

# POWERCON CORPORATION



## TYPE VM38-25K VERTICAL LIFT DRAWOUT CIRCUIT BREAKER

**BROCHURE #PC-026A**

**ELECTRONIC VERSION CREATED: 6/30/96**

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# TYPE VM38-25K

## Vertical Lift Drawout Circuit Breaker

**RATINGS**  
**38KV, 1200A, 1500MVA, 25KA**  
**CAPACITOR SWITCHING**  
**REACTOR SWITCHING**

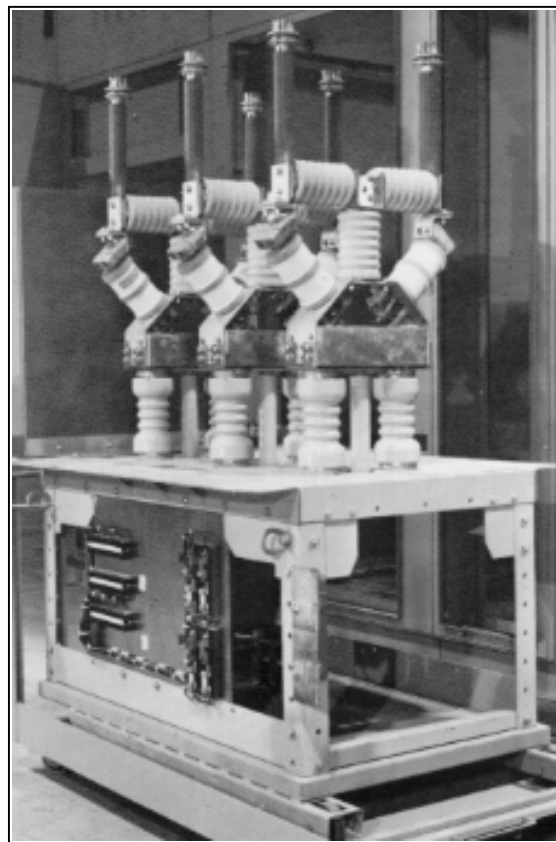
### **ADVANTAGES OF VACUUM INTERRUPTION**

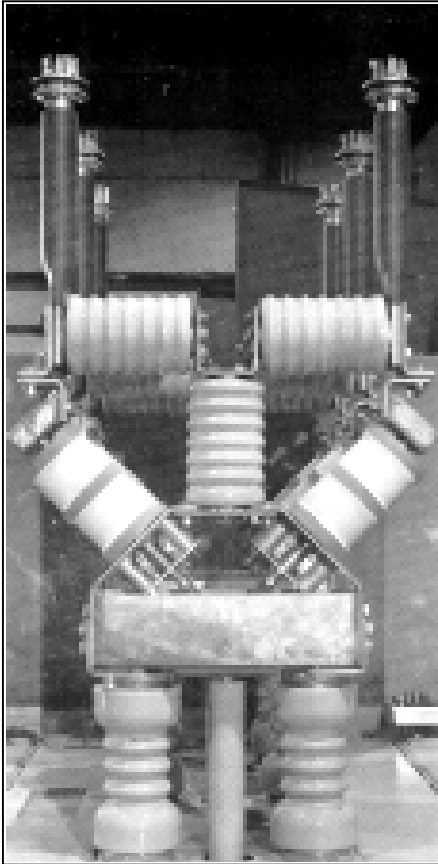
Maintenance - The absence of oil as an insulating and interrupting medium minimizes the maintenance and servicing required,

Installation - The forces generated during interruption are only those of the operating mechanism. This greatly simplifies foundation requirements.

Duty Cycle - No derating of interrupting capability is required regardless of the reclosing cycle.

Safety - The use of air as the primary insulation minimizes the hazard from fire or explosion.



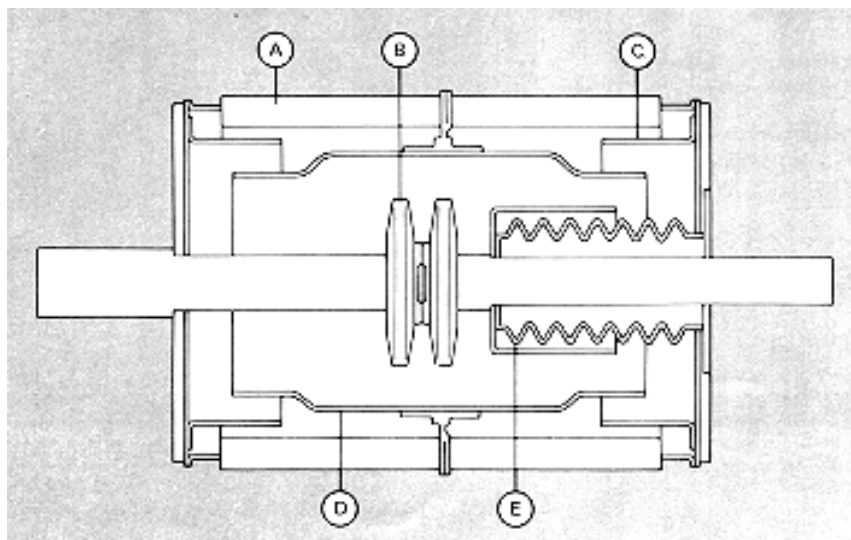


## VM38-25K DESIGN

The Type VM38-25K vacuum circuit breaker design features 2 vacuum interrupters per phase connected in series. The pair of interrupters is driven by a common porcelain push rod through a unique linkage which ensures simultaneous operation. Each interrupter has an individual contact pressure spring and provisions to measure contact wear. Rolling contacts transfer the current from the moving contact stem to the main bus.

