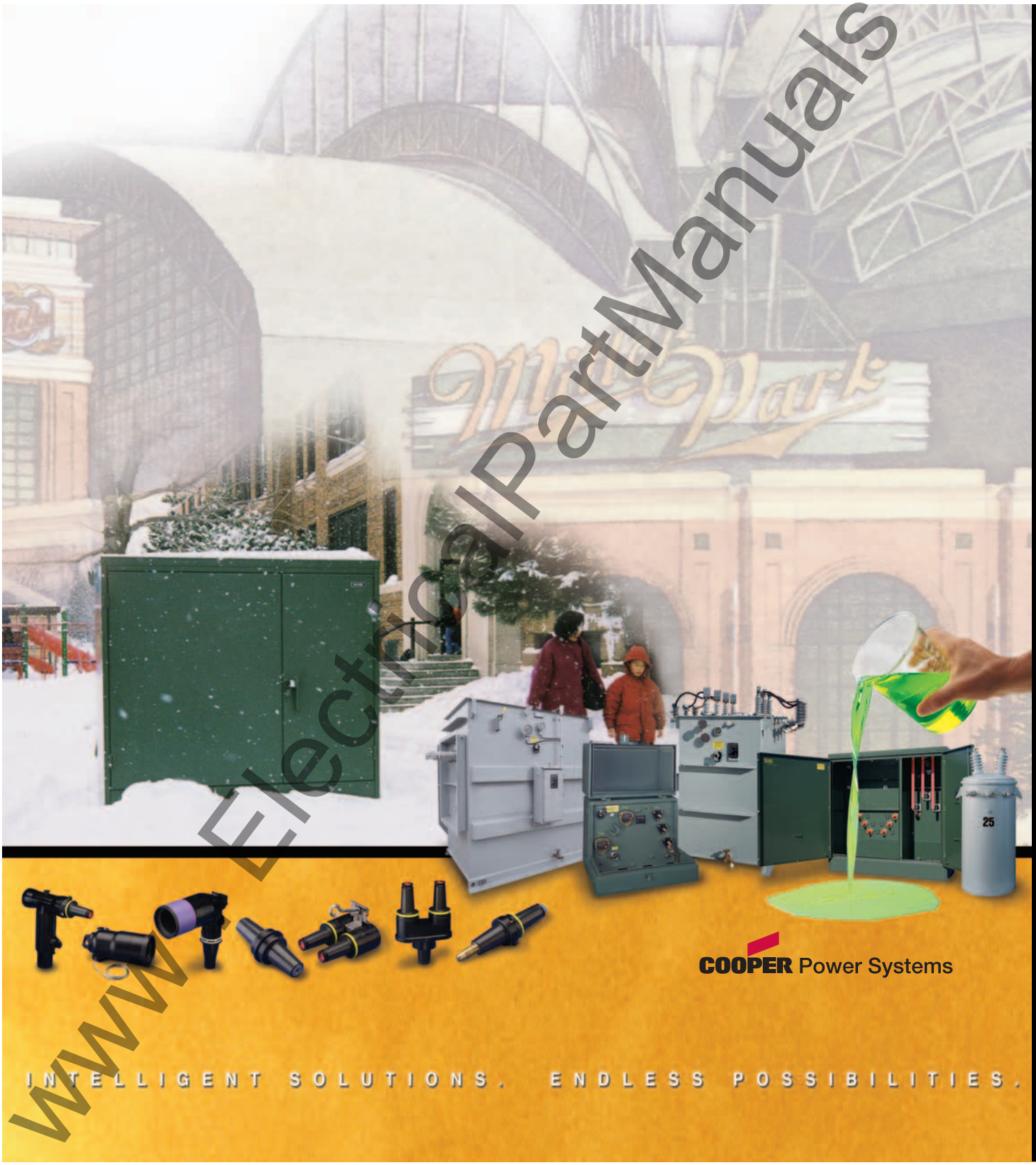
Electrical Distribution Products

for Commercial and Industrial Applications



INDUSTRIAL PRODUCTS

COOPER Power Systems

INTELLIGENT SOLUTIONS. ENDLESS POSSIBILITIES.

COOPER Power Systems

Broad Product Line

Cooper Power Systems offers one of the broadest product lines in the industry, designed to improve system performance. Through our leading innovations in energy reliability and automation, we provide complete solutions to your most pressing application requirements. Whether you are working on a typical transformer installation, or a specialized indoor application, we offer products and services to meet your power distribution needs.

Leader in Transformer Reliability

Cooper offers overhead, pad-mounted and substation transformers to 14,000 kVA. Our transformers have earned a worldwide reputation for quality and reliability.

The Indoor Powercenter™ Transformer offers improved safety, reliability and efficiency, and has a lower cost than a dry-type transformer. It's specially designed and approved for all indoor or roof-mounted applications and suitable in all commercial and industrial environments. In fact, The Indoor-Powercenter Transformer, filled with Cooper Envirotemp® FR3™ fluid, can be used anywhere dry-type transformers have been specified.

Developer of Revolutionary Transformer Fluid

Envirotemp® FR3™ fluid, Cooper's soy-based, PCB-free coolant, has improved fire safety, extends transformer life and is environmentally preferred. It is the perfect coolant for both new and retrofill applications. Approved by Underwriters Laboratories® and FM Global®, Envirotemp FR3 fluid has the industry's highest published flash and fire points. Tests show that transformer insulating paper lasts five to eight times longer with Envirotemp FR3 fluid than with other coolants. It is the first biodegradable dielectric fluid made from edible seed oil, and has received the Environmental Technological Verification (ETV) from the U.S. Environmental Protection Agency.

Provider of Superior Molded Rubber Products

Cooper completes your transformer package with a full selection of molded rubber loadbreak and deadbreak connectors. Using advanced technology, we mix all of our EPDM rubber in an intermeshing rotor mixer with integral process control. This results in a more consistent material molding performance and unsurpassed product operation. We use a proprietary, multi-stress aging test to ensure longevity and excellent field performance.

– On Target Solutions

Cooper Offers More

In addition to transformers and molded rubber products, Cooper also supplies surge arresters, switchgear, capacitors, voltage regulators, relays, reclosers, switches, faulted circuit indicators, fuses and line construction materials – all the products you need for a complete package.

Application and Technical Support

With Cooper Power Systems, you're not alone on the job. Technical support and application information are readily available.

Our Systems Integration Group (SIG) offers turnkey solutions, including their Modular Integrated Transportable Substations (MITS) that can be installed on your site within hours. It is a complete electrical power distribution substation that is assembled on a self-supporting structural base and wired together at the factory, then transported to the project site and set in place with one crane lift.

If you can't find what you're looking for, or need more detailed information, you can contact our factory application engineers at 800-847-4584 or 800-847-4585, within the domestic USA.

Visit our website at www.cooperpower.com and be sure to register for Cooper PowerCentral, our Online Resource Center.

