



Transmission Tools

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Responsibility for selection of the proper product or application rests solely with the purchaser. In the event of errors or inaccuracies determined to be caused by Hubbell Power Systems, Inc., its liability will be limited to the re-performance of any such analysis or study.

Live-Line Work Minimum Approach Distances						
				Dista	ance	
Nomin	al Vol	tage	Phase-to	o-ground	Phase-t	o-phase
in K	ilovolt	ts	expc	sure	expo	osure
Phase	-to-Ph	nase	(ftin.)	(m)	(ftin.)	(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.

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HUBBELL® Power Systems





STRAIN LINK STICK



On deadend structures and running corners, a Strain Link Stick is used as insulation between rope blocks and a cuma-long clamp.

Conductor loads on long spans and H-frame structures are sometimes greater than can effectively be handled with wire tongs. To supplement the wire tongs, a Strain Link Stick is attached to the conductor close to the wire tong. The Strain Link Stick is supported from above by rope blocks, which are operated in unison with the rope blocks attached to the wire tong.

Strain Link Sticks are also used to support the middle conductor on H-frame structures during insulator or crossarm changes.

Hooks and ferrules are made of heat-treated aluminum alloy for the best ratio of high strength to light weight. Butt rings — for attaching rope blocks or hand lines — are forged of high quality steel. Butt swivel spins freely on ball thrust bearing. The edges of the jaws of Chance Link Sticks are rounded to prevent scarring of conductors.

					Max.	
		Pole Dia.			Work	Approx.
Catalog	Overall	and	Jaw O _l	pening	Load,	Wt.,
No.	Length	Length	Min.	Max.	lb.	lb.
H47152	4'9"	1 ¹ / ₄ " x 4'	.22	.75	3500	3³/4/1.7 kg.
C4000814	7'3"	1 ¹ / ₄ " x 6'	.22	.75	3500	$5^{1/4}/2.4$ kg.
C4000815	9'3"	1 ¹ / ₄ " x 8'	.22	.75	3500	6 /2.7 kg.
C4000816	11'3"	11/4" x 10'	.22	.75	3500	6³/₄/3.1 kg.
C4000817	13'3"	11/4" x 12'	.22	.75	3500	7 ¹ / ₂ /3.4 kg.
C4000818	15'3"	11/4" x 14'	.22	.75	3500	8¹/₄/3.7 kg.
H47161	3'3"	1 ¹ / ₂ " x 2'	.44	1.06	6500	$4^{3}/_{4}/2.2$ kg.
H47162	4'9"	1 ¹ / ₂ " x 4'	.44	1.06	6500	$5^{3}/_{4}/2.6$ kg.
H47163	6'9"	1 ¹ / ₂ " x 6'	.44	1.06	6500	6³/₄/3.1 kg.
H47164	8'9"	1 ¹ / ₂ " x 8'	.44	1.06	6500	7 ³ / ₄ /3.6 kg.
H47165	10'9"	11/2" x 10'	.44	1.06	6500	8 ³ / ₄ /4.0 kg.
H47166	12'9"	11/2" x 12'	.44	1.06	6500	9³/₄/4.4 kg.
H4717	5'0"	1 ¹ / ₂ " x 4'	.72	1.50	6500	9 ⁷ / ₈ /4.5 kg.
H47171	7'2"	1 ¹ / ₂ " x 6'	.72	1.50	6500	11 ⁷ / ₈ /5.4 kg.
H4718	5'2"	1 ¹ / ₂ " x 4'	1.00	2.50	6500	11 ¹ / ₈ /5.1 kg.
H47181	7'2"	1 ¹ / ₂ " x 6'	1.00	2.50	6500	13 /5.9 kg.
H47182	9'2"	11/2" x 8'	1.00	2.50	6500	15 /6.8 kg.
H47183	11'2"	11/2" x 10'	1.00	2.50	6500	17 /7.7 kg.
H47184	13'2"	11/2" x 12'	1.00	2.50	6500	19 /8.6 kg.

