



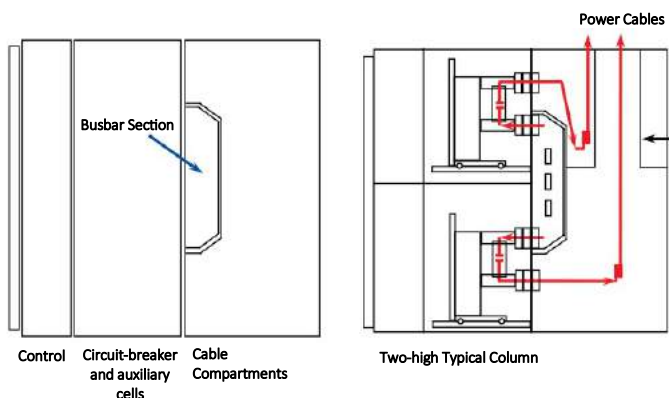
Eaton's VacClad-W Family for Medium-voltage Switchgear and Controlgear applications provides centralized control and protection of medium voltage power equipments in circuits in industrial, commercial and utility installations involving generators, motors, feeder circuits and transmission and distribution lines.

VacClad-W products were developed and tested by the following standards:

- ANSI C37.20.2.
- NEMA SG-5.
- IEC 62271-1.
- IEC 62271-200.

The design and construction of VacClad-W products represent the result of years of continuous research and improvement based upon the continuous developments and use of best practices concepts adopted around the world. Two-high power compartments are standard up to 27 kV. One-high arrangements can be furnished when required.

### Two-high concept – general



### The main features are:

- Short-circuit Interrupting and Short-time (1s / 3s) Currents:
  - ◆ 4.76 kV:
    - 31.5 kA
    - 40.0 kA
    - 63.0 kA
  - ◆ 8.25 kV:
    - 31.5 kA
  - ◆ 15.0 kV:
    - 20.0 kA
    - 31.5 kA
    - 40.0 kA
    - 50.0 kA
    - 63.0 kA
- Rated Voltages (based IEC's 50 Hz practice):
  - 4.76 kV
  - 8.25 kV
  - 15.0 kV
  - 27.0 kV
- Continuous Current – Incoming and Outgoing Circuits :
  - ◆ 1200 A, 2000 A, 3000 A (5 and 15 kV designs)
  - ◆ 4000 A Forced cooled (5 and 15 kV designs)
  - ◆ 1200 A, 2000 A (27 kV designs)
  - ◆ 1250 A, 2000 A, (38kV designs)
  - ◆ 3000 A Forced cooled (38 kV designs)
- Continuous Current – Main busbar :
  - ◆ 1200 A, 2000 A, 3000 A, 4000 A (5 and 15 kV designs)
  - ◆ 1200 A, 2000 A, (27 kV designs)
  - ◆ 1200 A, 2000 A, 3000 A (38 kV designs)
- Metallic enclosure, metallic shutters and metallic barriers between vertical sections and incoming / outgoing units (ANSI metal-clad designing – IEC LSC2B-PM).
- Draw-out and fixed units.
- Metallic Shutters for circuit-breaker draw-out units (VCP-W Vacuum Circuit Breakers)
- Two-high design for vertical column of 5 kV Switchgear and Controlgear and 15 and 27 kV Switchgear.
- Arc and Non-arc resistant designs
- Arc resistant classification (up to 50 kA rms /0.5seconds):
  - ◆ Type 2 per ANSI C37.20.7
  - ◆ IAC B – FLR per IEC 62271-200
- MOC (Mechanism Operated Cell Contacts) and TOC ( Truck Operated Cell Contacts) for circuit-breaker cells (increasing of available auxiliary contacts and position indication)
- Four-defined positions for draw-out units: connected, test, disconnected and removed.
- Grounding possibility by incorporated Earthing Switch (with interlocks) or removable Ground and Test Device.
- Automatic control plug for withdrawable circuit-breakers.
- Lifting angles for each transport unit.

### Earthing switch

Although the basic design of this family was established on the use of Grounding and Testing Device (removable equipment for safety increasing), a fault-make earthing switch for cable grounding can be mounted in each compartment with circuit-breaker or contactor. For conditions where there is no chance for closing on short-circuit configurations, there is a reduced capacity (motor / cable capacitances discharging) version for contactor cells only.



