

Outdoor live tank vacuum circuit breaker

Type OVB-VBF for 24/36/40.5 kV applications



ABB

ABB – a global leader

ABB (www.abb.com) 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 operates in around 100 countries.

ABB's Power Technologies division offers electric, gas and water utilities as well as industrial and commercial customers a wide range of products, system and services for power generation, transmission and distribution. ABB's turnkey solution capabilities in the sector range from substations to complete electrification and plant automation to bulk power transmission, 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 and reactive power compensators, power and distribution transformers as well as instrument transformers.

ABB in India has a long-standing presence over several decades. The company has extensive local manufacturing across 8 centers supported by a countrywide marketing presence, including 26 marketing offices, a widespread network of around 500 channel partners and 8 service centers in addition to customer training hubs and 3 global R & D centers.

Advantage ABB

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

Commitment to quality and sustainability

All ABB India manufacturing facilities confirm to the highest quality standards and environment norms. These are all ISO 9001 and ISO 14001 compliant and are certified by leading international authorities.



Salient features

- Designed and type tested as per IEC 62271 - 100
- Vacuum interruption
- Porcelain clad construction suitable for outdoor substation ensures protection from fire and hazardous conditions
- Long electrical life with proven vacuum interrupters that utilise the excellent arc quenching and insulating properties of vacuum technology
- Suitable for auto-closure duty cycle of O-0.3 sec-CO-3 min-CO and CO-15 sec-CO
- Simple and reliable spring mechanism minimises operating energy and ensures longer mechanical life
- Simple installation – structure mounted with option of extension
- The complete breaker can be shipped as one unit with minimal adjustments to be made on site. As an option the breaker can be shipped in knocked down kits which can be easily assembled at site

Construction

Pole assembly

- Pole assembly consists of three poles and a common duct
- Each pole comprises a vacuum bottle, current transfer contacts and an insulating pull rod placed in the porcelain housing
- Robust housing for protection against fire and hazardous conditions
- Primary terminal connectors can be provided, such as NEMA 4
- All three poles are mounted on a common duct
- Poles are interconnected with each other as well as to the operating mechanism with a linkage arrangement
- Simple design - minimises spare parts

Applications

- Distribution networks
- Capacitor switching
- Frequent switching duties
- Arc furnace duty
- Rapid auto-reclosing
- Switching unloaded transformers and reactors

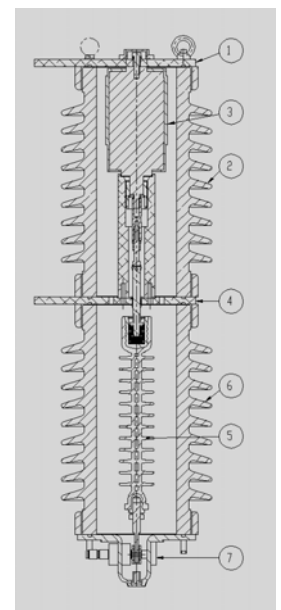
Base cabinet

The base cabinet is made of painted mild steel with an option for galvanised steel. The cabinet houses a spring operated mechanism which is mechanically linked to all three poles. The cabinet also includes the following:

- Anti-condensation heater
- Circuit breaker status indicator
- Mechanical operation counter
- Breaker control switches
- Anti-pumping relay
- AC / DC fuses
- Auxiliary wiring
- Terminal blocks

Mounting structure

A robust extruded steel angle structure is used for mounting the breaker which can be extended for mounting current transformers depending on customer requirements.

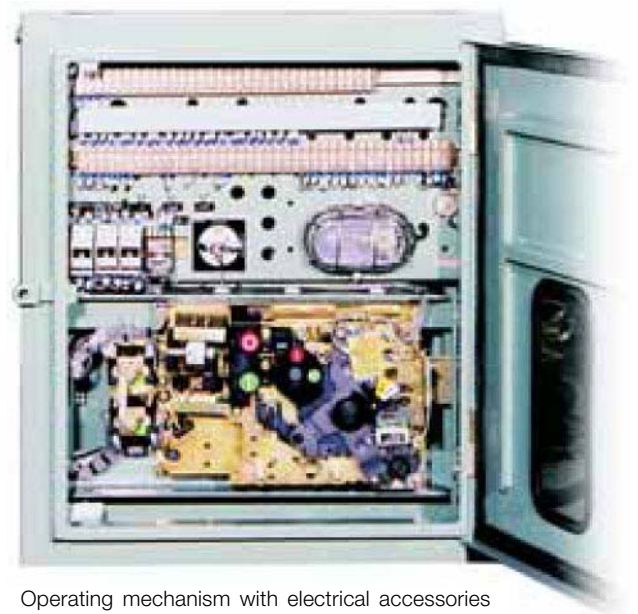


Operating mechanism

For high operational reliability and minimal maintenance, a simple and robust spring-operated mechanism is used.

