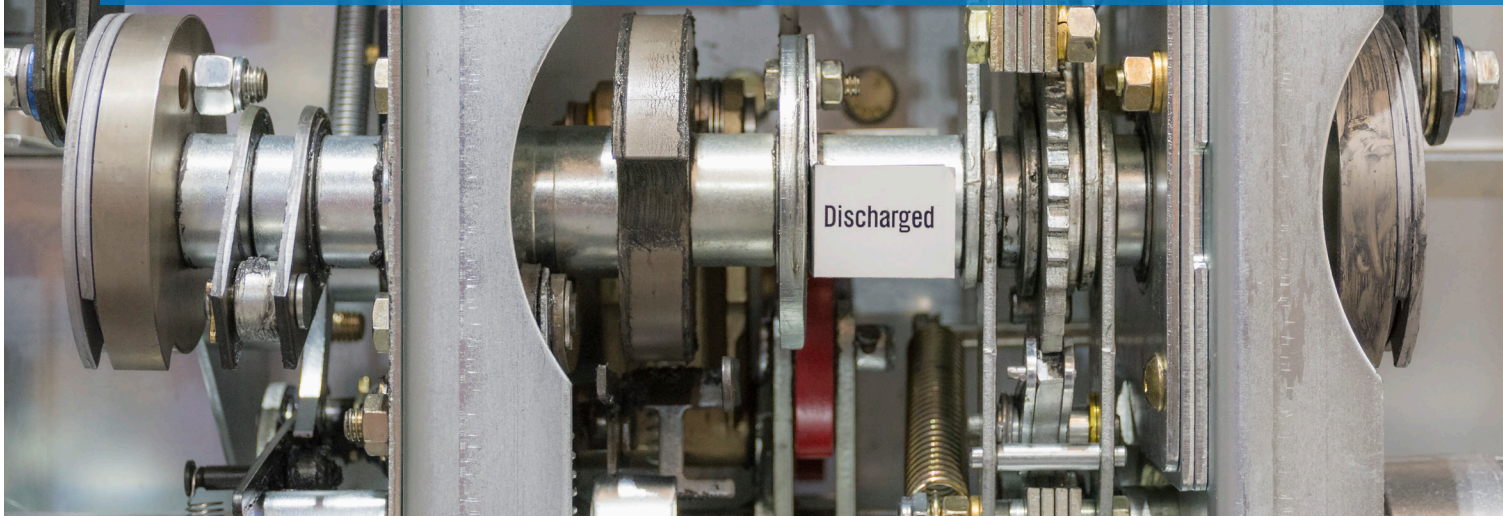


# Factory Authorized Mechanism Enhancements

## Equipment Life Extension and Modernization



### VCP-W History

Eaton's VCP-W line of medium voltage (MV) power circuit breakers have been commercially available since 1986 and over 200,000 units were placed in service since the VCP-W's introduction. If original OEM parts are used and proper maintenance conducted, power circuit breakers can have an exceptionally productive performance. Some were properly maintained, but many were not and as a result, customers need more than just routine maintenance to get their mechanisms back in "like-new" condition.

### 30 Years of Constant Improvement

Over the years component and material changes have enhanced the performance and durability of our VCP-W products. Most changes are backwards compatible, but some require additional modifications to accommodate the higher performance components.

Power circuit breakers are "silent sentinels" waiting to instantly open and clear short circuits even if dormant for years. Most utility distribution circuit breakers experience less than 300 operations over a 30-40 year span. This requires lubrication that is temperature stable and non-hardening. Circuit breakers that operate regularly require rugged components to avoid failure.

### Power Breaker Center (PBC) and Power Breaker Reconditioning centers (PBRc)

Eaton's PBC in Greenwood, SC and PBRc nationwide are requested to provide reconditioning and repair for VCP-W power circuit breakers. Customers ask Eaton to provide a reconditioning process that incorporates all previous mechanism upgrades and enhancements.

### Factory Authorized Mechanism Enhancements (FAME)

Eaton's PBC has developed a premium solution for VCP-W distribution class power circuit breakers. We call the process FAME and we want to modernize your VCP-W circuit breakers to perform beyond expectations. Eaton's PBC and PBRc locations provide a quality oriented procedure with key components and expertise to drive the FAME process.

### FAME Process

- Ship VCP-W to the PBC/PBRc
- Incoming inspection
- Test vacuum bottles
- Test Control Components
- Disassemble mechanism
- Rebuild mechanism with enhanced components
- Lubricate with new synthetic molybdenum disulfide grease
- Test and return with signed test certificate

### Enhanced Durability

Some circuit breakers are used as motor starters. Although this is not the ideal application for power circuit breakers, it is a common occurrence for higher continuous current requirements. The only way to really test a circuit breaker in a motor starting application is apply it and let it operate. This is not an application that can be practically duplicated in a power testing laboratory. As a result, the PBC actively seeks customers that will partner with us in a Beta Test Program for motor starting applications.