COOPER Power Systems

The Envirotran® Indoor-Powercenter™ Transformer

Improved Safety, Reliability, Efficiency—at a Lower Cost
Consultants, engineering firms, contractors, and end-users are reconsidering their previous uses of dry-type transformers indoors and making the switch to the superior new fluids. New fire safety and environmental advances have made the liquid-filled transformer the transformer of choice. In nearly thirty years of use and over 100,000 units, transformers with fire-resistant fluids have never been the cause of a building or fluid-pool fire. VPI dry-type and cast-resin transformers cannot claim this same perfect fire-safety record.

The Envirotran Indoor-Powercenter Transformer is specifically designed and approved for all indoor or roof-mounted applications placing the transformer near the load. Envirotran Transformers are suitable in all commercial and industrial environments. Use anywhere dry-type transformers have been specified.

The Envirotran Advantage:
- No fire-rated electrical vaults required
- No sprinklers or deluge systems required
- Containment pans available
- Less clearance distances required
- Lower insurance rates

Envirotran Indoor-Powercenter Compared to Dry-Type Transformers
- Lower initial cost
- Lower installed cost
- Higher energy efficiency
- Lower sound level
- Longer insulation life
- Higher contamination resistance
- Higher short-and long-term overloadability
- Routine maintenance does not require downtime
- Integrated overcurrent and overvoltage options may eliminate traditional switchgear

Product Scope:
- Unit substation transformers thru 10 mVA
- Close-coupled or stand-alone
- Primary Voltages: 5 kV through 35 kV, 200 kV BIL
- Secondary Voltages: 120 V through 15 kV, 95 kV BIL
- FM Approved and UL® Classified
- 15% or 25% fan cooling
- 65°C or 55/65°C temperature rise

Standard Features:
- Envirotemp® FR3™ fluid – the highest firepoint of any fluid in the industry
- Enhanced transformer insulation life
- Meets all NEC safety requirements of Section 450-23 for indoor transformer applications
- EPA/ETV tested and approved

Optional Features:
- Deadfront termination: radial or loop configurations
- Containment pan
- K-factor rated
- NEMA TP-1 energy efficiency
- Vacuum fault interrupter (VFI) integral to the transformer tank
- 33% fan cooling rating

Applications:
- Schools and Universities
- Steel Producers
- Hospitals
- Insurance Companies
- Religious Institutions
- Automotive Industry
- Theme Parks
- Commercial/Institutional
- Industrial Manufacturing
- Petro/Chemical Industry
- Power Generation
- Pulp & Paper Industry
- Office Buildings
- Food & Drug Industry

Transformer Products - Three-Phase Pad and Substation
Suggested Documents: 00006, B210-05002, B210-05019, 97055, 210-15 (See instructions on back.)

Envirotemp® FR3™ Fluid Transformer Retrofill Service

Increased performance, lower life-cycle costs
Conserve one of your most important assets by retrofilling your transformer with insulation life-extending Envirotemp FR3 fluid. Counter insurance and liability costs with reduced fire and environmental risks.

Transformers Retrofilled with Envirotemp FR3 Fluid offer:
- Extended life
- Expanded capacity
- Reduced fire and environmental risk
- ROI < 2 years

Start-to-Finish service from the experts at Cooper Power Systems
With Cooper, retrofilling your transformer with Envirotemp FR3 fluid is a turnkey process. We'll take care of it all, from quote to completion. Whether you ship equipment to us or need on-site service, you can count on Cooper to do it right, on time, and on budget.

As the developer of Envirotemp FR3 fluid, Cooper can best provide the Envirotemp FR3 fluid retrofill services you need, regardless of the size, make, or voltages of your equipment. Our highly competent retrofill team will complete the job to your satisfaction. (Units filled with silicone oil are not eligible for Envirotemp FR3 fluid retrofill service at this time.) Across the U.S. and Canada, no job is too big or too small for us.

All transformers, regardless of make, size, or voltage
Cooper Power Systems can service all transformer equipment makes, sizes, and voltages with a turnkey service that includes four easy steps:

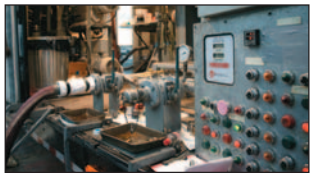
1. Fluid testing – all fluid is pre- and post-retrofill tested, including testing for PCBs.
2. Used-oil disposal – PCB-free (<1 ppm) fluid is recycled. PCB-contaminated fluid (1 to 449 ppm) is incinerated.
3. Fluid for the flush and retrofill process – shipped in totes, drums, and bulk transport.
4. Retrofill logistics – we bring in the right equipment for the job.

To minimize transportation costs, Cooper schedules just-in-time fluid delivery. We manage the entire process and provide supervision services when required.

For more information on retrofilling your equipment with Envirotemp FR3 fluid, please call our toll-free retrofill hotline or email us today.

Retrofill Hotline: **886-861-0328**
Retrofill FAX: 262-953-5286
Retrofill Email: retrofills@cooperpower.com

Dielectric Fluids - Fluids Products
Suggested Documents: B900-04063, 900-20
(See instructions on back.)



COOPER Power Systems

Compact Industrial/Commercial Power in a Pad-mounted Transformer

Three-Phase Pad-mounted Compartmental Transformers Including Envirotran Transformers & VFI Transformers

Three-phase, pad-mounted transformers may be compact power centers for industrial or commercial installations. With proper design selection, they may be located near or inside buildings for greater flexibility and savings. These transformers are designed to meet or exceed all applicable **ANSI**®, NEMA®, and **IEEE**® standards.

- Ratings from 45 to 10,000 kVA with primary voltage ratings from 2,400 V to 46,000 V; available with primary dual voltage ratings
- Radial or loop feed configurations with dead or live front terminations
- Secondary voltages from 208 V to 13,800 V
- Manufactured to meet or exceed **ANSI**® C57.12.28 or 29 for tamper resistance and for corrosion resistance with state-of-the-art paint processing including eight pre-treatment stages and multiple coatings
- Filled with Envirotemp® FR3™ fluid or standard electrical grade mineral insulating oil
- Available as an FM Approved transformer to meet NEC® 450-23 (recommended)
- Available as a UL® Listed transformer or combination UL Listed/ UL Classified transformer with Envirotemp® FR3™ fluid to meet NEC 450-23

- Optional accessories should include primary on-off load-break switching or four-position sectionalizing switching; primary expulsion Bay-O-Net & ELSP backup current-limiting fusing or Vacuum Fault Interrupter (VFI); and primary under-oil or externally mounted M.O.V.E. surge arrester protection (recommended).

Transformer Products - Three-Phase Pad and Substation
Suggested Documents: 210-12, 00006, 02039, 97055
(See instructions on back.)

Substation Transformers to Your Exact Specifications

Primary or Secondary Unit or Open Substation Transformers

The Unit Substation Transformer is designed for commercial and industrial applications to convert distribution voltages to utilization voltages. They are constructed to interconnect easily with both primary and secondary switchgear. They can be used in outdoor or indoor (when filled with Envirotemp FR3 fluid) load center substations.