### Integrated Solution

If the customer needs an integrated solution in electrical room, Eaton can supply the VacClad-W line-up inside a Electrocenter (pre-fabricated electrical an mechanically integrated room). The advantage here is that assembly and other work on site is restricted to a minimum. In such cases, the entire installation is assembled and inspected in the Eaton's Assemblies Plant. The Electrocenter provides good housing conditions for the installation. On request, the container can be provided with lighting, air conditioning, and/or a separate control room.



### The Vacuum Circuit - Breaker

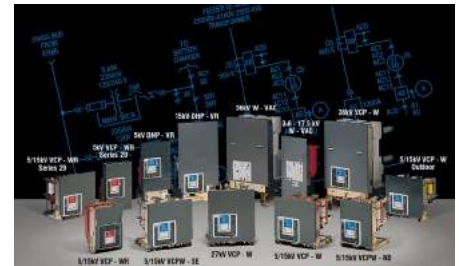
The vacuum circuit-breakers, type VCP-W, and vacuum contactors, type SL-D, were developed and are manufactured by Eaton and has the following features, among many others:

- Small dimensions, takes up little space
- Explosion-free
- Suitable for numerous operations
- No external switching phenomena
- Rapid dielectric recovery ensures circuit interruption at the first current-zero
- Low maintenance requirements
- Long service life



ANSI Standards – Type VCP-W Vacuum Circuit Breaker Rated on Symmetrical Current Rating Basis ①

| Identification<br>Circuit Breaker Type | Rated Values                               |                           |                              |                                  |         |                             |   |                             |                                      |                           |  |   |   | Weight<br>Kg |                   |
|--|--|---------------------------|------------------------------|----------------------------------|---------|-----------------------------|---|-----------------------------|--------------------------------------|---------------------------|--|---|---|--------------|-------------------|
|  | Nominal Voltage Class<br>3-Phase MVA Class | Nominal Voltage<br>kV rms | Voltage Withstand<br>kV Peak | Insulation Level<br>Test Voltage |         | Current                     |   | Interrupting Time<br>Cycles | Permissible Tipping Delay<br>Seconds | Maximum Voltage<br>kV rms | Current Values   |   |   |              |                   |
|  |  |                           |                              | Power Frequency<br>(1 Minute)    | Impulse | Continuous Current at 60 Hz | Short Circuit Current (at Rated Maximum kV) |                             |                                      |                           | Maximum Symmetrical Interrupting Capability<br>k Times Rated Short Circuit Current | Closing and Latching Capability<br>2,7X Times Rated Short Circuit Current | Closing and Latching Capability Momentary<br>1,8X Times Rated Short Circuit Current |              |                   |
| 50VCP-W250                             | 4.16                                       | 250                       | 4.76                         | 1.24                             | 19      | 60                          | 1200<br>2000<br>3000                        | 29                          | 5                                    | 2                         | 3.85   | 36  | 97<br>132   | 58<br>78     | 160<br>186<br>238 |
| 50VCP-W350                             | 4.16                                       | 350                       | 4.76                         | 1.19                             | 19      | 60                          | 1200<br>2000<br>3000                        | 41                          | 5                                    | 2                         | 4.00   | 49  | 132   | 78           | 210<br>222<br>238 |
| 75VCP-W500                             | 7.2  | 500                       | 8.25                         | 1.25                             | 36      | 95                          | 1200<br>2000<br>3000                        | 33                          | 5                                    | 2                         | 6.60   | 41  | 111   | 66           | 170<br>186<br>238 |
| 150VCP-W500                            | 13.8                                       | 500                       | 15.00                        | 1.30                             | 36      | 95                          | 1200<br>2000<br>3000                        | 18                          | 5                                    | 2                         | 11.50  | 23  | 62<br>97  | 37<br>58     | 160<br>186<br>238 |
| 150VCP-W750                            | 13.8                                       | 750                       | 15.00                        | 1.30                             | 36      | 95                          | 1200<br>2000<br>3000                        | 28                          | 5                                    | 2                         | 11.50  | 36  | 97<br>130   | 58<br>77     | 160<br>186<br>238 |
| 150VCP-W1000                           | 13.8                                       | 1000                      | 15.00                        | 1.30                             | 36      | 95                          | 1200<br>2000<br>3000                        | 37                          | 5                                    | 2                         | 11.50  | 48  | 130   | 77           | 210<br>222<br>238 |
| 150VC-W1500                            | 13.8                                       | 1500                      | 15.00                        | 1.00                             | 36      | 95                          | 1200<br>2000<br>3000                        | 63                          | 5                                    | 2                         | 15.00  | 63  | 170   | 101          | 238<br>240<br>250 |



