

HUBBELL[®] TIPS & NEWS

Vol. 11 No. 1 APRIL 2006

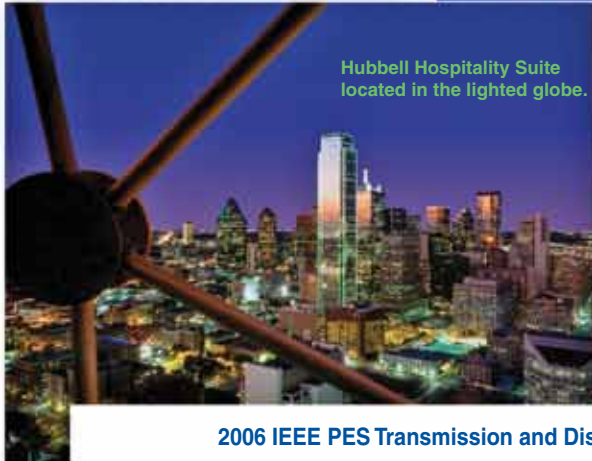
www.hubbellpowersystems.com



See You
in
Dallas
IEEE Booth
1441



Dallas here we come!



2006 IEEE PES Transmission and Distribution Conference and Exposition, May 22 -24, 2006 Dallas, Texas USA

Do we ever have a show for you! See our many new products introduced since the 2003 Dallas IEEE show as well as the many Hubbell products you've used for years. At the Hubbell booth, you'll see how we can supply 90% of the components needed on a steel transmission tower and 75% of those used for construction and maintenance on a distribution pole. It's hands-on at the Hubbell booth. After show hours join us at the Hubbell Hospitality Suite located in the lighted globe at the Hyatt Regency Reunion Lookout Room for the best view of the city. Suite is open Sunday May 21 from 6:00 p.m. to 9:00 p.m. Monday May 22 from 5:00 p.m. to 9:00 p.m. and Tuesday May 23 from 5:00 p.m. to 9:00 p.m.

The 2006 IEEE PES Transmission and Distribution Conference & Exposition is designed to provide today's power-delivery professional with the information and detail necessary to manage technology and business solutions. Conference and exposition attendees will find a comprehensive event that draws the highest attendance of T and D professionals from around the world. Visit www.ieeet-d.org for more details.

ESMO Show October 16-19, 2006, Albuquerque, NM • Plan on visiting the Hubbell Power Systems' booth at ESMO



Connectors

New Fargo GLS Automatic Splices
Use to splice overhead or support guy wires. Holds a minimum of 90% of the guy wire rated breaking strength. 1/4," 5/16" and 3/8" sizes.



Arrester New Ohio Brass PDV-100 Optima Arrester

This polymer-housed arrester is ANSI heavy-duty rated. Provides improved isolator reliability. Universal protective cap. Higher temporary over voltage (TOV). Field-tested sealing system.

See the many new products of Hubbell Power Systems



See Our
New Line
of 15-
72kV Post
Insulators.



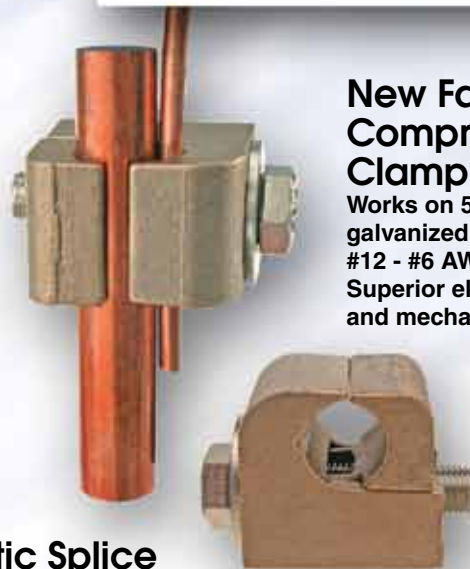
New Polymer Pin Insulator

This Ohio Brass polymer pin is far superior to porcelain. It resists the cracking and breaking associated with porcelain designs. Because the polymer pin is also lighter, it's easier to handle, easier to install and less costly to ship. Features include UV stability, 15kV and 25kV ratings. Complies with ANSI C29.5 and C29.6.