Features

- O-C-O operation without recharging
- Closing spring is charged by motor in less than 15 seconds
- Mechanical / electrical anti-pumping
- Provision for manual charging
- Suitable for high speed auto-reclosing
- Manual closing and tripping arrangement
- Mechanical 'ON-OFF' and 'SPRING CHARGED' indication
- Auxiliary switch: 13 NO+13 NC
- Additional tripping solenoid (Optional)



Operating mechanism with electrical accessories



Closing / opening coil



Auxiliary switch



Spring charging motor

Certified routine tests

Each breaker is subjected to the following routine tests as per IEC 62271 - 100

- Verification of components
- Low / high / nominal closing coil voltage:
i.e. at 85%, 110% & 100% of nominal voltage
- Low / high / nominal tripping coil voltage:
i.e. at 70%, 110% & 100% of nominal voltage
- Low / high / nominal spring charging motor voltage at 85%, 110% & 100% of nominal voltage
- Trip-free operation
- Control wiring: 2000V to ground for 1 minute (if applicable)
- Test for withstanding power frequency voltage at 70kV for 1 minute
- Opening and closing speed
- Contact resistance
- Anti-pumping test



Transportation, erection, commissioning and maintenance

- To minimise erection time, the breaker is transported as an assembled unit mounted on a support assembly, which needs to be replaced by the standard mounting structure (supplied alongwith the breaker) at site.
- The breaker can also be transported in parts if required
- The advanced circuit breaker design minimises maintenance

Operating manual available on request.

Technical details

Circuit-breaker on Column		OVB-VBF 24			OVB-VBF36			OVB-VBF 40.5	
Standard	IEC 62271-100	■			■			■	
Rated Voltage	(kV)	24			36			40.5	
Rated insulation voltage	(kV)	24			36			40.5	
Power frequency withstand	(kV /min)	70 (dry) / 70 (wet)			95 (dry) / 95 (wet)			95 (dry) / 95 (wet)	
Impulse withstand voltage	(kV peak)	170			170			195	
Rated Frequency	(Hz)	50-60			50-60			50-60	
Rated Normal current	(Amps)	1250	2000	2500	1250	2000	2500	2000	2500
Rated Symmetrical breaking capacity	(kA r.m.s)	25	25	31.5	25	25	31.5	31.5	31.5
Rated short time withstand current (3s)	(kA r.m.s)	25	25	31.5	25	25	31.5	31.5	31.5
Asymmetrical Breaking capacity	(% of d.c Component at t=45ms)	35			35			35	
Rated Making capacity.	(kA peak)	63	63	80	63	63	80	80	80
Operating Sequence	0-0.3sec- CO - 3 Min - CO & CO-15sec- CO	■			■			■	
Opening Time	(ms)	45 ± 10			45 ± 10			45 ± 10	
Capacitor current switching capacity	(Amps)	400			400			400	
Arcing Time	(ms)	5-15			5-15			5-15	
Total Breaking time	(ms)	50-60			50-60			50-60	
Closing Time	(ms)	75 ± 10			75 ± 10			75 ± 10	
Over all dimensions	On Frame (H x L x P) mm	(3090-3840) x 900 x 686							
Weight	(kg)	850/900			850/900			900	
N2 gas absolute Pressure	(kPa) for Anticondensation	150			150			150	
Operating temperature	(O C)	-25..... + 40			-25..... + 40			-25..... + 40	
Tropicalisation	IEC:60068-2-30,721-2-1	■			■			■	
Electromagnetic compatibility	IEC 62271-1,61000-6-2, 61000-6-4	■			■			■	
Solar Radiation	(W/m2)	■			■			■	
Presence of Pollution	IEC 60815-Table 1	Level III			Level III			Level III	
Creepage distance	(mm/kV)	25			25			27.5	
Ice coating	(mm)	10							
Wind Speed	(m/s)	34							
Earth quake resistance	(g)	0.6							
Surface force on the terminal	Logitudinal x Transversal x Vertical (N)	750 x 500 x 750							

