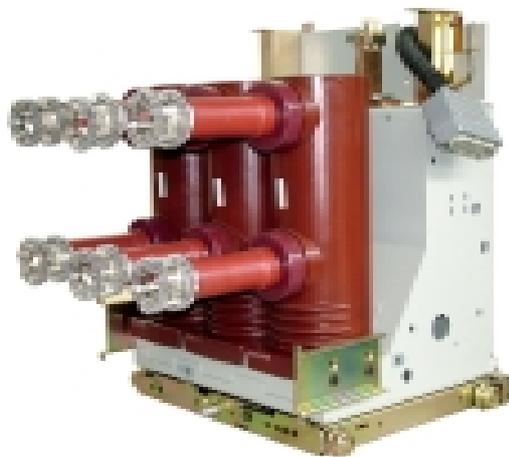
# Air insulated indoor switchgear cubicle type Unisafe with vacuum circuit breaker type VD4

## Salient Features – Unisafe Cubicle

- The Unisafe cubicle is designed and type tested to meet requirements of IEC62271-200 & 60694 / IS:3427
- Metal clad compartmentalised construction - all compartments are segregated from each other with metal sheets
- IP4X degree of protection externally & IP5X available as an option
- Internal arc tested
- Independent exhaust vents for all HT compartments
- Internal earthing switch (optional)
- Small width panel - 600mm up to 1250A busbar rating
- The normal service performances are guaranteed under the following conditions
  - Min. Ambient Temp.: -5°C
  - Max. Ambient Temp.: +40°C
  - Max. Relative Humidity: 95%
- Insulation level of 95kVp available on request
- Option of REF 542+, composite unit for protection, measurement, control, signalling, interlock, automation and communication

## Salient features – VD4 circuit breaker

- The VD4 circuit breaker is designed and type tested to meet requirements of IEC62271-100 / IS:13118
- Vacuum used as insulation and arc interruption medium
- Operationally safe and reliable in a wide range of ambient temperatures (-5° to 40°C)
- Capable of interrupting small magnetising and capacitive currents
- Vacuum interrupters assembled in epoxy enclosure with insulated contact arms
- Features of operating mechanism:
  - O-C-O operation without recharging
  - Closing spring charged by motor in less than 15 seconds
  - Electrical anti-pumping
  - Provision for manual charging
  - Synchronisation and fast auto re-closure duty
- Standard accessories:
  - Mechanical ON/OFF push button
  - Spring charge/discharge indication



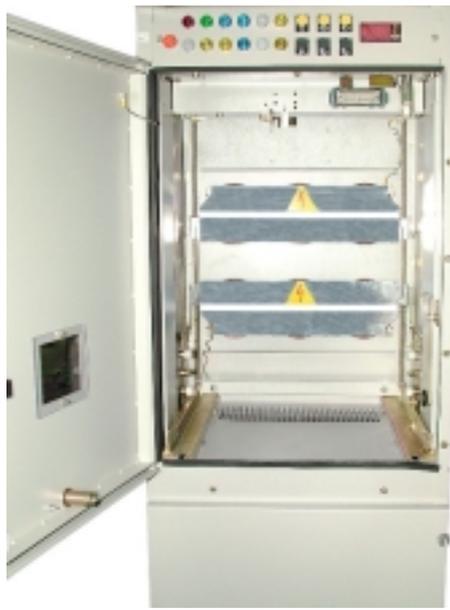
# Air insulated indoor switchgear cubicle type Unisafe with vacuum circuit breaker type VD4

## Metering compartment

- Metering compartment with numerical / static / electromagnetic relays, indicating meters, lamps and control switches
- Protection and measuring apparatus customised as per requirement

## Breaker compartment

- Cassette mounted breaker placed on elevated level with test position of breaker behind closed door
- Interlocks :
  - Racking in/out of breaker from test to service position and vice-versa with cubicle door closed only
  - To prevent racking in/out of breaker, when breaker is in closed position
  - To prevent door from opening when breaker is in service position
- Multiple guides for safe and enduring alignment of fixed & moving power contacts
- Live parts covered by automatic shutters when breaker is racked out
- Provision for padlocking of CB compartment door



## Potential Transformer (PT) compartment

- Withdrawable line PT provided in the breaker panel
- Removable fuses mounted on the PT
- Safety shutters between PT and cable compartment close automatically on PT withdrawal





