

IEEE PES Transmission & Distribution Conference & Exposition

If you want “hands on” then the Hubbell Power Systems IEEE booth in Chicago is for you. See the many new Hubbell products introduced since the 2006 Dallas IEEE PES Transmission and Distribution Conference and Exposition.

At Hubbell, we support utilities with 90% of the components needed on steel transmission towers and 75% of those used for construction and maintenance of distribution poles. For our utility customers, that means one vendor with the experience you trust.

Join us in the Monarch Suite at the top of the Downtown Hyatt, 151 East Wacker Drive. Open 5-9:00 p.m. Monday, Tuesday and Wednesday.



NEW Hubbell Versa-Tech® single-phase recloser

The only single-phase recloser utilities need. Frees up capital tied to inventory. Install on systems up to 27kV, 125kV LIW (BIL). Fully programmable. User settable 50 to 800 Amp minimum Trip. 400 Amp Continuous and 8,000 Amp interrupting. Environmentally friendly. No oil. A “green” addition to your system.

NEW Hubbell Quadri*Sil Transmission Insulator

This new silicone-rubber, direct-bonded insulator prohibits moisture ingress thanks to a revolutionary four-point seal. Manufactured to withstand the worst possible conditions. Superior tracking and dry band arcing. Backed by 100 years of Ohio Brass experience and innovation.



NEW Ohio Brass Silicone Rubber Post Insulators

Use for distribution and sub-transmission applications 15 -72kV. Bonded design. High strength. Contamination protection. Superior performance with exceptional quality. Backed by 100 years of Ohio Brass innovation and engineering experience.



2008

April 22 – 24, 2008
Chicago - Booth 1032



NEW Chance SafetyShield™ Hot Stick Barrier.

Use on hot sticks for a 24" diameter protective screen between lineman and a potential electrical hazard. Made of two-flame-retardant transparent polycarbonate protective shields. Extensive field use.

NEW To Our Hubbell Family – Quazite Underground Enclosures and Pads

See our polymer precast concrete enclosures and pads. Strongest and safest on the market. Meet ANSI test requirements. Resist alkalines, acids, weathering. Non-flammable. Non-conductive.



NEW Anderson Aluminum Deadend Single Bolt

Single bolt side opening. Cuts additional installing time by using a single $1/2"$ bolt compared to the traditional $3/8"$ U-bolt. Increased torque value. Install by hand or hydraulic wrench.

NEW Anderson AA Rated Vise-Type Connectors

Rated per ANSI C119.4. Helps you address the increased demand for power on existing lines.



NEW OPTIMA Arrester Family

For the best way to avoid service interruptions caused by shorted arresters, use the Ohio Brass (OB) Optima arrester. Optima dependably clears if faulted with no line

lockouts. Also with Optima, there's no shipping restraints needed to meet DOT rules.



IEEE PES Transmission & Distribution Conference & Exposition

NEW M3C Switch

Installs like a cutout. Use on single-phase overhead distribution circuits. Fully rated for 600 or 900A. High-conductivity copper blade. Silver-plated at contact areas. Silicon-alloy rubber insulator. Light. Easy handling. Dependable.

NEW Fargo® Cutout Cover

One size fits all 15 and 27kV polymer and porcelain cutouts. Use on new installations for retrofitting existing applications. Made from specially formulated plastisol material. High performance in all climates and conditions.



NEW Slip-Resistant Equi-Mat® Ground Grid

For rain, snow and ice, the napped surface of the mat offers superior worker footing. For dry conditions, use the orange standard Equi-Mat personal protective ground grid. Mats provide a portable equipotential work zone on the ground.



NEW Fargo® Set Screw Bar Transformer Connectors

Provides easy connectability to and from transformer studs. Extruded from high strength 6061-T6 aluminum alloy along with high strength set screws to ensure constant bolting pressure on conductor.

