



Insulated Hand Tools

Warranty - Material

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Warranty - Application

Hubbell Power Systems, Inc. does not warrant the accuracy of and results from product or system performance recommendations resulting from any engineering analysis or study. This applies regardless of whether a charge is made for the recommendation, or if it is provided free of charge.

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Live-Line Work Minimum Approach Distances					
Nominal Voltage in Kilovolts Phase-to-Phase		Distance			
		Phase-to-ground exposure		Phase-to-phase exposure	
		(ft.-in.)	(m)	(ft.-in.)	(m)
0.05	to 1.0	*	*	*	*
1.1	to 15.0	2-1	0.64	2-2	0.66
15.1	to 36.0	2-4	0.72	2-7	0.77
36.1	to 46.0	2-7	0.77	2-10	0.85
46.1	to 72.5	3-0	0.90	3-6	1.05
72.6	to 121	3-2	0.95	4-3	1.29
138	to 145	3-7	1.09	4-11	1.50
161	to 169	4-0	1.22	5-8	1.71
230	to 242	5-3	1.59	7-6	2.27
345	to 362	8-6	2.59	12-6	3.80
500	to 550	11-3	3.42	18-1	5.50
765	to 800	14-11	4.53	26-0	7.91

• Distances agree with OSHA guidelines in Table R-6 of the Federal Register, published 1/31/94. These distances take into consideration the highest switching surge an employee will be exposed to on any system with air as the insulating medium and the maximum voltages shown.

• The clear live-line tool distance shall equal or exceed the values for the indicated voltage ranges.

*Avoid contact.

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

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For smooth operation, investment-casting stainless steel components include Jaw, Jaw Holder, Safety Stop, Lockbar and Latch illustrated below.*

To accept grounding clamps with long eyescrews, all Grip-All clampsticks feature 6¾ inches of head travel.



Notch in tool head aligns the clamp while the operator places it.



M1867

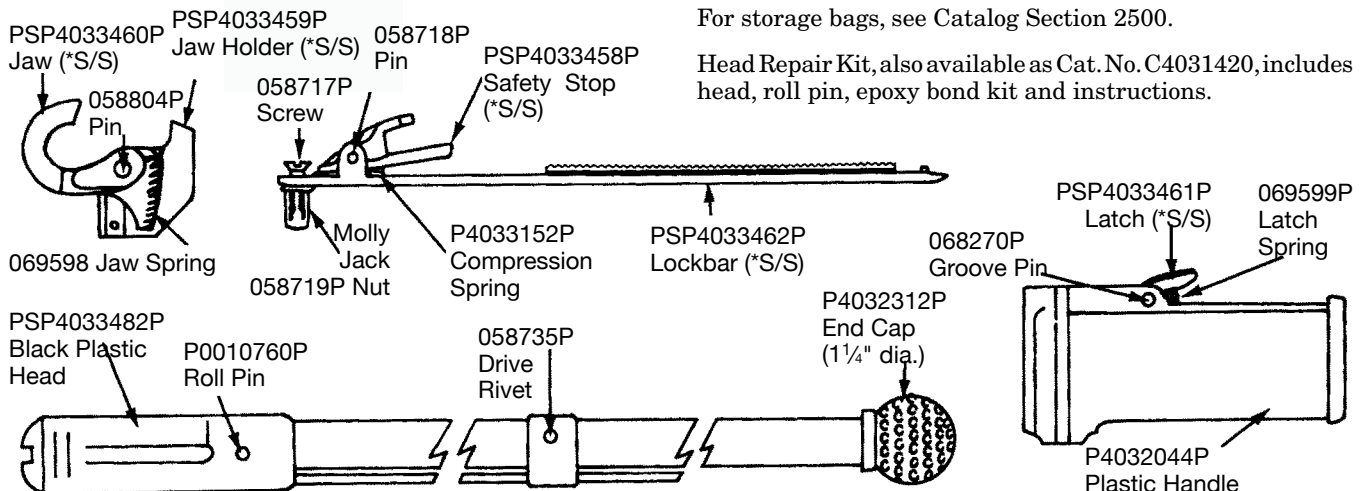
To convert any Grip-All stick to use all Universal Tool Accessories, the M1867 Adapter secures in the clampstick hook and head housing.



†For metal universal fitting on handle end of any Single-Piece or Hinged Grip-All, add suffix "A" to the Catalog Number.

Replacement Parts

for Single-Piece and Hinged Grip-All Clampsticks



Grip-All Clampsticks

*New for the 21st Century with black head and *stainless steel components*

Single-Piece Style

The most versatile tool in a lineworker's hands, the Grip-All stick puts an easy-to-control "finger" on an insulated pole. Although primarily designed for installing hot-line and grounding clamps, it serves both overhead and underground circuits with various end fittings.

Commonly called a "shotgun," the operating mechanism incorporates a sliding hand grip that opens the hook to grasp a clamp eyescrew and retract it into the tool head. A thumb latch then must be depressed to release the locked hand grip so it can open the hook.

While the tool head is of Lexan[®] for close-quarter operations, the worker must maintain recommended working distance solely on the Epoxiglas[®] pole section of the handle as the hook and its actuator are metal parts.

Easy to care for, Grip-All sticks do not require field stripping to clean. All insulated parts including the operating rod are outside the main pole, readily accessible to wipe dry.

CAUTION: Do not clean the plastic head with solvent.

†Catalog No.	Overall Length	Weight
C4030291	1¼" x 4' 9"	5¾ lb./2.6 kg.
C4030292	1¼" x 6' 8"	6½ lb./2.9 kg.
C4030293	1¼" x 8' 7"	7¼ lb./3.3 kg.
C4030294	1¼" x 10' 7"	8 lb./3.6 kg.
C4030295	1¼" x 12' 7"	8¾ lb./3.9 kg.

For storage bags, see Catalog Section 2500.

Hinged Style

Ideal for troubleshooters with limited tool-storage space in their cars, this folding version operates with the same features as the one-piece style.

†Catalog No.	Folded	Extended	Weight
C4030296	3'4"	1¼" x 6' 9"	8 lb./3.6 kg.
C4030297	4'4"	1¼" x 8' 8"	9 lb./4.1 kg.
C4030298	5'4"	1¼" x 10' 8"	10 lb./4.5 kg.
C4030299	6'4"	1¼" x 12' 8"	10½ lb./4.7 kg.
C4030342	7'4"	1¼" x 14' 8"	11 lb./5.0 kg.
C4030343	8'4"	1¼" x 16' 8"	11½ lb./5.2 kg.

For storage bags, see Catalog Section 2500.

Head Repair Kit, also available as Cat. No. C4031420, includes head, roll pin, epoxy bond kit and instructions.

Grip-All Clampsticks, Telescoping

New for the 21st Century with black head

Available in two sizes, each readily locks at variable working lengths.

The design features a rotating coupler and an engineered positive-lock button with safety stop to keep the sections from parting or the hook releasing while in use. The mechanism locks the sections into a solid and rattle-free tool.



Telescoping Style

Our Telescoping Grip-All Stick can replace several conventional clampsticks. With fewer sticks, it still permits linemen to serve their many safe-working distances and positioning needs. This can reduce the number of clampsticks required on a line truck, saving limited storage space.

Engineered interface between sections ensures that tool retracts with full control. Close fit also helps keep out dirt and moisture. Top section is of foam-center Epoxiglas® insulated pole.

Basic clampstick functions of this telescoping style are identical to the fixed-length style. All controls can be manipulated while wearing gloves. Easy to disassemble, the Telescoping Grip-All Stick must be kept clean and dry inside and out for maximum personnel protection.

Catalog No.	Extended Tool can lock at each length:	Retracted Length	Weight
C4031035	5'6¾", 6'9½", 8'	5'2¾"	6 lb./2.7 kg.
C4031036	8'6¾", 10'4½", 12'2¼", 14'	8'2¾"	8 lb./3.6 kg.

For storage bags, see Catalog Section 2500.

Telescoping Style with Universal Fitting on Handle

Catalog No.	Extended Tool can lock at each length:	Retracted Length	Weight
C4033060	5'10½", 7'1¼", 8'3¾"	5'6½"	6 lb./2.7 kg.
C4033061	8'10½", 10'8¼", 12'6", 14'3¾"	8'6½"	8 lb./3.6 kg.

For storage bags, see Catalog Section 2500.



For SAFETYSHIELD™ Hot Stick Barrier to fit tools on this page, see page 2129.

Factory-installed universal fitting on end opposite the clampstick head.



Grip-All Clampstick Assist Ring

Assist Ring provides a suspension midpoint for any Grip-All clampstick. Particularly helpful on longer sticks, the assembly permits a support line to attach at the smaller ring. To help maintain safe-working clearances for hotline procedures, an insulated Strain Link Stick* of proper size should be used in the handline.

Assist Ring halves assemble simply by threaded fasteners. Keyhole shape for operating rod permits clampstick to function as usual.



Catalog No.	Description	Weight
E4032543P	Grip-All Assist Ring	1½ lb./0.68 kg.

*For Strain Link Sticks, see Catalog Section 2250.



ELBOW CONNECTOR TOOL REPLACEMENT GRIPPERS FOR 15 kV, 25 kV and 34.5 kV ELBOWS

**C4030704**

The tool provides a sure grip for installing and disconnecting elbow terminators. The tool grabs the elbow and has a special integral hook that fits through the rubber eye of an elbow or the metal hook of a bushing cap so that the lineman has complete, positive control, overcoming the resistance of the stiff underground cable.

ORDERING INFORMATION

REPLACEMENT GRIPPERS (Also required for Elbow Puller Tools, page 2105)

Catalog No.	Description	Weight
C4030704	15 kV Plastic-Coated Grippers	5/8 lb./3 kg.
C4030613	25 kV Plastic-Coated Grippers	1 lb./5 kg.
C4030614	25 kV Uncoated Grippers	5/8 lb./3 kg.
C4030814	34.5 kV Plastic-Coated Grippers. Fits RTE 200 AMP and 600 AMP Elastimold "T" Elbow	1 lb./5 kg.
C4030815	34.5 kV Plastic-Coated Grippers (For Elastimold Elbows)	2 1/4 lb./1.0 kg.

Arc Snuffer Removal & Replacement Tools

**C4032037****C4032036**

Without de-energizing URD bushings, these two hot-line tools permit easy retrieval of broken arc snuffers and installation of replacements.

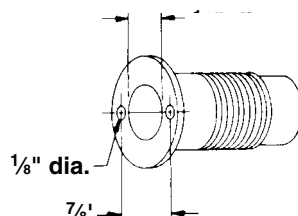
Designed to ensure adequate electrical clearances, both tools are to be used expressly in a Grip All clampstick. Integral ring on each tool retracts into clampstick. Tool bodies are high-impact plastic with steel inserts.

Removal Tool works on the principle of a bolt extractor. Inserted into a damaged arc snuffer, it permits retrieval by unscrewing the broken part.

Replacement Tool controls alignment with a spring-action center post that snaps into the arc snuffer bore. Two steel lugs of the tool engage holes in the snuffer collar to transmit tightening torque.

**Tools fit many
15 & 25 kV snuffers.**

These tools fit bushing arc snuffers with dimensions given at right.



ORDERING INFORMATION

Catalog No.	Description	Weight
C4032037	Removal Tool	1/4 lb./0.1 kg.
C4032036	Replacement Tool	1/4 lb./0.1 kg.

ELBOW PULLER TOOLS

Grippers are not included with tools on this page. To order grippers interchangeable for 15, 25 and 35 kV, see REPLACEMENT GRIPPERS table, page 2104.

Application

These tools facilitate removing elbow connectors from bushings of transformers and other apparatus. Elbows that have been installed for a long period of time sometimes are difficult to remove because silicone grease on the interface of the elbow and bushing dries out and hardens.

A special integral hook on the tool heat fits through the rubber eye of an elbow or the metal hook of a bushing cap. Used in this manner, the hook adds extra control and pulling power to the grippers.

IMPACT Elbow-Puller Tools

Design Features

The lightweight tool employs a simple, slide-hammer mechanism to easily disengage and assist in replacing elbows. The tool and grippers help the operator control the elbow and stiff underground cable lead.

For a sure, balanced grip the 5-pound slide hammer is plastisol coated and flared at both ends. Also for secure handling, both front and rear handgrip areas of the pole are coated with Griptread, a grit-filled rubber-base paint.