### Internal Vacuum Interrupter Construction

- A Ceramic Envelope
- B Butt Type Contacts
- C Voltage Grading Shield
- D Main Shield - Suspended from the center seal, the metal shield provides a condensing surface for the vaporized contact material generated during the arcing period. This action prevents contamination of the internal ceramic surface.
- E Bellows - Braced to the moving contact stem and in contact with the main shield, the flexible stainless steel bellows allows the contact to move during operation while maintaining a perfect seal.

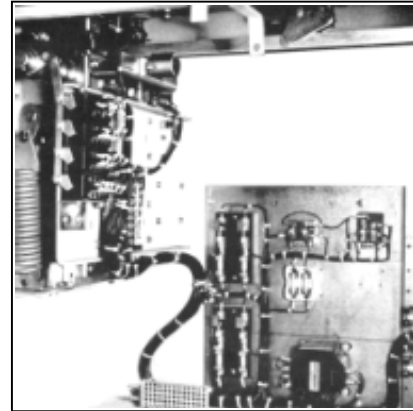


## LOW VOLTAGE COMPARTMENT

The low voltage compartment contains all relay, metering and mechanical functions and is completely insulated from the high voltage section.

### Control Wiring

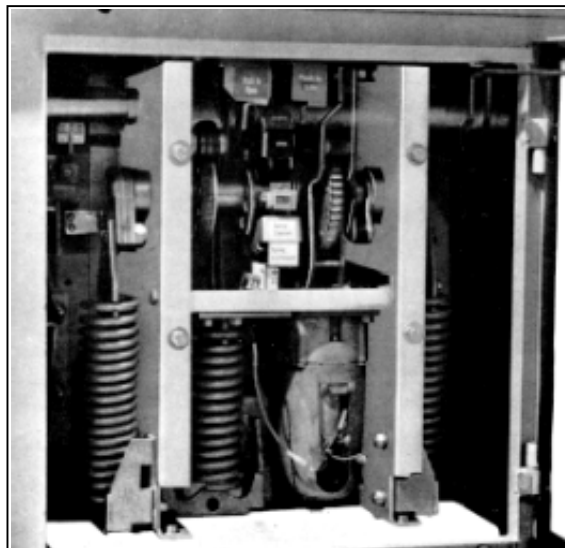
Panels located in the low voltage compartment are used to mount terminal blocks and the 52X and 52Y control relays. Secondary voltage circuits are normally wired through fused knife switches for circuit protection and easy disconnect. The trip circuit is connected through a knife switch, but is not normally fused. Bushing current transformer leads are brought from the high voltage compartment and connected to shorting type terminal blocks.



### Operating Mechanism

The operating mechanism is the stored energy type, spring close - spring open. A motor driving through a ratchet mechanism is used to charge the main closing springs. Energy is stored in the tripping spring during the closing sequence to ensure adequate tripping energy whenever it is required. The mechanism is electrically and mechanically trip free.

The operating mechanism drives directly to the main shaft which connects all three phases. Each phase is operated from this shaft through an independently adjustable linkage.



# TYPICAL SPECIFICATIONS

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Rated Maximum Voltage	38 KV RMS
Voltage Range Factor K	1.65
Frequency	60 Hertz
Continuous Current	1200 Amps RMS
Dielectric Strength	
Low Frequency Withstand (Dry 60 Hertz - 1 Minute)	80 KV RMS
Full Wave Withstand (BIL)	150 KV Crest
Operating Duty (Standard Duty Cycle)	CO 15 Sec. CO
Interrupting Time	5 Cycles
Permissible Tripping Delay Y	2 Seconds
Closing Time	6.0 Cycles
Reclosing Time	0.5 Seconds
Rated Short Circuit Current	21 KA
Close and Latch (Initial Current Loop)	56 KA, RMS, Asym.
Short Time Current (3-Seconds)	35 KA, RMS, Sym.
Transient Recovery Voltage (Time to peak 63 IA sec)	71.4 KV Peak
Load Current Switching Capability	1200 Amperes
Capacitance Current Switching	
Open wire Line Charging Switching Current	Up to 1200A
Isolated Cable Charging Current	Up to 1200A
Isolated Capacitor Bank Switching Current	1200 Amps RMS
Back-to-Back Shunt Capacitor Bank Switching Current	1200 Amps RMS
Transient Overvoltage Factor	2.5
Transient Inrush Current	50 KA Peak
Transient Inrush Frequency	6800 Hertz
Interrupting Time	5 Cycles
Capacitor Current Switching Life	1500
Grounding of System	Grounded
Grounding of Capacitor Bank	Grounded or Ungrounded

## Stored Energy Mechanism Control Power Requirements

Rated Control Voltage	Spring Run Amperes	Charge Motor Time (Sec.)	Close or Trip Amperes	Voltage Range	
				Close	Trip
48 V DC	9.0	6	16	38-56	28-56
125 V DC	5.0	6	7	100-140	70-140
250 V DC	3.0	6	4	200-280	140-180
120 V AC	5.0	6	16	104-127	104-127
240 V AC	3.0	6	8	208-254	208-254

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