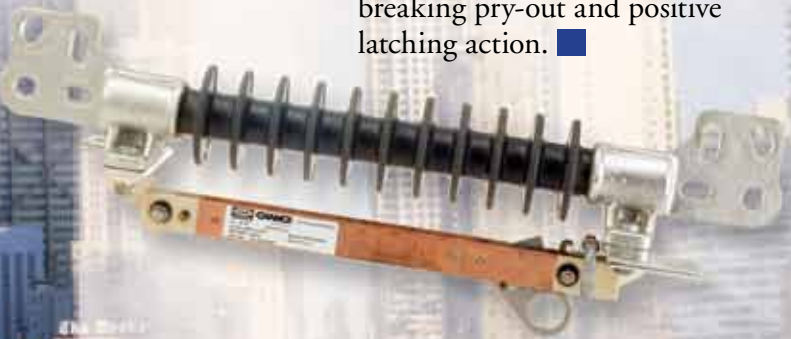


PCORE® Joins HPS

PCORE Electric is North America's only entity 100% focused on the manufacturing of capacitance-graded bushings and related components for transformers and oil circuit breakers in the ANSI and CSA markets. PCORE is also a leading provider of time and cost-saving products and services that include the PCORE Test Terminal, the Quick Link bushing™ and reliable Bushing Repair Service.

NEW Hubbell In-Line Switch for 900A

High impact strength insulation with Ohio Brass polymer insulator. 200kV BIL for 15 – 35kV applications. Light weight. Joins the popular 600A model. Ice-breaking pry-out and positive latching action. ■



For more information, contact your Hubbell Power Systems representative or e-mail hpsliterature@hps.hubbell.com



Fargo® Uni-Grip® single-die deadends ship from stock. Delivered fast to meet your schedule.

Installation in half the time of a conventional two-die type. Install using one compression die setup. Steel deadend eye is already compressed to enhance installing speed. Body and jumper terminal pre-filled with Fargo UJC inhibitor to improve critical connection performance.

Made from aluminum alloy seamless tube, deadends and splices, with our Easy-On 1-piece core grip, provide full-tension installations for ACSR conductors.

Fargo transmission deadends are laboratory proven. Field verified. ■



Fargo easy-on core grip (far right) has a tri-lobe bore that is 11% greater for easier insertion of core with less grit scrape out compared to other brands. Beveled bore opening edges make core wire insertion easier to start for faster installations.

For more information, contact your Hubbell Power Systems representative or email hpsliterature@hps.hubbell.com

Hubbell Sectionalizing

Switch Protects New

Overhead primary line conversion to underground saves de

*By: John Callahan
Manager of Operations
Tri-State EMC
McCaysville, GA.*

Recently in the southern end of the Appalachians, in McCaysville, GA, a new housing development called the Ivy Ridge Subdivision was planned with underground service. But the existing overhead feeder that was to be tapped for this service was blocking construction of the entranceway. While relocating the overhead lines just outside the state DOT right-of-way would have cost the developer three lots because of necessary right-of-way clearance for overhead distribution feeders, locating a portion of the overhead feeder underground would not only keep those lots free for development but also create ample free space for the construction of the subdivision entrance.

Tri-State Electric Membership Cooperative (EMC), an electric distribution utility located in McCaysville, GA, solved this two-fold problem by using Hubbell AIS-9 padmounted switchgear to relocate the main feeder underground and then pull it back out to the DOT right-of-way. The member-owned utility serves about 17,000 customers in north central Georgia, southeast Tennessee, and southwest North Carolina. It

Subdivision


Developer three lots and more



has approximately 1550 miles of distribution and some transmission. Primary voltages are 13 kV and 25 kV. Although the Tri-State system is primarily overhead, in recent years the trend has been to underground. Now about 90% of all new construction projects like the Ivy Ridge Subdivision are underground.