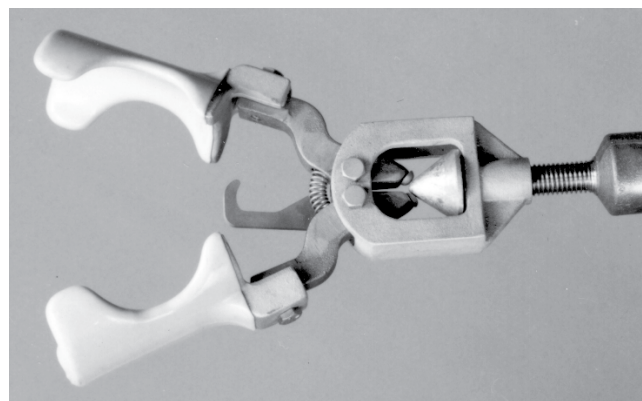
Available in three lengths, the tools are made of 1¼"-diameter orange Epoxiglas® pole. The 6- and 8-foot units meet OSHA requirements with 25 and 48 inches of insulation respectively from the tool end to the handguard (as factory assemble). On the 4½-foot unit (labeled "For Rubber Glove Use Only") insulation length measures 5 inches.

Operation

To pull an elbow connector: Insert hook through eye of elbow. Close down grippers on elbow by rotating pole. Support tool with one hand on front grip behind handguard and other hand on slide hammer. Slam hammer from front to rear anvil. Resulting impact should release elbow with sufficient momentum to withdraw it from the bushing without extended arcing.

To replace an elbow connector: Follow the same procedures for pulling except use slide hammer impact against front anvil to help seat the elbow.

For SAFETYSHIELD™ Hot Stick Barrier to fit tools on this page, see page 2129.



Impact Elbow Pullers

(Grippers not included. Order Grippers separately. See REPLACEMENT GRIPPERS table, page 2104.)

Catalog No.	Description	Weight
C4031822	†6-foot length	12 lb./5.4 kg.
C4031850	†8-foot length	12¼ lb./5.6 kg.
C4031851	*4½-foot length	11½ lb./5.2 kg.

*4½-foot tool labeled "For Rubber Glove Use Only."
†6- and 8-foot tools meet OSHA insulation requirements.

Storage Bags (Yellow vinyl/fabric)

P6436	Bag for 4½' or 6' tool above
P6438	Bag for 8' tool above

WIRE-HOLDING STICK

The Chance Epoxiglas® Wire-Holding Stick is used on or around energized lines for forming, bending and positioning jumper wires; and for holding conductors during splicing operations. The gripper, equipped with an eye so that other sticks can assist with heavy bending, will handle No. 6 solid copper through 1590 kcmil ACSR.

Operation of the Wire-Holding Stick has been simplified so that it grips much like locking-type pliers. By tightening the knurled nut at the control lever, the wire-holding jaws can be positioned to firmly grip the conductor. When this is done, the tightening control lever must be relaxed in a position about 1 inch away from the pole. Then, to secure the grip on the conductor, push lever down to pole; and to release the conductor simply move the control lever all the way up along the rod.

The head of the tool locks in three stop positions so that the lineman can engage and position conductors easily from most angles. The knurled screw handle below the jaw opening is used to adjust the head position from straight to right or left.

Head of the tool locks in three positions . . . enables lineman to handle conductor from any angle.



With handle positioned as shown in square photo, above, the knurled nut can be turned to adjust the gripper to the exact wire size.

Conductor Capacity: #6 to 1590 kcmil ACSR (0.162" to 1.5")

Catalog No.	Pole Dia. & Overall Length	Approx. Weight
C4033068	1¼" x 6'5"	6½ lb./2.7 kg.
C4033069	1¼" x 8'5"	6¾ lb./3.0 kg.

For SAFETYSHIELD™ Hot Stick Barrier to fit tools on this page, see page 2129.

**Wire Holding Stick
C4033068**

**Positive Grip
Clamp Stick
HG30302**

Positive Grip Clampstick

The Epoxiglas Positive Grip Clampstick is made for use on eyescrew grounding or hot line clamps. It can be mounted on the line and tightened at angles up to 30°. Fittings are aluminum and bronze.

To install clamp, align locking ring with slot in housing; place eye of clamp into housing. Holding locking ring and clamp in one hand, rotate pole clockwise to trap eye. To remove clamp, engage locking ring on clamp body and rotate pole counter-clockwise to trap eye.

The butt end of the tool is equipped with a combination tool hanger and universal head.

Catalog No.	Pole Dia. & Overall Length	Type Head	Approx. Weight
HG30302	1¼" x 8'6"	Regular Length	4 lb./1.8 kg.
HG303012	1¼" x 8'6"	Extra Long	4 lb./1.8 kg.
HG30422	Reg. Length Clampstick Head Only		1 lb./0.45 kg.
HG30425	Extra Long Clampstick Head Only		1½ lb./0.5 kg.

HG30425

Extra long head (above) for use with long eyescrew ground clamps.

TELESCOPING DISCONNECT TOOLS

Certified to OSHA dielectric requirements (Sub-part V, section 1926.951) and tested per ASTM F1826-00, Chance Epoxiglas® Telescoping Tools have maximum convenience for the lineman because they permit him to perform many routine jobs from ground level. The universal end fitting on the insulated top section accepts a wide variety of attachments so that the lineman can disconnect switches, replace cutout tubes and reclose, remove pole covers, prune trees and complete many other overhead tasks . . . all with one tool.

The sticks retract to approximately 5 ft. so that they can be carried on most trouble trucks, often in the cab section.

Design Features

Heavy duty, spring-loaded plastic buttons, keep the extended tool sections securely locked in position. As each section is extended and twisted slightly, the buttons pop into place, allowing working to be done with complete control and confidence.

Standard versus Heavy Duty

Both units use the same telescoping tube design. The tip section of the heavy duty units is slightly larger in diameter (1¼" versus 1⅛") so that each telescoping tube is slightly larger, resulting in a more rigid tool when fully extended, important where additional weight may be frequently encountered on maintenance tasks. Both tip sections employ time-proved Chance Epoxiglas, the unicellular foam-core material where the epoxy reinforced fiberglass wall is built around the foam core to prevent any moisture trapping voids that could build up between foam and tool.

Disconnect Head included with each tool.



When space is extremely limited for truck storage, a 23 ft. Telescoping Tool that compacts to 4 ft. is available as Catalog No. C4031739.

Standard Duty
Heavy Duty ▼

Standard Duty (1⅛"-dia. Tip)

Catalog Number	Extended Length (Tool can be locked at each length shown)	Storage Retracted Length	Base Dia.	Number of Sections	Weight
C4031023	8 ft.	56"	1¼"	2	2 lb./0.9 kg.
C4031017	8 - 12 ft.	57"	1½"	3	2¾ lb./1.2 kg.
C4031018	12 - 16 ft.	59"	1⅞"	4	4 lb./1.8 kg.
C4031019	12½ - 16½ - 20 ft.	61"	1⅞"	5	5¼ lb./2.4 kg.
C4031020	16½ - 20½ - 25 ft.	63"	2⅛"	6	7 lb./3.2 kg.
C4031021	17½ - 21½ - 25½ - 30 ft.	65"	2¼"	7	8¾ lb./3.9 kg.
C4031022	22 - 26 - 30½ - 35 ft.	67"	2½"	8	11 lb./5 kg.
T4033349	22 - 28 - 34 - 40 ft.	74½"	2½"	8	12 lb./5.45 kg.

Compact Standard Duty (1⅛"-dia. Tip)

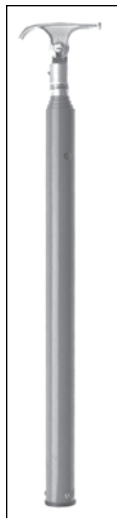
T4032205	7'-2"	28"	1⅞"	5	2¾ lb./1.2 kg.
C4031739	14 - 17 - 20 - 23 ft.	48"	2½"	8	9 lb./4.1 kg.
T4033240	11 ft.	36"	1⅞"	4	4 lb./1.8 kg.

Heavy Duty (1¼"-dia. Tip)

C4031597	8 ft.	56"	1½"	2	3 lb./1.4 kg.
C4031598	8 - 12 ft.	57"	1⅞"	3	3¾ lb./1.7 kg.
C4031599	12 - 16 ft.	59"	1⅞"	4	5 lb./2.3 kg.
C4031600	12½ - 16½ - 20 ft.	61"	2⅛"	5	6½ lb./2.9 kg.
C4031601	16½ - 20½ - 25 ft.	63"	2¼"	6	8½ lb./3.7 kg.
C4031602	17½ - 21½ - 25½ - 30 ft.	65"	2½"	7	10¼ lb./4.6 kg.

Telescoping Tool Repair Kits

BUTTON & SPRING NUTS — With normal care and maintenance, the Chance Telescoping Tool will have a long service life, but when repairs are necessary, a complete kit is available containing all of the buttons and springs needed to repair a particular length of stick. Refer to the cross reference at right for the individual kit part numbers. If only a single part is required, the correct part numbers can be ordered, referring to the drawing and table.

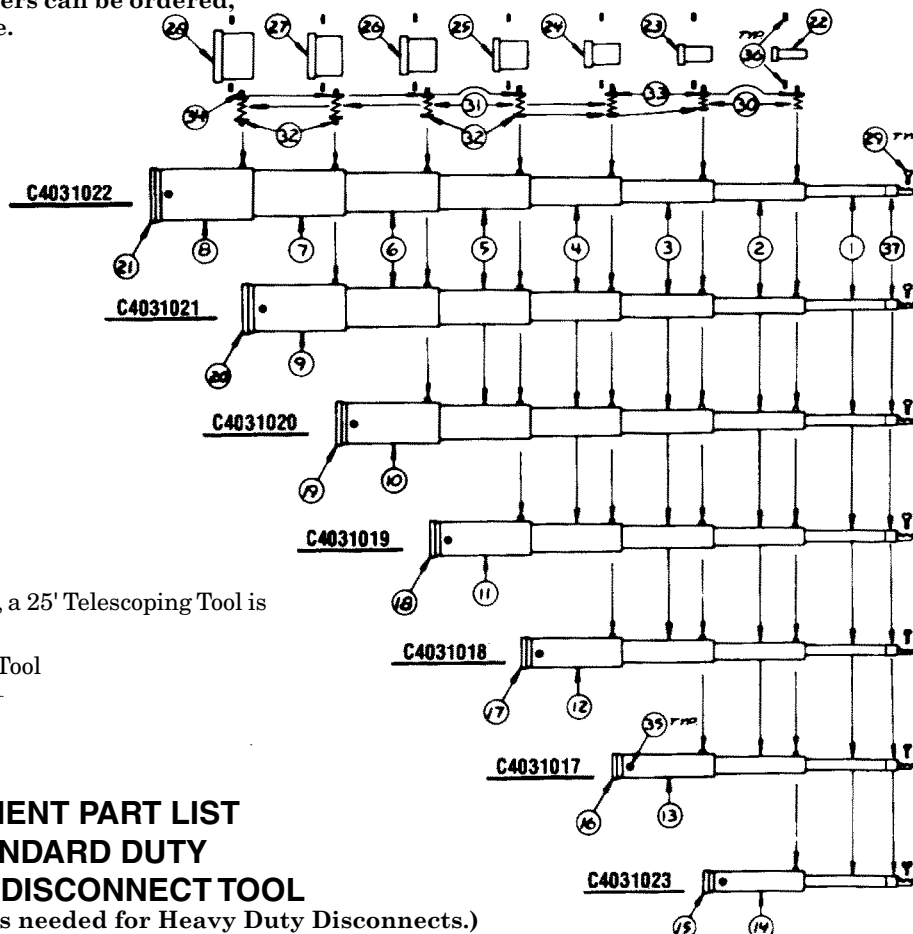


Sticks For Small Vehicles

When storage space is extremely tight, a 25' Telescoping Tool is available that compacts down to 4'.

Cat. No. C4031739 — Standard Duty Tool

Standard Duty Tool Cat. No.	Heavy Duty Tool Cat. No.	Button & Spring Kit No.
C4031023	C4031597	T4031245
C4031017	C4031598	T4031246
C4031018	C4031599	T4031247
C4031019	C4031600	T4031248
C4031020	C4031601	T4031249
C4031021	C4031602	T4031250
C4031022	N/A	T4031251



REPLACEMENT PART LIST FOR STANDARD DUTY TELESCOPING DISCONNECT TOOL

(Refer to factory for specific parts needed for Heavy Duty Disconnects.)

Item	Description	Part Number
1	Pole & Ferrule	E4032742P
2	Tube	P4030987P
3	Tube	P4030988P
4	Tube	P4030989P
5	Tube	P4030990P
6	Tube	P4030991P
7	Tube	P4030992P
8	Base Tube	P4030999P
9	Base Tube	P4030998P
10	Base Tube	P4030997P
11	Base Tube	P4030996P
12	Base Tube	P4030995P
13	Base Tube	P4030994P
14	Base Tube	P4030993P
15	Bottom Cap	P4031014P
16	Bottom Cap	P4031013P
17	Bottom Cap	P4031012P
18	Bottom Cap	P4031011P
19	Bottom Cap	P4031010P
20	Bottom Cap	P4031009P
21	Bottom Cap	P4031008P

Item	Description	Part Number
22	Plug	P4031007P
23	Plug	P4031006P
24	Plug	P4031005P
25	Plug	P4031004P
26	Plug	P4031003P
27	Plug	P4031002P
28	Plug	P4031001P
29	Thumbscrew	P4030467P
30	Spring	P4032351P
31	Spring	P4032352P
32	Retainer	P4031977P
33	Button	P4033001P
34	Button	P4033002P
35	Mach. Screw	P0010309P
36	Drive Lock Pin	P0010419P
37	Universal Fitting	P4032514P

Telescoping Measuring/Disconnect Tool

- *One tool does it all*
- *English AND Metric Scales*

Application

Certified to OSHA dielectric requirements (Sub-part V, section 1926.951) and tested per ASTM F1826-00, this full-function Telescoping Tool does more than separate measuring sticks and disconnect tools. To measure pole heights and conductor clearances from the ground, this single tool is marked with both English and Metric scales.

Disconnect head supplied for operating switches and cutouts is removable. End fitting on insulated top section accepts other Universal Tool Accessories (beginning on Catalog page 2121) for various tasks near energized conductors . . . all from the ground:

- Prune trees
- Clean conductors
- Replace open-link fuses
- Spray aerosols
- Brush paint
- Replace light bulbs
- Remove pole cover-up
- Gauge conductor sizes

Design Features

Measuring scales are easy-to-read, large black figures silk-screened on Chance orange fiberglass sections. English scales are marked with each 1-foot increment designated in a box, each inch in bold numbers and half-inches designed by intermediate bars. Metric scales similarly display meters, decimeters and centimeters.

A positive spring-loaded locking-button mechanism and plug feature in each section prevent separation of the tool.

Once snapped into place, buttons securely lock sections into position. There's no worry about an unexpected tool retraction.

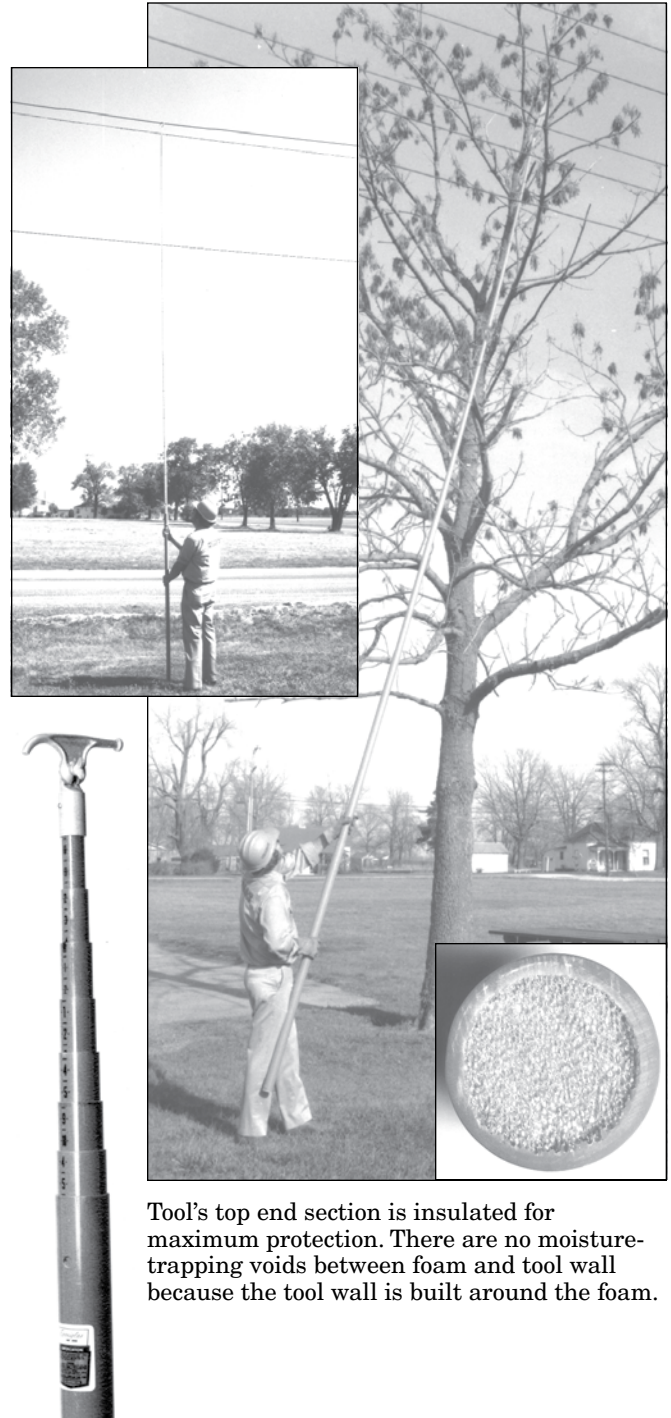
Operation

To extend tool to length needed, first pull out top section and rotate it until button engages in next section. For measuring aerial distances, continue this process until tip reaches height desired. Then set butt of tool on ground and read scale at eye level for exact distance of tip above ground. To retract, depress button of largest section first, rotate it to disengage and collapse section. Continue this process taking the next smaller section in turn.

English AND Metric Scales

feet, inches, half inches AND meters, decimeters, centimeters

*Catalog Number	Number of Sections	Length		Weight
		Min. (storage)	Max. (extended)	
C4031022EM	8	5' 7" (1.70m)	34' 9.3" (10.6m)	11 lb./5.0 kg.



Tool's top end section is insulated for maximum protection. There are no moisture-trapping voids between foam and tool wall because the tool wall is built around the foam.

Heavy-Duty Adjustable Sticks

- Two-section telescoping tool
- Two sizes and three styles

For substations, close-clearance worksites

Clearly marked at each 1-foot extension lock, one of these tools can replace as many as eight[‡] single-length hotsticks. Especially for such tight confines as substations, these adjustable sticks can be stored in standard-length cannisters and avoid the difficulties of working extra-long sticks through busswork structures.

Heavy-duty construction

Classified as Heavy-Duty due to its large (1¼"-diameter) insulated top section and 1½"-O.D. epoxy-reinforced fiberglass base tube, this design also features:

- **24" overlap at usable-length extremes**

In each size, a 2-foot section of the Epoxiglas® foam-core top section remains inside the base section at the longest locked, usable length. Also at the shortest locked length, the insulated top section extends a full 2 feet beyond the base.

- **Easy-to-operate yet rugged mechanism**

High-strength-plastic buttons – same as those in other proven Chance telescoping tools – keep these tools locked at each length. As the top section is simply extended and twisted, the lock button pops into place. For one worker to quickly adjust the length, a convenient alignment dot at each 1-ft. setting on the insulated section matches another dot at the top of the base section.

For SAFETYSHIELD™ Hot Stick Barrier to fit tools on this page, see page 2129.

Ordering Information

Disconnect-Style NEMA Head:

Catalog No.	Lockable Lengths, ft.	Collapsed	Weight
C4032600	10,11,12,13,14	8' 2¾"	6½ lb./2.9 kg.
C4032601	12,13,14,15,16,17,18	10' 2¾"	8 lb./3.6 kg.

Switch-Style NEMA Head:

C4032602	10,11,12,13,14	8' 2"	6½ lb./2.9 kg.
C4032603	12,13,14,15,16,17,18	10' 2"	8 lb./3.6 kg.

Universal Fitting* Style:

C4032604	10,11,12,13,14	8' 3¾"	6½ lb./2.9 kg.
C4032605	12,13,14,15,16,17,18	10' 3¾"	8 lb./3.6 kg.

• Universal Fitting* Style



- **Switch-Style Head**
Bronze, NEMA-Standard



- **Disconnect-Style Head**
Bronze, NEMA-Standard



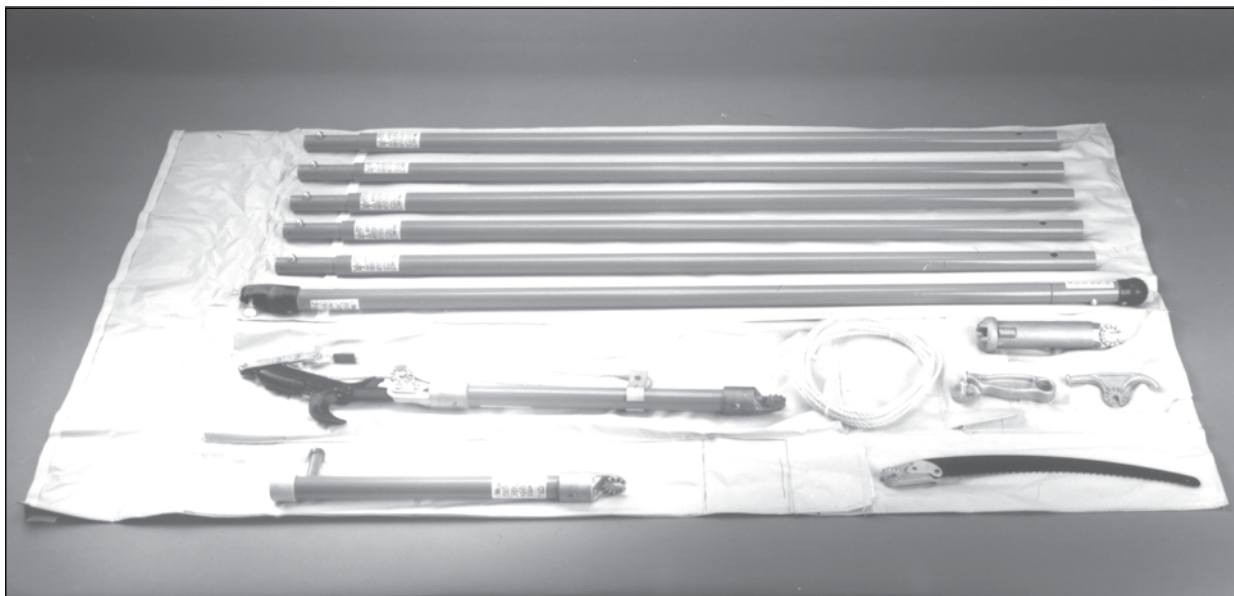
Extension length is clearly marked at each hole for button engagement.

[‡]Top section may be removed for use alone since it is essentially a single-piece hotstick of standard Epoxiglas construction with unicellular foam center.



*Universal disconnect head (Part No. M4455-9) must be ordered as a separate item for universal-fitting style sticks (Catalog Numbers C4032604 or C4032605).

Trouble Shooter Kit



Multi-duty kit includes six 4-foot sections of field-proven 1¼" Epoxiglas® Universal Pole that snap together. Spring-loaded locking buttons permit uses at 4, 8, 12, 16, 20 and 24-foot lengths. Butt section has Plastisol end cap. Fitting on top section with thumbscrew accepts such Universal Accessories as those in Kit:

- **Aluminum Disconnect Head** for opening and closing switches, opening enclosed cutouts, etc. has built-in hanger hook.
- **Non-Metallic Disconnect Head** provides additional insulation for indoor substations where buswork and switches are in close proximity. Plastisol cap at top; 19" overall length with 15" long Epoxiglas section.

- **Clamp Stick Head** for use with 6" long eyescrew ground clamps has locking ring with detent ball for on-off operation. Aluminum alloy.
- **Tree Trimmer** adds 1½ feet to reach with 3-to-1 mechanical advantage pulley and 25 feet of furnished rope. Offset universal fitting on trimmer accepts pruning saw.
- **Pruning Saw** with black Teflon® coating on fine-tooth blade for smooth, non-stick action attaches direct to top pole, tree trimmer or pistol grip.
- **Pistol Grip Saw Handle** of aluminum alloy is for use when limbs can be reached and insulation is not needed.
- **Storage Case** of yellow heavy-duty vinyl-impregnated fabric has separate pockets for individual tools and Velcro flap closures.



Kit forms compact 4-foot x 9-inch unit secured by two straps and plated buckles. At 24 pounds, kit easily totes by center carrying handle.

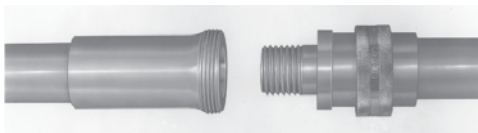
Catalog No.	Description	Weight
C4031612	Complete Trouble Shooter Tool Kit	24 lb./10.8 kg.

Catalog No.	Separate or Replacement Components	Weight
C4032046	Top Section Epoxiglas Pole	2¼ lb./1.0 kg.
C4032062	Mid Section Epoxiglas Pole	2¼ lb./1.0 kg.
M44559	Aluminum Disconnect Head	⅞ lb./0.06 kg.
E4031614	Non-Metallic Disconnect Head	1¼ lb./0.6 kg.
M445529B	Clamp Stick Head	1¼ lb./0.6 kg.
H21064	Tree Trimmer	3½ lb./1.6 kg.
C4032213	Pruning Saw	½ lb./0.2 kg.
M445566	Pistol Grip Saw Handle	½ lb./0.2 kg.
P4032996	Storage Case	3¼ lb./1.5 kg.

Disconnect Sticks



H304613



SPLICE FOR H3146 SERIES

Used on Cutouts, Disconnect Switches

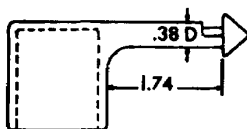
Disconnect sticks provide insulation for linemen in opening and closing disconnect switches and cutouts. They are also used for installing and removing open-link fuse links.

Poles are made of Epoxiglas[®] NEMA-standard heads of cast bronze are of three types — switch head, disconnect head, or spliced disconnect head.

Spliced Disconnect Sticks

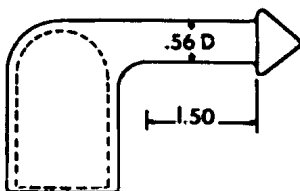
For convenience in transporting and/or where greater length is required, Spliced Disconnect Sticks are available. The splice is strong and rigid . . . easy to put together and easy to take apart. The taking-down feature of these sticks makes them especially handy to carry on line trucks or in tool trailers.

For SAFETYSHIELD[™] Hot Stick Barrier to fit tools on this page, see page 2129.



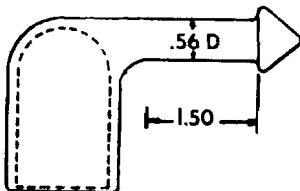
1 1/4" Switch Stick Head

Catalog No.	Pole Dia. & Length	Weight
H3046	Head Only	4 oz./0.11 kg.
H304611	1 1/4" x 4'	1 1/4 lb./0.6 kg.
H304612	1 1/4" x 6'	1 1/2 lb./0.7 kg.
H304613	1 1/4" x 8'	2 1/4 lb./1.0 kg.
H304614	1 1/4" x 10'	2 3/4 lb./1.2 kg.
H304617	1 1/4" x 12'	3 5/8 lb./1.6 kg.



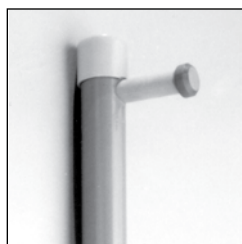
1 1/2" Disconnect Head

H30462	Head Only	5 oz./0.14 kg.
H304622	1 1/2" x 6'1"	2 1/4 lb./1.0 kg.
H304623	1 1/2" x 8'1"	2 13/16 lb./1.3 kg.
H304624	1 1/2" x 10'1"	3 7/16 lb./1.5 kg.
H304615	1 1/2" x 12'1"	4 lb./1.8 kg.
H304616	1 1/2" x 16'1"	5 5/16 lb./2.4 kg.
H304618	1 1/2" x 18'1"	6 lb./2.7 kg.
H304620	1 1/2" x 20'1"	6 9/16 lb./3 kg.



1 1/4" Spliced Disconnect Head

H314612	1 1/4" x 6' and 1 1/2" x 6'1"	6 lb./2.7 kg.
H314616	1 1/4" x 8' and 1 1/2" x 8'1"	7 1/2 lb./3.4 kg.
H314618	1 1/4" x 8' and 1 1/2" x 10'1"	8 1/4 lb./3.7 kg.
H314620	1 1/4" x 10' and 1 1/2" x 10'1"	9 lb./4 kg.
H314624	1 1/4" x 12' and 1 1/2" x 12'1"	10 1/2 lb./4.7 kg.



Fiberglass Head

The Fiberglass Head Disconnect Stick (illustrated at left) gives the additional insulation required for work where bus and disconnect switch spacings are confined, as in indoor substations.

Catalog No.	Pole Diameter & Length	Approximate Weight
H30465	1 1/4" x 4'	1 1/8 lb./0.5 kg.
H30466	1 1/4" x 6'	1 5/8 lb./0.7 kg.
H30467	1 1/4" x 8'	2 1/8 lb./1.0 kg.
H30468	1 1/4" x 10'	2 5/8 lb./1.2 kg.
H30469	1 1/4" x 12'	4 lb./1.8 kg.

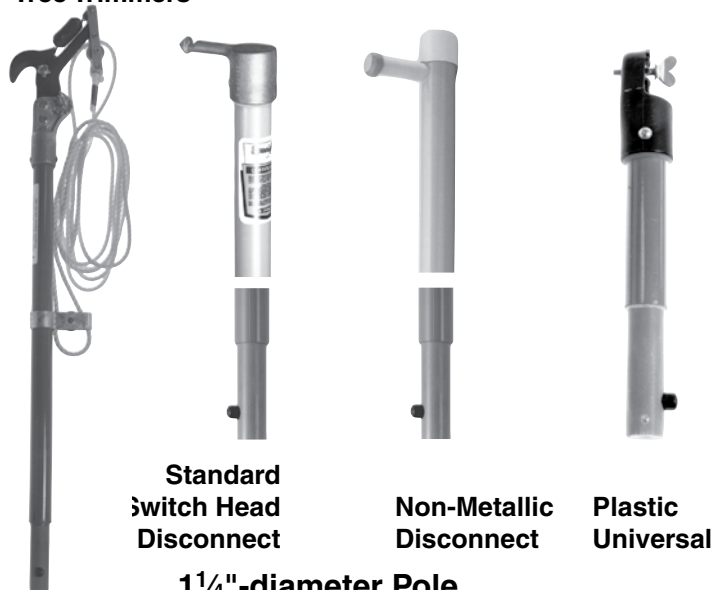


For SAFETYSHIELD™ Hot Stick Barrier to fit tools on this page, see page 2129.

Sectional Disconnects & Universal Sticks

Non-conductive splices snap together for just the right job length. Compact fittings interchange on orange Epoxiglas® insulated sections, store in limited space. For quick assembly and long life, metal buttons are rounded and springs of stainless steel. Silicone coating and gloss finish seal out moisture. Base cap included with top sections.

Tree Trimmers



1 1/4"-diameter Pole

Catalog Number	Length	Approx. Weight
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Standard Switch Head Disconnect

C4032073	6 inches	3/4 lb./0.34 kg.
C4032053	4 feet	2 3/8 lb./1.07 kg.
C4032054	6 feet	2 5/8 lb./1.18 kg.
C4032055	8 feet	2 7/8 lb./1.29 kg.

Non-Metallic Disconnect Head

C4032095	6 inches	1 lb./0.45 kg.
C4032059	4 feet	2 1/4 lb./1.01 kg.
C4032060	6 feet	2 1/2 lb./1.13 kg.
C4032061	8 feet	2 3/4 lb./1.22 kg.

Plastic Universal Head

C4032071	6 inches	5/8 lb./0.28 kg.
C4032046	4 feet	2 lb./0.90 kg.
C4032047	6 feet	2 1/4 lb./1.01 kg.
C4032048	8 feet	2 1/2 lb./1.13 kg.

Tree Trimmer Head

C4032096	*2 feet	3 1/4 lb./1.46 kg.
C4032097	*4 feet	3 1/2 lb./1.57 kg.

*Length excludes trimmer head fitting.

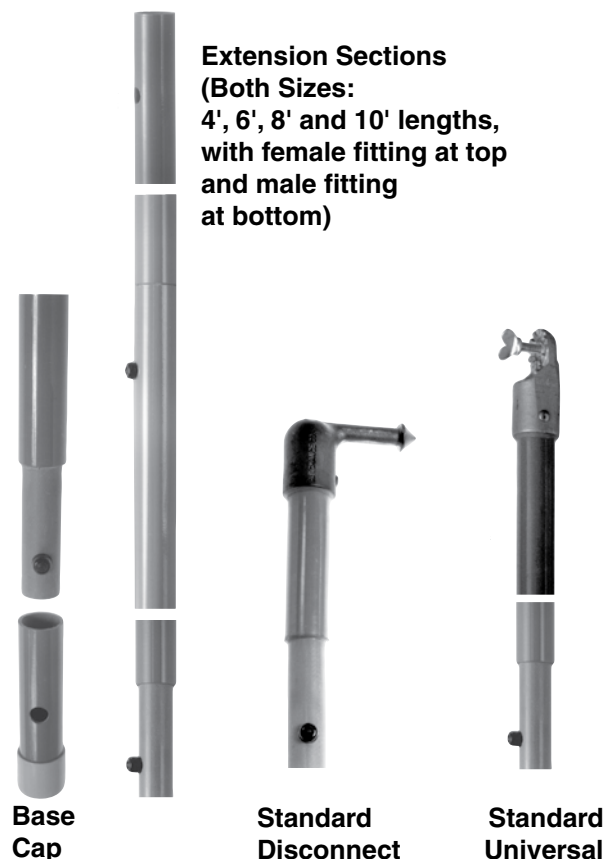
Extension Section

C4032062	4 feet	2 lb./0.90 kg.
C4032063	6 feet	2 1/4 lb./1.01 kg.
C4032064	8 feet	2 1/2 lb./1.13 kg.
C4032133	10 feet	2 3/4 lb./1.22 kg.

Base Cap

C4032069	5 inches	1/8 lb./0.06 kg.
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Extension Sections
(Both Sizes:
4', 6', 8' and 10' lengths,
with female fitting at top
and male fitting
at bottom)



1 1/2"-diameter Pole

Catalog Number	Length	Approx. Weight
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Standard Disconnect Head

C4032074	6 inches	1 lb./0.45 kg.
C4032056	6 feet	3 1/8 lb./1.41 kg.
C4032057	8 feet	3 5/8 lb./1.63 kg.
C4032058	10 feet	4 1/8 lb./1.86 kg.

Standard Universal Head

C4032072	6 inches	1 lb./0.45 kg.
C4032049	4 feet	2 7/8 lb./1.29 kg.
C4032050	6 feet	3 3/8 lb./1.52 kg.
C4032051	8 feet	3 7/8 lb./1.74 kg.
C4032052	10 feet	4 1/8 lb./1.86 kg.

Extension Section

C4032065	4 feet	2 lb./0.90 kg.
C4032066	6 feet	2 1/2 lb./1.13 kg.
C4032067	8 feet	3 lb./1.35 kg.
C4032068	10 feet	3 1/2 lb./1.57 kg.

Base Cap

C4032070	5 inches	1/4 lb./0.11 kg.
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Epoxiglas[®] POWER-FUSE LIFT STICK

- Storage Bag Included

• Flag-Hoisting Principle

The Chance Power-Fuse Lift Stick tool removes and installs power fuse holders weighing up to 50 pounds. It is equipped with an arrangement of ropes and pulleys that permit the operator to lower and raise a power fuse holder in much the way a flag is handled on a flagpole. The operator has complete control of the fuse holder at all times, and doesn't have to balance and lift dead weight as must be done with the fuse on the end of the hookstick.

• Fuse Mount Supports Tool

During the removal and replacement of fuse holders, the fuse mount supports both the weight of the fuse holder and the tool. The pole hangs free while the operator automatically steadies it during the raising or lowering operation. Only during the actual opening and closing of the power fuse does the operator support the weight of the tool. A disconnect prong is located on the bottom ferrule of the tool.

• Soundly Constructed

While this tool is soundly constructed to support heavy fuse holders (up to 50 pounds); it is relatively light in weight. The Epoxiglas[®] pole is tested to assure its insulating strength. Operating lines are polypropylene rope. Carrier bands and shepherd hook attachments are coated with plastisol.



How To Remove A Power Fuse — Hook carrier prong into the eye on the inverted lower end of fuse holder. Lift the fuse holder out of the contact trunnions, then lower carrier.



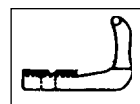
M4221



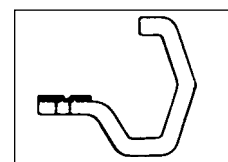
M42212



M42213



M42191



M42192



WARNING

Operating lines must be kept clean and dry to avoid dangerous current flow in the rope.

How to Order — Select one of the Power Fuse Lift Sticks from Table I, based on the desired pole length.

TABLE I — POWER-FUSE LIFT STICK

Each includes an all-weather storage bag.

Catalog No.	Diameter and Overall Length	Weight
H422114	1½" x 14'1"	10¼ lb.
H422116	1½" x 16'1"	11¼ lb.

Then, in Table II, find the applicable Power Fuse Type and select the Fuse attachment that is to be installed at the top of the Lift Stick.

