

DEADEND & SUSPENSION INSULATORS

for 15-69kV Applications

Experience & Reliability



Warranty—Material

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The Company shall in no event be liable for any loss of profits or any consequential or special damages incurred by Buyer. The Company's warranty shall run only to the first Buyer of a product from the Company, from the Company's distributor, or from an original equipment manufacturer reselling the Company's

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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.

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.

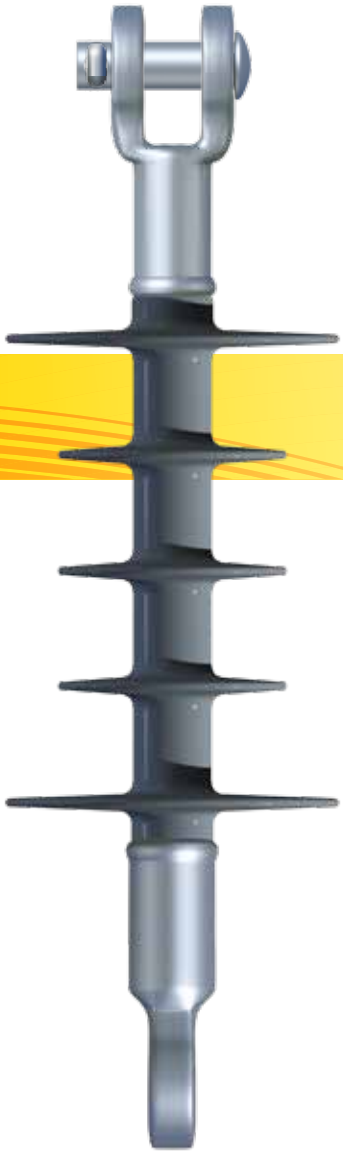


Deadend & Suspension Insulators

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Experience





Hubbell has been leading the way with polymer insulators under the distinguished Ohio Brass name since 1976. Veri*Lite distribution insulators embody the latest in polymer design and manufacturing features.

Our Veri*Lite insulators are backed by thorough testing and research to provide our customers with high performance products. More than 20 million distribution deadend

and suspension insulators have been put into service around the world. Hubbell is dedicated to providing superior products and service to the power industry.



Performance



Distinguished by Design

Porcelain Bell Equivalents — The full line of Veri*Lite suspension and deadend insulators are direct equivalents to 5 ¾ inch x 10 inch and 4 ¼ inch x 6 ¼ inch porcelain bells, respectively. Please refer to the Electrical Characteristics table for the number of bell equivalents, on pages 9 and 11.

DS Class Ratings — The polymer deadend insulator product line has an offering for several DS class ratings, in accordance with ANSI C29.13 and CSA C411.5-10 standards. Please refer to the Electrical Characteristics table on page 9 for the appropriate insulator class rating.

Rod — Veri*Lite Insulators are produced from the highest quality materials. Strands in the fiberglass rod are aligned for maximum tensile strength, and the rod is filled 70 percent, by weight, with electrical grade glass fibers.

End Fittings — Ferrous end fittings are crimped directly to the fiberglass rod by a process originated by Ohio Brass and later adopted by other manufacturers. The crimp requires no intermovement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

Weathersheds — Veri*Lite Insulators are manufactured with ESP™ rubber, the same proven material used in PDV arresters and Hi*Lite Insulators. ESP™ is a polymer compound made by alloying silicone and EPDM rubber. This alloy offers the desired toughness and resistance to tracking of the original EPR, along with the hydrophobic characteristics derived from low molecular weight silicone oils.

Testing You Can Count On... Hubbell's state-of-the-art electrical and mechanical testing facilities are capable of performing ANSI, IEC, CSA, and other industry required tests. Tracking, QUV, corona cutting, salt fog, oxidative stability, and variations of differential thermal analysis are just a sample of tests performed to ensure the quality of our polymer material.

For further information on our polymers, ask your Hubbell Ohio Brass representative for the publication "Polymer Materials for Insulator Weathersheds", EU1264 – H.



Product Performance

Leakage Distance — Veri*Lite Insulators feature high leakage distance for optimum contamination performance.

Cleaning — Washing of the Veri*Lite suspension and dead-end insulators may be required based on the contamination level of the installation location. In the event that washing is required, the procedures outlined in Section IX of the "IEEE GUIDE FOR INSULATOR CLEANING," IEEE STD 957-2005 are generally applicable.

Standards — Veri*Lite suspension and deadend insulators meet the latest ANSI/IEEE-1024, CSA C411.5-10, and IEC-61109 standards. Hubbell's manufacturing facilities have implemented a quality system in accordance with ISO 9001-2008.

Mechanical Ratings — The Specified Mechanical Load (SML) rating for all Veri*Lite suspension and deadend insulators is 15,000 lbs. The Routine Test Load (RTL) rating for these insulators is 50% of the SML rating.

All Veri*Lite suspension and deadend insulators are proof tested to 10,000 lbs in tension prior to shipment from the factory. This test load exceeds the RTL rating of the insulator to ensure the quality of our product.

Markings — Markings for Veri*Lite suspension and deadend insulators are permanently embossed into the end fittings and polymer housing. Markings include SML rating, date of manufacture, DS rating in accordance with ANSI C29.13 and CSA C411.5-10 standards, and Ohio Brass identification.

Packaging — The standard packaging of Veri*Lite suspension and deadend insulators is in boxes stacked on pallets. The quantity per box and pallet vary based on the catalog number. Please refer to the Mechanical characteristics table in this catalog for the standard packing quantities.



Polymer Design Tests

The following must be performed to certify a material for use in production.

Tracking test: Performed on a sample of material inclined at 15° and electrodes positioned 35 mm apart. Samples are sprayed with a conductive solution (400Ωcm) and energized at 10kV. The cycle is repeated every 90 seconds. The sample passes if there is:

1. No carbonization or tracking.
2. No erosion through sample.
3. No leakage current flow at the end of 90 seconds.

The sample must withstand 20,000 test cycles.

Ultraviolet Test: Samples of the rubber must be tested in a QUV tester or equivalent cyclic weatherometer. The samples are exposed to high ultraviolet radiation and high humidity without cracking, checking, or becoming hydrophilic. The sample is judged to have passed this test if it exceeds 8,000 hours of exposure without damage.

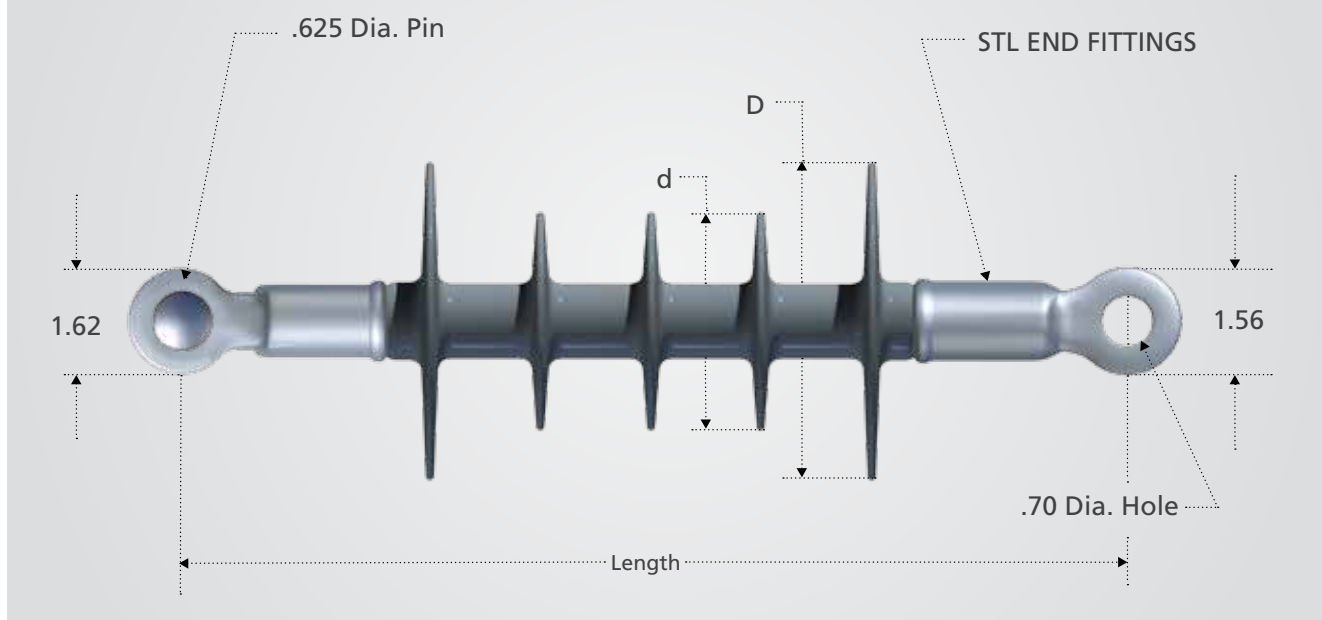
Corona Cutting: Samples 5 cm by 7 cm are subjected to mechanical stress of 300,000 microstrain by bending samples over a grounded electrode. A needle-like electrode is placed 1 mm from the surface of the sample and energized at 12 kV in a controlled humidity chamber. The sample is judged to have passed this test if there is no splitting or cutting during 1,000 hours of exposure to these test conditions.

Oxidative Stability: Samples of the polymer compound are tested using differential scanning calorimetry. Samples are heated rapidly in a nitrogen atmosphere to the test temperature of 200°C. The atmosphere is then changed to air, and the temperature is maintained until the antioxidant is consumed, as measured by an exothermic chemical reaction. The time for this reaction to occur must exceed 300 minutes.

Tear Strength: Rubber test slabs are prepared in accordance with ASTM Standards and are tested to determine tear strength of the material. The minimum acceptable tear strength is 150 lb/in.

PDI Mechanical Characteristics

0.625" (16mm) Diameter Rod Deadend Insulators



Mechanical Characteristics

Catalog Number	No. of Sheds	Length Inches (mm)	Diameter Inches (mm)		Net Wt. pounds (kg)	Standard Package Qty		Torsion ft-lb (N-m)	² SML pounds (kN)	³ RTL pounds (kN)	⁴ Proof pounds (kN)
			D	d		Box	Pallet				
4010150215 ¹	5	12.50 (318)	3.9 (99)	2.7 (69)	2.3 (1.0)	15	540	35 (47)	15,000 (70)	7,500 (35)	10,000 (44.5)
4010280215 ¹	10	17.50 (445)	3.3 (84)	2.4 (61)	2.5 (1.1)	15	360	35 (47)	15,000 (70)	7,500 (35)	10,000 (44.5)
4010250215 ¹	10	18.75 (475)	3.8 (97)	2.8 (71)	2.7 (1.2)	15	360	35 (47)	15,000 (70)	7,500 (35)	10,000 (44.5)
4010350215 ¹	8	25.00 (635)	3.0 (76)		2.8 (1.3)	15	300	35 (47)	15,000 (70)	7,500 (35)	10,000 (44.5)
4010460215	10	23.00 (584)	4.4 (112)	3.0 (76)	2.9 (1.3)	15	300	40 (55)	15,000 (70)	7,500 (35)	10,000 (44.5)

¹RUS Accepted

²SML — Specified Mechanical Load is the tension load that a Veri*Lite insulator can withstand during a 90-second test without failure. SML is comparable to the M&E strength rating of porcelain insulators.

³RTL — A Routine Test Load value is equal to 50% of the SML value.

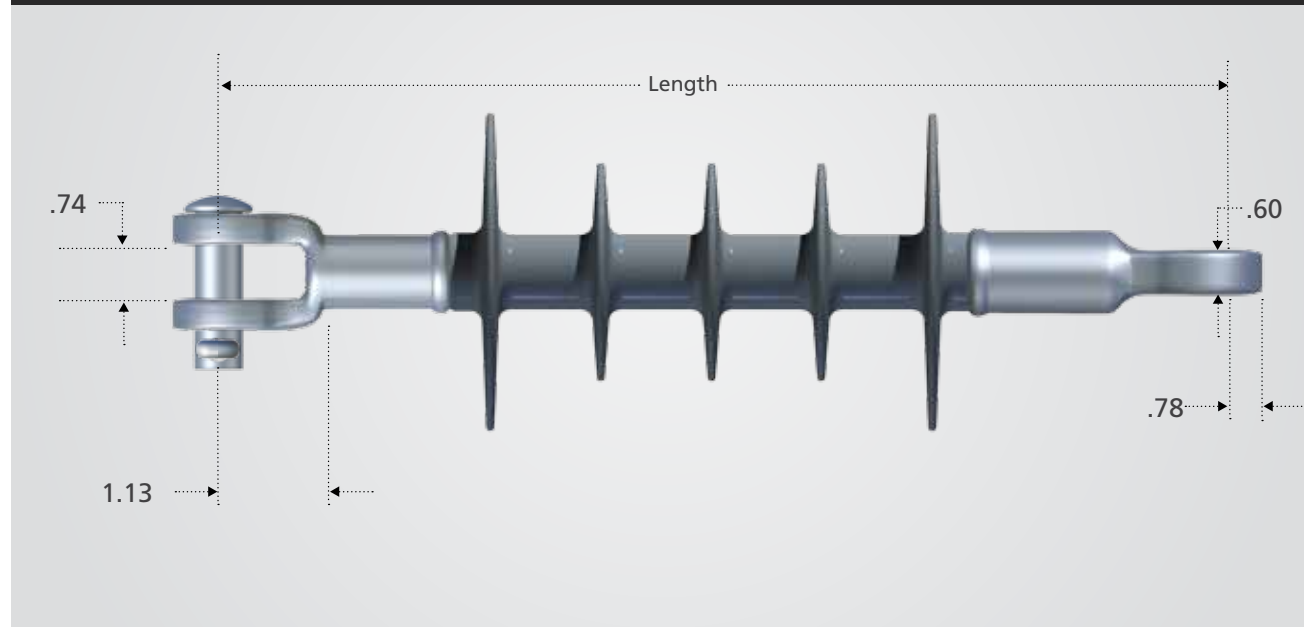
⁴Proof Test — The mechanical tension load applied at the factory to each insulator for ten (10) seconds.

NOTE: PDI Type insulators are intended for applications which are within 75° of horizontal to allow proper shed drainage.



PDI Electrical Characteristics

0.625" (16mm) Diameter Rod Deadend Insulators



Electrical Characteristics

Catalog Numbers	Type	Leakage Distance Inches (mm)	Dry Arc Distance Inches (mm)	Flashover ANSI - kV		Critical Impulse Flashover		RIV		Power Arc kA cycles	SL of # of 4-1/4 Bells	Insulator Class
				Dry-kV	Wet-kV	Pos-kV	Neg-kV	Test kV	Max.			
4010150215	PDI-15	16 (406)	8.1 (205)	100	80	150	170	15	<10	150	2	DS15
4010280215	PDI-28	26 (660)	12.6 (320)	140	120	235	250	20	<10	150	—	DS28
4010250215	PDI-25	31 (787)	14.3 (363)	155	135	270	280	30	<10	150	3	DS35
4010350215	PDI-35	33 (838)	20 (508)	200	160	325	360	30	<10	150	4	—
4010460215	PDI-46	37.6 (955)	19.1 (485)	195	175	360	365	30	365	150	—	DS46

KEY TO THE CATALOG NUMBERS

401 XXXX 215

- 0 = Std. Pin
- 3 = Standard Pin Rotated End-fitting
- 5 = ANSI 52-3 B & S
- 6 = IEC 16mm B & S

Voltage Rating kV

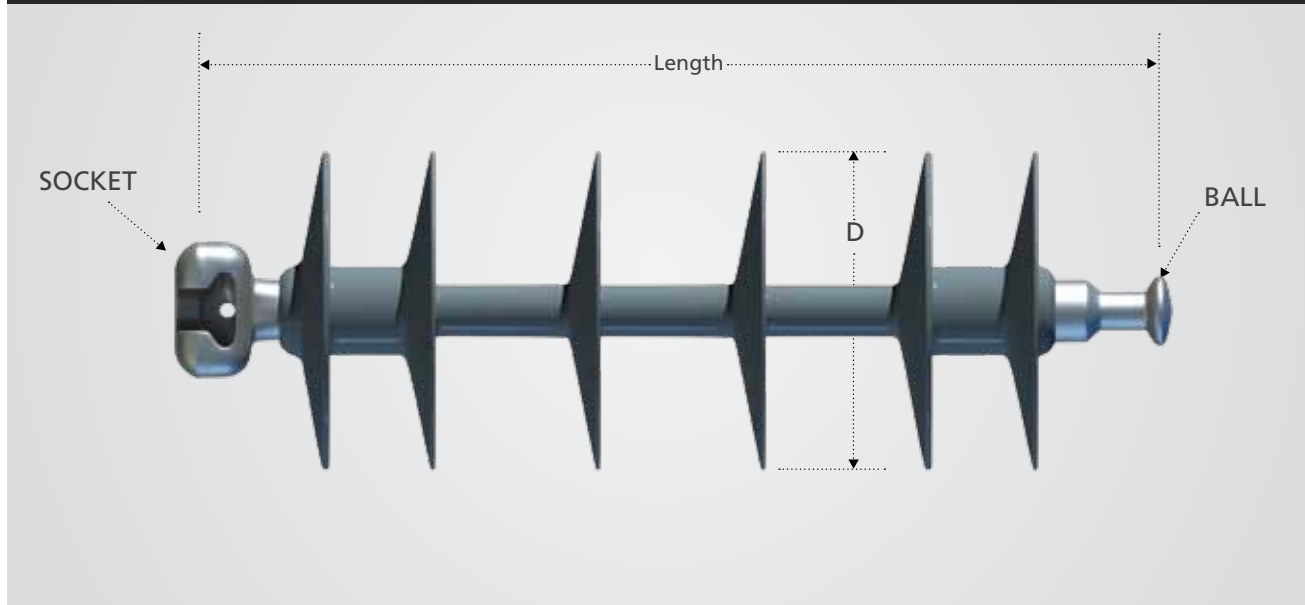
- 0 = Standard Marking
- 6 = LWIWG Marking

SML

Example: Cat. #4013250215 is a Veri*Lite insulator, 25 kV. Rated with standard pin and rotated end-fitting (ferrous) 15,000 lbs. SML, plus standard markings.

VLS Mechanical Characteristics

0.625" (16mm) Diameter Rod Suspension Insulators



Mechanical Characteristics

Catalog Numbers	No. of Sheds	Length Inches (mm)	D Diameter Inches (mm)	Net Wt. pounds (kg)	Standard Package Qty		¹ SML pounds (kN)	² RTL pounds (kN)	³ Proof pounds (kN)
					Carton	Pallet			
4050021301	4	11.5 (292)	5.9 (150)	4 (1.8)	12	96	15,000 (70)	7,500 (35)	10,000 (44.5)
4050029001**	4	12.5 (318)	5.9 (150)	4 (1.8)	12	96	15,000 (70)	7,500 (35)	10,000 (44.5)
4050031301	6	17.25 (438)	5.9 (150)	4 (1.8)	12	96	15,000 (70)	7,500 (35)	10,000 (44.5)
4050041301	8	23 (584)	5.9 (150)	5 (2.3)	12	96	15,000 (70)	7,500 (35)	10,000 (44.5)
4050051301	10	28.75 (730)	5.9 (150)	6 (2.8)	12	48	15,000 (70)	7,500 (35)	10,000 (44.5)
4050061301	12	34.5 (876)	5.9 (150)	7 (3.2)	12	48	15,000 (70)	7,500 (35)	10,000 (44.5)

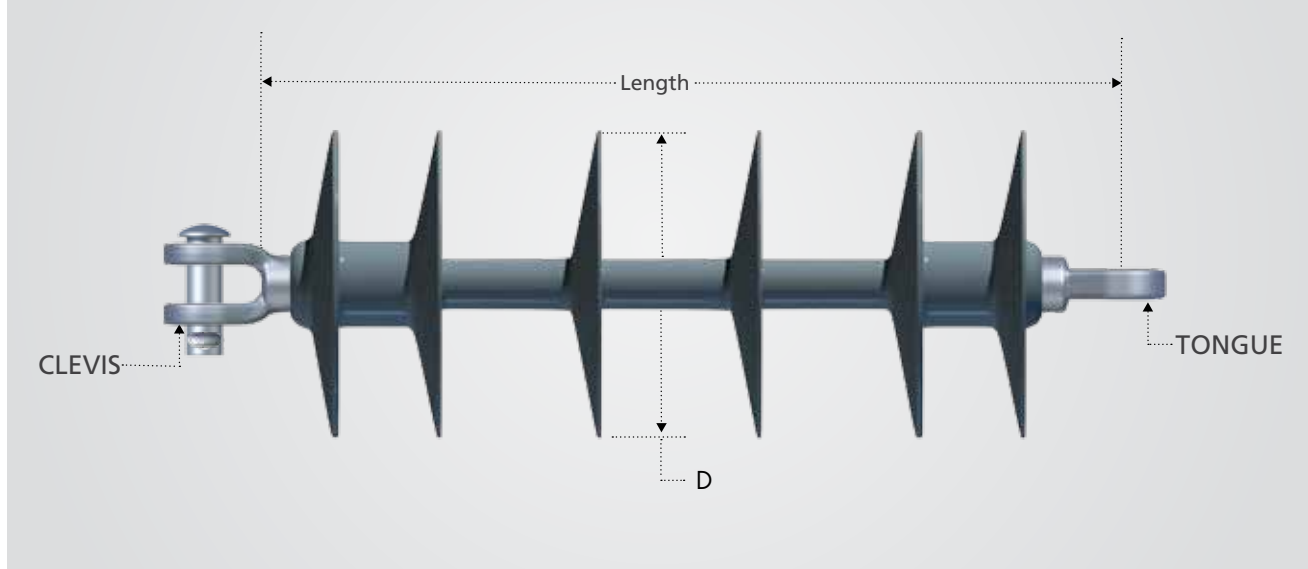
¹**SML** — Specified Mechanical Load is the tension load that a Veri*Lite insulator can withstand during a 90-second test without failure. SML is comparable to the M&E strength rating of porcelain insulators.

²**RTL** — A Routine Test Load value is equal to 50% of the SML value.

³**Proof Test** — The mechanical tension load applied at the factory to each insulator for ten (10) seconds.

VLS Electrical Characteristics

0.625" (16mm) Diameter Rod Suspension Insulators



Electrical Characteristics

Catalog Numbers	Type	Leakage Distance Inches (mm)	Dry Arc Distance Inches (mm)	Flashover ANSI - kV		Critical Impulse Flashover		RIV		Power Arc kA cycles	Equivalent number of 5 3/4" X 10" Bells	Volt*/ Class
				Dry-kV	Wet-kV	Pos-kV	Neg-kV	Test kV	Max. μ V			
4050021301	VLS-2	23 (584)	11.75 (298)	135	110	225	255	21	<10	150	2	15/25
4050029001**	VLS-2	23 (584)	11.75 (298)	135	110	225	255	21	<10	150	2**	15/25
4050031301	VLS-3	39 (991)	18 (457)	190	140	320	330	32	<10	150	3	35/46
4050041301	VLS-4	54 (1372)	23.7 (602)	255	190	420	435	48	<10	150	4	46/69
4050051301	VLS-5	69 (1753)	29.5 (749)	315	245	500	510	48	<10	150	5	69
4050061301	VLS-6	84 (2134)	35.2 (894)	370	305	610	580	48	<10	150	6	69

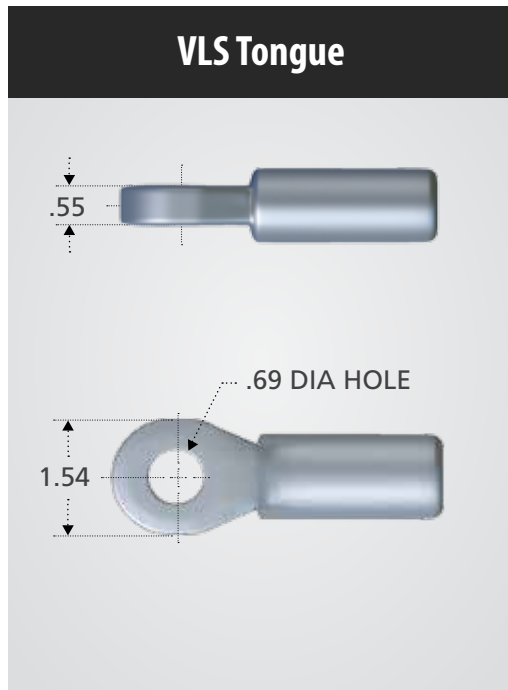
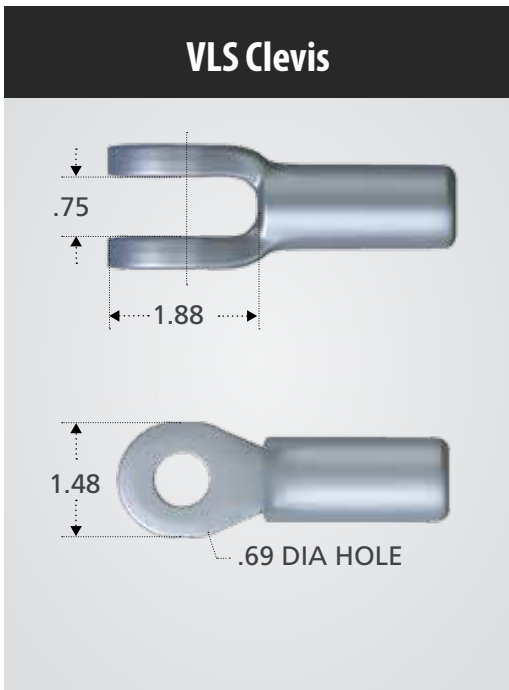
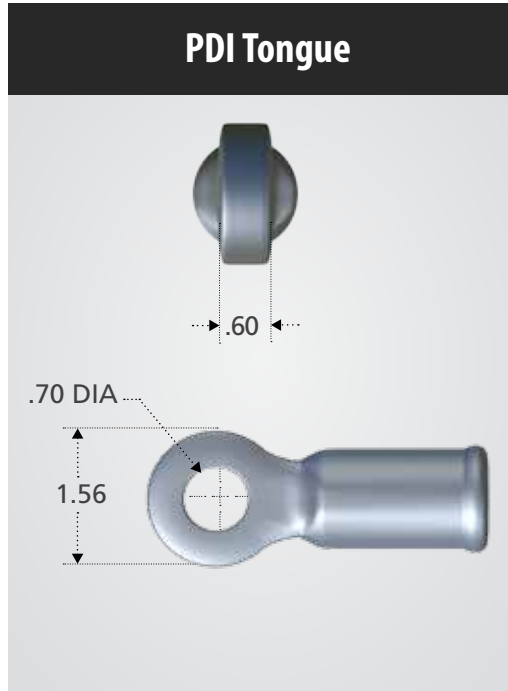
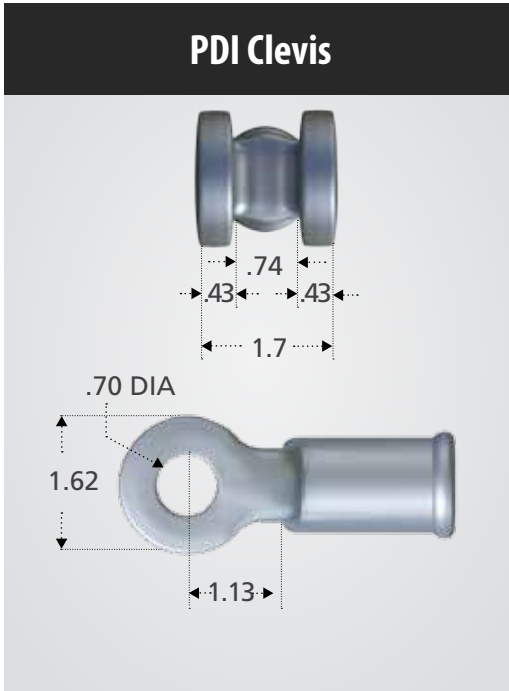
* Phase-to-Phase voltage.

** Replaces two 10" x 6-1/4" distribution deadend bells.

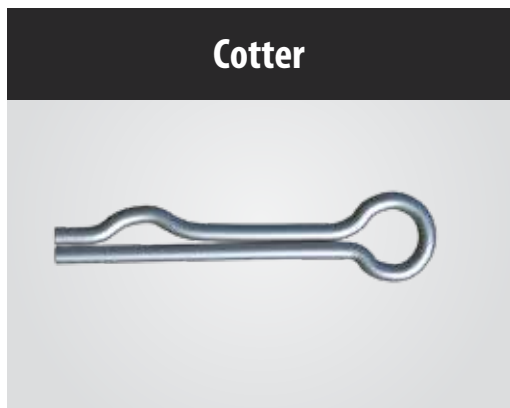
VLS insulators are available with ANSI and IEC ball/socket end fittings and also with clevis/tongue end fittings. Please use the following 4-digit suffix codes after the first 6-digits of the catalog number.

Suffix Code	Tower-end	Line-end
1301	ANSI 52-3 Socket	ANSI 52-3 Ball
1400	ANSI 52-6 Clevis	ANSI 52-6 Tongue
2A07	IEC 16 mm Socket	IEC 16 mm Ball

End Fitting Details (Inches)



End Fitting Details (Inches)







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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Printed in USA

RGS 10M

Veri*Lite™

Silicone Rubber Line Post Insulators for 15-69kV Applications



Warranty - Material

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Warranty - Application

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Veri*Lite Insulators embody the latest features available in polymer insulator design and manufacture.

Ohio Brass began its efforts in polymer research in the early 1900s. After years of production and research with polymeric compounds in the high voltage insulation field, Ohio Brass introduced the Hi*Lite insulator in 1976. A decade later the Ohio Brass polymer distribution arrester, PDV-100, was introduced as the first U.S. made polymer-housed MOV arrester.

Today's Veri*Lite post insulators build upon the experience of placing nearly 20 million polymer distribution arresters, 17 million polymer deadend distribution insulators and 2 million high voltage transmission insulators in service. Ohio Brass is dedicated to providing a quality product for the electric utility industry.

Design

The structural design of the Veri*Lite insulator consists of three basic parts:

Rod - Veri*Lite insulator fiberglass rod is produced from the highest quality materials. Strands are aligned for maximum tensile strength. The rod is filled 65 percent, by volume, with electrical grade glass fibers.

End Fittings - Ferrous end fittings are directly crimped to the fiberglass rod by a circumferential crimping process originated by Ohio Brass. The crimp requires no intermovement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

Weathersheds - Veri*Lite insulators are manufactured with OB's proprietary silicone rubber.

Ohio Brass uses several tests to evaluate materials. Tracking, QUV, corona cutting, salt fog, oxidative stability and variations of differential thermal analysis tests assure the quality of OB's shed material.

Leakage Distance

Veri*Lite insulators feature high leakage distance for optimum contamination performance.

Washability

The Veri*Lite insulators listed in this catalog are suitable for washing by all known methods in current use. Washing tests have been conducted with high-pressure equipment at close nozzle-to-insulator distances. No water intrusion occurred after multiple washings.

Standards

Veri*Lite line post insulators meet ANSI C29.18-2003 and CEA LWIWG-02-1996 standards.

The Ohio Brass facility in Aiken, SC, USA is registered for successful implementation of a quality system in accordance with ISO 9001-2000.

Mechanical Ratings

Specified Cantilever Load (SCL) is the ultimate cantilever strength rating. Maximum Design Cantilever Load (MDCL) or Working Cantilever Load (WCL) is the maximum continuous cantilever load at which the post insulator should be applied.

Markings

Markings are 0.12 inch high raised letters in the rubber and include: Base catalog number, CEA LWIWG Class, SCL in pounds, MDCL/WCL in kN and date code. Ohio Brass identification is cast into the end fittings.

Equivalency

Equivalency of line post insulators involves a check of the general characteristics.

MECHANICAL

Compare the SCL of the polymer insulator to the cantilever strength rating of the porcelain insulator.

ELECTRICAL

Compare porcelain to Veri*Lite leakage distance.
Compare porcelain to Veri*Lite section length.

Insulation Coordination

The operating performance of a distribution or transmission line depends on its insulation level. It must not flash over under practically any operating condition.

Several methods of coordination of line and station insulation have been proposed. Generally, the best method is to establish a definite common insulation level for all the station insulation and then match that level with the line insulation. With this approach, the task is limited to three fundamental requirements:

1. Selection of the Basic Impulse Insulation Level (BIL).
2. Specification of insulation with flashover characteristics equal to or greater than the selected BIL.
3. The application of suitable overvoltage surge protection.

Satisfactory performance is generally achieved with an insulator which has a dry 60 Hz flashover of three to five times the phase-to-ground voltage and a leakage distance approximately twice the shortest air-gap (strike) distance.

Packaging

Veri*Lite insulator standard packing is cartons on pallets. Larger orders for Veri*Lite posts may be shipped in wood crates.

Sample Polymer Specification

Purpose: To ensure a suitable service life of polymer insulating materials.

I. Material Design Tests

- The following must be performed to certify a material for use in production.

1. Tracking test: Performed on a sample of material inclined at 30° and electrodes positioned 35 mm apart. Samples are sprayed with a conductive solution (400 Ωcm) and energized at 10 kV. The cycle is repeated every 90 seconds. The sample passes if there is:

1. No carbonization or tracking.
2. No erosion through sample.
3. No leakage current flow at the end of 90 seconds.

The sample must withstand 20,000 test cycles.

2. Ultraviolet Test: Samples of the rubber must be tested in a QUV tester or equivalent cyclic weatherometer. The samples are exposed to high ultraviolet radiation and high humidity without cracking, checking or becoming hydrophilic.

The sample is judged to have passed this test if it exceeds 8,000 hours of exposure without damage.

3. Corona Cutting: Samples 5 cm by 7 cm are subjected to mechanical stress of 300,000 microstrain by bending samples around a grounded electrode. A needle-like electrode is placed 1 mm from the surface of the sample and energized at 12 kV in a controlled humidity chamber.

The sample is judged to have passed this test if there is no splitting or cutting. Samples must pass 1,000 hours of exposure to this test.

4. Oxidative Stability: Samples of the polymer compound are tested using differential scanning calorimetry. Samples are heated rapidly in a nitrogen atmosphere to the test temperature of 200°C. The atmosphere is then changed to oxygen and the temperature is maintained until the antioxidant is consumed, as measured by an exothermic chemical reaction. The time for this reaction to occur must exceed 400 minutes.

5. Tear Strength: Rubber test slabs are prepared in accordance with ASTM Standards and are tested to determine tear strength of the material. The acceptable nominal tear strength, per ASTM method B, is 100 lb./in.

II. Other Requirements

- The manufacturer must supply upon request a listing of routine tests performed to ensure production compliance with design tests.

kV	Post Style	Line	Base	Catalog Number	ANSI C29.18 Class	CEA LWIWG-02 Class	"X" Dimension Inches (mm)	Line & Gnd End Shed Dia. Inches (mm)	Intermediate Shed Quantity	Intermediate Shed Dia. Inches (mm)	Dry Arc Distance Inches (mm)
15	Horz	Clamptop	Gain	80S015-0100	51-31	LP 15	12.5 (318)	4.8 (121)	0		7.4 (188)
	Horz	Clamptop	3/4-10 Tap	80S015-0109	51-21		13.3 (339)				
	Vert	Clamptop	3/4-10 Tap	80S015-0209	51-11		12.8 (324)				
	Vert	F-Neck	3/4-10 Tap	80S015-0F09	51-1F		12.4 (315)				
25	Horz	Clamptop	Gain	80S025-0100	51-32	LP 25	14.3 (362)	5.2 (132)	2	3.8 (96)	9.6 (244)
	Horz	Clamptop	3/4-10 Tap	80S025-0109	51-22		15.1 (383)				
	Vert	Clamptop	3/4-10 Tap	80S025-0209	51-12		14.5 (368)				
	Vert	F-Neck	3/4-10 Tap	80S025-0F09	51-2F		14.2 (360)				
35	Horz	Clamptop	Gain	80S028-0100	51-33	LP 28M	16.5 (420)	5.1 (130)	4	4.6 (117)	11.7 (297)
	Horz	Clamptop	3/4-10 Tap	80S028-0109	51-23		17.4 (441)				
	Vert	Clamptop	3/4-10 Tap	80S028-0209	51-13		16.8 (425)				
	Vert	F-Neck	3/4-10 Tap	80S028-0F09	51-3F		16.5 (418)				
46	Horz	Blade	Gain	80S046-0000	--	LP 46	19.2 (488)	7.1 (179)	6	4.4 (112)	14.4 (390)
	Horz	Blade	3/4-10 Tap	80S046-0009	--		20.0 (508)				
	Horz	Clamptop	Gain	80S046-0100	51-34		19.0 (482)				
	Horz	Clamptop	3/4-10 Tap	80S046-0109	51-24		19.8 (504)				
	Vert	Clamptop	3/4-10 Tap	80S046-0209	51-14		20.1 (510)				
	Vert	F-Neck	3/4-10 Tap	80S046-0F09	51-4F		19.5 (495)				
69	Horz	Blade	Gain	80S069-0000	--	LP 69M	25.8 (656)	7.5 (190)	8	5.2 (132)	22.3 (566)
	Horz	Blade	3/4-10 Tap	80S069-0009	--		26.6 (676)				
	Horz	Clamptop	Gain	80S069-0100	51-36		25.6 (650)				
	Horz	Clamptop	3/4-10 Tap	80S069-0109	51-26		26.5 (672)				
	Vert	Clamptop	3/4-10 Tap	80S069-0209	51-16		26.8 (680)				
	Vert	F-Neck	3/4-10 Tap	80S069-0F09	--		26.1 (663)				

CATALOG NUMBER KEY Veri*Lite Line Post Insulators - Silicone

8 0 S 0 6 9 0 2 0 9

Polymer Type	
80S	Veri*Lite - SR Polymer

Hardware Finish	
0	Standard

Rating	
15	15kV (1.5" rod)
25	25kV (1.5" rod)
28	35kV (1.5" rod)
46	46kV (1.75" rod)
69	69kV (1.75" rod)

*Teardrop Blade only available for 46-69kV

Bottom End Fitting	
00	Gain Base - Transverse
09	3/4" Stud Base
10	7/8" Stud Base

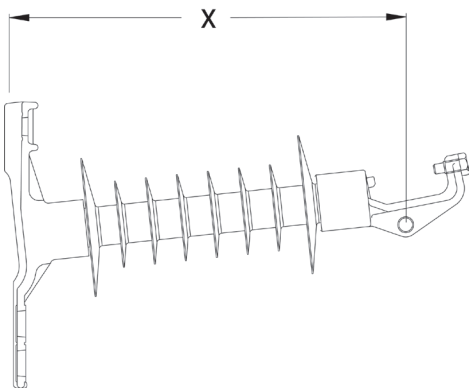
Top End Fitting	
0	Teardrop Blade*
1	Horizontal Clamptop
2	Vertical Clamptop
5	5" B.C. Through
6	Horizontal Clamptop (longer pintle bolt)
A	Vertical Clamptop (longer pintle bolt)

Dimensioning	
0	ANSI C29.18 Quality Conformance Tests
6	LWIWG - 02 Sample Tests
9	Special

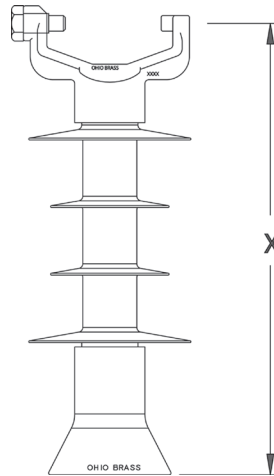
Leakage Distance Inches (mm)	60 Hz (Low Frequency) Flashover		Impulse Critical Flashover Pos. kV	Impulse Positive Withstand kV	SCL pounds (kN)	MDCL/ WCL pounds (kN)	Net Weight pounds (kg)	Standard Package Quantity			kV
	Dry-kV	Wet-kV						Carton	Pallet	Max/Crate	
11.0 (279)	90	70	150	140	2800 (12.5)	1235 (5.5)	9.8 (4.5)	3	36	--	15
							6.9 (3.1)				
							6.5 (2.9)				
							6.6 (3.0)				
17.3 (439)	110	75	185	170	2800 (12.5)	1235 (5.5)	10.3 (4.7)	3	36	--	25
							7.3 (3.3)				
							7.0 (3.2)				
							7.1 (3.2)				
26.1 (662)	135	100	215	200	2800 (12.5)	1235 (5.5)	11.2 (5.1)	3	36	--	35
							8.2 (3.7)				
							7.8 (3.5)				
							8.0 (3.6)				
34.3 (872)	170	125	260	235	2800 (12.5)	1235 (5.5)	19.7 (8.9)	--	--	14/21/28/35	46
							14.6 (6.6)			70	
							18.6 (8.4)			14/21/28/35	
							13.5 (6.1)			70	
							14.1 (6.4)			70	
58.2 (1478)	230	180	360	330	2470 (11.0)	1235 (5.5)	22.1 (10.0)	--	--	14/21/28/35	69
							16.9 (7.7)			35	
							21.0 (9.5)			14/21/28/35	
							15.9 (7.2)			35	
							16.5 (7.5)			35	
							12.0 (5.4)			35	

NOTES:

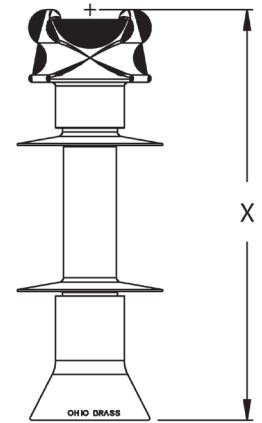
1. Maximum Design Tension for Clamptop is 2500 pounds (11 kN)
2. 15, 25 & 28 kV Units use 1.5 inch (38 mm) Diameter Rod
3. 46 & 69 kV Units use 1.75 inch (44 mm) Diameter Rod



**Horizontal Clamptop & Gain Base
(0100)**



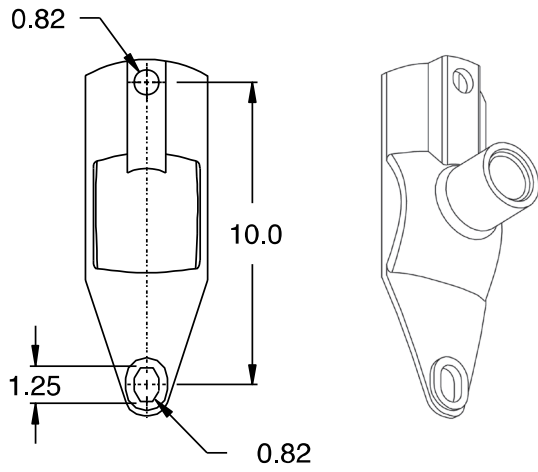
**Vertical Clamptop & Stud Base
(0209 & 0210)**



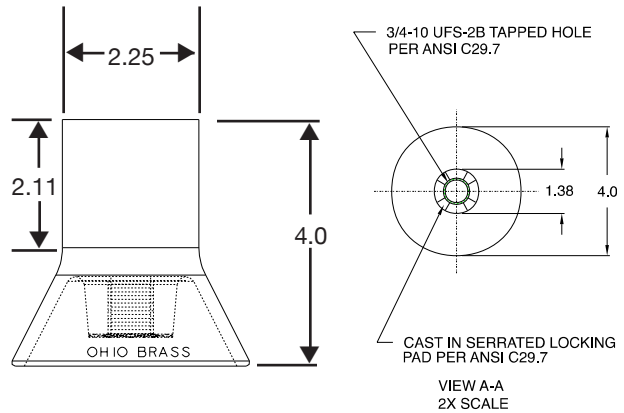
**F-Neck & Stud Base
(0F09 & 0F10)**

Post Base & Line Fittings

Post Base Fittings Dimensions (in inches)

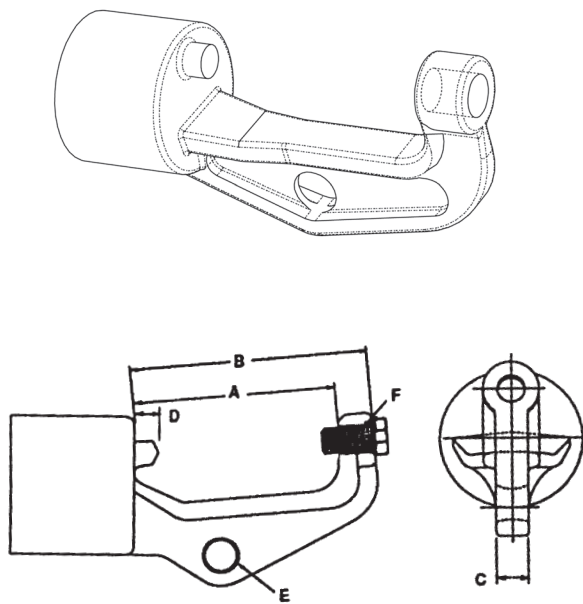


15, 25 & 35 kV
Horizontal Gain Base

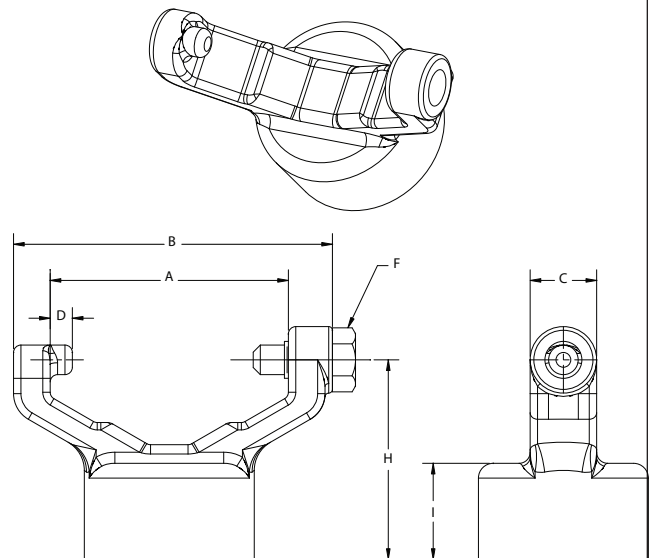


15, 25 & 35 kV
Stud Base

Post Line Fittings Dimensions (in inches)



15-69 kV
Horizontal Clamptop Cap

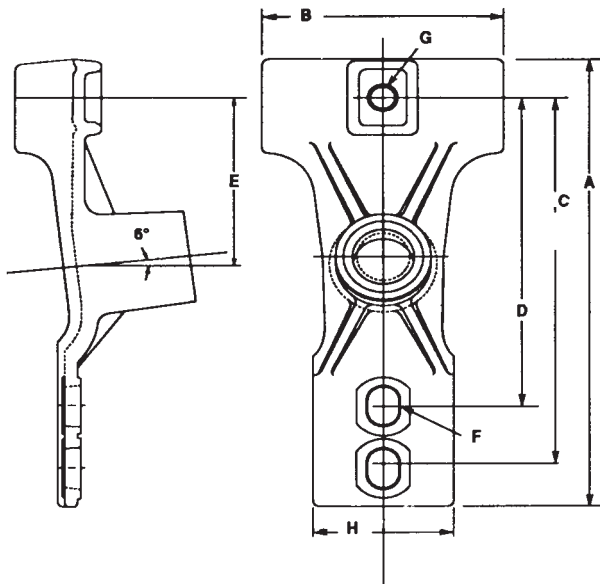


15-69 kV
Vertical Clamptop Cap

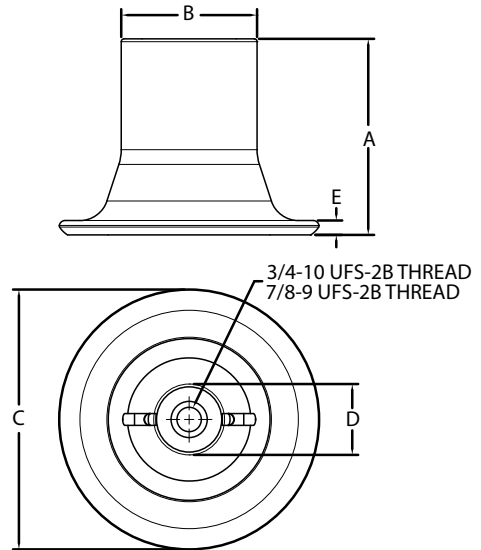
Line Post Line Fittings Dimensions (in inches)

Type	A	B	C	D	E	F	H	I	Material
H. Clamptop Cap	4.00	4.75	0.62	0.38	0.69	5/8-11 UFS-2B	-	-	60-40-18 DI
V. Clamptop Cap	4.00	5.38	1.12	0.38	-	5/8-11 UFS-2B	3.38	1.63	60-40-18 DI

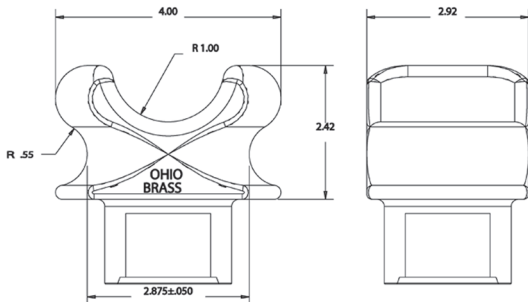
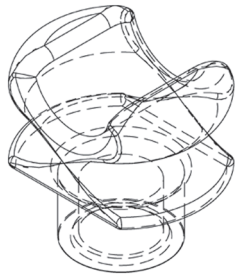
Post Base & Line Fittings



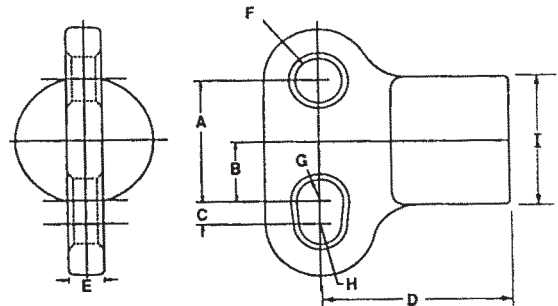
46 & 69 kV Horizontal Gain Base



46 & 69 kV Stud Base



15-69 kV F-Neck Cap



46 & 69 kV Two Hole Blade

Line Post Base Fittings Dimensions (in inches)

Type	A	B	C	D	E	F	G	H	Material
H. Gain Base	14.50	7.00	12.00	10.00	6.75	1.25 x 0.88	0.88	4.00	60-40-18 DI
Stud Base	4.22	2.875	5.50	1.50	0.50	3/4-10 UFS-2B or 7/8-9 UFS-2B	-	-	60-40-18 DI
Two Hole Blade	2.75	1.38	0.50	4.00	0.75	1.00 Dia.	0.50 R	0.44 R	60-40-18 DI

Application Curves for Veri*Lite Insulators

How to use the application curves. After you have established the loading cases, you can use the curves to determine whether a specific Veri*Lite unit meets your loading requirement.