Substation VFI Transformer

The Substation VFI Transformer is designed for commercial or industrial applications where conventional transformer protection is inadequate or where space limitations are restrictive. The compact design reduces real estate requirements and makes installation simpler and more economical.

- Three-phase, 50 or 60 Hz, 65°C (55°C/65°C optional)
- Mineral oil or Envirotemp FR3 fluid
- 500-10,000 kVA
- Delta or wye connected 2,400-43,800 V
- Secondary 208Y/120 V to 14,400 V
- FM Approved transformer to meet NEC 450-23
- UL® Listed transformer or with UL Classified Envirotemp FR3 fluid to meet NEC 450-23
- 75°C rise Envirotemp FR3 fluid-filled used to reduce overall cost or increase overload capacity

Indoor Power Center Transformer

Transformer Products - Three-Phase Pad and Substation
Suggested Documents: 210-16, 210-15 & same as page 4
(See instructions on back.)

Specifying The Right Transformer Just Got Easier

Cooper Power Systems has made it easier to select the right transformers for indoor and outdoor applications. Our FM Approved, Code Listed transformers are the Industry's first "Listed and Labeled" liquid-filled transformers. They provide state-of-the-art fire protection while making it easy to comply and verify compliance with the National Electric Code® (NEC®) for both indoor and outdoor locations.

A dielectric coolant option for the FM Approved transformer is Envirotemp FR3 fluid. The fluid has a typical fire point (360°C). Envirotemp FR3 is an edible, seed oil-based, readily biodegradable, non-toxic dielectric coolant that incorporates only food grade performance enhancing additives. Cooper Power Systems transformers filled with Envirotemp FR3 fluid are sold under the trade name Envirotran, and also have the option of being FM Approved Listed and Labeled. While there have been reported explosions and fires with dry-type and cast resin units as well as mineral-oil filled transformers, transformers filled with Envirotemp FR3 fluid have a flawless fire safety record.

FM Approved and Code Listed transformers are available as three-phase pad-mounted units, with ratings from 75-10,000 kVA and voltage ratings up to 46 kV, and substation units with ratings from 500-10,000 kVA and voltage ratings up to 46 kV. These transformers can be filled with Envirotemp FR3 fluid fire-resistant dielectric coolant.

More Design Flexibility

Now you can locate your transformers indoors or outdoors, on rooftops, near buildings and walkways, in clean or harsh environments. FM Approved transformers can be positioned right next to the load for greater efficiencies and lower installation costs. They can be sited as little as three feet from buildings and equipment. You don't have to settle for less-less-efficient dry-type and cast resin transformers, with their higher losses and greater burden on HVAC systems. In dirty, wet, and corrosive environments, the sealed tank construction of the FM Approved transformers ensures reliable, long-term performance.

Dielectric Fluids - Fluids Products
Suggested Documents: 98076, 03061, 900-20
(See instructions on back.)

Single-Phase Distribution Transformers

Cooper Power Systems manufactures a complete line of single-phase overhead-type and pad-mounted distribution transformers. Single-phase transformers are available as conventional and protected, in a variety of ratings and meet or exceed the requirements of applicable **ANSI**® and NEMA standards. Units designed per Rural Utilities Service (RUS) standards are also available.

Conventional and protected overhead transformers are manufactured in 5-75 kVA. Protected transformers have direct connected primary arrester(s), and a MagneX® Interrupter primary breaker. This eliminates the need for separately mounted protective devices and installation economy results.

Single-phase pad-mounted transformers are manufactured in 10-167 kVA. Units can be supplied with a Bay-O-Net expulsion fuse or a MagneX Interrupter primary breaker in series with an isolation or ELSP current-limiting fuse.

Transformer Products - Overhead & Pad Transformers
Suggested Documents: 201-10, 201-20
(See instructions on back.)

COOPER Power Systems

Voltage Regulators

Voltage Regulators

For efficient, reliable, cost-effective voltage regulation, voltage regulators from Cooper Power Systems are by far the best solution. Cooper's voltage regulators are used throughout the world on four-wire, multi-grounded systems, and three-wire uni-grounded and underground systems. The voltage regulator product line includes step voltage regulators, auto-boosters, pad-mounted single-phase voltage regulators and regulator controls.

Step Voltage Regulators

The thirty-two step voltage regulator accurately regulates voltage in 5/8% steps from 10% raise to 10% lower on distribution circuits rated 2400 volts (60 kV BIL) through 34,500 volts (200 kV BIL) for either 50 or 60 hertz systems.

CL-6A Series Regulator Control features include built-in metering, voltage limiting, voltage reduction, reverse power flow detection and operation, the most flexible resident digital communications capability, time-tagged demand metering, profile recorder, tap position tracking, and source voltage calculation without an additional potential transformer. The CL-6A even has built-in diagnostics and duty cycle monitor features, which allow you to monitor contact wear to accurately predict and schedule maintenance. The PMT™ preventive maintenance tapping feature and the Quick-Drive™ Tap-Changer further extend contact life.

Pad-mounted Voltage Regulators

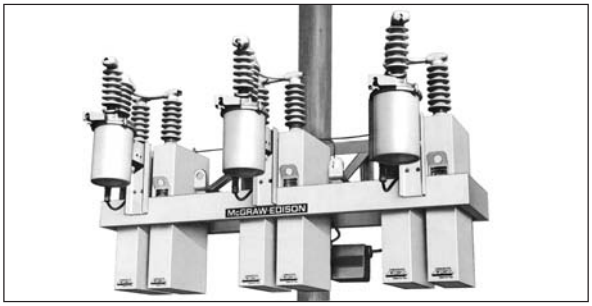
Cooper Power Systems' pad-mounted voltage regulators give you new freedom in improving safety, reliability and power quality in existing and new underground systems. The pad-mounted voltage regulator helps reduce installation costs, and preserves a more aesthetically pleasing environment. Substation designers now have a full complement of product to install a complete, modular pad-mounted substation. Safety and reliability are enhanced, construction costs are reduced, land requirements are smaller, and the physical profile presented to the public is smaller and more attractive.

Voltage Regulators - Voltage Regulating Apparatus
Suggested Documents: 225-10, 225-60
(See instructions on back.)

Power Capacitors

Cooper Power Systems produces high-voltage power capacitors for worldwide utility and industrial applications, for system voltages from 2.4 kV through EHV. Cooper produces capacitor subsystems for shunt, series, HVDC, SVC, and filtering applications throughout the world. The Type EX®-7L capacitor and the Type EX®-D capacitor are the most technologically advanced capacitors available today.

Power Capacitors - McGraw Edison Power Capacitors
Suggested Documents: 230-20, 230-11
(See instructions on back.)



Switchgear

As the industry's leading producer of electrical power distribution switchgear, Cooper Power Systems manufactures over 80 distinct models of fault interrupting, switching, and control devices, providing dependable electrical power distribution to millions of people throughout the United States and in more than 70 countries around the world.

VFI

Kyle® Type VFI Vacuum Fault Interrupter pad-mounted switchgear provides superior overcurrent protection with proven, reliable Kyle vacuum interrupters—instead of fuses. **The resettable VFI breaker mechanism allows immediate service restoration,** eliminating the added downtime and expense associated with replacing conventional fuses.

