

MEDIUM VOLTAGE VACUUM CIRCUIT BREAKERS

Type VCPW-ND, NARROW DESIGN MEDIUM VOLTAGE VACUUM CIRCUIT BREAKERS

**ANSI 5 kV at 250 MVA
1200 Amperes, 60 kV BIL**

**IEC 3.6 - 7.2 kV at 25 kA and 31.5 kA
630 and 1250 Amperes, 60 kV BIL**

Greater flexibility now comes in a smaller package — Cutler-Hammer's "Narrow Design" Type VCPW-ND. Reliable, maintenance-free vacuum circuit breaker technology designed into a "space saving" 26" wide switchgear section.

The Cutler-Hammer Type VCPW-ND Vacuum Circuit Breaker was specifically designed to meet and exceed ANSI, IEEE, NEMA, and IEC Standards. Local codes can also be met with an exclusive VCPW-ND UL Listed option for breakers and switchgear. There is no longer a need to be locked into the industry standard, 36" wide switchgear. This new space saving, 26" wide design solves the problem of limited floor space.

A Variety of Applications

With its small footprint and the flexibility of a one or two-high design, the Type VCPW-ND Vacuum Circuit Breaker is an ideal solution for applications where space comes at a premium:

- Generator control
- Oil platforms
- Add-ons to existing switchgear
- Outdoor switchgear

Quality and Reliability are Built-In

All Type VCPW-ND circuit breakers are designed for reliability and minimal maintenance ... a direct result of engineering with proven components, quality materials and fewer moving parts.



Each Type VCPW-ND Vacuum Circuit Breaker is assembled in an ISO 9002 certified facility and provided with its unique Quality Assurance Certificate that documents all tests and inspections performed.

Cutler-Hammer is a world leader in vacuum interrupters and vacuum circuit breakers. The Type VCPW-ND Vacuum Circuit Breaker incorporates many design features which have been field proven through more than 30 years of vacuum interrupter design and manufacturing experience... coupled with over 75 years of power circuit breaker design and manufacturing experience.

Maintenance Free Vacuum Technology

Spiral copper-chrome contacts provide superior performance characteristics, including lower chop currents. The spiral contact design provides a self-induced magnetic effect that moves the arc root around the contact periphery. This very efficient arc control prevents hot spots which minimizes contact erosion.

The Industry's Best System for an Electrical Connection to a Vacuum Interrupter

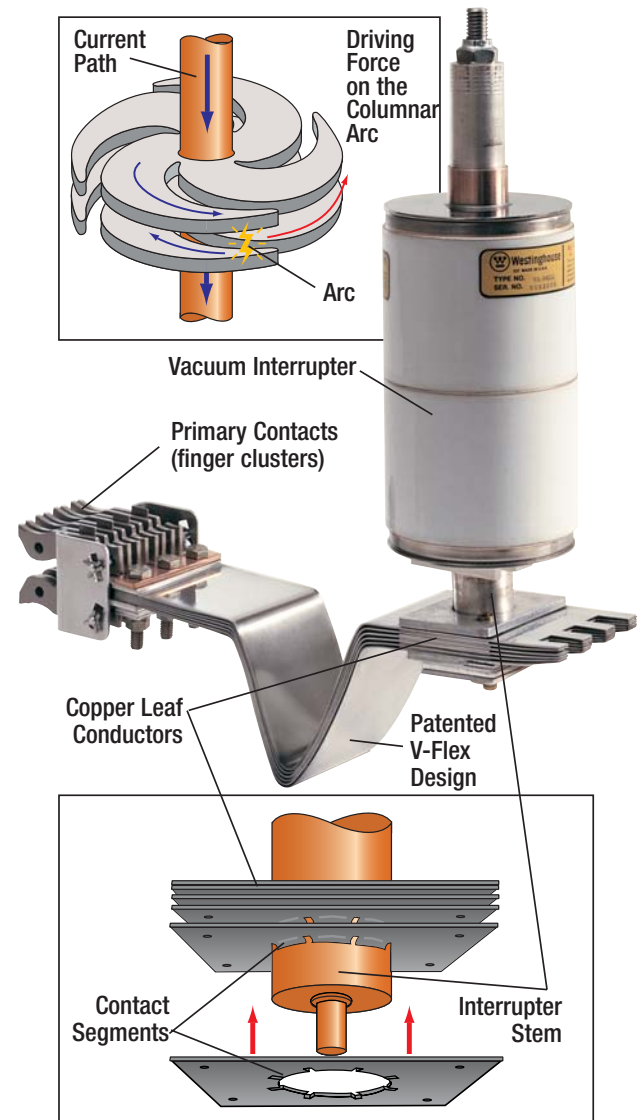
Our nonsliding current transfer system consists of a series of tin-plated, high-conductivity copper leaf conductors that are swaged onto the vacuum stems:

- Providing improved current flow through the increased surface area (skin effect) of the multiple conductors while the multi-point contacts offer very low electrical and thermal resistance.
- Unlike sliding or rolling designs, there are no moving parts to wearout ... therefore, no maintenance.
- Resulting in longer circuit breaker life.