SPIRAL LINK STICK



The Spiral Link Stick is used in lieu of a strain link stick in close places where the lineman cannot safely install a strain link stick by hand. A lifting eye on the head ferrule enables the lineman to guide the Spiral Link Stick to the conductor with a hotstick. The pole of the Spiral Link Stick is made of $1^{1/4}$ " Epoxiglas[®].

Ferrule castings are of heat-treated aluminum alloy; spiral hook and butt ring of galvanized steel.

		Pole Dia.	Maximum	Max. Work	Approx.
Catalog	Overall	and	Conductor	Load,	Wt.,
No.	Length	Length	Size	lb.	lb.
H4722	$271/_{2}$ "	1 ¹ / ₄ " x 15.4"	$1510.5 \ \mathrm{kcmil} \ \mathrm{ACSR}$	3500	$3^{1/2}/1.6$ kg.
C4000812	$57^{1/2}$ "	1 ¹ / ₄ " x 42"	$1510.5~\mathrm{kcmil}\mathrm{ACSR}$	3500	$4^{1}/_{2}/2.0$ kg.

ROLLER LINK STICK



The Chance Roller Link Stick is used to spread and hold conductors aside at midspan when relocating poles. It is applied to the conductor at the pole and pulled to position by a hand line attached to the butt ring. The handline should be secured by a temporarily installed screw anchor or other fixed object.

The tool is also used for measuring conductor-to-ground clearance by attaching a measuring tape or length of rope to the butt ring. Poles for Roller Link Sticks are 1³/₄ inches

	rotating the pole closes the	hook	leaving	the hea	ad free
to	roll along the conductor.				

				Max.	
		Pole Dia.	Maximum	Work	Approx.
Catalog	Overall	and	Conductor	Load,	Wt.,
No.	Length	Length	Size	lb.	lb.
H47144	58"	1 ¹ / ₄ " x 4'	605 kcmil ACSR	1000	3³/4/1.7 kg.
H47146	82"	1 ¹ / ₄ " x 6'	605 kcmil ACSR	1000	4 ¹ / ₄ /1.9 kg.

Н	U	В	В	Ε	L	L	®
Po	w	er	S	/si	te	m	S





ADJUSTABLE STRAIN POLES



Clevis furnished with high-strength steel Through Pin E4011510 and Klik Pin P059738P. 2-in. Pole Clamp E4010138 included with each Strain Pole listed below.



12" Strain Jack E4011998 included with each Strain Pole listed below.

Applications and design

Key to many transmission and EHV maintenance jobs, these hot-line tools help support conductors while insulators are removed and replaced. Adjustable strain poles can be used with yoke plates and hook assemblies at the conductor and structure ends of suspension, V-string or deadend insulator strings.

To support the hot-end trunnions or hooks, five stainlesssteel crosspins are located at 6" intervals on the 2"-diameter Epoxiglas® poles. To engage deadend and suspension yokes at the hot end also requires the adjustable pole clamp of heat-treated aluminum. This pole clamp can be unlocked and positioned by hotsticks.

On the cold end, a high-strength steel strain-jack with bronze tongue provides take-up with a ratchet wrench (see page 2257) and trunnions (page 2255). Wrench and trunnions must be ordered as separate items. Standard strain jack furnished with each strain pole provides 12" of adjustment. Longer strain jacks (for 24" or 36" of take-up) and extra pole clamps also may be ordered as options below.

Ordering Information

Adjustable Strain Poles

- 7,500-lb. maximum load rating (2"-diameter Epoxiglas pole)
- 2-ft. adjustment by Pole Clamp (furnished) in 6" increments on five stainless-steel pins
- 12"-long Strain Jack E4011998 furnished as standard
- Optional 24" & 36" strain jacks and extra pole clamps available below