The existing overhead feeder in question is 13-kV, three-phase. Approximately 1800 ft of it was ultimately converted to underground using 1,000 kcmil TRXLP direct buried Southwire cable. Placing this portion of the line underground also required a tap that would maintain continuity of the feeder -- one of Tri-State's main three-phase distribution feeders that serves a hospital and a large elementary school from the Epworth Substation about a mile away. The integrity of this feeder in the event of a fault in the subdivision was a major concern because a fault on this tap, if it were left unfused, would back up on the distribution breaker in the substation. The Hubbell AIS-9 padmounted switchgear recommended by the Hubbell distributor Tri-State Utility Products, Marietta, GA, provided an excellent fit.

continued . . . ➤



The AIS padmounted switchgear is an air-insulated deadfront switch specifically used for sectionalizing underground distribution systems. It offers three in and three out connections with three switch positions. The switchgear has switches on incoming and outgoing feeds with the tap between the switches, thus allowing a feed from either direction, an important requirement in this application. The AIS switchgear utilizes a sealed switching department and 600-A deadfront connector system and provides a fused tap for the subdivision at 13-kV. Also, Tri-State chose to use Hubbell 600-A T-body elbow connectors in the switching cabinet and Hubbell elbow arresters. The T-body design offers a 200-A insert on the back of the

elbow to be able to piggyback a smaller cable to it if necessary.

Construction work went smoothly at Ivy Ridge largely because the Hubbell equipment chosen to do the job met the requirements and was easy to work with. Since November 2006 when it was installed the underground tap has caused no problems. Both Tri-State Utility Products and Hubbell were extremely helpful in providing guidance in setting up the equipment, which was very important because with the decision to use an underground tap at the Ivy Ridge Subdivision, Tri-State was using this equipment for the first time. ■

John Callahan passed away in early April 2007. Mr. Callahan had been with Tri-State EMC for 34 years working his way up from ground worker to line foreman to the position of manager of operations at the time of his death.

For more information, contact your Hubbell Power Systems representative, fax 573-682-8714 or e-mail hpsliterature@hps.hubbell.com.

New!

Versa-Tech[®] Recloser

the *only* single-phase recloser you need!

Setting a new industry standard, the Versa-Tech[®] Recloser can replace all other single-phase distribution reclosers on the market today. User programmability, fault history recording, and self-powered fault sensing and interruption put the Versa-Tech design above all the others. The Versa-Tech Recloser can perform every function of all other reclosers: Interruption, sectionalizing and isolating faults.



Truly a technological breakthrough, the Versa-Tech design shares some aspects of the better reclosers available. It features these essential points you should expect of any modern recloser: Vacuum interruption technology, repeatability regardless of operating temperature from -40° to 60°C and a proven life span of 2,500 mechanical operations.

1 Versa-Tech[®] recloser DOES IT ALL

Superior performance = More than a typical recloser

Going above and beyond the base definition of recloser functions, the Versa-Tech design also brings you the following *exclusive features all in one unit*:

- All systems up to 27 kV, 125 kV LIW (BIL)
- User-Settable 50 to 800 Amp Minimum Trip
- Beacon indicates lockout
- 400 Amp Continuous & 8,000 Amp Interrupting
- Records fault history for later review
- Password-protected programming
- Self-powered recloser operation
- Light weight, easy to handle and install
- Radio-programmable in-service option
- Minimal maintenance and insulation concerns
- Battery (8-year minimum life) powers these functions *only*: To close recloser after installation or lockout, radio if load current is less than 5 amps, and flashing lockout beacon