Plus, our unique, patented V-Flex system allows for vacuum stem movement thus creating less friction and wear with fewer moving parts and a shorter stroke. This provides for a simpler, more compact, low energy mechanism with longer life and greater reliability.

Designed-In Safety Features Provide Optimum Operator Safety

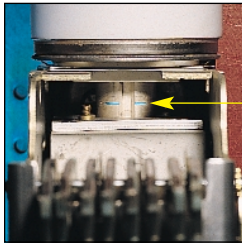
- Double dead front shields isolate the operator from high voltage when the breaker is energized. Additionally, the circuit breaker can be connected or disconnected with the compartment door closed by utilizing an electric levering device or a manually operated levering device.
- True mechanically and electrical trip-free stored energy mechanism design means that while holding a mechanical trip command, the breaker contacts will not close or touch even if an electrical or mechanical close command is received.
- Safety interlocks provide added operator safety. The mechanism is held mechanically trip-free when levering the circuit breaker in or out. Additionally, closing springs will discharge automatically when the breaker is being withdrawn from or inserted into its compartment.



Controls and indicators are functionally grouped on the front panel of the VCPW-ND breaker for user friendly operation.

Designed for Easy Access, Inspection, and Minimal Maintenance

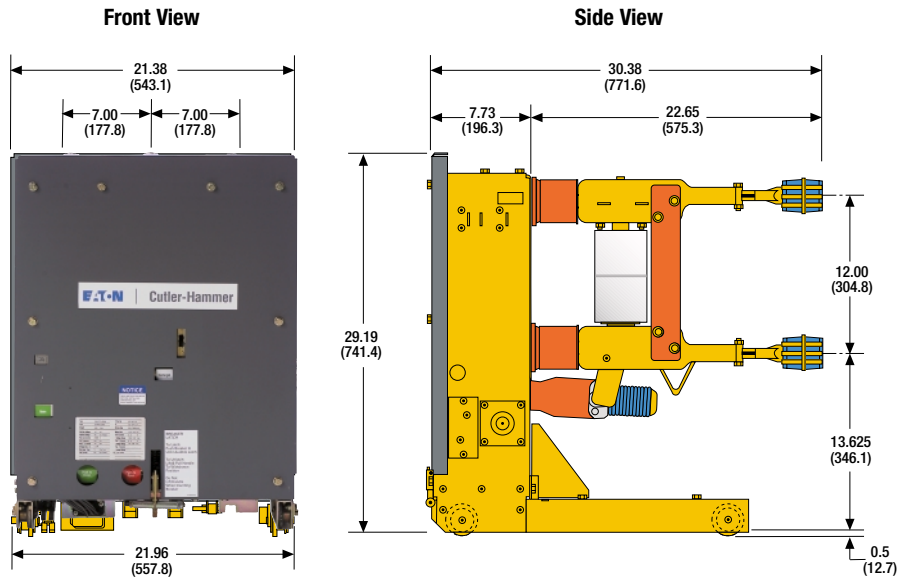
Removing the circuit breaker front panel provides access to the stored energy mechanism and control components, facilitating ease of inspection. Minor maintenance when required, such as lubricating the mechanism and accessing the control components, is simplified.



Contact Erosion Indicator

When the circuit breaker is withdrawn from the compartment on removable extension rails, the contact erosion indicator (one for each vacuum interrupter) can be visually inspected. Only occasional visual inspection is required.

Type VCPW-ND Dimensions - Inches (mm)



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

Identification		Rated Values											Weight		
Circuit Breaker Type	Nominal Voltage Class	Nominal 3-Phase MVA Class	Voltage		Insulation Level		Current		Interrupting Time	Permissible Tripping Delay	Maximum Voltage Divided By K	Current Values			Weight
			Maximum Voltage	Voltage Range Factor	Withstand Test Voltage		Continuous Current at 60 Hz	Short Circuit Current (at Rated Max. kV)				K Times Rated Short Circuit Current ②④	Closing and Latching Capability	Closing and Latching Capability Momentary	
			E	K	Power Frequency (1 min.)	Impulse	Amperes	kA rms							
kV	MVA	kV rms		kV rms	kV Peak				Y	E/K	kA rms	kA Peak	kA rms	lbs.	
50VCPW-ND250	4.16	250	4.76	1.24	19	60	1200	29	5	2	3.85	36	97	58	345

UL Underwriters Laboratories, Inc. listed option is available.

