



# Outdoor live tank vacuum circuit breaker Type OVB-VBF for 24/36/40.5 kV applications



# Outdoor live tank vacuum circuit breaker

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

### Standard features

- Designed and type tested as per IEC 62271-100
- Vacuum interruption
- Porcelain clad construction suitable for outdoor substation ensures protection from hazardous conditions
- Long electrical life with proven vacuum interrupters that utilize the excellent arc quenching and insulating properties of ABB 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 minimizes 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

### Applications

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

### Salient features

- Extruded / forged electrical grade aluminium for low power loss and increased reliability
- Sealed for life poles
- Silicon encapsulated vacuum interrupter to reduce possibility of internal flash over
- Application of total contact force throughout the service life even at maximum contact erosion without any maintenance

### 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 hazardous conditions
- Primary terminal connectors can be provided, such as NEMA 4
- Poles are interconnected with each other as well as to the operating mechanism with a linkage arrangement
- Simple design - minimizes spare parts

### 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.

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### Base cabinet

The base cabinet is made of painted mild steel with an option for stainless steel. The cabinet houses a spring operated mechanism which is mechanically linked to all three poles.

The cabinet also includes the following:

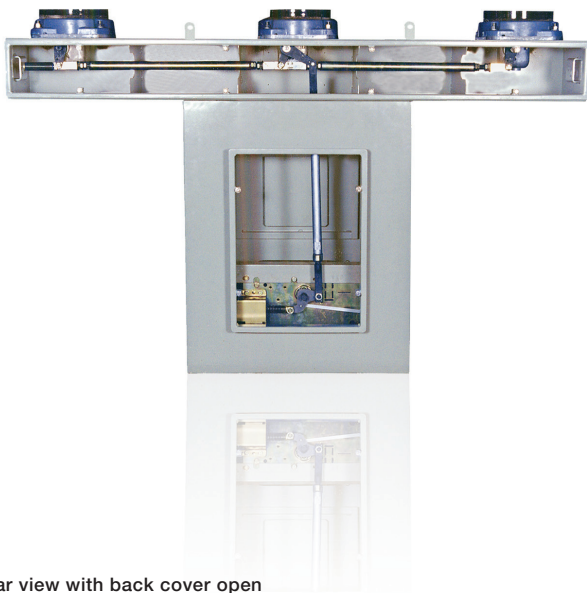
- Anti-condensation heater
- Circuit breaker status indicator
- Mechanical operation counter
- Breaker control switches
- Anti-pumping relay
- AC / DC fuses
- Auxiliary wiring
- Terminal blocks

### Operating mechanism

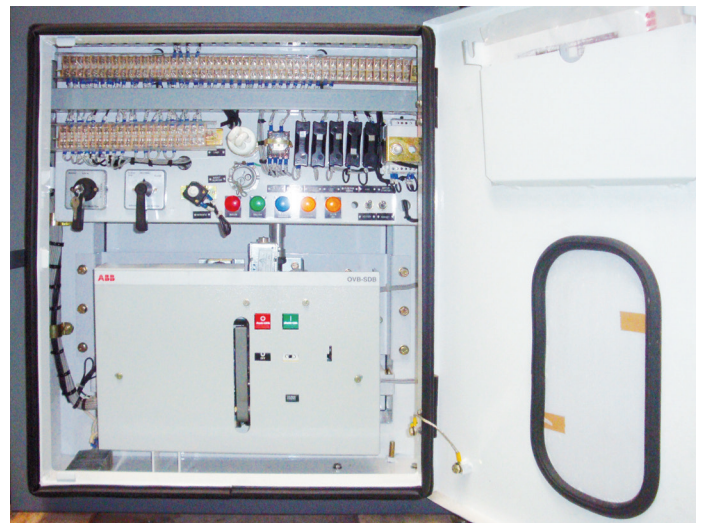
For high operational reliability and minimal maintenance, a simple and robust spring-operated mechanism is used.

### Features

- O-C-O operation without recharging
- Closing spring is charged by a motor in less than 15 seconds
- Mechanical / electrical anti-pumping
- Provision for manual charging
- Pushbutton provided for manual closing and tripping
- Mechanical 'ON-OFF' and 'SPRING CHARGED' indication
- Auxiliary switch: 6 NO+ 6 NC
- Additional tripping solenoid (optional)
- In-built spring charging handle
- Extended coil reliability due to continuous rated capacity



Rear view with back cover open



Operating mechanism with electrical accessories

### 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
- Opening and closing speed
- Contact resistance
- Anti-pumping test

### Transportation, erection, commissioning and maintenance

- To minimize 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 along with the breaker) at site.
- The breaker can also be transported in parts if required
- The advanced circuit breaker design minimizes maintenance