VFI oil or SF_6 insulated switchgear can be used for both utility and **commercial/industrial applications,** and can be easily coordinated using field-selectable settings to meet distribution system requirements

Many commercial loads include large three-phase transformers and motors. Until now these were protected by single-phase fuses. The VFI's optional automatic three-phase ganged tripping avoids the overvoltage and ferroresonance disasters caused by "single-phasing". Optional visible break feature is available on some models.

Ratings for VFI Vacuum Fault Interrupter Padmounted Switchgear

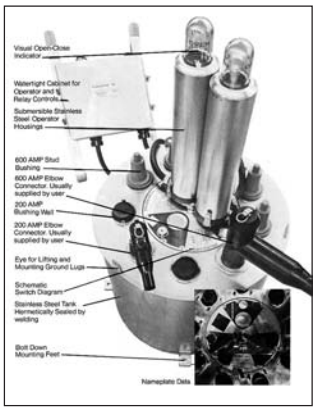
Nominal Voltage	5 and 15kV	25kV	35kV
Maximum Design Voltage	15.5	27	38
BIL, kV	95	125	150
1-Minute Withstand, Switch and Terminators, kV	34	40	50
Continuous Current, amps (max.)	600	600	600
Load Switching, amps	600	600	600
Momentary Current, 10 Cycles (asym.), kA	20000	20000	20000
3 Sec., amps (sym.)	12000	12000	12000
3 Shot Make and Latch amps (sym.)	12000	12000	12000
(asym).	20000	20000	20000

Distribution Switchgear - Underground Distribution Switchgear
Suggested Documents: 285-10, 01003, 01041
(See instructions on back.)

VACpac®

Cooper Power Systems VACpac Switchgear may be used to **switch load, loop, capacitor, cable charging and magnetizing currents.** Vacuum bottle interrupters in SF_6 insulating gas and its extremely high duty cycle makes the VACpac ideally suited for automated applications that require a large number of switching operations.

The unique space saving, light weight, and compact design is suitable for indoor or outdoor applications. It can be mounted on walls, ceilings, manholes, vaults or cabinets without any special building or liquid containment requirements. A variety of remote operating mechanisms are available.



Ratings

15.5, 27 and 38 kV
200 and/or 600 A continuous and interrupting at all voltages.
95, 125 and 150 kV BIL at 15.5, 27 and 38 kV respectively.
20 kA asymmetrical momentary at all voltages.
20 kA asymmetrical fault close at all voltages.
64 kA asymmetrical fault close at all voltages with Kearney™ C.L. Fuses.

Distribution Switchgear - Underground Distribution Switchgear
Suggested Documents: 285-30, 01042
(See instructions on back.)

Kyle® PST Padmount Source Transfer

Automatic Source Transfer Switchgear – The Ability In Reliability. Critical customer loads, such as health, educational, financial, and manufacturing facilities, require optimum power quality and reliability. These loads are normally provided with a preferred and an alternate source of power. Source transfer packages are used to switch the load to the alternate source when the preferred source is lost, and to transfer back when voltage is restored.

PST (Padmount Source Transfer) packages are self-contained devices, which provide automatic source transfer in 6 cycles or less, and fault protection for 15, 25 and 35 kV underground systems.

When reliability and power quality are critical, the PST offers:
- 15, 25, 35 kV
- Fast source transfer
- Improved system reliability
- Vacuum interruption
- Deadfront construction

PST combines several time-proven Kyle products:
- S control, which performs the automatic transfer based on loss of voltage detection
- TPG control, which provides fault detection
- CI vacuum fault interrupters, which perform three-phase switching and fault interruption.

PST Packages
- The industry-standard PST Model 6, which includes two CI mechanisms that are operated by an S control during loss of voltage conditions (transfer), and by a TPG control during fault conditions (tripping).

Kyle® MOST Oil-Insulated Switchgear

Wide Selection and Versatile Application on a Narrow Budget. MOST pad-mounted switchgear provides a simple, economical approach to switching for 15, 25, and 35 kV underground systems. It is suited for utility and commercial/industrial requirements. MOST switchgear fits the majority of standard pads and is compatible with commonly used tools and techniques.

MOST is easily adaptable to most distribution systems, with:
- Wide selection of fuse ratings
- 15, 25, 35 kV
- Sealed tank
- Simple, economical operation
- Low profile
- Field-proven components
- Switching and fusing flexibility
- Deadfront construction

MOST Switching System
The Kyle three-phase, gang-operated loadmake/loadbreak oil sectionalizing switches used in MOST switchgear have a history of more than thirty years of successful application. Positive position indicators assure safe operation. The side-mounted switch can be operated by shotgun stick or an optional manually operated handle. Front-mounted switches are also available.

Kyle® RVAC Vacuum Switchgear

Better switch to better protection. When you require frequent 600 A main line switching or fuse protection, you require RVAC. It's perfect for applications like shopping malls and industrial parks.

Features:
- 15, 25, 35 kV
- Vacuum interruption
- 600 A switching
- Oil, Envirotemp® FR3™ fluid, or SF_6 insulation available
- Distribution automation
- Low profile
- Deadfront construction

RVAC pad-mounted vacuum switchgear is designed for applications where frequent 600 A main line switching and fuse protection are required. RVAC incorporates vacuum interruption, designed specifically for repetitive switching duty and proven through decades of field usage. A wide range of current-limiting fusing options provides simple, easy coordination with system requirements. Available in single- or three-phase units.

Vacuum Technology
Cooper Power Systems' Distribution Switchgear products incorporate vacuum technologies, which have advanced the durability and extended the application base for vacuum products. The patented axialmagnetic field vacuum interrupter is the most advanced vacuum interrupter in the world.

- The PST Model 9, which includes two CI mechanisms which are operated by an S control during loss of voltage conditions (transfer); and two three-phase VFI (vacuum fault interrupter) mechanisms operated by two TPG controls during fault conditions.

ANSI® Standards

The Type PST padmount transfer package meets **ANSI**® C37.72 for manually operated, deadfront padmount switchgear with load-interrupting switches, and **ANSI**® C37.60 for automatic circuit reclosers and fault interrupters.

Distribution Switchgear - Underground Distribution Switchgear
Suggested Documents: 01042
(See instructions on back.)

Four switch options are available with the MOST:

- Two-position open/close
- Four-position selector blade
- Four-position "V" blade
- Four-position "T" blade

Kyle's "V" and "T" blade designs are unique in that they perform the function of three separate open/close switches. Combining multiple functions on one switch permits quicker and more reliable operation. For applications where parallel loops are required, break-before-make operation is guaranteed. When oil sectionalizing switches are used, the need for interlocks is eliminated.

Distribution Switchgear - Underground Distribution Switchgear
Suggested Documents: 01044, 285-20
(See instructions on back.)