IEC Standards – VCP-W Vacuum Circuit Breaker Types Rated on Symmetrical Current Rating Basis ⑤

Identification		Rated Values							Weight
Circuit Breaker Type	Voltage Class	Insulation Level		Normal Current	Short Circuit Breaking Current	3 Second Short Time Current	Short Circuit Making Current	Cable Charging Breaking Amps	Weight
		Power Frequency	Impulse Withstand						
36VCPW-ND25	3.6	10	40	630, 1250	25	25	63	25	159
36VCPW-ND32	3.6	10	40	630, 1250	31.5	31.5	79	25	159
72VCPW-ND25	7.2	20	60	630, 1250	25	25	63	25	159
72VCPW-ND32	7.2	20	60	630, 1250	31.5	31.5	79	25	159

① 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).

② Consult Application Data 32-265 for further information.

③ Optional interrupting time of 3 cycles is available.

④ Also 3-second short time current carrying capability.

⑤ Interrupting time is 3 cycles at 50/60 Hz.

Rated operating sequence O-3 min-CO-3 min-CO, in accordance with IEC-56.

Typical Specification for Westinghouse Type VCPW-ND Medium Voltage Vacuum Circuit Breakers and Related Metal-Clad Switchgear

All circuit breakers and related switchgear shall conform to applicable [ANSI, IEEE, UL Listed] or [IEC] ① standards. All circuit breakers shall use vacuum interrupter technology, be manufactured in a Cutler-Hammer ISO 9002 factory, and be Cutler-Hammer Type VCPW-ND, rated as follows:

Maximum Voltage:

ANSI 4.76 k
IEC 3.6 - 7.2 kV

Insulation Level:

Power Frequency - 19 kV rms
Impulse Withstand - 60 kV peak

Short Circuit Current:

ANSI - 29 kA (250MVA) ①
IEC - [25 kA] or [31.5 kA] ①

Close and Latch Capability:

ANSI - 97 kA peak②

Short Circuit, Making Current:

IEC - [63 kA] or [79 kA] peak ①

Interrupting Time:

[Five] or [Three] cycles ①

Continuous Current:

ANSI - [1200A] ①
IEC - [630A] or [1250A] ①

The vacuum circuit breakers shall be horizontal drawout type capable of being withdrawn on rails. The circuit breakers shall be operated by a motorcharged spring type stored energy mechanism, charged normally by an electric motor and in an emergency by a manual charging tool. The primary disconnecting contacts shall be self-aligning, silverplated copper. Each circuit breaker shall be of modular construction, containing front accessible mechanism with free and unobstructed access to control components for ease of inspection or maintenance. Each circuit breaker shall contain three vacuum interrupters separately mounted in a self-contained, self-aligning pole unit, which can be removed as complete assemblies. The vacuum interrupter pole unit primary phase to ground insulation system shall be glass polyester. A contact erosion indicator for each vacuum interrupter, which requires no special tools to indicate available contact life, shall be easily visible when the breaker

is removed from its compartment. The vacuum interrupter shall utilize copper chrome contact material. The current transfer from the vacuum interrupter moving stem to the breaker main conductor shall be a nonsliding/nonrolling design. The secondary contacts shall be silver-plated and shall automatically engage the breaker in the operating position, and also manually engage in test position.

Each circuit breaker compartment cell shall be equipped to house a removable breaker element. The levering device shall allow for the circuit breaker to be connected or disconnected with the door closed by use of a manual levering tool or optionally by an electrical levering mechanism. It will include all of the necessary interlocks to render the breaker mechanism mechanically and electrically trip free during the levering process. Extension rails shall be provided to allow withdrawal of the circuit breaker for inspection and maintenance without the need for lifting devices or portable platforms.

The stationary primary contacts shall be silver-plated and recessed within glass polyester insulating tubes. A grounded steel shutter shall automatically cover the stationary primary disconnecting contacts when the circuit breaker is in the test or disconnected position or out of the cell. Positive guidance rails shall be provided to automatically align the primary and secondary disconnects while inserting the circuit breaker into the switchgear.

All main bus supports between sections shall be [glass polyester] or [porcelain]①. All auxiliary compartments for potential transformers, control power transformers, and/or fuse drawers shall conform to a drawout 26" wide switchgear construction. Main bus supports, cable supports, and all standoff insulators shall be [glass polyester] or [porcelain]①.

The switchgear assembly shall consist of individual vertical sections housing various combinations of circuit breakers and auxiliaries, bolted to form a rigid metal-clad 26" wide switchgear assembly.

① *Note to Specification Writer: Select one of the available standards or ratings.*