



200 AMP 15 KV LOADBREAK PRODUCTS

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<http://www.hubbellpowersystems.com>

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





15 kV LOADBREAK PRODUCTS RATINGS & SPECIFICATIONS

GENERAL INFORMATION

Hubbell 8.3/14.4 kV Underground Connectors provide utilities with products having high reliability and low maintenance expense.

These connectors provide:

- 10,000-ampere fault-closing capability
- Piston-operated fault-close action
- Standard elbow and bushing insert loadbreak principle
- Small size for ease of hot-stick handling
- Field replaceable elbow and probe
- Molded shields
- Peroxide-cured EPDM compounds
- Full compliance with ANSI/IEEE Standard 386

Hubbell Separable Connector bushing inserts and elbows are designed for use with single-conductor, concentric neutral power cable having extruded insulation shielding. With shield adapter products, the elbow can be used with cables having a metallic tape shield, wire shield, or lead sheath with tape or extruded insulation shielding.

All insulating and conducting rubber components are made of a special formulation of an EPDM elastomer using a peroxide curing process. The material and curing process provides superior elastomer stress relaxation characteristics under high ambient temperatures and contributes to reliable, long-time operation in either above-ground or subsurface installations.

Elbow connector/bushing insert combinations are suitable for energized loadmake/loadbreak operations by a qualified lineman using a shotgun-type (Chance) hot stick.

All elbow/bushing insert combinations are designed for use with subsurface (submersible to 10 feet of water) or pad-mounted installations.

Where to Use

Hubbell 15 kV Loadbreak Products are designed for operation on and connection to 15 kV class, 95 kV BIL systems where the voltage ratings listed on this page are not exceeded.

RATINGS

Max. continuous voltage	8.3 kV phase-to-ground 14.4 kV phase-to-phase
Continuous current	200 ampere rms
Eight-hour overload	300 ampere rms (non-loadbreak)

SHORT-TIME CURRENT RATINGS

0.17-second duration	10,000 ampere rms symmetrical
3.00 second duration	3500 amperes rms symmetrical

INSULATION WITHSTAND VOLTAGES

Basic Impulse Level	95 kV crest (1.2 x 50 microsec. wave)
60 Hertz (one minute)	34 kV rms
Dc (15 minutes)	53 kV
Corona extinction voltage	11 kV (3 picocoulombs)

SWITCHING

1-phase and 3-phase circuits 8.3 kV phase-to-ground, 14.4 kV maximum across the open contacts.	10 loadmake/loadbreak operations at 200 amperes with 90% parallel and 10% series resistance — reactance load at 0.8 power factor.
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FAULT CLOSURE

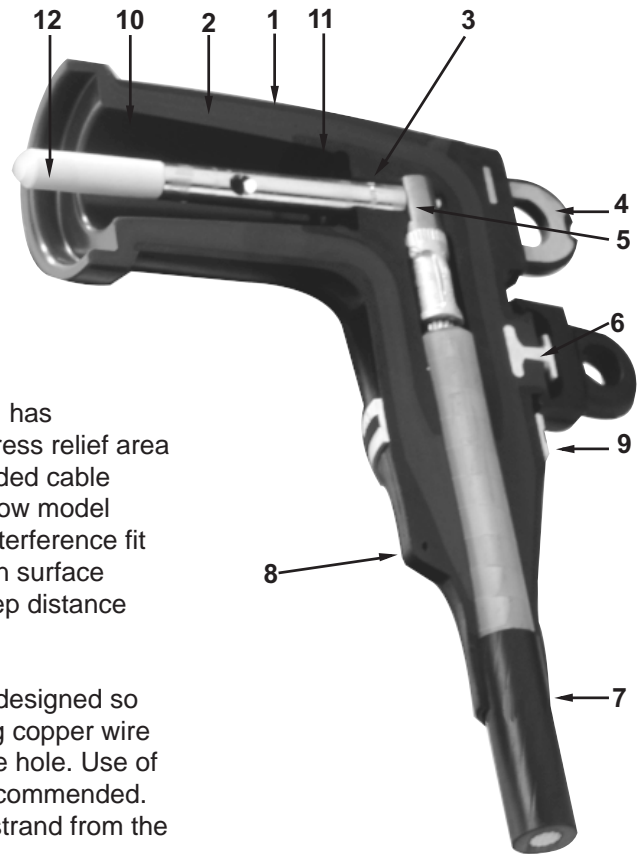
One fault-close operation at 8.3 kV phase-to-ground, or 14.4 kV phase-to phase; 10,000 amperes rms symmetrical, 10 cycles, (0.17 seconds).