Catalog No.	Description	Maximum Voltage Use	Insulated Section	Overall Length	Weight
C4012144	6-ft. Strain Pole	72.5 kV	36 in. (91.44 cm)	7 ft8 in.	18 lb. / 8.1 kg.
C4012145	7-ft. Strain Pole	169 kV	48 in. (121.92 cm)	8 ft8 in.	18³/ ₄ lb. / 8.4 kg.
C4012146	8-ft. Strain Pole	242 kV	63 in. (160.02 cm)	9 ft11 in.	$19^{1\!/_2}$ lb. / 8.8 kg.
C4012147	10-ft. Strain Pole	302 kV	84 in. (213.36 cm)	11 ft8 in.	20 ⁷ / ₈ lb. / 9.4 kg.
C4012215	12-ft. Strain Pole	362 kV	102 in. (259.8 cm)	13 ft2 in.	$22^{1}/_{4}$ lb. / 10 kg.
C4012148	14-ft. Strain Pole	552 kV	135 in. (342.9 cm)	15 ft11 in.	23³/4 lb. / 10.7 kg.
C4012149	18-ft. Strain Pole	765 kV	180 in. (457.2 cm)	19 ft8 in.	26 ¹ / ₂ lb. / 11.9 kg.

Accessories-

E4010138P	2" Adjustable Pole Clamp	2 lb. / 0.9 kg.
E4011998P	12"-Acme-thread Strain Jack	3 lb. / 1.4 kg.
V4010157P	24"-Acme-thread Strain Jack	4 lb. / 1.8 kg.
V4010158	36"-Acme-thread Strain Jack	6 lb. / 2.7 kg.
E4011510P	Steel Through Pin	³/ ₈ lb. / 0.17 kg.
059738P	Klik Pin	¹ / ₁₆ lb. / 0.03 kg.





Heavy Duty Two-Pole Strain Carriers (15,000 lb.)

See page 2257 for Ratchet Wrench.



Two-pole Strain Carriers relieve strain from an insulator string to permit removal from energized lines. Normally used on a single string of insulators, these carriers sometimes are used for multiple strings where conductor-end hardware permits attachment.

Available here as complete assemblies, separate components also may be ordered. For adjustable strain poles, see page 2253; for yokes, sockets and trunnions, see page 2255.

Yokes are fabricated from high-strength aluminum plate and include a steel chain assembly for anchoring the back plate to the structure. Conductor-end yoke includes a hook and a machined socket (C4011894).





Maximum load rating for each of the strain-carrier assemblies listed below is 15,000 lb. per insulator string.

Catalog	Nominal	Distance B	etween Yokes	Weight,
Number	Pole Length	Minimum	Maximum	each assembly
C4012174	6 ft.	49 "	81"	81 lb. / 36.45 kg
C4012175	7 ft.	59 "	93"	83 lb. / 37.35 kg
C4012176	8 ft.	74 "	108"	85 lb. / 38.25 kg
C4012177	10 ft.	95 "	129"	89 lb. / 40.05 kg
C4012216	12 ft.	113 "	147"	95 lb. / 42.27 kg
C4012178	14 ft.	146"	180"	97 lb. / 43.65 kg
C4012179	18ft.	191"	225"	105 lb. / 47.25 k

Common features for all units listed:

- Two 2"-diameter Epoxiglas poles
- Yokes are 26" wide on pole centers
- 2-ft. adjustment in 6" increments on five stainless-steel pins per pole
- 12"-long Strain Jacks

Standard Duty Strain Carriers (6,500 lb.)



This tool assembly has the same basic use as the two-pole strain carrier: Relieving strain while removing a single string of insulators. The distribution strain carrier has a compression deadend yoke at the hot end which is equipped with a various shoe sizes to grip the conductor ahead of insulatorconductor hardware with a compression lever-type action, gripping tighter as the load increases. The various shoes furnished with the kit fit conductors from 0.292" through 0.806" (No. 2 through 397.5 ACSR).

Maximum load rating for each distribution strain-carrier assembly listed below is 6,500 lb. per insulator string.

• Two 1 ¹ / ₄ "-diameter Epoxiglas poles	 Yokes are 21" wide on pole center 	ers
• 2-ft. adjustment in 6" increments or	n five stainless-steel pins per pole	12"-long Strain Jacks

Catalog Nominal		Distance Be	Weight,	
Number	Pole Length	Minimum	Maximum	each assembly
C4010411	6 ft.	471/2"	81"	82 lb. / 36.9 kg.
C4010410	8 ft.	711/2"	105"	92 lb. / 41.4 kg.