ANSI® Padmount Switchgear Standard

RVAC meets **ANSI**® C37.72, which specifies complete deadfront construction. The RVAC's vacuum load-break switches also meet the stringent **ANSI**® switching duty cycle, not only at 15 kV, but at 25 kV and 35 kV, as well.

Distribution-Automation Accessories

DC Motor Operators and SCADA accessories are available for RVAC switchgear. These accessories will allow for remote operation and monitoring of the unit, which speeds up the circuit/load reconfiguration. The motor operator control can handle up to six motors, and it has SCADA contacts for remote operation and status indication.

Distribution Switchgear - Underground Distribution Switchgear
Suggested Documents: 01045, 285-50
(See instructions on back.)

COOPER Power Systems

Pad-mounted Modular Substations

Cooper Power Systems provides **pad-mounted modular substations, the most flexible, cost-effective, customized solution for sites with limited time and manpower**. Rigid manufacturing processes and standards enable Cooper to provide a full line of components and equipment that are pre-assembled, pre-wired and tested before being securely shipped anywhere in the world.

Components and equipment are pre-assembled on a structural base, then integrated and tested before shipping. They include:

- Transformers
- Switchgear
- Regulators
- Reclosers
- Capacitor banks
- Distributed automation
- And other options

Customers can expect their custom-engineered, modular substations to arrive ready for installation and energization. An aesthetically pleasing low profile makes Cooper Power Systems' pad-mounted modular substations the right choice for a variety of urban and remote locations, including residential, industrial and commercial sites in an automated distribution network. Installation takes hours instead of days with power down for only a limited time. Their flexibility of design minimizes field installation problems and reduces costs associated with labor while providing the same high quality customers have come to expect from Cooper. Modular Substations can also be provided on a "turnkey" basis.

Refer to http://www.cooperpower.com/Library/SIG/oct2004.pdf

Edison® Idea™ Relays

Cooper Power Systems' **Edison Idea** relay platform was developed specifically to give power systems professionals the **ultimate in protection, control and communications flexibility**. The Idea offers both the physical and technical longevity required for today's world of ever-changing requirements.

- Create custom control and protection logic using over 400 programming signals and tools, all selectable from drag-off Toolboxes
- Monitor and control practically every aspect of the relay's operation
- Create custom metering and measurement quantities
- Create custom sequence of event records
- Configure communication protocols
- Intuitive logic works the way an engineer thinks \

Protective Relays - Edison Idea Relays
Suggested Documents: 01024, 03042, 165-420
(See instructions on back.)

Reclosers

Automatic circuit reclosers are recognized by electric utilities throughout the world as an essential device for achieving their prime goal: providing maximum continuity of electric service to their customers simply and economically. Major classifying features of automatic circuit reclosers are:

- Single-phase or Three-phase
- Interrupters: Oil or Vacuum
- Control: Hydraulic or Electronic
- Insulation: Oil, Air, or Epoxy

The Kyle® Type NOVA® recloser is a three-phase, vacuum-interrupting recloser designed for three-phase electrical distribution systems through 34.5 kV. The NOVA recloser is designed and **ANSI®** tested as a complete system with a Cooper Power System control to assure reliable performance throughout its lifetime and compatibility with future updates.

The NOVA recloser is available with maximum voltage ratings of 15 kV, 27 kV, and 38 kV. The rated continuous current is 630 A. An 800 A accessory is also available. Different configuration options are available to suit your application.

Distribution Switchgear - Reclosers & Controls
Suggested Documents: 280-05, 280-42, 01010
(See instructions on back.)

The NOVA recloser system successfully combines four patented technologies developed by Cooper Power Systems:

- Cycloaliphatic-epoxy encapsulation
- High-performance Kyle vacuum interrupter
- Dependable lower power mechanism
- Microprocessor and automated control

Form 6 Recloser Controls

The innovative and industry-leading Form 6 recloser control is designed for rapid user customization, full protection and metering, all under the automation umbrella. The Form 6 Recloser Control uses a powerful, yet flexible, platform design to provide maximum protective functionality, standardized hardware design, and simple interactive graphical interfaces.

Engineering features such as **ProView™** interface software, **TCC Editor™ II**, **Idea Workbench™**, and Oscillography Replay highlight innovative new tools to standardize on one protection system for your distribution system.

Distribution Switchgear - Reclosers & Controls
Suggested Documents: 00029, 03010
(See instructions on back.)

200 A Loadbreak and Deadbreak Underground Line Connectors

Cooper Power System's 200 A 15, 25, and 35 kV Loadbreak Elbow Connectors and Accessories are submersible, fully-shielded and insulated plug-in terminations, ideal for connecting underground cable to transformers, switching cabinets and junctions. These connectors are molded using high-quality, peroxide-cured EPDM insulation for reliable field performance.

The entire connector system can be applied to concentric neutral cable with Cooper's JS200 Series Sealing Kit or to almost any other type of cable with Cooper's SA Series Shield Adapter Kit.

All 200 A loadbreak connectors meet the electrical, mechanical, and dimensional requirements of **IEEE Standards 386**™ and are designed to be fully interchangeable with other major manufacturers currently complying with **IEEE Standard 386**™.

25 kV POSI-BREAK™ Elbow and Cap

The Cooper POSI-BREAK Elbow and Cap is an engineered solution that increases strike distance and improves reliability. The added features solve problems such as:

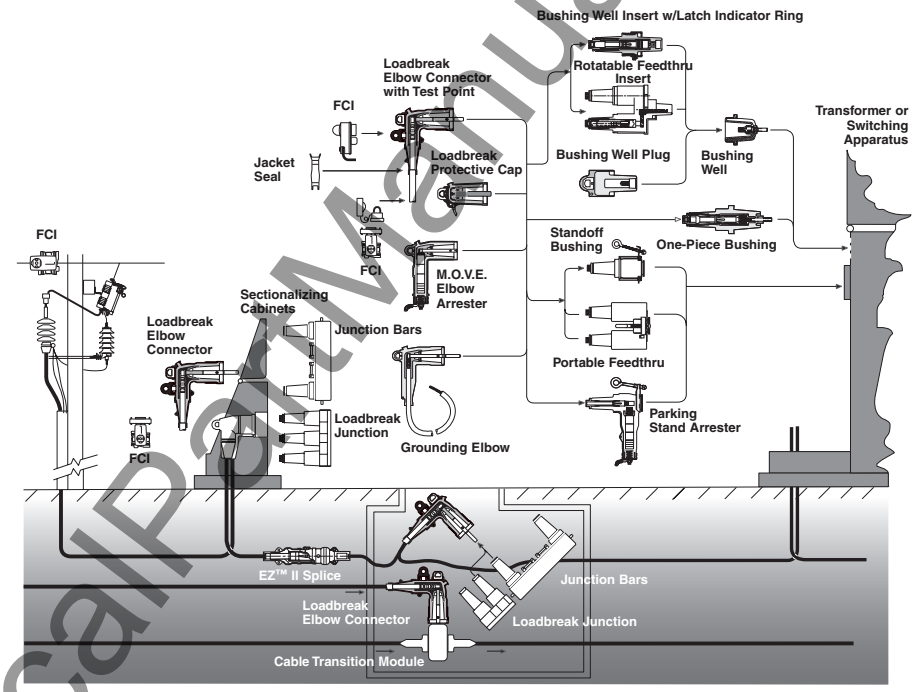
- Partial Vacuum Flashovers
- Capacitance
- Ferroresonance
- Contamination

35 kV Large Interface Elbow Bushing System

The Cooper 35 kV 200 A Large Interface Elbow Bushing System is a reliable, field proven design. This system has over 25 years of field experience while being used on large 35 kV distribution systems.