Cable Accessories New Hubbell Feed-Thru Bushings

These 15 kV and 25 kV 200 Amp Loadbreak Feed-thru Bushing Inserts provide an extra interface for looping, tapping, or adding ar-rester protection.



New Fargo Compression Clamp

Works on 5/8" copper and galvanized ground rods and #12 - #6 AWG conductor. Superior electrical grounding and mechanical hold.

New Fargo Range-taking Automatic Splice

The GL 4098 splice is used for full tension applications of 3/0 or 4/0 AAC, AAAC and ACSR conductors.



IEEE
BOOTH
1441



New Anderson ASOD Side-Loading Deadend Clamps

Quick to install. Works in distribution and light transmission applications. Cast of high strength 356-T6 alloy. Use on AAC, AAAC and ACSR conductors.

Formed Wire Deadend

For anchor attachment of guy strand, choose Fargo grips. Quick and easy to install. No special tools. Rated 100% tension of EHS, HS, Common, Siemens Martin and Utilities grade guy wires. Four sizes presently available with more being added later. Current sizes are 1/4," 5/16," 3/8" and 7/16."



New Fargo Automatic Guy Wire Deadends

Fargo 5100 and 5202 automatics are used by utilities to quickly and efficiently deadend guy wires. Designed to protect against tampering.



Split Bolts

The new Anderson full standard series of copper and copper-aluminum split bolt connectors are easy to specify and easy to use. Available for use on copper and Copperweld® conductors as well as copper to copper and aluminum to copper connections. Go to: www.hubbellpowersystems.com and open the What's New icon for complete details.

PAPERS TO BE PRESENTED

"Improvements in Distribution Arrester Reliability"

Description: Distribution arresters use a disconnecting device to isolate in the event of a failure. This session covers recent design advances to improve system reliability.

Presented by:

Steve Brewer, Ohio Brass, Product Manager
Tuesday May 23, 1-2 p.m., Room D221.

"Hubbell Power Systems Launches New Line of 15-72kV Post Insulators"

Description: Hubbell Power Systems expands voltage range, increases the strength and introduces new composite material for our line of post insulators. Insulators meet both ANSI & LWIWG standards.

Presented by:

Michael Vermilye, Ohio Brass, Product Manager
Tuesday May 23, 4-5 p.m., Room D221.

"Application Considerations for Gapped Silicone - Carbide Arresters Currently Installed on Utility High Voltage Installations"

Presented by:

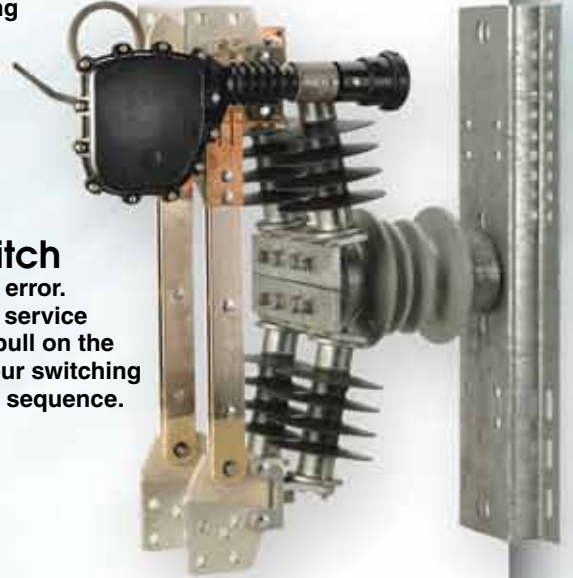
Denny Lenk, Ohio Brass, Principal Engineer
Poster Session 6
Tuesday May 23, 10-12 a.m., Exhibit Hall A.

