Outdoor live tank vacuum circuit breaker
Type OVB-VBF for 24/36/40.5 kV applications
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 operates in around 100 countries.

In India, ABB has a vast installed base, extensive manufacturing facilities and a countrywide marketing and service presence.

The Power Products business 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 bulk power transmission, turnkey 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, instrument transformers, disconnectors, capacitor banks, reactive power compensators, power and distribution transformers and a range of power distribution products like compact secondary 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

Commitment to quality and sustainability

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

ISO 9001 - 2008 Quality Systems
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

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

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

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.
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
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

<table>
<thead>
<tr>
<th>Circuit-breaker on Column</th>
<th>OVB-VBF 24</th>
<th>OVB-VBF 36</th>
<th>OVB-VBF 40.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>IEC 62271-100</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>(kV)</td>
<td>24</td>
<td>36</td>
</tr>
<tr>
<td>Rated insulation voltage</td>
<td>(kV)</td>
<td>24</td>
<td>36</td>
</tr>
<tr>
<td>Power frequency withstand</td>
<td>(kV /min)</td>
<td>70 (dry)  / 70 (wet)</td>
<td>95 (dry) / 95 (wet)</td>
</tr>
<tr>
<td>Impulse withstand voltage</td>
<td>(kV peak)</td>
<td>170</td>
<td>170</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>(Hz)</td>
<td>50-60</td>
<td>50-60</td>
</tr>
<tr>
<td>Rated normal current</td>
<td>(Amps)</td>
<td>1250</td>
<td>2000</td>
</tr>
<tr>
<td>Rated symmetrical breaking capacity</td>
<td>(kA r.m.s)</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Rated short time withstand current (3s)</td>
<td>(kA r.m.s)</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Asymmetrical breaking capacity (%) of d.c Component at t=45ms)</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Rated making capacity.</td>
<td>(kA peak)</td>
<td>63</td>
<td>63</td>
</tr>
<tr>
<td>Operating sequence</td>
<td>0-0.3sec- CO - 3 Min - CO &amp; CO-15sec- CO</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Opening time</td>
<td>(ms)</td>
<td>45 ± 10</td>
<td>45 ± 10</td>
</tr>
<tr>
<td>Capacitor current switching capacity</td>
<td>(Amps)</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Single bank - C2 class</td>
<td></td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Back to back - C2 class</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arcing time</td>
<td>(ms)</td>
<td>5-15</td>
<td>5-15</td>
</tr>
<tr>
<td>Total breaking time</td>
<td>(ms)</td>
<td>50-60</td>
<td>50-60</td>
</tr>
<tr>
<td>Closing time</td>
<td>(ms)</td>
<td>75 ± 10</td>
<td>75 ± 10</td>
</tr>
<tr>
<td>Over all dimensions</td>
<td>On Frame (H x L x P) mm</td>
<td>(3090-3840) x 900 x 686</td>
<td>900</td>
</tr>
<tr>
<td>Weight</td>
<td>(kg)</td>
<td>850/900</td>
<td>850/900</td>
</tr>
<tr>
<td>N2 gas absolute pressure</td>
<td>(kPa) for Anticondensation</td>
<td>150</td>
<td>150</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>(°C)</td>
<td>-25..... + 40</td>
<td>-25..... + 40</td>
</tr>
<tr>
<td>Tropicalization</td>
<td>IEC:60068-2-30,721-2-1</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Electromagnetic compatibility</td>
<td>IEC 62271-1,61000-8-2, 61000-6-4</td>
<td>■</td>
<td>■</td>
</tr>
<tr>
<td>Solar radiation</td>
<td>(W/m²)</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td>Presence of pollution</td>
<td>IEC 60815-Table 1</td>
<td>Level III</td>
<td>Level III</td>
</tr>
<tr>
<td>Creepage distance</td>
<td>(mm/kV)</td>
<td>25²</td>
<td>25³</td>
</tr>
<tr>
<td>Ice coating</td>
<td>(mm)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Wind speed</td>
<td>(m/s)</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Earth quake resistance</td>
<td>(g)</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Surface force on the terminal</td>
<td>Transversal x Longitudinal (N)</td>
<td>750 x 500 x 750</td>
<td></td>
</tr>
</tbody>
</table>

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
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.
ABB Limited
Medium voltage products
Plot no. 79, Street no. 17
MIDC estate, Satpur
Nashik - 422 007, Maharashtra, India
Phone: +91-253-2201200
Fax: +91-253-2351260

South Zone
No.49, 5th Floor, West wing
Khanija Bhavan, Race course road
Bangalore 560 001
Phone: +91 80 2294 9250 / 6677
1st floor, Apple towers
Palarivattom bypass junction
Cochin 682 024
Phone: +91-484-2330342
Fax: +91-484-2330343

5th floor, Ardee building, Plot no.1
Siripuram, Balajinagar
Visakhapatnam 530 003
Phone: +91-891-2798583
Fax: +91-891-2538188

5th floor, Splendid towers
S P road, Begumpet
Hyderabad 500 016
Phone: +91-40-27906713/15, 27906728
Fax: +91-40-27906648

Chennai Zone
1st floor, Janpriya Crest
113/96, Pantheon road, Egmore
Chennai 600 008
Phone: +91-44-28193131(D), 28191551
Telefax: +91-44-28193545

2nd floor, West wing
Rajanarayan towers
70, Race course road
Coimbatore 641 018
Phone: +91-422-2300371

www.abb.co.in

West Zone
ABB House
Dr. S.B. Path, Ballard estate
Mumbai 400 001
Phone: +91-22-66159843
Telefax: +91-22-6615 9828 / 9800
Plot no.34, Sector – A
Next to Bhopal Medical Centre
Indrapuri, Raisen road, Bhopal 462 023
Phone: +91-0755-6463601-08
Fax: +91-0755-2550397
Neel square, 1st floor, Plot no.8
Sanghvinagar, near Parivar Chowk
Aundh, Pune 411 007
Phone: +91-20-66243800
Sai-Rish, 5 - Gawande layout
Near Chhatrapati square, Ring road
Nagpur 440 015
Phone: +91-712-6461146
A-101, Shapath - 4, opp. Karnawati club
S.G. highway, Ahmedabad 380 051
Phone: +91-79-66090113
R&D Centre, Marketing department
P.O. Maneja, Marketing department
Chandigarh 160 022
Phone: +91-172-4231800

Maruti heights, 5th floor
Aamanaka, G E road
Raipur 492 099
Phone: +91-771-4213202 / 4213203

North Zone
14, Mathura road, Ground floor
P.O. Amarnagar, Faridabad 121 003
Phone: +91-1292567144
Mobile: +91-8130644555
SCO-no.13, 14, 15, 3rd floor, 34 A
Chandigarh 160 022
Phone: +91-172-4231800
C-116, Alaknanda, II floor
Behind Vidhan Sabha
Janpath 302 015, Jaipur
Phone: +91-141-2744024
Fax: +91-141-2744027
C-2/201, Vaibhav Place, Indira nagar
Dehradun 248 006
Phone: +91-135-2762731
Fax: +91-135-2760855
SCO - 124, 5th floor, Gurtej tower
Firooz Gandhi market
Ludhiana 141 002
Phone: +91-161-4656830 / 6831

29/9, Raina Pratap marg, 2nd floor
Raj chambers, Lucknow 226 001
Phone: +91-522-2209436
Fax: +91-522-2209478

Note: No part of this publication may be reproduced or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise without prior written permission of ABB.