15 kV LOADBREAK ELBOW

Hubbell Loadbreak Elbows provide utilities with products having high reliability and low maintenance expense.

The elbow, when mated with a loadbreak bushing product meeting the requirement of 1995 ANSI/IEEE Standard 386, is suitable for energized loadmake / loadbreak operations by a qualified lineman using a shotgun-type (Chance) hot stick.



PRODUCT FEATURES

1. Molded external shield - conductive, abrasion resistant 1/8-inch thick shield of peroxide cured EPDM.

2. EPDM insulation - cured with peroxide process provides superior stress-relaxation characteristics and assures long life under high-ambient temperatures. Compatible with poly-ethylene, crosslink polyethylene and EPR insulations.

3. Molded conductive insert - guards against high electrical stress from corners of crimped connector.

4. Hot-stick operating eye - reinforced with stainless steel ring. Withstands 500-pound pull and 10 foot-pound torque, permits energized loadmake-loadbreak operation with hot-stick tool.

5. Compression connector - meets requirements of ANSI C119.4/NEMA CC3 for Class A connectors.

6. Test point - allows voltage indication when readout is made with suitable high-impedance devices. Elbows are available with or without this feature.

7. Cable entrance - has conductive rubber stress relief area which contacts extruded cable insulation shield. Elbow model selected to assure interference fit along cable insulation surface providing proper creep distance and water-tight fit.

8. Grounding tab - designed so that a single #14 awg copper wire can be inserted in the hole. Use of a separate wire is recommended. Do not use a single strand from the concentric neutral.

9. White-black-white band - identifies elbow (and mating bushing insert) as having phase-to-ground and phase-to-phase voltage rating. Both the black and white bands are individually removable.

10. Interface - to allow interference-fit seal when installed on mating component designed to ANSI/IEEE Standard 386. Provides proper creep distance and water-tight fit, yet permits unplugging of elbow after years of service.

11. Locking ring - is a part of ANSI/IEEE Standard 386 requirement. Provides positive gripping. Initial pull-off force to unseat from mating groove in bushing insert produces fast break necessary for loadbreak switching.

12. Probe - mates with pinch-finger contacts in bushing insert, or other switch point. Inner end has threads with pilot to aid installation in crimped connector without thread stripping. Outer end is made of ARCMATE™ ablative material that produces gas when exposed to loadbreak arc, permitting reliable interruption even with close ground spacing.

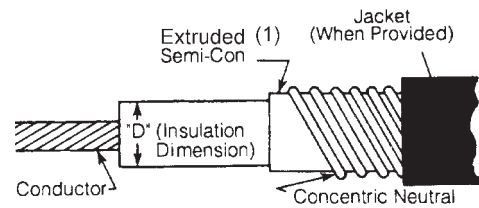


15 kV LOADBREAK ELBOW

SELECTION AND ORDERING

Elbow must be sized to the cable insulation diameter. Cable manufacturers' catalogs show the nominal insulation diameter plus tolerance. Select the elbow so the cable dimension is within the "D" dimension listed in the following tables.

In the event the cable-diameter information is not available, take several insulation measurements along a length of cable to be used with the elbow.



Cable Dimension Reference

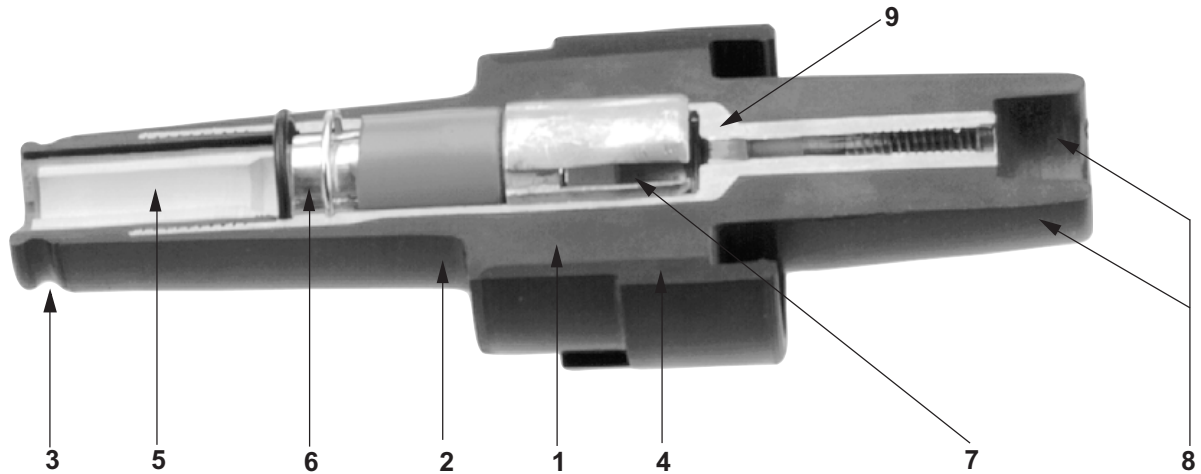
(1) If insulation shield is not extruded, an adapter must be used to accommodate elbow.