### Extended Maintenance Intervals

Extending the time between scheduled maintenance of a power circuit breaker requires a high level of confidence in the product and significant additional testing. The PBC is so confident in our new component enhancements and lubrication system that we have extended the normal maintenance interval of all VCP-W circuit breakers that are submitted to the FAME program. The new maintenance interval of the FAME enhanced VCP-W mechanism is 10,000 operations or 10 years, whichever comes first. This applies to all Distribution Class Circuit Breakers rated up to:

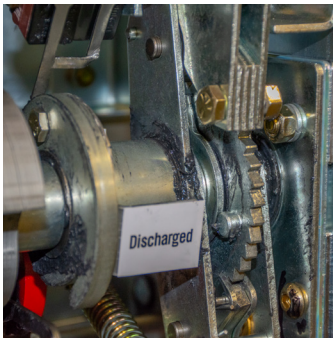
- 2000 A continuous current
- 50 kA max. short circuit
- 15 kV max. voltage at 60 Hz

### Value

Depending on the application and environment, a typical VCP-W circuit breaker may be reconditioned 1-4 times during a 10 year period at a cost of \$4,500-\$9,700 for each reconditioning. This cost will only increase with time and may not have any of the FAME enhancements incorporated in the circuit breaker. For a similar cost, the FAME process returns a superior product that requires no schedule maintenance for the same period when applied under usual conditions. Eaton also offers a "tune-up" after 10 years to ensure your mechanism continues to operate at the FAME level for even longer. Contact your local Eaton representative and let us modernize your VCP-W circuit breaker.

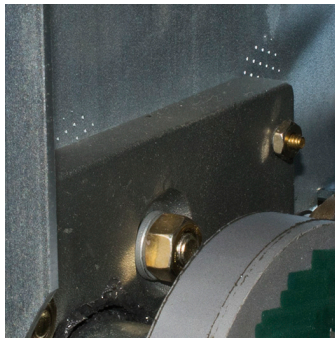


Powering Business Worldwide



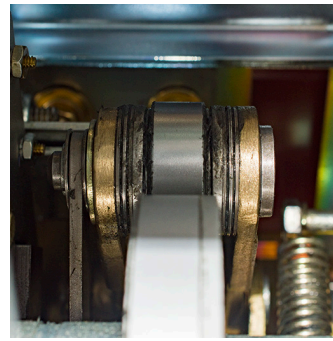
### Synthetic Molybdenum Disulfide Lubrication System

A modern lubrication system creates a protective layer between wearing surfaces. The lubrication system and utility hardened mechanism extends scheduled maintenance to 10 years or 10,000 operations, whichever comes first.



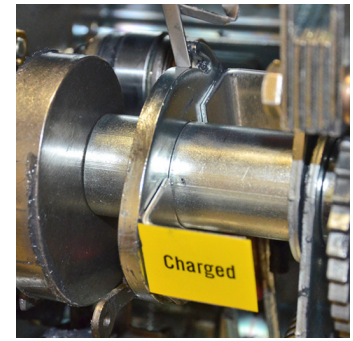
### Cast Iron Bearing Block

The main bearing block is subjected to high impact every time the circuit breaker is closed. If closed into a fault, the repulsion forces increase as the square of the difference of the current. This can cause laminated bearing blocks to shift and tighten the bearing surfaces. The cast iron bearing block rigidly supports the bearing surfaces.



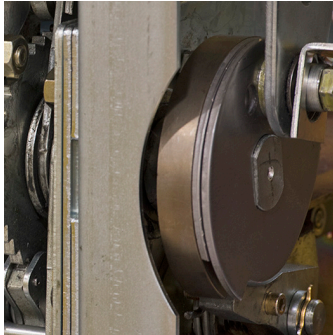
### Main-Link Roller and Cam

The enhancement of the FAME system uses the components of a 63 kA mechanism and a hardened closing cam to ensure longer life and reliability during all closing events. The main link roller incorporates a sealed aircraft bearing.



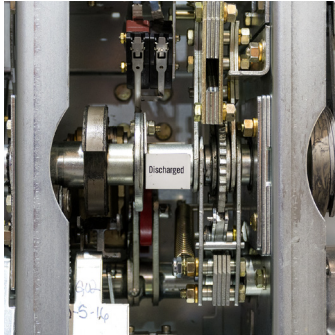
### Enhanced Motor Cut-off Cam

Each time the mechanism charges the closing springs a limit switch operates to remove power from the charging motor. An enhanced motor cut-off cam is added to the mechanism to allow more positive initiation of the motor cut-off limit switch and prevent damage to the limit switch actuator arm.



### Rugged Anti-reverse System

Over time, the high impact on the right lamination stack can cause the mechanism system to tighten and eventually cease to operate. The lamination stack is replaced by a solid cam to eliminate the lamination spread and tightening of the mechanism shaft components. Enhanced support of the anti-reverse prop prevents bending of the main prop bolt.



### Enhanced Vertical Supports

The mechanism enhancements provide more durability to the mechanism. To further enhance the overall mechanism performance and reliability, the main inside vertical supports are stronger ones with wider flanges. This prevents vibration and flexing that can result with higher fault current ratings.



### New Escutcheon Decal

VCP-W power circuit breakers are applied in many environments that are poorly lighted and it is often difficult to identify the operators without additional lighting. FAME adds a new front cover escutcheon decal to assist personnel in identifying each semaphore without the aid of additional lighting. In an emergency situation, this can save valuable time.

### FAME Warranty

The FAME process is exclusive to Eaton's PBC and PBRc locations and extends the useful life of every VCP-W mechanism regardless of age. The circuit breaker mechanism warranty, excluding control components is three years after the FAME process is performed for all qualifying VCP-W circuit breakers unless operated as a motor starter. Motor Starting applications are currently limited to a two year warranty. Contact your nearest Eaton representative and use FAME to modernize your circuit breakers.

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