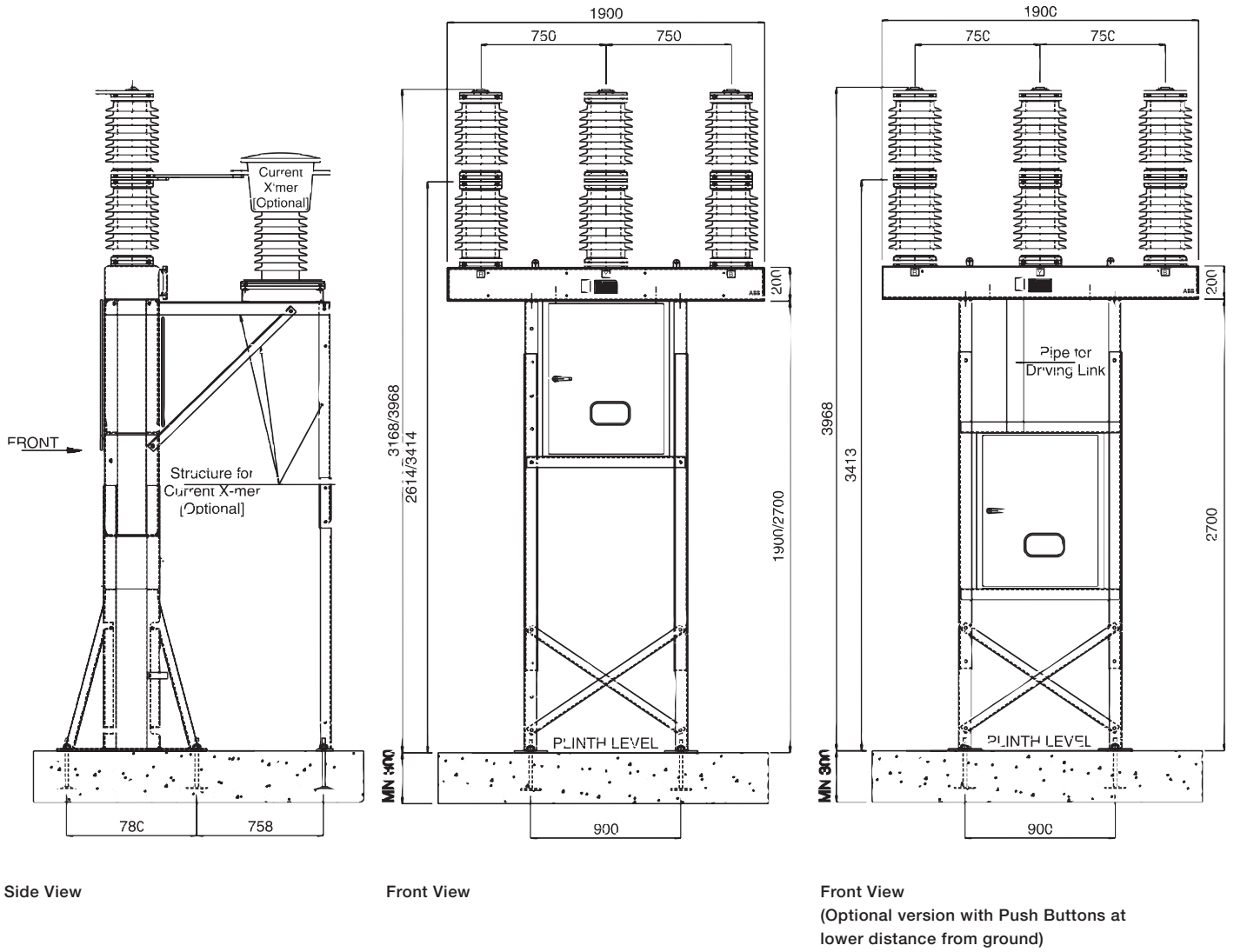


# Technical details

Circuit-breaker on Column		OVB-VBF 24	OVB-VBF 36	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)			
Single bank - C2 class		400	400	
Back to back - C2 class		-	-	750
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 #1	(° C)	-25..... + 40	-25..... + 40	-25..... + 40 #3
Tropicalization	IEC:60068-2-30,721-2-1	■	■	■
Electromagnetic compatibility	IEC 62271-1,61000-6-2, 61000-6-4	■	■	■
Solar radiation	(W/m2)	1000	1000	1000
Presence of pollution	IEC 60815-Table 1	Level III	Level III	Level III
Creepage distance	(mm/kV)	25#2	25#2	27.5#2
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/ higher ambient temperature, High altitude installation, please consult us  
 #1 For lower/ higher ambient temperature, High altitude installation, please consult us  
 #2 Higher creepage on request  
 #3 -60° on request

# General arrangement drawing



Standard feature is of Fixed height structure. Optional version of telescopic structure to vary mounting height and arrangement of CT or PT mounting arrangement can be provided on request'

# Contact us

ABB Limited operates a process of continuous product development. We therefore reserve the right to change designs, dimensions and data without prior notice.



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