Switching



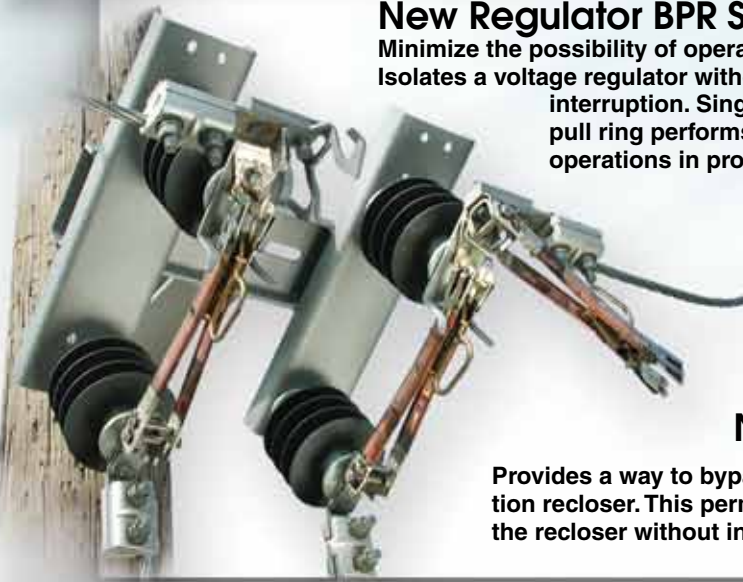
New PAD™ Motor Operator

The most advanced and economical way to automate air-insulated AIS pad-mounted switches. Two-way, three-way and four-way switching now possible.



New Regulator BPR Switch

Minimize the possibility of operator error. Isolates a voltage regulator without service interruption. Single pull on the pull ring performs four switching operations in proper sequence.



New Type BP3 By-Pass Switch

Provides a way to bypass and disconnect a pole-mounted distribution recloser. This permits de-energized periodic maintenance of the recloser without interrupting service.

New 27 kV Polymer Cutout

Type C 27kV, 125 kV BIL, polymer cutouts are significantly lighter than porcelain cutouts. They provide extra creepage distance, 17.1" (434mm) versus 12.6" (320mm) for traditional porcelain insulator cutouts. The insulator is manufactured with time-proven Ohio Brass ESP silicone alloy rubber. It meets or exceeds all applicable ANSI standards.



New Grip-All Clampstick

The new Chance 21st Century GRIP-ALL Clampstick has two key improvements over the original design: Stainless-steel operating control parts and jaw hook parts for a uniform assembly and precise tool operation/locking action. Lexan® plastic head is now black to help demark the length of orange insulated pole between the black head and black sleeve near the handle of the Clampstick. The new tool gives linemen the smoothest performance ever.



FREE OHIO BRASS®

ARRESTER SELECTOR



Quickly determine the many Ohio Brass arrester and hardware combinations that are available to you. Order your selector at: hpsliterature@hps.hubbell.com. or fax your request to 573-682-8714.

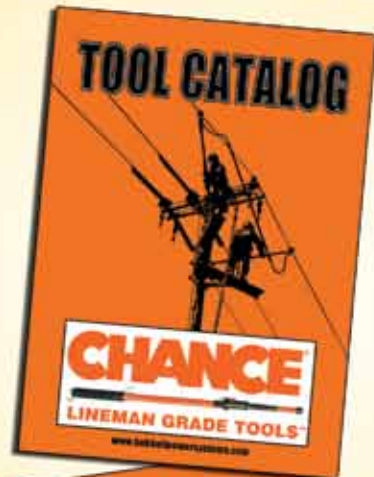
FREE

This is the seventh in a series of 17" x 24" posters we have offered over the past 15 years. This latest poster is a great collector item. Ideal for framing. Quantities are limited, so place your order early. Order the poster by going to: www.hubbellpowersystems.com. In the Comments section of the Literature Request form, simply type the word "poster" and we will send your copy.



UPDATED

CHANCE® PAPER BACK TOOL CATALOG



Orders your English copy or Spanish copy at:

hpsliterature@hps.hubbell.com. or fax your request to 573-682-8714.

Safety is top priority

Clean, test and protect your hot line tools

Making life on a line crew safer and easier is what Chance hot line tools and tool care products are all about!