For lower temperatures, High altitude installation, please consult us

General arrangement drawing

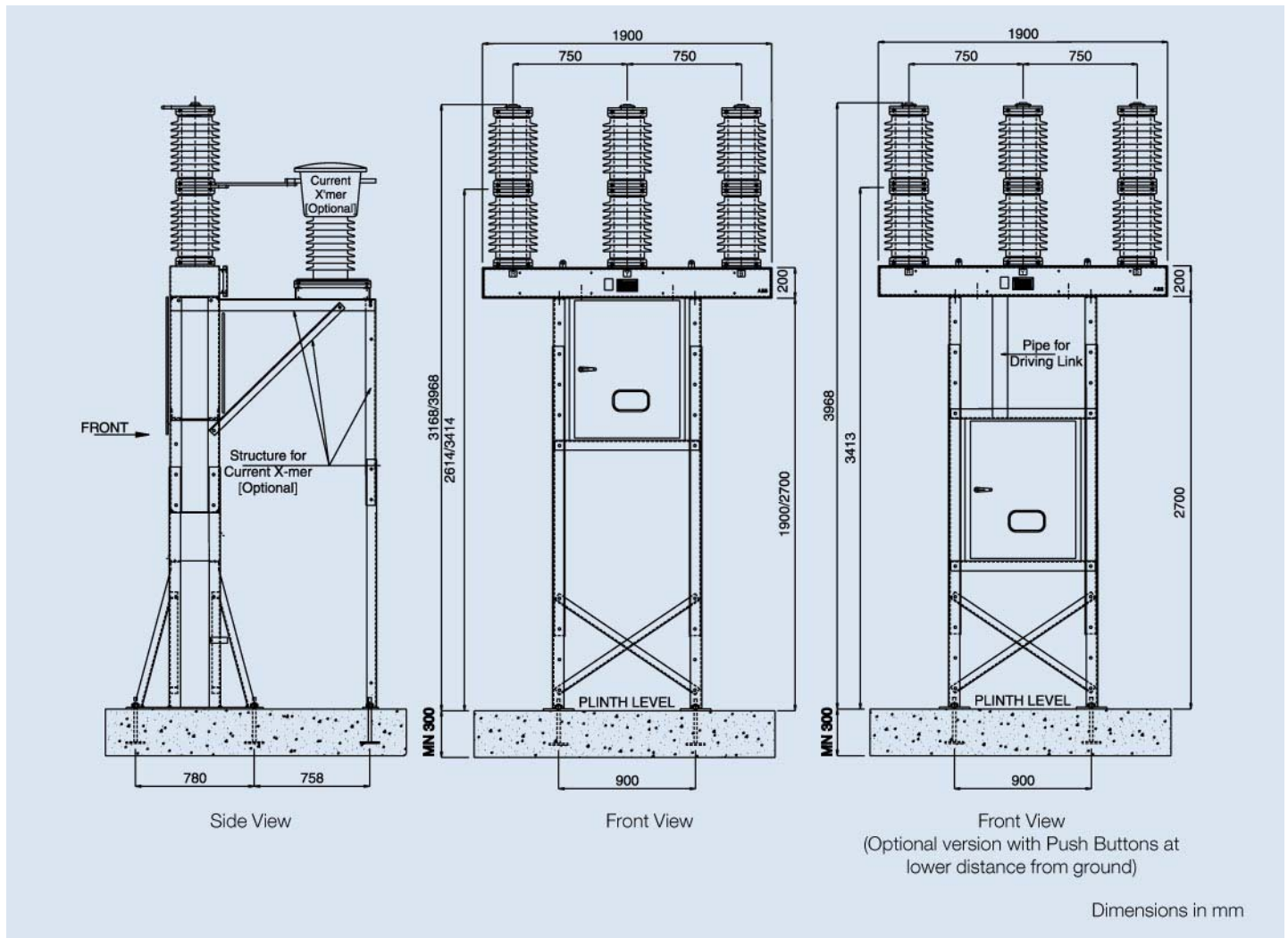


ABB Limited
Medium Voltage
Technologies
Street No. 17
MIDC, Satpur
Nashik 422 007
Tel: +91 253-2351095-98
Fax: +91 253-2350644

Regional Marketing Offices:

North

No.14, Mathura Road
P.O. Amar Nagar
Faridabad 121 003
Tel: +91 129 2275592,
2279627, 5049000
Fax: +91 129 2279692/5019

South

Embassy Star, 1st Floor
No. 8, Palace Road
Vasanth Nagar
Bangalore 560 052
Tel: +91 80 22949779
Fax: +91 80 22949808

Central

4th & 5th Floor
Maruti Heights
Aamanaka, G E Road
Raipur 492 099
Tel: +91 771 4701016

West

ABB House
Dr. S B Path
Ballard Estate
Mumbai 400 038
Tel: +91 22 56318231 - 39
Fax: +91 22 56318276/77

SCO No.13-14-15
(3rd Floor)
Sector 34-A
Chandigarh - 160 022
Tel: +91 172 2606093
Fax: +91 172 2601618

Century Plaza
No. 3C, 3D & 3F, 3rd Floor
561 / 562, Anna Salai
Teynampet (Mount Road)
Chennai 600 018
Tel: +91 44 24340201
Fax: +91 44 24340282

FF- 9A, 1st Floor
Manasarover Commercial
Complex
Hoshangabad Road
Bhopal 462016
Tel: +91 755 4223572
Fax: +91 755 4253323

East

4th Floor
No. 9, Elgin Road
Kolkata 700 020
Tel: +91 33 22832906/8
Fax: +91 33 22832990