Cable "D" Dimension (")		Conductor Size Copper or Aluminum		Model Numbers (2)	
Minimum	Maximum	Stranded or Compressed	Solid or Compacted	With Test Point	Without Test Point
0.635	0.830	6	4	9U01AAD621	9U01ABD621
		4	2	9U01AAD622	9U01ABD622
		2	1	9U01AAD623	9U01ABD623
		1	1/0	9U01AAD624	9U01ABD624
		1/0	2/0	9U01AAD625	9U01ABD625
		2/0	3/0	9U01AAD626	9U01ABD626
0.705	0.910	6	4	9U01AAD631	9U01ABD631
		4	2	9U01AAD632	9U01ABD632
		2	1	9U01AAD633	9U01ABD633
		1	1/0	9U01AAD634	9U01ABD634
		1/0	2/0	9U01AAD635	9U01ABD635
		2/0	3/0	9U01AAD636	9U01ABD636
		3/0	4/0	9U01AAD637	9U01ABD637
		4/0	—	9U01AAD638	9U01ABD638
0.785	1.005	6	4	9U01AAD641	9U01ABD641
		4	2	9U01AAD642	9U01ABD642
		2	1	9U01AAD643	9U01ABD643
		1	1/0	9U01AAD644	9U01ABD644
		1/0	2/0	9U01AAD645	9U01ABD645
		2/0	3/0	9U01AAD646	9U01ABD646
		3/0	4/0	9U01AAD647	9U01ABD647
		4/0	—	9U01AAD648	9U01ABD648
0.875	1.115	6	4	9U01AAD651	9U01ABD651
		4	2	9U01AAD652	9U01ABD652
		2	1	9U01AAD653	9U01ABD653
		1	1/0	9U01AAD654	9U01ABD654
		1/0	2/0	9U01AAD655	9U01ABD655
		2/0	3/0	9U01AAD656	9U01ABD656
		3/0	4/0	9U01AAD657	9U01ABD657
		4/0	—	9U01AAD658	9U01ABD658
0.955	1.205	6	4	9U01AAD661	9U01ABD661
		4	2	9U01AAD662	9U01ABD662
		2	1	9U01AAD663	9U01ABD663
		1	1/0	9U01AAD664	9U01ABD664
		1/0	2/0	9U01AAD665	9U01ABD665
		2/0	3/0	9U01AAD666	9U01ABD666
		3/0	4/0	9U01AAD667	9U01ABD667
		4/0	—	9U01AAD668	9U01ABD668

(2) Model Numbers listed are for elbows with the long bimetal conductor crimp connector. To specify elbow for PROBELOK® CONNECTORS (Catalog page C1-15) add a P before the last 3 numbers - example 9U01AADP668. To specify a copper connector, change the D to an S.



15 kV LOADBREAK BUSHING INSERT



ALL COPPER DESIGN

The Hubbell Loadbreak Bushing Insert represents state-of-the-industry design in an all-copper construction. It is designed for installation on transformers or other equipment having a bushing well that meets the requirements of ANSI/IEEE Standard 386, Fig. 3.

PRODUCT FEATURES

1. EPDM insulation - cured with peroxide process. Provides superior stress-relaxation characteristics, assuring long life under high ambient temperature.

2. Interface - conforms to ANSI/IEEE Standard 386. When a suitable elbow is installed, provides proper creep distance and water-tight joint.

3. Locking groove - conforms to ANSI/IEEE Standard 386. Mates with elbow locking ring.

4. Molded shield - conductive, abrasion resistant 1/8 inch thick shield of peroxide cured EPDM. Three molded tabs provide convenient points for external grounding of the shield.

5. Loadbreak assembly - includes ARC MATE™ ablative material that produces gas when exposed to the loadbreak/loadmake switching arc.