Make tool care an everyday routine

For daily cleaning of hotsticks, handy packs of Moisture Eater II Wipes and Silicone Wipes can't be beat.

For periodic maintenance, we prescribe a Kit of Moisture Eater in a gallon jug, cleaning pads, two-part epoxy patch components and silicone wiping cloths. Storage bags in sizes you need completes the system.

You also can find lubricants for metal tool components and details on all our tool care and storage products on our web site in the current Catalog Section 2500. ■

TO THOSE WHO CLIMB™



Assure OSHA, ASTM, IEEE compliance with the Chance Wet/Dry Hotstick Tester.

CHANCE[®]

LINEMAN GRADE TOOLS[™]



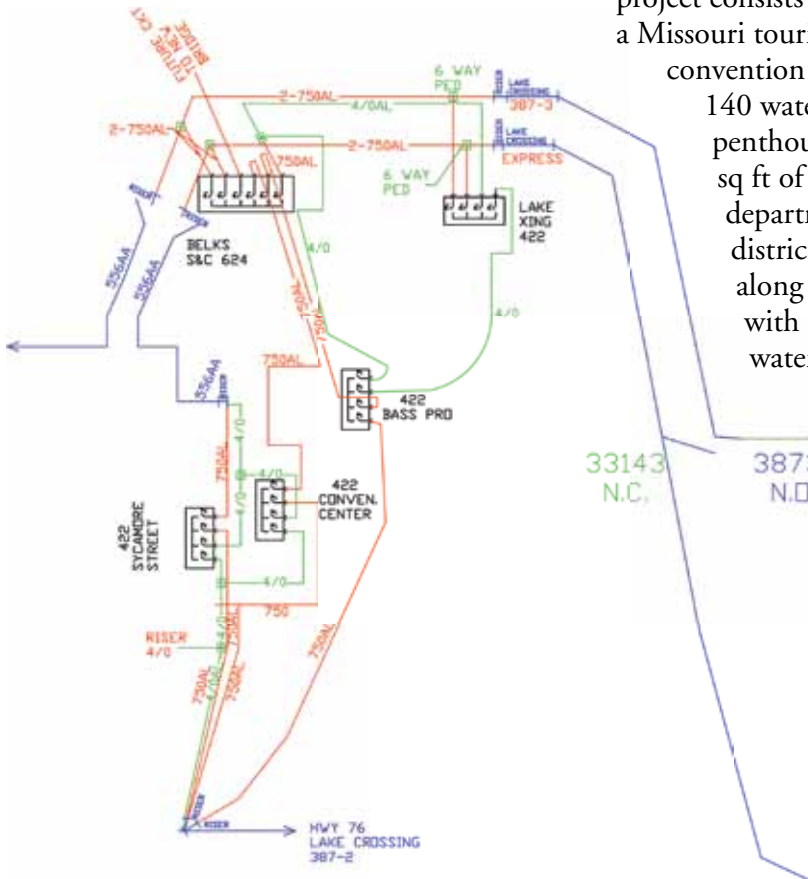
Branson Landing project requires unique engineering solution

By Josh Clements
Standards Engineer
The Empire District Electric Company



Branson, Missouri, already one of the most popular tourist destinations in the United States, is revitalizing its downtown section to further enhance its tourist attractions. Known as Branson Landing, this \$300 million project is situated between US Route 65 and Lake Taneycomo near the Branson tourist district. The site occupies 95 acres including 1.5 mi of waterfront on Lake Taneycomo. Specifically, the project consists of a 220,000 sq ft convention center, a Missouri tourism center, a four-star, 260 room convention hotel, a 100-room boutique hotel, 140 waterfront luxury condominiums and penthouses, a marina, and a total of 465,000 sq ft of retail space. A Bass Pro shop and a Belk department store will anchor the shopping district. The Landing will include a boardwalk along the lakefront, a 2.5 acre town square with a 1,500 seat amphitheater, and a lighted water fountain created by WET Design, the designers of the Bellagio Fountains in Las Vegas.

