



TRUST. WELL EARNED.

BSR – The Retrofit Solution

The BSR is an OEM designed retrofit circuit breaker for both the BRUSH Switchgear VSI range of Oil Circuit Breakers and the VMV vacuum Circuit Breaker, to IEC 62271-100.

BRUSH Switchgear is proud of its heritage in the VSI, VTD & VMV range of switchgear, which continue to work at the highest standards today.

Technological advances have allowed us to improve further and offer our customers a circuit breaker that boasts the award-winning magnetic actuator technology with vacuum interrupters.

The BSR circuit breaker offers a new lease of life for existing switchgear with this effective retrofit solution.

The BSR is designed for 10,000 operations and a life expectancy of 30 years. It is designed for retrofitting into existing switchboards without the need for panel modification.

Key Benefits to Retrofit

- Superior, proven technology with minimal maintenance
- No civil works required and existing HV cabling remains undisturbed
- Improvement of Health & Safety by removal of oil
- Considerable life extension of the existing switchgear
- Lower owner costs through virtually no maintenance requirements and increased switchboard life expectancy
- Uses existing design of primary and automatic secondary contacts
- Improved panel interlocking to latest ENA requirements
- In addition to the retrofit of the circuit breaker BRUSH Switchgear can offer a more complete system solution to enhance the control and automation of the distribution network



Ratings

| | | |
|--|--|--------------------|
| Rated Voltage | kV | 12 |
| Normal Rated Currents | A 800,1600 | 630, 1250, 2000 |
| Lightning Impulse Withstand Voltage | kVP | 75/95 |
| Short Duration Power Frequency Withstand Voltage | kV | 28 |
| Rated Frequency | Hz | 50 |
| Rated Short-Time Withstand Current | kA(s) | 25 for 3 seconds |
| Rated Peak Withstand Current | kA Peak | 62.5 |
| Making Current (peak) | kA | 62.5 |
| Symmetrical Breaking Current | kA | 25 |
| Rated Auxiliary Voltages | V dc | 30, 48/50, 110/125 |
| Minimum opening time/closing time | ms | 33ms/76ms |
| Normal Operations | | 10,000 |
| Weight | Kg | 211 |
| Rated Operating Sequence | O-0.3s-CO-15s-Co | |
| Operating Mechanism Type | Dependent power closing (Magnetic actuator); Stored energy opening (Springs charged during closing stroke) | |



VSI/VTD Circuit Breaker

The BRUSH range of VSI and VTD oil circuit breakers was manufactured between 1963 and 1990 by BRUSH Switchgear boasting a global install base.

The BRUSH range of oil circuit breakers have provided excellent service in both the 11kV primary and 6.6kV and 3.3kV secondary substation applications.

However, both time and development have offered improved technology and mechanical endurance, which are present in the BSR retrofit circuit breaker, offering 10,000 operations and 30 year life expectancy.



VMV Circuit Breaker

In 1990, the VMV circuit breaker was introduced as a type-tested, direct replacement for the VSI/VTD circuit breakers, employing vacuum interrupter technology. The fundamentals of the design ensured the upgrade from oil to vacuum circuit breakers was a safe and easy operation, moving away from traditional insulation materials to the much more durable and robust cast epoxy resin.

The VMV circuit breaker and housing was used as our product offering for 11kV, 6.6kV & 3.3kV switchboard applications.

Standards

- IEC 62271 Series of Standards
- ENA Notice of Conformity No.1137



Additional Technical Information/Testing

| | | BSR |
|--|---------------------------------|---|
| Rated Short-Circuit Breaking Current | kA | 25 |
| Rated Short-Circuit Making Current | kA Peak | 62.5 |
| Rated Capacitive Switching Currents | Class | C1 |
| Rated Line-Charging Breaking Current | A | 10 |
| Rated Cable-Charging Breaking Current | A | 25 |
| Out of Phase Making and Breaking Current | kA | 6.25 |
| Rated Single Capacitor Bank Breaking Current | A | 400 |
| Double earth Fault | kA (0.87 x I _{sc}) | 21.8 |
| Single Phase Fault | kA (I _{sc} at 12/√3kV) | 25 |
| D.C. Time Constant | ms | 45 |
| D.C. Component | % | 45 |
| Rated Break Time | ms max. | 45 |
| Classification for Mechanical Endurance | Class | M2 (10,000 operations) |
| Classification for Electrical Endurance | Class | Class E2 List 1 (Table 21 of IEC 62271-100) |
| Integral Earthing | | |
| Rated Short Time Withstand Current | kA | 25 (3 seconds) |
| Rated Short-Circuit Making Current | kA Peak | 62.5 |

BRUSH

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