6. Pinch-finger contacts - are part of loadbreak assembly which has all copper current path.

7. Piston assembly - patented concept. Piston movement assists operator under fault-close conditions.

8. Interface - conforms to ANSI/IEEE Standard 386, bushing-well interface.

9. Hex Fracture - accepts 5/16 hexwrench for proper torquing into bushing well.

SELECTION AND ORDERING*

- 9U02AAB001 Bushing Insert
- 9U01AAJ6__ Bushing Insert and Elbow with Capacitance Tap (Long - Bimetal Connector)
- 9U01ABJ6__ Bushing Insert and Elbow without Capacitance Tap (Long - Bimetal Connector)

*For the last two digits of catalog number, refer to Selection Table shown on page C1-4.



15 kV LOADBREAK JUNCTIONS

DESCRIPTION

Hubbell Junctions are used to sectionalize cables or as feedthru's for making lateral taps.

They are available in two, three and four tap units and, when connected with loadbreak elbows, have ratings as shown on the 15 kV Loadbreak Product Ratings & Specifications sheet.

The corrosion-resistant stainless steel mounting bracket provides for backplate mounting angles of 30, 45, or 60 degrees. It can also be adjusted for horizontal mounting to a flat surface.

Each tap works independently of the others contained on the same unit.

Adjacent taps are 3.24 inches center to center, providing improved ease of operation.



*2-position Junction
without hardware;
includes stainless steel
U-straps, not shown.*



*3-position Junction
without hardware;
includes stainless steel
U-straps, not shown.*



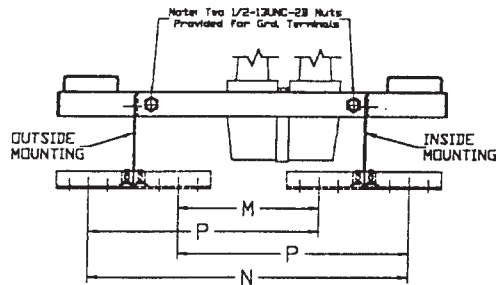
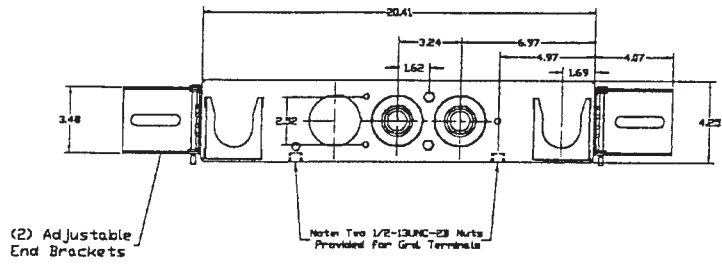
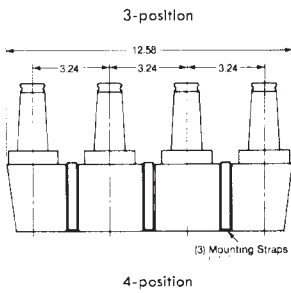
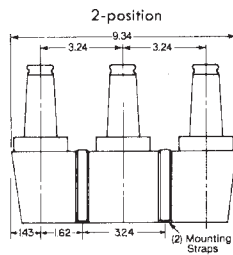
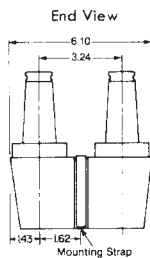
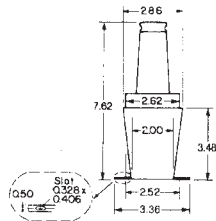
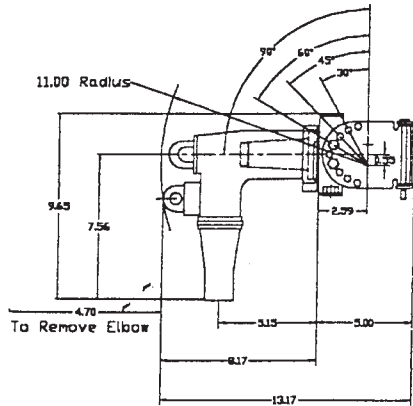
*4-position Junction
without hardware;
includes stainless steel
U-strap, not shown.*

