

## Simplicity and reliability you can count on

Eaton's Cooper Power™ series vacuum reclosers have provided simplicity and economical overcurrent protection for more than 45 years. The mechanical design of the single-phase recloser has proven its longevity, becoming the backbone of circuit reliability projects for utilities around the globe. New design analysis reveals opportunities to extend routine inspection intervals a minimum of 15 years.

Single-phase V4H, V4L and V4E vacuum reclosers are complete self-contained systems that don't require external power sources, such as batteries or potential transformers (PTs), providing full functionality and circuit overcurrent protection over the entire voltage and current operating range. The reclosers are cost-effective and highly reliable, providing utilities excellent circuit and device protection performance on existing circuit infrastructure.

### Proven reliability

Versatile single-phase workhorse of the utility market:

- Reclosing is achieved with a simple stored-energy spring mechanism
- Meets twice the duty cycle short-circuit test requirements of ANSI C37.60 recloser standards
- Full four-shot fault interruption sequences performed at 6 kA

- Fifty percent higher duty cycle rating than oil interrupting reclosers
- Reduced mechanism stress and component wear allow for significantly longer operating life
- Low-energy arc interruption takes place in a clean vacuum environment
- No auxiliary control power sources required—including batteries
- Recloser life expectancy exceeds 30 years in most environments

### Simple design, easy to operate

- Mechanism operating handles and recloser tank are at safer ground potential than live-tank designs that have operating handles and housing at system potential
- Mechanical lockout indication
- Clearly visible and easily seen from the road
- No external power or battery source required
- Indication of lockout state remains until line crew arrives—whether in an hour or a day

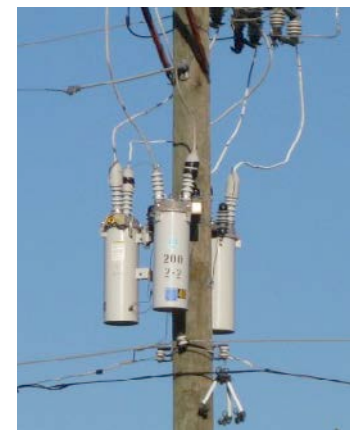
- Coil size and time current characteristics (TCC) curve selection designed to simple coordination principles—no special system coordination tools required
- Opening and closing of device is performed with hotstick; no auxiliary power required

### Total life cycle cost

- Reduced maintenance costs
- Extended maintenance cycle over all available alternatives
- Fewer line crews to dispatch
- Minimal training needed
- Inexpensive parts—gaskets, liners and new oil
- Cost-effective initial investment

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Based on Eaton's extensive study of the vacuum interrupter integrity and life expectancy, insulating oil characteristics, and insulation and dielectric clearances of the Type V4H, V4L and V4E reclosers, we are able to extend the recommended routine maintenance interval to a minimum of 15 years.

#### Condition-based maintenance (CBM) white paper results

- Condition-based monitoring techniques can be successfully applied to V4H, V4L and V4E reclosers
- A combination of oil, paper desiccant and free breathing tank manages moisture content of oil over operating life
- Counter operations combined with a user-selected application is a successful method to determine maintenance interval
- V4H, V4L and V4E recloser duty cycle extends beyond mechanism wear for numerous scenarios
- Maintenance cycles can be extended to a minimum of 15 years (i.e., 100 A coil: 40 operations/year x 15 years)

#### Superior performance with vacuum interrupter technology

- Fast, low-energy arc interruption with long contact and interrupter life, low mechanical stress and increased operating safety
- Contact and interrupter life are several times greater than with interruption in oil
- Designed with a metal and ceramic housing for maximum strength and long-term vacuum integrity
- Fast fault clearing

#### Maintenance

- Fifteen-year routine maintenance cycle vs. the previous six-year recommendation
- Gasket life of 20 years
- Vacuum has no maintenance vs. oil interrupter system
- Because reclosers are applied under widely varying operating and climatic conditions, maintenance intervals are best determined by the user, based on actual operating experience

- Reclosers must be maintained when the vacuum interrupter has reached the end of its interrupter life (twice the rated duty cycle)
- Authorized Service Centers (ASCs) located throughout U.S.—qualified and certified technicians
- Switchgear Support Group (SSG) is dedicated to providing answers to your technical questions and after-sales support
  - Phone: (800) 497-5953
  - Email: PSSM-SSG@Eaton.com

#### Availability

- Many ratings and timing available in four weeks or less
- Contact Eaton with your specific requirements to develop plans to fit your supply chain needs

#### Single-phase recloser ratings

Recloser type	Rated system nominal voltage (kV)	Rated system maximum voltage (kV)	Rated system withstand voltage (BIL) (kV)	60 Hz insulation level withstand rating	Continuous current (amperes)	Maximum interrupting current (amperes) (rms)
V4H	14.4	15.5	110	50	200	2000
V4L	14.4	15.5	110	50	280	6000
V4E	24.9	27	150	60	280	6000

For Eaton's Cooper Power series recloser product information, call **1-877-277-4636** or visit: **Eaton.com/cooperpowerseries**

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