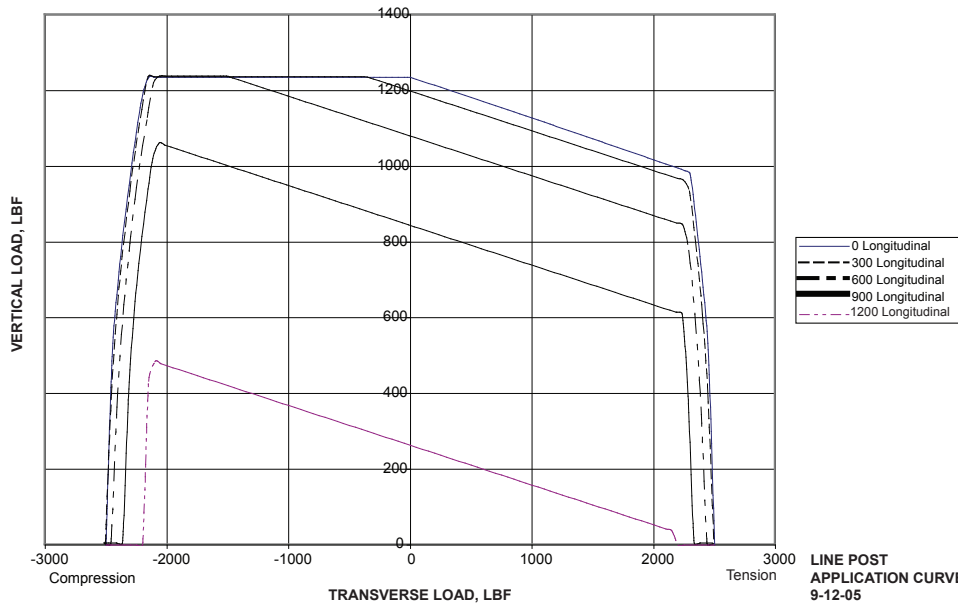
For example, consider the installation of a Veri*Lite post number 80S025-0100 on a line with a vertical cantilever load of 800 pounds and a compression load of 900 pounds. By entering the curve at these

values, find the allowable longitudinal load to be 900 pounds.

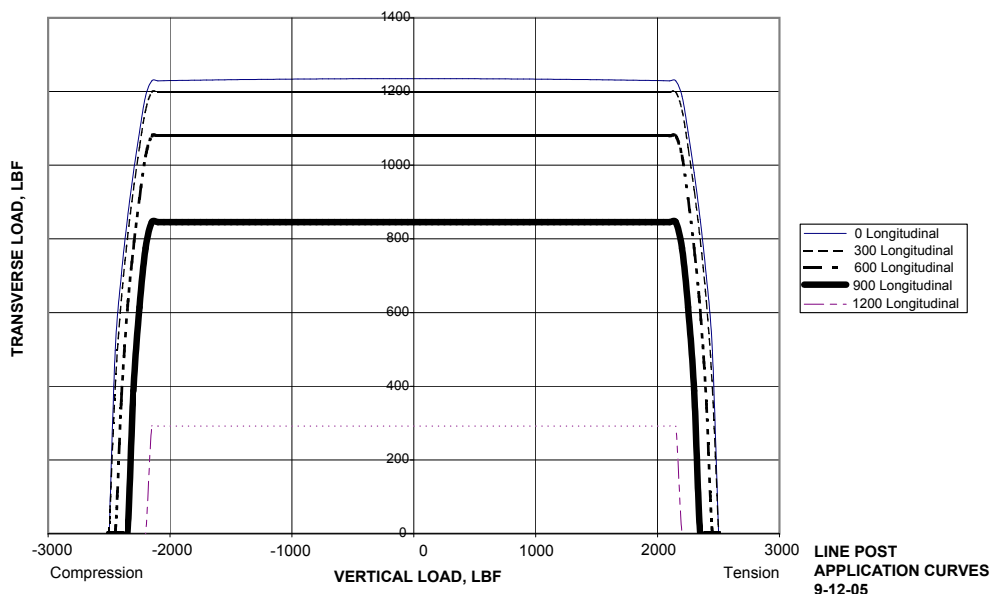
When the posts are loaded in tension the cantilever loading due to the combined effects of longitudinal, vertical and tensile loads should not exceed the rated tension working value.

IMPORTANT: The application curves should not be extrapolated.

80S015, 80S025 & 80S028 HORIZONTAL STYLE



80S015, 80S025 & 80S028 VERTICAL STYLE



Maximum deflection for any of the post styles is approximately 1.75" at SCL.
Curves are shown using a 2.0 safety margin to SCL

Application Curves for Veri*Lite Insulators

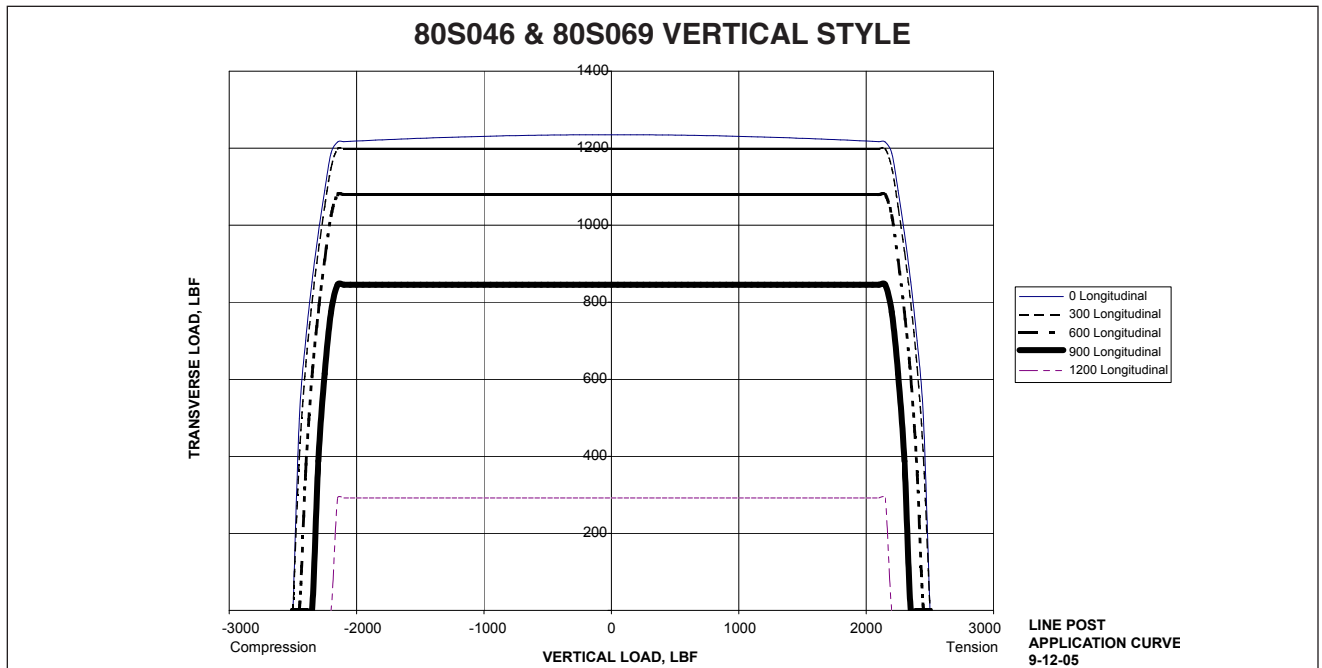
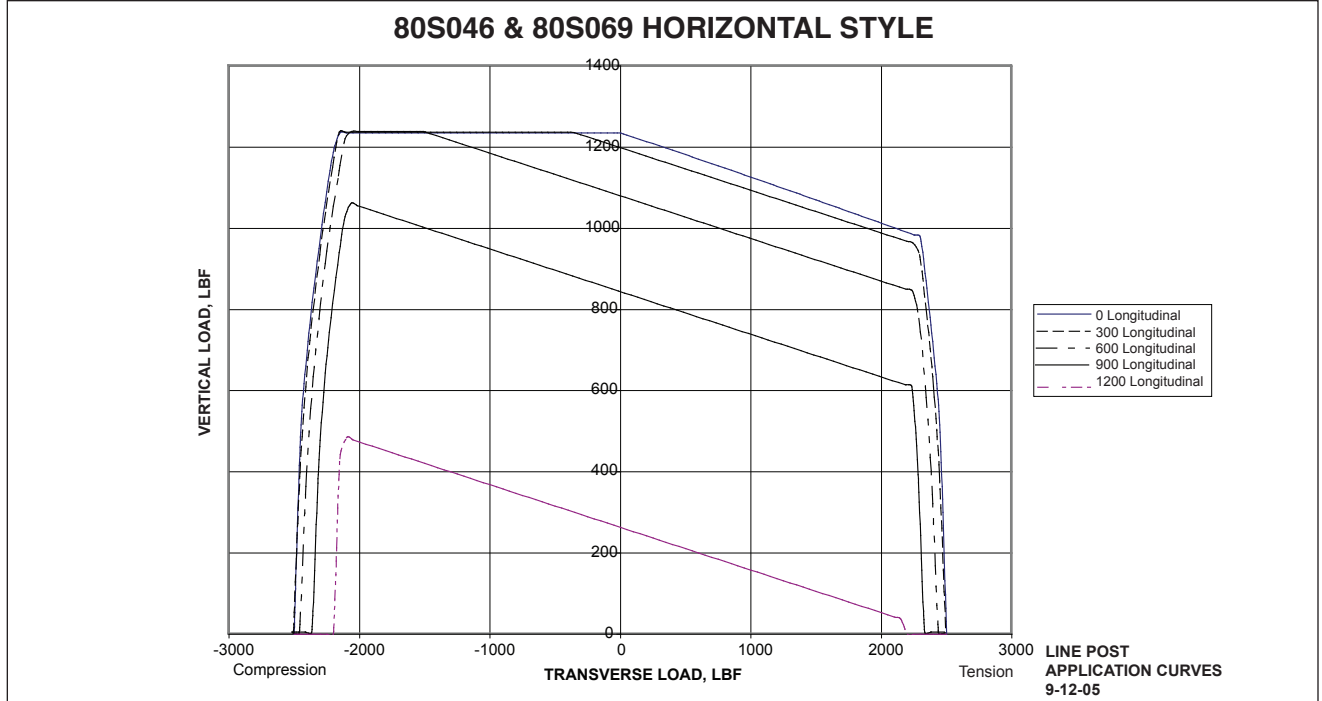
How to use the application curves. After you have established the loading cases, you can use the curves to determine whether a specific Veri*Lite unit meets your loading requirement.

For example, consider the installation of a Veri*Lite post number 80S069-0100 on a line with a vertical cantilever load of 800 pounds and a compression load of 900 pounds. By entering the curve at these

values, find the allowable longitudinal load to be 900 pounds.

When the posts are loaded in tension the cantilever loading due to the combined effects of longitudinal, vertical and tensile loads should not exceed the rated tension working value.

IMPORTANT: The application curves should not be extrapolated.

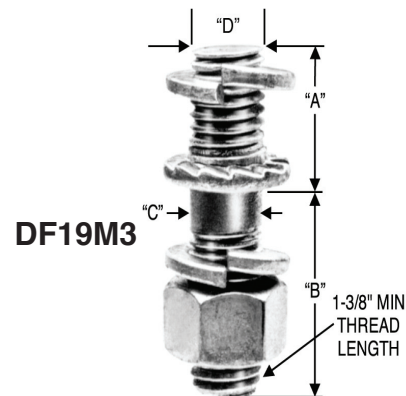


Maximum deflection for any of the post styles is approximately 1.75" at SCL.
Curves are shown using a 2.0 safety margin to SCL.

Line Post Insulator Studs

DF19M Series

Serrated collar and lockwasher secure unit to line post insulator and prevent accidental disassembly. Cut threads above serrated collar, rolled threads below collar.

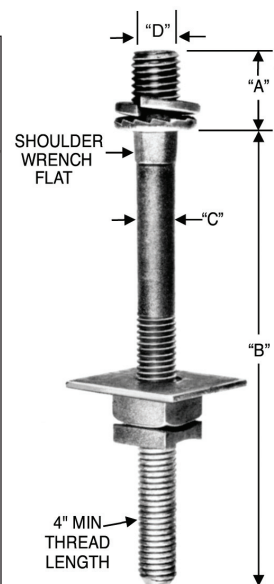


For Steel Crossarms

Catalog No.	Dimensions (in.)				Hardware Included	Standard Package	Weight 100 Pcs.
	"A"	"B"	"C"	"D"			
DF19M1	1-1/8	1-3/4	5/8	3/4	(1) reg. hexnut and (2) spring lockwashers	100 pcs.	43 lbs.
DF19M3	1-1/8	1-3/4	3/4	3/4	(1) reg. hexnut and (2) spring lockwashers	100 pcs.	54 lbs.
875833001	1-3/8	2	7/8	7/8	(1) reg. hexnut and (2) spring lockwashers	100 pcs.	85 lbs.

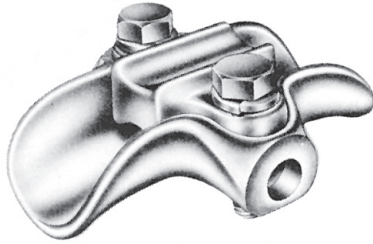
For Wood Crossarms

Catalog No.	Dimensions (in.)				Hardware Included	Std. Pkg.	Weight 100 Pcs.
	"A"	"B"	"C"	"D"			
DF19M2	1-1/8	7	5/8	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	50 pcs.	102 lbs.
DF19M4	1-1/8	7	3/4	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	40 pcs.	140 lbs.
DF19M19	1-1/8	10	5/8	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	25 pcs.	176 lbs.
DF19M20	1-1/8	12	5/8	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	25 pcs.	192 lbs.
*DF19M29	1-1/8	14	3/4	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	20 pcs.	234 lbs.
*DF19M32	1-1/8	24	3/4	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	15 pcs.	342 lbs.
875843001	1-3/8	8	7/8	7/8	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	50 pcs.	277 lbs.



*DF19M29 and DF19M32 include (1) additional double coil lockwasher.

Suspension Trunnion Bolted Aluminum Clamptop Clamps

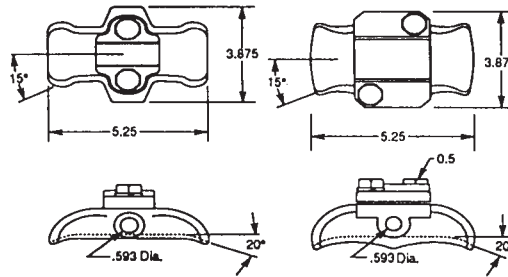


For standard voltage applications with all aluminum, ACSR or aluminum alloy conductor.

Designed for use on tangent suspension spans with horizontal or vertical post insulators.

Keeper is reversible for proper fit on different size conductors.

Material: Body and Keeper—356-T6 aluminum alloy
 Hardware—Galvanized steel
 Anti-static spring 302 stainless steel



Catalog Number	Former Catalog Number	Fig. No.	Clamping Range Inches (mm)	Ultimate Body Strength Lbs. (kN)	Dimensions Inches (mm)			Approx. Wt. Each Lbs. (kg)
					L	W	J	
TSC57	270660-3002	1	.25-.57 (6.3-14.4)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.42 (.19)
TSC86		1	.35-.86 (8.8-21.8)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.45 (.20)
TSC106	270661-3002	1	.50-1.06 (12.7-26.9)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.62 (.28)
TSC150	270662-3002	1	1.00-1.50 (25.4-38.1)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.64 (.29)
TSC200	270663-3002	2	1.50-2.00 (38.1-50.8)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.75 (.34)

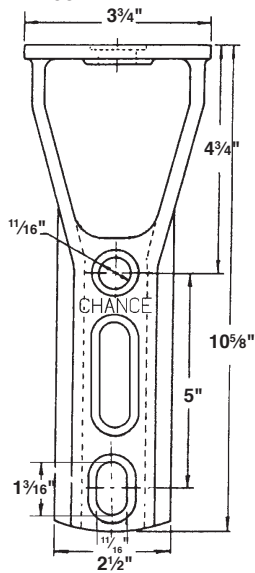
- NOTES:
- (1) Recommended torque on bolts; 1/2" — 480 in. lbs.
 - (2) Anti-static spring can be supplied by adding "ARIV" to catalog number. Example, TSC57ARIV.
 - (3) Clamptop clamps can be mounted directly on Veri*Lite posts, if the posts are ordered with the horizontal or vertical clamptop option.

Bracket, Pole Top Insulator

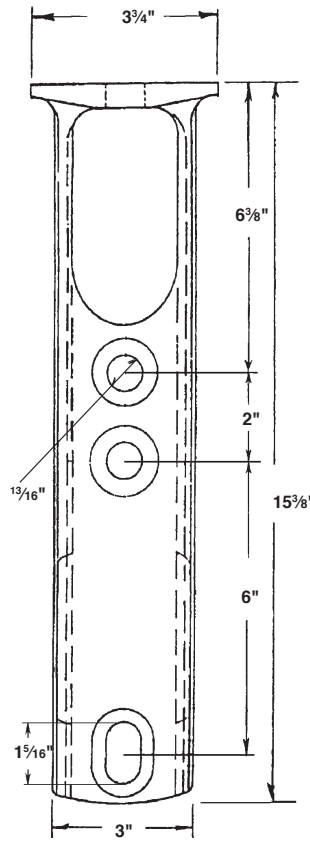
Mounts post or pin type insulator to top of pole. Variety of bolt hole locations for mounting to pole.

Catalog No.	Mounting Bolt Dia.	Insulator Bolt Dia.	Mtg. Bolt Spacing	Dist. From Insul. Base To Top Hole	Approx. Ship. Wt. Lbs. Per 100 Pcs.
IB2	5/8"	5/8" or 3/4"	4 3/4"	4 3/4"	360
IB3	3/4"	5/8" or 3/4"	5" or 8"	6 3/8"	600
†IB4	5/8"	5/8" or 3/4"	5" or 8"	5"	600
75114	3/4"	5/8" or 3/4"	6" or 8"	6"	1000

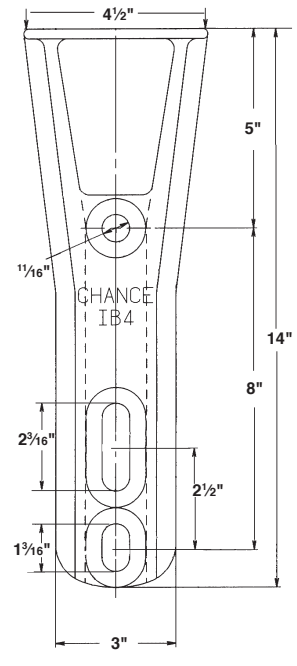
Ductile iron per ASTM A-536
 Hot dipped galvanized per ASTM A-153
 † RUS Listed



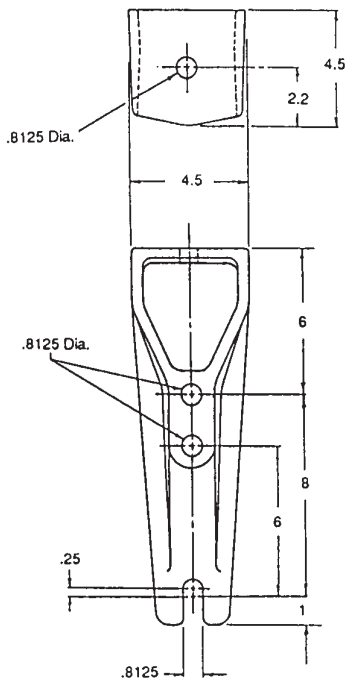
IB2



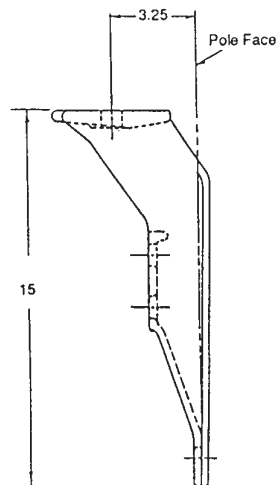
IB3



IB4



75114

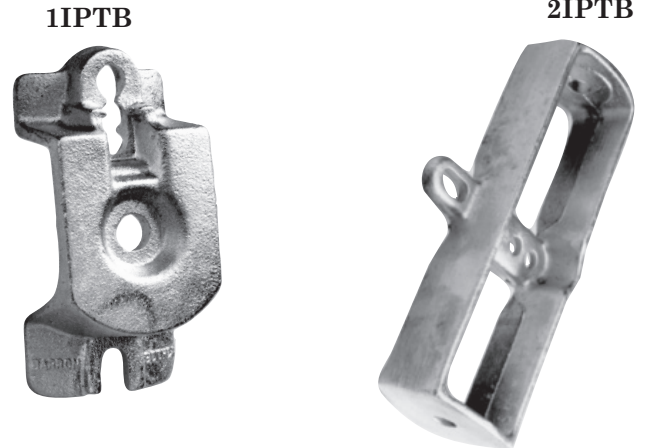


Bracket, Horizontal Insulator

Use for mounting one or two insulator(s) to pole for armless construction.

Catalog No.	Mtg. Bolt Dia.	Max. Insul. Bolt Dia.	Mtg. Bolt Spacing	Insul. Angle Dim.	Space Between Insul. Bases	Approx. Ship. Wt.Lbs. Per 100 Pcs.
1IPTB	Two 5/8"	3/4"	5", 6"	5°	—	333
2IPTB	Two 5/8"	3/4"	4", 5"	—	14"	1025

Ductile iron per ASTM A-536
Hot dipped galvanized per ASTM A-153



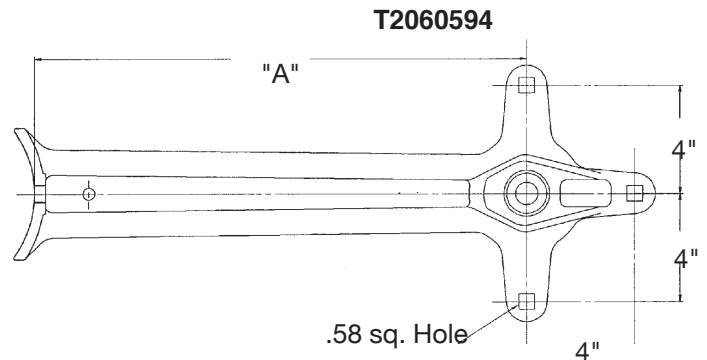
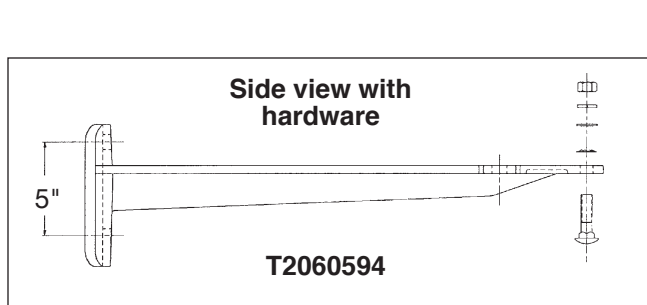
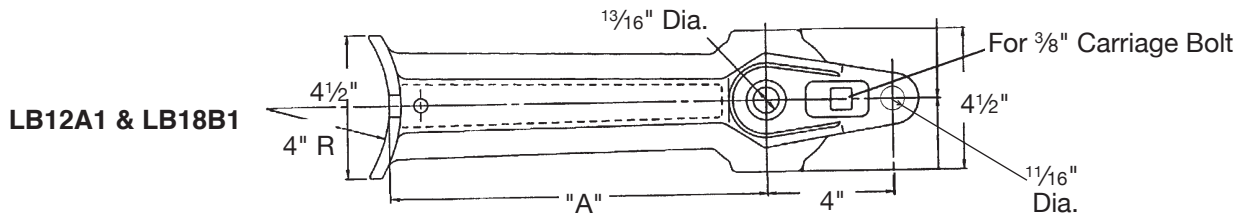
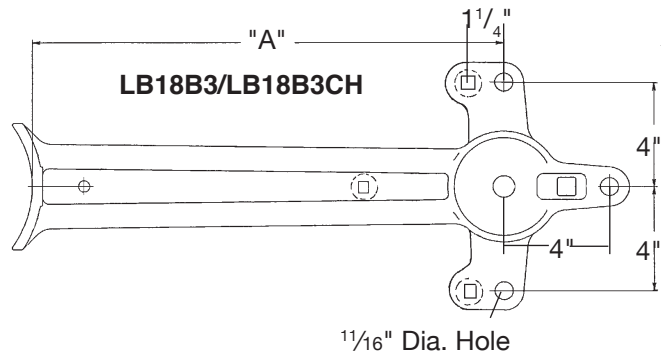
Bracket, Vertical Insulator

Use for mounting pin or post vertical insulators, cutouts, arresters, or cable terminators. Three-hole style can be used for in-line deadending using suspension insulators.

Catalog No.	Max. Insul. Mtg. Bolt Dia.	Max. Equip. Mtg. Bolt Dia.	Pole Mtg. Bolt Dia.	Pole Mtg. Bolt Spacing	Clearance Pole To Insul. Bolt "A"	Approx. Ship. Wt.Lbs. Per 100 Pcs.
LB12A1	3/4"	5/8"	Two 5/8"	5"	12"	860
LB18B1	3/4"	5/8"	Two 5/8"	5"	18"	1300
LB18B3	3/4"	5/8"	Two 5/8"	5"	18"	1400
*T2060594	3/4"	1/2"	Two 5/8"	5"	12"	86
**LB18B3CH	3/4"	5/8"	Two 5/8"	5"	18"	1400

Ductile iron per ASTM A-536
Hot dipped galvanized per ASTM A-153

- * T206-0594 has 3 captive 1/2" x 2" bolts and nuts included
- ** LB18B3CH has 2 captive 1/2" x 2" bolts and nuts included with LB18B3.



Bracket, Pole Top Insulator

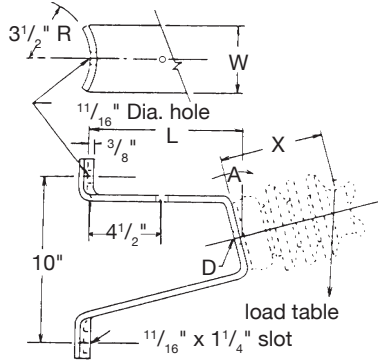


BRACKET, ANGLE CROSSARM

Mounts post insulators at 30° angle on crossarm for use on running corners.

Catalog No.	Crossarm Size	Mtg. Bolt Diameter	Stud Bolt Diameter	Approx. Ship Wt. Lbs. Per 100 Pcs.
1XAB	3 ³ / ₄ " x 4 ³ / ₄ " Max. and Round Crossarms	3/4"	3/4"	610

Ductile iron per ASTM A-536
Hot dipped galvanized per ASTM A-153



C2060009

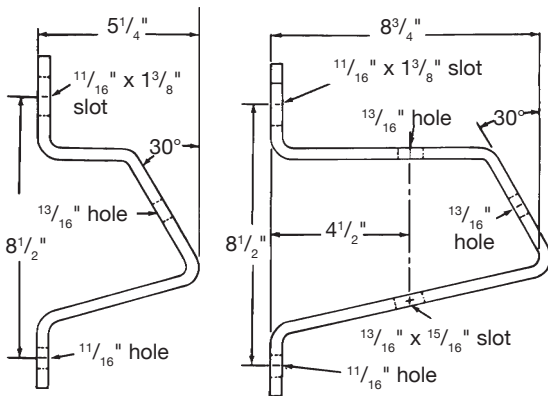
BRACKETS, POST INSULATOR Curved base

This bracket can be used for mounting distribution post-type insulators from 15 kV to 34.5 kV on the side of the pole. The base has a pole-shape back for convenient installation. Brackets can be placed in a phase-over-phase arrangement or can be mounted on opposite sides of the pole for "armless" construction.

Insulators not included.

Catalog Number	Dimensions In Inches			Angle A	Approx. Ship Wt. Lbs. Per 100 Pcs.
	L	D	W		
*C2060009	9 1/2	13/16	4	15°	1220
†*C2060010	12	13/16	4	15°	1669
C2060011	15	13/16	4	15°	2066

*These brackets have 13/16" stringing block holes.
†RUS listed



C2060162

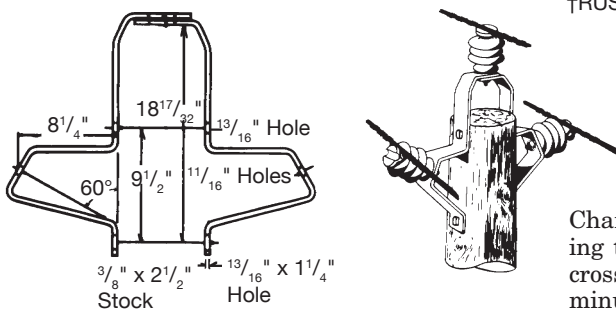
C2060209

BRACKETS, POST INSULATOR Side Mounted

The bracket is formed of high-quality 3/8" x 2 1/2" bar steel and hot dip galvanized. It can be utilized to mount distribution post insulators from 15 kV to 34.5 kV.

Catalog Number		Pole Mounting Bolts Required	Insulator Stud Bolts Required	Approx. Ship Wt. Lbs. Per 100 Pcs.
13/16" Hole	11/16" Hole			
†*C2060209	16919	Two 5/8"	3/4"	650
C2060162		Two 5/8"	3/4"	440

*This bracket is designed to facilitate a stringing block.
†RUS listed



No. 9183

BRACKETS, POST INSULATOR Uni-Brackets

Chance Uni-Brackets are a clean-appearing, low-cost method of mounting three post-type insulators atop a pole completely eliminating the crossarm. The brackets can be installed on the pole in less than five minutes, requiring only two 3/4" bolts for attachment. Uni-Brackets fit poles having a pole-top diameter from 6" to 8 1/2". Slot on top is 11/16" x 2 1/4".

No. 9183 brackets can be adapted to a variety of distribution construction using post-type insulators from 15 through 34.5 kV.

Catalog Number	Insulator Stud Bolts Required	Approx. Ship Wt. Lbs. Per 100 Pcs.
†9183	5/8"	2100

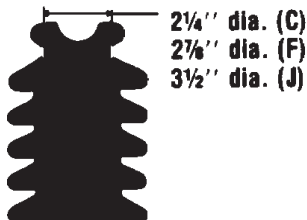
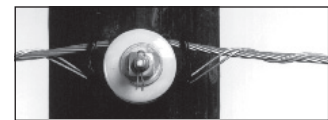
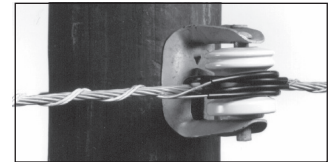
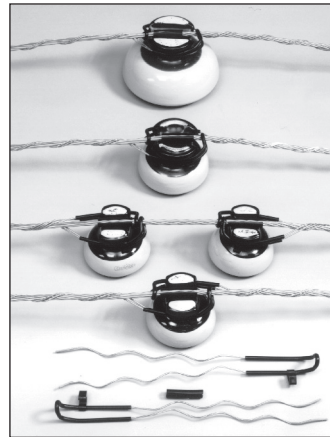
†Includes both sections of bracket

SUPER TOP-TIE® Line Ties

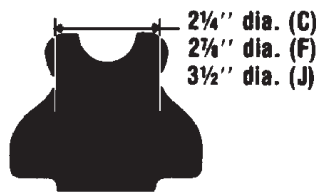
• for Pin, Post and Spool Insulators

Made of aluminum-clad steel compatible with aluminum, aluminum-alloy and ACSR conductors in the top grooves of vertical-mounted *ANSI Class C, F, J and many non-standard pin and post insulators (single-or double-support) or on *ANSI 53-2 spool insulators (horizontal or vertical).

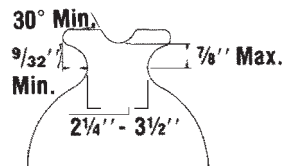
High-density polyethylene hooks provide the wide application range and ensure proper installation. If used over armor rods (not required), select tie size based on total conductor/armor diameter. Semiconductive-rubber pad and high-density-polyethylene on loops protect against abrasion of insulator, conductor and tie. Fit is resilient and provides superior performance under galloping and aeolian vibration. Install by hand or with hot-line tools.



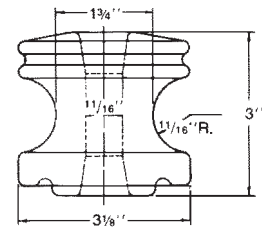
POST
INSULATOR



PIN
INSULATOR



NON-STANDARD
INSULATOR



ANSI 53-2
SPOOL

*Super Top-Tie STT10 — STT130 also fit many foreign or reclaimed pin and post insulators with neck sizes 2 1/4" - 3 1/2".
Consult Hubbell Power Systems, Inc. for use on pins and posts outside these dimensions.

ORDERING INFORMATION

Catalog Number	Aluminum-Type Conductors, Typical Sizes				Color Code	Std. Pkg.	Wt. Per 100, Lb.
	AAC (All-Aluminum)	AAAC (Alum.-Alloy)	ACSR	Diameter Range			
STT10	#6, 7W	#6, 7W	#6, 6/1	.184-.220" (4.67-5.59 mm)	None	50	28
STT20	#4, 7W	#4, 7W	#4, 6/1	.221-.257" (5.61-6.53 mm)	Orange	50	28
STT30	#3, 7W	#3, 7W	#3, 6/1	.258-.289" (6.55-7.34 mm)	Purple	50	28
STT40	#2, 7W	#2, 7W	#2, 6/1	.290-.325" (7.37-8.26 mm)	Red	50	28
STT50	#1, 7W	#1, 7W	#1, 6/1	.326-.360" (8.28-9.14 mm)	Gray	50	28
STT60	1/0, 7W	1/0, 7W	1/0, 6/1	.361-.409" (9.17-10.39 mm)	Yellow	50	32
STT70	2/0, 7W	2/0, 7W	2/0, 6/1	.410-.460" (10.41-11.68 mm)	Blue	50	32
STT80	3/0, 7W	3/0, 7W	3/0, 6/1	.461-.516" (11.71-13.11 mm)	Black	50	32
STT90	4/0, 7W	4/0, 7W	4/0, 6/1	.517-.584" (13.13-14.83 mm)	Pink	50	32
STT100	266.8, 19W	266.8, 19W	266.8, 18/1	.585-.664" (14.86-16.87 mm)	Green	50	32
STT110	336.4, 19W	336.4, 19W	336.4, 18/1	.665-.755" (16.89-19.18 mm)	Brown	50	40
STT120	477, 19W	477, 19W	477, 18/1	.756-.859" (19.20-21.82 mm)	Violet	50	40
STT130	636, 37W	556.5, 19W	556.5, 18/1	.860-.977" (21.84-24.82 mm)	Gold	50	40

LEFT-HAND LAY STANDARD

- Applied Length: 29" - 48" (Depends on insulator make and conductor size).
- Strength: Exceeds Rule 261E.2(A) of National Electrical Safety Code.
- REA accepted.
- To obtain outside diameters of conductors, consult Conductor Chart.

Web: <http://www.hubbellpowersystems.com>
E-mail: hpsliterature@hps.hubbell.com

Veri*Lite™

Silicone Rubber Line Post Insulators with Universal Clamp for 15-69kV Applications

The Ohio Brass Universal Clamp end fitting is used with the Veri*Lite™ Line Post (VLLP) insulator family. Combining the proven direct bond silicone technology of the Ohio Brass VLLP design, the Universal Clamp offers a flexible range-taking connection that can be installed in either the vertical or horizontal direction. The Universal Clamp design eliminates the need for a separate additional conductor clamp; saving both money and installation time. In addition, the optional hotstick-operable feature provides flexibility for live-line work.



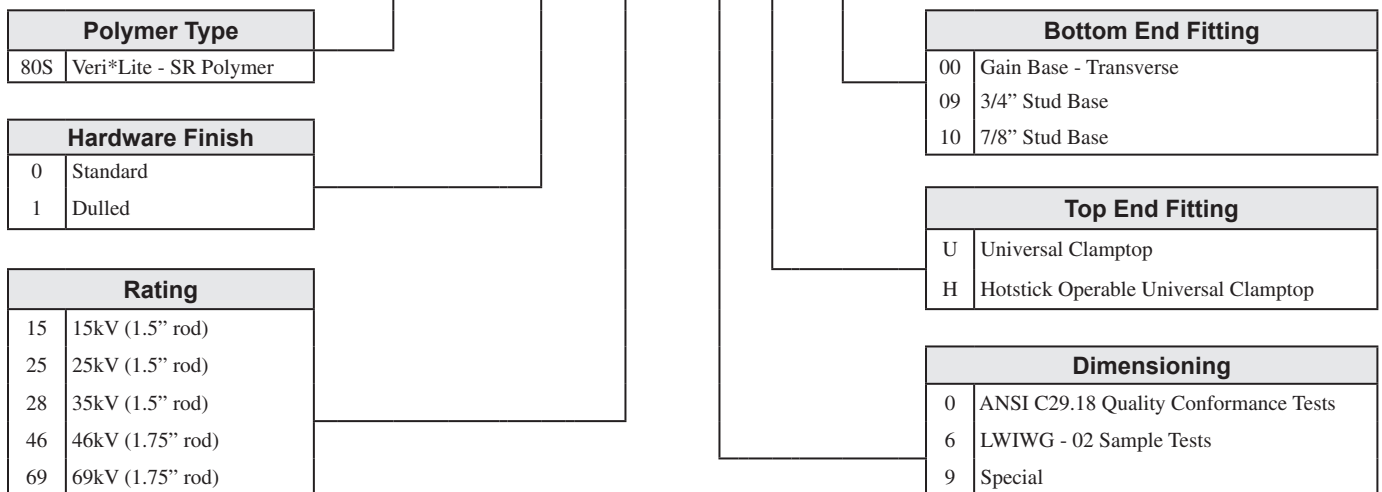
Design Features

- Proven direct bond interface
- Weathersheds molded with proprietary silicone rubber compound
- Universal clamp works for a conductor diameter range of 0.30” (7.6 mm) to 1.34” (34 mm) to provide flexibility in the field
- Hotline option allows for live-line operability
- Can be installed in vertical or horizontal directions, thus reducing inventory
- Integral design eliminates need for additional trunnion clamp
- Meets requirements of CEA LWIWG-02-1996 & ANSI C29.18-2003

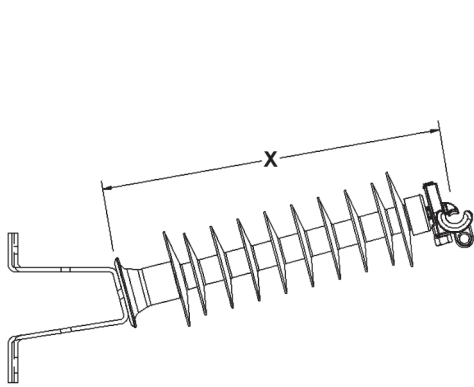
CATALOG NUMBER KEY

Veri*Lite Line Post Insulators - Silicone

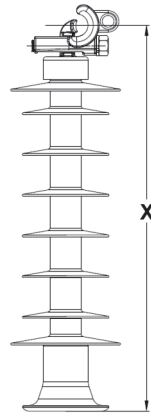
8 0 S 0 6 9 0 U 0 9



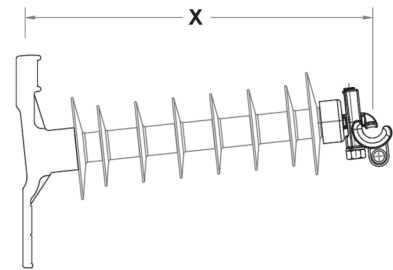
kV	Line Fitting	Base Fitting	Catalog Number	"X" Dimension Inches (mm)	Dry Arc Distance Inches (mm)	Leakage Distance Inches (mm)	60 Hz (Low Frequency) Flashover		Impulse Critical Flashover Pos. kV	Impulse Positive Withstand kV	SCL pounds (kN)	MDCL/WCL pounds (kN)	Package Quantity	Crate/Pallet Quantity
							Dry-kV	Wet-kV						
15	Universal	3/4-10 Tap	80S015-0U09	13.0 (330)	7.4 (188)	11.0 (279)	90	70	150	140	2800 (12.5)	1235 (5.5)	3	60
	Universal	7/8-9 Tap	80S015-0U10	13.0 (330)									3	60
	Universal	Gain	80S015-0U00	12.4 (314)									3	60
25	Universal	3/4-10 Tap	80S025-0U09	14.8 (375)	9.6 (244)	17.3 (439)	110	75	185	170	2800 (12.5)	1235 (5.5)	3	60
	Universal	7/8-9 Tap	80S025-0U10	14.8 (375)									3	60
	Universal	Gain	80S025-0U00	14.1 (357)									3	60
35	Universal	3/4-10 Tap	80S028-0U09	17.0 (432)	11.7 (297)	26.1 (662)	135	100	215	200	2800 (12.5)	1235 (5.5)	3	60
	Universal	7/8-9 Tap	80S028-0U10	17.0 (432)									3	60
	Universal	Gain	80S028-0U00	16.4 (415)									3	60
46	Universal	3/4-10 Tap	80S046-0U09	19.5 (495)	14.4 (390)	34.3 (872)	170	125	260	235	2800 (12.5)	1235 (5.5)	-	35
	Universal	7/8-9 Tap	80S046-0U10	19.5 (495)									-	35
	Universal	Gain	80S046-0U00	18.8 (478)									-	35
69	Universal	3/4-10 Tap	80S069-0U09	26.1 (663)	22.3 (566)	58.2 (1478)	230	180	360	330	2470 (11.0)	1235 (5.5)	-	35
	Universal	7/8-9 Tap	80S069-0U10	26.1 (663)									-	35
	Universal	Gain	80S069-0U00	25.4 (645)									-	35



Universal Clamptop & Stud Base w/Bracket* (0U09 & 0U10 w/C2060009)



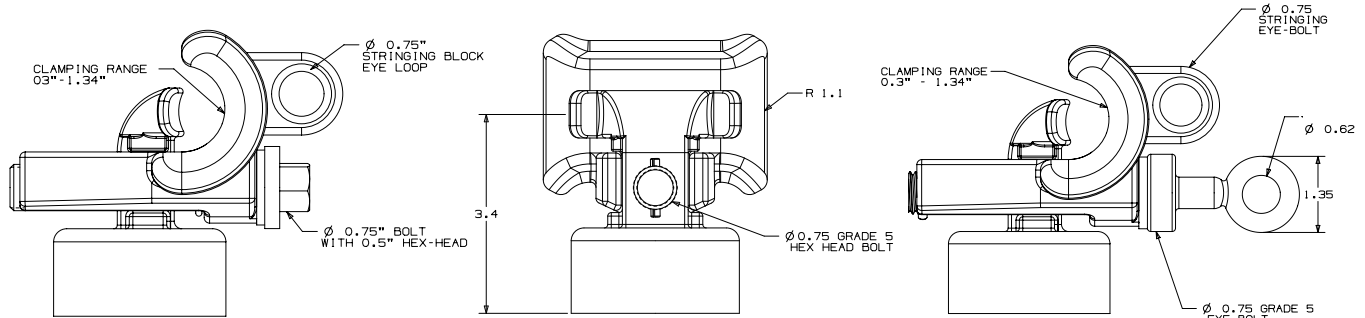
Universal Clamptop & Stud Base (0U09 & 0U10)



Universal Clamptop & Gain Base (0U00)

*Multiple bracket options available (see pages 13-15 of Section 23)

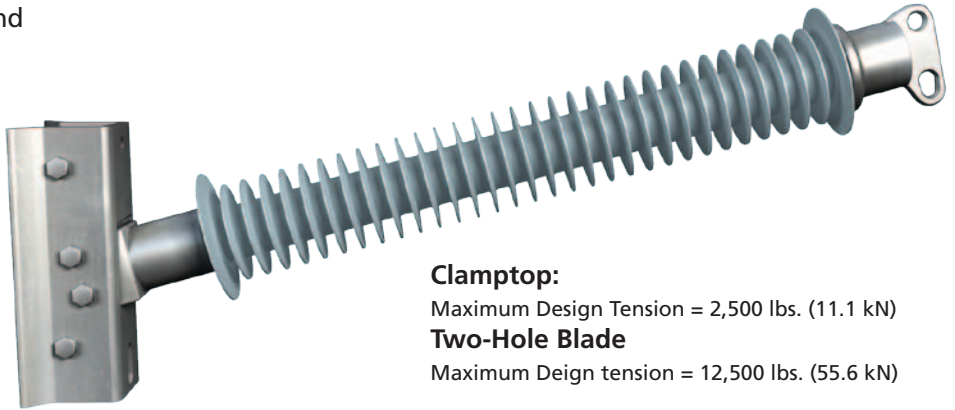
Universal Clamptop Dimensions (in inches)



Horizontal Line Post Insulators 3.0" (76.2 mm) Rod Diameter

Hubbell Power Systems offers a transmission product line to meet the needs of today's power utility. The 3" Quadri*Sil® Line Post is an addition to the reliable product line that boasts a redundant four point sealing system. The Quadri*Sil® product line will ensure the utmost protection against weather and contaminants in an unpredictable environment.