SELECTION AND ORDERING

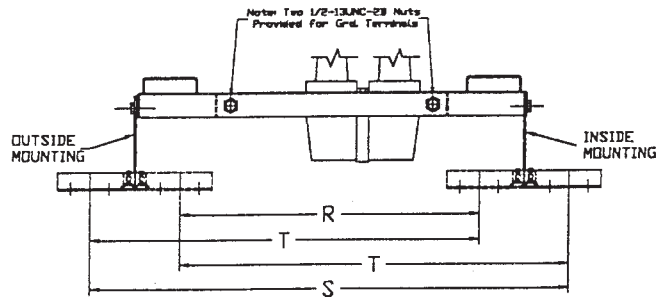
	Model No. (Includes Hardware; Stainless-steel Backplate and Mounting Brackets)	Model No. (Without Hardware; Includes Stainless-steel U-straps)
2-POSITION	9U07AFD2201	9U07ALF200
3-POSITION	9U07AGD3201	9U07ALF300
4-POSITION	9U07AGD4201	9U07ALF400

Note: For component parts, see page C-11.

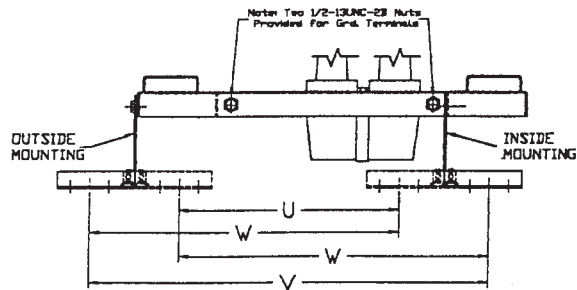
Note: for stainless steel mounting hardware & dimensions, refer to pages C1-7 through C1-9.
Patent 5,931,708



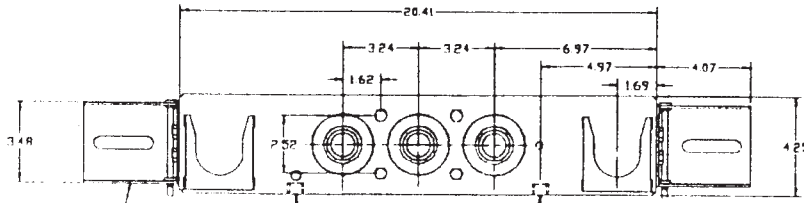
BRACKETS MOUNTED	M		N		P	
	MIN	MAX	MIN	MAX	MIN	MAX
INSIDE	5.23	9.23	14.55	18.55	9.91	13.91
OUTSIDE	5.35	9.35	14.67	18.67	10.03	14.03



BRACKETS MOUNTED	R		S		T	
	MIN	MAX	MIN	MAX	MIN	MAX
INSIDE	13.49	17.49	22.83	26.83	18.16	22.16
OUTSIDE	13.61	17.61	22.95	26.95	18.28	22.28

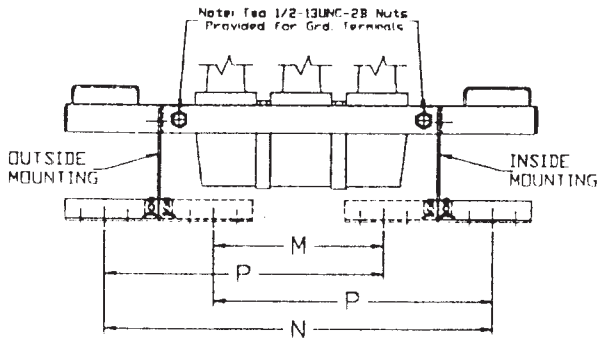


BRACKETS MOUNTED	U		V		V	
	MIN	MAX	MIN	MAX	MIN	MAX
INSIDE	9.35	13.35	18.68	22.69	14.02	18.02
OUTSIDE	9.47	13.47	18.81	22.81	14.14	18.14