TABLE II — POWER FUSE ATTACHMENTS

Catalog No.	For Power Fuses	Weight
M4221	S&C SM, Size 5	14 oz.
M42212	S&C SMD; West'g're BA & DBA; GE. EF-1, EF-1B & EF-2B	1½ lb.
M42213	S&C SM & HSO; S.S. HBA & BTA; West'g're BA & DBA; G.E. EF-1, EF-1B, & EF-2	1½ lb.

Finally, in Table III, again find the applicable Power Fuse type and select the Lift Finger to be installed on the Carrier.

TABLE III — CARRIER LIFT FINGERS

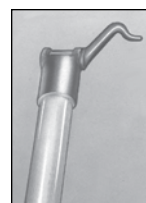
Catalog No.	For Power Fuses	Weight
M42191	West'g' BA & DBA; S&C SM, SMD, & HSO; G.E. EF-1, EF-1B & EF-2	4 oz.
M42192	S.S. HBA & BTA	7 oz.

TIE STICKS

Chance Epoxiglas Tie Sticks are made with a variety of heads to meet every lineman's particular preference. Rotary Prong Tie Sticks, most linemen find are speedy and easy to operate for handling looped ties. Two-Prong Tie Sticks are preferred by many linemen for handling hot ties with loops. Rotary Blade Tie Sticks have a swivel action that permits greater freedom of movement than the fixed-blade types.

Catalog No.	TIE STICKS		Overall Length	Approx. Weight
	Head	End		
H185519	Rotary Prong	Universal	8'3"	3 lb./1.4 kg.
H185520	Two-Prong	Universal	8'4"	4 lb./1.8 kg.
H185525	Rotary Prong	Rotary Blade	8'2"	3½ lb./1.6 kg.
H185526	Rotary Blade	Universal	8'3"	3¼ lb./1.5 kg.

For universal tool accessories, see Pages 2120 through 2126.



Rotary Prong



Two-Prong



Rotary Blade

All Tie Sticks are mounted on 1¼" diameter Epoxiglas poles with a tie-wire assistant, hanger bracket.

H185526

ALL-ANGLE COG WRENCH

15 ft.-lb. maximum torque rating

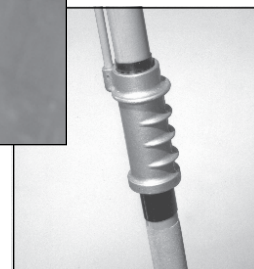
Controls on the Chance All-Angle Cog Wrench permit operator efficiency in locating the wrench on energized hardware. The hand-grip steadies the tool and holds the cog housing in place while the pole is rotated, turning the the cogs to engage the wrench on the nut or bolt.

The angle of the wrench head in relation to the handle is adjustable within a range of 140 degrees. Wing nuts on either side of the head tighten to hold the head in a friction-locked position during use.

This Chance Epoxiglas Hot Line Tool is 1½" in diameter with a ⅜" diameter fiberglass control rod. The hand-grip is aluminum alloy, the cog housing is bronze alloy and the gears are hardened steel.

Catalog No.	All-Angle Cog Wrench Description	Approximate Weight
C4030184	6-foot length	7 lb./3.2 kg.
C4030185	8-foot length	7½ lb./3.4 kg.
C4030186	10-foot length	8 lb./3.6 kg.

½-inch square drive



C4030184

CABLE LIFT TOOL



C4031078

The Epoxiglas Cable Lift Tool was originally designed to move heavy electrical cables in mines, but also serves as an efficient method of moving other heavy cables on the ground. The tool is 40" in overall length and has two ½"-diameter spiral grab hooks that will pick up cables up to 2" diameter by rotating the tool only ¼ turn.

Catalog No.	Description	Weight
C4031078	40" Cable Lift Tool	3⅜ lb./1.5 kg.



Align the grab hooks on both sides of cable.



Turn the tool 90° clockwise, to slip hooks under cable.

Lift the cable and move to desired position.



For SAFETYSHIELD™ Hot Stick Barrier to fit tools on this page, see page 2129.

Flexible Insulated Wrenches

40 ft.-lb. torque rating

These wrenches are used for tightening nuts on hardware fittings on high-voltage lines. The coil spring around the universal joint has just the proper degree of flexibility so that the operator has control over the socket at various angles. Spring is easily removed for lubricating. Wrenches are made to fit any 1/2-inch square-shank socket. All wrenches are mounted on 1 1/2" diameter Epoxiglas® poles.



Catalog Number	Description	Overall Length	Approx. Weight
H18912	w/Flexible 1/2" Sq. Plug and Fixed 1/2" Sq. Plug	6'3"	5 1/2 lb./2.5 kg.
H18913	w/Flexible 1/2" Sq. Plug and Fixed 1/2" Sq. Plug	8'3"	6 1/2 lb./2.9 kg.
H18915	w/Flexible 1/2" Sq. Plug and Univ. Head - Hole Through Ferrule for 5/8" Turning Rod	6'3"	5 1/2 lb./2.5 kg.
H18916	w/Flexible 1/2" Sq. Plug and Univ. Head - Hole Through Ferrule for 5/8" Turning Rod	8'3"	6 1/2 lb./2.9 kg.
066780	Ratchet Wrench		1 1/2 lb./0.7 kg.

Heavy-Duty FLEXIBLE INSULATED WRENCHES — 75 ft.-lb. torque rating



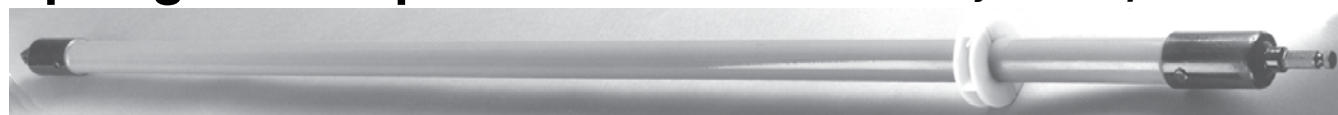
Standard square socket in lower end accepts 1/2" square-shank ratchet or similar hand tools. Square shank on upper end fits any 1/2"-drive socket.

Mounted on 1 1/2"-diameter Epoxiglas® extensions, these wrenches may be used for tightening nuts on hardware fittings on high-voltage lines.

Coil spring around the universal joint limits flexibility so operator maintains control over the socket at various angles. Spring removes easily for lubrication.

Catalog No.	Overall Length	Weight, each
C4032137	6 ft. 3 in.	5 1/2 lb./2.5 kg.
C4032136	8 ft. 3 in.	6 1/2 lb./2.9 kg.

Epoxiglas® Torque Extension Stick for hydraulic power tools



Insulated extension stick permits hot-line work with hydraulic power tools on bucket trucks. Its 7/16"-hexagonal quick-connect fitting couples with a power tool's drive socket. On the other end, its square detent-ball fitting accepts all 1/2"-drive wrenches. The 1 1/4" x 4' Epoxiglas pole handguard is 6 inches from the ferrule with hex fitting.

75 ft.-lb. torque rating

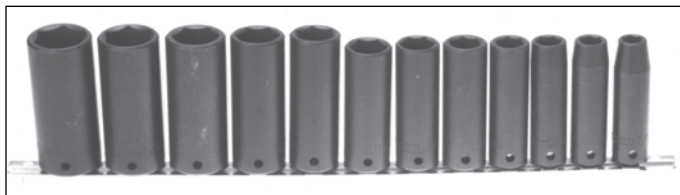
Catalog No.	Description	Weight
T4033009	Torque Extension Stick	5 lb./2.25 kg.

HEX SOCKET SETS

Available in SAE and Metric sizes, each set includes sockets to fit any 1/2" (12.17 mm) square-shank drive tool (such as the Chance All-Angle Cog Wrench and Flexible Insulated Wrench).

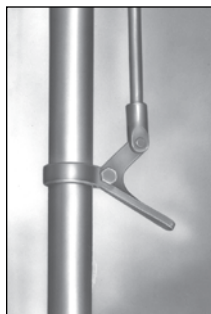
SAE (in.) Set
Catalog No. C4031085
includes 11 deep-well 6-point sockets
in sizes from 1/2" through 1 1/8"

METRIC Set
Catalog No. C4031085M
includes 10 deep-well 6-point sockets
in sizes from 10mm through 19mm





AMERTONGS



Trigger at end of operating rod controls roller to open and close ammeter jaws.

The Chance Amertong can be adjusted at the collar to fit an ammeter. Plastic coated castings protect the finish on the meters and make a good secure gripping surface with easy handles and fiberglass operating rod provide maximum insulation.

Catalog No.	Description	Pole Dia. and Overall Length	Weight
H19686	Amertong	1¼" x 6'3"	4 lb./1.8 kg.
H19688	Amertong	1¼" x 8'3"	4½ lb./2.0 kg.
H19786	Hinged Amertong	1¼" x 6'3"	5 lb./2.3 kg.
H19788	Hinged Amertong	1¼" x 8'3"	5½ lb./2.5 kg.

PLASTIC HEAD FOR UNIVERSAL TOOLS

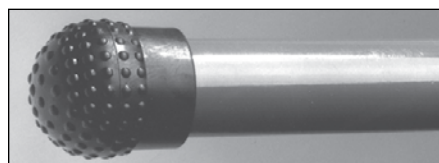


Sized to retrofit over 1¼"-diameter Chance Epoxiglas® hot line tools, plastic head is available in kit form for shop installation. It is intended for users concerned about hotsticks with metal ferrules that could draw an arc or effect a short circuit in close-clearance worksites. The kit includes a black plastic

(glass-filled nylon) ferrule with splines to accept Chance Universal Tool Accessories (Catalog pages 2120 through 2127), a thumbscrew to hold the accessory in use, two drive screws and an instruction tag. Simple procedure requires attaching ferrule to pole with Epoxiglas Bond Kit H1917, drilling through holes and installing the drive screws.

Catalog No.	Description	Weight
C4031996	Plastic Universal Head Kit: Ferrule, Thumbscrew, 2 Drive Screws, Instructions	5 oz./0.14 kg.

HEAVY-DUTY END CAP

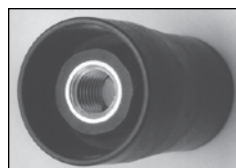


Catalog No.	Description
P4032312P	Heavy-Duty End Cap for 1¼" Epoxiglas pole

Tough enough to withstand rough working conditions, the heavy-duty cap quickly fits on any 1¼"-diameter pole with Chance Epoxy Bond Kit, Catalog No. H1917.

Molded nubs on exterior, ball shape and thick walls cushion the repeated impacts of normal use. Black ethylene vinyl acetate material provides optimum resistance to abrasion and cuts.

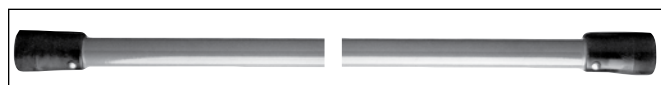
THREADED HEX FITTING & UNIVERSAL POLES



Insulating black plastic ferrule accepts the threaded-stud fitting unique to Safety Line brand interchangeable-tool accessories. Made from the same glass-filled nylon materials as Chance universal-tool

ferrules, it extends insulation to the end of the tool handle. The ferrule may be ordered either separate for retrofit on customer poles or factory-installed on 1¼"-diameter Epoxiglas® poles.

Catalog No.	Description	Weight
P4032252P	Plastic Hex Ferrule only	6 oz./0.17 kg.



Both Ends: Plastic Hex Ferrules Installed

C4001585	6-foot length	2¼ lb./1 kg.
C4001586	8-foot length	3 lb./1.4 kg.
C4001587	10-foot length	3¾ lb./1.7 kg.



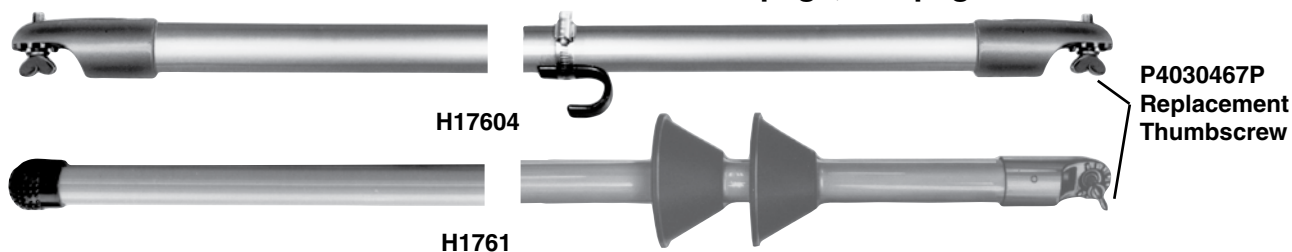
Opposite Ends: Plastic Hex and Chance Universal* Ferrules

Catalog No.	Description	Weight
C4001582	6-foot length	2¼ lb./1 kg.
C4001583	8-foot length	3 lb./1.4 kg.
C4001584	10-foot length	3¾ lb./1.7 kg.

*Thumbscrew included with Chance universal fitting.

Universal Poles

For SAFETYSHIELD™ Hot Stick Barrier to fit tools on this page, see page 2129.



Interlock with Universal Tools

Designed for use as a hot stick handle for Universal Tools, Chance Universal Poles are made of Epoxiglas® and light-weight aluminum castings.

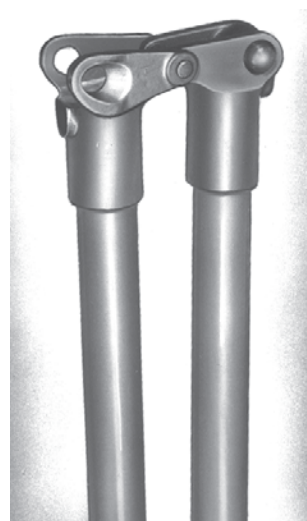
The Universal Tools shown on the following pages fit under the thumbscrew of the spline on the Universal Pole. For job versatility, the splines allow angling the tool up to 90° depending upon the individual tool design. Universal Adapter M445584 shown on page 2123 may be added between the pole and tool to gain any angle desired.

Storm Tool for Bad Weather

The Storm Tool, a Universal Pole with special rubber insulator skirts, is designed for emergency use. It provides extra leakage distance and disrupts water paths. Skirts break up water streams that would otherwise run down pole.

Universal Fittings for Spliced Poles

Universal fittings are threaded for use on Epoxiglas poles with Rigid Splices. Also see Catalog Section 2500 for Rigid Pole Splices and Epoxiglas Blank Poles.



**Hinged Pole
H1770**



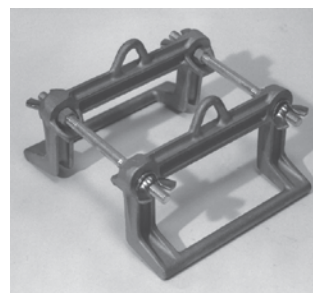
**Spliced Poles
H17602 & H17606**

Catalog No.	Description	Pole Dia.	Overall Length	Weight
H1760	Pole with one universal head	1¼"	8'2"	3 lb./4 kg.
H17601	Pole with one universal head	1¼"	6'1"	1¾ lb./8 kg.
H17602	Rigid spliced pole with one universal head	1¼"	4'1" + 4'	5 lb./2.3 kg.
H17603	Pole with two universal heads	1¼"	6'3"	2½ lb./1.1 kg.
H17604	Pole with two universal heads	1¼"	8'3"	3¾ lb./1.7 kg.
H17606	Rigid spliced pole with two universal heads	1¼"	4'1" + 4'1"	5¾ lb./2.6 kg.
H176010	Pole with two universal heads	1¼"	10'3"	4 lb./1.8 kg.
H176012	Pole with two universal heads	1¼"	12'3"	4½ lb./2.0 kg.
H176014	Pole with two universal heads	1¼"	14'3"	5 lb./2.3 kg.
H1761	Spline universal storm tool with two skirts	1¼"	8'2"	3¼ lb./1.5 kg.
H1770	Hinged pole with one universal head	1¼"	8'2"	4½ lb./2.0 kg.
H17908	Pole with two universal head, pole hanger	1½"	8'3"	6 lb./2.7 kg.
H179010	Pole with two universal heads	1½"	10'3"	6 lb./2.7 kg.
H179012	Pole with two universal heads	1½"	12'3"	8 lb./3.6 kg.
H179014	Pole with two universal heads	1½"	14'3"	10 lb./4.5 kg.
H4455	Universal head only	1¼"	—	9 oz./2 kg.
H4455A	Universal head only	1½"	—	14 oz./4 kg.
P4030467P	Replacement Thumbscrew	—	—	—

Crossarm Tool Hanger

The Chance Crossarm Tool Hanger is adjustable to crossarms ranging in width from 3¼ to 4½ inches (depth of the crossarm does not matter). The Crossarm Tool Hanger is made of strong, lightweight aluminum alloy and has cadmium-plated steel hardware.

Catalog No.	Description	Weight
M1860	Crossarm Tool Hanger	2 lb./9 kg.

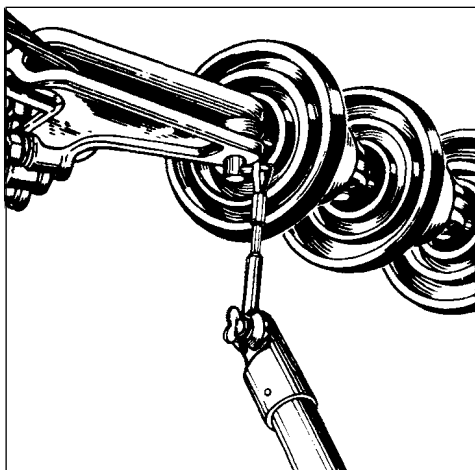


Universal Tool Kits

One Number for Complete Set

With over 75 individual Universal Tools to select for various maintenance jobs, these kits are a convenient way of ordering, with one single catalog number shipped in a single carton, the tools that are most frequently used by hot stick crews and were selected by the Chance Hot Line Tool Demonstrators.

Although all Universal Tools shown on the following pages are still available as individual part numbers, ordering one or more of the following kits will cover most tool requirements.

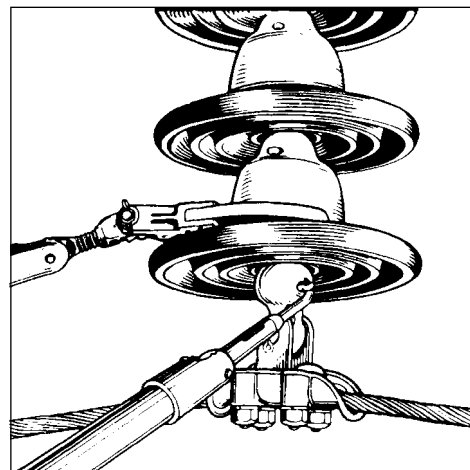


**Universal Tool Kit
for Clevis Type Insulators
C403112**

This 10-piece list contains the Universal Tools normally used to handle cotter keys, bolts and insulator hardware for insulator control on Clevis-tongue type suspension or deadend insulator strings.

C403112 Kit consists of

Part No.	Description	Cat. Page Ref.
M44552	Pin Holder	2120
M445512	Cotter Key Remover	2120
M445515	Locating Pin	2120
M445538	Clear Vision Mirror	2122
M445539	Shepherd Hook	2122
M445567	Insulator Fork	2122
M445582	Cotter Key Tool	2123
M445584	Universal Adapter	2123
C4030177	All Angle Pliers	2125



**Universal Tool Kit
for Ball Socket Insulators
C403113**

This 7-piece list contains those Universal Tools required to handle cotter keys, bolts and hardware on ball and socket type suspension or deadend insulator.

C403113 Kit consists of

Part No.	Description	Cat. Page Ref.
M445512	Cotter Key Remover	2120
M445519	Cotter Key Pusher	2121
M445522	Ball Socket Adjuster	2121
M445538	Clear Vision Mirror	2122
M445567	Insulator Fork	2122
M445596	Ball Socket Cotter Key Remover	2124
C4030177	All Angle Pliers	2125

Complete Kit for Hot Stick Trailer — C403114

Tool trailers are usually equipped for maximum efficiency for a variety of hot stick jobs. This 21-piece list contains the Universal Tools most frequently furnished with Chance Tool Trailers.

C403-114 Kit consists of

Part No.	Description	Cat. Page Ref.
M44552	Pin Holder	2120
M44555	Cutout Tool	2120
M44556	Ratchet Wrench	2120
M445512	Cotter Key Remover	2120
M445515	Locating Pin	2120
M445522	Ball Socket Adjuster	2121
M445528	Screw Driver	2121
M445538	Clear Vision Mirror	2122

Part No.	Description	Cat. Page Ref.
M445539	Shepherd Hook	2122
M445546	Wrench Head	2122
M445567	Insulator Fork	2122
M445579	Spiral Disconnect	2123
M445582	Cotter Key Tool	2123
M445584	Universal Adapter (2 Furnished)	2123
M445596	Ball Socket Cotter Key Remover	2124
M4455102	Clevis Pin Installer	2124
M4455103	Cotter Key Tool	2125
C4030011	Knocker	2125
C4030126	Ball Socket Adjuster	2125
C4030177	All Angle Pliers	2125

**Pin Holder**

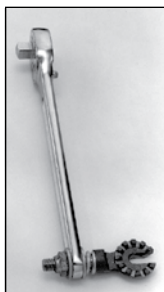
For replacing pins and bolts. The bolt head fits into a slot and is held tight by spring action. Will take bolts or pins up to 5/8" diameter. Fits EEI and NEMA insulators.

Part No. M44552 10 oz.

**Cutout Tool**

While this tool was designed for removing and replacing the doors of enclosed cutouts, its finger-like grasp makes it useful on many other jobs where a sure grip is required. Jaws open to accommodate an object 3 3/4 inches wide. All parts that contact porcelain are plastisol covered.

Part No. M44555 1 3/4 lb.

**Ratchet Wrench****1/2-inch-square drive**

This Ratchet Wrench is used for tightening bolts in substation equipment, hardware bolts on transmission and distribution lines, etc.

Part No. M44556 1 3/4 lb.

**Disconnect**

Used for opening and closing switches, opening enclosed cutouts, etc.

Aluminum:

Part No. M44559 2 oz.

Bronze:

Part No. C4001418 6 oz.

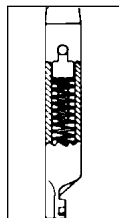
**Chuck Blank (5/8" opening)**

Screw drivers, hack saws, and other tools may be inserted in this device and secured by soldering. For wing-nut tightened Chuck Blank order No. M4455-37.

Part No. M445510 4 1/2 oz.

Snapout Cotter Key Remover

Hammer-like action makes it extremely useful in pulling out stuck cotter keys. Release of the compression spring by a



quick jerk of the pole deals the cotter key a hammer blow without disengaging the eye.

Part No. M445512 8 oz.

**Snapout Disconnect**

The Chance Snapout Disconnect imparts a hammer blow to the pulling ring of a cutout door or disconnect switch. Release of the compression spring by a downward jerk of pole gives momentum to the blow, permitting operation in a confined area. The amount of additional momentum depends upon the abruptness of the pull.

Part No. M445513 8 oz.

**Locating Pin**

Used as a drift pin in aligning bolt holes as an aid in bolt and pin insertions. It is recommended for making hardware connections on tower transmission lines and line deadends where aligning or hardware fitting is difficult.

Part No. M445515 10 oz.

**Folding Rule**

Adaptable to many uses. It is particularly suited for obtaining measurements near live conductors in congested areas.

Part No. M445516 8 1/2 oz.

**Fixed Prong Tie Stick Head**

Often preferred for manipulating tie wires which have looped ends. Useful in close quarters where loose ends of tie wire must be rolled up to prevent contact with crossarm or hardware while untying.

Part No. M445517 1 lb.





Cotter Key Pusher

For ball and socket insulator coupling. Straight end of the tool enters the socket opening to force cotter key out. Curved end forces cotter key back into position.

Part No. M445519 9 oz.



Ball Socket Adjuster

Useful in controlling the adapter between clevis clamps and ball and socket insulator pins.

Part No. M445522 9 oz.



Hack Saw

Excellent for use at various angles where a hack saw is needed near energized conductors, comes with 10 blades.

Part No. M445523 1 lb. 12 oz.

P4030369P Blade only



Paint Brush

A three-inch brush, with bristles set in rubber, for painting around live apparatus. Useful for applying conductor paint on insulator heads.

Part No. M445525 9 oz.

Pruning Saw

These saws can be used with Chance Pistol-Grip Handle, Tree Trimmers, Universal or Telescoping Tools.

Saw C4032213 has black Teflon® coating on fine-toothed blade for smooth, non-stick action.

C4032213 8 oz.



Screw Driver

Ideal for a number of odd jobs where an insulated handle is needed.

Part No. M445528 3½ oz.

Universal Cutout Tool

4-in-1 tool for 100 amp fuse holders and Chance Electronic Sectionalizer. Works on major brands of cutouts (ABB, Chance, S&C) for easy lift out, placement, *opening and closing operations. Holds fuse holder in inverted position, more secure method than a disconnect prong. Lightest weight of its kind (other designs weigh nearly twice as much).

PSC4033484 4 oz.

*When opening a cutout, follow all work rules and OSHA regulations. Not for use with loadbreak cutouts.



Clamp Stick Head

A Universal Clamp Stick Head for use with Eye Screw Grounding Clamps.

The 6" head is for long eye screw grounding clamps.

Part No. M445529B (6") 1¼ lb.