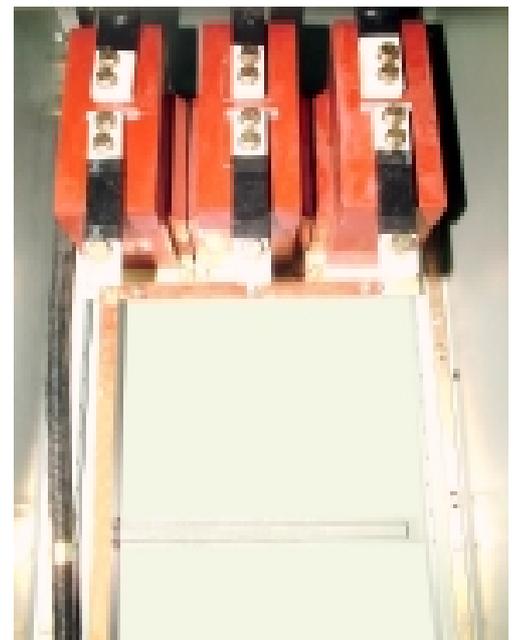
### Busbar compartment

- Spacious busbar compartment for adequate air clearances
- Option for busbar insulation available
- Option for shroud on joints available



### Cable and Current Transformer (CT) compartment

- Spacious compartment to accommodate one set of CTs and 2 runs of cable
- Option of rear extension to accommodate extra CTs or cables
- Adequate height for cable termination



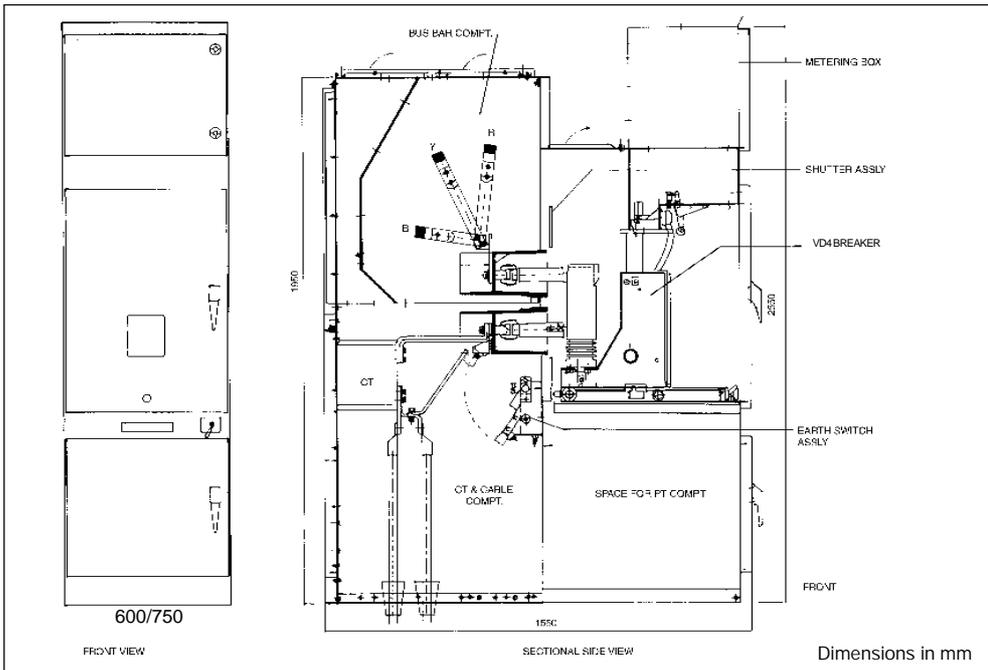
### Quality assurance

ABB India's manufacturing facilities conform to the highest quality standards and environment norms. These products are manufactured of ABB's works in Nashik which has the following certificates.

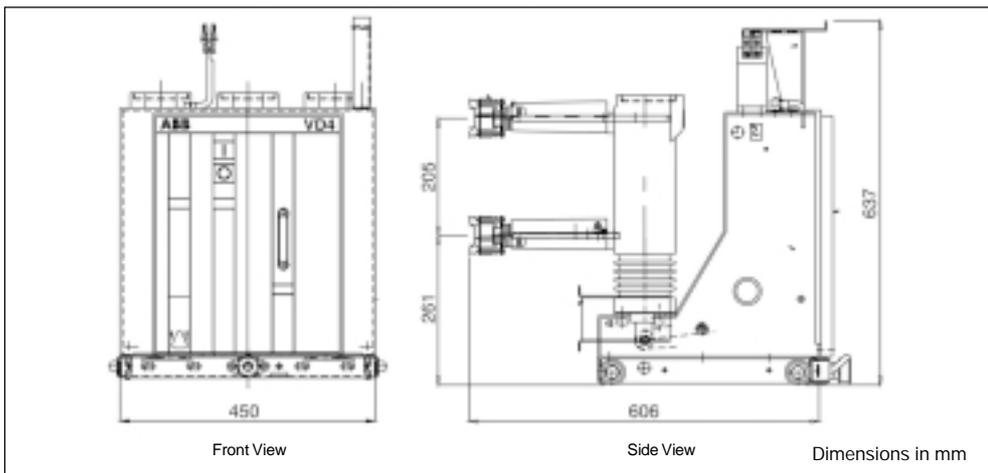
- ISO9001 for quality standards
- ISO14001 for environment standards
- ISO 18001 for occupational health and safety standards



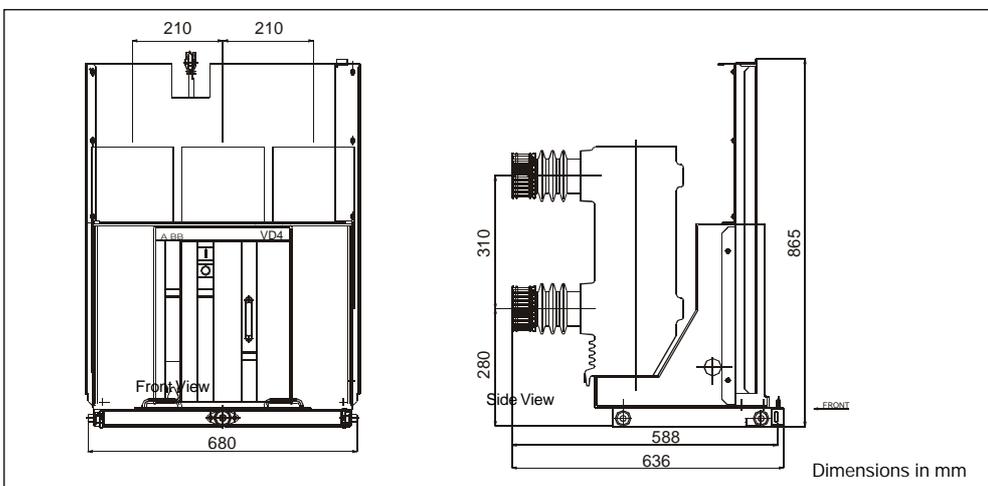
## General arrangement drawing – Unisafe Cubicle



## Dimensional drawing of VD4 (up to 1600 A)



## Dimensional drawing of VD4 (up to 2000 A)



### Technical details – Unisafe cubicle

Description	Unit	Rating
Rated Voltage	kV	12
Rated Frequency	Hz	50
Rated Busbar Current	A	up to 2000
Short time withstand current (3 sec)	kA kAp	26.3 66
Insulation levels	kVrms/kVp	28/75*
Width x Depth x Height up to 1250A above 1250A	mm mm	600 x 1550 x 2500 750 x 1550 x 2500
Weight with circuit breaker	Kg	800
Degree of protection Enclosure Between the compartments	- -	IP4X IP2X

\*95 kVp on request

### Technical details – VD4 circuit breaker

Description	Unit	Rating			
		12.06.13E	12.12.25	12.16.25	12.20.25
Type	VD4				
Rated Voltage	kV	12			
Insulation Levels	kVrms/kVp	28/75			
Normal Current (40°C amb.)	A	800	1250	1600	2000
Breaking Capacity	kA	13.1	26.3	26.3	26.3
Making Capacity	kAp	33	66	66	66
Short time withstand current	kA (3sec)	13.1	26.3	26.3	26.3
Opening time	ms	55 (max)			
Arcing time	ms	15 (max)			
Total Break time	ms	70 (max)			
Making time	ms	75 (max)			
Operating Sequence	-	0 - 3min - CO - 3min - CO/ 0 - 0.3sec - CO - 3min - CO			
Weight (approx.)	Kg	110	110	120	250



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