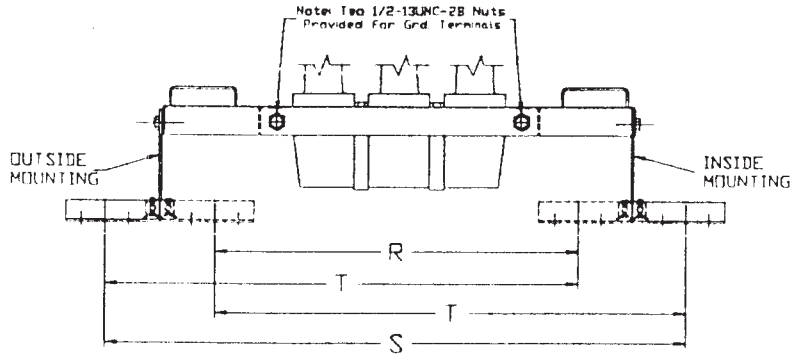
(2) Adjustable End Brackets

Note: Two 1/2-13UNC-2B Nuts Provided For Grd. Terminals



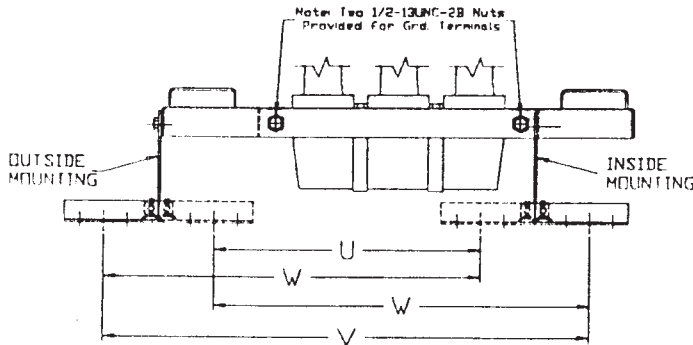
Note: Two 1/2-13UNC-2B Nuts Provided For Grd. Terminals

BRACKETS MOUNTED	M		N		P	
	MIN	MAX	MIN	MAX	MIN	MAX
INSIDE	5.23	9.23	14.55	18.55	9.91	13.91
OUTSIDE	5.35	9.35	14.67	18.67	10.03	14.03



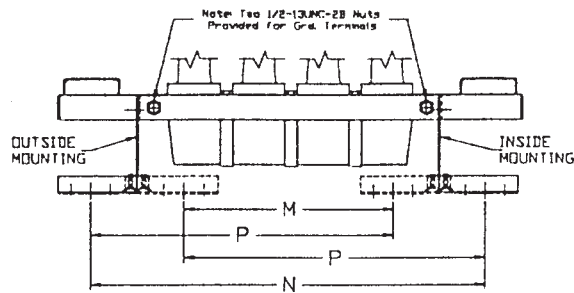
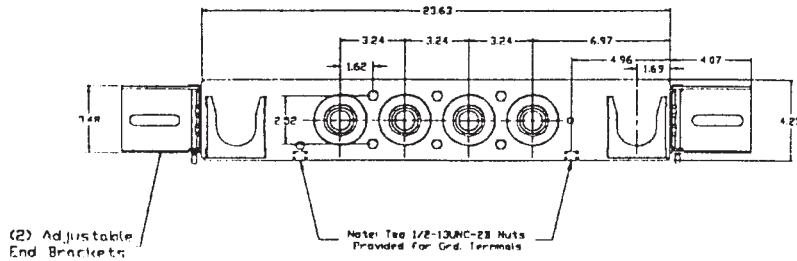
Note: Two 1/2-13UNC-2B Nuts Provided For Grd. Terminals

BRACKETS MOUNTED	R		S		T	
	MIN	MAX	MIN	MAX	MIN	MAX
INSIDE	13.49	17.49	22.83	26.83	18.16	22.16
OUTSIDE	13.61	17.61	22.95	26.95	18.28	22.52

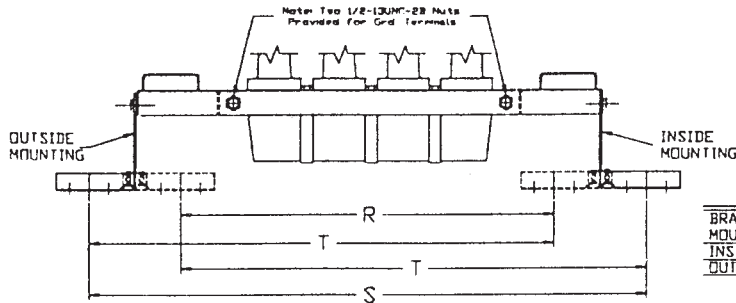


Note: Two 1/2-13UNC-2B Nuts Provided For Grd. Terminals

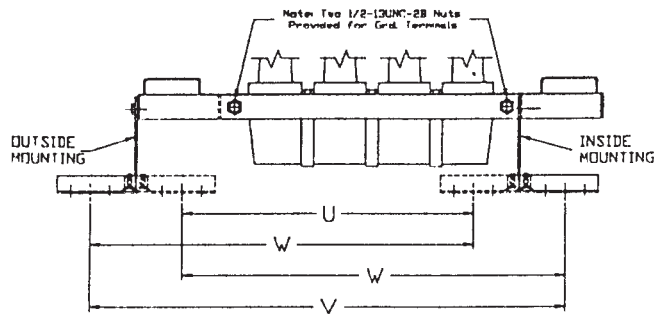
BRACKETS MOUNTED	U		V		W	
	MIN	MAX	MIN	MAX	MIN	MAX
INSIDE	9.35	13.35	18.68	22.69	14.02	18.02
OUTSIDE	9.47	13.47	18.81	22.81	14.14	18.14