Link Stick Head

Use with light conductors. The clamp will hook into a cum-a-long ring. Jaw openings range from .750 to .22. Jaws have rounded edges to prevent scarring conductors. The hook is made of heat-treated aluminum alloy. Screw is Everdur.

Part No. M445536 1 lb.



Chuck Blank (5/8" opening)

The Chuck Blank can be used for a variety of applications, such as inserting screw drivers, saws, etc. The wing nut tightens the installed tool.

Part No. M445537 5 oz.





Clear Vision Mirror

Angle adjustment enables the operator to inspect insulators, switch bases, and other equipment which is difficult to see without coming in contact with energized conductors.

Part No. M445538..... 14 oz.



Shepherd Hook

The self-aligning shepherd hook is designed for pulling and lifting insulator strings. Swivel action permits it to rotate and maintain its alignment with the insulator at all times. Heat treated aluminum alloy.

Part No. M445539..... 14 oz.



Fixed Blade Tie Stick Head

For manipulating tie wires with or without looped ends. The sharp V-notched blade gets into tight places to pry tie wires loose. The head is set at 60° angle from the pole when attached, for ease in operation.

Part No. M445540..... 8 oz.



Flexible Wrench Head 1/2-inch-square drive

Made to fit standard wrench sockets. Flexibility permits use at various angles.

Part No. M445546..... 1 lb.



Skinning Knife

For cutting or scraping insulation, cleaning conductors, etc., prior to making splices. Its use with a universal pole permits work near energized lines with safety.

Part No. M445550..... 7½ oz.

Conductor Cleaning Brush

V-position of brushes gives 2-sided cleaning action. As brushes wear, they can be rotated, by loosening the anchor screws, so that unused bristles will come in contact with conductor.

Part No. M445563..... 11 oz.

Part No. M1889 With Hand Grip..... 16 oz.

Part No. M1889 Box of 10 Replacement Brushes..... 5 lb.



Storm Tool

A universal pole extension with rubber insulator skirts. Splined fitting at top of tool receives other universal tools. Overall length 19½".

Part No. H445564..... 1¼ lb.



Pistol Grip Saw Handle

Developed for use with a pruning saw when limbs are convenient and insulation is not needed. Aluminum alloy.

Part No. M445566..... 8 oz.



Adjustable Insulator Forks

Designed to grasp 9" and 10" disk insulators used in dead-end construction, will raise most pin type insulators up to 15 lb. Fiber jaws open and close by rotating screw.

Part No. M445567

Jaws adjust from 3" to 4¼" across inside center of fork **1 lb. 11 oz**

No. T4031101

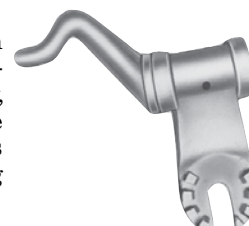
For polymer insulators, jaws adjust from 2¼" to 3½" **1 lb. 6 oz**



Rotary Prong Tie Stick Head

For placing insulator ties with looped ends. Head treated aluminum alloy body. Prong swivels freely, permitting a full turn on the tie wire without releasing contact. This minimizes the possibility of kinking or burning the wires.

Part No. M445569..... 6 oz.





Universal Tool Accessories

— See Universal Tool KITS on Page 2119 —

CHANCE®

2123



Rotary Blade Tie Stick Head

For manipulating tie wires with or without looped ends. The heat treated aluminum alloy body design permits a swivel action. Wire is wrapped or unwrapped without turning universal pole. A V-notched carbon steel blade grasps tie wire securely.

Part No. M445570 6 oz.



Pointed Disconnect

A pointed disconnect head for use on certain types of disconnect switches. Made of aluminum alloy.

Part No. M445571 3 oz.



Conductor Gauge

This aluminum gauge is small, compact, and light. It is used to make a quick, accurate check on the gauge of ACSR, solid or stranded copper conductors.

Range: #4 Cu. through 4/0 ACSR.

Part No. M445572 3 oz.



Fuse Puller

The Chance Fuse Puller may be preset to any position desired and locked there by tightening the wing nut. A spring assembly also permits the tool to be preset without locking, so that it will align with the fuse during the pulling operation. The Fuse Puller is opened and closed by turning the pole. Its jaws are plastisol covered.

Part No. M445577

(1/2" to 1 1/2" Fuse) 1 7/8 lb.

Part No. M445578

(1 1/2" to 2 1/2" Fuse) 2 1/2 lb.

Spiral Disconnect

Extremely effective in opening switches and removing and installing cutout doors on porcelain enclosed type cutouts. Also called "Pigtail" Disconnect.

Part No. M445579

..... 6 1/2 oz.



Tree & Rope Hook

The Universal Tree and Rope Hook is made of aluminum alloy and is attached to a universal pole to push tree limbs out of the way of hot-stick work and to clear rope if it becomes tangled.

Part No. M445580 1 lb.



All-Purpose Cotter Key Tool

For pulling and replacing hump-type cotter keys. Particularly suitable for use on clevis pins and ball socket insulators. Easy guiding of cotter key provided by contoured slot and raised eye pin.

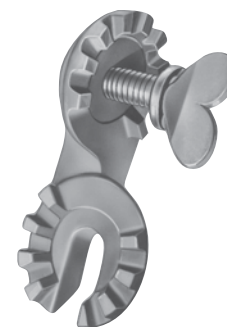
Part No. M445582 5 oz.



Universal Adapter

When this adapter is mounted on a universal stick, and any universal stick, and any universal tool is mounted on the adapter, the tool can be set at almost any angle to the stick. Useful for working in close places.

Part No. M445584 5 oz.



Hammer

Used for many operations around energized conductors such as moving conductors such as moving suspension clamps and other pieces of hardware requiring a forceful blow.

Part No. M445585 1 lb.





Ball Socket Adjuster

Used on heavy socket clevises . . . particularly where aluminum suspension and deadend clamps are attached to ball and socket insulators.

Part No. M44558710 oz.



Bolt Head Wrench

Used on heads of 3/4" and 5/8" dia. bolts to keep bolt from turning as nut is being tightened. Extremely useful on rural ridge pin type construction — outer edges of wrench are tapered so that they can be wedged between flanges on channel and bolt head to keep bolt from turning.

Part No. M445588 ..1 lb. 2 oz.



Ratchet Wrench

This Ratchet Wrench is for tightening square nuts on 5/8" pole line hardware, regardless of the length of the bolt running beyond it. The long socket permits wrench handles to swing past crossarm when tightening top ridge pin nut.

Part No. M4455892½ lb.



Aerosol Can Holder

By pulling the rope on this tool, a prong reaches out to depress the nozzle of an aerosol can to apply G.E. Insuljel to insulators or insecticides to bee and wasp nests on poles and crossarms. Also useful for applying paint, lubricant, etc., in hard-to-reach places.

C403227012 oz.

Conductor Cleaning Brush

Semi-tubular shape allows linemen to clean 6" of entire circumference of conductor with two stick position.

Part No. M445592

1¼" Dia. Tube with Universal Fitting 13 oz.



Part No. C4030320

1¼" Dia. Tube with clip6 oz.



Part No. M445593

1¼" Dia. Tube only5 oz.



Cotter Key Puller

This Cotter Key Puller is used to partially withdraw a ball-socket cotter key so that the insulator can be removed from another insulator hanger. This puller with its thin prong is preferred for prying out standard keys deeply set on long insulator strings.

Part No. M445596 12 oz.



Tool for "W" Keys

This tool is used for handling the "W" shaped keys used in suspension insulators which are popular in western Europe and Japan.

Part No. M445597 14 oz.



Clevis Pin Installer

This tool has particular application on EHV hardware and insulators where the pin must be placed in semi-recessed areas. The three-finger device is spring-loaded with cadmium-plated music wire for positive grip.

Part No. M4455102 1 lb.

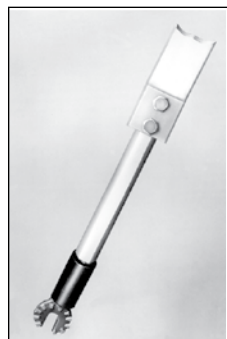




Cotter Key Holder

Used to install cotter keys into semi-recessed hardware such as found EHV, this tool will hold the keys of the position for proper insertion into clevis pins. The tool will hold the key firmly, yet readily release once engagement is made

Part No. M4455103 1 lb.



Cotter Key Tool

Used for ball and socket insulator couplings, this tool is used to push the cotter key into position where great force is required.

Part No. C4030005 1¼ lb.



Cotter Key Tool

The Cotter Key Tool is a companion tool to Part No. C4030005, both designed for ball and socket type insulator couplings. C4030005 enters the socket opening to force the cotter key out while C4030006, shown here, forces the key back into position. Effectiveness of both tools is enhanced with the use of the Universal Knocker.

Part No. C4030006 1¼ lb.



Knocker

Designed to knock out and pull the cotter keys on fog-type insulators, the Knocker Tool is spring assisted for greater impact in restricted space and under adverse working conditions. The Knocker has a standard universal fitting one end and a Universal fitting with wingnut on the other end to receive various Cotter Key Tools at top of this page.

Part No. C4030011 10 oz.



Ball Socket Adjuster

Similar to the M445587 Chance Ball socket Adjuster, this Adjuster is designed to handle socket adapters up to 2¾ inches wide.

Part No. C4030126 14 oz.

Plastic Insulator Tool

Plastic coating of the Chance Ball and Socket Adjuster prevents damage to Epoxilator distribution deadend insulators during lifting or rotating of the insulator. Arms of the tool are designed to fit between the skirts of the insulator.

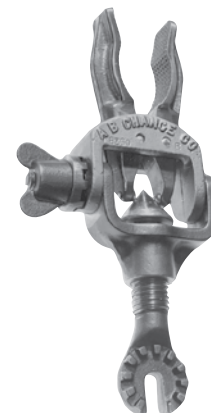
Part No. C4030175 12 oz.



All-Angle Pliers

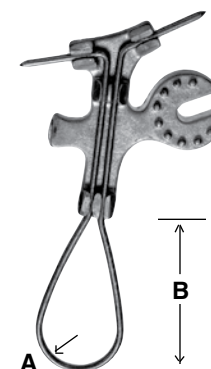
Designed to grasp from any angle, and tighten by clockwise rotation of the Universal Tool handle. The jaws are held firmly in position with a wing-nut. Used as a holding device for retaining bolt heads and loose hardware, adjusting arcing horns, replacing cotter keys, etc.

Part No. C4030177 1½ lb.



Hot Rodder Tool

Ideal for applying line ties and other formed wire products on energized lines. The smaller unit (C4031071) is particularly adaptable to Super Top-Ties®. The loop type work end permits rotational control which is difficult with conventional tying tools.



Part No.	Dim. A.	Dim. B.	Weight
C4031071	17/32"	1¾"	12 oz.
C4030834	11/16"	3"	13 oz.

Tie Wire Claw

Hand-like hot line tool easily and neatly applies tie wires, both factory-formed and field-formed. Claw controls wire with grip equal to pliers, permits securely wrapping tight coils onto conductors.

Available either with splined fitting for use on Universal tools or with ferrule fitting mounted on insulated Epoxi-glas® handles.



**Tie Wire Claw
C4031416
Universal Tool Fitting**



**Tie Wire Claw
C4031764 & C4031765
Epoxi-glas Handle Mounted**

ORDERING INFORMATION

Tool Head only

Catalog No.	Description	Weight
C4031416	Tie Wire Claw/Universal Fitting	½ lb./0.2 kg.

Epoxi-glas Handle with Tool

Catalog No.	Description	Weight
C4031764	6' x 1¼" Handle/Tie Wire Claw	3 lb./1.35 kg.
C4031765	8' x 1¼" Handle/Tie Wire Claw	4½ lb./2 kg.

Utility Head

Gator-look shape makes Utility Head popular for many hot line jobs: Placing and removing blocks, slings, circuit breakers, line hooks and strain breakers.

Available either as a Universal tool accessory with splined fitting or ferrule style mounted on insulated Epoxi-glas handles.



**Utility Head
C4031417
Universal Tool Fitting**



**Utility Head
C4031766 & C4031767
Epoxi-glas Handle Mounted**

ORDERING INFORMATION

Tool Head only

Catalog No.	Description	Weight
C4031417	Utility Head/Universal Fitting	½ lb./0.2 kg.

Epoxi-glas Handle with Tool

Catalog No.	Description	Weight
C4031766	6' x 1¼" Handle/Utility Head	3 lb./1.35 kg.
C4031767	8' x 1¼" Handle/Utility Head	4½ lb./2 kg.