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Two-Pole Strain Carrier Accessories

Two-Pole Yokes

Two-pole yokes can be ordered separately to make up any of the two pole strain carriers shown on Page 2254. The yokes are fabricated of high strength ($^{3}/_{4}$ " and 1" thick) aluminum plate.

The yokes have 26" width between the center of the adjustable strain poles used with them. Maximum load ratings are 15,000 pounds per insulator string.

Catalog No.	Description	Weight
C4011720	Conductor End Yoke Assembly	25 lb./11.3 kg.
C4011721	Structure End Yoke Assembly	20 lb./ 9.0 kg.



Includes hook and C4011894 Socket



Includes steel loading chain and attachment hardware.



Deadend Compression Yoke Assembly

Used with Two-Pole Strain Carriers, these units grip compression sleeves over the compressed area, requiring no shoulder or adapter to pull against. Castings are heat treated aluminum. When used with 2" adjustable strain poles, this assembly is rated at 11,000 pounds maximum load.

Designed specifically for use on extension links. A swing up gate exposes the shoe area of the assembly to the load and must be closed before taking up tension.

Catalog No.	Description	Weight
C4010095	Compression Yoke Assembly Complete with a Hot Line Extension Link for ³ / ₄ " and 1" dia. shank	44 lb./19.8 kg.

Take-Up Trunnions

For replacement or conversion, these trunnions are bronzealloy and ball-thrust bearing construction for use on adjustable strain poles. They are designed to equal the capacity of all Chance yokes and provide maximum efficiency for the lineman. **Require M19483 Ratchet.**

Catalog No.	Description	Weight
E4012066P	One Large Trunnion,	31/2 lb./1.6 kg.
	replaces 70356	
E4012068P One Small Trunnion,		2 lb./0.9 kg.
	replaces E4010486	

Trunnion Gauge

Gauge for Trunnions E4012066 and E4012068 above with ${}^{3}\!/_{4}$ " Acme threads.

Catalog No.	Description	Weight
T4012265	Trunnion Gauge for 3/4" Acme threads	¹ / ₂ lb./0.25 kg.

Deadend Sockets

The Deadend Socket is furnished with the Two-Pole Strain Carrier. Use following catalog number for ordering replacement.

Max. Load Rating: 15,000 lb.

	Bolted	Conductor Ra	nge of Fittings	Compression	
	Strain	Maximum	Minimum	Deadend	
	Clamp	Copper or	Copper or	Body	Approx.
Catalog No.	Max.	ACSR	ACSR	Maximum	Weight
C4011894	For Extension Links with 7/8" Shank and 11/2" Collar.				



Single-Pole Strain Carrier Yokes



C4011717

2256 **CHAN**

These yokes can be used with adjustable strain poles (see page 2253) to remove the strain from one string of multiple strings of deadend insulators. Because the yokes are designed to fit various types of yoke plates, they should be purchased in pairs to fit the specific construction. The **same yoke assemblies** can be used on **both** the hot and cold end of the insulator string as they hook into the yoke plate hardware.

All of these yokes are rated at 15,000 pounds maximum load per insulator string.

Catalog		
No.	Fits Yoke Plates	Weight
C4011719	Flat Plates up to ³ / ₄ " thick	25 lb./11.3 kg.
C4011718	Flat Plates up to 1" thick	25 lb./11.3 kg.
C4011717	Rectangular or Triangular	25 lb./11.3 kg.
	plates up to $3/4$ " thick	







Strain Poles For Bundle Conductor Yoke Plates

Strain Poles for conductor yoke plates accommodate a wide range of yoke plate designs and hole spacings. Both Strain Poles, of 2" diameter Epoxiglas[®] construction, offer 12,000pounds maximum load capacity with a 1" wide clevis for aluminum conductor yoke plates. Commonly used in deadend rigging, for "V" strings and restrained angles, poles offer two clevis lengths and overall lengths.