- Proprietary silicone rubber compound
- Direct bond design
- Uniform circumferential crimp



Clamptop:

Maximum Design Tension = 2,500 lbs. (11.1 kN)

Two-Hole Blade

Maximum Design Tension = 12,500 lbs. (55.6 kN)

Horizontal Line Post Insulators 3.0" (76.2 mm) Rod Diameter

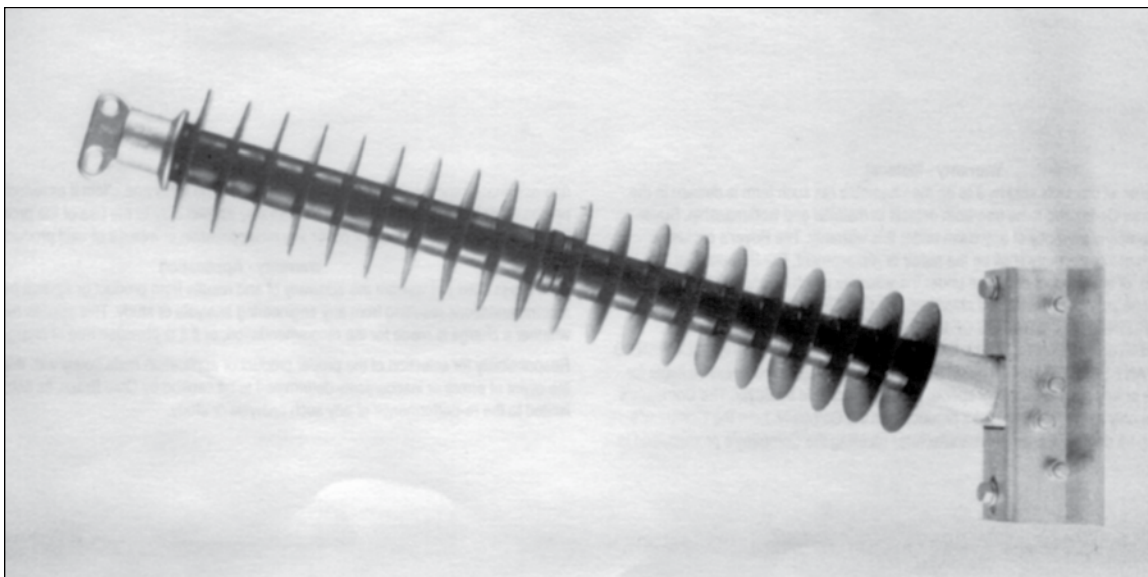
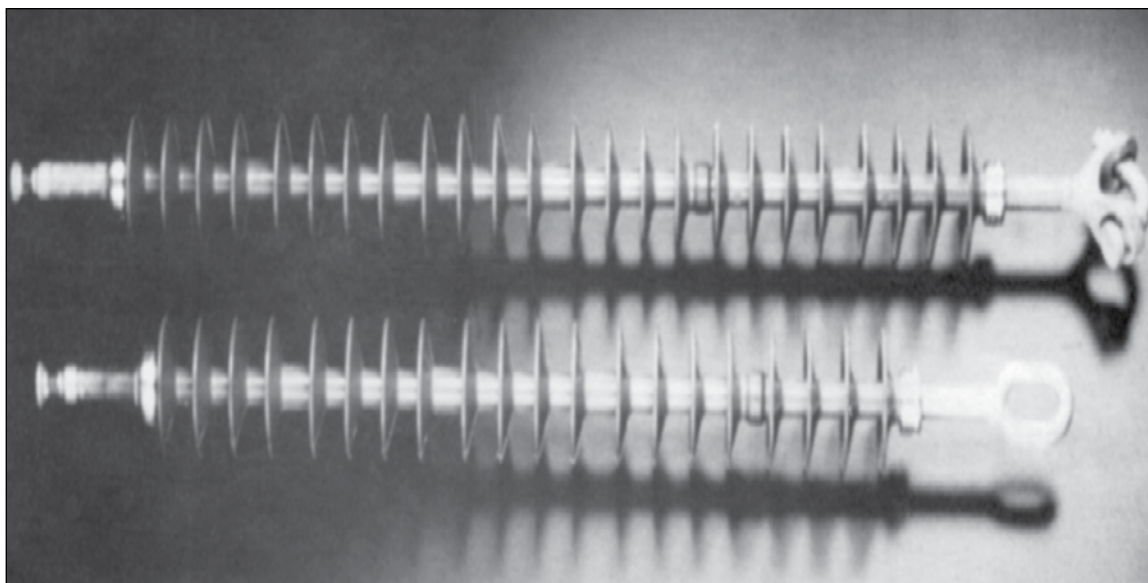
Selection Guide: Typical Line Voltage, kV ⁽¹⁾	Catalog Numbers ⁽³⁾	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values			SCL lbs. (kN)	
						⁽²⁾ 60-Hz Dry Flashover (kV)	⁽²⁾ 60-Hz Wet Flashover (kV)	⁽²⁾ Critical Impulse Positive (kV)	⁽²⁾ Critical Impulse Negative (kV)	⁽²⁾ 60-Hz 1-minute Wet Withstand (kV)	⁽²⁾ Impulse Positive Withstand (kV)	⁽²⁾ Impulse Negative Withstand (kV)		
69 115 138 161 230 345														
	P300025S0020	025	38.5 (978)	27.9 (708)	82 (2083)	275	245	425	520	200	400	485	7500 (33.4)	
	P300026S0020	026	39.7 (1008)	29.2 (741)	88 (2223)	290	255	445	540	215	415	505	7500 (33.4)	
	P300031S0020	031	44.4 (1128)	34.0 (863)	101 (2555)	335	300	520	615	255	490	575	7500 (33.4)	
	P300036S0020	036	49.1 (1247)	38.9 (988)	116 (2934)	385	345	595	690	285	560	650	6670 (29.7)	
	P300042S0020	042	55.0 (1397)	44.9 (1140)	134 (3406)	445	400	690	785	340	685	740	5810 (25.8)	
	P300047S0020	047	59.7 (1516)	49.8 (1265)	149 (3785)	490	445	765	860	375	725	815	5261 (23.4)	
	P300052S0020	052	64.4 (1636)	54.7 (1389)	164 (4163)	540	490	840	935	410	790	884	4820 (21.4)	
	P300053S0020	053	65.6 (1666)	55.9 (1420)	168 (4260)	550	500	860	955	425	810	900	4720 (20.9)	
	P300057S0020	057	69.1 (1755)	59.5 (1511)	179 (4544)	585	535	915	1010	450	865	955	4440 (33.4)	
	P300058S0020	058	70.3 (1786)	60.7 (1542)	183 (4638)	600	545	935	1030	460	880	975	4350 (19.3)	
	P300063S0020	063	75.0 (1905)	65.6 (1666)	198 (5017)	645	590	1010	1105	495	950	1045	4040 (17.9)	
	P300064S0020	064	76.2 (1935)	66.8 (1697)	201 (5110)	660	600	1030	1125	510	970	1065	3970 (17.7)	
	P300068S0020	068	79.7 (2024)	70.4 (1788)	212 (5395)	695	635	1085	1180	535	1025	1120	3770 (16.8)	
	P300069S0020	069	80.9 (2055)	71.6 (1819)	216 (5489)	705	645	1105	1200	545	1045	1140	3710 (16.5)	
	P300074S0020	074	85.6 (2174)	76.5 (1943)	231 (5867)	755	690	1180	1275	585	1115	1210	3480 (15.5)	
	P300078S0020	078	90.3 (2294)	81.4 (2068)	246 (6246)	800	735	1255	1350	620	1185	1280	3280 (14.6)	
	P300083S0020	083	95.0 (2413)	86.2 (2189)	261 (6624)	850	780	1330	1430	655	1255	1350	3100 (13.8)	
	P300085S0020	085	96.2 (2443)	87.4 (2220)	265 (6721)	860	790	1350	1445	670	1275	1370	3050 (13.6)	
	P300089S0020	089	100.9(2563)	92.3 (2344)	280 (7099)	910	835	1425	1520	705	1345	1440	2900 (12.9)	
	P300094S0020	094	105.6(2682)	97.1 (2466)	294 (7478)	955	880	1500	1600	740	1420	1515	2760 (12.3)	
	P300095S0020	095	106.8(2713)	98.4 (2499)	292 (7412)	970	890	1520	1615	755	1435	1530	2720 (12.1)	
	P300099S0020	099	110.4(2804)	102.0(2591)	309 (7856)	1005	925	1575	1675	780	1490	1585	2630 (11.7)	
	P300103S0020	100	111.5(2832)	103.2(2621)	313 (7950)	1015	935	1595	1690	790	1510	1605	2600 (11.6)	
	P300105S0020	105	116.2(2951)	108.0(2743)	328 (8329)	1065	980	1670	1770	825	1580	1675	2480 (11.0)	

Notes:

- 1) For voltages above 345 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- 2) Electrical values are without corona ring. For voltages equal to or greater than 220 kV, please contact your HPS representative.
- 3) The catalog number shown in the table is for a 3.0" (76.2mm) rod diameter line post with a two hole blade on the line end and an aluminum gain base on the tower end. For other end fitting combinations, please contact your HPS representative.

hubbelpowersystems.com
hpsliterature@hps.hubbell.com

Hi*Lite® XL Transmission Insulators



HUBBELL®
Power Systems



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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Warranty - Material

Hubbell Power Systems, Inc. warrants all products sold by it to be merchantable (as such term is defined in the Uniform Commercial Code) and to be free from defects in material and workmanship. Buyer must notify the Company promptly of any claim under this warranty. The Buyer's exclusive remedy for breach of this warranty shall be the repair or replacement, F.O.B. factory, at the Company's option, of any product defective under the warranty which is returned to the Company within one year from the date of shipment. NO OTHER WARRANTY, WHETHER EXPRESS OR ARISING BY OPERATION OF LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE IMPLIED, SHALL EXIST IN CONNECTION WITH THE COMPANY'S PRODUCTS OR ANY SALE OR USE THEREOF. The Company shall in no event be liable for any loss of profits or any consequential or special damages incurred by Buyer. The Company's warranty shall run only to the first Buyer of a product from the Company, from the Company's distributor, or from an original equipment manufacturer reselling the Company's product, and is non-assignable and non-transferable and shall be of no force and effect if asserted by any person other than such first Buyer. This warranty applies only to the use of the product as intended by Seller and does not cover any misapplication or misuse of said product.

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.

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.

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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Hi*Lite® XL Transmission Insulators

Section 26

Suspensions	A
Line Posts	B
Braced Posts	C
Station Posts	D
Sample Polymer Specs	E

Hi*Lite[®] XL Suspension Insulators

A

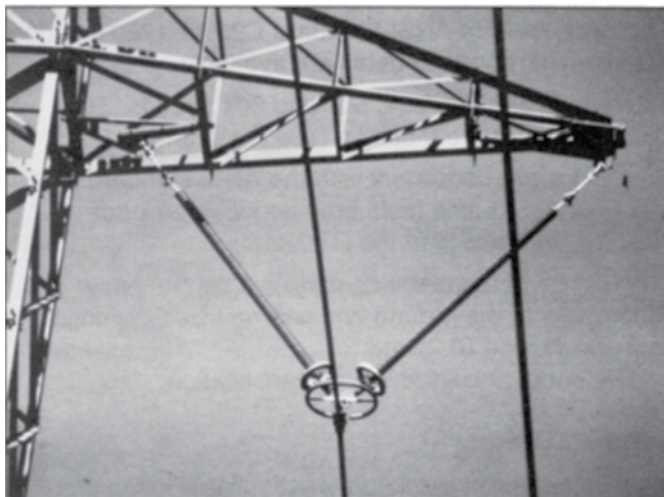


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Hi*Lite® XL Insulators

Hi*Lite XL suspension insulators in this publication embody the latest features available in polymer insulator design and manufacture.

From the early prototypes in 1971, through full scale introduction in 1976, and through the succeeding years, Hi*Lite insulators have featured conservative design and high-quality manufacture.

Today's Hi*Lite insulators will add to the over 1,000,000 already in service worldwide.

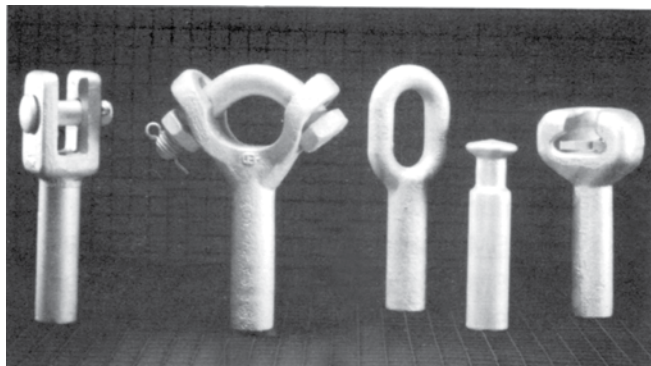
Design

The structural design of the Hi*Lite XL consists of these basic parts:

Rod - Hi*Lite insulator fiberglass rod is produced from the highest quality materials. Strands are aligned for maximum tensile strength. The rod is more than 50 percent glass fibers in cross section.

End Fittings - End fittings are steel or ductile iron. They are crimped directly to the rod by a special process originated by Ohio Brass, and later adopted by many other producers. The crimp develops a high percentage of the rod's inherent tensile strength. It requires no inter-movement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

Weathersheds - Weathersheds are high pressure injection molded by Ohio Brass, from the proprietary com-



ound ESP™. Housings manufactured with ESP silicone alloy rubber exhibit hydrophobicity, high mechanical strength, high corona resistance and low permeability to moisture.

Interface - Hi*Lite insulators use Ohio Brass' live silicone interface. This feature prevents intrusion of moisture and contaminating elements. If the exterior seal is damaged, redundant o-ring seals within the live silicone interface prohibit the lengthwise migration of intrusive elements between shed and rod.

Leakage Distance

Hi*Lite XL insulators feature high leakage distance for maximum resistance to contamination and leakage currents. Specific leakage distance (leakage divided by dry arcing distance) is higher than porcelain. Contact Ohio Brass if you have extra-high leakage distance needs.

Washability

Hi*Lite insulators listed in this catalog are suitable for flood washing up to 200 psi. The design incorporates positive, labyrinth seals to ensure long-term security against water entry. Conventional dry-particle, air-pressure cleaning methods may also be employed. A cleaning guideline is available from Ohio Brass.

If your washing requirements exceed flood washing, contact Ohio Brass.

Mechanical Ratings

Hi*Lite XL suspension insulators are rated and tested in accordance with ANSI Standard C29.11. Certified test reports in detail are available.

SML ratings are 25k, 30k and 50k pounds.

RTL ratings are consistent with the ANSI standard. Actual factory routine tests are conducted at loads equal to or greater than the RTL rating.

Markings for XL insulator designs are permanently embossed into the ground end corona shielding rings. Markings include SML and RTL, part number, assembly date code, and Ohio Brass identification.

Lengths Available

Hi*Lite suspension insulators are available in lengths appropriate for 69 kV through 765 kV. Longer lengths can be produced for special projects. Length increments are approximately three inches.

Product Updates

Hi*Lite XL insulator end fittings are attached with an improved crimping process using the successful principles of earlier Hi*Lite designs. The corona shield has been refined; a more compact Corona Shielding Ring (CSR) provides both electrical stress relief and a mechanical seal at the housing-to-end fitting interface.

Packaging

Hi*Lite suspension insulators are packaged in appropriate quantities in wood crates. As an option, Ohio Brass offers packaging of the insulators in individual sleeves.

Corona Performance

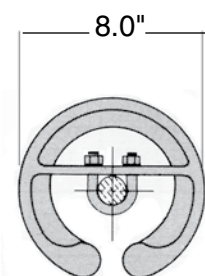
Hi*Lite XL suspension insulators are RIV and corona free through 161 kV, by the use of integral Corona Shield Rings (CSR). Due to the small diameter of the end fittings, corona shielding is necessary at 230 kV and above. The table below details the rings necessary for voltages equal to or exceeding that listed in the column header.

Normal Applications: Top Grounded, Bottom Energized

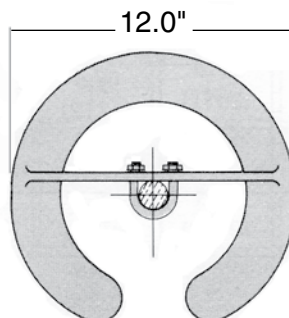
Insulator	Orientation	230 kV Ring	345 kV Ring	500 kV Rings
Suspension 25/30 K SML	Top	NONE	NONE	2717613001
	Bottom	2717613001	2717053001	2717513001
Suspension 50 K SML	Top	NONE	NONE	2717613002
	Bottom	2717613002	2717053002	2717513002

A

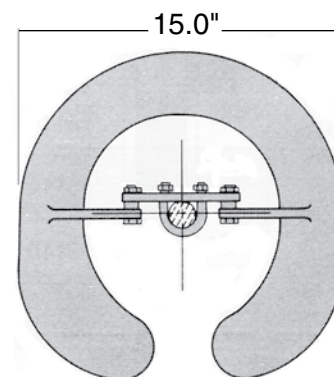
The physical and electrical values for the insulators on pages 26-8 through 26-10 are shown without corona protection above 161 kV. Ohio Brass has therefore provided the table below that yields the physical and electrical changes to the insulator when rings are installed for voltages above 161 kV.



Part Number 271761



Part Number 271705



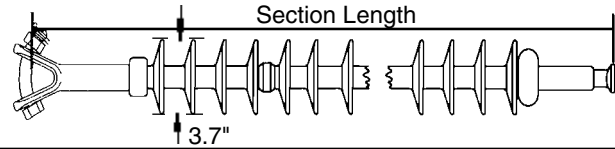
Part Number 271751

Physical & Electrical Change Table

Physical & Electrical Characteristics	230 kV Ring	345 kV Ring	500 kV Rings
Dry Arc Distance inches (mm)	-1.2 (-30.48)	-2 (-50.8)	-5 (-127.0)
Leakage Distance inches (mm)	0	0	0
60 Hz Flashover Dry - kV	-10	-15	-30
60 Hz Flashover Wet - kV	0	0	0
Critical Flashover Positive - kV	-15	-25	-65
Critical Flashover Negative - kV	-20	-30	-65
Net Weight pounds (kg)	3 (1.8)	3 (1.8)	5.1 (2.29)

5/8" (16mm) Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 25,000 lbs. 111 kN
RTL = 12,500 lbs. 56 kN



Selection Guide Typical Line Voltage, kV ⁽¹⁾						Catalog Number with Y-Clevis - 52.5 Ball	Section Length Inches (mm)	Number of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽²⁾ 60 Flashover ANSI		⁽²⁾ Critical Flashover ANSI		Net Weight pounds (kg)
											Dry-kV	Wet-kV	Pos-kV	Neg-kV	
69	115	138	161	230	345	5110041201	34.7 (881)	16	24.7 (627)	61 (1549)	245	240	410	390	4.8 (2.2)
						5110051201	40.7 (1034)	20	30.7 (780)	76 (1930)	310	295	505	490	5.6 (2.5)
						5110061201	46.8 (1189)	24	36.8 (935)	92 (2337)	370	350	605	595	6.4 (2.9)
						5110071201	53.0 (1346)	28	42.9 (1090)	107 (2718)	430	405	700	695	7.1 (3.2)
						5110081201	59.1 (1501)	32	49.1 (1247)	122 (3099)	490	455	795	795	8.0 (3.6)
						5110091201	65.1 (1654)	36	55.1 (1397)	138 (3505)	545	505	890	890	8.8 (4.0)
						5110101201	71.3 (1811)	40	61.2 (1554)	152 (3861)	600	555	985	990	9.5 (4.3)
						5110111201	77.4 (1966)	44	67.4 (1712)	168 (4267)	655	605	1080	1090	10.4 (4.7)
						5110121201	83.5 (2121)	48	73.5 (1867)	184 (4674)	710	655	1170	1185	11.2 (5.1)
						5110131201	89.5 (2273)	52	79.5 (2019)	198 (5029)	760	700	1260	1280	11.9 (5.4)
						5110141201	95.7 (2431)	56	85.6 (2174)	214 (5436)	810	750	1350	1370	12.7 (5.8)
						5110151201	101.8 (2586)	60	91.7 (2329)	229 (5817)	855	790	1440	1465	13.5 (6.1)
						5110161201	108.0 (2743)	64	97.9 (2487)	245 (6223)	905	835	1530	1560	14.4 (6.5)
						5110171201	114.0 (2896)	68	103.9 (2639)	260 (6604)	945	880	1615	1650	15.2 (6.9)
						5110181201	120.1 (3051)	72	110.0 (2794)	275 (6985)	990	920	1705	1740	15.9 (7.2)
						5110191201	126.2 (3205)	76	116.2 (2951)	290 (7366)	1030	960	1790	1830	16.7 (7.6)

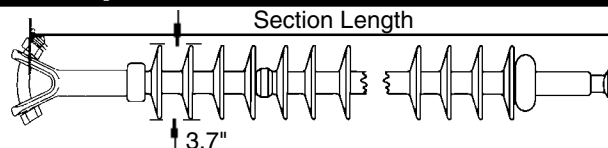
Notes: (1) For voltages above 345 kV, and other section lengths, contact Ohio Brass.
 (2) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 For voltages above 161 kV refer to Page 26-7 for Corona Rings, and associated physical/electrical changes to above data.
 Dimensions are within allowable tolerances as specified in ANSI C29.11.

Ground Fitting	Line Fitting	Suffix Code	Length Change		Weight Change	
			Inches	mm	Pounds	kg
Eye	Ball	1001	-.06	-1.5	-2.5	-.11
Eye	Eye	1000	1.28	32.5	-2.5	-.11
Socket	Ball	1301	-.97	-24.6	-.05	-.01
Clevis	Ball	1401	-1.00	-25.4	-.15	-.07
Y-Clevis	Eye	1200	1.34	34.0	0	0
Clevis	Eye	1400	.34	8.6	-.15	-.007

For configurations not shown contact Ohio Brass.

5/8" (16mm) Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 30,000 lbs. 133 kN
RTL = 15,000 lbs. 67 kN



Selection Guide Typical Line Voltage, kV ⁽¹⁾						Catalog Number with Y-Clevis - 52.5 Ball	Section Length Inches (mm)	Number of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽²⁾ 60 Flashover ANSI		⁽²⁾ Critical Flashover ANSI		Net Weight pounds (kg)
69	115	138	161	230	345						Dry-kV	Wet-kV	Pos-kV	Neg-kV	
						5150041201	34.7 (881)	16	24.7 (627)	61 (1549)	245	240	410	390	4.8 (2.2)
						5150051201	40.7 (1034)	20	30.7 (780)	76 (1930)	310	295	505	490	5.6 (2.5)
						5150061201	46.8 (1189)	24	36.8 (935)	92 (2337)	370	350	605	595	6.4 (2.9)
						5150071201	53 (1346)	28	42.9 (1090)	107 (2718)	430	405	700	695	7.1 (3.2)
						5150081201	59.1 (1501)	32	49.1 (1247)	122 (3099)	490	455	795	795	8 (3.6)
						5150091201	65.1 (1654)	36	55.1 (1397)	138 (3505)	545	505	890	890	8.8 (4.0)
						5150101201	71.3 (1811)	40	61.2 (1554)	152 (3861)	600	555	985	990	9.5 (4.3)
						5150111201	77.4 (1966)	44	67.4 (1712)	168 (4267)	655	605	1080	1090	10.4 (4.7)
						5150121201	83.5 (2121)	48	73.5 (1867)	184 (4674)	710	655	1170	1185	11.2 (5.1)
						5150131201	89.5 (2273)	52	79.5 (2019)	198 (5029)	760	700	1260	1280	11.9 (5.4)
						5150141201	95.7 (2431)	56	85.6 (2174)	214 (5436)	810	750	1350	1370	12.7 (5.8)
						5150151201	101.8 (2586)	60	91.7 (2329)	229 (5817)	855	790	1440	1465	13.5 (6.1)
						5150161201	108 (2743)	64	97.9 (2487)	245 (6223)	905	835	1530	1560	14.4 (6.5)
						5150171201	114 (2896)	68	103.9 (2639)	260 (6604)	945	880	1615	1650	15.2 (6.9)
						5150181201	120.1 (3051)	72	110 (2794)	275 (6985)	990	920	1705	1740	15.9 (7.2)
						5150191201	126.2 (3205)	76	116.2 (2951)	290 (7366)	1030	960	1790	1830	16.7 (7.6)

A

Notes: (1) For voltages above 345 kV, and other section lengths, contact Ohio Brass.
 (2) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 For voltages above 161 kV refer to Page 26-7 for Corona Rings, and associated physical/electrical changes to above data.
 Dimensions are within allowable tolerances as specified in ANSI C29.11.

**Y-Clevis Tower Attachment Detail
for 25k, 30k, and 50k SML Insulators**

1" Dia. Minimum
1/8" x 45° Chamfer

"D" Max.
3/4" Max.

SML	"D" Max. Inches
25/30k	.531
50k	1.0

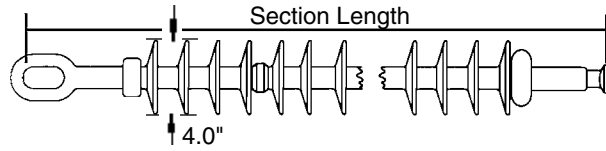
To achieve insulator SML value, proper grade steel should be used

Ground Fitting	Line Fitting	Suffix Code	Length Change		Weight Change	
			Inches	mm	Pounds	kg
Eye	Ball	1001	-0.06	-1.5	-2.50	-0.110
Eye	Eye	1000	1.28	32.5	-2.50	-0.110
Socket	Ball	1301	-0.97	-24.6	-0.05	-0.010
Clevis	Ball	1401	-1.00	-25.4	-0.15	-0.070
Y-Clevis	Eye	1200	1.34	34.0	0.00	0.000
Clevis	Eye	1400	0.34	8.6	-0.15	-0.007

For configurations not shown contact Ohio Brass.

7/8" (22mm) Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 50,000 lbs. 222 kN
RTL = 25,000 lbs. 111 kN



Selection Guide Typical Line Voltage, kV ⁽¹⁾						Catalog Number with Chain Eye - 52.11 Ball	Section Length Inches (mm)	Number of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽²⁾ 60 Flashover ANSI		⁽²⁾ Critical Flashover ANSI		Net Weight pounds (kg)
											Dry-kV	Wet-kV	Pos-kV	Neg-kV	
115	138	161	230	345	500	5130071001	55.8 (1417)	28	42.9 (1090)	106 (2692)	430	400	700	695	12.7 (5.8)
						5130081001	62.0 (1574)	32	49.0 (1245)	121 (3073)	490	455	795	795	13.7 (6.2)
						5130091001	68.0 (1727)	36	55.0 (1397)	136 (3454)	545	505	890	890	14.8 (6.7)
						5130101001	74.1 (1882)	40	61.2 (1554)	151 (3835)	600	555	985	990	15.9 (7.2)
						5130111001	80.3 (2040)	44	67.3 (1709)	167 (4242)	655	605	1080	1090	16.9 (7.7)
						5130131001	92.4 (2347)	52	79.5 (2019)	197 (5004)	760	700	1260	1280	19.1 (8.7)
						5130141001	98.5 (2502)	56	85.6 (2174)	212 (5385)	810	745	1350	1370	20.2 (9.2)
						5130151001	104.7 (2659)	60	91.7 (2329)	228 (5791)	855	790	1440	1465	21.2 (9.6)
						5130171001	116.8 (2967)	68	103.9 (2639)	258 (6553)	945	875	1615	1650	24.4 (11.1)
						5130181001	123.0 (3124)	72	110.0 (2794)	273 (6934)	990	915	1705	1740	24.5 (11.1)
						5130191001	129.1 (3279)	76	116.2 (2951)	288 (7315)	1030	955	1790	1830	25.5 (11.6)
						5130211001	141.2 (3586)	84	128.3 (3259)	319 (8103)	1110	1035	1960	2005	27.6 (12.5)
						5130231001	153.5 (3899)	92	140.6 (3271)	349 (8885)	1180	1105	2125	2175	29.8 (13.5)
						5130251001	165.7 (4209)	100	152.7 (3879)	379 (9627)	1245	1175	2285	2345	31.9 (14.5)
						5130271001	177.9 (4519)	108	165.0 (4191)	410 (10414)	1305	1240	2445	2510	34.0 (15.4)
						5130281001	184.1 (4676)	112	171.1 (4346)	425 (10795)	1330	1270	2520	2590	35.1 (15.9)

Notes: (1) For voltages above 500 kV, and other section lengths, contact Ohio Brass.
 (2) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 For voltages above 161 kV refer to Page 26-7 for Corona Rings, and associated physical/electrical changes to above data.
 Dimensions are within allowable tolerances as specified in ANSI C29.11.

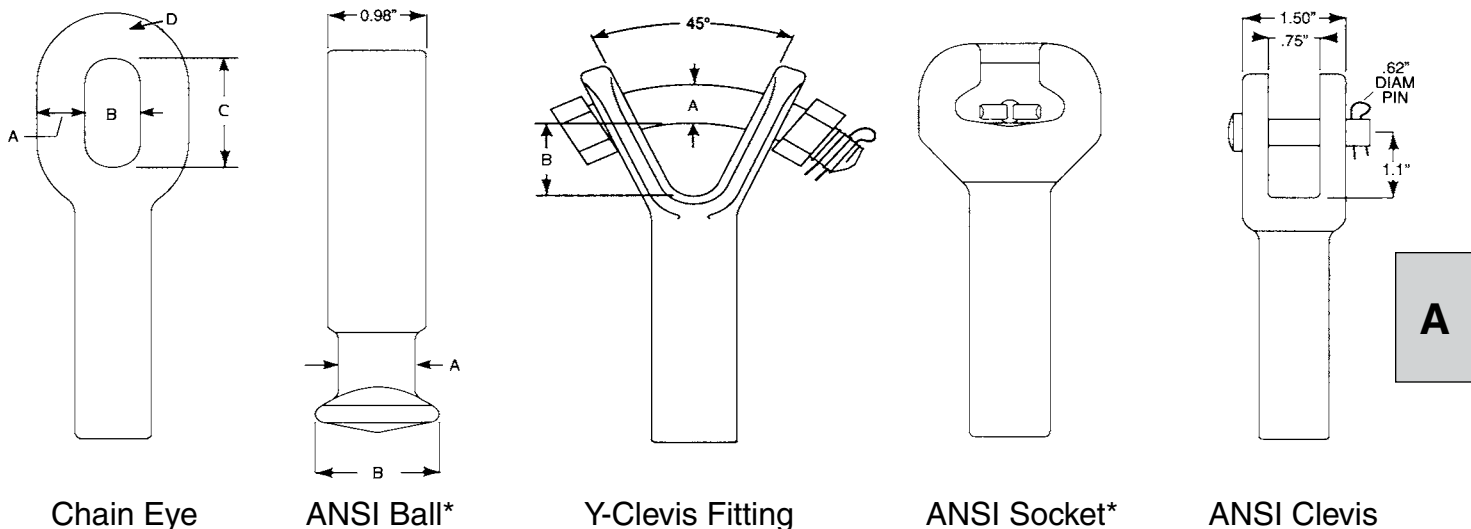
End Fitting Example

You need the electrical and mechanical characteristics of Catalog #5130101001. But, a Y-clevis is needed at the ground end instead of an eye. From the table at the right, find the code for the Y-clevis/ball configuration 1201. You should order Catalog #5130101201. The same process is used for 5/8" (25k) and 7/8" (30k) insulators.

Ground Fitting	Line Fitting	Suffix Code	Length Change		Weight Change	
			Inches	mm	Pounds	kg
Y-Clevis	Ball	1201	-.58	-14.7	.4	.18
Eye	Eye	1000	1.26	32.0	-.4	-.18
Socket	Ball	1301	-.72	-18.3	.4	.18
Y-Clevis	Eye	1200	-.58	-14.7	0	0

For configurations not shown contact Ohio Brass.

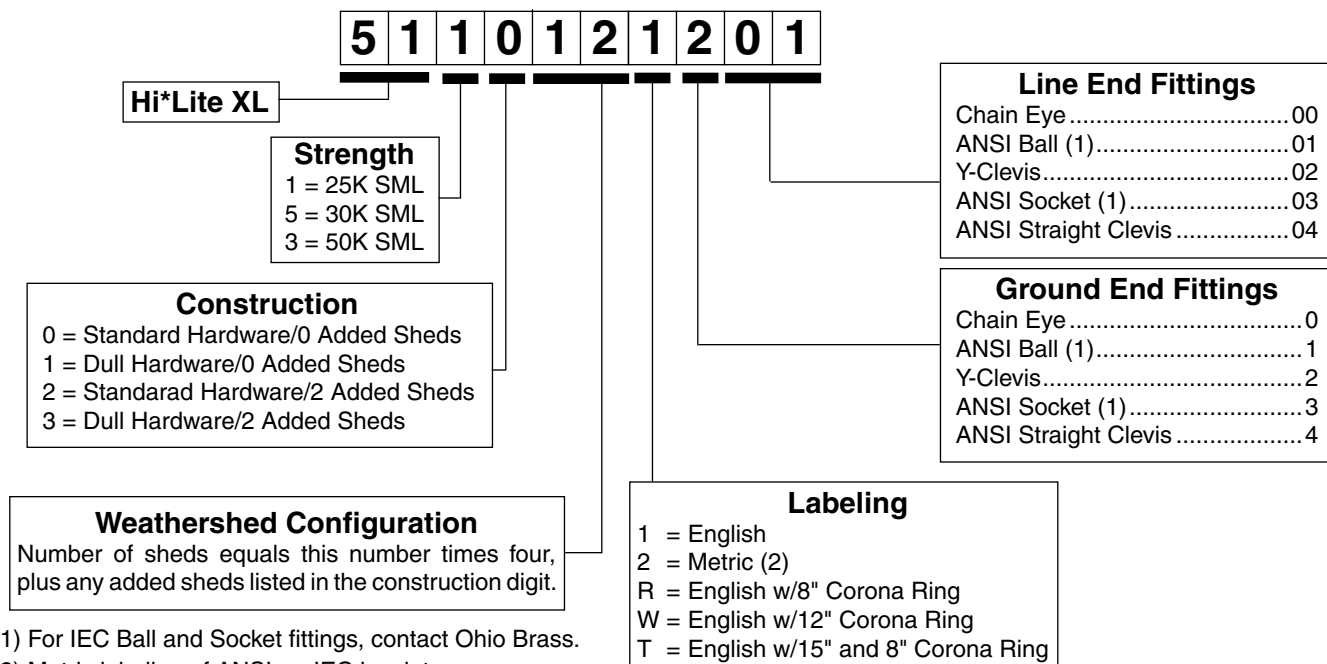
Most Common End Fittings



FITTING TYPE	SML k-LB (kN)	ANSI CLASS	DIMENSIONS IN. (mm)			
			A	B	C	D
CHAIN EYE	25 (111) - 30 (133)	-	0.62	1.00	2.00	0.62
	50 (222)	-	0.75	1.00	2.00	0.85
BALL & SOCKET	25 (111) - 30 (133)	52-5	0.73	1.29	-	-
	50 (222)	52-11	0.92	1.63	-	-
Y-CLEVIS	25 (111) - 30 (133)	-	0.75	1.53	-	-
	50 (222)	-	0.88	1.59	-	-
CLEVIS	25 (111) - 30 (133)	52-6	0.62	0.75	1.50	1.10

* For IEC 16mm and 20mm Ball and Socket fittings, contact Ohio Brass.

Hi*Lite XL Suspension Insulators: Key to the Catalog Numbers



(1) For IEC Ball and Socket fittings, contact Ohio Brass.
(2) Metric labeling of ANSI, or IEC insulators.

Hi*Lite® XL Line Post Insulators

B

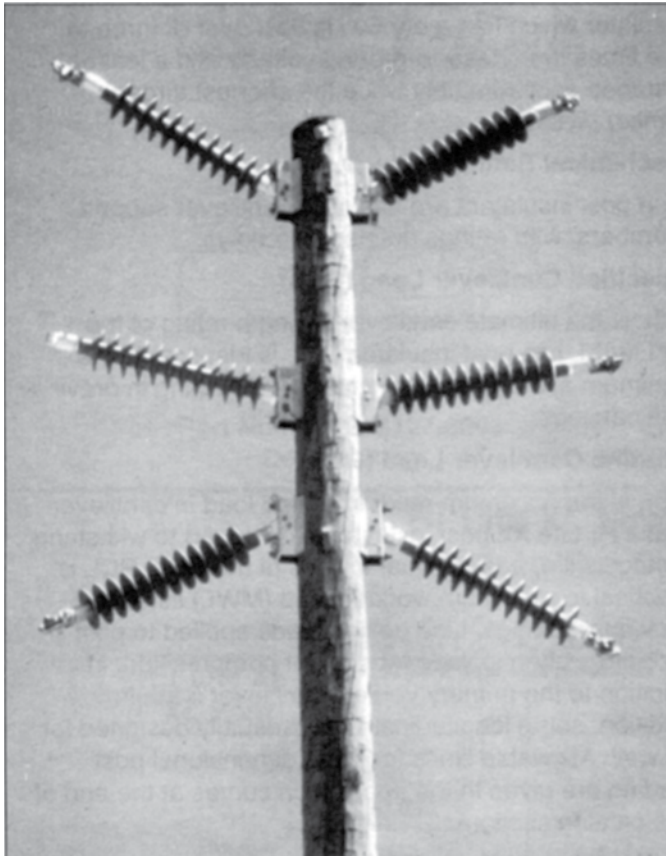


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Hi*Lite*® XL Insulators

Hi*Lite XL line post insulators in this publication embody the latest features available in polymer insulator design and manufacture.

From the early prototypes in 1971, through full scale introduction in 1976, and through the succeeding years, Hi*Lite insulators have featured conservative design and high-quality manufacture.

Today's Hi*Lite insulators will add to the over 1,000,000 already in service worldwide.

Design

The structural design of the Hi*Lite XL consists of these basic parts:

Rod - Hi*Lite insulator fiberglass rod is produced from the highest quality materials. Strands are aligned for maximum tensile strength. The rod is more than 50 percent glass fibers in cross section.

End Fittings - End fittings are aluminum or ductile iron. They are crimped directly to the rod by a special process originated by Ohio Brass, and later adopted by many other producers. The crimp requires no inter-movement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

Weathersheds - Weathersheds are high pressure injection molded by Ohio Brass, from the proprietary compound ESP™. Housings manufactured with ESP silicone alloy rubber exhibit hydrophobicity, high mechanical strength, high corona resistance and low permeability to moisture.

Interface - Hi*Lite insulators use Ohio Brass' live silicone interface. This feature prevents intrusion of moisture and contaminating elements. If the exterior seal is damaged, redundant o-ring seals within the live silicone interface prohibit the lengthwise migration of intrusive elements between shed and rod.

Leakage Distance

Hi*Lite XL insulators feature high leakage distance for maximum resistance to contamination and leakage currents.

Washability

Hi*Lite Line Post insulators listed in this catalog are suitable for flood washing up to 200 psi. The design incorporates positive, labyrinth seals to ensure long-term security against water entry. Conventional dry-particle, air-pressure cleaning methods may also be employed. A cleaning guideline is available from Ohio Brass.

If your washing requirements exceed flood washing, contact Ohio Brass.

Mechanical Ratings

Line post insulators are basically cantilever support members, with ratings defined as follows:

Specified Cantilever Load (SCL)

SCL is the ultimate cantilever strength rating of the Hi*Lite XL line post insulator. SCL is identical to the minimum average breaking load (ABL) rating in previous catalogs.

Reference Cantilever Load (RCL)

RCL is the maximum recommended load in cantilever that a Hi*Lite XL post insulator is designed to withstand during its life, and is equal to 50% of the SCL. RCL is identical to maximum working load (MWL) listed in previous catalogs. Line design loads applied to post insulators often include tension, or compression, in addition to the primary vertical cantilever load. In addition, some longitudinal load is usually designed for as well.

Combined Load

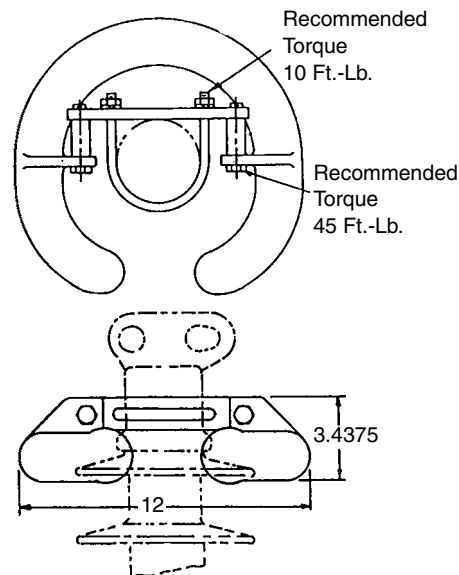
Contact your Hubbell Power Systems representative for combined load applications.

2.5" (63.5mm) Rod Diameter Horizontal Line Posts

Corona Rings

Hi*Lite XL line post insulators are corona free through 161 kV.

Application	161 kV & below	230 kV	345 kV
Line End Energized	Top - NONE Bott - NONE	Top - 2721273001 Bott - NONE	Top - 2721273001 Bott - NONE
Bottom End Energized	Top - NONE Bott - NONE	Top - NONE Bott - 2721273001	Top - NONE Bott - 2721273001



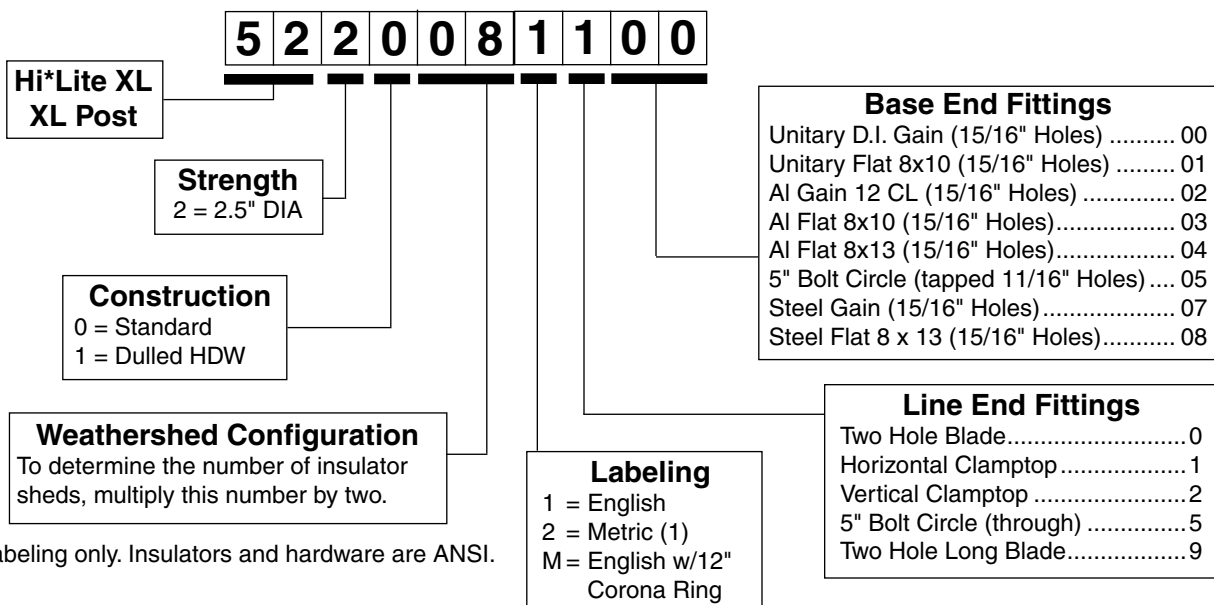
**Part Number 2721273001
Control Ring**

B

Packaging

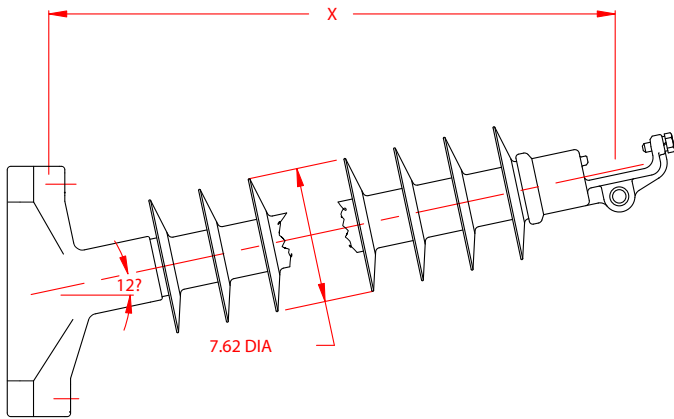
Hi*Lite XL line post insulators are packaged in appropriate quantities in open wood crates. As an option, Ohio Brass offers packaging of the insulators in individual sleeves.