Versa-Tech® design notes



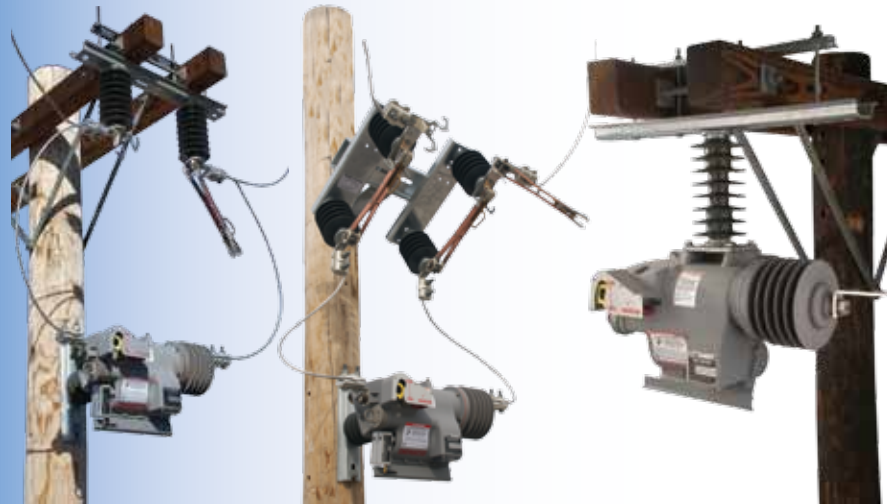
From the outset of this project, over 5 years ago, we set our sights on what has become the full gamut of its features today. Our overall objective was not only to match features from the best reclosers available but also to supersede them. High-end reclosers offered vacuum interruption, digital control, magnetic drive, self-powered operation, fault history recording and programmability.

Based on customer input before, during and after field-trial installations on their systems, we worked out problematic issues.

To make our recloser more compact and to overcome the insulation breakdown potential associated with existing reclosers, we made ours “hot.” That is, with its tank, controls and mechanism all energized at system potential.

We added radio communication to give it individual monitoring and reprogramming capability. The lockout beacon makes it user friendly to the crews who get up close and personal with reclosers. The ones we worked with liked the lighter weight, too.

Our final result is very satisfying to everyone involved. It's the most novel recloser on the market – one “do-all” unit that reduces inventory for our customers for all their 15 through 27 kV uses.



Pole/surface and crossarm mounting brackets permit arrangements such as those with the Hubbell Bypass Switches above (BP single-pull switch at left, BP3 three-pull switch at center). Adjustable crossarm mount, at right, fits all sizes of double-arm construction in the distribution range.

Stock one recloser for all locations

Here are just some of the User Programmed features of the Versa-Tech® Recloser, all password protected:

- **Minimum Trip (50 - 800 amp)**
- **Operations to lockout (1 - 4)**
- **Minimum response time**
- **Cold load time**
- **Standard Time-Current Curves (44 curves available)**
- **Sequence coordination**
- **Rest time**
- **Reclose time**

This versatility gives significant advantages to the operation and maintenance of any single-phase system. It's this versatility that gave the Versa-Tech® Recloser half its name. It can mean the end of stocking special units for various parts of a system. Now, one can be customized for each particular application's needs.

The unique combined benefits of all these Versa-Tech design features makes it the new ultimate standard of measure for all other single-phase reclosers. None other offers the Versa-Tech® Recloser's advancement of versatile technology for practical performance.

continued . . . ➤



Lockout beacon gives a clear indication when the Versa-Tech® Recloser has interrupted service. Digital record of operations count displays in a window next to the beacon. Clearly marked manual operating handle and non-reclosing lever are color coded. A skirted polyester/silicone insulated support houses the vacuum interrupter for maximum weather resistance. For mounting the unit, a polymer post insulator isolates from ground all components energized to system potential.

Revolutionary benefit package

Never before have all the operational advantages of the Versa-Tech® Recloser been combined. All in a base unit that weighs only 55 lb. (25 kg.).

It easily can coordinate with virtually any distribution circuit in its range. Its PC-based software program and illustrated instruction manual make it easy to customize automatic operation to meet specific service needs for every installation on your system.