Features of the Cooper Large Interface System include:

- Increased strike distance to provide greater reliability and overall performance.
- Reliable loadbreak switching and fault closure capability.
- Full line of large interface accessory products.



200 A Loadbreak Connector Ratings in Accordance with IEEE Std. 386™

Voltage Ratings	15 kV	25 kV	35 kV
Standard Voltage Class	15	25	35
Max. Rating Phase-to-Phase	14.4	26.3	36.6
Max. Rating Phase-to-Ground	8.3	15.2	21.1
AC 60 Hz 1 Minute Withstand	34	40	50
DC 15 Minute Withstand	53	78	103
BIL and Full Wave Crest	95	125	150
Min. Corona Voltage Level	11	19	26

Current Ratings	15 kV	25 kV	35 kV
Continuous	200 A rms	200 A rms	200 A rms
Switching	10 operations at 200 A rms at 14.4 kV	10 operations at 200 A rms at 26.3 kV	10 operations at 200 A rms at 36.6 kV
Fault Closure	10,000 A rms sym. at 14.4 kV for 0.17s after 10 switching operations	10,000 A rms sym. at 26.3 kV for 0.17s after 10 switching operations	10,000 A rms sym. at 36.6 kV for 0.17s after 10 switching operations
Short Time	10,000 A rms sym. for 0.17s 3,500 A rms sym. for 3.0s	10,000 A rms sym. for 0.17s 3,500 A rms sym. for 3.0s	10,000 A rms sym. for 0.17s 3,500 A rms sym. for 3.0s

Components & Protective Equipment - Cable Accessories
Suggested Documents: 02024, choose 500-xx as necessary for 200 A
(See instructions on back.)

600 A Deadbreak Underground Line Connectors

Cooper Power System's 600 A Deadbreak Connector Systems are designed to fill the demand for a deadfront underground installation in 600 A main and lateral feeders. They provide a completely shielded, deadfront, fully submersible cable connection for high-voltage apparatus – such as transformers, switchgear, large motors, etc., and can also be used to make splices, junctions, taps and deadends for main underground, distribution feeders. They offer the same high degree of operating flexibility and reliability as our 200 A products. All components fit together easily and assembly variations are available.

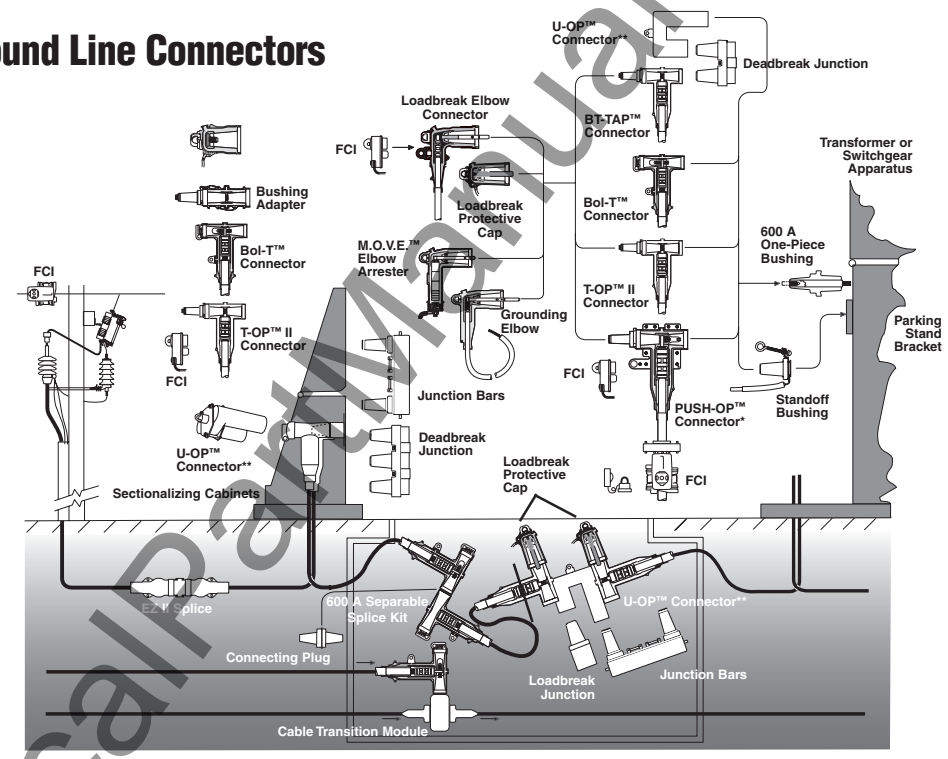
These connector systems are designed for installation on various types of cables. The entire system can be applied to concentric neutral cable, and with Cooper's SA Series Shield Adapter Kit to almost any other type of cable.

All Cooper 600 A Deadbreak Connectors meet the electrical, mechanical and dimensional requirements of **IEEE Standard 386**™ and are designed to be fully interchangeable with those currently available from other major manufacturers.

900 A RATING

A 900 A continuous rating can be achieved with Bol-T™, BT-TAP™ and T-OP™ II Systems when used with a coppertop compression connector and all copper mating components including apparatus bushing or junction.

The capacitive test point on the insulating plug provides a means of testing the circuit without disturbing the bolted connection. In addition to the capacitive test point feature on the insulating plug, Cooper Power Systems offers an optional capacitive test point similar to the test points on Cooper's 200 A elbows. This allows the use of the Type "TPR" Series Fault Indicators, and provides a hotstick operable means of determining circuit condition.



*Push-OP requires modified bushing and tank hardware.
**U-OP requires frontplate stud provisions. Refer to Installation Instructions S600-14-1 for details.

600 A Deadbreak Connector Ratings in Accordance with IEEE Std. 386™

Current Ratings	15 kV	25 kV	35 kV
600 A Interface**			
Continuous	600 A rms	600 A rms	600 A rms
24 Hour Overload	1,000 A rms	1,000 A rms	1,000 A rms
Short Time	25,000 A rms sym. for 0.17s 10,000 A rms sym. for 3.0s	25,000 A rms sym. for 0.17s 10,000 A rms sym. for 3.0s	25,000 A rms sym. for 0.17s 10,00 A rms sym. for 3.0s
200 A Interface On Loadbreak Reducing Tap Plug (LRTP)*			
Continuous	200 A rms	200 A rms	200 A rms
Switching	10 operations at 200 A rms at 14.4 kV	10 operations at 200 A rms at 26.3 kV	10 operations at 200 A rms at 21.1 kV
Fault Closure	10,000 A rms sym. at 14.4 kV for 0.17s after 10 switching operations	10,000 A rms sym. at 26.3 kV for 0.17s after 10 switching operations	10,000 A rms sym. at 36.6 kV for 0.17s after 10 switching operations
Short Time	10,000 A rms sym. for 0.17s 3,500 A rms sym. for 3.0s	10,000 A rms sym. for 0.17s 3,500 A rms sym. for 3.0s	10,000 A rms sym. for 0.17s 3,500 A rms sym. for 3.0s

Components & Protective Equipment - Cable Accessories
Suggested Documents: 02024, choose 600-xx as necessary for 600 A
(See instructions on back.)