Hot Line Applicator Tools for Rubber Line Hose & Blankets

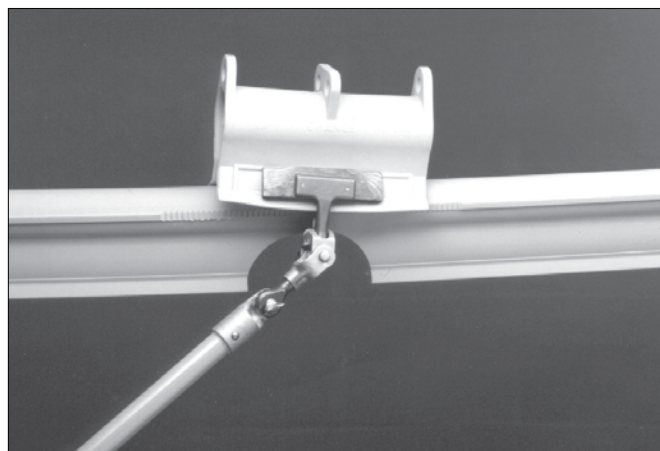
Designed to grasp the extended lip on Class 4 rubber line hose, these tools also permit placement and removal of rubber cover-up blankets with insulated hotsticks.

Select from two styles, three lengths

Available in two styles to fit either clampsticks or universal hotsticks, each style comes in three wood blade lengths.



Grip-All clampstick operates applicator tool to install Class 4 line hose with ease. Simply rotating the stick clockwise tightens the tool's grasp on the hose lip.

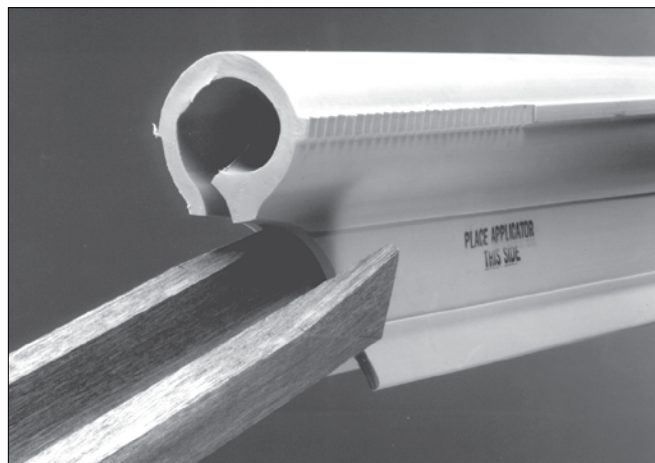


Especially for hose couplers, tools with 6" blades also may be used to position rubber blankets and shorter line hose lengths.



Prong on universal tool may be used in several techniques to remove and place line hose couplers, insulator hoods and rubber blankets.

HUBBELL®
Power Systems



Beveled top corner on each blade end helps insert tool between hose lips. Notice that blades fit in flat area debossed full length on outside of one hose lip.



Clampstick tool features an eyescrew similar to grounding and tap clamps.

Catalog No.	Description	Weight
C4032505	Clampstick Tool 6"	1.7 lb./0.8 kg.
C4032506	Clampstick Tool 24"	2.5 lb./1.1 kg.
C4032507	Clampstick Tool 36"	3.0 lb./1.4 kg.



Universal tool mounts by its fitting for thumbscrew. Adjustable hinge feature can be set at various working angles simply by unscrewing the prong, meshing the pivot cogs and tightening the prong again.

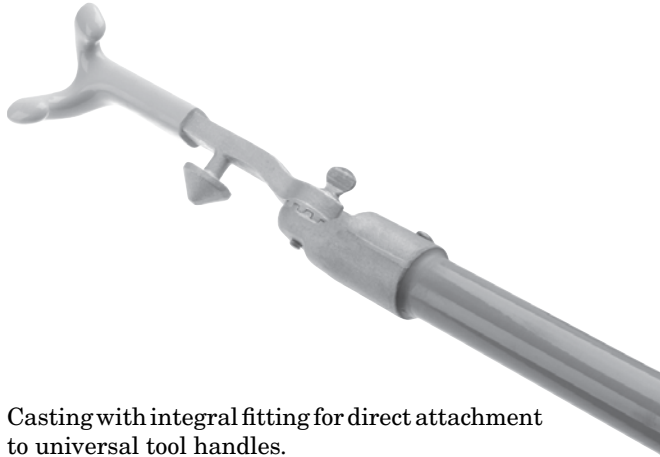
Catalog No.	Description	Weight
C4032525	Universal Tool 6"	1.7 lb./0.8 kg.
C4032526	Universal Tool 24"	2.5 lb./1.1 kg.
C4032527	Universal Tool 36"	3.0 lb./1.4 kg.

CHANCE – CENTRALIA, MISSOURI
AUGUST 2009

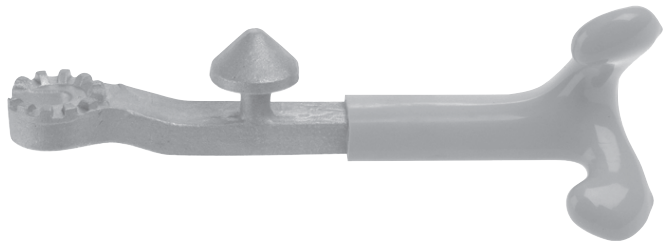
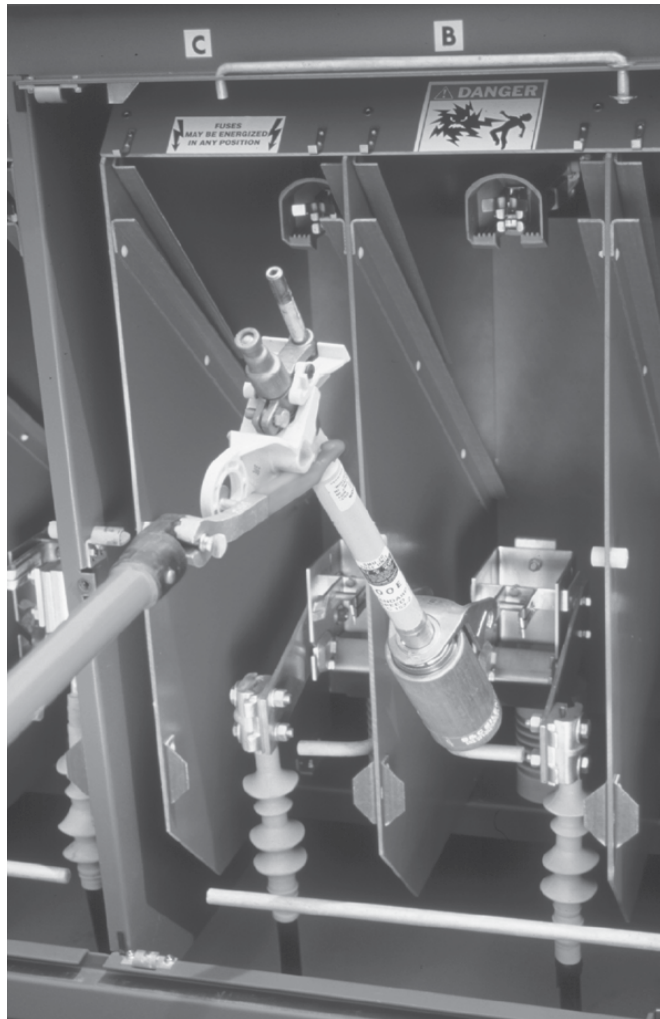
Fuse Grappler Tool

By design, this tool helps remove and install power fuses and barriers in padmounted switchgear. It specifically fits power fuses made by S&C Electric Company with the designations SM-4Z, SM-20, SML-4Z and SML-20.

It is made to be attached to an insulated universal tool. The tool is an aluminum casting with a plastisol coating on the hooks to help avoid scuffing whatever it contacts.



Casting with integral fitting for direct attachment to universal tool handles.



Ordering Information

Catalog No.	Description	Weight
C4033284	Fuse Grappler Tool	½ lb. / 0.23 kg.

SAFETYSHIELD™

Hot Stick Barrier

***U.S. Patent 5,666,253**
Foreign Patents Pending

In less than a minute, the patented* SAFETYSHIELD™ Hot Stick Barrier can be mounted on a 1¼" or 1½"-diameter live line tool. That's all it takes to add up to a 24"-diameter protective screen between a lineman and a potential electrical hazard.

Used by major electric utilities, co-operatives, contractors and industrial customers in the U.S. and abroad, it fits on clampsticks, hooksticks, and elbow-puller tools. SAFETYSHIELD™ Hot Stick Barrier should be mounted on the hot stick nearest the point where an electrical arc flashback may occur. It is made of two flame-retardant transparent polycarbonate protective shields affixed with a nylon fastener to a nylon 33% glass-filled clamp.

Tested per ASTM Standard F2522-05: Test Method for Determining the Protective Performance of a Shield Attached on Live Line Tools or on Racking Rods for Electrical Arc.



Orange protective storage case and instructions are included with each SAFETYSHIELD™ Hot Stick Barrier.



Three standard diameters:

- 16" (406.4 mm) 1 lb. 6 oz. /0.62 kg. Cat. # PSC4170627
- 21" (533.4 mm) 2 lb. 6 oz./1.08 kg. Cat. # PSC4170628
- 24" (609 mm) 2 lb. 14 oz./1.3 kg. Cat. # PSC4170629

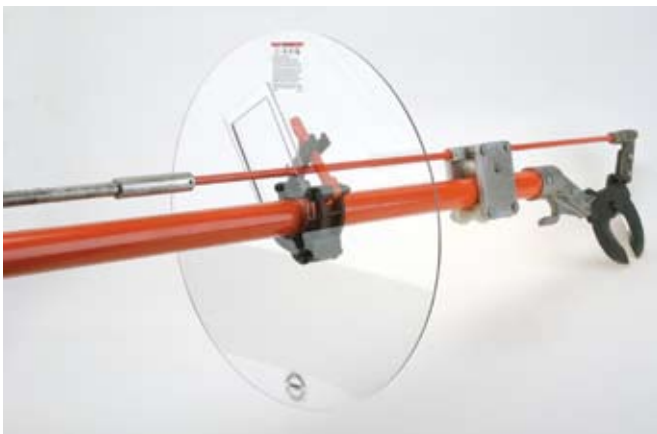
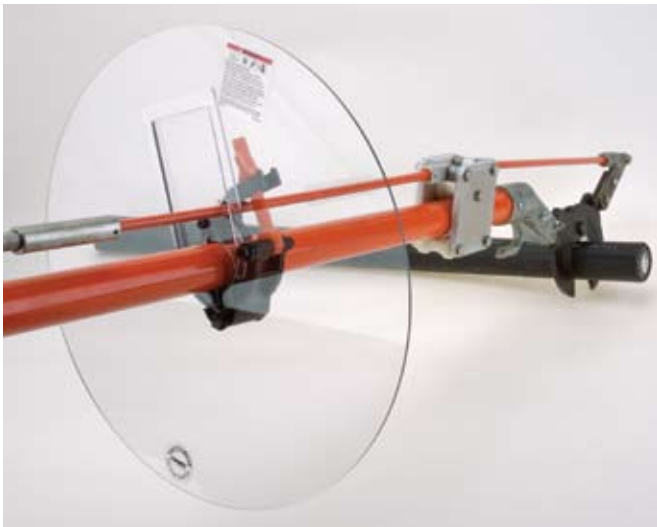


SAFETYSHIELD™ Hot Stick Barrier for Ratchet Wire Cutters†

*U.S. Patent 5,666,253
Foreign Patents Pending

In less than a minute, the patented* SAFETYSHIELD™ Hot Stick Barrier can be mounted on a 1½"-diameter Chance® Ratchet Wire Cutter† handle. That's all it takes to add a 16"-diameter protective screen between a lineman and a potential electrical hazard.

Used by major electric utilities, co-operatives, contractors and industrial customers in the U.S. and abroad, this barrier style fits strictly on the Ratchet Wire Cutters listed †below. SAFETYSHIELD™ Hot Stick Barrier should be mounted on the hot stick nearest the point where an electrical arc flashback may occur. It is made of two flame-retardant transparent polycarbonate protective shields affixed with a nylon fastener to a nylon 33% glass-filled clamp.



Tested per ASTM Standard F2522-05: Test Method for Determining the Protective Performance of a Shield Attached on Live Line Tools or on Racking Rods for Electrical Arc.

Orange protective storage case and Instructions are included with each SAFETYSHIELD™ Hot Stick Barrier.



Ordering Information SAFETYSHIELD™ Hot Stick Barrier for Ratchet Wire Cutters†

Catalog No.	Diameter	Weight
PSC4170630	16" (406.4 mm)	1 lb. 6 oz. / 0.62 kg.

†See Catalog Section 2150 for these Ratchet Wire Cutters:
Catalog No. C4031381, C4031382, C4031383 & C4031384.