R&D proven in actual practice

Extensive field trials were part and parcel of our engineering research and development program. Systems with concerns such as yours were among our customers involved in this segment of the Versa-Tech® Recloser's evolution.

We appreciate their help which led to the refinements that make it ready for you now. We are confident you also will appreciate the state-of-the-art improvements it brings to your systems. ■

To see our new Versa-Tech® Recloser details on www.hubbellpowersystems.com, click on the catalog icon, select construction-switching-protection, and scroll to Catalog Section 10E.

Versa-Tech® Field Trials feedback

- **David J. Kirkland**
Engineer
Clay Electric Cooperative, Florida



Only one of our Versa-Tech beta test reclosers operated (2 trips) for a fault within its zone of overcurrent protection. The permanent fault was on a downline lateral tap that was cleared by a fused cutout. While the second unit was not exposed to any downline fault conditions that required interruption, it functioned in every other way as designed.

Some of the features we like are the wireless communication/diagnostic link, specifically the flexibility of changing the pickup magnitude and TCC remotely without having to change out the recloser. Also the light weight/compactness of the Versa-Tech unit facilitates installation by one person.

- **Ed Bevers**
Engineering & Operations Manager
Rural Electric Cooperative, Oklahoma



The weight of equipment hanging high on poles is critical in environments such as ours, where ice can mechanically load a pole beyond its ability to support the load. And when a pole with equipment such as reclosers, jumpers and brackets--and ice--is subjected to unbalanced forces because of adjacent pole or conductor failures, the difference between a small line failure and a major failure may lie in the weight of equipment used. We intend to minimize added weight on the pole as a weapon against ice storm catastrophes, and the Chance Versa-Tech recloser will be in our arsenal.

We are subjected to varying loads due to oil industry operations, as the price of oil and gas goes up and down. Sometimes it is hard to stay current on the system loads, and the ability to program reclosers "on the fly" is very attractive. The Versa-Tech recloser holds the promise of much smaller inventories and a high degree of flexibility in the field.

One of my philosophies is: "Feedback is the breakfast of champions." Data captured in the field becomes information on a computer screen or report, and that information becomes knowledge for the operations manager or engineer. Capturing event times, magnitudes and durations has become a vital decision-making tool for us in 1) responding to trouble, and 2) designing out problem areas to improve the system for our members. We hope to make the Versa-Tech recloser an integral part of our field-level information system.

Improved!**TO THOSE WHO CLIMB™**

Temporary Cutout and Load Disconnect Tools

• Type C- Polymer Cutout insulator and hot parts

To provide fuse protection during live-line maintenance, the Temporary Cutout Tool simply clamps onto a primary conductor using an insulated clampstick. The brass stud at the lower end accepts the clamp of a temporary tap jumper.

Temporary Cutout Tools for 15 & 27 kV applications

Recent improvements to the design include the insulated bushing and hot parts from Chance Type C-Polymer cutouts: Upper contact with integral sleet shield and hooks for operation by loadbreak tool and lower trunnion of cast bronze. The fusetube must be fitted with no larger than a 100 Amp fuse link.

Options for the 15 kV and 27 kV ratings include 100-Amp fused models (with and without a pivot-lever closing device) and 300-Amp solid-blade models. For loadbreak 300-Amp models, see the next page on Temporary Load Disconnect Tools.

continued . . .