C4000612

Catalog No.	Description	Working Length*	Max. Load	Weight
H1949113	Clevis 3.35" x 1"	113"	12,000 lb.	17 lb./7.7 kg.
C4000612	Clevis 1.56" x 1"	113"	12,000 lb.	14 lb./6.3 kg.
C4000613	Clevis 1.56" x 1"	134"	12,000 lb.	15 lb./6.8 kg.

* Distance from centerline of pin to inside end of butt ring.

Strain Pole Accessories



E4011998, V4010157 & V4010158.

Catalog No.	Description	Weight
M19483	Ratchet Wrench	2.2 lb./1 kg.
E4011998P	Strain Jack (12" Long) Tongue Type	3 lb./1.4 kg.
V4010157P	Strain Jack (24" Long) Tongue Type	4 lb./1.8 kg.
V4010158	Strain Jack (36" Long) Tongue Type	6 lb./2.8 kg.
H47852	Strain Jack (18" Long) Clevis Type	8 lb./3.6 kg.
H47853	Strain Jack (24" Long) Clevis Type	10 lb./4.5 kg.
SPM29471	Acme Eyenut	1 lb./0.5 kg.





Insulator Cradles

Three basic types of Insulator Cradles are available for various insulator changeout requirements:

2258

TRANSMISSION CRADLE is designed to be used on 69 kV to 115 kV deadend or suspension strings supported by a pair of wire tongs or link sticks.

EHV TROUGH-DESIGN CRADLE is designed to be used on 345 kV to 500 kV deadend or suspension strings and in

TRANSMISSION INSULATOR CRADLE

This Chance Insulator Cradle is used to make insulator changes by supporting the string while damaged insulators are replaced, or to pivot the string so that it may be removed and lowered to the ground. On deadends or running corners these cradles are used in conjunction with strain carriers; and in straight suspensions they are used with various types of link sticks or adjustable strain pole assemblies.

Insulator Cradles are made with three $1^{1/2}$ " dia. Epoxiglas[®] poles. Light in weight, they are easy to handle and adaptable to many applications.

combination with insulator cradle carriers for moving the insulators. (See catalog page 2259.)

EHV SIDE-OPENING CRADLE is designed to be used on only EHV deadend strings for removing only one string in a double, triple or quad deadend bundle. (See catalog page 2260.)

Lugs located at the forward end of the cradle are used to support the insulator string with a pair of wire tongs or link sticks. The back end of the cradle is supported by ropes tied at the structure. Hinged in this manner the insulators may be lowered or raised to the best position for changing damaged insulators.

In some cases, the cradle is supported in eyes located on the forward yoke of Two-Pole Strain Carriers. This is done when raising or lowering of the insulator string is unnecessary.



Catalog	Overall	Recommended	Approx.
No.	Length	Capacity	W eight
H18406	6-ft. (180cm)	10 10" (250mm) Insulators	19³/4 lb./ 8.887 kg.
H18408	8-ft. (240cm)	14 10" (250mm) Insulators	24 lb./11.262 kg.
H184010	10-ft. (300cm)	18 10" (250mm) Insulators	27 lb./13.837 kg.





EHV Trough-Design Insulator Cradle



This Chance Cradle is used for making insulator changes on lines energized up to and including 500 kV. It is used to lower insulator strings on deadend and swinging-corner construction, and to raise the insulators on long suspension units.

Heat-treated aluminum castings, durable Epoxiglas[®] poles, and steel hardware combine to make the cradle a strong and dependable piece of equipment. The aluminum castings are a weight-saving feature providing ease in handling.

The deep "trough" design of the cradle holds the insulator string securely and prevents accidental dropping of the string while the slotted insulator-retaining plate secures the top insulator of the string.

The insulator-laden cradle can be raised or lowered for easier insulator changes using a bail attached to a link stick. Hooks are furnished for installing and removing the deadend tool from insulator yokes.

		Max.	
		10"	
Catalog		Insulator	
No.	Description	Capacity	Weight
H19509	9' Insulator Cradle	19	23 lb./10.45 kg.
C4010015	11'4" Insulator Cradle	25	27 lb./12.27 kg.
H195090	Insulator Cradle Carrier		25 lb./11kg.