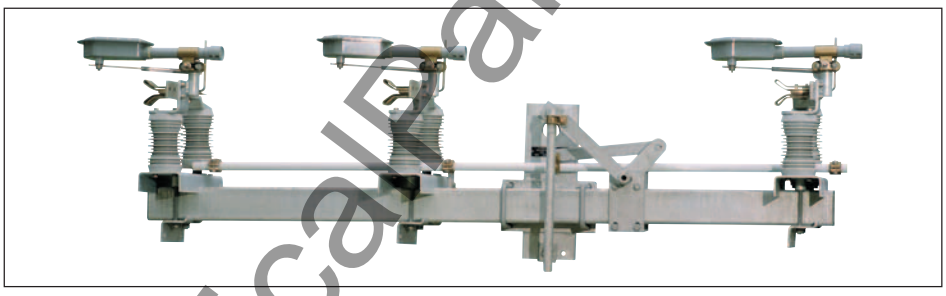
Switches

The **Kearney**™ **Sidebuster**® Type **M-Force**™ Switch is a distribution class, gang operated, factory unitized three-phase overhead load-break switch, in 15 kV, 25 kV, and 35 kV sizes. The Type M-Force Switch may be used for line sectionalizing, paralleling, by-passing, isolating or as a remote system when used in conjunction with a motor operator.

M-Force stands for "Magnetic Force". Cooper Power Systems has the only reverse loop contacts found on distribution class sidebreak switches; a contact usually reserved for higher priced transmission switches. The reverse loop contacts utilize high current magnetic forces for added reliability. The reverse loop design allows for high contact pressure to be maintained during fault conditions. This feature prevents pitting and distorting of the switch blade and contacts even under severe momentary overload.

Cooper's Kearney switches are easy and inexpensive to install. Rugged, long-lasting construction is the design philosophy behind every switch. The switches provide reliable, trouble free, all weather operation. Rugged construction combined with unique features ensure year-round service in all extremes of weather. Heavy silver-plated copper contacts and sturdy galvanized hardware provide maximum protection against severe weather.

Components & Protective Equipment - Kearney Products Literature
Suggested Documents: 02007, K-Sec 926, 00042, K-Section 915
(See instructions on back.)



Disconnect and Bypass Switches

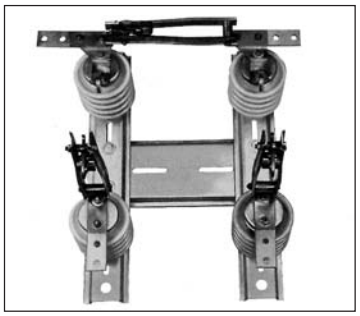
Cooper Power Systems offers a complete selection of Kearney Disconnect and Bypass Switches. They are available in 7.2 through 34.5 kV in 400, 600 and 1200 amps.

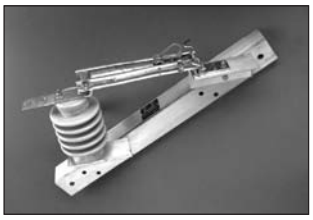
Disconnect and Oil Circuit Recloser Bypass Switches feature:

- All copper bar current-carrying parts, providing uniform strength and conductivity with no hidden defects.
- Silver washers between the blade assembly and hinge.

Regulator and Current Transformer Bypass Switches features include:

- Sequenced, make-before-break operation in both 600 A and 1200 A ratings.
- Single-pull operation of the 600 A ratings, which bypasses and disconnects the regular or current transformer, or reconnects them to the line.
- Two-pull operation of 1200 A ratings, which minimizes the operating effort of these heavy-duty switches. .





Components & Protective Equipment - Kearney Products Literature
Suggested Documents: K-Sec 060 & 090
(See instructions on back.)

Faulted Circuit Indicators

Cooper Power Systems offers a wide variety of faulted circuit indicators (FCIs) ranging from basic circuitry models in the Delayed Reset style to the more sophisticated circuitry of the Test Point Reset and Electrostatic Reset types. The Cooper Power Systems S.T.A.R.™ Faulted Circuit Indicator product line offers six basic types of FCIs and each unit is tailored to be the most reliable for the intended application. Each type varies by reset method and the type of system it connects to. The S.T.A.R. product line also includes several faulted circuit indicators with PATHFINDER™ Variable Trip Technology for one-size fits all application.

Components & Protective Equipment - Fault Indicators
Suggested Documents: 320-05, 03013
(See instructions on back.)

Surge Arresters

Cooper Power Systems offers the largest, most economical selection for low voltage, distribution, riser pole, intermediate, and station class surge arresters for overhead and underground applications in the industry.

VariGAP® Design Technology

VariGAP arresters offer unbeatable equipment protection and arrester reliability. With up to 30% lower discharge voltages compared to equally rated gap-less MOV arresters, equipment life can be extended due to the reduced stresses placed upon them. VariGAP arresters can survive much higher magnitude and longer temporary overvoltages (TOV's) than equally rated gap-less MOV arresters. With its supreme TOV withstandability, VariGAP arresters are the most reliable arrester on the market today.

- Extend the life of your underground cable
- Extra protection for old or sensitive cable from voltage stresses to lengthen its service life
- Extend the life of your transformers

Components & Protective Equipment - Surge Arresters
Suggested Documents: 235-58 (Station class shown)
(See instructions on back.)

Distribution Class Surge Arresters

Cooper Power Systems is the leading designer and manufacturer of polymeric surge arresters. Cooper's UltraSIL™ housed surge arresters utilize silicon rubber, the industry's recognized superior polymer housing material. The patented construction of UltraSIL arresters incorporates high-quality Metal Oxide Varistors (MOVs) manufactured in Cooper's Olean, NY facility. Each arrester is subjected to a battery of electrical tests prior to shipment to ensure field performance.

UltraSIL housed VariSTAR® distribution class surge arresters provide superior overvoltage protection for any electrical distribution system. They are available in Normal Duty, Heavy Duty and Heavy Duty Riser Pole classifications.

Components & Protective Equipment - Surge Arresters
Suggested Documents: 235-35 (Riser Pole shown)
(See instructions on back.)

COOPER Power Systems

Fusing Equipment

When it comes to fusing equipment, Cooper Power Systems' total capability translates into economy for the customer. Overhead distribution fusing products include standard and current-limiting cutouts, a variety of fuse links, Companion® back-up current-limiting fuses, and ELF™ full-range current-limiting dropout fuses. Enclosure-mounted fuses include full-range NX®, X-Limiter® and ELX current-limiting fuses and a variety of fuse mounts. Underground systems are commonly fused with a Bay-O-Net in series with an ELSP back-up oil-submersible current-limiting fuse or a full-range ELS fuse mounted in an EL Bay-O-Net holder. Pad-mounted switchgear protection is available with the ELSG full range fuse, mounted in a wet well holder.

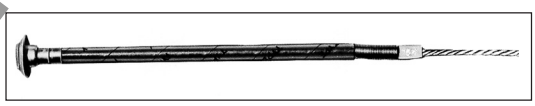
Distribution Fuse Cutouts

Loadbreak and non-loadbreak types are available in 2.4 through 34.5 kV for applications of 100, 200 and 300 A. Pole, cross-arm and multiple mounting configurations are available.

Suggested Documents: K-Sec 010

Fuse Links

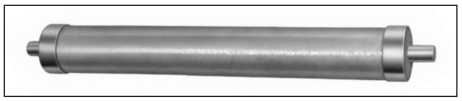
A full range of EEI-NEMA standard and open fuse links are available in 1 to 200 A for open fuse cutouts. Kearney™ fuse links are of the highest quality in the industry and are available in the following types: K, T, 200™ (N), KS™, QA™, D™ and secondary indicating fuses.



Suggested Documents: K-Sec 100

Current-Limiting Fuses

Cooper Power Systems is the industry leader in current-limiting fuse technology and variety. Extensive product offering includes back-up and full-range, current-limiting protection ranging from 20 kA to 50 kA. Fuses for overhead distribution include Companion® II, K-Limiter and ELF. For enclosure mounted applications, Cooper offers the ELSP, ELX, X-Limiter®, NX®, NXC®, ELSG, EL Bay-O-Net and ELG® fuses.



Suggested Documents: select as needed

Under-Oil Expulsion Products

Cooper's Bay-O-Net Fuse Assembly is the industry standard for pad-mounted transformer protection. Bay-O-Net assemblies combine the ease of hotstick operation with the safety of deadfront construction. It allows for convenient under-oil fuse element inspection and replacement in the field.

Suggested Documents: 240-40 through 240-49

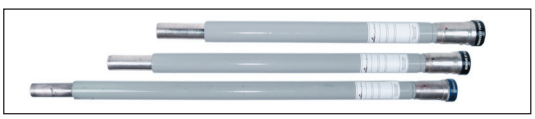
MagneX® Interrupter

The MagneX is a resettable overcurrent protective device that protects distribution transformers from damaging overloads and secondary faults, and is also used for switching the transformer "on" or "off". As a transformer protective device, the MagneX Interrupter combines safety and efficiency with economic operation.

Suggested Documents: 240-33, 240-34

Boric Acid Fuses

Cooper Power Systems CMU-20 Power Fuses are boric acid expulsion-style fuses; available in 17 kV, 27 kV, and 38 kV voltage classes. Suitable for indoor and outdoor applications, the CMU Power Fuse offers an economical alternative to refillable fuses. CMU-20 Power Fuse units are used to directly replace S&C SMU®-20 fuse units. Three speed variations are available: Standard "E", Slow "E", and "K".



Suggested Documents: 240-94

All items on this page are Components & Protective Equipment. Top two are Kearney Products Literature, balance is Fusing Equipment (See instructions on back.)

Line Construction Materials

Cooper Power Systems offers a wide variety of Hi-Line® Tools and maintenance equipment including Insulated Sticks, Fit-on Tools, Fuse Pullers, Support and Tension Products, Cover-up Equipment, Jumpering/Grounding Equipment, Compression Tools, Cutters and Accessories.

Kearney™ Compression Tools, Cutters and Accessories

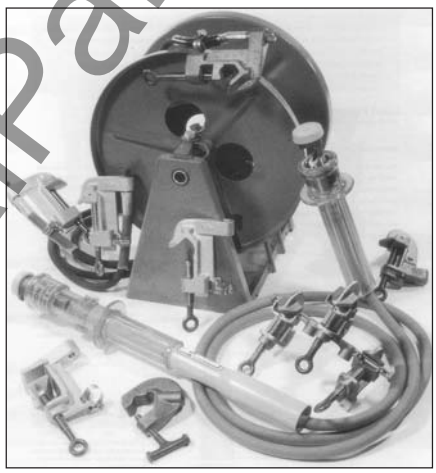
- Hand Operated Mechanical and Hydraulic Tools
- Power Operated Remote Hydraulic Tools 12 to 25 ton capacity
- Hand & Remote Hydraulic Compression Tool Dies and Accessories

Components & Protective Equipment - Kearney Products Literature. Suggested Documents: K-Sec 131
(See instructions on back.)

Kearney™ Terminals and Splices

- Taps, Terminals, Splices, Insulated Hand Held Sticks,
- Fit-On Tools & Accessories, Support & Care Products

Components & Protective Equipment - Kearney Products Literature. Suggested Documents: K-Sec 142 & 143
(See instructions on back.)



Grounding and Jumping

Cooper Power Systems provides a full line of jumpering, load pickup, grounding clamps, jumper set assemblies and a wide variety of components and accessories for system and equipment grounding. Products are built to meet or exceed all required industry standards and are recognized throughout the industry for the highest quality and reliability.

Components & Protective Equipment - Kearney Products Literature. Suggested Documents: K-Sec 200
(See instructions on back.)

Multi-point Junctions

Cooper Power Systems multi-point junctions offer solutions for above-ground and below-grade sectionalizing. They are fully shielded, submersible, resistant to harsh materials and are designed and manufactured in accordance with **IEEE Standard 386™** – "Separable Insulated Connector Systems." We offer a wide variety of configurations – the broadest selection in the market! Existing designs can be quickly modified to provide customized solutions, and you can typically expect delivery in three weeks or less.

Components & Protective Equipment - Cable Accessories
Suggested Documents: 700-37, B650-05045
(See instructions on back.)

Contact Us

You can find the Cooper Power Systems sales representative nearest you simply by visiting the Contact Us page on the Cooper website at **www.cooperpower.com.**

Select Industrial Sales from the left hand side navigation bar. Cooper Power Systems sales representatives are listed by state.

Select the state that you are located in to find the sales representative that can supply the products you need.

If you need further information, call 1-877-CPS-INFO.

Easy Access to Additional Information

You can locate additional product literature in the following ways:

www.cooperpower.com/Library/Literature
Find product category, click on product group. You can now view all related documents. Find and select the suggested or desired document.

"Find It Fast" from **www.cooperpower.com**. Simply key in the document number and go directly to it.

PowerCentral users should log in at www.cooperpowercentral.com. Go to Epic Online and choose Document Number Search. Key in the document number and go directly to it.

COOPER Power Systems

1045 Hickory Street
Pewaukee, WI 53072 USA
www.cooperpower.com

Bulletin B100-05030 • August 2005 • New Issue