Branson is experiencing a record-setting year for new construction, having issued more building permits in 2005 than in any previous year. Construction of Branson Landing began in June 2004.



Scheduled completion is April 2006 with the exception of the convention center, which is scheduled for completion in 2007.

The Empire District Electric Company of Joplin, Missouri, is supplying electric power for this project. The company's 10,000 square miles service territory encompasses southwest Missouri, including Branson, southeast Kansas, northwest Arkansas and northeast Oklahoma and has over 1,200 miles of transmission lines and 6,000 miles of distribution lines.

Electrical challenge

One of the biggest challenges in powering Branson Landing was the high-current underground service needed. For aesthetic reasons, overhead feeder lines that presently provide power to the area, are being converted to underground. Empire has considerable underground distribution experience with 200 A, but this is the first time to supply underground at 600 A. To achieve the required supply current of 836 A at 12.47 kV, we paralleled two, 750 kcmil aluminum conductors for each phase. Terminating these cables in the available space in pedestals and switchgear was a challenge; however, Hubbell Power Systems (HPS) had the answers to our many questions about working with 600-A materials and provided excellent customer service and support throughout the entire scope of the project. Also, HPS offered their materials at a fair price and delivered on schedule.

The approximately 1,500 ft. underground feeder for Branson Landing has taps that flow underground down into the development area to switchgear, pad mounted transformers, and pedestals to supply the actual loads. The one-line diagram on page 8 shows the arrangement of circuits. Our original plan was to connect each cable to its own bushing in the switchgear; that is, two bushings for each phase. However, there wasn't enough physical space to do that in the cabinet, so we had to connect two cables to one bushing. This fact greatly complicated the



Hubbell engineers worked closely with Empire District Electric Company in providing electric service to major tourist attraction in Branson, Missouri

Continued . . . 

mounting of the various terminating products such as elbows, elbow arresters and tap connectors, and junctions. Fortunately, this challenge in mounting was eased considerably through the cooperation and engineering assistance of HPS whose terminating and arrester products we were installing.

The Hubbell products installed included 900-A 6-way junctions, 600-A elbow kits, 600-A to 200-A reducing tap connectors, and elbow arresters. The insulating plug that is usually put in the back of the 600-A elbow is removed and the 600-A to 200-A tap connector is put in its place. This arrangement converts the 600-A elbow on the back side to a 200-A tap, so you can install a 200-A loadbreak elbow, an elbow arrester, or a grounding elbow for doing maintenance. It can also be used as a place to test for voltage prior to performing maintenance and applying grounds. The reducing tap connector is installed in both switchgear and pedestals so as to not limit the ability to ground and protect the cables. In addition, every cable has a surge arrester on it at switchgear locations and at pedestals.



The 900-A 6-way junction is used inside the pedestal. It is a bus that has six bushings installed along its

length. Because there is a parallel run of cable, we would need perfectly equal lengths of cable in order to avoid current imbalance, so the junction is used to overcome problems of current imbalance. (For future projects, we have decided to utilize 25 kV as our feeder voltage which will eliminate the need for parallel cables.)

We have 900 A in parallel cables coming into two of those bushings and then feeding through, going out on two of the other bushings. The remaining two bushings are tapped off to the 900-A switchgear.

Work accomplished

The cables have been successfully terminated inside the switchgear. Each parallel cable termination created a stacking height of about 36 inches inside the 900-A switchgear. The stack on each bushing includes the two cables, an elbow, a 600-A to 600-A connector, another elbow, and a 600-A to 200-A reducer to allow us to piggyback off the back and use that for an arrester. To ground the cable, we would remove the arrester and then install a grounding elbow into the reducing bushing. Everything has gone well so far thanks to the up-front help provided by HPS.