STATIC GROUND

Designed to eliminate the problem of electrostatic charge when working insulator strings. The Chance Static Ground drains off the charge from the insulator string to the tower leg. Six feet of No. 2 grounding cable is attached to the Static Ground tool and a flat face clamp attaches to the either end of the grounding cable.

The adjustable jaws of the Static Ground fit insulator caps from $2^{1/2}$ " to 6". Overall length with a $1^{1/4}$ " x 19" Epoxiglas[®] pole, is 30".

To ground an insulator string, attach the flat face clamp to the tower leg and the Static Ground just under the first insulator cap.

For barehand work, attach the flat face clamp to the bucket shield system and the Static Ground under the second insulator from the LIVE end.

Catalog No.	Description	Approx. Wt.
HG42301	W/Eyescrew Clamp No. G33633SJ	5 lb./2.3 kg.
C6000000	W/"T" Handle Clamp No. G33634SJ	5 lb./2.3 kg.



Insulator Cradle Carrier H195090

The Insulator Cradle Carrier utilizes a spiral link stick as a support member for the three hook and clamp assemblies and has a 2¹/₂" Epoxiglas[®] insulated ridgepole. The maximum load is 500 pounds.







11/2" dia.

EHV Side-Opening Insulator Cradle





HOOK ASSEMBLIES

C4010361

LIES C4010362

Designed specifically for selective removal of any one string in deadend bundles, double, triple or quad, the Side-Open Cradle eliminates the need of removing top strings in the bundle to get at the lower string.

Available in 9, 13 and 16-foot lengths, cradles are shipped complete with bridle for attaching to Swivel Boom, an Insulator Retaining Plate and either 15 or 31-inch Hook Assemblies. The 15-inch assembly is used for single or double deadends while the 31-inch Assembly is for removal of the bottom strings in 4-bundle deadends, and for double "V"-string assemblies.

The 9-foot Cradle is rated 500 pounds maximum load, and the 13 and 16-foot Cradles are rated at 1000 pounds maximum load.

The Insulator Retaining Plate is dual purpose, one side adaptable to 11-inch insulator bells and the opposite of the plate for $12^{3}/4$ -inch bells.

Catalog		
No.	Description	Weight
C4010358	9' Cradle, 15" Support Hooks	93 lb./41.9 kg.
C4010359	9' Cradle, 31" Support Hooks	97 ¹ / ₂ lb./43.9 kg.
C4010356	13' Cradle, 15" Support Hooks	119 lb./53.6 kg.
C4010357	13' Cradle, 31" Support Hooks	123 ¹ / ₂ lb./55.6 kg.
C4010354	16' Cradle, 15" Support Hooks	125 lb./56.7 kg.
C4010355	16' Cradle, 31" Support Hooks	130 ¹ / ₂ lb./58.7 kg.
C4010361	15" Support Hooks, one only	10 lb./ 4.5 kg.
C4010362	31" Support Hook, one only	11 ¹ / ₂ lb./ 5.2 kg.
C4010455	Insulator Retaining Plate	7 ¹ / ₂ lb./ 3.4 kg.



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The J-Hook unit can also be used for removal of deadend insulator strings. The plastisol covered steel hook swivels on the end of a 2" x 36" Epoxiglas[®] pole and has a 2¹/2" diameter pole clamp at the top end, allowing horizontal adjustment on an Epoxiglas ridgepole to varying lengths of insulator strings. This hook assembly is particularly useful in removing the bottom string in a 3-bundle insulator string. Rated working load: 250 lb. per hook BBELL®

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Suspension Insulator Tools

Several optional tools for relieving the load on suspension insulator strings are shown on the page. Where the same line crews work on both deadend and suspension structures, the Adjustable Strain Poles on Page 2253 can be used as the base tool for suspension insulator changeouts.