Hi*Lite XL Line Post Insulators: Key to the Catalog Numbers

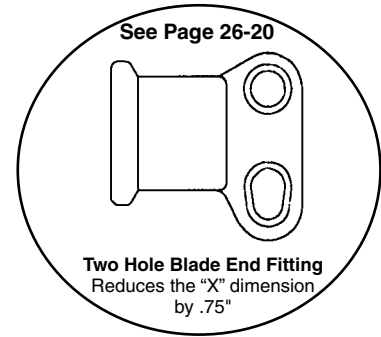


(1) Metric labeling only. Insulators and hardware are ANSI.

2.5" (63.5mm) Rod Diameter Horizontal Line Posts



Line & Base Detail see pages 26-19 & 26-20



Clamptop:

Maximum Design Tension = 2,500 lb (11.1 kN)

Two-Hole Blade:

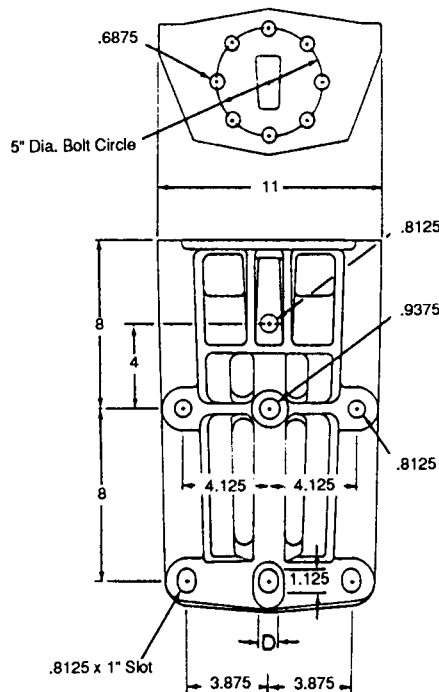
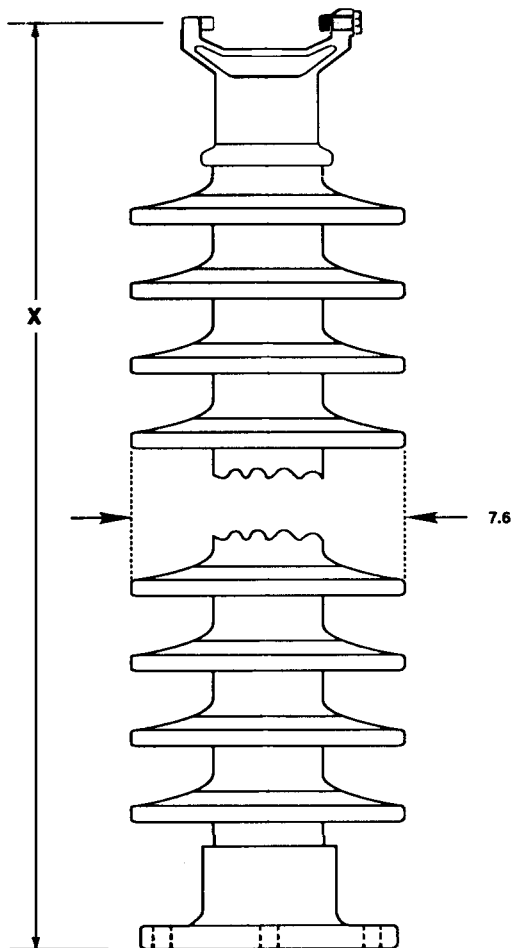
Maximum Design Tension = 7,500 lb. (33.4 kN)

Selection Guide Typical Line Voltage, kV						Catalog # with Gain Base & Clamptop End Fittings	"X" Length Inches (mm)	No. of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽¹⁾ 60 Flashover ANSI		⁽¹⁾ Critical Flashover ANSI		RCL pounds (kN)	Net Weight pounds (kg)
											Dry-kV	Wet-kV	Pos-kV	Neg-kV		
69	115	138	161	230	345	5220041100	33.5 (851)	8	23 (584)	54 (1372)	215	195	340	455	2500 (11.1)	47 (21.3)
						5220051100	38.6 (980)	10	28 (711)	68 (1727)	270	245	420	535	2500 (11.1)	50 (22.7)
						5220061100	43.9 (1115)	12	33 (838)	82 (2083)	325	295	505	620	2135 (9.5)	54 (24.5)
						5220071100	49.2 (1250)	14	39 (991)	96 (2438)	385	340	590	705	1865 (8.3)	57 (25.9)
						5220081100	54.5 (1384)	16	44 (1118)	110 (2794)	440	385	675	785	1650 (7.3)	61 (27.7)
						5220091100	59.6 (1514)	18	49 (1245)	124 (3150)	490	430	760	865	1490 (6.6)	65 (29.5)
						5220101100	64.8 (1646)	20	55 (1397)	138 (3505)	545	475	845	950	1350 (6.0)	68 (30.9)
						5220111100	70.1 (1781)	22	60 (1524)	152 (3861)	600	520	930	1035	1235 (5.5)	72 (32.7)
						5220121100	75.4 (1915)	24	65 (1651)	166 (4216)	650	560	1015	1115	1140 (5.0)	75 (34.1)
						5220131100	80.5 (2045)	26	71 (1803)	180 (4572)	700	600	1095	1195	1060 (4.7)	79 (35.9)
						5220141100	85.8 (2180)	28	76 (1930)	194 (4928)	755	635	1180	1280	990 (4.4)	82 (37.2)
						5220151100	91.1 (2314)	30	81 (2057)	208 (5283)	805	675	1265	1365	925 (4.1)	86 (39.0)
						5220161100	96.3 (2446)	32	87 (2210)	222 (5639)	855	710	1350	1445	870 (3.6)	89 (40.4)
						5220171100	101.4 (2575)	34	92 (2337)	236 (5994)	905	745	1435	1525	820 (3.6)	93 (42.2)
						5220181100	106.7 (2710)	36	97 (2464)	250 (6350)	955	780	1520	1610	780 (3.5)	97 (44.0)
						5220191100	112.0 (2845)	38	103 (2616)	264 (6706)	1005	810	1605	1695	740 (3.3)	100 (45.4)

Notes: (1) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 (2) RCL is the maximum continuous load at which the post should be applied.
 For voltages above 161 kV refer to Page 26-15 for Corona Rings.
 Dimensions are within allowable tolerances as specified in ANSI C29.11.

2.5" (63.5mm) Rod Diameter Vertical Line Posts

Maximum Design Tension
2,500 lb (11.1 kN)



Aluminum Alloy
A356-T6

Catalog No. 75115
134,400 In.-Lb. Rating

Line & Base Fitting Detail see pages 26-19 & 26-20

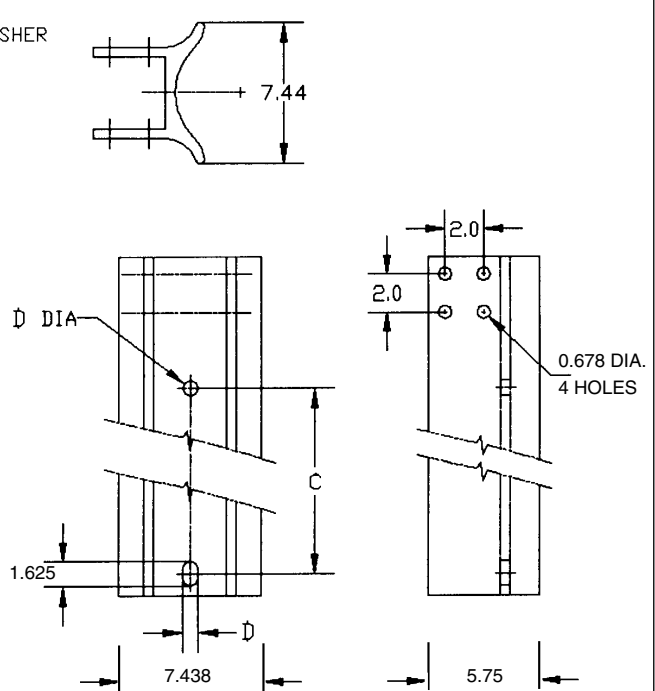
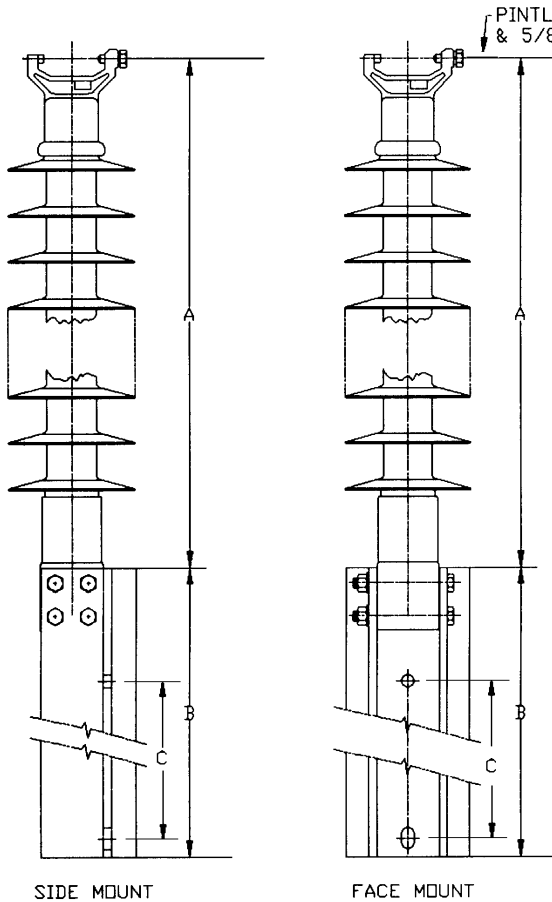
Selection Guide Typical Line Voltage, kV				Catalog # with 5" Bolt Circle & Vert. Clamtop ⁽³⁾	"X" Length Inches (mm)	No. of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽¹⁾ 60 Flashover ANSI		⁽¹⁾ Critical Flashover ANSI		RCL pounds (kN)	Net Weight pounds (kg)
69	115	138	161						Dry-kV	Wet-kV	Pos-kV	Neg-kV		
				5220041205	30.7 (780)	8	23 (584)	54 (1371)	215	195	340	455	2500 (11.1)	27 (12.3)
				5220051205	35.9 (912)	10	28 (711)	68 (1727)	270	245	420	535	2475 (11.0)	30 (13.6)
				5220061205	41.3 (1049)	12	33 (838)	82 (2083)	325	295	505	620	2115 (9.4)	34 (15.4)
				5220071205	46.7 (1186)	14	39 (991)	96 (2438)	385	340	590	705	1850 (8.2)	37 (16.8)
				5220081205	52.1 (1323)	16	44 (1118)	110 (2734)	440	385	675	785	1640 (7.3)	41 (18.6)
				5220091205	57.4 (1458)	18	49 (1245)	124 (3150)	490	430	760	865	1480 (6.6)	45 (20.4)

Notes: (1) Tests in accordance with ANSI C29.1-1982.

(2) RCL is the maximum cantilever continuous load at which the post should be applied.

(3) Mounting Base Catalog No. 75115 may be ordered with these Catalog numbers for a vertical assembly.

2.5" (63.5mm) Rod Diameter Vertical Line Post Assembly



Aluminum Alloy
6063-T5
Base Detail

To Order an Assembly - Pick an insulator from Table A based on your Electrical and Mechanical needs — next, select a Base configuration from Table B, for your mounting position needs.

Line End Fitting Detail see pages 26-19 & 26-20

Selection Guide Typical Line Voltage, kV				(1)Catalog # with Vertical Clamptop & Base Code	"A" Length Inches (mm)
69	115	138	161		
				52200412XX	30.4 (772)
				52200512XX	35.6 (904)
				52200612XX	41.0 (1041)
				52200712XX	46.4 (1179)
				52200812XX	51.8 (1316)
				52200912XX	57.0 (1448)

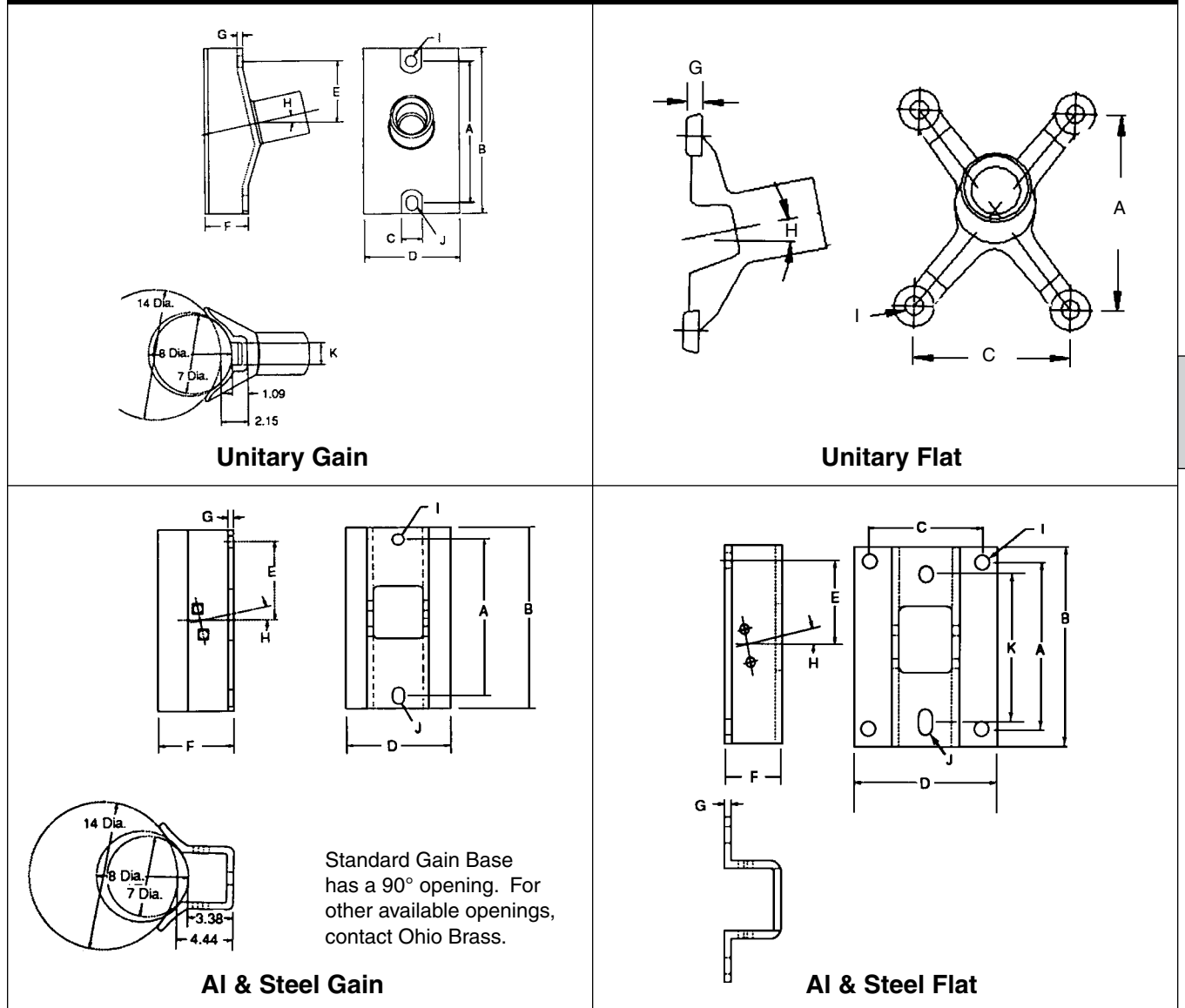
(1) Insulators in Table A have the same electrical and mechanical characteristics as those on Page 26-17 with Code 1205.

Table A

"XX" Code	Style	"B" Length Inches (mm)	"C" Length Inches (mm)	"D" Diameter Inches (mm)
20	Face	20 (508)	12 (305)	.8125 (21)
21	Side	20 (508)	12 (305)	.8125 (21)
22	Face	20 (508)	12 (305)	.9375 (24)
23	Side	20 (508)	12 (305)	.9375 (24)
24	Face	31.75 (806)	16 (406)	.8125 (21)
25	Side	31.75 (806)	16 (406)	.8125 (21)
26	Face	31.75 (806)	16 (406)	.9375 (24)
27	Side	31.75 (806)	16 (406)	.9375 (24)

Table B

2.5" (63.5 mm) Rod Diameter Base Fittings

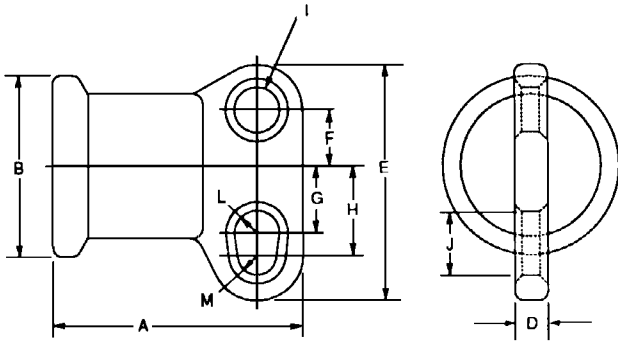

B

Horizontal & Vertical Bases Dimensions (in inches)

Type (Code)*	A	B	C	D	E	F	G	H	I	J	K	Material
Unitary D.I. Gain (00)	12.0	14.0	1.75	8.06	-	3.54	0.5	12°	0.94	0.94 x 1.31	1.90	60-45-12 D.I.
Unitary D.I. Flat (01)	10.0	12.2	8.0	10.0	5.0	-	0.8	12°	0.94	-	-	60-45-12 D.I.
5" B.C. (15)	4.75	6.25	3.63	0.90	5.0	-	-	-	0.69	-	-	60-45-12 D.I.
5" B.C. (05)	4.75	6.25	3.63	0.90	5.0	-	-	-	5/8 - 11 UFS	-	-	60-45-12 D.I.
Al Gain (02)	12.0	14.0	-	8.06	6.13	5.56	0.5	12°	0.94	0.94 x 1.31	-	6063 T5 Al
Al Gain (12)	12.0	14.0	-	8.06	6.13	5.56	0.5	12°	0.81	0.94 x 1.31	-	6063 T5 Al
Steel Gain (07)	12.0	15.0	-	8.33	6.5	6.04	0.38	12°	0.94	0.94 x 2.0	-	Low Carbon Steel
Al Flat (03)	10.0	12.0	8.0	10.0	5.0	4.0	0.5	12°	0.94	-	-	6063 T5 Al
Al Flat (13)	10.0	12.0	8.0	10.0	5.0	4.0	0.5	12°	0.81	-	-	6063 T5 Al
Steel Flat (08)	13.0	15.0	8.0	10.0	6.5	4.0	0.5	12°	1.125 x 0.94	0.94 x 2	12.0	Low Carbon Steel
Al Flat (04)	13.0	15.0	8.0	10.0	6.5	4.0	0.5	12°	0.94	0.94 x 1.31	12.0	6063 T5 Al
Al Flat (14)	13.0	15.0	8.0	10.0	6.5	4.0	0.5	12°	0.81	0.81 x 1.31	12.0	6063 T5 Al

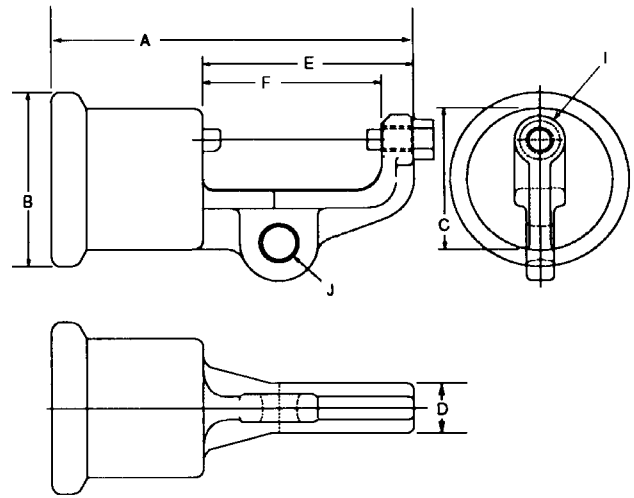
*Code is the third and fourth numbers in the Suffix Code of the Catalog Number.

2.5" (63.5 mm) Rod Diameter Line Fittings

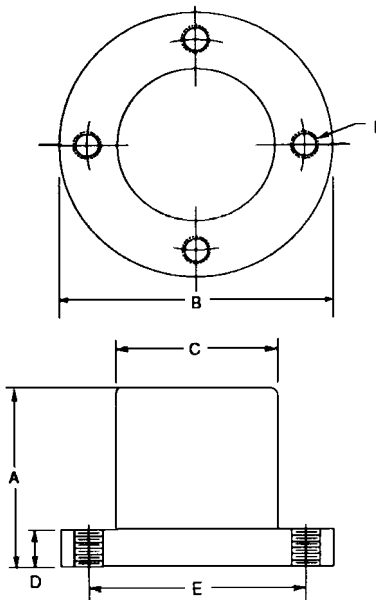


Transverse Compressing Swing Angle for Conductor Suspension Clamp	
2 Hole Blade (Std.)	2 Hole Long Blade
40 deg. max.	64 deg. max.

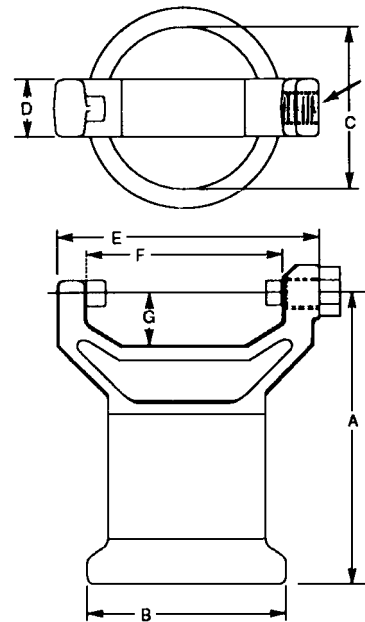
Two Hole Blade
*12° upsweep post angles



Horizontal Clamptop



5" Bolt Circle
Line or Base Fitting



Vertical Clamptop
Part per ANSI C29.7

Horizontal & Vertical End Fittings Dimensions (in inches)

Type (Code)*	A	B	C	D	E	F	G	H	I	J	L	M	Material
2 Hole Blade (0)	5.73	4.0	-	0.75	5.25	1.25	1.50	2.00	1.0	1.44	0.5R	0.44 R	60-40-18 D.I.
2 Hole Long Blade (9)	5.73	4.0	-	0.75	7.75	1.25	4.0	4.5	1.0	1.44	0.5R	0.44R	60-40-18 D.I.
H. Clamptop (1)	8.24	4.0	3.30	1.12	4.72	4.0	-	-	5/8 - 11 UFS	0.75	-	-	60-40-18 D.I.
5" B.C. (3)	4.75	6.25	3.63	0.90	5.0	-	-	-	5/8 - 11 UFS	-	-	-	60-45-12 D.I.
5" B.C. (5)	4.75	6.25	3.63	0.90	5.0	-	-	-	0.69 x Holes	-	-	-	60-45-12 D.I.
V. Clamptop (2)	5.88	4.0	3.30	1.12	5.37	4.0	1.06	-	5/8 - 11 UFS	-	-	-	60-40-18 D.I.

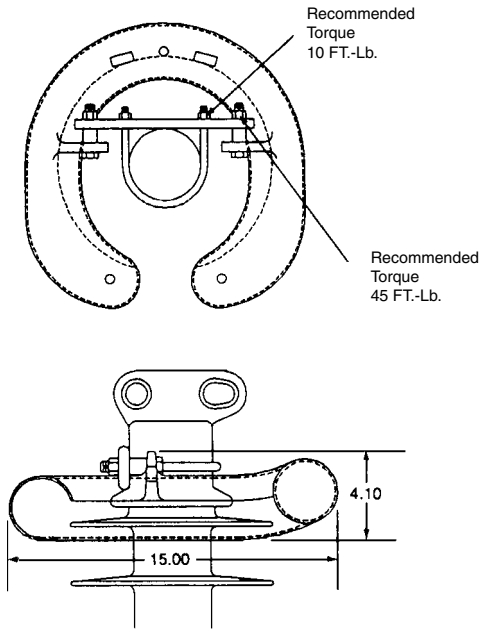
*Code is the 2nd number in the Suffix Code of the Catalog Number.

3.0" (76.2 mm) Rod Diameter Line Posts

Corona Rings

Hi*Lite XL line post insulators are corona-free through 230 kV line-to-ground.

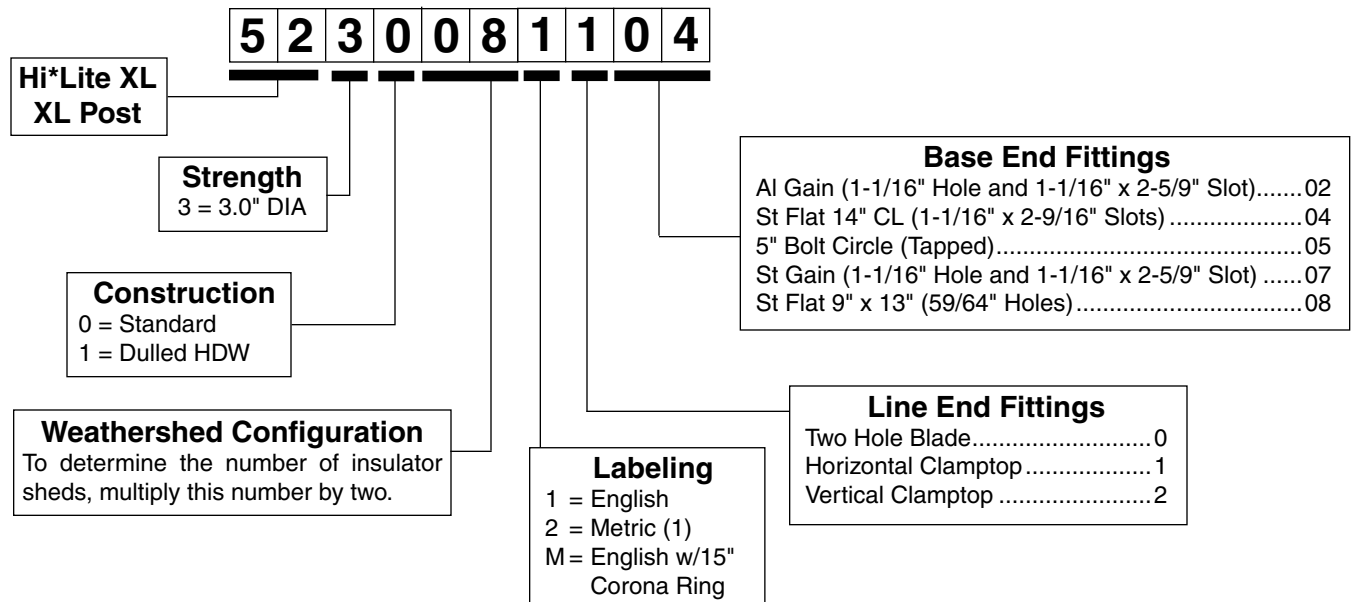
Application	138/161 kV	230 kV	345 kV
Line End Energized	Top - NONE Bott. - NONE	Top - NONE Bott. - NONE	Top - 2737743001 Bott. - NONE



Part Number 2737743001
Control Ring

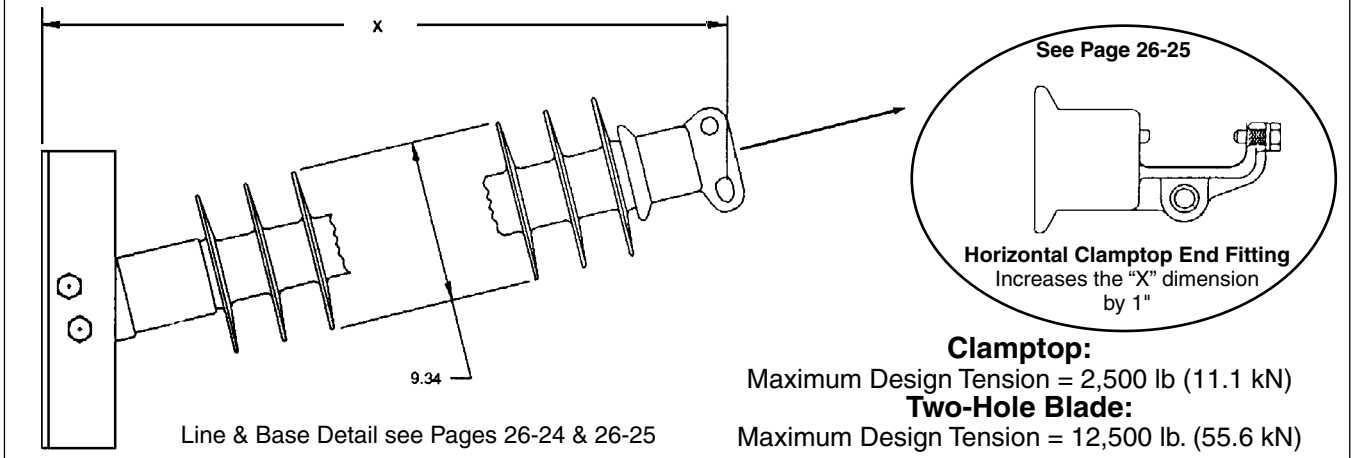
B

Hi*Lite XL Line Post Insulators: Key to the Catalog Numbers



(1) Metric labeling only. Insulators and hardware are ANSI.

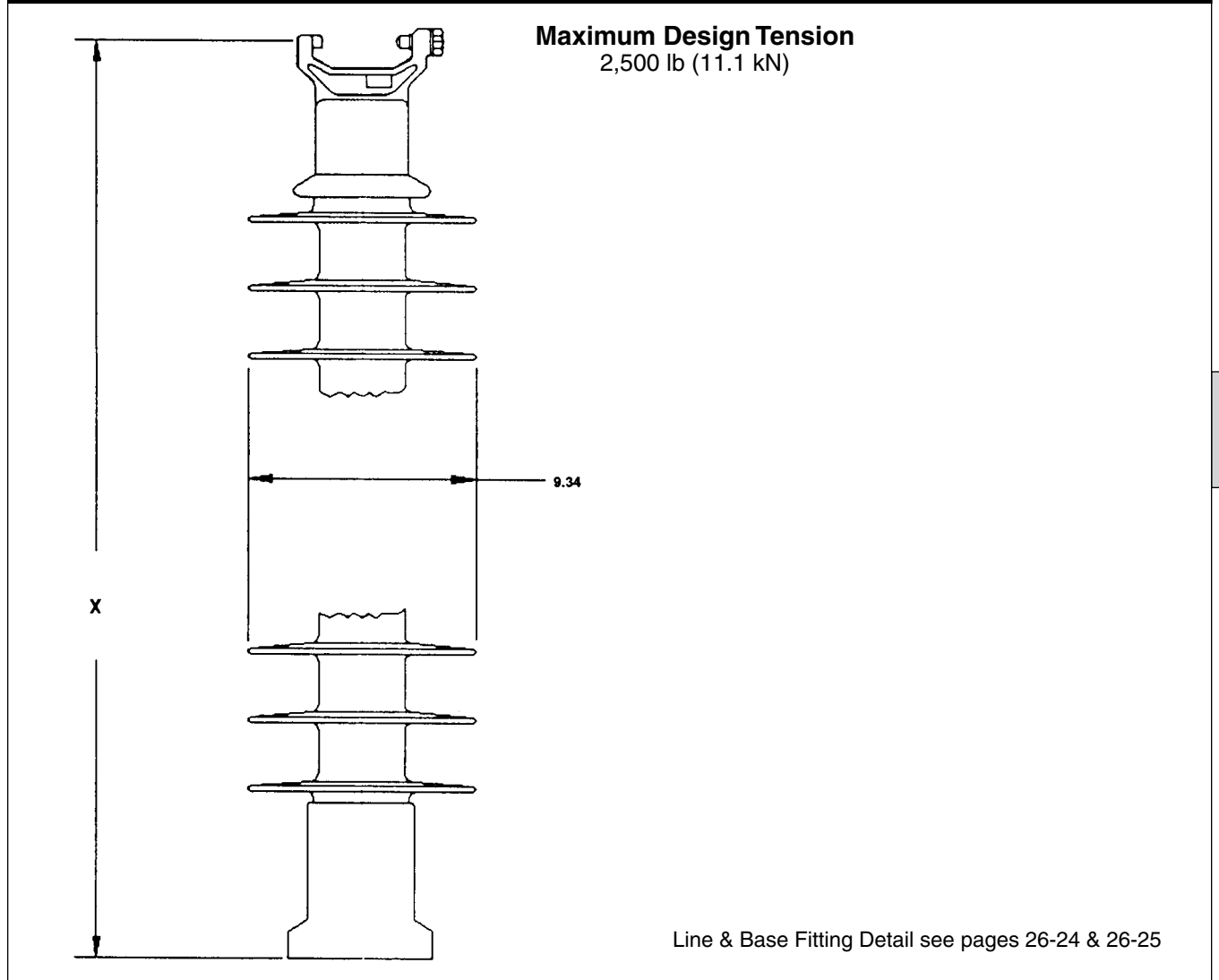
3.0" (76.2mm) Rod Diameter Horizontal Line Posts



Selection Guide Typical Line Voltage, kV						Catalog # with Flat Base & Two Hole Blade	"X" Length Inches (mm)	No. of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽¹⁾ 60 Flashover ANSI		⁽¹⁾ Critical Flashover ANSI		⁽²⁾ RCL pounds (kN)	Net Weight pounds (kg)
69	115	138	161	230	345						Dry-kV	Wet-kV	Pos-kV	Neg-kV		
						5230051004	38.8 (986)	10	29 (737)	77 (1956)	295	250	445	540	4405 (19.6)	90 (40.8)
						5230061004	43.8 (1113)	12	34 (864)	93 (2362)	345	295	530	620	3780 (16.8)	95 (43.1)
						5230071004	49.0 (1245)	14	39 (991)	108 (2743)	395	335	615	705	3295 (14.7)	100 (40.9)
						5230081004	54.8 (1392)	16	45 (1143)	124 (3150)	445	380	695	790	2920 (13.0)	106 (48.1)
						5230091004	59.3 (1506)	18	50 (1270)	140 (3556)	495	420	780	870	2620 (11.7)	110 (49.9)
						5230101004	64.5 (1638)	20	55 (1397)	156 (3962)	545	465	865	955	2380 (10.6)	115 (52.2)
						5230111004	69.5 (1765)	22	60 (1524)	171 (4343)	590	505	950	1035	2185 (9.7)	120 (54.4)
						5230121004	74.7 (1897)	24	66 (1676)	187 (4750)	640	550	1035	1120	2015 (9.0)	125 (56.7)
						5230131004	79.9 (2029)	26	71 (1803)	203 (5156)	685	590	1120	1200	1865 (8.3)	130 (58.9)
						5230141004	85.0 (2159)	28	76 (1930)	218 (5537)	735	640	1205	1285	1740 (7.7)	135 (61.2)
						5230151004	90.2 (2291)	30	82 (2083)	234 (5944)	780	670	1290	1365	1630 (7.2)	141 (63.9)
						5230161004	95.2 (2418)	32	87 (2210)	250 (6350)	825	710	1370	1445	1535 (6.8)	146 (66.2)
						5230171004	100.4 (2550)	34	92 (2337)	265 (6731)	870	755	1455	1530	1450 (6.5)	151 (68.5)
						5230181004	105.5 (2680)	36	98 (2489)	281 (7137)	915	795	1540	1615	1370 (6.1)	156 (70.8)
						5230191004	110.7 (2812)	38	103 (2616)	297 (7544)	960	835	1625	1695	1300 (5.8)	161 (73.1)
						5230201004	115.9 (2944)	40	108 (2743)	313 (7950)	1000	875	1710	1780	1240 (5.5)	166 (75.3)

Notes: (1) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 (2) RCL is the maximum continuous load at which the post should be applied.
 For voltages above 230 kV refer to Page 26-21 for Corona Rings. Electrical values are shown for insulators without rings. For electricals with rings, contact Ohio Brass.

3.0" (76.2 mm) Rod Diameter Vertical Line Posts

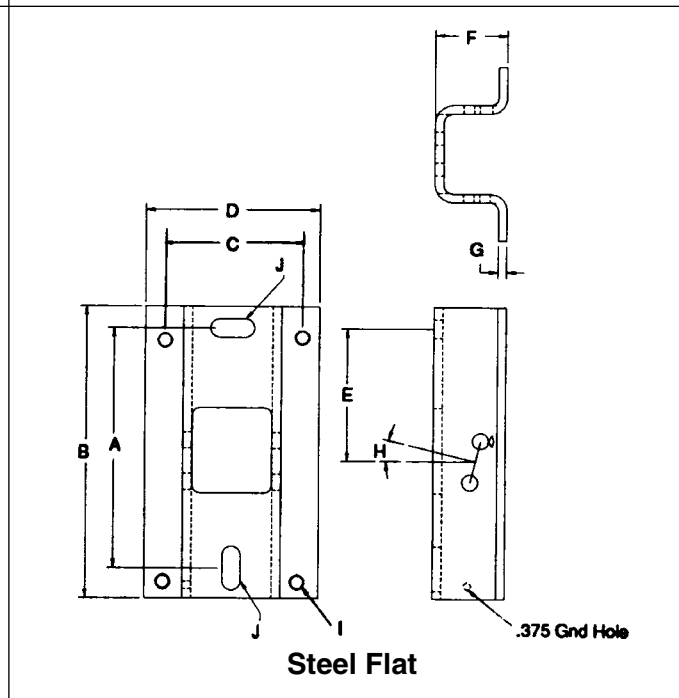
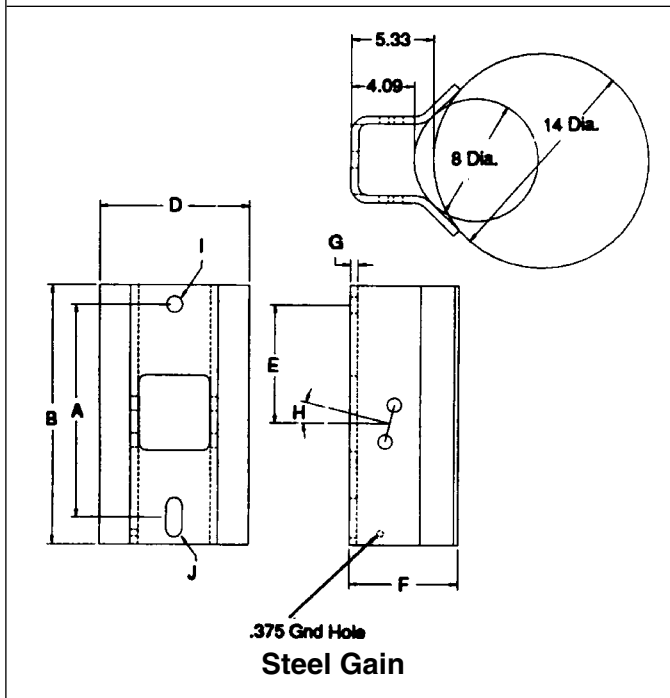
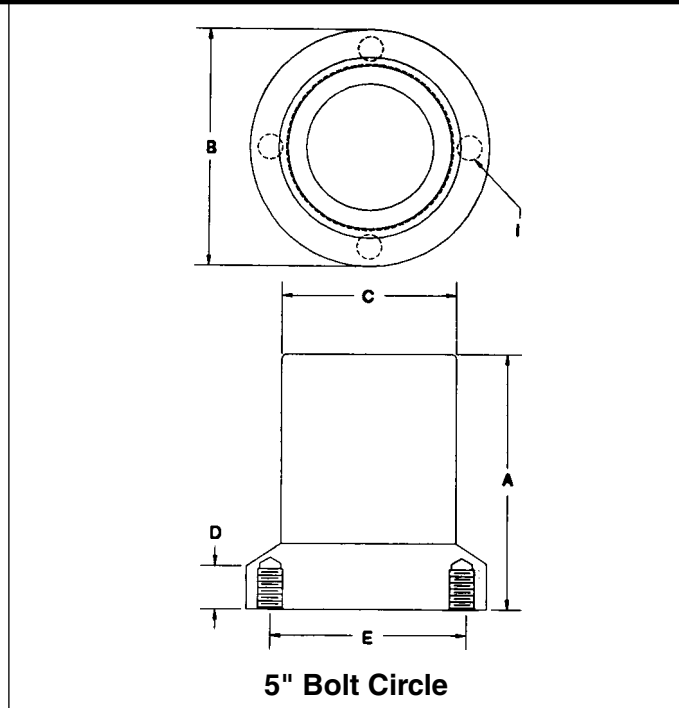
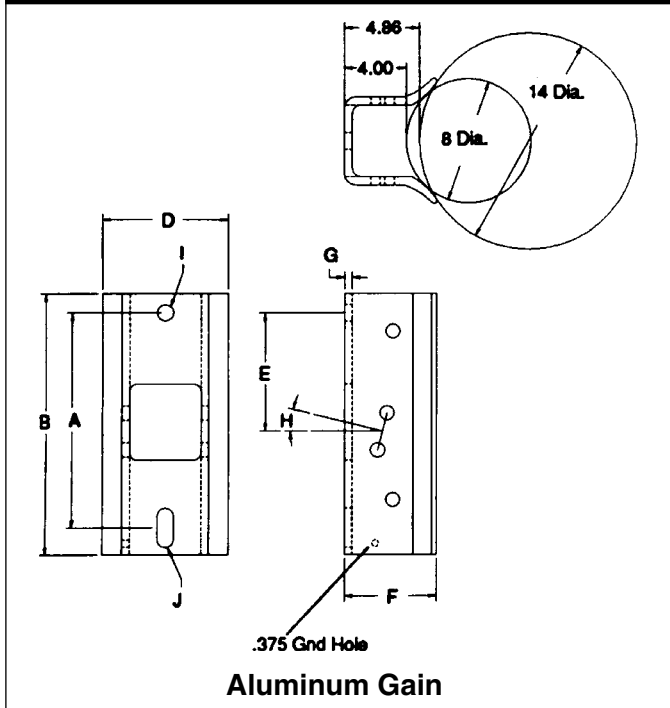


B

Selection Guide Typical Line Voltage, kV				Catalog # with 5" Bolt Circle & Vert. Clamptop	"X" Length Inches (mm)	No. of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽¹⁾ 60 Flashover ANSI		⁽¹⁾ Critical Flashover ANSI		⁽²⁾ RCL pounds (kN)	Net Weight pounds (kg)
69	115	138	161						Dry-kV	Wet-kV	Pos-kV	Neg-kV		
				5230051205	38.0 (965)	10	29 (737)	77 (1956)	295	250	445	540	2500 (11.1)	54 (24.5)
				5230061205	43.2 (1097)	12	34 (864)	93 (2362)	345	295	530	620	2500 (11.1)	59 (26.8)
				5230071205	48.5 (1219)	14	39 (991)	108 (2743)	395	335	615	705	2500 (11.1)	64 (29.1)
				5230081205	53.8 (1367)	16	45 (1143)	124 (3150)	445	380	695	785	2500 (11.1)	69 (31.4)
				5230091205	59.2 (1504)	18	50 (1270)	140 (3556)	495	420	780	870	2500 (11.1)	74 (33.6)
				5230101205	64.5 (1638)	20	55 (1397)	156 (3962)	545	465	865	950	2335 (10.4)	79 (35.9)

Notes: (1) Tests in accordance with ANSI C29.1-1982.
 (2) RCL is the maximum cantilever continuous load at which the post should be applied.