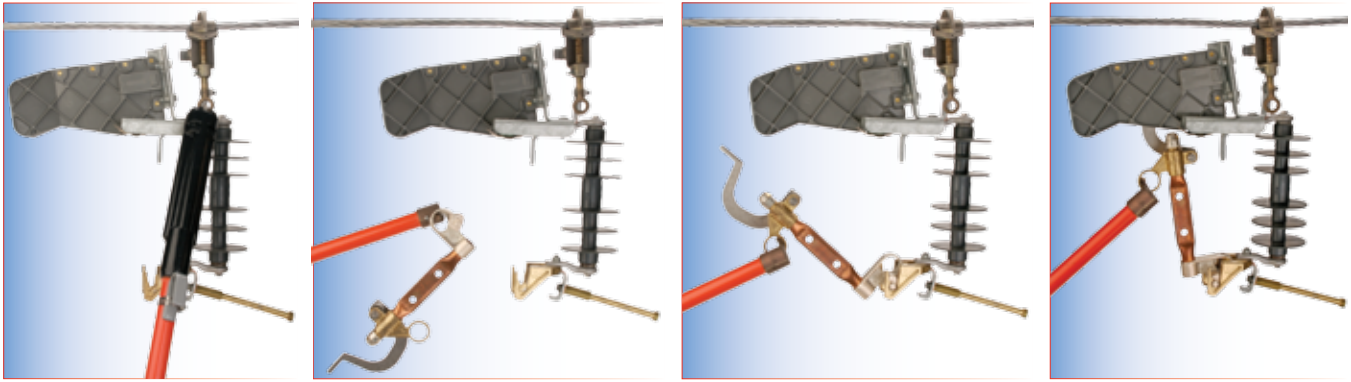
Six new Catalog Numbers are cross-referenced as replacements for those of our previous design in our recently revised Section 2300.



Pivot-Lever Type Temporary Cutout Tools permit closing by hookstick from the side opposite the fuse tube. The plastisol-coated hook lever serves only to close the cutout, not to break the fuse link.



CHANCE
LINEMAN GRADE TOOLS™



Unfused or unswitched loads can be disconnected by first installing this tool and a temporary bypass jumper in parallel with the permanent tap connection. After closing the blade of the tool, the permanent tap can be disconnected. The load can then be dropped or reconnected by operating the blade of the tool. It should never be closed into a fault or opened during a fault.

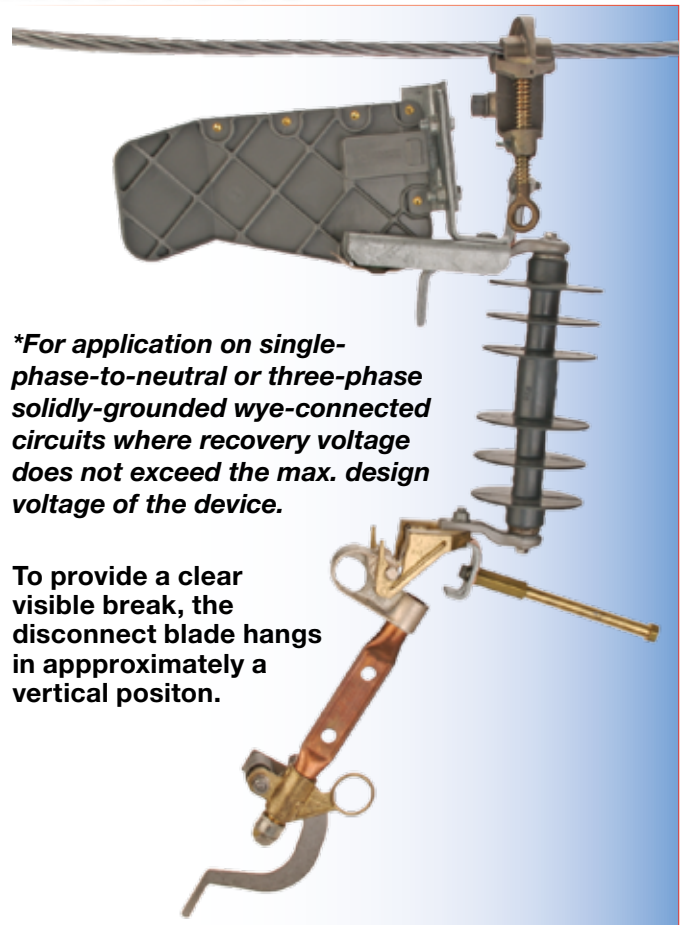
Temporary Load Disconnect Tools

8.3/15 & 15/27 kV applications*

Simply installed by hot line tools, the Temporary Load Disconnect Tool provides a temporary means of connecting and disconnecting equipment or circuits under load conditions. This tool design does not have a fuse and does not provide protection for fault or overcurrent conditions.