(See Page 2253) or Clevis Pole (See Page 2257)

maximum load is 6,500 pounds. Catalog No. Pole Dia. & Length Weight H472084 1½" x 84" 14 lb./6.3 kg. H472096 1½" x 96" 16 lb./7.2 kg. H4720114 1½" x 114" 18 lb./8.1 kg.

Suspension Link Stick





STRUCTURE YOKES

NOTE: Yokes shown here use Adjustable Strain Poles and small trunnions on page 2252 through 2253.







TOWER YOKE

The Tower Yoke fits over the tower arm, serving as a support for the Chance Strain Poles to relieve tension on the suspension insulator string through the "hot end" yoke and the conductor yoke plate.

The legs of the yoke are so designed that they can be adjusted to fit most tower structure configurations. Still, it is recommended that the design drawings of the tower arms be submitted to Hubbell Power Systems, Inc. with the Tower Yoke order for engineering evaluation to assure a proper fit. Swivel trunnions are 26" center to center.

Catalog No.	Description	Max. Load	Weight
H478322	Tower Arm Yoke	12,000 lb.	42 ¹ / ₂ lb./19.1 kg.

H-FRAME YOKE

The H-Frame Crossarm Yoke is similar to the Tower Yoke in design and application. The two clamp bolts which secure the yoke to the double plank crossarms may be adjusted to three center-to-center positions (9", 11" and 13") to fit various arm sizes; vertical take-up on the crossarm is from 9" to 12". The swiveling trunnion brackets are located 26" center-to-center. Longer braces are available on special order.

Catalog No.	Description	Max. Load	Weight
C4000219	H-Frame Crossarm Yoke	12,000 lb.	41 lb./18.5 kg.

STEEL ARM YOKE

Designed for use on the arm of a steel pole, the Steel Arm Yoke mounts over a ³/4-inch-thick end plate as shown at left. Swivel castings in the end of the yoke assure proper alignment of the Chance Strain Poles to the conductor-end yoke. The load rating is dependent upon the angle of the end plate on the arm; 45° is maximum angle allowed with a maximum load of 9,000 pounds. In-line loading of the yoke permits a maximum load of 15,000 pounds. Bronze pins place the strain poles 21 inches apart, center-to-center. A lifting eye is cast into the top of the yoke for the purpose of landing the yoke upon the end plate of the pole arm.

Catalog No.	Description	Max. Load	Weight
C4000445	Steel Arm Yoke	15,000 lb.	14³/4 lb./6.6 kg.

STEEL ARM BRACKET

The steel arm bracket is used with the C4000445 (steel arm yoke) where the steel arm is not equipped with an end plate. The bracket is made of heat treated aluminum and is complete with a wheel binder. The steel arm bracket serves the same purpose as an end plate to support the yoke assembly.

Catalog No.	Description	Max. Load	Weight
T4000838	Steel Arm Bracket	15,000 lb.	15 lb./6.8 kg.

CHANCE – CENTRALIA, MISSOURI JULY 2009

HUBBELL® Power Systems



All-Purpose Handline Gin

The aluminum angle Tower Handline Gin is $3' \ge 3' \ge 1/4$ " with an aluminum-weld end-plate securing a bronze, free-swivel butt ring. Snatch blocks hooked into the butt ring keep handlines from dragging over the tower structure, giving clearance to tools in transit.

Bronze mounting hooks of the Tower Gin are held in place with bronze wing nuts on plated steel bolts. Hook adjustment will fit tower angle from $1^{3}/4^{"} \ge 1^{3}/4^{"} \ge 6^{"} \ge 6^{"} \ge 6^{"}$. Maximum load for the gin is 500 pounds.

Catalog No.	Description	Length	Weight
M1979	Tower Handline Gin	21"	6 ³ /4 lb./3 kg.

TROLLEY POLE SUSPENSION INSULATOR TOOL

The Trolley Pole Assembly serves as a convenient method of rolling a string of suspension insulators into the structure so that the damaged units can be replaced. The tool can be fastened, horizontally under the tower arm, using tower type wire tong saddles.