Hi*Lite XL 3.0" Rod Dia. Base Fittings

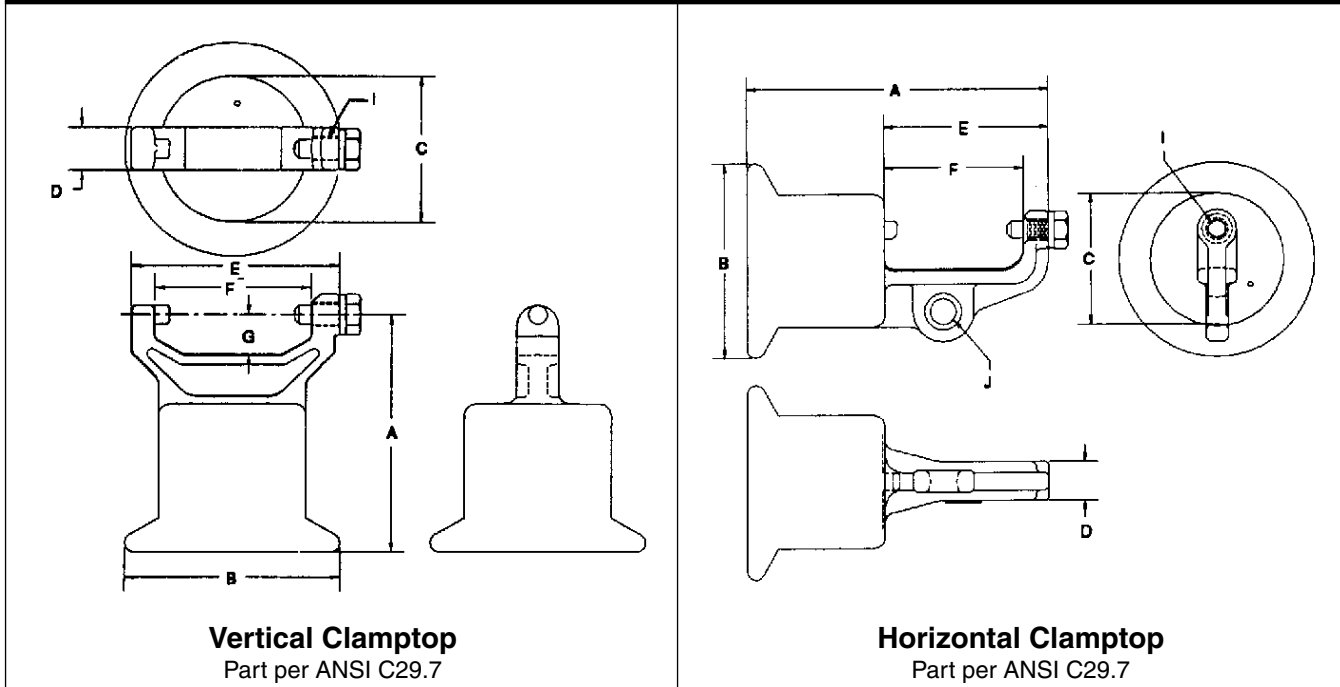


Horizontal & Vertical Bases Dimensions (in inches)

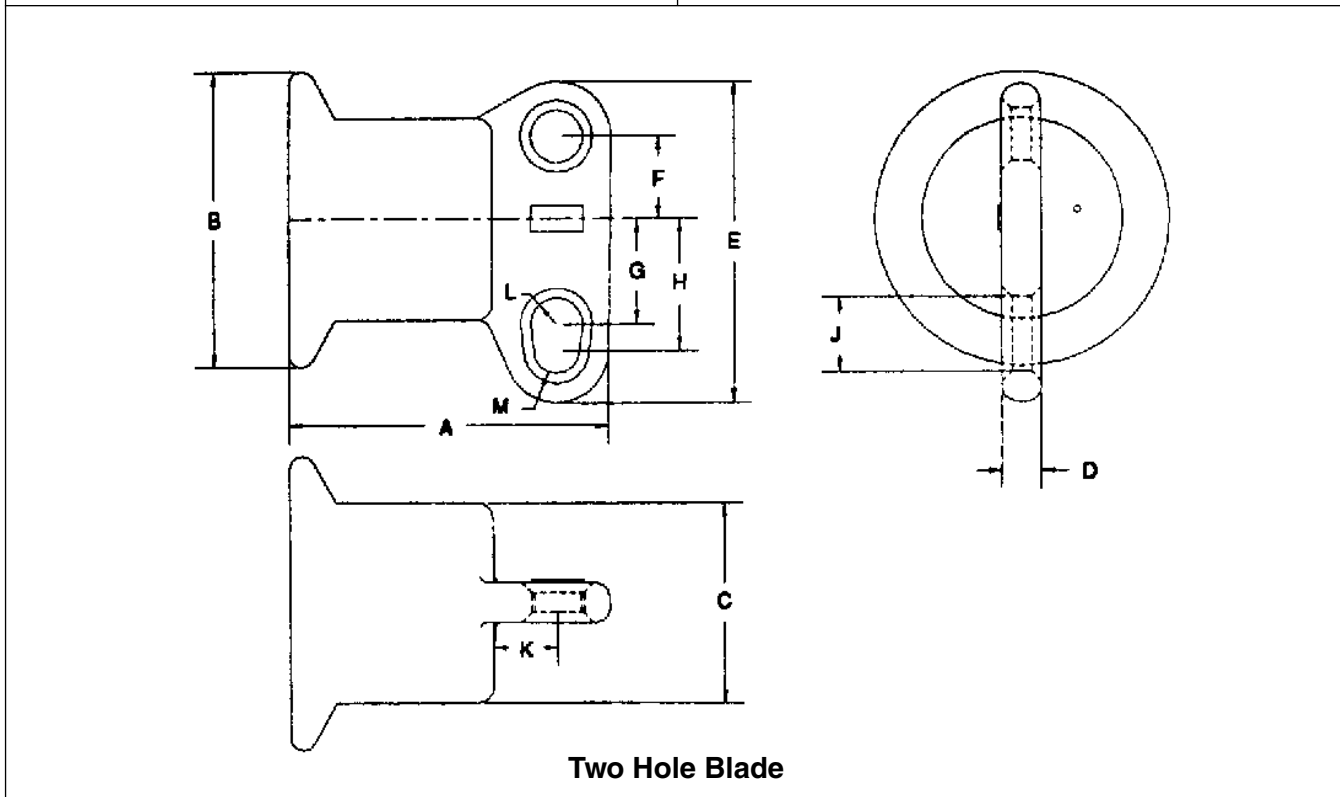
Type (Code)*	A	B	C	D	E	F	G	H	I	J	Material
5" B.C. (05)	6.36	5.9	4.37	1.2	5.0	-	-	-	5/8 - 11 UFS	-	60-40-18 D.I.
Al Gain (02)	14.0	17.0	-	8.079	7.75	5.949	0.53	14°	1.06	1.06 x 2.56	6063 T5 Al
Steel Gain (07)	14.0	17.0	-	9.65	7.75	7.03	0.5	14°	1.06	1.06 x 2.56	Low Carbon Steel
Steel Flat (08)	13.0	15.0	9.0	11.0	6.5	4.12	0.5	14°	0.938	-	Low Carbon Steel
Steel Flat (04)	14.0	17.0	-	10.0	7.75	4.12	0.5	14°	-	1.06 x 2.56	Low Carbon Steel

*Code is the 2nd number in the Suffix Code of the Catalog Number.

Hi*Lite XL 3.0" Rod Dia. Line Fittings



B



Horizontal & Vertical End Fittings Dimensions (in inches)

Type (Code)*	A	B	C	D	E	F	G	H	I	J	K	L	M	Material
2 Hole End (0)	6.16	5.63	3.84	0.75	6.12	1.57	2.0	2.5	-	1.44	1.24	0.5R	0.44 R	60-40-18 D.I.
H. Clamptop (1)	8.64	5.63	3.84	1.12	4.72	4.0	-	-	5/8 - 11 UFS	0.75	-	-	-	60-40-18 D.I.
V. Clamptop (2)	6.31	5.63	3.84	1.12	5.37	4.0	1.06	-	5/8 - 11 UFS	-	-	-	-	60-40-18 D.I.

*Code is the 2nd digit in the Suffix Code of the Catalog Number.

Clamptop Clamp

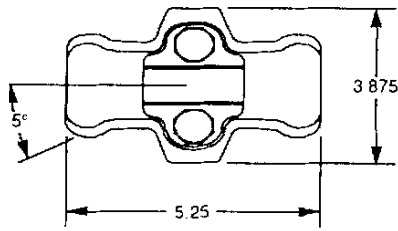


Figure 1

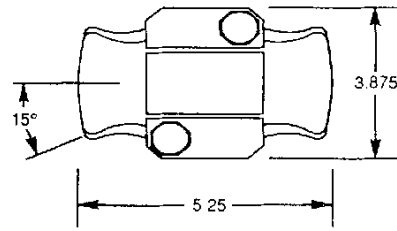


Figure 2

Clamptop clamps can be mounted directly on Hi*Lite XL 250 posts if the posts are ordered with the horizontal or vertical clamptop option.

Catalog Number	Fig. No.	Body & Keeper Material	Clamping Range Inches (mm)	Ultimate Body Strength Lbs. (kN)
TSC57	1	356-T6 Al	0.25-057 (6.3-14.4)	2800 (1.273)
TSC106	1	356-T6 Al	0.50-1.06 (12.7-26.9)	2800 (1.273)
TSC150	1	356-T6 Al	1.00-1.50 (25.4-38.1)	2800 (1.273)
TSC200	2	356-T6 Al	1.50-2.00 (38.1-50.8)	2800 (1.273)

Jumper Clamps and Assemblies

A practical application of Hi*Lite line posts is for support of jumper loops on transmission lines.

Horizontal motion of the jumper is restricted, and the factor of wind sway is eliminated. Additionally the crossarm length may be reduced. The Difference in cost of insulation is not significant but, the savings in tower cost can be attractive. Regardless of cost, the use of a jumper support improves construction.

If using a single clamp, clamp position relative to the insulator may be changed by bolting the clamp through the upper hole in the insulator end fitting.

Jumper clamps are not intended for tangent span applications.

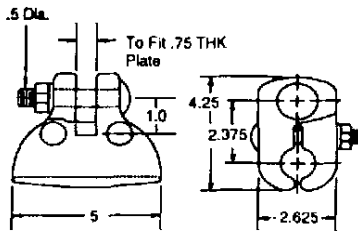


Figure 1

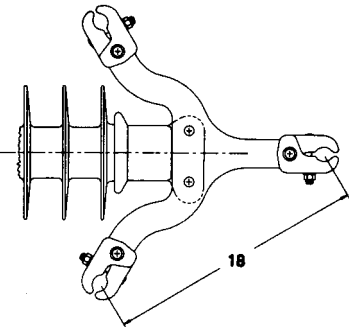


Figure 3

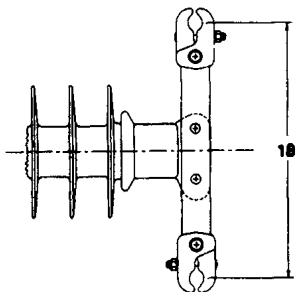


Figure 2

Figure	Catalog Number	Yoke Type	Clamping Range (Inches)	Post Type
1	976423002	None	1.00 - 1.40	Any
1	976423003	None	1.40 - 1.60	Any
1	600643001	None	1.60 - 2.00	Any
2	2717243001	Dual	1.00 - 1.40	250
2	2717253001	Dual	1.40 - 1.60	250
2	2717263001	Dual	1.60 - 2.00	250
2	2738383001	Dual	1.00 - 1.40	300
2	2738393001	Dual	1.40 - 1.60	300
2	2738403001	Dual	1.60 - 2.00	300
3	2721763001	Triple	1.00 - 1.40	250
3	2721773001	Triple	1.40 - 1.60	250
3	2721783001	Triple	1.60 - 2.00	250
3	2738413001	Triple	1.00 - 1.40	300
3	2738423001	Triple	1.40 - 1.60	300
3	2738433001	Triple	1.60 - 2.00	300
4	2721793001	Quad	1.00 - 1.40	250
4	2721803001	Quad	1.40 - 1.60	250
4	2721813001	Quad	1.60 - 2.00	250
4	2738443001	Quad	1.00 - 1.40	300
4	2738453001	Quad	1.40 - 1.60	300
4	2738463001	Quad	1.60 - 2.00	300

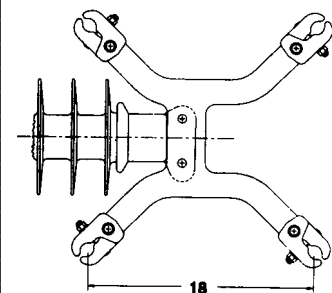
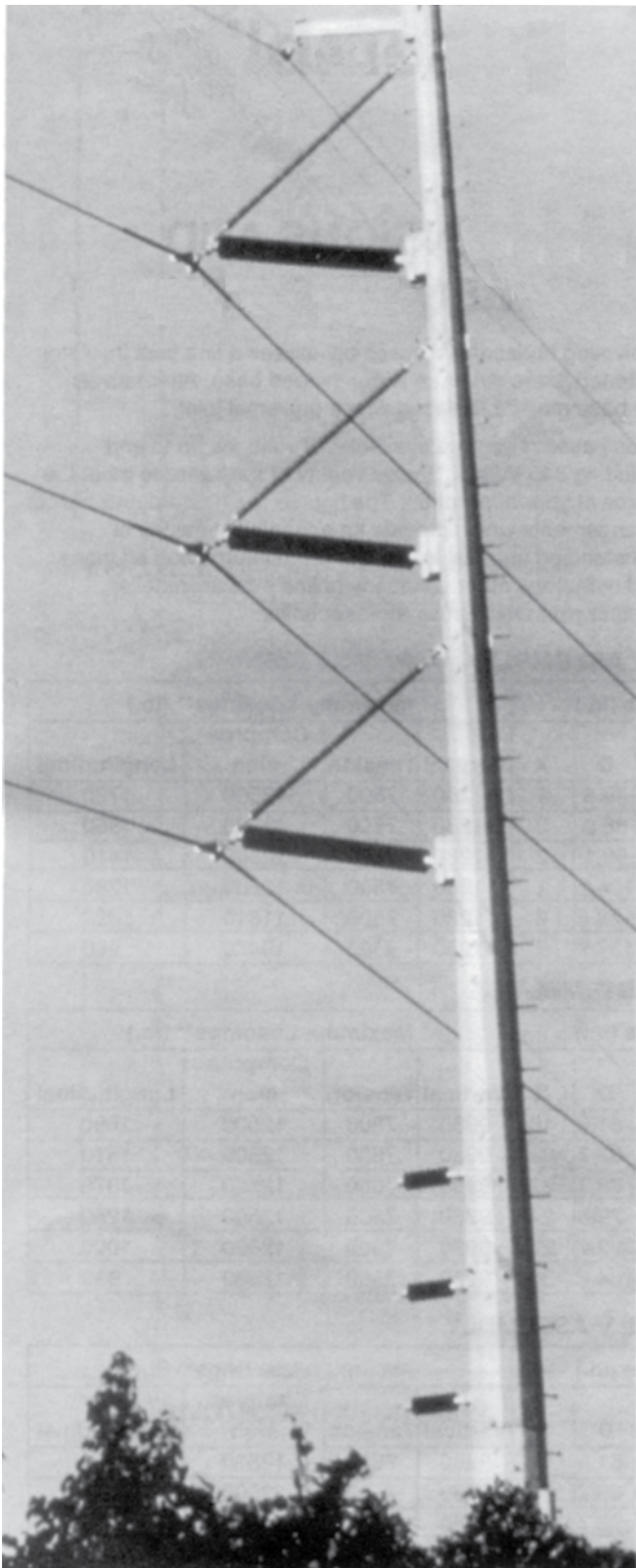


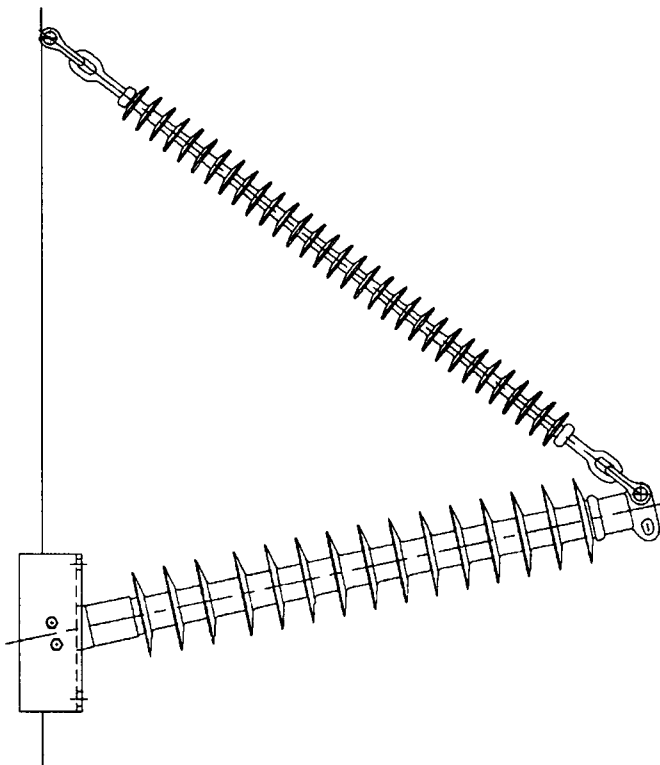
Figure 4



Hi*Lite[®] XL Braced Posts

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Dimension and Strength Ratings.....	26-28
Assembly Drawings	26-29

C



Hi*Lite® XL Assemblies

Catalog number covers complete assembly including insulator and hardware as illustrated.

The need to minimize the tower size and visual impact of transmission lines has prompted increased interest in braced line posts, horizontal-V, and pivoting V assemblies. These insulating structures offer vastly improved vertical load capabilities over conventional lines posts while retaining the advantages of a fixed conductor position.

A braced line post uses a conventional line post with a suspension string tied to the tower face with a link. A horizontal-V replaces the link with a fixed offset extending from the tower face adding a stabilizing force to the assembly. Both these assemblies are available with flat or gain bases.

A pivoting horizontal-V assembly utilizes a line post insulator fastened to the structure with a hinged base. Alternatively, the base may be replaced with a universal joint.

These assemblies are available for voltages up to and including 345 kV with a wide variety of hardware to meet the needs of your application. The figures illustrated depict typical arrangements which provide an economical means of withstanding unusual loads. For more information on these and numerous other variations of line post assemblies, contact your Ohio Brass representative.

BRACED LINE POST ASSEMBLY

Typical System kV	Cat # Gain Base	Cat # Flat Base	Component Insulators		Dimensions (in.)					Maximum Loadings** (lb.)			
			Post	Suspension	A	B	C	D	X	Vertical	Tension	Compress-ion	
												Longitudinal	
115/138	234220	234221	522008	511010	53.7	72.8	74.0	79.8	2	11280	7500	12500	1730
115/138	234222	234223	522009	511211	58.8	81.9	83.0	88.9	2	11280	7500	12500	1550
161	234224	234225	522010	511013	64.1	91.1	91.0	98.1	2	11280	7500	12500	1410
161	234226	234227	522011	511014	69.4	97.2	96.0	104.2	2	11280	7500	12500	1280
230 *	234228	234229	522014	511018	85.0	121.6	118.0	128.6	2	11280	7500	11810	1020
230 *	234230	234231	522015	511219	90.3	130.7	127.0	137.7	2	11280	7500	10470	960

HORIZONTAL V ASSEMBLY

Typical System kV	Cat # Gain Base	Cat # Flat Base	Component Insulators		Dimensions (in.)					Maximum Loadings** (lb.)			
			Post	Suspension	A	B	C	D	X	Vertical	Tension	Compress-ion	
												Longitudinal	
115/138	234232	234233	522008	511007	54.9	54.6	51.0	61.6	18	9980	7500	12500	1680
115/138	234234	234235	522009	511008	60.1	60.7	56.0	67.7	20	9980	7500	12500	1510
161	234236	234237	522010	511009	65.5	66.7	61.0	73.7	22	9980	7500	12500	1370
161	234238	234239	522011	511010	70.9	72.8	66.0	79.8	24	9980	7500	12500	1250
230 *	234240	234241	522014	511013	86.9	91.1	80.0	98.1	28	9980	7500	12500	1000
230 *	234242	234243	522015	511014	92.3	97.2	85.0	104.2	30	9980	7500	12500	930

PIVOTING HORIZONTAL V ASSEMBLY

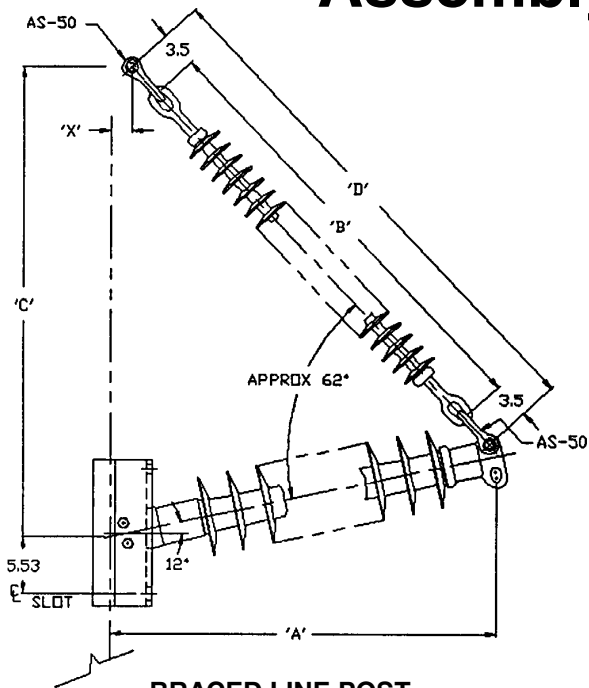
Typical System kV	Cat # Gain Base	Cat # Flat Base	Component Insulators		Dimensions (in.)					Maximum Loadings** (lb.)			
			Post	Suspension	A	B	C	D	X	Vertical	Tension	Compress-ion	
												Longitudinal	
115/138	—	234244	522008	511007	55.2	54.6	51.0	61.6	18	9980	7500	12500	—
115/138	—	234245	522009	511008	60.4	60.7	56.0	67.7	20	9980	7500	12500	—
161	—	234246	522010	511009	65.8	66.7	61.0	73.7	22	9980	7500	12500	—
161	—	234247	522011	511010	71.2	72.8	66.0	79.8	24	9980	7500	12500	—
230 *	—	234248	522014	511013	87.2	91.1	80.0	98.1	28	9980	7500	12500	—
230 *	—	234249	522015	511014	92.6	97.2	85.0	104.2	30	9980	7500	12500	—

Contact your Ohio Brass representative for designs utilizing the optional pivoting strut member.

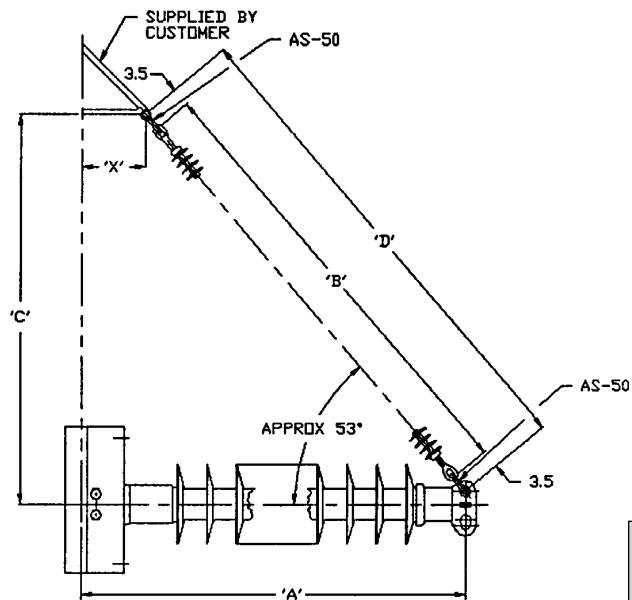
* Corona rings are required for 230 kV and above.

** Maximum loads are for single loads in the specified direction.

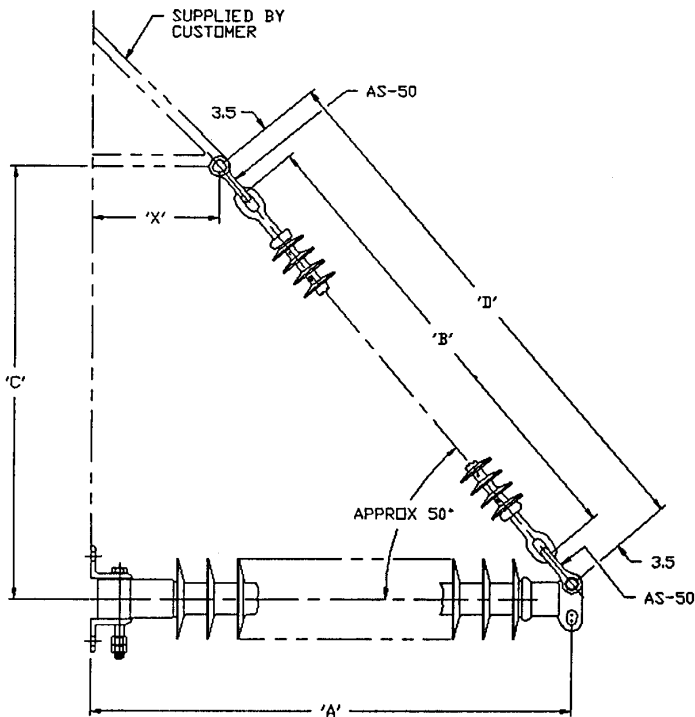
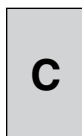
Assembly Drawings



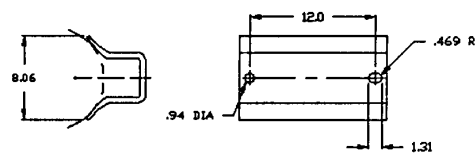
BRACED LINE POST



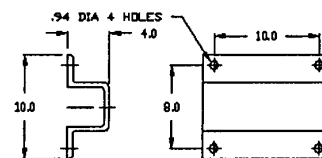
HORIZONTAL-V



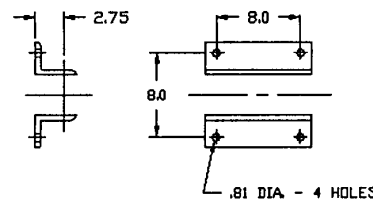
PIVOTING HORIZONTAL-V



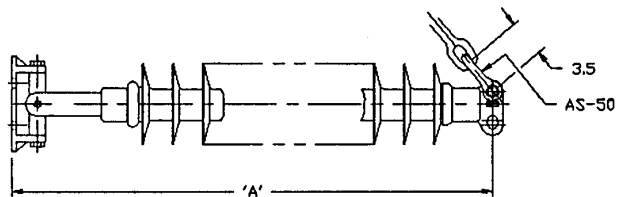
GAIN BASE MOUNTING



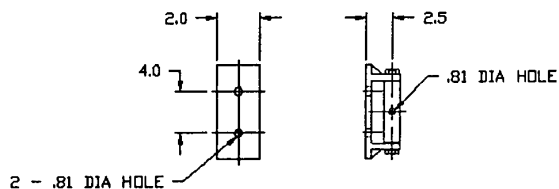
FLAT BASE MOUNTING



PIVOTING BASE MOUNTING



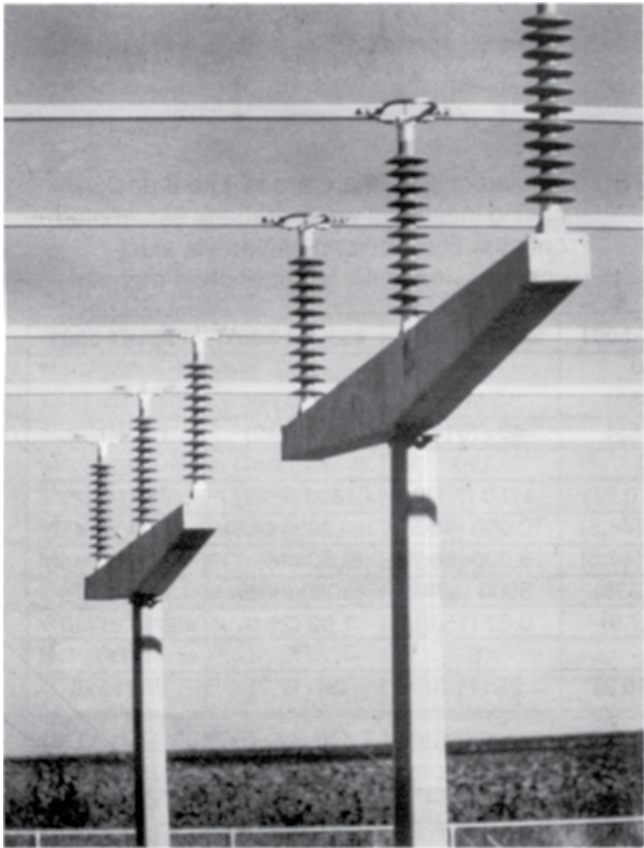
OPTIONAL PIVOTING STRUT MEMBER



HI*LITE II STATION POST INSULATORS

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NOTE: Insulators listed here are Hi-Lite II design having individual weathersheds assembled to the core rod and sealed via axial compression in the polymer rubber material.

D

HI-LITE II POST INSULATORS

Maximum Design Cantilever Rating (MDC)

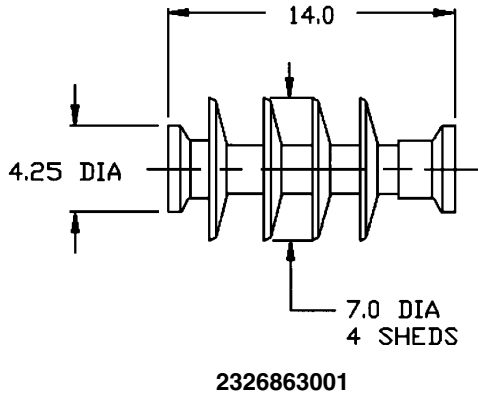
MDC is the maximum recommended load in cantilever that a Hi*Lite post insulator is designed to withstand during its service life.

Average Failing Load (AFL)

AFL is the average failing load of a Hi*Lite line or station post insulator. This value can be determined by multiplying the MDC by a factor of 2.5.

Selection

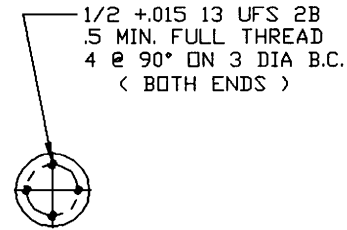
If you need a Hi*Lite post that is different from those shown in this catalog, please contact your OB representative. Hi*Lite station posts meet electrical and dimensional specifications of their porcelain equivalents. Mechanically, the Hi*Lite are less rigid with more deflection under both cantilever and torsional loading.



HI*LITE II STATION POST INSULATORS

Series 175

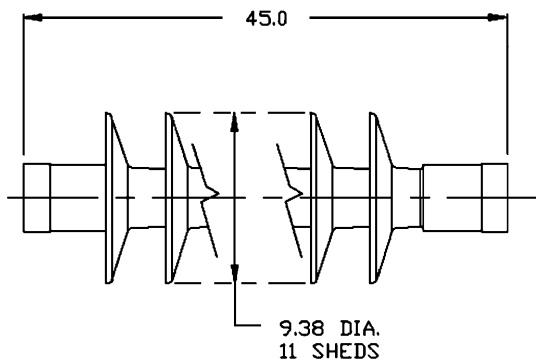
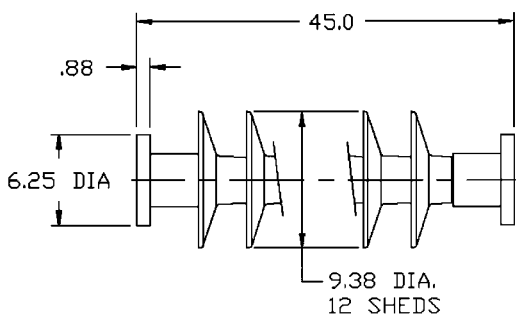
3" (76mm) Bolt Circles



NOTE: Insulators listed here are Hi-Lite II design having individual weathersheds assembled onto the core rod and sealed via axial compression in the polymer shed material.

CATALOG NUMBER (3" BOLT CIRCLES)	2326863001	2326853001	2331923001	2331873001
BIL (kV)	150	200	250	350
Height — X in. (mm)	14 (356)	18 (457)	22 (559)	30 (762)
Leakage Distance in. (mm)	27 (685)	40 (1015)	49 (1240)	76 (1930)
60-Hz Withstand — 10 sec/wet (kV)	80	120	150	230
Maximum Design Cantilever lb. (kN)	2390 (10.67)	1750 (7.78)	1390 (6.23)	980 (4.39)
Maximum Design Tension lb. (kN)	10,000 (44.5)	10,000 (44.5)	10,000 (44.5)	10,000 (44.5)
Maximum Design Compression lb. (kN)	10,000 (44.5)	15,000 (66.7)	15,000 (66.7)	15,000 (66.7)
Maximum Design Torsion in.-lb. (N-meter)	3000 (339)	3000 (339)	3000 (339)	3000 (339)
Deflection at Stated Cantilever in. (mm)	0.31 (7.9)	0.62 (15.9)	1.02 (25.9)	2.16 (54.9)
Weathersheds	4	6	7	11
Net Weights lb. (kg.)	22.5 (10.2)	25 (11.3)	28 (12.7)	33 (15.0)

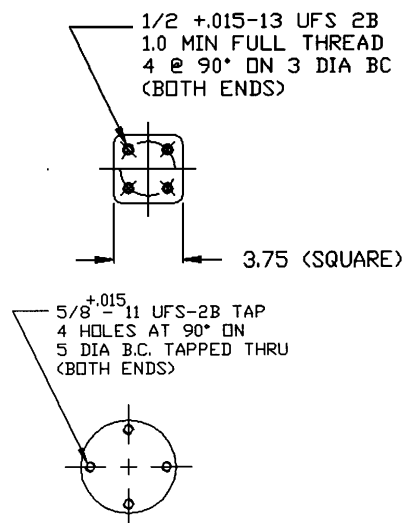
Note: Station Posts are also available in non-standard section lengths.
Contact your Ohio Brass representative.


2321993001

2323373001

HI*LITE II STATION POST INSULATORS

Series 250

5" (127mm) Bolt Circles



CATALOG NUMBER (3" BOLT CIRCLES)	2323013001	2321993001	2323003001	2323093001
BIL (kV)	350	550	650	750
Height — X in. (mm)	30 (762)	45 (1143)	54 (1372)	62 (1575)
Leakage Distance in. (mm)	63 (1570)	102 (2590)	128 (3250)	148 (3760)
60-Hz Withstand — 10 sec/wet (kV)	190	300	380	430
Maximum Design Cantilever lb. (kN)	1400 (6.23)	930 (4.14)	770 (3.42)	670 (2.98)
Maximum Design Tension lb. (kN)	30,000 (133)	30,000 (133)	30,000 (133)	30,000 (133)
Maximum Design Compression lb. (kN)	50,000 (222)	50,000 (222)	50,000 (222)	50,000 (222)
Maximum Design Torsion in.-lb. (N-meter)	9,000 (1000)	9,000 (1000)	9,000 (1000)	9,000 (1000)
Deflection at Stated Cantilever in. (mm)	1.0 (25)	2.3 (58)	3.4 (86)	4.5 (114)
Weathersheds	7	11	14	16
Net Weights lb. (kg.)	30 (13.6)	42 (19)	51 (23)	54 (24.5)

CATALOG NUMBER (5" BOLT CIRCLES)	2323363001	2323373001	2323383001	2323393001	2323753001
BIL (kV)	350	550	650	750	900
Height — X in. (mm)	30 (762)	45 (1143)	54 (1372)	62 (1575)	80 (2032)
Leakage Distance in. (mm)	64 (1626)	109 (2770)	130 (3300)	156 (3960)	204 (5180)
60-Hz Withstand — 10 sec/wet (kV)	190	320	380	450	560
Maximum Design Cantilever lb. (kN)	2900 (12.90)	1850 (8.23)	1520 (6.76)	1310 (5.83)	990 (4.45)
Maximum Design Tension lb. (kN)	30,000 (133)	30,000 (133)	30,000 (133)	30,000 (133)	30,000 (133)
Maximum Design Compression lb. (kN)	50,000 (222)	50,000 (222)	50,000 (222)	50,000 (222)	35,000 (156)
Maximum Design Torsion in.-lb. (N-meter)	9000 (1000)	9000 (1000)	9000 (1000)	9000 (1000)	9,000 (66.7)
Deflection at Stated Cantilever in. (mm)	1.77 (45)	4.13 (105)	6.00 (152)	8.00 (203)	13.50 (343)
Weathersheds	8	12	14	17	22
Net Weights lb. (kg.)	30 (13.6)	42 (19)	51 (23)	54 (24.5)	72 (32.7)

- Notes: 1. Station Posts are also available in non-standard section lengths. Contact Ohio Brass.
 2. At 230 kV, corona ring 2721273001 may be required.
 3. For through holes, specify code 3002.

Sample Polymer Specification

Purpose: To ensure a suitable service life of polymer insulating materials.

I. Material Design Tests

- The following must be performed to certify a material for use in production.

1. Tracking test: Performed on a sample of material inclined at 30° and electrodes positioned 35mm apart. Samples are sprayed with a conductive solution (400Ωcm) and energized at 10kV. The cycle is repeated every 90 seconds. The sample passes if there is:

1. No carbonization or tracking.
2. No erosion through sample.
3. No leakage current flow at the end of 90 seconds.

The sample must withstand 15,000 test cycles.

2. Ultraviolet Test: Samples of the rubber must be tested in a QUV tester or equivalent cyclic weatherometer. The samples are exposed to high ultraviolet radiation and high humidity without cracking, checking or becoming hydrophilic.

The sample is judged to have passed this test if it exceeds 8,000 hours of exposure without damage.

3. Corona Cutting: Samples 5 cm by 7 cm are subjected to mechanical stress of 300,000 μstrain by bending samples around a grounded electrode. A needle-like electrode is placed 1 mm from the surface of the sample and energized at 12 kV in a controlled humidity chamber.

The sample is judged to have passed this test if there is no splitting or cutting. Samples must pass 1,000 hours of exposure to this test.

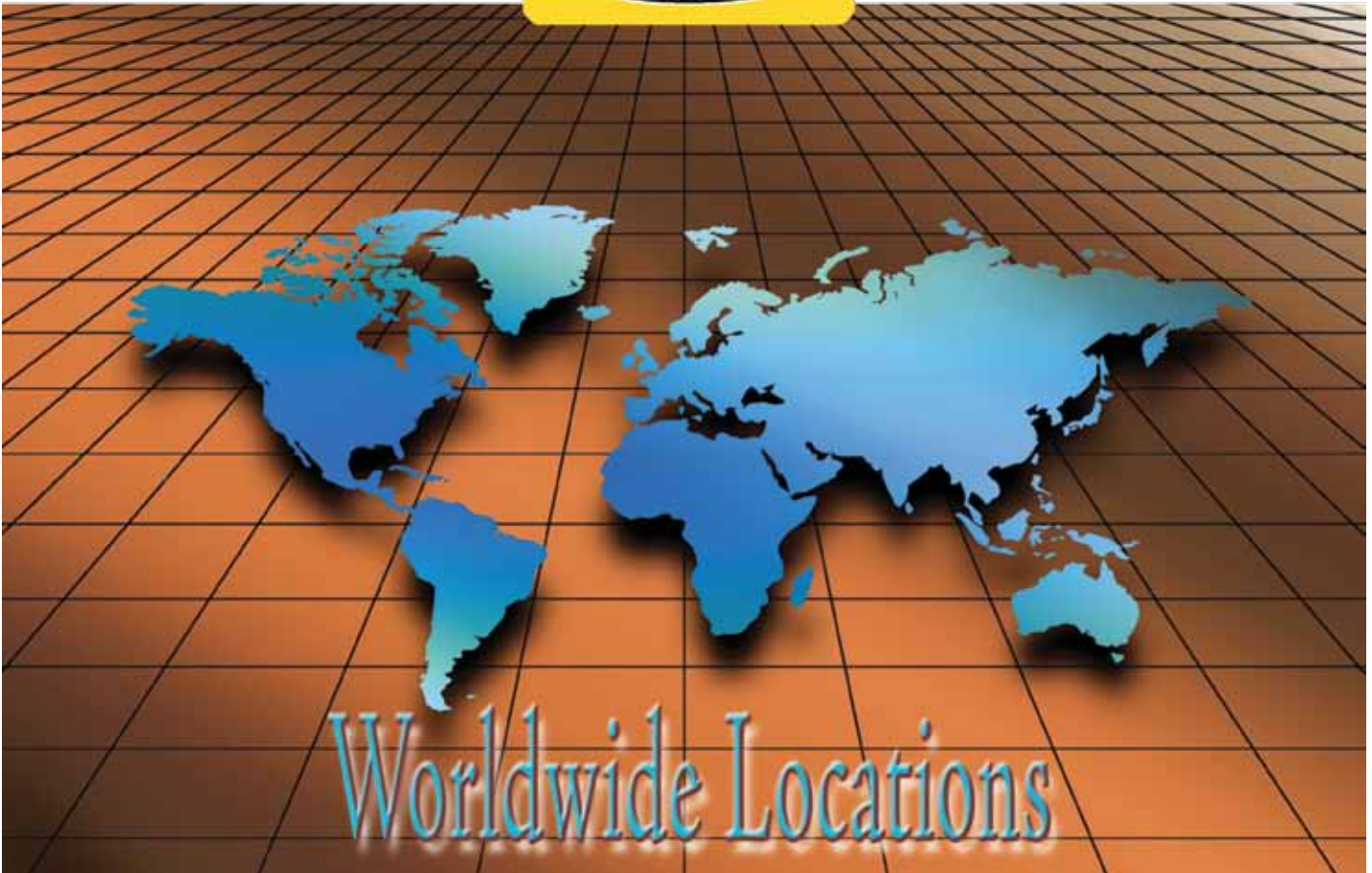
4. Oxidative Stability: Samples of the polymer compound are tested using differential scanning calorimetry. Samples are heated rapidly in a nitrogen atmosphere to the test temperature of 200°C. The atmosphere is then changed to air and the temperature is maintained until the antioxidant is consumed, as measured by an exothermic chemical reaction. The time to this reaction must exceed 300 minutes.

5. Tear Strength: Rubber test slabs are prepared in accordance with ASTM Standards and are tested to determine tear strength of the material. The minimum acceptable tear strength is 150 lb./in.

II. Other Requirements

- The manufacturer must supply upon request a listing of routine tests performed to ensure production compliance with design tests.

E



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BUSHINGS • CONSTRUCTION • INSULATION • PROTECTION • SWITCHING • TOOLS

Hi*Lite® XL Suspension Insulators



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Warranty - Material

Hubbell Power Systems, Inc. warrants all products sold by it to be merchantable (as such term is defined in the Uniform Commercial Code) and to be free from defects in material and workmanship. Buyer must notify the Company promptly of any claim under this warranty. The Buyer's exclusive remedy for breach of this warranty shall be the repair or replacement, F.O.B. factory, at the Company's option, of any product defective under the warranty which is returned to the Company within one year from the date of shipment. NO OTHER WARRANTY, WHETHER EXPRESS OR ARISING BY OPERATION OF LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE IMPLIED, SHALL EXIST IN CONNECTION WITH THE COMPANY'S PRODUCTS OR ANY SALE OR USE THEREOF. The Company shall in no event be liable for any loss of profits or any consequential or special damages incurred by Buyer. The Company's warranty shall run only to the first Buyer of a product from the Company, from the Company's distributor, or from an original equipment manufacturer reselling the Company's product, and is

non-assignable and non-transferable and shall be of no force and effect if asserted by any person other than such first Buyer. This warranty applies only to the use of the product as intended by Seller and does not cover any misapplication or misuse of said product.

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.

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.

ANSI C29.12/IEC 1109 TESTED



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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Hi*Lite® XL Insulators

Hi*Lite XL suspension insulators in this publication embody the latest features available in polymer insulator design and manufacture.

From the early prototypes in 1971, through full scale introduction in 1976, and through the succeeding years, Hi*Lite insulators have featured conservative design and high-quality manufacture.

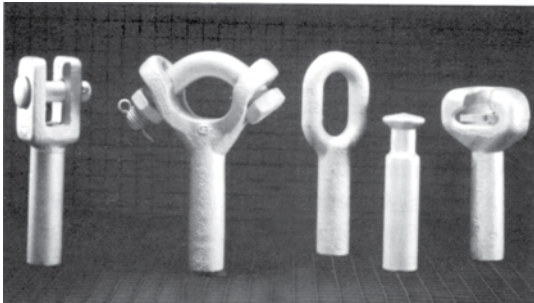
Today's Hi*Lite insulators will add to the over 1,000,000 Hi*Lite transmission insulators already in service worldwide.

Design

The structural design of the Hi*Lite XL consists of these basic parts:

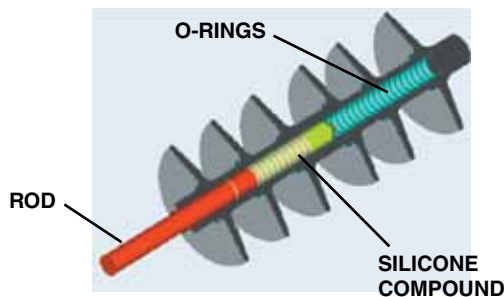
Rod - Hi*Lite insulator fiberglass rod is produced from the highest quality materials. Strands are aligned for maximum tensile strength. The rod is more than 50 percent glass fibers in cross section.

End Fittings - End fittings are steel or ductile iron. They are crimped directly to the rod by a special process originated by Ohio Brass, and later adopted by many other producers. The crimp develops a high percentage of the rod's inherent tensile strength. It requires no inter-movement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.



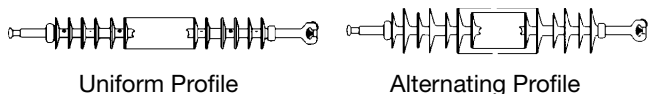
Weathersheds - Weathersheds are high pressure injection molded by Ohio Brass, from the proprietary compound ESP™. Housings manufactured with ESP silicone alloy rubber exhibit long-term hydrophobicity, high mechanical strength, excellent corona resistance and low permeability to moisture.

Interface - Hi*Lite insulators use Ohio Brass' live silicone interface. This feature prevents intrusion of moisture and contaminating elements. In the unlikely event the exterior seal is damaged, redundant o-ring seals within the live silicone interface will prohibit the lengthwise migration of intrusive elements between shed and rod.



Leakage Distance

Hi*Lite XL insulators feature high leakage distance for maximum resistance to contamination and leakage currents. Specific leakage distance (leakage divided by dry arcing distance) is higher than that of porcelain. Hi*Lite XL insulators are offered in standard uniform weathershed configuration and alternating (major/minor) weathershed configuration for applications requiring increased specified leakage distances.



Washability

Hi*Lite XL insulators listed in this catalog are suitable for flood washing up to 1,380 kPa (200 psi) at the ground pump level at a distance not less than 4.6 meters (15 ft.). The design incorporates positive, labyrinth seals to ensure long-term security against water entry. Conventional dry-particle, air-pressure cleaning methods may be employed.

High Pressure wash designs are also available. Washing is permissible for up to 6,900 kPa (1,000 psi) ground pump pressure at a distance no less than 1.8 meters (6 feet).

Cleaning guidelines (Ohio Brass publication #EU1272-H for flood and #EU1273-H for high pressure wash) are available from your representative.

Mechanical Ratings

Hi*Lite XL suspension insulators are rated and tested in accordance with IEC 1109-1992 and ANSI C29.12-1997. Certified test reports in detail are available.

SML ratings are 120 kN, 160 kN and 210 kN for insulators furnished with IEC fittings. For insulators furnished with ANSI fittings, SML ratings available are 111 kN (25K lbs.), 133 kN (30K lbs.), 160 kN (36K lbs.) and 222 kN (50K lbs.) RTL ratings are consistent with the IEC and ANSI standard. Actual factory routine tests are conducted at loads equal to or greater than the RTL rating.

Markings for XL insulator design are permanently embossed into the ground end corona shielding rings (CSR). Markings include SML and RTL, part number, assembly date code, and Ohio Brass identification. These marks are consistent with the IEC and ANSI standard.

Lengths Available

Hi*Lite XL suspension insulators are available in lengths appropriate for 69 kV through 765 kV. Longer lengths can be produced for special projects. Intermediate lengths (utilizing an additional 2 sheds) are also available (those that fall in between the catalog numbers listed in the tables). Length increments are approximately 76 mm (3 inches).

Testing

The Hi*Lite XL suspension insulator has been successfully "Design" tested to IEC 1109 at an independent laboratory. In addition, the Hi*Lite XL suspension insulator has successfully completed the 5,000 hour accelerated aging test detailed in Annex C of IEC 1109. A certified test report is available by contacting your Ohio Brass representative and requesting bulletin EU1348-H.

Since the ANSI "Prototype" and IEC "Design" testing requirements are virtually identical, the "Design" test report per IEC 1109 can serve as verification of compliance to ANSI.

Packaging

Hi*Lite suspension insulators are packaged in appropriate quantities in wooden crates 111.7 cm (44 inches) wide with the length of the crate determined by the length of the insulator. The height of the crate is normally less than 114.3 cm (45 inches). The gross weight will not exceed 909 kg (2,000 lbs.). Crates are available for both domestic and export transportation.



Export Crate

Corona Performance

Hi*Lite XL suspension insulators are RIV and corona free through 161 kV, by the use of integral Corona Shield Rings (CSR). Corona shielding is necessary at 220/230 kV and above. The table below details the rings necessary for voltages equal to or less than that listed in the column header.

Normal Applications: Top Grounded, Bottom Energized

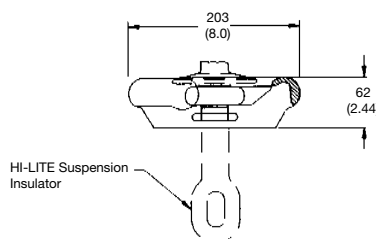
Insulator	Orientation	220/230 kV	330/345 kV	400 kV	500 kV
120 & 111 kN (25K lbs.)	Top Bottom	NONE 2717613001*	NONE 2717053001	2717613001 2717053001	2717613001 2717513001
160/210 kN & 133-222 kN (30-50K lbs.)	Top Bottom	NONE 2717613002*	NONE 2717053002	2717613002 2717053002	2717613002 2717513002

*For 96 mm (3.8") S.L. ratio designs, 271705 rings must be used in lieu of 271761 at the bottom end (energized) of insulator at 220/230 kV operating system voltage.

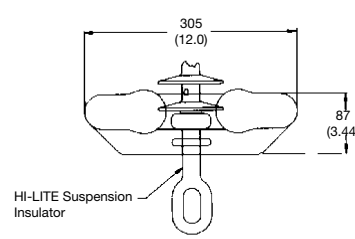
The physical and electrical values for the insulators on pages 5 through 8 are shown without corona protection. The table below yields the physical and electrical changes to the insulator when rings from table are installed for voltages above 161 kV.

Physical & Electrical Change Table

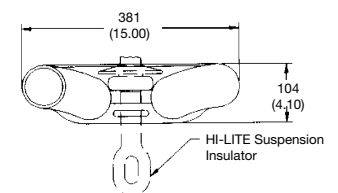
Physical & Electrical Characteristics	220/230 kV Ring	330/345 kV Ring	400 kV Rings	500 kV Rings
Dry Arc Distance mm (inches)	-20.3 (-1.2)	-50.8 (-2.0)	63.5 (2.5)	-127.0 (-5.0)
Leakage Distance mm (inches)	0	0	0	0
60 Hz Flashover Dry - kV (ANSI)	-10	-15	-20	-30
60 Hz Flashover Wet - kV (ANSI)	0	0	0	0
Critical Impulse Flashover Positive - kV (ANSI)	-15	-25	-35	-65
Critical Impulse Flashover Negative - kV (ANSI)	-20	-30	-35	-65
Power Frequency 1 minute Wet Withstand - kV (IEC)	0	0	0	0
Lightning Impulse Withstand Positive - kV (IEC)	-20	-25	-30	-60
Lightning Impulse Withstand Negative - kV (IEC)	-15	-25	-35	-65
Net Weight kg (pounds)	+0.9 (2.0)	+1.4 (3.0)	+ 2.3 (5.0)	+ 3.6 (8.0)



Part Number 271761

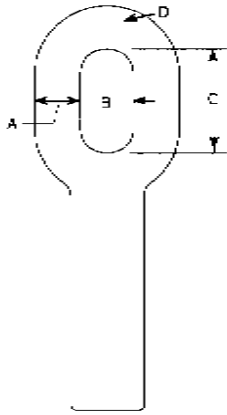


Part Number 271705

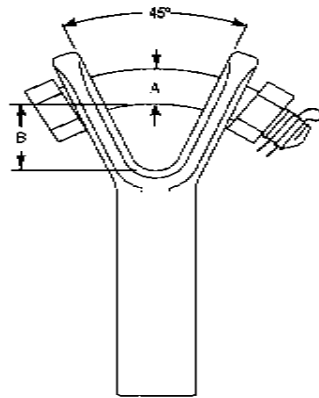


Part Number 271751

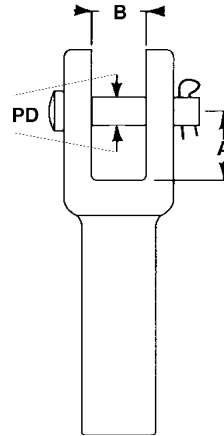
Most Common End Fittings



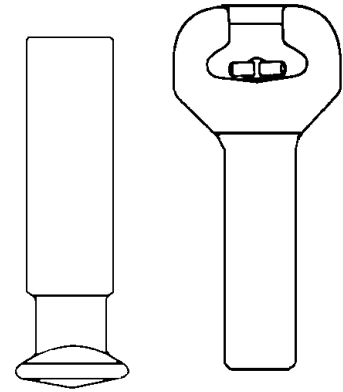
Chain Eye



Y-Clevis



Straight Clevis



Ball/Socket

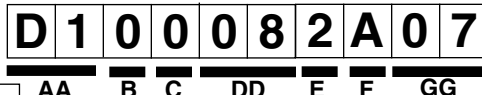
SML	Dimensions mm (in.)			
	A	B	C	D
111 kN (25K lbs.)	15.74 (0.62)	25.4 (1.00)	50.8 (2.00)	15.74 (0.62)
120 kN	15.74 (0.62)	25.4 (1.00)	50.8 (2.00)	15.74 (0.62)
133 kN (30K lbs.)	19.05 (0.75)	25.4 (1.00)	50.8 (2.00)	21.59 (0.85)
160 kN (36K lbs.)	19.05 (0.75)	25.4 (1.00)	50.8 (2.00)	21.59 (0.85)
210 kN	19.05 (0.75)	25.4 (1.00)	50.8 (2.00)	21.59 (0.85)
222 kN (50K lbs.)	19.05 (0.75)	25.4 (1.00)	50.8 (2.00)	21.59 (0.85)

SML	Dimensions mm (in.)		
	A	B	Bolt Dia.
111 kN (25K lbs.)	19.05 (0.75)	38.86 (1.53)	19 (0.75)
120 kN	19.05 (0.75)	38.86 (1.53)	19 (0.75)
133 kN (30K lbs.)	22.35 (0.88)	40.39 (1.59)	22 (0.88)
160 kN (36K lbs.)	22.35 (0.88)	40.39 (1.59)	22 (0.88)
210 kN	22.35 (0.88)	40.39 (1.59)	22 (0.88)
222 kN (50K lbs.)	22.35 (0.88)	40.39 (1.59)	22 (0.88)

SML	Dimensions mm (in.)			
	Class	A	B	PD
111 kN (25K lbs.)	ANSI 52-6	36 (1.41)	19 (0.75)	16 (0.62)
120 kN	IEC 16C	36 (1.41)	19 (0.75)	16 (0.62)
133 kN (30K lbs.)	ANSI 52-6	36 (1.41)	19 (0.75)	16 (0.62)
160 kN (36K lbs.)	IEC 19L	46 (1.81)	21 (0.83)	19 (0.75)
210 kN	IEC 19L	46 (1.81)	21 (0.83)	19 (0.75)
222 kN (50K lbs.)	N/A			

SML	Class
111 kN (25K lbs.)	ANSI 52-5
120 kN	IEC 16 mm
133 kN (30K lbs.)	ANSI 52-5
160 kN (36K lbs.)	IEC 20 mm (ANSI 52-8)
210 kN	IEC 20 mm
222 kN (50K lbs.)	ANSI 52-11

Hi*Lite XL Suspension Insulators: Key to the Catalog Numbers



AA = Hi*Lite XL
 51 = 63 mm (2.5" S.L.)
 A1 = 73 mm (2.9" S.L.)
 D1 = 83 mm (3.3" S.L.)
 G1 = 96 mm (3.8" S.L.)
 S.L. = Specified Leak
 (approx. leak/dry arc)
 +These codes apply to our ESP
 silicone alloy compound. For other
 polymer materials contact Ohio Brass

B = Strength
 0 = 120 kN SML
 1 = 111 kN (25K lbs.) SML
 2 = 160 kN (36K lbs.), 133 kN (30K lbs.) SML
 3 = 210 kN, 222 kN (50K lbs.) SML

C = Construction
 0 = Standard Hardware/0 Added Sheds
 2 = Standard Hardware/2 Added Sheds

DD = Weathershed Configuration
 To determine the number of sheds in your insulator,
 multiply this number by four, then add any additional
 sheds as listed in the Construction digit.

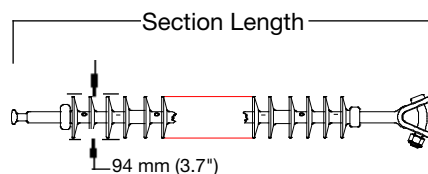
E = Labeling
 1 = English
 2 = Metric

GG = Line End Fittings
 Chain Eye00
 ANSI Ball01
 Y-Clevis02
 ANSI Straight Clevis04
 IEC Ball07*
 IEC Straight Clevis.....08
 *For 160 kN, 20 mm ball, use "09" code.

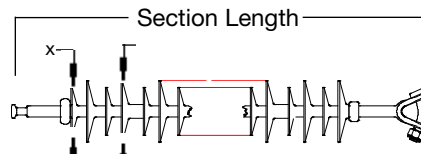
F = Ground End Fittings
 Chain Eye0
 Y-Clevis2
 ANSI Socket3
 ANSI Straight Clevis4
 IEC Straight Clevis.....8
 IEC Socket..... A

16 mm (5/8") Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 111 kN (25,000 lbs.)
RTL = 55 kN (12,500 lbs.)



Standard Design



High Leak Design

Type	x mm (in.)	y mm (in.)
A11..	97 (3.8)	114 (4.5)
D11..	109 (4.3)	140 (5.5)
G11..	130 (5.1)	160 (6.3)

Selection Guide Typical Line Voltage, kV ⁽¹⁾								Leakage Distance mm (in.) XX =				Catalog Number with ANSI 52-5 ball and Y-Clevis	Section Length mm (in.)	No. of Sheds	Dry Arc Distance mm (in.)	⁽²⁾ IEC Wet Switching Impulse Withstand (ANSI 60 Hz. Dry F.O.) kV	⁽²⁾ IEC Power Freq. Wet Withstand (ANSI 60 Hz. Wet F.O.) kV	⁽²⁾ IEC Light- ning Impulse Withstand (ANSI Critical Impulse F.O.) kV	
70	110	132	161	220	330	400	51	A1	D1	G1	Pos-kV							Neg-kV	
							1160 (45)	1340 (53)	1530 (60)	1760 (69)	XX10032201	725 (28.6)	12	470 (18.5)	260 (180)	135 (180)	275 (310)	255 (285)	
							1550 (61)	1790 (70)	2040 (80)	2350 (92)	XX10042201	881 (34.7)	16	625 (24.6)	345 (245)	180 (240)	365 (410)	350 (390)	
							1940 (76)	2230 (88)	2540 (100)	2920 (115)	XX10052201	1033 (40.7)	20	775 (30.6)	420 (310)	220 (295)	450 (505)	440 (490)	
							2320 (91)	2680 (105)	3060 (120)	3520 (138)	XX10062201	1189 (46.8)	24	930 (36.8)	500 (370)	260 (350)	540 (605)	530 (595)	
							2710 (107)	3130 (122)	3570 (140)	4110 (162)	XX10072201	1345 (53.0)	28	1090 (42.9)	570 (430)	305 (405)	630 (700)	620 (695)	
							3100 (122)	3580 (141)	4080 (160)	4700 (185)	XX10082201	1501 (59.1)	32	1245 (49.0)	650 (490)	340 (455)	715 (795)	710 (795)	
							3490 (137)	4020 (158)	4580 (180)	5280 (207)	XX10092201	1654 (65.1)	36	1395 (55.0)	720 (545)	380 (505)	800 (890)	800 (890)	
							3880 (152)	4480 (176)	5100 (200)	5870 (231)	XX10102201	1810 (71.3)	40	1555 (61.2)	790 (600)	420 (555)	885 (985)	890 (990)	
							4270 (168)	4930 (194)	5610 (221)	6460 (254)	XX10112201	1966 (77.4)	44	1710 (67.3)	860 (655)	455 (605)	970 (1080)	975 (1090)	
							4660 (183)	5370 (211)	6120 (241)	7050 (277)	XX10122201	2121 (83.5)	48	1865 (73.5)	930 (710)	490 (655)	1050 (1170)	1065 (1185)	
							5040 (198)	5820 (229)	6620 (261)	7630 (300)	XX10132201	2274 (89.5)	52	2015 (79.5)	995 (760)	525 (700)	1135 (1260)	1145 (1280)	
							5430 (214)	6270 (247)	7140 (281)	8220 (323)	XX10142201	2430 (95.7)	56	2175 (85.6)	1060 (810)	560 (750)	1215 (1350)	1230 (1370)	
							5820 (229)	6720 (264)	7650 (301)	8810 (347)	XX10152201	2586 (101.8)	60	2330 (91.7)	1120 (855)	595 (790)	1295 (1440)	1315 (1465)	
							6210 (244)	7170 (282)	8160 (321)	9400 (370)	XX10162201	2742 (108.0)	64	2485 (97.9)	1185 (905)	625 (835)	1375 (1530)	1400 (1560)	
							6600 (260)	7610 (299)	8670 (341)	9980 (393)	XX10172201	2894 (114.0)	68	2635 (103.9)	1240 (945)	655 (880)	1455 (1615)	1480 (1650)	
							6990 (275)	8060 (317)	9180 (361)	10570 (416)	XX10182201	3050 (120.1)	72	2795 (110.0)	1300 (990)	690 (920)	1530 (1705)	1565 (1740)	
							7380 (290)	8510 (335)	9700 (381)	11170 (439)	XX10192201	3206 (126.2)	76	2950 (116.2)	1355 (1030)	720 (960)	1610 (1790)	1645 (1830)	
							7770 (306)	8960 (353)	10210 (402)	11760 (463)	XX10202201	3362 (132.4)	80	3105 (122.3)	1410 (1070)	745 (1000)	1685 (1875)	1725 (1920)	
							8150 (321)	9400 (370)	10710 (421)	12330 (485)	XX10212201	3514 (138.4)	84	3260 (128.3)	1460 (1110)	775 (1040)	1760 (1960)	1800 (2005)	
							8540 (336)	9860 (388)	11220 (442)	12930 (509)	XX10222201	3670 (144.5)	88	3415 (134.4)	1510 (1145)	800 (1075)	1835 (2040)	1880 (2090)	
							8930 (351)	10310 (406)	11740 (462)	13520 (532)	XX10232201	3826 (150.7)	92	3570 (140.6)	1560 (1180)	830 (1110)	1910 (2125)	1955 (2175)	

Notes: (1) For voltages above 400 kV, and other section lengths, contact your Ohio Brass representative.

(2) Electrical values are without corona ring. For voltages above 161 kV refer to Page 3 for Corona Rings, and associated physical/electrical changes to above data. Dimensions are within allowable tolerances as specified by IEC 1109 and ANSI C29.12.

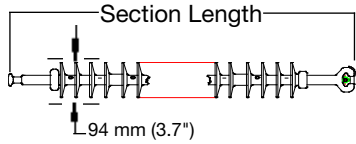
End Fitting Example

You need the electrical and mechanical characteristics of Catalog #5110102201. But chain eye is needed at the ground end instead of a Y-clevis. From the table at the right, find the code for the chain eye/ANSI ball configuration 2001. You should order catalog number 5110102001. The same process is used for other strength Hi*Lite XL insulators.

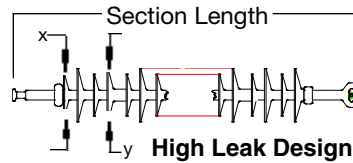
Ground Fitting	Line Fitting	Suffix Code	Length Change	
			mm	Inches
Eye	Eye	2000	+39	+1.5
Eye	ANSI 52-5 Ball	2001	+1	+0.0
ANSI 52-5 Socket	ANSI 52-5 Ball	2301	-25	-0.9
Y-Clevis	Eye	2200	+37	+1.4
ANSI 52-6 Clevis	Eye	2400	+11	+0.4

16 mm (5/8") Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 120 kN
RTL = 60 kN



Standard Design



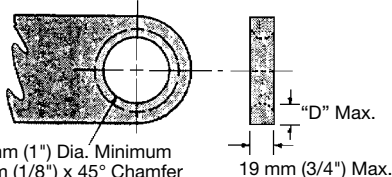
High Leak Design

Type	x mm (in.)	y mm (in.)
A10..	97 (3.8)	114 (4.5)
D10..	109 (4.3)	140 (5.5)
G10..	130 (5.1)	160 (6.3)

Selection Guide Typical Line Voltage, kV ⁽¹⁾								Leakage Distance mm (in.) XX =				Catalog Number with IEC 16 mm ball - socket	Section Length mm (in.)	No. of Sheds	Dry Arc Distance mm (in.)	⁽²⁾ IEC Wet Switching Impulse Withstand (ANSI 60 Hz. Dry F.O.) kV	⁽²⁾ IEC Power Freq. Wet Withstand (ANSI 60 Hz. Wet F.O.) kV	⁽²⁾ IEC Light- ning Impulse Withstand (ANSI Critical Impulse F.O.) kV	
70	110	132	161	220	330	400	51	A1	D1	G1	Pos-kV							Neg-kV	
							1160 (45)	1340 (53)	1530 (60)	1760 (69)	XX00032A07	731 (28.8)	12	470 (18.5)	260 (180)	135 (180)	275 (310)	255 (285)	
							1550 (61)	1790 (70)	2040 (80)	2350 (92)	XX00042A07	886 (34.9)	16	625 (24.6)	345 (245)	180 (240)	365 (410)	350 (390)	
							1940 (76)	2230 (88)	2540 (100)	2920 (115)	XX00052A07	1039 (40.9)	20	775 (30.6)	420 (310)	220 (295)	450 (505)	440 (490)	
							2320 (91)	2680 (105)	3060 (120)	3520 (138)	XX00062A07	1195 (47.1)	24	930 (36.8)	500 (370)	260 (350)	540 (605)	530 (595)	
							2710 (107)	3130 (122)	3570 (140)	4110 (162)	XX00072A07	1351 (53.2)	28	1090 (42.9)	570 (430)	305 (405)	630 (700)	620 (695)	
							3100 (122)	3580 (141)	4080 (160)	4700 (185)	XX00082A07	1507 (59.3)	32	1245 (49.0)	650 (490)	340 (455)	715 (795)	710 (795)	
							3490 (137)	4020 (158)	4580 (180)	5280 (207)	XX00092A07	1659 (65.3)	36	1395 (55.0)	720 (545)	380 (505)	800 (890)	800 (890)	
							3880 (152)	4480 (176)	5100 (200)	5870 (231)	XX00102A07	1815 (71.5)	40	1555 (61.2)	790 (600)	420 (555)	885 (985)	890 (990)	
							4270 (168)	4930 (194)	5610 (221)	6460 (254)	XX00112A07	1971 (77.6)	44	1710 (67.3)	860 (655)	455 (605)	970 (1080)	975 (1090)	
							4660 (183)	5370 (211)	6120 (241)	7050 (277)	XX00122A07	2127 (83.8)	48	1865 (73.5)	930 (710)	490 (655)	1050 (1170)	1065 (1185)	
							5040 (198)	5820 (229)	6620 (261)	7630 (300)	XX00132A07	2279 (89.8)	52	2015 (79.5)	995 (760)	525 (700)	1135 (1260)	1145 (1280)	
							5430 (214)	6270 (247)	7140 (281)	8220 (323)	XX00142A07	2435 (95.9)	56	2175 (85.6)	1060 (810)	560 (750)	1215 (1350)	1230 (1370)	
							5820 (229)	6720 (264)	7650 (301)	8810 (347)	XX00152A07	2591 (102.1)	60	2330 (91.7)	1120 (855)	595 (790)	1295 (1440)	1315 (1465)	
							6210 (244)	7170 (282)	8160 (321)	9400 (370)	XX00162A07	2747 (108.2)	64	2485 (97.9)	1185 (905)	625 (835)	1375 (1530)	1400 (1560)	
							6600 (260)	7610 (299)	8670 (341)	9980 (393)	XX00172A07	2900 (114.2)	68	2635 (103.9)	1240 (945)	655 (880)	1455 (1615)	1480 (1650)	
							6990 (275)	8060 (317)	9180 (361)	10570 (416)	XX00182A07	3056 (120.3)	72	2795 (110.0)	1300 (990)	690 (920)	1530 (1705)	1565 (1740)	
							7380 (290)	8510 (335)	9700 (381)	11170 (439)	XX00192A07	3212 (126.5)	76	2950 (116.2)	1355 (1030)	720 (960)	1610 (1790)	1645 (1830)	
							7770 (306)	8960 (353)	10210 (402)	11760 (463)	XX00202A07	3368 (132.6)	80	3105 (122.3)	1410 (1070)	745 (1000)	1685 (1875)	1725 (1920)	
							8150 (321)	9400 (370)	10710 (421)	12330 (485)	XX00212A07	3520 (138.6)	84	3260 (128.3)	1460 (1110)	775 (1040)	1760 (1960)	1800 (2005)	
							8540 (336)	9860 (388)	11220 (442)	12930 (509)	XX00222A07	3676 (144.8)	88	3415 (134.4)	1510 (1145)	800 (1075)	1835 (2040)	1880 (2090)	
							8930 (351)	10310 (406)	11740 (462)	13520 (532)	XX00232A07	3832 (150.9)	92	3570 (140.6)	1560 (1180)	830 (1110)	1910 (2125)	1955 (2175)	

Notes: (1) For voltages above 400 kV, and other section lengths, contact your Ohio Brass representative.
 (2) Electrical values are without corona ring. For voltages above 161 kV refer to Page 3 for Corona Rings, and associated physical/electrical changes to above data. Dimensions are within allowable tolerances as specified by IEC 1109 and ANSI C29.12.

Y-Clevis Tower Attachment Detail for all Hi*Lite XL Insulators



Rod Dia. mm (in.)	"D" Max. mm (in.)
16 (5/8")	13 (.53)
22 (7/8")	25 (1.0)

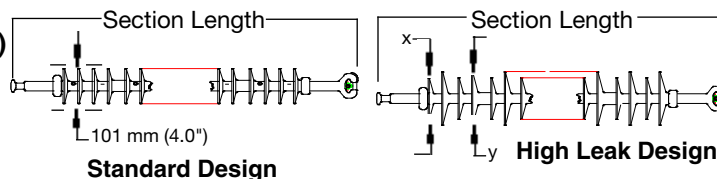
To achieve insulator SML value, proper grade steel should be used

Ground Fitting	Line Fitting	Suffix Code	Length Change	
			mm	Inches
Eye	Eye	2000	+59	+2.3
Eye	IEC 16 mm Ball	2007	+26	+1.0
Y-Clevis	IEC 16 mm Ball	2207	+24	+0.9
Y-Clevis	Eye	2200	+57	+2.2
IEC 16C Clevis	Eye	2800	+31	+1.2

22 mm (7/8") Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 160 kN (36,000 lbs.)
RTL = 80 kN (18,000 lbs.)

Insulators with either ANSI ball and/or socket end-fittings will be rated 133 kN (30,000 lbs.) SML and 66 kN (15,000 lbs.) RTL.



Type	x mm (in.)	y mm (in.)
A12..	97 (3.8)	114 (4.5)
D12..	109 (4.3)	140 (5.5)
G12..	130 (5.1)	160 (6.3)

Selection Guide Typical Line Voltage, kV ⁽¹⁾								Leakage Distance mm (in.) XX =				Catalog Number with IEC 20 mm ball and socket	Section Length mm (in.)	No. of Sheds	Dry Arc Distance mm (in.)	⁽²⁾ IEC Wet Switching Impulse Withstand (ANSI 60 Hz. Dry F.O.) kV	⁽²⁾ IEC Power Freq. Wet Withstand (ANSI 60 Hz. Wet F.O.) kV	⁽²⁾ IEC Light- ning Impulse Withstand (ANSI Critical Impulse F.O.) kV	
																		Pos-kV	Neg-kV
70	110	132	161	220	330	400	51	A1	D1	G1	XX20032A09	795 (30.8)	12	470 (18.5)	260 (180)	135 (180)	275 (310)	255 (285)	
							1540 (60)	1790 (70)	2040 (80)	2350 (92)	XX20042A09	951 (37.0)	16	625 (24.6)	345 (245)	180 (240)	365 (410)	350 (390)	
							1920 (75)	2230 (88)	2540 (100)	2920 (115)	XX20052A09	1104 (43.5)	20	775 (30.6)	420 (310)	220 (295)	450 (505)	440 (490)	
							2310 (91)	2680 (105)	3060 (120)	3520 (138)	XX20062A09	1260 (49.6)	24	930 (36.8)	500 (370)	260 (350)	540 (605)	530 (595)	
							2700 (106)	3130 (123)	3570 (140)	4110 (162)	XX20072A09	1416 (55.8)	28	1090 (42.9)	570 (430)	305 (405)	630 (700)	620 (695)	
							3080 (121)	3580 (141)	4080 (160)	4700 (185)	XX20082A09	1572 (61.9)	32	1245 (49.0)	650 (490)	340 (455)	715 (795)	710 (795)	
							3470 (136)	4020 (158)	4580 (180)	5280 (207)	XX20092A09	1724 (67.9)	36	1395 (55.0)	720 (545)	380 (505)	800 (890)	800 (890)	
							3850 (151)	4480 (176)	5100 (200)	5870 (231)	XX20102A09	1880 (74.0)	40	1555 (61.2)	790 (600)	420 (555)	885 (985)	890 (990)	
							4240 (167)	4930 (194)	5610 (221)	6460 (254)	XX20112A09	2036 (80.2)	44	1710 (67.3)	860 (655)	455 (605)	970 (1080)	975 (1090)	
							4630 (182)	5370 (211)	6120 (241)	7050 (277)	XX20122A09	2192 (86.3)	48	1865 (73.5)	930 (710)	490 (655)	1050 (1170)	1065 (1185)	
							5010 (197)	5820 (229)	6620 (261)	7630 (300)	XX20132A09	2344 (92.3)	52	2015 (79.5)	995 (760)	525 (700)	1135 (1260)	1145 (1280)	
							5400 (212)	6270 (247)	7140 (281)	8220 (323)	XX20142A09	2500 (98.5)	56	2175 (85.6)	1060 (810)	560 (750)	1215 (1350)	1230 (1370)	
							5790 (228)	6720 (264)	7650 (301)	8810 (347)	XX20152A09	2656 (104.6)	60	2330 (91.7)	1120 (855)	595 (790)	1295 (1440)	1315 (1465)	
							6170 (243)	7170 (282)	8160 (321)	9400 (370)	XX20162A09	2812 (110.7)	64	2485 (97.9)	1185 (905)	625 (835)	1375 (1530)	1400 (1560)	
							6560 (258)	7610 (299)	8670 (341)	9980 (393)	XX20172A09	2965 (116.7)	68	2635 (103.9)	1240 (945)	655 (880)	1455 (1615)	1480 (1650)	
							6940 (273)	8060 (317)	9180 (361)	10570 (416)	XX20182A09	3120 (122.9)	72	2795 (110.0)	1300 (990)	690 (920)	1530 (1705)	1565 (1740)	
							7330 (288)	8510 (335)	9700 (381)	11170 (439)	XX20192A09	3276 (128.9)	76	2950 (116.2)	1355 (1030)	720 (960)	1610 (1790)	1645 (1830)	
							7720 (304)	8960 (353)	10210 (402)	11760 (463)	XX20202A09	3432 (135.2)	80	3105 (122.3)	1410 (1070)	745 (1000)	1685 (1875)	1725 (1920)	
							8100 (319)	9400 (370)	10710 (421)	12330 (485)	XX20212A09	3585 (141.2)	84	3260 (128.3)	1460 (1110)	775 (1040)	1760 (1960)	1800 (2005)	
							8490 (334)	9860 (388)	11220 (442)	12930 (509)	XX20222A09	3741 (147.3)	88	3415 (134.4)	1510 (1145)	800 (1075)	1835 (2040)	1880 (2090)	
							8870 (349)	10310 (406)	11740 (462)	13520 (532)	XX20232A09	3897 (153.4)	92	3570 (140.6)	1560 (1180)	830 (1110)	1910 (2125)	1955 (2175)	

Notes: (1) For voltages above 400 kV, and other section lengths, contact your Ohio Brass representative.
 (2) Electrical values are without corona ring. For voltages above 161 kV refer to Page 3 for Corona Rings, and associated physical/electrical changes to above data. Dimensions are within allowable tolerances as specified by IEC 1109 and ANSI C29.12.

Corona Ring Example

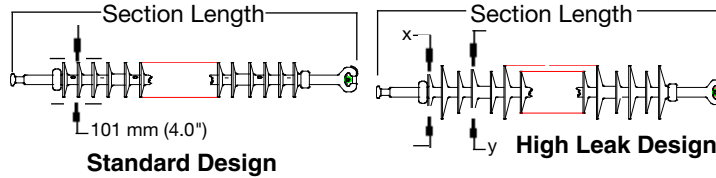
You have selected Catalog #D120122A09, the typical application is 220kV. From page 3, you would select ring 2717613002 on the bottom end. The physical/electrical characteristics would change per the table on page 3.

Ground Fitting	Line Fitting	SML kN (lbs.)	Suffix Code	Length Change	
				mm	In.
Eye	Eye	160 kN (36K)	2000	+40	+1.5
Eye	IEC 20 mm Ball	160 kN (36K)	2009	+21	+0.8
Y-Clevis	Eye	160 kN (36K)	2200	+27	+1.0
Eye	ANSI 52-5 Ball	133 kN (30K)	2001	+2	+0.1
Y-Clevis	IEC 20 mm Ball	160 kN (36K)	2209	+8	+0.3
Y-Clevis	ANSI 52-5 Ball	133 kN (30K)	2201	-11	-0.4
ANSI 52-5 Socket	ANSI 52-5 Ball	133 kN (30K)	2301	-35	-1.3

22 mm (7/8") Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 210 kN
RTL = 55 kN

ANSI fittings are capable of 222 kN SML (50K lbs.)

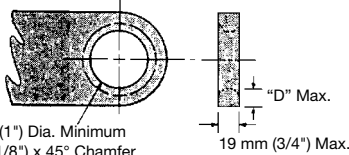


Type	x mm (in.)	y mm (in.)
A13..	97 (3.8)	114 (4.5)
D13..	109 (4.3)	140 (5.5)
G13..	130 (5.1)	160 (6.3)

Selection Guide Typical Line Voltage, kV ⁽¹⁾							Leakage Distance mm (in.) XX =				Catalog Number with IEC 20 mm ball and socket	Section Length mm (in.)	No. of Sheds	Dry Arc Distance mm (in.)	⁽²⁾ IEC Wet Switching Impulse Withstand (ANSI 60 Hz. Dry F.O.) kV	⁽²⁾ IEC Power Freq. Wet Withstand (ANSI 60 Hz. Wet F.O.) kV	⁽²⁾ IEC Light- ning Impulse Withstand (ANSI Critical Impulse F.O.) kV	
69	115	138	161	220	330	400	51	A1	D1	G1							Pos-kV	Neg-kV
							1150 (45)	1340 (53)	1530 (60)	1760 (69)	XX30032A07	795 (30.8)	12	470 (18.5)	260 (180)	135 (180)	275 (310)	255 (285)
							1540 (60)	1790 (70)	2040 (80)	2350 (92)	XX30042A07	951 (37.0)	16	625 (24.6)	345 (245)	180 (240)	365 (410)	350 (390)
							1920 (75)	2230 (88)	2540 (100)	2920 (115)	XX30052A07	1104 (43.5)	20	775 (30.6)	420 (310)	220 (295)	450 (505)	440 (490)
							2310 (91)	2680 (105)	3060 (120)	3520 (138)	XX30062A07	1260 (49.6)	24	930 (36.8)	500 (370)	260 (350)	540 (605)	530 (595)
							2700 (106)	3130 (123)	3570 (140)	4110 (162)	XX30072A07	1416 (55.8)	28	1090 (42.9)	570 (430)	305 (405)	630 (700)	620 (695)
							3080 (121)	3580 (141)	4080 (160)	4700 (185)	XX30082A07	1572 (61.9)	32	1245 (49.0)	650 (490)	340 (455)	715 (795)	710 (795)
							3470 (136)	4020 (158)	4580 (180)	5280 (207)	XX30092A07	1724 (67.9)	36	1395 (55.0)	720 (545)	380 (505)	800 (890)	800 (890)
							3850 (151)	4480 (176)	5100 (200)	5870 (231)	XX30102A07	1880 (74.0)	40	1555 (61.2)	790 (600)	420 (555)	885 (985)	890 (990)
							4240 (167)	4930 (194)	5610 (221)	6460 (254)	XX30112A07	2036 (80.2)	44	1710 (67.3)	860 (655)	455 (605)	970 (1080)	975 (1090)
							4630 (182)	5370 (211)	6120 (241)	7050 (277)	XX30122A07	2192 (86.3)	48	1865 (73.5)	930 (710)	490 (655)	1050 (1170)	1065 (1185)
							5010 (197)	5820 (229)	6620 (261)	7630 (300)	XX30132A07	2344 (92.3)	52	2015 (79.5)	995 (760)	525 (700)	1135 (1260)	1145 (1280)
							5400 (212)	6270 (247)	7140 (281)	8220 (323)	XX30142A07	2500 (98.5)	56	2175 (85.6)	1060 (810)	560 (750)	1215 (1350)	1230 (1370)
							5790 (228)	6720 (264)	7650 (301)	8810 (347)	XX30152A07	2656 (104.6)	60	2330 (91.7)	1120 (855)	595 (790)	1295 (1440)	1315 (1465)
							6170 (243)	7170 (282)	8160 (321)	9400 (370)	XX30162A07	2812 (110.7)	64	2485 (97.9)	1185 (905)	625 (835)	1375 (1530)	1400 (1560)
							6560 (258)	7610 (299)	8670 (341)	9980 (393)	XX30172A07	2965 (116.7)	68	2635 (103.9)	1240 (945)	655 (880)	1455 (1615)	1480 (1650)
							6940 (273)	8060 (317)	9180 (361)	10570 (416)	XX30182A07	3120 (122.9)	72	2795 (110.0)	1300 (990)	690 (920)	1530 (1705)	1565 (1740)
							7330 (288)	8510 (335)	9700 (381)	11170 (439)	XX30192A07	3276 (128.9)	76	2950 (116.2)	1355 (1030)	720 (960)	1610 (1790)	1645 (1830)
							7720 (304)	8960 (353)	10210 (402)	11760 (463)	XX30202A07	3432 (135.2)	80	3105 (122.3)	1410 (1070)	745 (1000)	1685 (1875)	1725 (1920)
							8100 (319)	9400 (370)	10710 (421)	12330 (485)	XX30212A07	3585 (141.2)	84	3260 (128.3)	1460 (1110)	775 (1040)	1760 (1960)	1800 (2005)
							8490 (334)	9860 (388)	11220 (442)	12930 (509)	XX30222A07	3741 (147.3)	88	3415 (134.4)	1510 (1145)	800 (1075)	1835 (2040)	1880 (2090)
							8870 (349)	10310 (406)	11740 (462)	13520 (532)	XX30232A07	3897 (153.4)	92	3570 (140.6)	1560 (1180)	830 (1110)	1910 (2125)	1955 (2175)

Notes: (1) For voltages above 400 kV, and other section lengths, contact your Ohio Brass representative.
 (2) Electrical values are without corona ring. For voltages above 161 kV refer to Page 3 for Corona Rings, and associated physical/electrical changes to above data. Dimensions are within allowable tolerances as specified by IEC 1109 and ANSI C29.12.

Y-Clevis Tower Attachment Detail for all Hi*Lite XL Insulators



Rod Dia. mm (in.)	"D" Max. mm (in.)
16 (5/8")	13 (.53)
22 (7/8")	25 (1.0)

To achieve insulator SML value, proper grade steel should be used.

Ground Fitting	Line Fitting	Suffix Code	Length Change	
			mm	Inches
Eye	Eye	2000	+40	+1.5
Eye	IEC 20mm Ball	2007	+18	+0.7
ANSI 52-11 Socket	ANSI 52-11 Ball	2301	-16	-0.6
Eye	ANSI 52-11 Ball	2001	+2	+0.1
Y-Clevis	Eye	2200	+19	+0.7
Y-Clevis	ANSI 52-11 Ball	2201	-13	-0.5
Y-Clevis	IEC 20 mm Ball	2207	+4	+0.1
Eye	IEC 19L Clevis	2800	+31	+1.2

Veri*Lite™

Silicone Rubber Line Post Insulators for 15-69kV Applications



Warranty - Material

Hubbell Power Systems, Inc. warrants all products sold by it to be merchantable (as such term is defined in the Uniform Commercial Code) and to be free from defects in material and workmanship. Buyer must notify the Company promptly of any claim under this warranty. The Buyer's exclusive remedy for breach of this warranty shall be the repair or replacement, F.O.B. factory, at the Company's option, of any product defective under the warranty which is returned to the Company within one year from the date of shipment. NO OTHER WARRANTY, WHETHER EXPRESS OR ARISING BY OPERATION OF LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE IMPLIED, SHALL EXIST IN CONNECTION WITH THE COMPANY'S PRODUCTS OR ANY SALE OR USE THEREOF. The Company shall in no event be liable for any loss of profits or any consequential or special damages incurred by Buyer. The Company's warranty shall run only to the first Buyer of a product from the Company, from the Company's distributor, or from an original equipment manufacturer reselling the Company's product, and is non-assignable and non-transferable and shall be of no force and effect if asserted by any person other than such first Buyer. This warranty applies only to the use of the product as intended by Seller and does not cover any misapplication or misuse of said product.

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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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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RGS 1M

Veri*Lite Insulators embody the latest features available in polymer insulator design and manufacture.

Ohio Brass began its efforts in polymer research in the early 1900s. After years of production and research with polymeric compounds in the high voltage insulation field, Ohio Brass introduced the Hi*Lite insulator in 1976. A decade later the Ohio Brass polymer distribution arrester, PDV-100, was introduced as the first U.S. made polymer-housed MOV arrester.

Today's Veri*Lite post insulators build upon the experience of placing nearly 20 million polymer distribution arresters, 17 million polymer deadend distribution insulators and 2 million high voltage transmission insulators in service. Ohio Brass is dedicated to providing a quality product for the electric utility industry.

Design

The structural design of the Veri*Lite insulator consists of three basic parts:

Rod - Veri*Lite insulator fiberglass rod is produced from the highest quality materials. Strands are aligned for maximum tensile strength. The rod is filled 65 percent, by volume, with electrical grade glass fibers.

End Fittings - Ferrous end fittings are directly crimped to the fiberglass rod by a circumferential crimping process originated by Ohio Brass. The crimp requires no intermovement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

Weathersheds - Veri*Lite insulators are manufactured with OB's proprietary silicone rubber.

Ohio Brass uses several tests to evaluate materials. Tracking, QUV, corona cutting, salt fog, oxidative stability and variations of differential thermal analysis tests assure the quality of OB's shed material.

Leakage Distance

Veri*Lite insulators feature high leakage distance for optimum contamination performance.

Washability

The Veri*Lite insulators listed in this catalog are suitable for washing by all known methods in current use. Washing tests have been conducted with high-pressure equipment at close nozzle-to-insulator distances. No water intrusion occurred after multiple washings.

Standards

Veri*Lite line post insulators meet ANSI C29.18-2003 and CEA LWIWG-02-1996 standards.

The Ohio Brass facility in Aiken, SC, USA is registered for successful implementation of a quality system in accordance with ISO 9001-2000.

Mechanical Ratings

Specified Cantilever Load (SCL) is the ultimate cantilever strength rating. Maximum Design Cantilever Load (MDCL) or Working Cantilever Load (WCL) is the maximum continuous cantilever load at which the post insulator should be applied.

Markings

Markings are 0.12 inch high raised letters in the rubber and include: Base catalog number, CEA LWIWG Class, SCL in pounds, MDCL/WCL in kN and date code. Ohio Brass identification is cast into the end fittings.

Equivalency

Equivalency of line post insulators involves a check of the general characteristics.

MECHANICAL

Compare the SCL of the polymer insulator to the cantilever strength rating of the porcelain insulator.

ELECTRICAL

Compare porcelain to Veri*Lite leakage distance.
Compare porcelain to Veri*Lite section length.

Insulation Coordination

The operating performance of a distribution or transmission line depends on its insulation level. It must not flash over under practically any operating condition.

Several methods of coordination of line and station insulation have been proposed. Generally, the best method is to establish a definite common insulation level for all the station insulation and then match that level with the line insulation. With this approach, the task is limited to three fundamental requirements:

1. Selection of the Basic Impulse Insulation Level (BIL).
2. Specification of insulation with flashover characteristics equal to or greater than the selected BIL.
3. The application of suitable overvoltage surge protection.

Satisfactory performance is generally achieved with an insulator which has a dry 60 Hz flashover of three to five times the phase-to-ground voltage and a leakage distance approximately twice the shortest air-gap (strike) distance.

Packaging

Veri*Lite insulator standard packing is cartons on pallets. Larger orders for Veri*Lite posts may be shipped in wood crates.

Sample Polymer Specification

Purpose: To ensure a suitable service life of polymer insulating materials.

I. Material Design Tests

- The following must be performed to certify a material for use in production.

1. Tracking test: Performed on a sample of material inclined at 30° and electrodes positioned 35 mm apart. Samples are sprayed with a conductive solution (400 Ωcm) and energized at 10 kV. The cycle is repeated every 90 seconds. The sample passes if there is:

1. No carbonization or tracking.
2. No erosion through sample.
3. No leakage current flow at the end of 90 seconds.

The sample must withstand 20,000 test cycles.

2. Ultraviolet Test: Samples of the rubber must be tested in a QUV tester or equivalent cyclic weatherometer. The samples are exposed to high ultraviolet radiation and high humidity without cracking, checking or becoming hydrophilic.

The sample is judged to have passed this test if it exceeds 8,000 hours of exposure without damage.

3. Corona Cutting: Samples 5 cm by 7 cm are subjected to mechanical stress of 300,000 microstrain by bending samples around a grounded electrode. A needle-like electrode is placed 1 mm from the surface of the sample and energized at 12 kV in a controlled humidity chamber.

The sample is judged to have passed this test if there is no splitting or cutting. Samples must pass 1,000 hours of exposure to this test.

4. Oxidative Stability: Samples of the polymer compound are tested using differential scanning calorimetry. Samples are heated rapidly in a nitrogen atmosphere to the test temperature of 200°C. The atmosphere is then changed to oxygen and the temperature is maintained until the antioxidant is consumed, as measured by an exothermic chemical reaction. The time for this reaction to occur must exceed 400 minutes.

5. Tear Strength: Rubber test slabs are prepared in accordance with ASTM Standards and are tested to determine tear strength of the material. The acceptable nominal tear strength, per ASTM method B, is 100 lb./in.