Making the transition to 600-A deadbreak material was a challenging effort complicated by the paralleling of the cable. Hubbell's expertise and assistance made this transition from 200-A to 600-A much easier. They were always there for support on this project, have been a great ally in the past, and will continue, I know, to be a great supporter in the future. ■

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

New Transmission-Level Digital Phasing Testers

Two models for up to 120 kV or 240 kV

TO THOSE WHO CLIMB™

Now we can offer your transmission crews the same convenience and accuracy in as in our Digital Phasing Testers for distribution circuits. The transmission testers consist of two high-impedance components encapsulated in fiberglass poles, each with an end fitting threaded for interchangeable hook probes. A 22-foot-long insulated flexible cable from the voltmeter stores on a reel on the other pole.



Job-specific kits serve your select needs

Two complete kits give you the choice of two voltage ranges. Each kit includes an instruction manual, a pair of 1½"-diameter insulated handles for proper working clearances and storage bags for the handles and tester.

Large direct display with backlight and hold features

Verification tester available as accessory

To easily check the Digital Transmission Phasing Tester before and after use, an accessory Voltmeter Tester is available as Catalog No. PSE4033473. See details on it and all Chance instruments and meters on our web site in current Catalog Section 2450. ■

10-120 kV (64" Long)
Digital Phasing Tester
Kit Cat. No. PSC4033465



40-240 kV (102" Long)
Digital Phasing Tester
Kit Cat. No. PSC4033466



96" Epoxiglas® Handles

CHANCE
LINEMAN GRADE TOOLS™

Automated gang switches keep power flowing to generation pumping station

Remote switching interfaces utility's existing protocol programs

• Hubbell AR Switches and Cleaveland/Price Motor Operators

by Denny Robbins
Design Engineer Power Supply
and
Chris Ware
Communications Engineer,
Hoosier Energy - Bloomington, IN

Uninterrupted power is critical for the Merom Pumping Station, which supports Hoosier Energy's primary generation station in southwestern Indiana. To ensure operating reliability, we designed an automation package that included three-phase gang-operated air break (GOAB) switches capable of remote operation.

Our initial consideration focused on GOABs with traditional down-the-pole control shafts. This design would give us both the desired remote control by motor operators and on-site manual operation.

Hookstick control preferred

When we learned of the hook stick operation option on the Hubbell AR Switch, we were impressed by several of its advantages for this package. By definition, the AR GOAB switches are Automation Ready, as their name implies.

For this vital site, easy operation and installation were imperative features to



the switch we would specify. The AR's hook stick option satisfied these criteria. It requires no field adjustment of its manual control and there are no control shaft sections to install.

Hoosier Energy is a generation and transmission cooperative providing wholesale electric power and services to 17 member electric distribution cooperatives in 48 central and southern Indiana counties. With headquarters in Bloomington, Indiana, Hoosier Energy operates two baseload power production facilities: The 1,070-megawatt Merom Generating Station and the 250-megawatt Ratts Generating Station. The cooperative also owns two peaking plants: The 174-megawatt Worthington Generating Station and the 258-megawatt Lawrence Generating Station.

High-voltage electric power is delivered to member cooperatives over a system of 1,400 miles of transmission lines and 14 primary substation facilities. Interconnections link Hoosier Energy with other major utilities in Indiana and neighboring states.

In addition, Hoosier Energy provides training, safety, marketing communications and technical services to its 17 member cooperatives. An estimated 650,000 residents, businesses, industries and farms in a 15,000-square-mile southern Indiana service area rely on Hoosier Energy's member distribution cooperatives for electric power.



Fast-action crossarm-mounted motor operator


What convinced us to select the AR switch was the crossarm-mounted motor operator available with the hook stick manual control option.

Not only does it contribute to maintaining the site's integrity for both the manual and remote operating means to be mounted out of public access. But this motor operator's rapid (0.4 second) switching speed also meets the site's uninterrupted power requirement.

User-friendly remote-operation software

Communications for remote switching with this motor operator let us continue to use computer programs integral to our other system controls. This compatibility keeps protocols consistent for our operations staff during potentially stressful circumstances at this site.



Continued . . . 