IEC 62271-100 Standards – Type VCP-W Vacuum Circuit Breaker Rated on Symmetrical Current Rating Basis ①

| Identification<br>Circuit Breaker Type | Rated Values  |                  |                   |                  |                                |                               |                              | Weight<br>Kg |                                 |
|--|---------------|------------------|-------------------|------------------|--------------------------------|-------------------------------|------------------------------|--------------|---------------------------------|
|  | Voltage Class | Insulation Level |                   | Normal Current   | Short Circuit Breaking Current | Short Time (3 Second) Current | Short Circuit Making Current |              | Cable Charging Breaking Current |
|  |               | Power Frequency  | Impulse Withstand |                  |                                |                               |                              |              |                                 |
| 36VCP-W25                              | 3.6           | 10               | 40                | 630, 1250, 2000  | 25                             | 25                            | 63                           | 25           | 188                             |
| 36VCP-W32                              | 3.6           | 10               | 40                | 1250, 2000       | 31.5                           | 31.5                          | 79                           | 25           | 188                             |
| 36VCP-W40                              | 3.6           | 10               | 40                | 1250, 2000       | 40                             | 40                            | 100                          | 25           | 225                             |
| 72VCP-W25                              | 7.2           | 20               | 60                | 630, 1250, 2000  | 25                             | 25                            | 63                           | 25           | 188                             |
| 72VCP-W32                              | 7.2           | 20               | 60                | 1250, 2000       | 31.5                           | 31.5                          | 79                           | 25           | 188                             |
| 72VCP-W40                              | 7.2           | 20               | 60                | 1250, 2000       | 40                             | 40                            | 100                          | 25           | 255                             |
| 120VCP-W25                             | 12            | 28               | 75                | 630, 1250, 2000  | 25                             | 25                            | 63                           | 25           | 195                             |
| 120VCP-W32                             | 12            | 28               | 75                | 1250, 2000       | 31.5                           | 31.5                          | 79                           | 25           | 195                             |
| 120VCP-W40                             | 12            | 28               | 75                | 1250, 2000       | 40                             | 40                            | 100                          | 25           | 225                             |
| 175VCP-W25                             | 17.5          | 38               | 95                | 1250, 2000       | 25                             | 25                            | 63                           | 31.5         | 195                             |
| 175VCP-W32                             | 17.5          | 38               | 95                | 1250, 2000       | 31.5                           | 31.5                          | 79                           | 31.5         | 195                             |
| 175VCP-W40                             | 17.5          | 38               | 95                | 1250, 2000       | 40                             | 40                            | 100                          | 31.5         | 225                             |
| 175VCP-W50                             | 17.5          | 38               | 95                | 1250, 2000, 3000 | 50                             | 50                            | 130                          | -            | 460                             |
|  | 17.5          | 38               | 95                | 1250, 2000, 3000 | 50                             | 50                            | 130                          | -            | 490                             |
|  | 17.5          | 38               | 95                | 1250, 2000, 3000 | 50                             | 50                            | 130                          | -            | 525                             |

① Applicable ANSI standards C37.04 - 1979, C37.09 - 1979, and C37.06 - 1997. Operating duty cycle CO-15 seconds-CO. Operating time values: opening 30-45 ms, closing 45-60 ms and reclosing 18 cycles (300 ms).  
 ② Nonstandard circuit breakers with High Close and Latch (momentary) rating for special applications.  
 ③ Consult Application Data 32-265 for further information.

④ Optional interrupting time of 3 cycles is available.  
 ⑤ Also 3 second short time current carrying capability.  
 ⑥ Interrupting time is 3 cycles at 50/60 Hz. Rated operating sequence: O-3 minutes-CO-3 minutes-CO.

### Standard Accessories:

