

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.

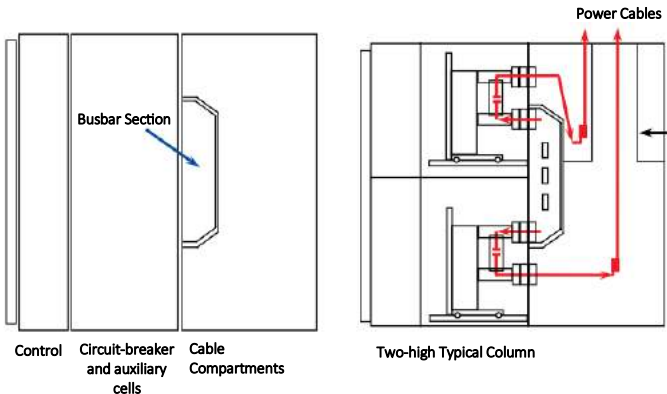
VacClad-W products were developed and tested by the following standards:

- ANSI C37.20.2.
- NEMA SG-5.
- IEC 62271-1.
- IEC 62271-200.
- NBR IEC62271-200.
- CSA C22.2 No. 31-M89.
- EEMAC G8-3.2.



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 views:



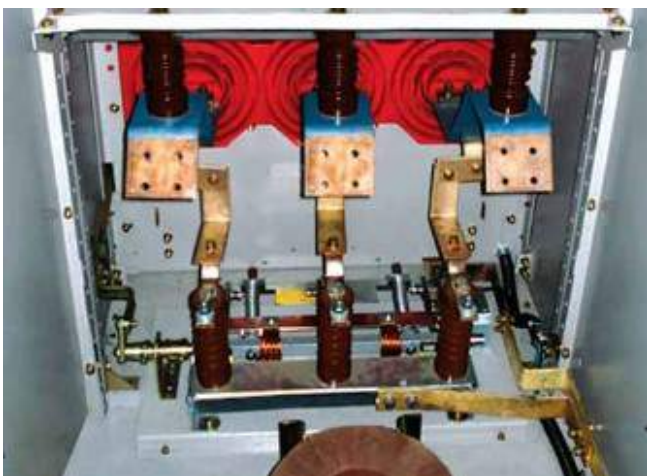
The main features are:

- 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 - 50.0 kA - 63.0 kA
 - ♦ 15.0 kV: - 20.0 kA - 31.5 kA - 40.0 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)
- Isolating shutters for contactor draw out units (SLD Vacuum Contactors)
- 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 Swiath (with interlocks) or removable Ground and Test Device.
- Automatic control plug for withdrawable circuit-breakers.
- Lifting angles for each transport unit.
- Cables Connection: top or bottom.

VacClad-W – MV Switchgear & Controlgear Assembly Design per ANSI C37

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.



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



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 and 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.



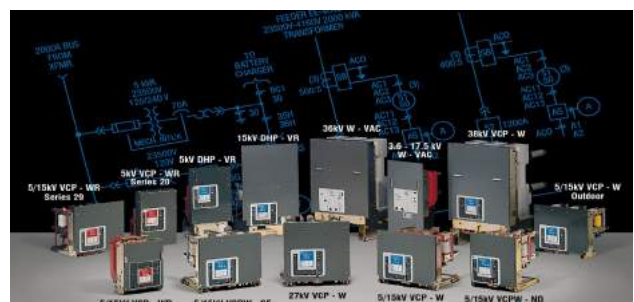
Standard Accessories:



Levering Crank



Lifting Yoke



VacClad-W – MV Switchgear & Controlgear Assembly Design per ANSI C37

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

Identification			Rated Values												Weight
Circuit Breaker Type	Nominal Voltage Class	Nominal 3-Phase MVA Class	Voltage		Insulation Level		Current		Interrupting Time ❷	Permissible Tripping Delay	Maximum Voltage Divided by K	Current Values			
			Maximum Voltage	Voltage Range Factor ❸	Withstand Test Voltage		Continuous Current at 60 Hz	Short Circuit Current (at Rated Maximum kV)				Closing and Latching Capability	Closing and Latching Capability		
					Power Frequency (1 Minute)	Impulse								K Times Rated Short Circuit Current ❹	2,7K Times Rated Short Circuit Current
kV	MVA	E	K	kV rms	kA Peak	Amperes	kA rms	Cycles	Seconds	E/K	kA rms	kA Peak	kA rms	Kg	
50VCP-W250	4.16	250	4.76	1.24	19	60	1200 2000 3000	29	5	2	3.85	36	97 132❺	58 78❻	160 186 238
50VCP-W350	4.16	350	4.76	1.19	19	60	1200 2000 3000	41	5	2	4.00	49	132	78	210 222 238
75VCP-W500	7.2	500	8.25	1.25	36	95	1200 2000 3000	33	5	2	6.60	41	111	66	170 186 238
150VCP-W500	13.8	500	15.00	1.30	36	95	1200 2000 3000	18	5	2	11.50	23	62 97❻	37 58❻	160 186 238
150VCP-W750	13.8	750	15.00	1.30	36	95	1200 2000 3000	28	5	2	11.50	36	97 130❻	58 77❻	160 186 238
150VCP-W1000	13.8	1000	15.00	1.30	36	95	1200 2000 3000	37	5	2	11.50	48	130	77	210 222 238
150VC-W1500	13.8	1500	15.00	1.00	36	95	1200 2000 3000	63	5	2	15.00	63	170	101	238 240 250

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

Identification		Rated Values							Weight
Circuit Breaker Type	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						
			kV rms	kV Peak					
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

❶ Applicable ANSI standards C37.04 - 1979, C37.09 - 1979, and C37.06 - 1987. Operating duty cycle CO-15 seconds-CO. Operating time values: opening 30-45 ms, closing 45-60 ms and reclosing 18 cycles (300 ms).

❷ Nonstandard circuit breakers with High Close and Latch (momentary) rating for special applications.

❸ Consult Application Data 32-265 for further information.

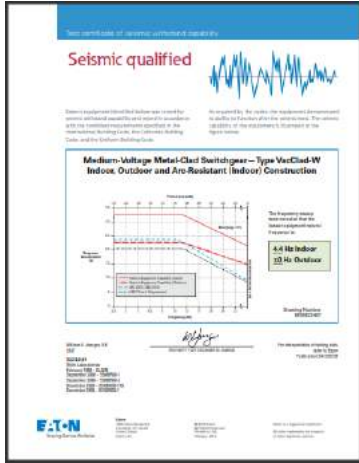
❹ Optional interrupting time of 3 cycles is available.

❺ Also 3 second short time current carrying capability.

❻ Interrupting time is 3 cycles at 50/60 Hz. Rated operating sequence: O-3 minutes-CO-3 minutes-CO.

VacClad-W – MV Switchgear & Controlgear Assembly Design per ANSI C37

Certificate



Type Test Certificate Seismic by EATON



Certificate of compliance by UL



Test Certificate ANSI by EATON

Success Story

NO	Project Name	Customer	Market Application
1	Penggantian Substation 63 - Pertamina RU IV Cilacap	PT. Timas Suplindo	Oil & Gas
2	Lahendong Unit 5&6 Gethermal Power Plant	PT. ReKayasa Industri	Power Plant
3	Rantau Dedap	PT. ReKayasa Industri	Power Plant
4	Visayas Philipine by Alstom (Overseas Mar-	PT. Mitra Purnama Engineering	Utility
5	PLTMG Paket 3	PT. Semacom Integrated	Utility
6	STG Boiler Pusri	PT. ReKayasa Industri	Fertilizer Plant
7	Kupang Gas Engine Power Plant (Peaker) 40 MW Project	PT. Indo Fuji Energi	Power Plant