Insulated bushing and hot parts are from Chance Type C-Polymer cutouts, including the distinctive tubular-copper disconnect blade. Two new Catalog Numbers replace those of our previous design in our recently revised Section 2300.

An arc-chute-type interrupter gives the tool its excellent loadbreak capability. To interrupt load currents, the device makes use of a stainless-steel auxiliary blade within a Delrin® arc chute.



***For application on single-phase-to-neutral or three-phase solidly-grounded wye-connected circuits where recovery voltage does not exceed the max. design voltage of the device.**

To provide a clear visible break, the disconnect blade hangs in approximately a vertical position.



Illustrated operating and maintenance instructions are included in the protective carrying case included with each Temporary Load Disconnect Tool.

For full details on these and all our Jumpers and Load Pickup Tools, see the current version of Catalog Section 2300 on www.hubbellpowersystems.com.

For more information, contact your Hubbell Power Systems representative, fax 573-682-8714 or e-mail hpsliterature@hps.hubbell.com.

Nylon-thread crossarm insulator pins *get the lead out!*



Whatever sizes or styles your system requires, you no longer need to rely on lead threads for your crossarm insulator pins. You name it and our full line up probably now offers you a nylon-thread alternative, with all the significant advantages over lead-material threads.

Choose from 14 catalog numbers providing a range of specs almost certain to fill your bill of materials: Pins for steel crossarms, wood or composite crossarms;

Nylon threads excel over Lead threads

- Eliminate concerns about handling and disposal
- Improve insulator fit: Firm seating, resilient and more impact resistant
- Improve installation - once firm, insulator can be turned up to a half turn more to align grooves with conductor



through-the-arm or saddle types; low-voltage or high-voltage; load ratings from 800 to 2,500 lb.; 1" or 1³/₈" threads; ANSI-Standard and RUS-Listed models.

All of our nylon threads meet ANSI performance and dimensional standards. All steel components galvanized per ASTM A-153.

Lead-free benefits fit, function and handling

Not only is the nylon-threaded pin more friendly than lead to personnel and the environment, it also performs better. Nylon threads eliminate the concerns associated with the proper handling and disposal of lead materials.

Nylon threads also are more resilient and impact-

resistant than lead which can be more easily deformed in handling.











In application, nylon threads provide a better fit or interface with the insulator. After an insulator is seated firmly on a nylon-thread pin, the insulator can be tightened as much as a half turn more if needed to align its grooves with the conductor. This "forgiving" resilience of nylon contributes to it being the superior thread-material choice.

continued . . .

Mounting hardware included

Complete mounting hardware is included as pictured with each of the pins in our line. By design, on-the-job functions are incorporated into the attributes of each individual pin type as follows:

- **Clamp-type pins** feature raised projections on back plate to help prevent slippage. Saddle style works for straight, angle or corner construction without cutting or drilling crossarm.
- **Shank-type pins** are forged steel and include a wide base to distribute load stresses.
- **Low-voltage pins** are forged with flats for wrench engagement.
- **High-voltage pins** comprise the newest additions to our nylon-thread insulator pin line.