BRACKETS MOUNTED	M		N		P	
	MIN	MAX	MIN	MAX	MIN	MAX
INSIDE	8.47	12.47	17.82	21.82	13.15	17.15
OUTSIDE	8.59	12.59	17.94	21.94	13.27	17.27



BRACKETS MOUNTED	R		S		T	
	MIN	MAX	MIN	MAX	MIN	MAX
INSIDE	16.73	20.73	26.07	30.07	21.40	25.40
OUTSIDE	16.85	20.85	26.19	30.19	21.52	25.52



BRACKETS MOUNTED	U		V		W	
	MIN	MAX	MIN	MAX	MIN	MAX
INSIDE	12.59	16.59	21.93	25.93	17.26	21.26
OUTSIDE	12.71	16.71	22.05	26.05	17.38	21.38

COMPONENT PARTS

- 9U09AAW2061 Junction Bracket, Stainless Steel with Adjustable Feet, 2 Position
- 9U09AAW2071 Junction Bracket, Stainless Steel with Adjustable Feet, 3 Position
- 9U09AAW2081 Junction Bracket, Stainless Steel with Adjustable Feet, 4 Position
- 9U09AAW088 Junction Adjustable Mounting Feet Only, Stainless Steel (1 Pair)
- 9U09AAW212 Junction U Strap Only, Stainless Steel



15 kV LOADBREAK ACCESSORIES SELECTION AND ORDERING



Insulating Cap

For installation on 8.3/14.4-kV loadbreak bushing interfaces designed to Fig. 5 of ANSI/IEEE Standard 386. It can be used as a temporary or a permanent cover on an energized circuit. To avoid low-energy discharge from the outer conductive shield, the 36-inch long braided lead should be grounded.

Order 9U01AEW400



Grounded Parking Bushing

Provides a temporary ground for cable circuits having loadbreak elbows designed to the requirements of Fig. 5 of ANSI/IEEE Standard 386. The bracket permits mounting on parking stands. This grounded bushing with its 17-inch long lead has successfully passed the fault-closing and short time current tests.

Order 9U07AAF100



Feed-Thru

Use either as a feed-thru or as a grounding device for the elbow connector.

Equipped with a bracket for mounting on the apparatus stand-off brackets, the feed-thru can be mounted by use of a hot stick.

The center-to-center spacing between taps is 3.24 inches.

Order 9U07AKF200



Grounding Rod

Fits into switch modules, multi-taps or other loadbreak bushings. It has a 17-inch long lead.

Order 9U09BAB001



Insulated Parking Bushing

Provides a temporary or permanent parking position for energized 8.3/14.4-kV loadbreak elbows designed to requirements of Fig.5 of ANSI/IEEE Standard 386. The bracket permits mounting on parking stands.

Order 9U07ACF100



Test Rod

Fits into switch modules, multi-taps or other loadbreak bushings. Used with test devices such as statoscope to provide indication of energized or deenergized condition of cable.

Order 9U09BAB002



15 kV LOADBREAK ELBOW ACCESSORIES REPLACEMENT PARTS

Crimp Connectors: For re-use or re-cabling of loadbreak elbows, long Bimetal or Proelock™ Connectors may be ordered as replacement parts.



Long Bimetal Connector



PROBELOK® Long Connector

<i>Conductor Size Copper or Aluminum</i>		<i>Model Number</i>	
<i>Stranded or Compressed</i>	<i>Solid or Compacted</i>	<i>Bimetal Long</i>	<i>PROBELOK® Long</i>
6	4	9U09AAW161	9U09LOK161
4	2	9U09AAW162	9U09LOK162
2	1	9U09AAW163	9U09LOK163
1	1/0	9U09AAW164	9U09LOK164
1/0	2/0	9U09AAW165	9U09LOK165
2/0	3/0	9U09AAW166	9U09LOK166
3/0	4/0	9U09AAW167	9U09LOK167
4/0	—	9U09AAW168	9U09LOK168

Note: Nominal overall length for either connector is 2.88 inches.