AR Switch design features and benefits

- Automation-ready design
- 900-amp continuous and interruption current rating
- Four-link overtoggle mechanism
- Hook stick operation capability
- Unitized, pre-assembled construction
- Compatible with today's D/A environment by adding a motor operator and RTU of your choice, or up-grade in the future
- Meets present and future operation requirements
- Mechanical advantage reduces operating torque to the lowest level in the industry to date
- Overtoggle feature assures blades are closed and gives "snap" feedback to the operator
- Minimizes installation time, reduces possible vandalism, eliminates control adjustments
- Minimizes installation time and eliminates control adjustments



Crews appreciate ease of installation

These hook stick GOABs and crossarm-mounted motor operators were fast, simple and easy for our installing crews. They loved the one-lift, bolt-up mounting and the direct-connect phase terminals. And the open/close adjustment was just a matter of setting the arm connecting the operator to the interphase shaft. ■

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

Motor operator features and benefits

The crossarm-mounted Cleaveland/Price PTAD motor operator incorporates these advantages.

Automation features:

- Dual source for the motor (AC or battery)
- Stallout timer that allows successive operation attempts on a stuck switch
- "Smart" battery disconnect to help prevent damage to the battery
- "No Go" function with status indication to help prevent underpowered switch operation
- Temperature-compensated battery charging circuit to help prevent over and under charging the battery
- Automatic battery testing
- Vented 33 A-H battery
- Automatic battery testing
- Fast (.4 second) high-torque operation
- Excellent ice-breaking ability

Operational features:

- Constant ready operation state - no mechanism wind-up required
- No decoupling procedure necessary - the PTAD automatically decouples for manual operation
- Decoupling not required to test the motor
- Linkage goes into full toggle with switch closed for momentary performance
- No decoupling procedure required for lockout
- Lockout of the motor by using a hotstick from ground level
- After manual operation, the switch can be resynchronized with the motor manually or remotely via SCADA
- No setting of limit switches required
- True switch status is always reported

GRIP-ALL Clampsticks

for the 21st CENTURY

TO THOSE WHO CLIMB™



Above, all Chance® GRIP-ALL clampsticks feature 6³/₄" of head travel to accept long-eyescrew grounding clamps. Glass filled nylon handle and stainless-steel Lockbar and Stop Lock give the operator total control to retract a clamp into the tool head, place it and tighten it on the line.



Above, hook securely grasps clamp eyescrew. Jaw holder's X shape aligns hook inside the tool head as the eyescrew is retracted. Left, a notch in tool head aligns the clamp while the operator places it.

You liked the original . . . you'll love this one!

Fondly nicknamed "shotgun," "egg sucker" and "slip stick" by linemen who've trusted the Chance® GRIP-ALL Clampstick over the years, it now passes to another generation with the smoothest performance ever.

Two key improvements put the 21st Century GRIP-ALL Clampstick ahead of earlier versions.

- Metal operating control parts and jaw hook parts now are stainless-steel. An investment casting manufacturing method produces these parts in identical form. This results in uniform assembly and precise tool operation/locking action.
- Lexan® plastic head now is black in color. This helps demark the length of orange insulated pole between the black head and the black sleeve near the handle on a single-piece GRIP-ALL Clampstick.

For safety and productivity, put Chance® tools in your crew's hands.



NEW ANDERSON[®] Versa-Crimp[®]

Hydraulic Compression Tools
Battery Operated
Types VC8C-BP & VC8U-BP

Type VC8C-BP
Conductor Range:
250—1000 MCM Al
500-1500 MCM Cu
250 Str.—1033.5 AAC (Full Tension)

Type VC8U-BP
Conductor Range:
3/0 Str. — 1033.5 MCM Al
3/0 Str.— 954 (54/7) ACSR
500 Str.— 1500 MCM Cu
266.8 26/7-1113 45/7 ACSR (Full Tension)



These Anderson hydraulic compression tools combine the range of the remote crimper with the ease of the battery powered tool. Ideal for aerial bucket and trench work. Think of it. One tool for an entire range. That means simplicity. No dies or die sets needed. You cut tooling costs. Meets ANSI C119.4 for highest strength crimps. Backed by full service maintenance and repair service. Order today.

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.

Vol. 11 No. 1

APRIL 2006

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.

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