Pins for Steel Crossarms	Pins for Wood or Composite Crossarms			
				
<p>Low-Voltage Pins Short-Shank 2 sizes, 1" Threads</p>	<p>Low-Voltage Pins Long-Shank 4 sizes, 1" Threads</p>	<p>High-Voltage Pins Long-Shank 2 sizes, 1" Threads 4 sizes, 1 3/8" Threads</p>	<p>Clamp-Type (Saddle-Type) Pins 1 size, 1" Threads</p>	<p>Clamp-Type (Saddle-Type) Pins 1 size, 1 3/8" Threads</p>
				
<p>2 per ANSI C135.17 1 RUS Listed, Cat. f</p>	<p>4 per ANSI C135.17 1 RUS Listed, Cat. f</p>	<p>3 per ANSI C135.17 1 RUS Listed, Cat. f (pending approval)</p>	<p>1 RUS Listed, Cat. f (pending approval)</p>	<p>1 RUS Listed, Cat. f (pending approval)</p>

Hubbell exclusive offerings



Clamp-Type (Saddle-Type) Pins with Nylon Threads

1" and 1 3/8" Threads

RUS Listed, Category f (pending approval)

Clamp-type insulator pins with nylon threads now are available only from Hubbell.

We are the first manufacturer to bring this combination to the industry. ■

For more details, see Catalog Supplement Bulletins 5-53.1, 2 and 3 on www.hubbellpowersystems.com. For our full line of Pole Line Hardware, see current versions of Catalog Sections 5, 5A, 5B, 5C and 5D on www.hubbellpowersystems.com.

Grounding sets for underground switches and transformers

TO THOSE WHO CLIMB™

Chance® grounding clamps, ferrules and cable meet ASTM F 855.

These tools are essential to safety and efficiency for your distribution construction and maintenance crews. They provide the temporary grounding connections to properly perform de-energized procedures to install and service your underground gear. Each set is fault-current rated for 10,000 amps for 10 cycles to help make the most of your crews' time on every underground job. ■



Three-Phase Grounding Elbow Sets

- | | | |
|--------------------|----------------------------------|--------------------|
| Cat. No. C600-3102 | 15 kV | 14.5 lb. (6.5 kg.) |
| Cat. No. C600-3103 | 25 kV & 35 kV
small interface | 15 lb. (6.75 kg.) |

For our full line of overhead and underground grounding equipment, see the current version of Catalog section 3000 on www.hubbellpowersystems.com.

For more information, contact your Hubbell Power Systems representative, fax 573-682-8714 or e-mail hpsliterature@hps.hubbell.com.

NOTE: Because we have a policy of continuous product improvement, we reserve the right to change design and specifications without notice.

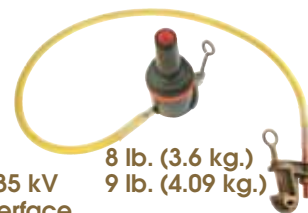
Grounding Elbow Sets for Single & Three-Phase Gear

- | | | |
|--------------------|----------------------------------|------------------|
| Cat. No. C600-0729 | 15 kV | 4 lb. (1.8 kg.) |
| Cat. No. T600-2131 | 25 kV & 35 kV
small interface | 6 lb. (2.7 kg.) |
| Cat. No. C600-1927 | 35 kV
large interface | 8 lb. (3.63 kg.) |



Grounded Parking Bushing Sets for Single & Three-Phase Gear

- | | | |
|--------------------|----------------------------------|------------------|
| Cat. No. T600-3091 | 15 kV | 8 lb. (3.6 kg.) |
| Cat. No. T600-3092 | 25 kV & 35 kV
small interface | 9 lb. (4.09 kg.) |



Vol. 13 No. 1

APRIL 2008

Hubbell TIPS & NEWS magazine is published to inform personnel of electric utilities and associated companies of new ideas and techniques in transmission and distribution practices. The magazine, under different titles and formats, has been published since 1932.

Your suggestions and editorial or photographic contributions are invited and may be submitted to **Hubbell TIPS & NEWS**.

visit <http://www.hubbellpowersystems.com>

HUBBELL TIPS & NEWS
210 N. Allen Street
Centralia, MO 65240-1395 USA
ADDRESS SERVICE REQUESTED

PRSR STD
U.S. POSTAGE PAID

HUBBELL