II. Other Requirements

- The manufacturer must supply upon request a listing of routine tests performed to ensure production compliance with design tests.

kV	Post Style	Line	Base	Catalog Number	ANSI C29.18 Class	CEA LWIWG-02 Class	"X" Dimension Inches (mm)	Line & Gnd End Shed Dia. Inches (mm)	Intermediate Shed Quantity	Intermediate Shed Dia. Inches (mm)	Dry Arc Distance Inches (mm)
15	Horz	Clamptop	Gain	80S015-0100	51-31	LP 15	12.5 (318)	4.8 (121)	0		7.4 (188)
	Horz	Clamptop	3/4-10 Tap	80S015-0109	51-21		13.3 (339)				
	Vert	Clamptop	3/4-10 Tap	80S015-0209	51-11		12.8 (324)				
	Vert	F-Neck	3/4-10 Tap	80S015-0F09	51-1F		12.4 (315)				
25	Horz	Clamptop	Gain	80S025-0100	51-32	LP 25	14.3 (362)	5.2 (132)	2	3.8 (96)	9.6 (244)
	Horz	Clamptop	3/4-10 Tap	80S025-0109	51-22		15.1 (383)				
	Vert	Clamptop	3/4-10 Tap	80S025-0209	51-12		14.5 (368)				
	Vert	F-Neck	3/4-10 Tap	80S025-0F09	51-2F		14.2 (360)				
35	Horz	Clamptop	Gain	80S028-0100	51-33	LP 28M	16.5 (420)	5.1 (130)	4	4.6 (117)	11.7 (297)
	Horz	Clamptop	3/4-10 Tap	80S028-0109	51-23		17.4 (441)				
	Vert	Clamptop	3/4-10 Tap	80S028-0209	51-13		16.8 (425)				
	Vert	F-Neck	3/4-10 Tap	80S028-0F09	51-3F		16.5 (418)				
46	Horz	Blade	Gain	80S046-0000	--	LP 46	19.2 (488)	7.1 (179)	6	4.4 (112)	14.4 (390)
	Horz	Blade	3/4-10 Tap	80S046-0009	--		20.0 (508)				
	Horz	Clamptop	Gain	80S046-0100	51-34		19.0 (482)				
	Horz	Clamptop	3/4-10 Tap	80S046-0109	51-24		19.8 (504)				
	Vert	Clamptop	3/4-10 Tap	80S046-0209	51-14		20.1 (510)				
	Vert	F-Neck	3/4-10 Tap	80S046-0F09	51-4F		19.5 (495)				
69	Horz	Blade	Gain	80S069-0000	--	LP 69M	25.8 (656)	7.5 (190)	8	5.2 (132)	22.3 (566)
	Horz	Blade	3/4-10 Tap	80S069-0009	--		26.6 (676)				
	Horz	Clamptop	Gain	80S069-0100	51-36		25.6 (650)				
	Horz	Clamptop	3/4-10 Tap	80S069-0109	51-26		26.5 (672)				
	Vert	Clamptop	3/4-10 Tap	80S069-0209	51-16		26.8 (680)				
	Vert	F-Neck	3/4-10 Tap	80S069-0F09	--		26.1 (663)				

CATALOG NUMBER KEY Veri*Lite Line Post Insulators - Silicone

8 0 S 0 6 9 0 2 0 9

Polymer Type	
80S	Veri*Lite - SR Polymer

Hardware Finish	
0	Standard

Rating	
15	15kV (1.5" rod)
25	25kV (1.5" rod)
28	35kV (1.5" rod)
46	46kV (1.75" rod)
69	69kV (1.75" rod)

*Teardrop Blade only available for 46-69kV

Bottom End Fitting	
00	Gain Base - Transverse
09	3/4" Stud Base
10	7/8" Stud Base

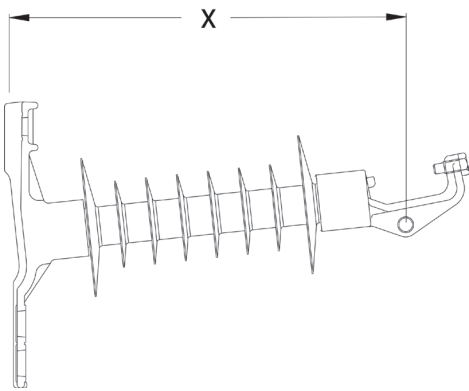
Top End Fitting	
0	Teardrop Blade*
1	Horizontal Clamptop
2	Vertical Clamptop
5	5" B.C. Through
6	Horizontal Clamptop (longer pintle bolt)
A	Vertical Clamptop (longer pintle bolt)

Dimensioning	
0	ANSI C29.18 Quality Conformance Tests
6	LWIWG - 02 Sample Tests
9	Special

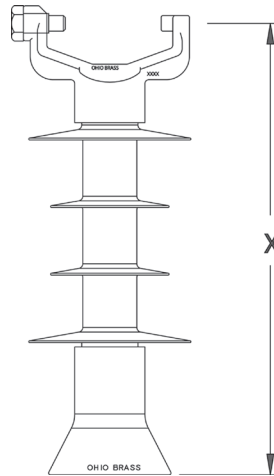
Leakage Distance Inches (mm)	60 Hz (Low Frequency) Flashover		Impulse Critical Flashover Pos. kV	Impulse Positive Withstand kV	SCL pounds (kN)	MDCL/ WCL pounds (kN)	Net Weight pounds (kg)	Standard Package Quantity			kV
	Dry-kV	Wet-kV						Carton	Pallet	Max/Crate	
11.0 (279)	90	70	150	140	2800 (12.5)	1235 (5.5)	9.8 (4.5)	3	36	--	15
							6.9 (3.1)				
							6.5 (2.9)				
							6.6 (3.0)				
17.3 (439)	110	75	185	170	2800 (12.5)	1235 (5.5)	10.3 (4.7)	3	36	--	25
							7.3 (3.3)				
							7.0 (3.2)				
							7.1 (3.2)				
26.1 (662)	135	100	215	200	2800 (12.5)	1235 (5.5)	11.2 (5.1)	3	36	--	35
							8.2 (3.7)				
							7.8 (3.5)				
							8.0 (3.6)				
34.3 (872)	170	125	260	235	2800 (12.5)	1235 (5.5)	19.7 (8.9)	--	--	14/21/28/35	46
							14.6 (6.6)				
							18.6 (8.4)				
							13.5 (6.1)				
							14.1 (6.4)				
13.9 (6.3)											
58.2 (1478)	230	180	360	330	2470 (11.0)	1235 (5.5)	22.1 (10.0)	--	--	14/21/28/35	69
							16.9 (7.7)				
							21.0 (9.5)				
							15.9 (7.2)				
							16.5 (7.5)				
12.0 (5.4)											

NOTES:

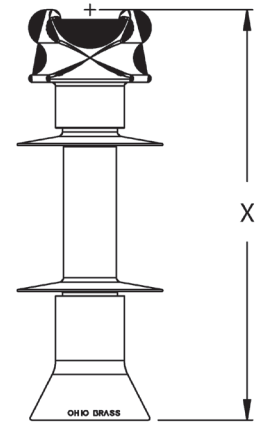
1. Maximum Design Tension for Clamptop is 2500 pounds (11 kN)
2. 15, 25 & 28 kV Units use 1.5 inch (38 mm) Diameter Rod
3. 46 & 69 kV Units use 1.75 inch (44 mm) Diameter Rod



**Horizontal Clamptop & Gain Base
(0100)**



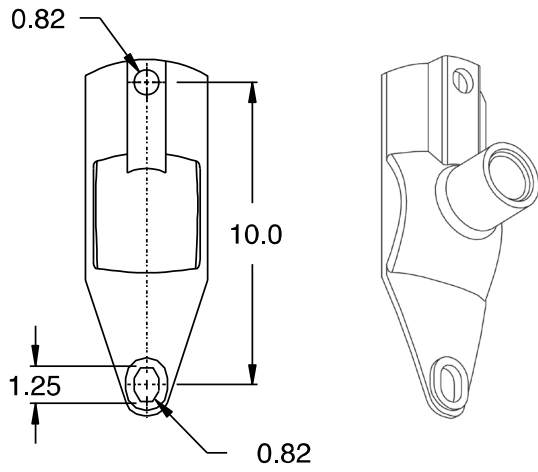
**Vertical Clamptop & Stud Base
(0209 & 0210)**



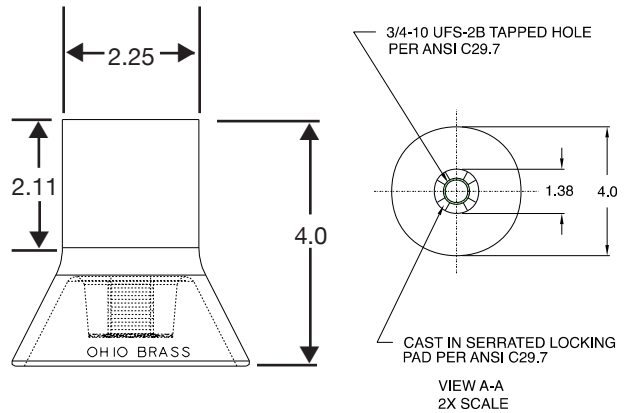
**F-Neck & Stud Base
(0F09 & 0F10)**

Post Base & Line Fittings

Post Base Fittings Dimensions (in inches)

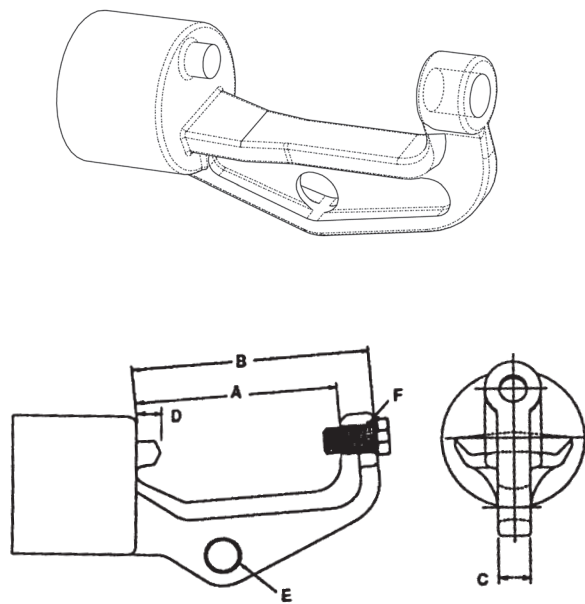


15, 25 & 35 kV
Horizontal Gain Base

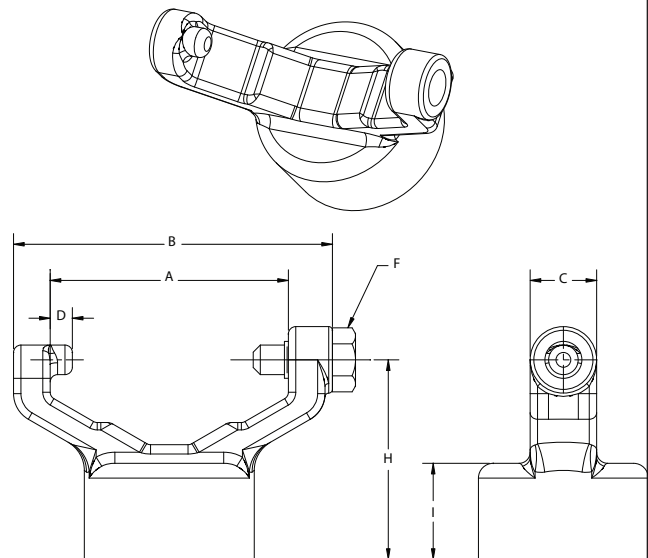


15, 25 & 35 kV
Stud Base

Post Line Fittings Dimensions (in inches)



15-69 kV
Horizontal Clamptop Cap

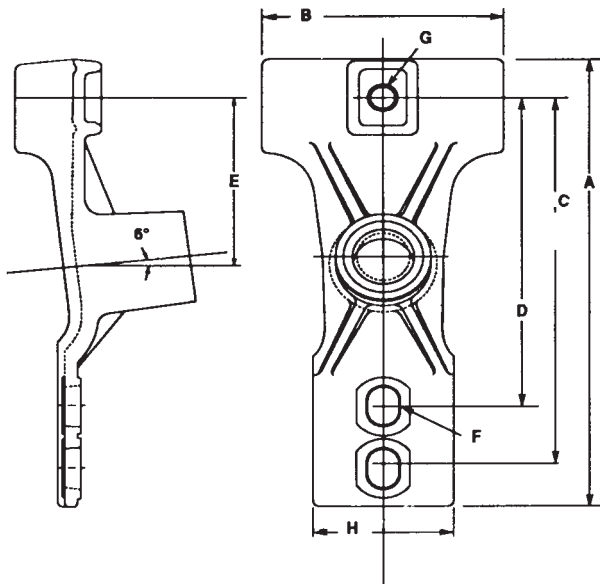


15-69 kV
Vertical Clamptop Cap

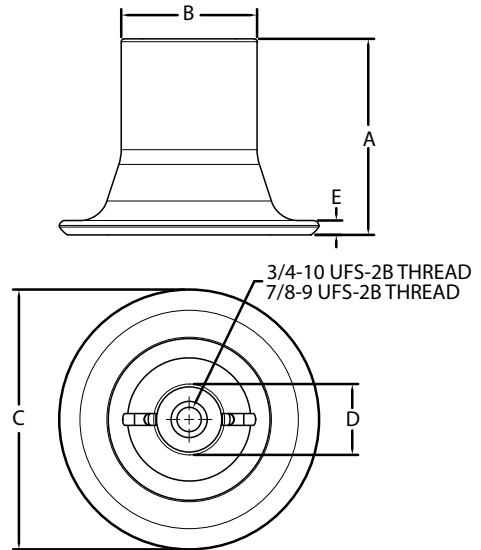
Line Post Line Fittings Dimensions (in inches)

Type	A	B	C	D	E	F	H	I	Material
H. Clamptop Cap	4.00	4.75	0.62	0.38	0.69	5/8-11 UFS-2B	-	-	60-40-18 DI
V. Clamptop Cap	4.00	5.38	1.12	0.38	-	5/8-11 UFS-2B	3.38	1.63	60-40-18 DI

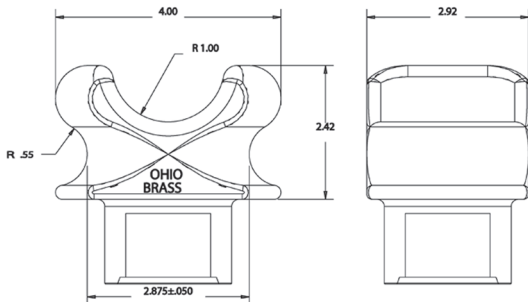
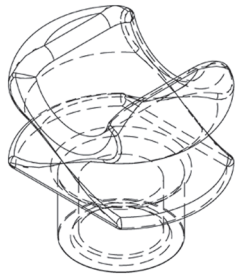
Post Base & Line Fittings



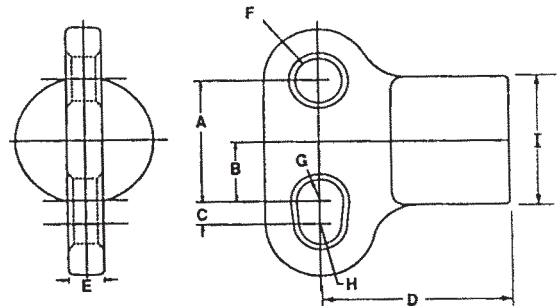
46 & 69 kV Horizontal Gain Base



46 & 69 kV Stud Base



15-69 kV F-Neck Cap



46 & 69 kV Two Hole Blade

Line Post Base Fittings Dimensions (in inches)

Type	A	B	C	D	E	F	G	H	Material
H. Gain Base	14.50	7.00	12.00	10.00	6.75	1.25 x 0.88	0.88	4.00	60-40-18 DI
Stud Base	4.22	2.875	5.50	1.50	0.50	3/4-10 UFS-2B or 7/8-9 UFS-2B	-	-	60-40-18 DI
Two Hole Blade	2.75	1.38	0.50	4.00	0.75	1.00 Dia.	0.50 R	0.44 R	60-40-18 DI

Application Curves for Veri*Lite Insulators

How to use the application curves. After you have established the loading cases, you can use the curves to determine whether a specific Veri*Lite unit meets your loading requirement.

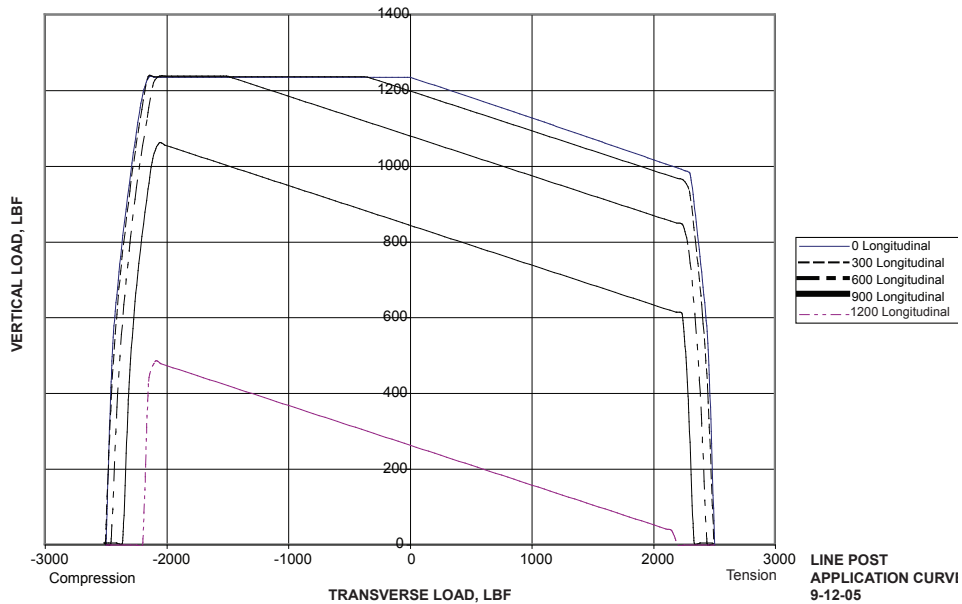
For example, consider the installation of a Veri*Lite post number 80S025-0100 on a line with a vertical cantilever load of 800 pounds and a compression load of 900 pounds. By entering the curve at these

values, find the allowable longitudinal load to be 900 pounds.

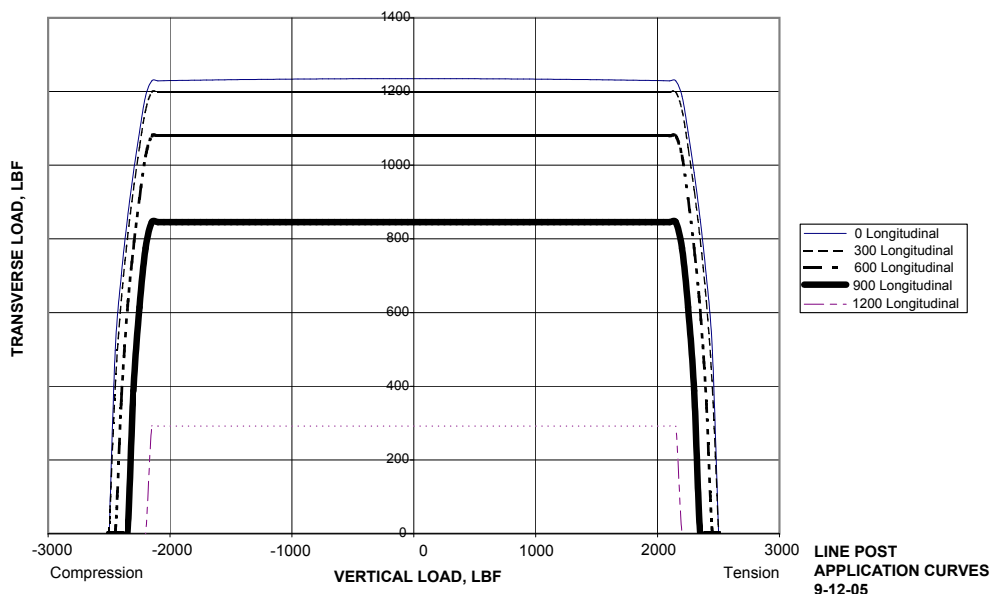
When the posts are loaded in tension the cantilever loading due to the combined effects of longitudinal, vertical and tensile loads should not exceed the rated tension working value.

IMPORTANT: The application curves should not be extrapolated.

80S015, 80S025 & 80S028 HORIZONTAL STYLE



80S015, 80S025 & 80S028 VERTICAL STYLE



Maximum deflection for any of the post styles is approximately 1.75" at SCL.
Curves are shown using a 2.0 safety margin to SCL

Application Curves for Veri*Lite Insulators

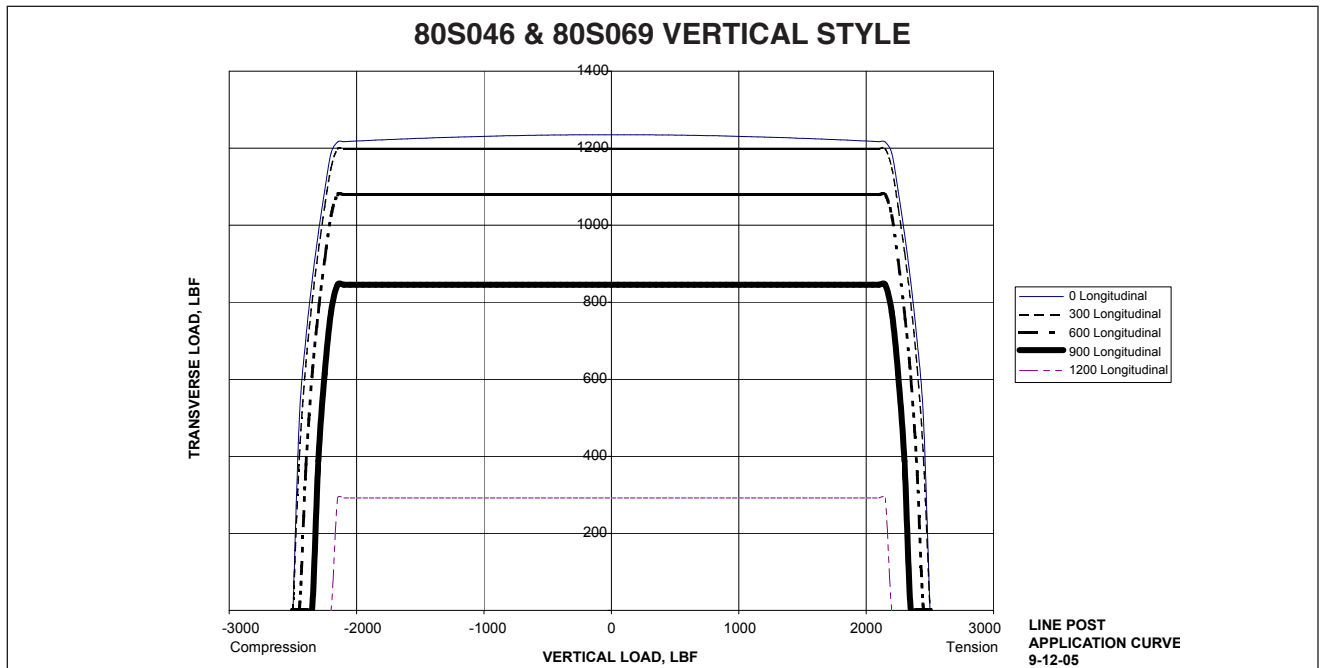
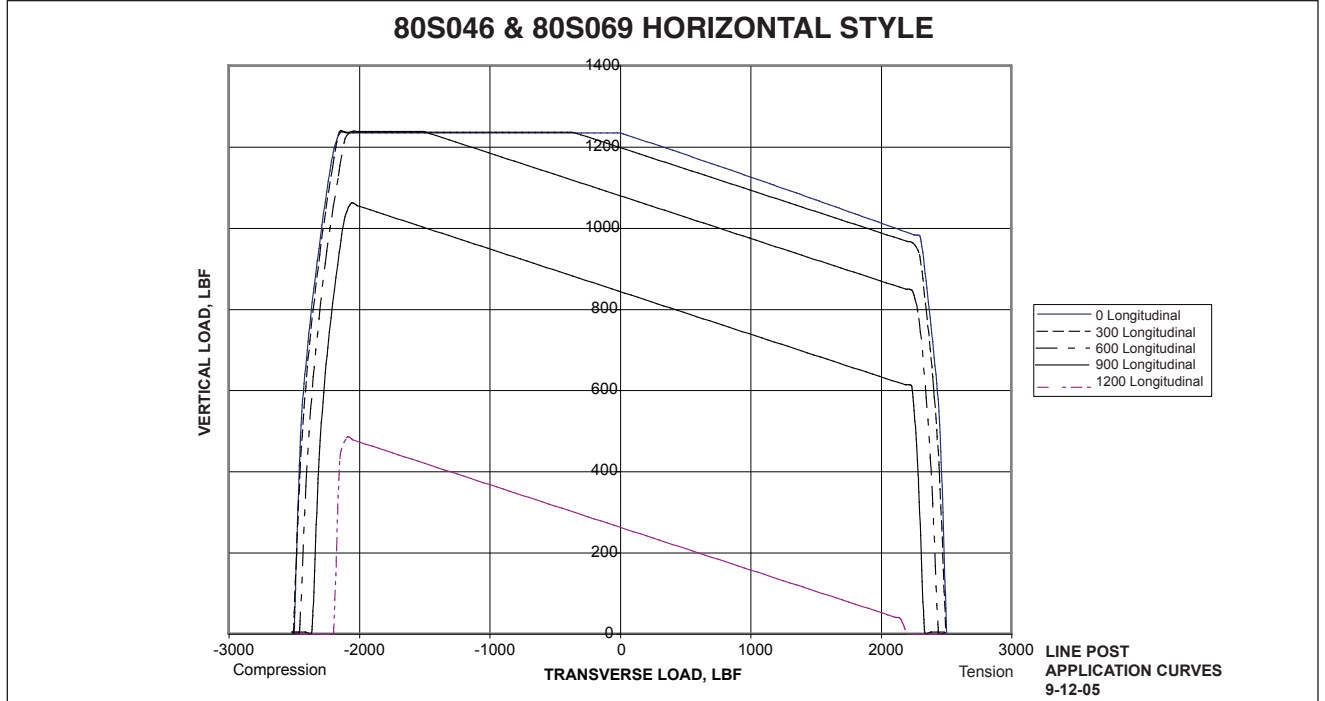
How to use the application curves. After you have established the loading cases, you can use the curves to determine whether a specific Veri*Lite unit meets your loading requirement.

For example, consider the installation of a Veri*Lite post number 80S069-0100 on a line with a vertical cantilever load of 800 pounds and a compression load of 900 pounds. By entering the curve at these

values, find the allowable longitudinal load to be 900 pounds.

When the posts are loaded in tension the cantilever loading due to the combined effects of longitudinal, vertical and tensile loads should not exceed the rated tension working value.

IMPORTANT: The application curves should not be extrapolated.

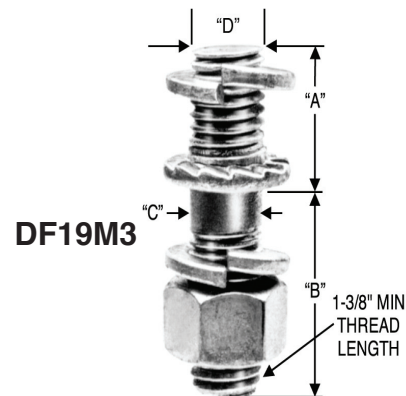


Maximum deflection for any of the post styles is approximately 1.75" at SCL.
Curves are shown using a 2.0 safety margin to SCL

Line Post Insulator Studs

DF19M Series

Serrated collar and lockwasher secure unit to line post insulator and prevent accidental disassembly. Cut threads above serrated collar, rolled threads below collar.

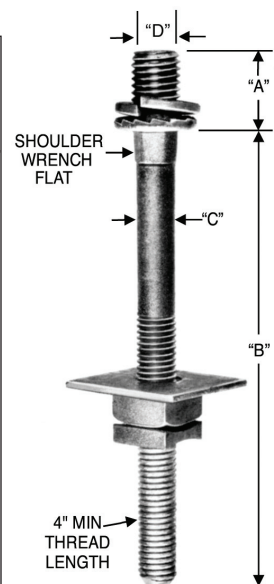


For Steel Crossarms

Catalog No.	Dimensions (in.)				Hardware Included	Standard Package	Weight 100 Pcs.
	"A"	"B"	"C"	"D"			
DF19M1	1-1/8	1-3/4	5/8	3/4	(1) reg. hexnut and (2) spring lockwashers	100 pcs.	43 lbs.
DF19M3	1-1/8	1-3/4	3/4	3/4	(1) reg. hexnut and (2) spring lockwashers	100 pcs.	54 lbs.
875833001	1-3/8	2	7/8	7/8	(1) reg. hexnut and (2) spring lockwashers	100 pcs.	85 lbs.

For Wood Crossarms

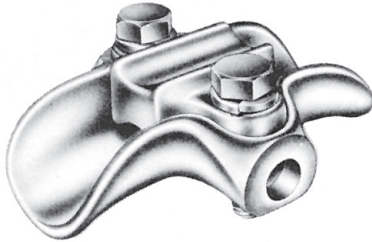
Catalog No.	Dimensions (in.)				Hardware Included	Std. Pkg.	Weight 100 Pcs.
	"A"	"B"	"C"	"D"			
DF19M2	1-1/8	7	5/8	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	50 pcs.	102 lbs.
DF19M4	1-1/8	7	3/4	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	40 pcs.	140 lbs.
DF19M19	1-1/8	10	5/8	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	25 pcs.	176 lbs.
DF19M20	1-1/8	12	5/8	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	25 pcs.	192 lbs.
*DF19M29	1-1/8	14	3/4	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	20 pcs.	234 lbs.
*DF19M32	1-1/8	24	3/4	3/4	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	15 pcs.	342 lbs.
875843001	1-3/8	8	7/8	7/8	(1) sq. nut, (1) sq. washer, (1) spring lockwasher, (1) MF locknut	50 pcs.	277 lbs.



DF19M2

*DF19M29 and DF19M32 include (1) additional double coil lockwasher.

Suspension Trunnion Bolted Aluminum Clamptop Clamps

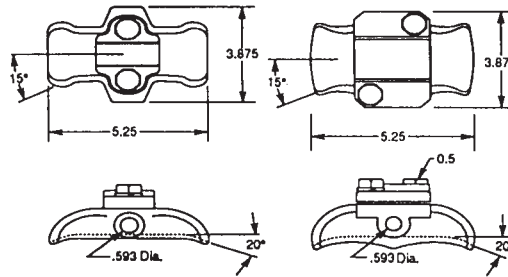


For standard voltage applications with all aluminum, ACSR or aluminum alloy conductor.

Designed for use on tangent suspension spans with horizontal or vertical post insulators.

Keeper is reversible for proper fit on different size conductors.

Material: Body and Keeper—356-T6 aluminum alloy
 Hardware—Galvanized steel
 Anti-static spring 302 stainless steel



Catalog Number	Former Catalog Number	Fig. No.	Clamping Range Inches (mm)	Ultimate Body Strength Lbs. (kN)	Dimensions Inches (mm)			Approx. Wt. Each Lbs. (kg)
					L	W	J	
TSC57	270660-3002	1	.25-.57 (6.3-14.4)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.42 (.19)
TSC86		1	.35-.86 (8.8-21.8)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.45 (.20)
TSC106	270661-3002	1	.50-1.06 (12.7-26.9)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.62 (.28)
TSC150	270662-3002	1	1.00-1.50 (25.4-38.1)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.64 (.29)
TSC200	270663-3002	2	1.50-2.00 (38.1-50.8)	2,800 (12.46)	5-1/4 (133.3)	3-7/8 (98.4)	1/2 (12.7)	.75 (.34)

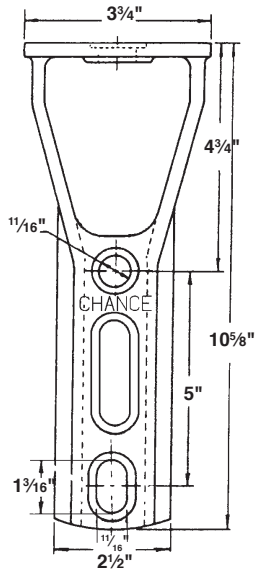
- NOTES:
- (1) Recommended torque on bolts; 1/2" — 480 in. lbs.
 - (2) Anti-static spring can be supplied by adding "ARIV" to catalog number. Example, TSC57ARIV.
 - (3) Clamptop clamps can be mounted directly on Veri*Lite posts, if the posts are ordered with the horizontal or vertical clamptop option.

Bracket, Pole Top Insulator

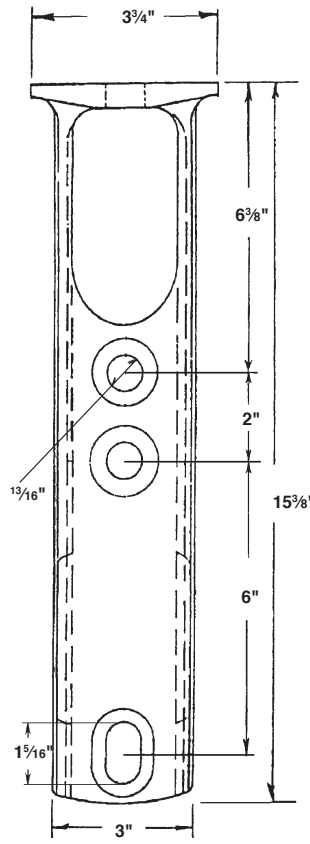
Mounts post or pin type insulator to top of pole. Variety of bolt hole locations for mounting to pole.

Catalog No.	Mounting Bolt Dia.	Insulator Bolt Dia.	Mtg. Bolt Spacing	Dist. From Insul. Base To Top Hole	Approx. Ship. Wt. Lbs. Per 100 Pcs.
IB2	5/8"	5/8" or 3/4"	4 3/4"	4 3/4"	360
IB3	3/4"	5/8" or 3/4"	5" or 8"	6 3/8"	600
†IB4	5/8"	5/8" or 3/4"	5" or 8"	5"	600
75114	3/4"	5/8" or 3/4"	6" or 8"	6"	1000

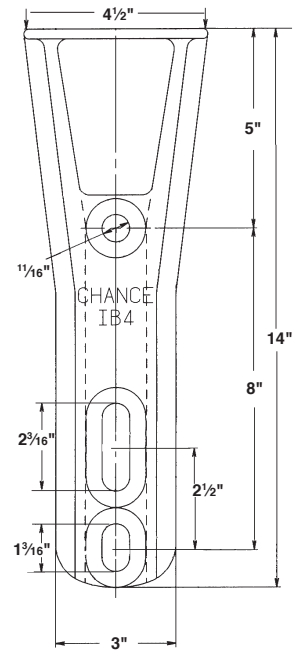
Ductile iron per ASTM A-536
 Hot dipped galvanized per ASTM A-153
 † RUS Listed



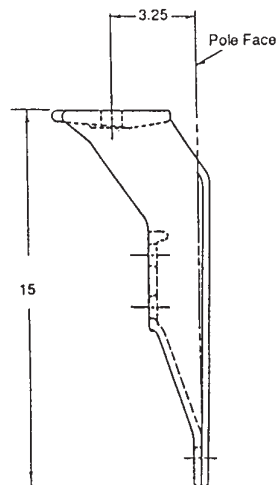
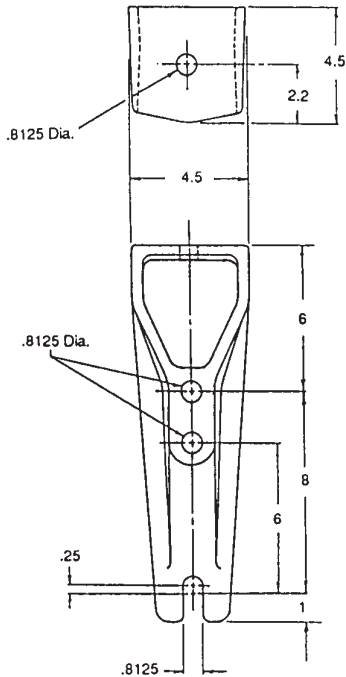
IB2



IB3



IB4



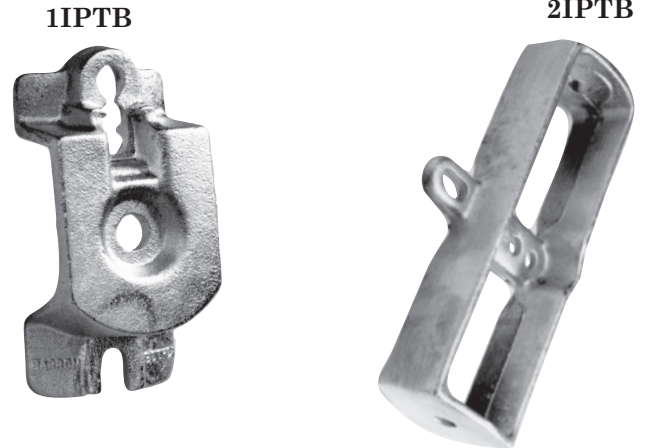
75114

Bracket, Horizontal Insulator

Use for mounting one or two insulator(s) to pole for armless construction.

Catalog No.	Mtg. Bolt Dia.	Max. Insul. Bolt Dia.	Mtg. Bolt Spacing	Insul. Angle Dim.	Space Between Insul. Bases	Approx. Ship. Wt.Lbs. Per 100 Pcs.
1IPTB	Two 5/8"	3/4"	5", 6"	5°	—	333
2IPTB	Two 5/8"	3/4"	4", 5"	—	14"	1025

Ductile iron per ASTM A-536
Hot dipped galvanized per ASTM A-153



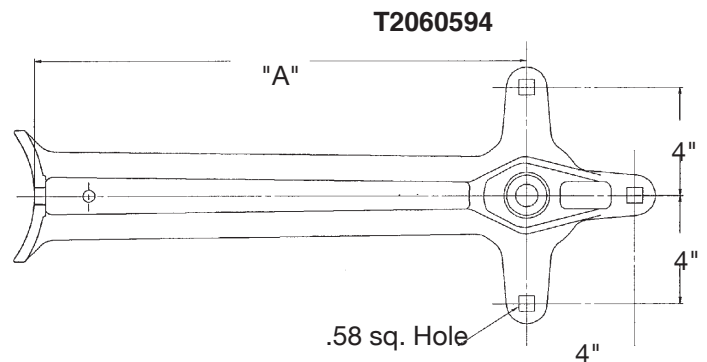
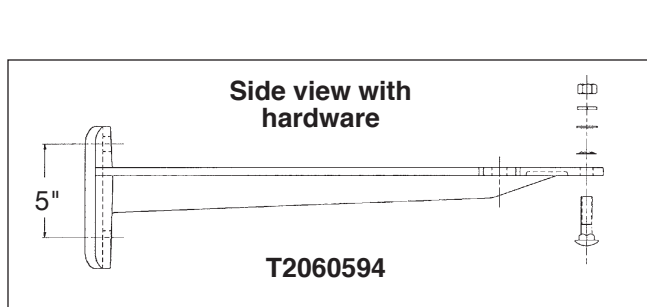
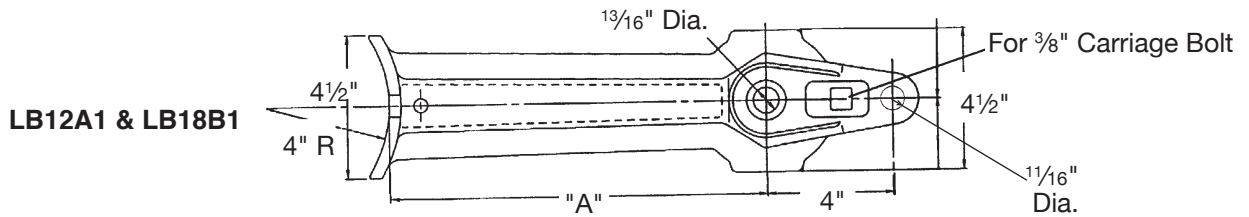
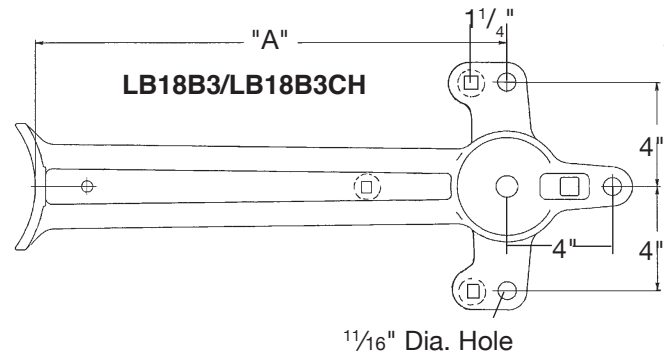
Bracket, Vertical Insulator

Use for mounting pin or post vertical insulators, cutouts, arresters, or cable terminators. Three-hole style can be used for in-line deadending using suspension insulators.

Catalog No.	Max. Insul. Mtg. Bolt Dia.	Max. Equip. Mtg. Bolt Dia.	Pole Mtg. Bolt Dia.	Pole Mtg. Bolt Spacing	Clearance Pole To Insul. Bolt "A"	Approx. Ship. Wt.Lbs. Per 100 Pcs.
LB12A1	3/4"	5/8"	Two 5/8"	5"	12"	860
LB18B1	3/4"	5/8"	Two 5/8"	5"	18"	1300
LB18B3	3/4"	5/8"	Two 5/8"	5"	18"	1400
*T2060594	3/4"	1/2"	Two 5/8"	5"	12"	86
**LB18B3CH	3/4"	5/8"	Two 5/8"	5"	18"	1400

Ductile iron per ASTM A-536
Hot dipped galvanized per ASTM A-153

- * T206-0594 has 3 captive 1/2" x 2" bolts and nuts included
- ** LB18B3CH has 2 captive 1/2" x 2" bolts and nuts included with LB18B3.



Bracket, Pole Top Insulator

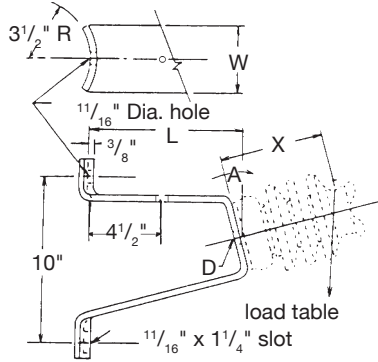


BRACKET, ANGLE CROSSARM

Mounts post insulators at 30° angle on crossarm for use on running corners.

Catalog No.	Crossarm Size	Mtg. Bolt Diameter	Stud Bolt Diameter	Approx. Ship Wt. Lbs. Per 100 Pcs.
1XAB	3 ³ / ₄ " x 4 ³ / ₄ " Max. and Round Crossarms	3/4"	3/4"	610

Ductile iron per ASTM A-536
Hot dipped galvanized per ASTM A-153



C2060009

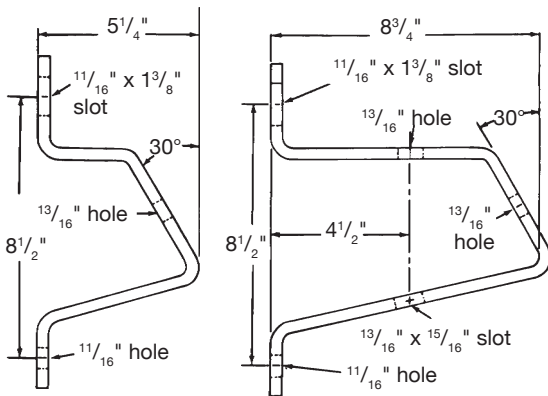
BRACKETS, POST INSULATOR Curved base

This bracket can be used for mounting distribution post-type insulators from 15 kV to 34.5 kV on the side of the pole. The base has a pole-shape back for convenient installation. Brackets can be placed in a phase-over-phase arrangement or can be mounted on opposite sides of the pole for "armless" construction.

Insulators not included.

Catalog Number	Dimensions In Inches			Angle A	Approx. Ship Wt. Lbs. Per 100 Pcs.
	L	D	W		
*C2060009	9 1/2	13/16	4	15°	1220
†*C2060010	12	13/16	4	15°	1669
C2060011	15	13/16	4	15°	2066

*These brackets have 13/16" stringing block holes.
†RUS listed



C2060162

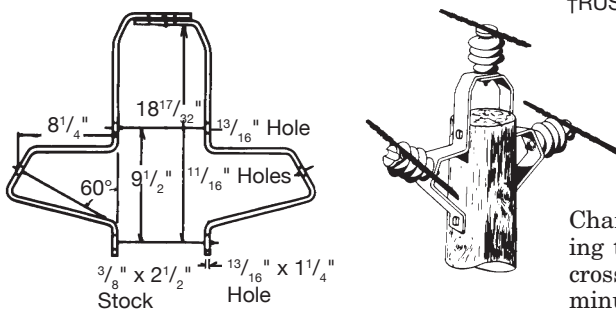
C2060209

BRACKETS, POST INSULATOR Side Mounted

The bracket is formed of high-quality 3/8" x 2 1/2" bar steel and hot dip galvanized. It can be utilized to mount distribution post insulators from 15 kV to 34.5 kV.

Catalog Number		Pole Mounting Bolts Required	Insulator Stud Bolts Required	Approx. Ship Wt. Lbs. Per 100 Pcs.
13/16" Hole	11/16" Hole			
†*C2060209	16919	Two 5/8"	3/4"	650
C2060162		Two 5/8"	3/4"	440

*This bracket is designed to facilitate a stringing block.
†RUS listed



No. 9183

BRACKETS, POST INSULATOR Uni-Brackets

Chance Uni-Brackets are a clean-appearing, low-cost method of mounting three post-type insulators atop a pole completely eliminating the crossarm. The brackets can be installed on the pole in less than five minutes, requiring only two 3/4" bolts for attachment. Uni-Brackets fit poles having a pole-top diameter from 6" to 8 1/2". Slot on top is 11/16" x 2 1/4".

No. 9183 brackets can be adapted to a variety of distribution construction using post-type insulators from 15 through 34.5 kV.

Catalog Number	Insulator Stud Bolts Required	Approx. Ship Wt. Lbs. Per 100 Pcs.
†9183	5/8"	2100

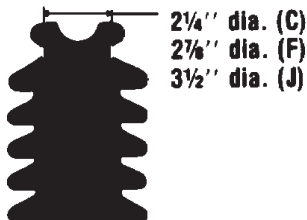
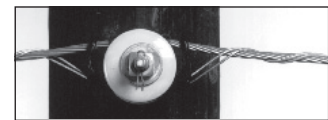
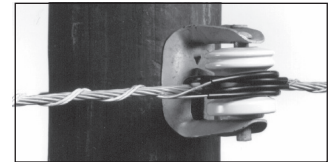
†Includes both sections of bracket

SUPER TOP-TIE® Line Ties

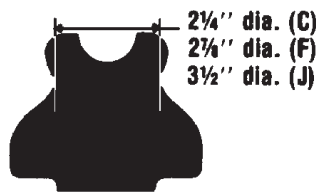
• for Pin, Post and Spool Insulators

Made of aluminum-clad steel compatible with aluminum, aluminum-alloy and ACSR conductors in the top grooves of vertical-mounted *ANSI Class C, F, J and many non-standard pin and post insulators (single-or double-support) or on *ANSI 53-2 spool insulators (horizontal or vertical).

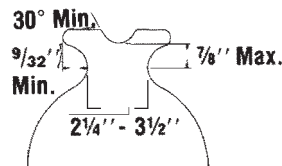
High-density polyethylene hooks provide the wide application range and ensure proper installation. If used over armor rods (not required), select tie size based on total conductor/armor diameter. Semiconductive-rubber pad and high-density-polyethylene on loops protect against abrasion of insulator, conductor and tie. Fit is resilient and provides superior performance under galloping and aeolian vibration. Install by hand or with hot-line tools.



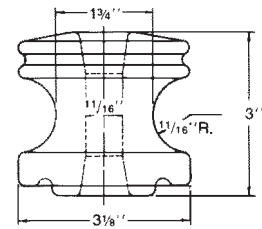
POST
INSULATOR



PIN
INSULATOR



NON-STANDARD
INSULATOR



ANSI 53-2
SPOOL

*Super Top-Tie STT10 — STT130 also fit many foreign or reclaimed pin and post insulators with neck sizes 2 1/4" - 3 1/2".
Consult Hubbell Power Systems, Inc. for use on pins and posts outside these dimensions.

ORDERING INFORMATION

Catalog Number	Aluminum-Type Conductors, Typical Sizes				Color Code	Std. Pkg.	Wt. Per 100, Lb.
	AAC (All-Aluminum)	AAAC (Alum.-Alloy)	ACSR	Diameter Range			
STT10	#6, 7W	#6, 7W	#6, 6/1	.184-.220" (4.67-5.59 mm)	None	50	28
STT20	#4, 7W	#4, 7W	#4, 6/1	.221-.257" (5.61-6.53 mm)	Orange	50	28
STT30	#3, 7W	#3, 7W	#3, 6/1	.258-.289" (6.55-7.34 mm)	Purple	50	28
STT40	#2, 7W	#2, 7W	#2, 6/1	.290-.325" (7.37-8.26 mm)	Red	50	28
STT50	#1, 7W	#1, 7W	#1, 6/1	.326-.360" (8.28-9.14 mm)	Gray	50	28
STT60	1/0, 7W	1/0, 7W	1/0, 6/1	.361-.409" (9.17-10.39 mm)	Yellow	50	32
STT70	2/0, 7W	2/0, 7W	2/0, 6/1	.410-.460" (10.41-11.68 mm)	Blue	50	32
STT80	3/0, 7W	3/0, 7W	3/0, 6/1	.461-.516" (11.71-13.11 mm)	Black	50	32
STT90	4/0, 7W	4/0, 7W	4/0, 6/1	.517-.584" (13.13-14.83 mm)	Pink	50	32
STT100	266.8, 19W	266.8, 19W	266.8, 18/1	.585-.664" (14.86-16.87 mm)	Green	50	32
STT110	336.4, 19W	336.4, 19W	336.4, 18/1	.665-.755" (16.89-19.18 mm)	Brown	50	40
STT120	477, 19W	477, 19W	477, 18/1	.756-.859" (19.20-21.82 mm)	Violet	50	40
STT130	636, 37W	556.5, 19W	556.5, 18/1	.860-.977" (21.84-24.82 mm)	Gold	50	40

LEFT-HAND LAY STANDARD

- Applied Length: 29" - 48" (Depends on insulator make and conductor size).
- Strength: Exceeds Rule 261E.2(A) of National Electrical Safety Code.
- REA accepted.
- To obtain outside diameters of conductors, consult Conductor Chart.

Web: <http://www.hubbellpowersystems.com>
E-mail: hpsliterature@hps.hubbell.com

Veri*Lite™

Silicone Rubber Line Post Insulators with Universal Clamp for 15-69kV Applications

The Ohio Brass Universal Clamp end fitting is used with the Veri*Lite™ Line Post (VLLP) insulator family. Combining the proven direct bond silicone technology of the Ohio Brass VLLP design, the Universal Clamp offers a flexible range-taking connection that can be installed in either the vertical or horizontal direction. The Universal Clamp design eliminates the need for a separate additional conductor clamp; saving both money and installation time. In addition, the optional hotstick-operable feature provides flexibility for live-line work.