Two types of Trolley Wheel Units are available with single (H47234) or tandem (C4000152) wheels. The tandem wheel units are used on extremely long strings of insulators for better weight distribution. Both trolley wheel types will roll on either a $2^{1}/2^{"}$ or 3" Epoxiglas[®] pole.

The slotted Suspension Insulator Attachment bolts to the end of the Trolley Pole and can be fitted under the top insulator. So applied, the entire string can be lifted free by a slight down pressure on the structure end of the Trolley Pole.

The insulators are returned to position on the Trolley Pole after the necessary changeouts have been made.

Suitable for $10^{1}/2^{\circ}$ disc insulators on one side and $10^{3}/4^{\circ}$ disc insulators on the other

H47232







unu

H47234

C4000152



H4721112 TROLLEY POLE COMPONENTS PARTS

Catalog No. Description		Weight
H47232	Fork Suspension Tool Attachment for 21/2" Pole	15¼ lb./7.0 kg.
H4721112	Trolley Pole (2 ¹ /2" x 12')	18¼/2 lb./8.3 kg.
H47234	Single Trolley Wheel with 2 ¹ /2" Pole Clamp	6 lb./2.7 kg.
C4000152	Tandem Trolley Wheel with 21/2" Pole Clamp	13 lb./5.9 kg.

HUBBELL® Power Systems









Hot Stick Tension Puller 34.5 kV Ø-Ø and 69 kV Ø-Ø





Tension Puller Hook Adapter C4000573

The Hook Adapter is a field-replacement item for adding the catch and the hotstick eye. The Adapter is interchangeable with hooks of both Tension Pullers above.

The Hotstick Tension Puller is equipped with rings so that it can be handled and operated with the Chance Grip-All Clampstick or with rubber gloves.

Both models feature a hook on each end that is non-swiveling for positive hotstick operation and has a spring-loaded gate which will rotate 135 degrees left or right from closed position.

For operational ease the selector lever on the ratchet wrench of these two models has been made larger to accommodate hotsticks.

Catalog No.	Description		Weight
C4000574	34.5 kV, Safety Hook both ends	12	lb./5.4 kg.
C4000575	69 kV, Safety Hook both ends	12^{1}	/ ₂ lb./ 5.6 kg.

Tie Back Clamp C4000600 Conductor Range: #4 to 397.4 kcmil ACSR



The Tie Back Clamp installs with a Grip-All clampstick. It is used with a Tension Puller to keep the tail of a conductor out of the work area by tying it back to the main line after it has been cut. The clamp also may be used to hold a jumper on the main line while applying a compression connector.

Tension Puller Switching Tool 35 kV Ø-Ø, 600 amps cont, 150 kV BIL • U.S. Patent 4,661,662

Tension Puller Switching Tool combines line-tension disconnect switch with Epoxiglas[®] insulated tool as above. Weathershed polymer skirts are bonded to 1¹/₂"-diameter pole. Compression clamps secure switch hot parts to pole. Bypass stud (¹/₂"-dia.) at each end of switch accepts 3"-wide jumper clamps. Copper switch blade with silver-plated contacts opens

to 90°, or 180° with stop pin removed. Galvanized hooks are provided for operation by loadbreak device.

With handling rings, this tool may be operated by either hot-line tools or rubber-glove techniques. Illustrated instructions give procedures for installation, operation and maintenance.

Hooks on ends are fixed so as not to swivel. Latch on hooks has a spring-loaded gate able to rotate 135 degrees left or right from the closed position.

Selector lever on ratchet wrench is extra large for easier operation by hot line tools.





Operate disconnect switch with **only** a portable loadbreak tool.

Hot line jumpers installed on conductor and tool's bypass studs create parallel circuit. Conductor is securely restrained before cut. Long tail is clamped back onto itself. Portable loadbreak device may be used to open switch. For additional recommendations, refer to ANSI C37.35 IEEE Guide for the Application, Installation, Operation and Maintenance of High Voltage Air Disconnecting and Load Intrerrupter Switches. **NOTE: Specifications are same as for 34.5 kV unit above.**

Catalog No.	Description	Weight
C4001907	Tension Puller Switching Tool	22 lb. / 9.9 kg.