SELECTION AND ORDERING

Accessory Products

- 9U07AKF200 Feed-thru, Parking Stand Mounting
- 9U01AEW400 Insulating Cap
- 9U07AAF100 Grounded Parking Bushing
- 9U07ACF100 Insulated Parking Bushing
- 9U09BAB001 Grounding Rod
- 9U09BAB002 Test Rod
- 9U07AFD2201 2 Position Junction With Stainless Steel Mounting Hardware
- 9U07ALF200 2 Position Junction Without Mounting Hardware (Incl Stainless U Straps)
- 9U07AGD3201 3 Position Junction With Stainless Steel Mounting Hardware
- 9U07ALF300 3 Position Junction Without Mounting Hardware (Incl Stainless U Straps)
- 9U07AGD4201 4 Position Junction With Stainless Steel Mounting Hardware
- 9U07ALF400 4 Position Junction Without Mounting Hardware (Incl Stainless U Straps)

Component Parts

- 9U09AAW080 Probe Kit (Includes Torque Wrench)
- 9U09AAW16_ _ Crimp Connector, Long Bimetal (Select Model Number from top table)



PROBELok® Connectors Prevent Elbows from Overheating



Applications

PROBELok® Connectors prevent elbows from overheating in 15, 25 and 35kV applications. A special insert in the connection holds the threaded connection tight, even if flexing causes it to turn. A conventional elbow uses a simple threaded connection between the cable connector and probe. When a lineman twists an elbow to put it on or pull it off, the connection loosens. Even a slight quarter

turn can cause the connection to wobble slightly. The wobble creates hot spots that can cause elbow overheating and failure. PROBELok® Connectors help stop the problem and unnecessary service calls that can cost hundreds of dollars to repair overheating elbows.

Ordering Information

Modify the standard 15, 25 and 35 kV elbow catalog number by adding a "P" to the number. For example, Catalog Number 9U01AAD623 is ordered as a PROBELok® Connector by inserting a "P" in the number, 9U01AADP623.



SHIELD ADAPTERS AND JACKET SEALS

Hubbell Cable Shield Adapters provide a simple economical method for grounding power cable shields and neutrals using watertight construction. The 9U0920MA, 9U0921MA and 9U70TL can be used on all Hubbell Cable Accessory products that are applied to XLP, EPR and other solid dielectric insulated power cables.

Cable Shield Adapters provide a leading edge that simulates an extruded semi-conductive insulation shield normally found on high voltage power cables. These adapters can be used on power cables with various combinations of shields, requiring no special preparation.



9U0920MA _ _



9U0921MA _ _



9U70TL _ _

CABLE SHIELD ADAPTERS					
	Suffix	Insulation Diameter			
		Inches		mm	
		MIN.	MAX.	MIN.	MAX.
9U0920MA _ _	FBG	0.670	0.830	17.1	21.0
	GAB	0.830	0.940	21.0	23.8
	GH	0.940	1.040	23.8	26.5
	HB	1.090	1.240	27.7	31.5
	JABB	1.280	1.500	32.5	38.0
9U0921MA _ _	FBG	0.670	0.830	17.1	21.0
	GAB	0.830	0.940	21.0	23.8
	GH	0.940	1.040	23.8	26.5
	HB	1.090	1.240	27.7	31.5
	JABB	1.280	1.500	32.5	38.0

CABLE SHIELD ADAPTERS					
	Suffix	Insulation Diameter			
		Inches		mm	
		MIN.	MAX.	MIN.	MAX.
9U70TL _ _	EB	0.495	0.585	12.6	14.9
	EF	0.525	0.635	13.3	16.1
	FA	0.575	0.685	14.6	17.4
	FAB	0.625	0.735	15.9	18.7
	FB	0.675	0.785	17.2	19.9
	FG	0.725	0.835	18.4	21.2
	GA	0.775	0.885	19.7	22.5
	GAB	0.825	0.935	21.0	23.8
	GB	0.875	0.985	22.2	25.0
	GH	0.930	1.040	23.6	26.4
	HA	0.980	1.115	24.9	28.3
	HAB	1.040	1.175	26.4	29.9
	HB	1.095	1.240	27.8	31.5
	HJ	1.160	1.305	29.5	33.2
	JA	1.220	1.375	31.0	34.9
	JAB	1.285	1.395	32.6	35.4
	JB	1.355	1.520	34.4	38.6
	KA	1.485	1.595	37.7	40.5
	KAB	1.530	1.640	38.9	41.7
	KB	1.575	1.685	40.0	42.8
PA	1.665	1.785	42.3	45.3	
PB	1.755	1.875	44.6	47.6	

C1-14



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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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