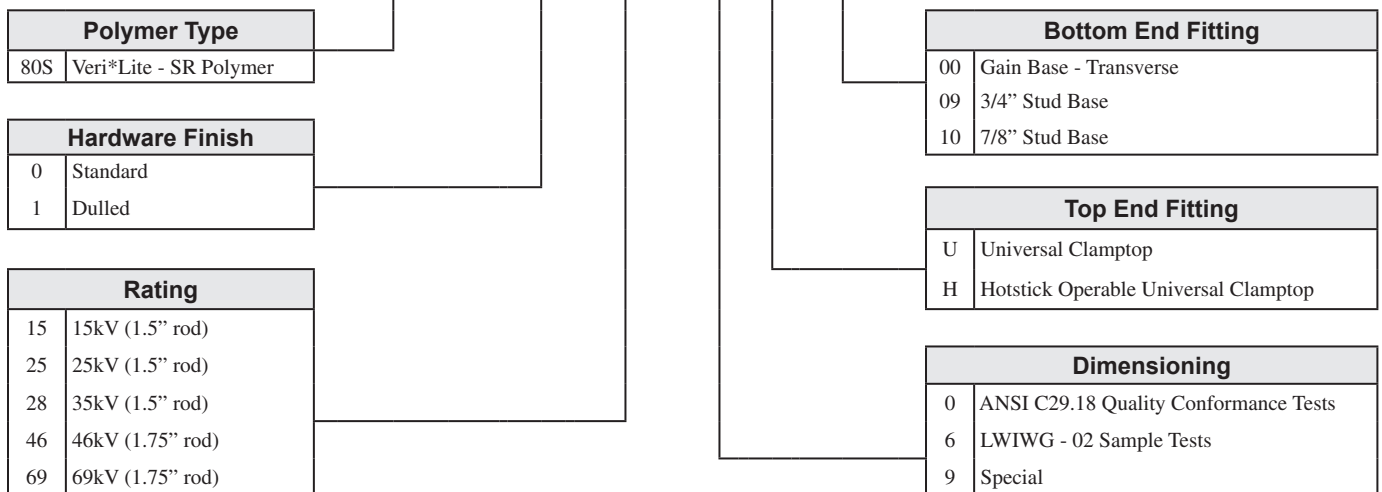


Design Features

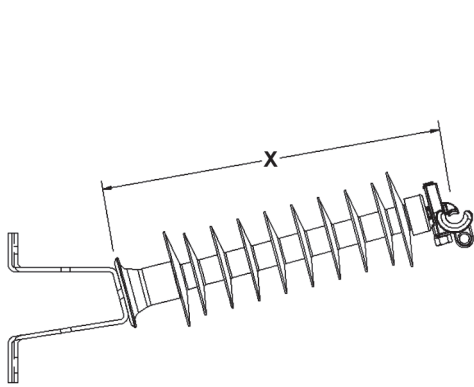
- Proven direct bond interface
- Weathersheds molded with proprietary silicone rubber compound
- Universal clamp works for a conductor diameter range of 0.30” (7.6 mm) to 1.34” (34 mm) to provide flexibility in the field
- Hotline option allows for live-line operability
- Can be installed in vertical or horizontal directions, thus reducing inventory
- Integral design eliminates need for additional trunnion clamp
- Meets requirements of CEA LWIWG-02-1996 & ANSI C29.18-2003

CATALOG NUMBER KEY
Veri*Lite Line Post Insulators - Silicone

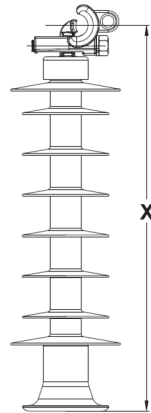
8 0 S 0 6 9 0 U 0 9



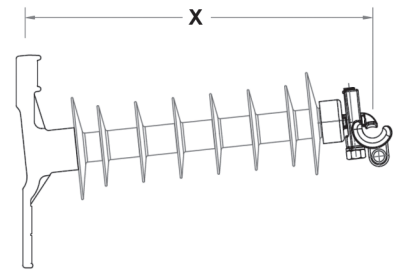
kV	Line Fitting	Base Fitting	Catalog Number	"X" Dimension Inches (mm)	Dry Arc Distance Inches (mm)	Leakage Distance Inches (mm)	60 Hz (Low Frequency) Flashover		Impulse Critical Flashover Pos. kV	Impulse Positive Withstand kV	SCL pounds (kN)	MDCL/WCL pounds (kN)	Package Quantity	Crate/Pallet Quantity
							Dry-kV	Wet-kV						
15	Universal	3/4-10 Tap	80S015-0U09	13.0 (330)	7.4 (188)	11.0 (279)	90	70	150	140	2800 (12.5)	1235 (5.5)	3	60
	Universal	7/8-9 Tap	80S015-0U10	13.0 (330)									3	60
	Universal	Gain	80S015-0U00	12.4 (314)									3	60
25	Universal	3/4-10 Tap	80S025-0U09	14.8 (375)	9.6 (244)	17.3 (439)	110	75	185	170	2800 (12.5)	1235 (5.5)	3	60
	Universal	7/8-9 Tap	80S025-0U10	14.8 (375)									3	60
	Universal	Gain	80S025-0U00	14.1 (357)									3	60
35	Universal	3/4-10 Tap	80S028-0U09	17.0 (432)	11.7 (297)	26.1 (662)	135	100	215	200	2800 (12.5)	1235 (5.5)	3	60
	Universal	7/8-9 Tap	80S028-0U10	17.0 (432)									3	60
	Universal	Gain	80S028-0U00	16.4 (415)									3	60
46	Universal	3/4-10 Tap	80S046-0U09	19.5 (495)	14.4 (390)	34.3 (872)	170	125	260	235	2800 (12.5)	1235 (5.5)	-	35
	Universal	7/8-9 Tap	80S046-0U10	19.5 (495)									-	35
	Universal	Gain	80S046-0U00	18.8 (478)									-	35
69	Universal	3/4-10 Tap	80S069-0U09	26.1 (663)	22.3 (566)	58.2 (1478)	230	180	360	330	2470 (11.0)	1235 (5.5)	-	35
	Universal	7/8-9 Tap	80S069-0U10	26.1 (663)									-	35
	Universal	Gain	80S069-0U00	25.4 (645)									-	35



Universal Clamptop & Stud Base w/Bracket* (0U09 & 0U10 w/C2060009)



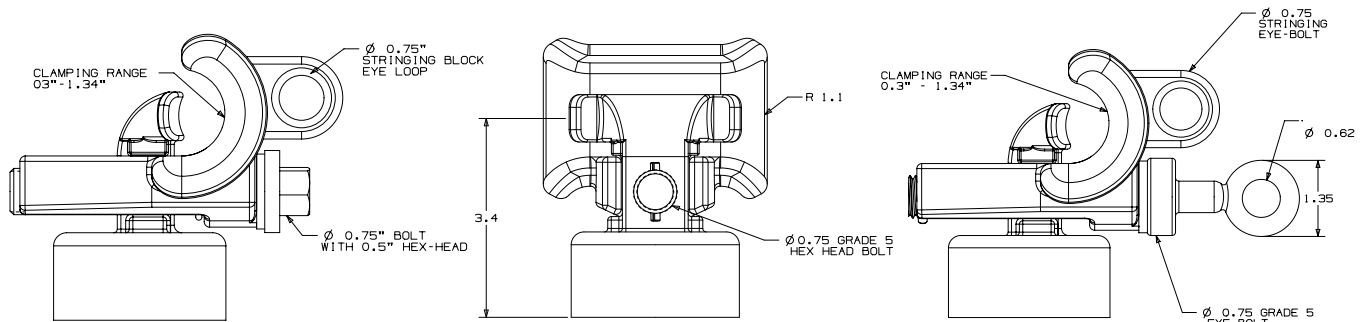
Universal Clamptop & Stud Base (0U09 & 0U10)



Universal Clamptop & Gain Base (0U00)

*Multiple bracket options available (see pages 13-15 of Section 23)

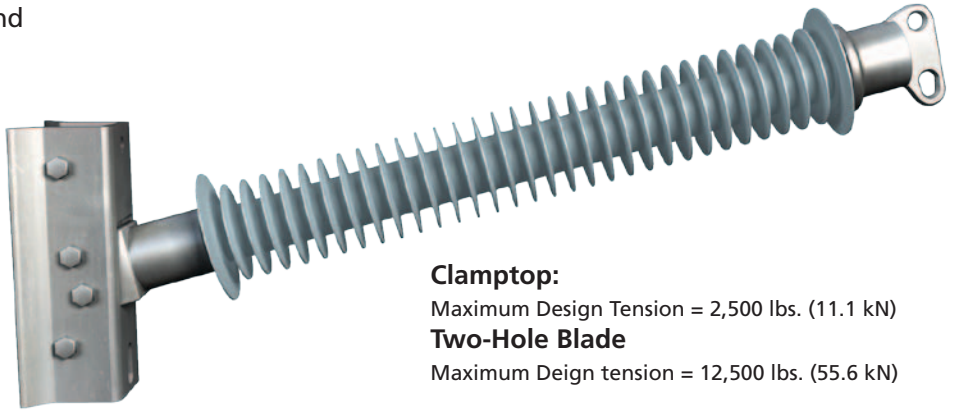
Universal Clamptop Dimensions (in inches)



Horizontal Line Post Insulators 3.0" (76.2 mm) Rod Diameter

Hubbell Power Systems offers a transmission product line to meet the needs of today's power utility. The 3" Quadri*Sil® Line Post is an addition to the reliable product line that boasts a redundant four point sealing system. The Quadri*Sil® product line will ensure the utmost protection against weather and contaminants in an unpredictable environment.

- Proprietary silicone rubber compound
- Direct bond design
- Uniform circumferential crimp



Clamptop:

Maximum Design Tension = 2,500 lbs. (11.1 kN)

Two-Hole Blade

Maximum Design Tension = 12,500 lbs. (55.6 kN)

Horizontal Line Post Insulators 3.0" (76.2 mm) Rod Diameter

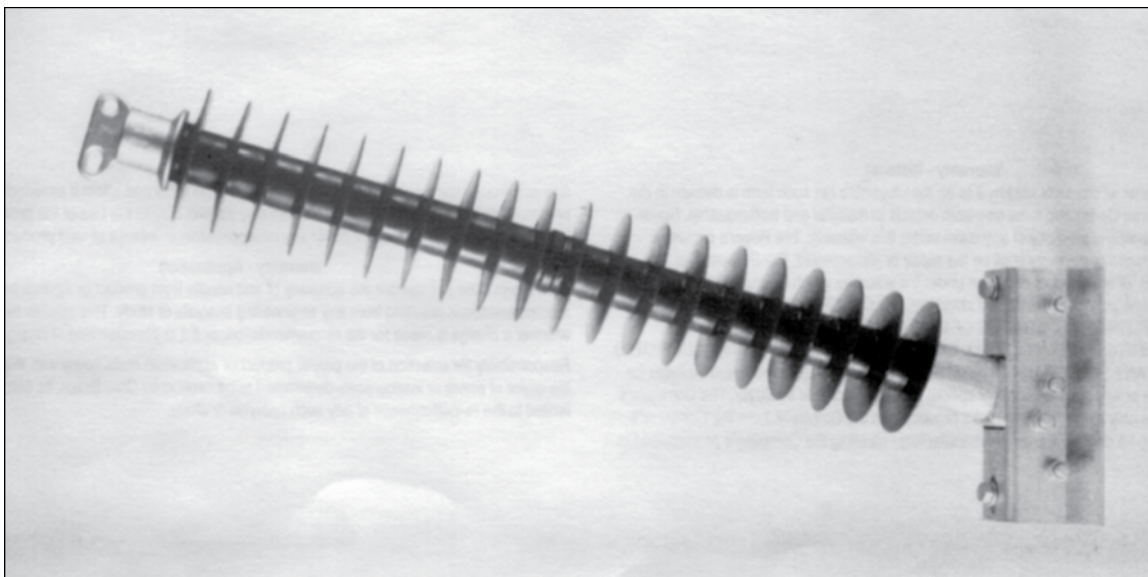
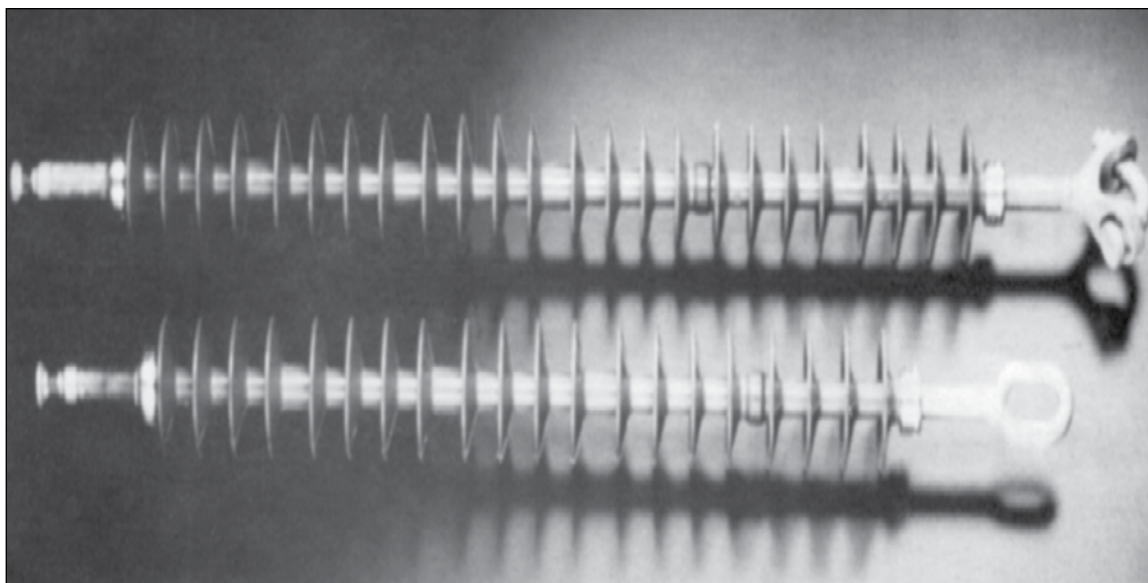
Selection Guide: Typical Line Voltage, kV ⁽¹⁾	Catalog Numbers ⁽³⁾	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values			SCL lbs. (kN)
						⁽²⁾ 60-Hz Dry Flashover (kV)	⁽²⁾ 60-Hz Wet Flashover (kV)	⁽²⁾ Critical Impulse Positive (kV)	⁽²⁾ Critical Impulse Negative (kV)	⁽²⁾ 60-Hz 1-minute Wet Withstand (kV)	⁽²⁾ Impulse Positive Withstand (kV)	⁽²⁾ Impulse Negative Withstand (kV)	
69 115 138 161 230 345	P300025S0020	025	38.5 (978)	27.9 (708)	82 (2083)	275	245	425	520	200	400	485	7500 (33.4)
	P300026S0020	026	39.7 (1008)	29.2 (741)	88 (2223)	290	255	445	540	215	415	505	7500 (33.4)
	P300031S0020	031	44.4 (1128)	34.0 (863)	101 (2555)	335	300	520	615	255	490	575	7500 (33.4)
	P300036S0020	036	49.1 (1247)	38.9 (988)	116 (2934)	385	345	595	690	285	560	650	6670 (29.7)
	P300042S0020	042	55.0 (1397)	44.9 (1140)	134 (3406)	445	400	690	785	340	685	740	5810 (25.8)
	P300047S0020	047	59.7 (1516)	49.8 (1265)	149 (3785)	490	445	765	860	375	725	815	5261 (23.4)
	P300052S0020	052	64.4 (1636)	54.7 (1389)	164 (4163)	540	490	840	935	410	790	884	4820 (21.4)
	P300053S0020	053	65.6 (1666)	55.9 (1420)	168 (4260)	550	500	860	955	425	810	900	4720 (20.9)
	P300057S0020	057	69.1 (1755)	59.5 (1511)	179 (4544)	585	535	915	1010	450	865	955	4440 (33.4)
	P300058S0020	058	70.3 (1786)	60.7 (1542)	183 (4638)	600	545	935	1030	460	880	975	4350 (19.3)
	P300063S0020	063	75.0 (1905)	65.6 (1666)	198 (5017)	645	590	1010	1105	495	950	1045	4040 (17.9)
	P300064S0020	064	76.2 (1935)	66.8 (1697)	201 (5110)	660	600	1030	1125	510	970	1065	3970 (17.7)
	P300068S0020	068	79.7 (2024)	70.4 (1788)	212 (5395)	695	635	1085	1180	535	1025	1120	3770 (16.8)
	P300069S0020	069	80.9 (2055)	71.6 (1819)	216 (5489)	705	645	1105	1200	545	1045	1140	3710 (16.5)
	P300074S0020	074	85.6 (2174)	76.5 (1943)	231 (5867)	755	690	1180	1275	585	1115	1210	3480 (15.5)
	P300078S0020	078	90.3 (2294)	81.4 (2068)	246 (6246)	800	735	1255	1350	620	1185	1280	3280 (14.6)
	P300083S0020	083	95.0 (2413)	86.2 (2189)	261 (6624)	850	780	1330	1430	655	1255	1350	3100 (13.8)
	P300085S0020	085	96.2 (2443)	87.4 (2220)	265 (6721)	860	790	1350	1445	670	1275	1370	3050 (13.6)
	P300089S0020	089	100.9(2563)	92.3 (2344)	280 (7099)	910	835	1425	1520	705	1345	1440	2900 (12.9)
	P300094S0020	094	105.6(2682)	97.1 (2466)	294 (7478)	955	880	1500	1600	740	1420	1515	2760 (12.3)
	P300095S0020	095	106.8(2713)	98.4 (2499)	292 (7412)	970	890	1520	1615	755	1435	1530	2720 (12.1)
	P300099S0020	099	110.4(2804)	102.0(2591)	309 (7856)	1005	925	1575	1675	780	1490	1585	2630 (11.7)
	P300103S0020	100	111.5(2832)	103.2(2621)	313 (7950)	1015	935	1595	1690	790	1510	1605	2600 (11.6)
	P300105S0020	105	116.2(2951)	108.0(2743)	328 (8329)	1065	980	1670	1770	825	1580	1675	2480 (11.0)

Notes:

- 1) For voltages above 345 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- 2) Electrical values are without corona ring. For voltages equal to or greater than 220 kV, please contact your HPS representative.
- 3) The catalog number shown in the table is for a 3.0" (76.2mm) rod diameter line post with a two hole blade on the line end and an aluminum gain base on the tower end. For other end fitting combinations, please contact your HPS representative.

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Hi*Lite® XL Transmission Insulators



HUBBELL®
Power Systems



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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Warranty - Material

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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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Hi*Lite[®] XL Transmission Insulators

Section 26

Suspensions	A
Line Posts	B
Braced Posts	C
Station Posts	D
Sample Polymer Specs	E

Hi*Lite[®] XL Suspension Insulators

A

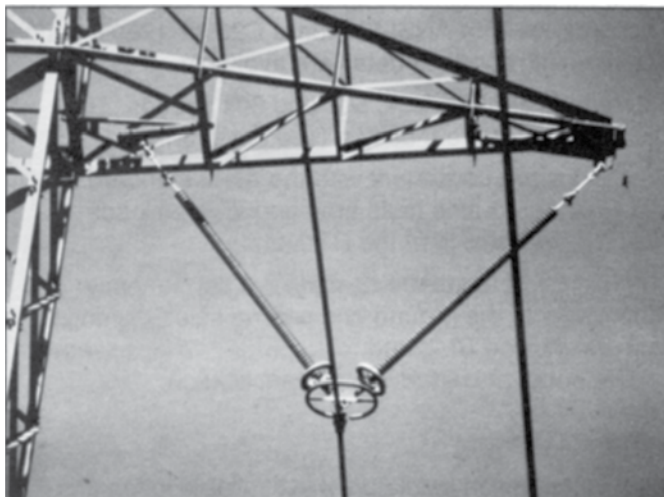


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Hi*Lite® XL Insulators

Hi*Lite XL suspension insulators in this publication embody the latest features available in polymer insulator design and manufacture.

From the early prototypes in 1971, through full scale introduction in 1976, and through the succeeding years, Hi*Lite insulators have featured conservative design and high-quality manufacture.

Today's Hi*Lite insulators will add to the over 1,000,000 already in service worldwide.

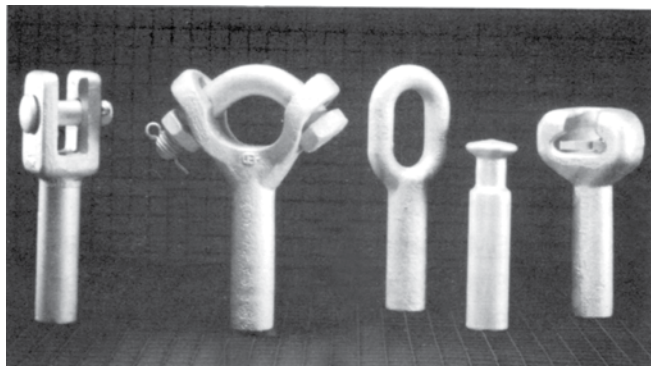
Design

The structural design of the Hi*Lite XL consists of these basic parts:

Rod - Hi*Lite insulator fiberglass rod is produced from the highest quality materials. Strands are aligned for maximum tensile strength. The rod is more than 50 percent glass fibers in cross section.

End Fittings - End fittings are steel or ductile iron. They are crimped directly to the rod by a special process originated by Ohio Brass, and later adopted by many other producers. The crimp develops a high percentage of the rod's inherent tensile strength. It requires no inter-movement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

Weathersheds - Weathersheds are high pressure injection molded by Ohio Brass, from the proprietary com-



ound ESP™. Housings manufactured with ESP silicone alloy rubber exhibit hydrophobicity, high mechanical strength, high corona resistance and low permeability to moisture.

Interface - Hi*Lite insulators use Ohio Brass' live silicone interface. This feature prevents intrusion of moisture and contaminating elements. If the exterior seal is damaged, redundant o-ring seals within the live silicone interface prohibit the lengthwise migration of intrusive elements between shed and rod.

Leakage Distance

Hi*Lite XL insulators feature high leakage distance for maximum resistance to contamination and leakage currents. Specific leakage distance (leakage divided by dry arcing distance) is higher than porcelain. Contact Ohio Brass if you have extra-high leakage distance needs.

Washability

Hi*Lite insulators listed in this catalog are suitable for flood washing up to 200 psi. The design incorporates positive, labyrinth seals to ensure long-term security against water entry. Conventional dry-particle, air-pressure cleaning methods may also be employed. A cleaning guideline is available from Ohio Brass.

If your washing requirements exceed flood washing, contact Ohio Brass.

Mechanical Ratings

Hi*Lite XL suspension insulators are rated and tested in accordance with ANSI Standard C29.11. Certified test reports in detail are available.

SML ratings are 25k, 30k and 50k pounds.

RTL ratings are consistent with the ANSI standard. Actual factory routine tests are conducted at loads equal to or greater than the RTL rating.

Markings for XL insulator designs are permanently embossed into the ground end corona shielding rings. Markings include SML and RTL, part number, assembly date code, and Ohio Brass identification.

Lengths Available

Hi*Lite suspension insulators are available in lengths appropriate for 69 kV through 765 kV. Longer lengths can be produced for special projects. Length increments are approximately three inches.

Product Updates

Hi*Lite XL insulator end fittings are attached with an improved crimping process using the successful principles of earlier Hi*Lite designs. The corona shield has been refined; a more compact Corona Shielding Ring (CSR) provides both electrical stress relief and a mechanical seal at the housing-to-end fitting interface.

Packaging

Hi*Lite suspension insulators are packaged in appropriate quantities in wood crates. As an option, Ohio Brass offers packaging of the insulators in individual sleeves.

Corona Performance

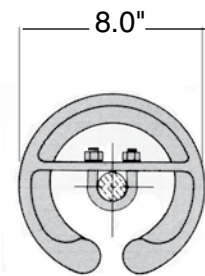
Hi*Lite XL suspension insulators are RIV and corona free through 161 kV, by the use of integral Corona Shield Rings (CSR). Due to the small diameter of the end fittings, corona shielding is necessary at 230 kV and above. The table below details the rings necessary for voltages equal to or exceeding that listed in the column header.

Normal Applications: Top Grounded, Bottom Energized

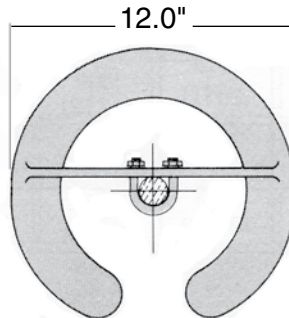
Insulator	Orientation	230 kV Ring	345 kV Ring	500 kV Rings
Suspension 25/30 K SML	Top	NONE	NONE	2717613001
	Bottom	2717613001	2717053001	2717513001
Suspension 50 K SML	Top	NONE	NONE	2717613002
	Bottom	2717613002	2717053002	2717513002

A

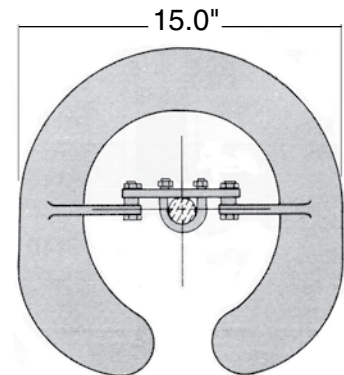
The physical and electrical values for the insulators on pages 26-8 through 26-10 are shown without corona protection above 161 kV. Ohio Brass has therefore provided the table below that yields the physical and electrical changes to the insulator when rings are installed for voltages above 161 kV.



Part Number 271761



Part Number 271705



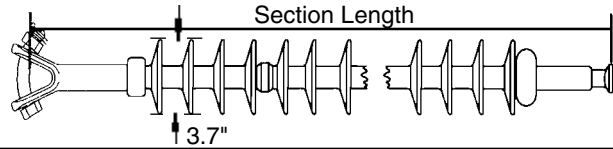
Part Number 271751

Physical & Electrical Change Table

Physical & Electrical Characteristics	230 kV Ring	345 kV Ring	500 kV Rings
Dry Arc Distance inches (mm)	-1.2 (-30.48)	-2 (-50.8)	-5 (-127.0)
Leakage Distance inches (mm)	0	0	0
60 Hz Flashover Dry - kV	-10	-15	-30
60 Hz Flashover Wet - kV	0	0	0
Critical Flashover Positive - kV	-15	-25	-65
Critical Flashover Negative - kV	-20	-30	-65
Net Weight pounds (kg)	3 (1.8)	3 (1.8)	5.1 (2.29)

5/8" (16mm) Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 25,000 lbs. 111 kN
RTL = 12,500 lbs. 56 kN



Selection Guide Typical Line Voltage, kV ⁽¹⁾						Catalog Number with Y-Clevis - 52.5 Ball	Section Length Inches (mm)	Number of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽²⁾ 60 Flashover ANSI		⁽²⁾ Critical Flashover ANSI		Net Weight pounds (kg)
											Dry-kV	Wet-kV	Pos-kV	Neg-kV	
69	115	138	161	230	345	5110041201	34.7 (881)	16	24.7 (627)	61 (1549)	245	240	410	390	4.8 (2.2)
						5110051201	40.7 (1034)	20	30.7 (780)	76 (1930)	310	295	505	490	5.6 (2.5)
						5110061201	46.8 (1189)	24	36.8 (935)	92 (2337)	370	350	605	595	6.4 (2.9)
						5110071201	53.0 (1346)	28	42.9 (1090)	107 (2718)	430	405	700	695	7.1 (3.2)
						5110081201	59.1 (1501)	32	49.1 (1247)	122 (3099)	490	455	795	795	8.0 (3.6)
						5110091201	65.1 (1654)	36	55.1 (1397)	138 (3505)	545	505	890	890	8.8 (4.0)
						5110101201	71.3 (1811)	40	61.2 (1554)	152 (3861)	600	555	985	990	9.5 (4.3)
						5110111201	77.4 (1966)	44	67.4 (1712)	168 (4267)	655	605	1080	1090	10.4 (4.7)
						5110121201	83.5 (2121)	48	73.5 (1867)	184 (4674)	710	655	1170	1185	11.2 (5.1)
						5110131201	89.5 (2273)	52	79.5 (2019)	198 (5029)	760	700	1260	1280	11.9 (5.4)
						5110141201	95.7 (2431)	56	85.6 (2174)	214 (5436)	810	750	1350	1370	12.7 (5.8)
						5110151201	101.8 (2586)	60	91.7 (2329)	229 (5817)	855	790	1440	1465	13.5 (6.1)
						5110161201	108.0 (2743)	64	97.9 (2487)	245 (6223)	905	835	1530	1560	14.4 (6.5)
						5110171201	114.0 (2896)	68	103.9 (2639)	260 (6604)	945	880	1615	1650	15.2 (6.9)
						5110181201	120.1 (3051)	72	110.0 (2794)	275 (6985)	990	920	1705	1740	15.9 (7.2)
						5110191201	126.2 (3205)	76	116.2 (2951)	290 (7366)	1030	960	1790	1830	16.7 (7.6)

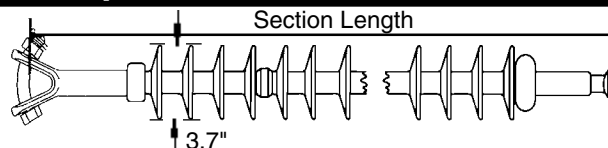
Notes: (1) For voltages above 345 kV, and other section lengths, contact Ohio Brass.
 (2) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 For voltages above 161 kV refer to Page 26-7 for Corona Rings, and associated physical/electrical changes to above data.
 Dimensions are within allowable tolerances as specified in ANSI C29.11.

Ground Fitting	Line Fitting	Suffix Code	Length Change		Weight Change	
			Inches	mm	Pounds	kg
Eye	Ball	1001	-.06	-1.5	-2.5	-.11
Eye	Eye	1000	1.28	32.5	-2.5	-.11
Socket	Ball	1301	-.97	-24.6	-.05	-.01
Clevis	Ball	1401	-1.00	-25.4	-.15	-.07
Y-Clevis	Eye	1200	1.34	34.0	0	0
Clevis	Eye	1400	.34	8.6	-.15	-.007

For configurations not shown contact Ohio Brass.

5/8" (16mm) Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 30,000 lbs. 133 kN
RTL = 15,000 lbs. 67 kN



Selection Guide Typical Line Voltage, kV ⁽¹⁾						Catalog Number with Y-Clevis - 52.5 Ball	Section Length Inches (mm)	Number of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽²⁾ 60 Flashover ANSI		⁽²⁾ Critical Flashover ANSI		Net Weight pounds (kg)
69	115	138	161	230	345						Dry-kV	Wet-kV	Pos-kV	Neg-kV	
						5150041201	34.7 (881)	16	24.7 (627)	61 (1549)	245	240	410	390	4.8 (2.2)
						5150051201	40.7 (1034)	20	30.7 (780)	76 (1930)	310	295	505	490	5.6 (2.5)
						5150061201	46.8 (1189)	24	36.8 (935)	92 (2337)	370	350	605	595	6.4 (2.9)
						5150071201	53 (1346)	28	42.9 (1090)	107 (2718)	430	405	700	695	7.1 (3.2)
						5150081201	59.1 (1501)	32	49.1 (1247)	122 (3099)	490	455	795	795	8 (3.6)
						5150091201	65.1 (1654)	36	55.1 (1397)	138 (3505)	545	505	890	890	8.8 (4.0)
						5150101201	71.3 (1811)	40	61.2 (1554)	152 (3861)	600	555	985	990	9.5 (4.3)
						5150111201	77.4 (1966)	44	67.4 (1712)	168 (4267)	655	605	1080	1090	10.4 (4.7)
						5150121201	83.5 (2121)	48	73.5 (1867)	184 (4674)	710	655	1170	1185	11.2 (5.1)
						5150131201	89.5 (2273)	52	79.5 (2019)	198 (5029)	760	700	1260	1280	11.9 (5.4)
						5150141201	95.7 (2431)	56	85.6 (2174)	214 (5436)	810	750	1350	1370	12.7 (5.8)
						5150151201	101.8 (2586)	60	91.7 (2329)	229 (5817)	855	790	1440	1465	13.5 (6.1)
						5150161201	108 (2743)	64	97.9 (2487)	245 (6223)	905	835	1530	1560	14.4 (6.5)
						5150171201	114 (2896)	68	103.9 (2639)	260 (6604)	945	880	1615	1650	15.2 (6.9)
						5150181201	120.1 (3051)	72	110 (2794)	275 (6985)	990	920	1705	1740	15.9 (7.2)
						5150191201	126.2 (3205)	76	116.2 (2951)	290 (7366)	1030	960	1790	1830	16.7 (7.6)

A

Notes: (1) For voltages above 345 kV, and other section lengths, contact Ohio Brass.
 (2) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 For voltages above 161 kV refer to Page 26-7 for Corona Rings, and associated physical/electrical changes to above data.
 Dimensions are within allowable tolerances as specified in ANSI C29.11.

Y-Clevis Tower Attachment Detail for 25k, 30k, and 50k SML Insulators

1" Dia. Minimum
1/8" x 45° Chamfer

"D" Max.
3/4" Max.

SML	"D" Max. Inches
25/30k	.531
50k	1.0

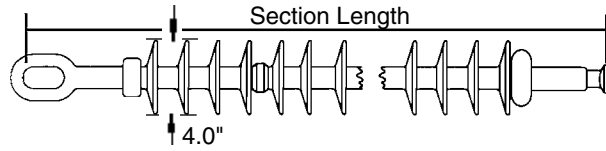
To achieve insulator SML value, proper grade steel should be used

Ground Fitting	Line Fitting	Suffix Code	Length Change		Weight Change	
			Inches	mm	Pounds	kg
Eye	Ball	1001	-0.06	-1.5	-2.50	-0.110
Eye	Eye	1000	1.28	32.5	-2.50	-0.110
Socket	Ball	1301	-0.97	-24.6	-0.05	-0.010
Clevis	Ball	1401	-1.00	-25.4	-0.15	-0.070
Y-Clevis	Eye	1200	1.34	34.0	0.00	0.000
Clevis	Eye	1400	0.34	8.6	-0.15	-0.007

For configurations not shown contact Ohio Brass.

7/8" (22mm) Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 50,000 lbs. 222 kN
RTL = 25,000 lbs. 111 kN



Selection Guide Typical Line Voltage, kV ⁽¹⁾						Catalog Number with Chain Eye - 52.11 Ball	Section Length Inches (mm)	Number of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽²⁾ 60 Flashover ANSI		⁽²⁾ Critical Flashover ANSI		Net Weight pounds (kg)
											Dry-kV	Wet-kV	Pos-kV	Neg-kV	
115	138	161	230	345	500	5130071001	55.8 (1417)	28	42.9 (1090)	106 (2692)	430	400	700	695	12.7 (5.8)
						5130081001	62.0 (1574)	32	49.0 (1245)	121 (3073)	490	455	795	795	13.7 (6.2)
						5130091001	68.0 (1727)	36	55.0 (1397)	136 (3454)	545	505	890	890	14.8 (6.7)
						5130101001	74.1 (1882)	40	61.2 (1554)	151 (3835)	600	555	985	990	15.9 (7.2)
						5130111001	80.3 (2040)	44	67.3 (1709)	167 (4242)	655	605	1080	1090	16.9 (7.7)
						5130131001	92.4 (2347)	52	79.5 (2019)	197 (5004)	760	700	1260	1280	19.1 (8.7)
						5130141001	98.5 (2502)	56	85.6 (2174)	212 (5385)	810	745	1350	1370	20.2 (9.2)
						5130151001	104.7 (2659)	60	91.7 (2329)	228 (5791)	855	790	1440	1465	21.2 (9.6)
						5130171001	116.8 (2967)	68	103.9 (2639)	258 (6553)	945	875	1615	1650	24.4 (11.1)
						5130181001	123.0 (3124)	72	110.0 (2794)	273 (6934)	990	915	1705	1740	24.5 (11.1)
						5130191001	129.1 (3279)	76	116.2 (2951)	288 (7315)	1030	955	1790	1830	25.5 (11.6)
						5130211001	141.2 (3586)	84	128.3 (3259)	319 (8103)	1110	1035	1960	2005	27.6 (12.5)
						5130231001	153.5 (3899)	92	140.6 (3271)	349 (8885)	1180	1105	2125	2175	29.8 (13.5)
						5130251001	165.7 (4209)	100	152.7 (3879)	379 (9627)	1245	1175	2285	2345	31.9 (14.5)
						5130271001	177.9 (4519)	108	165.0 (4191)	410 (10414)	1305	1240	2445	2510	34.0 (15.4)
						5130281001	184.1 (4676)	112	171.1 (4346)	425 (10795)	1330	1270	2520	2590	35.1 (15.9)

Notes: (1) For voltages above 500 kV, and other section lengths, contact Ohio Brass.
 (2) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 For voltages above 161 kV refer to Page 26-7 for Corona Rings, and associated physical/electrical changes to above data.
 Dimensions are within allowable tolerances as specified in ANSI C29.11.

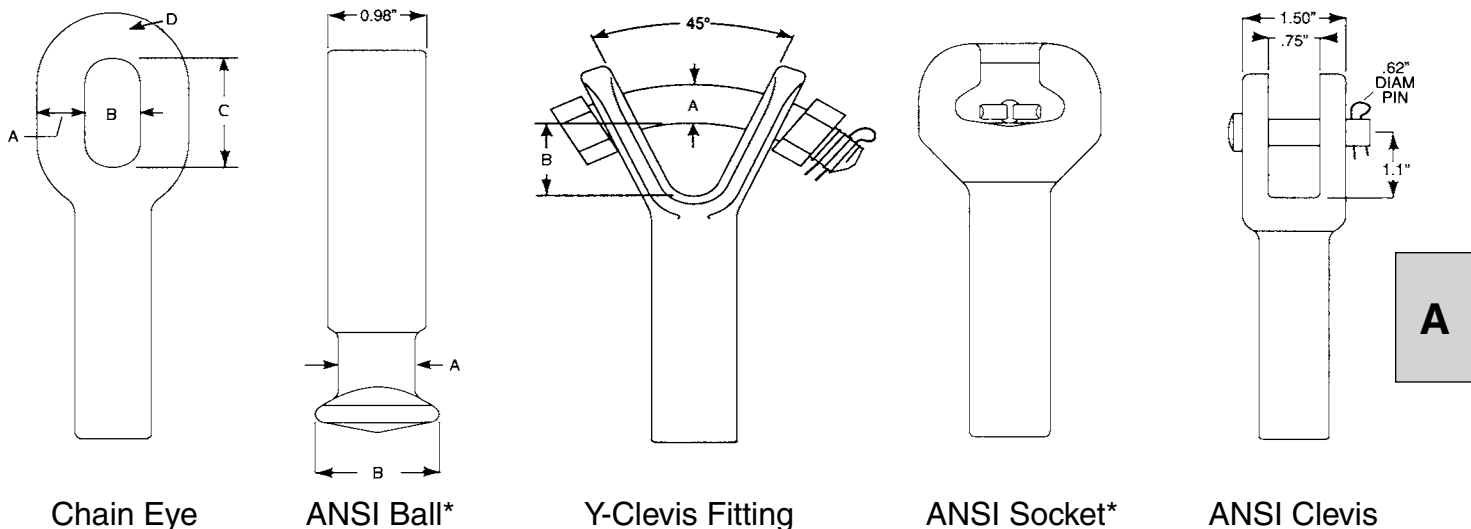
End Fitting Example

You need the electrical and mechanical characteristics of Catalog #5130101001. But, a Y-clevis is needed at the ground end instead of an eye. From the table at the right, find the code for the Y-clevis/ball configuration 1201. You should order Catalog #5130101201. The same process is used for 5/8" (25k) and 7/8" (30k) insulators.

Ground Fitting	Line Fitting	Suffix Code	Length Change		Weight Change	
			Inches	mm	Pounds	kg
Y-Clevis	Ball	1201	-.58	-14.7	.4	.18
Eye	Eye	1000	1.26	32.0	-.4	-.18
Socket	Ball	1301	-.72	-18.3	.4	.18
Y-Clevis	Eye	1200	-.58	-14.7	0	0

For configurations not shown contact Ohio Brass.

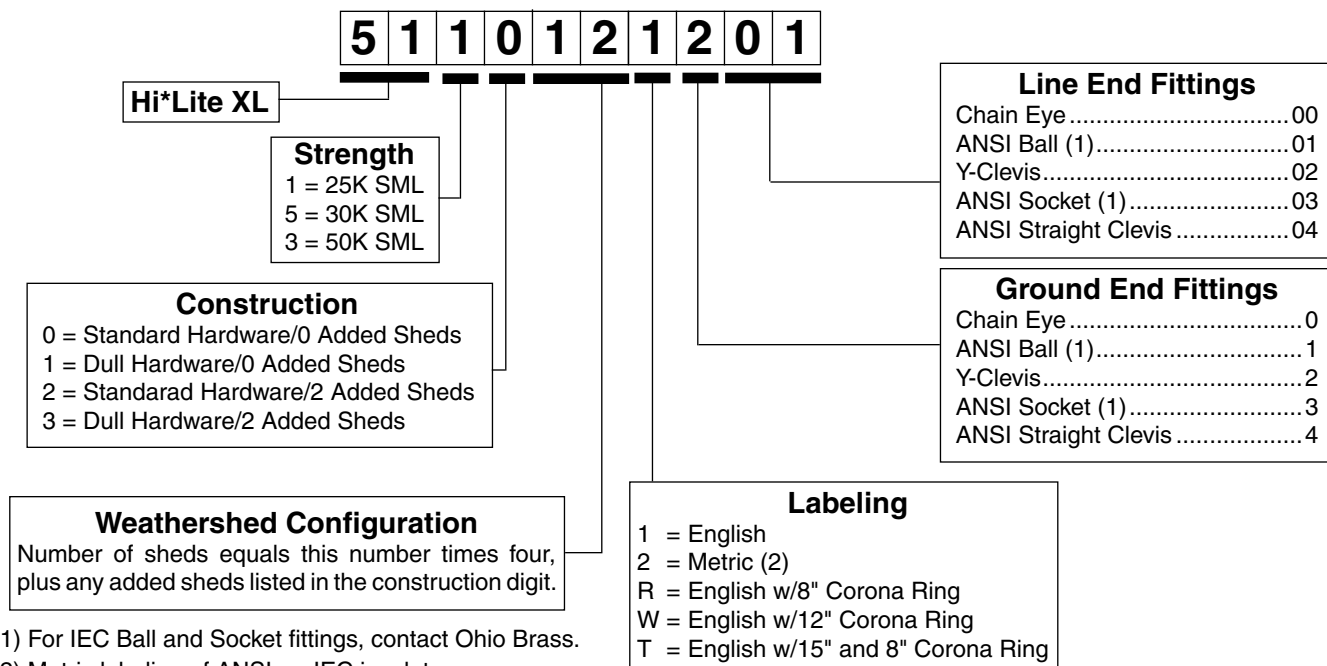
Most Common End Fittings



FITTING TYPE	SML k-LB (kN)	ANSI CLASS	DIMENSIONS IN. (mm)			
			A	B	C	D
CHAIN EYE	25 (111) - 30 (133)	-	0.62	1.00	2.00	0.62
	50 (222)	-	0.75	1.00	2.00	0.85
BALL & SOCKET	25 (111) - 30 (133)	52-5	0.73	1.29	-	-
	50 (222)	52-11	0.92	1.63	-	-
Y-CLEVIS	25 (111) - 30 (133)	-	0.75	1.53	-	-
	50 (222)	-	0.88	1.59	-	-
CLEVIS	25 (111) - 30 (133)	52-6	0.62	0.75	1.50	1.10

* For IEC 16mm and 20mm Ball and Socket fittings, contact Ohio Brass.

Hi*Lite XL Suspension Insulators: Key to the Catalog Numbers



(1) For IEC Ball and Socket fittings, contact Ohio Brass.
(2) Metric labeling of ANSI, or IEC insulators.

Hi*Lite® XL Line Post Insulators

B

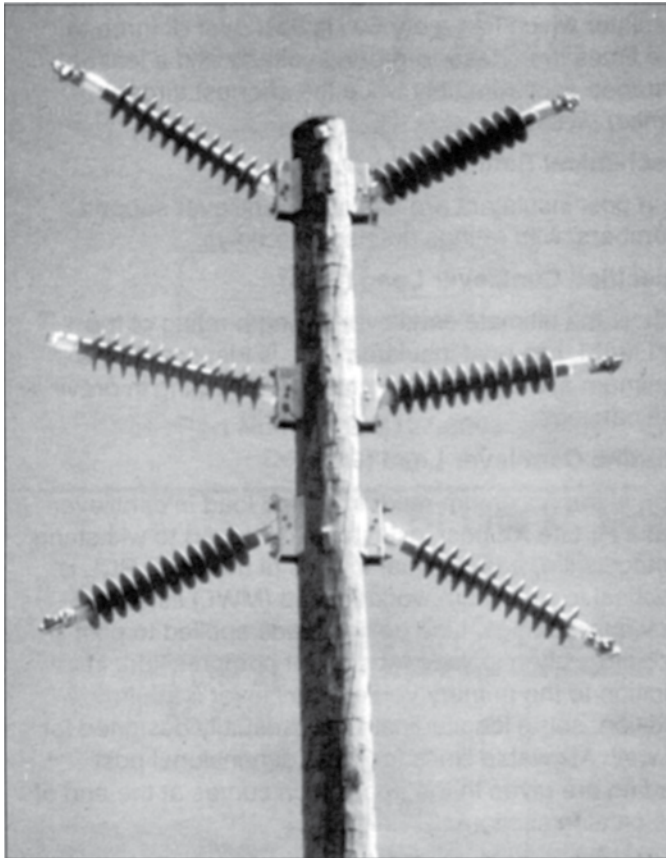


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Hi*Lite*® XL Insulators

Hi*Lite XL line post insulators in this publication embody the latest features available in polymer insulator design and manufacture.

From the early prototypes in 1971, through full scale introduction in 1976, and through the succeeding years, Hi*Lite insulators have featured conservative design and high-quality manufacture.

Today's Hi*Lite insulators will add to the over 1,000,000 already in service worldwide.

Design

The structural design of the Hi*Lite XL consists of these basic parts:

Rod - Hi*Lite insulator fiberglass rod is produced from the highest quality materials. Strands are aligned for maximum tensile strength. The rod is more than 50 percent glass fibers in cross section.

End Fittings - End fittings are aluminum or ductile iron. They are crimped directly to the rod by a special process originated by Ohio Brass, and later adopted by many other producers. The crimp requires no inter-movement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.

Weathersheds - Weathersheds are high pressure injection molded by Ohio Brass, from the proprietary compound ESP™. Housings manufactured with ESP silicone alloy rubber exhibit hydrophobicity, high mechanical strength, high corona resistance and low permeability to moisture.

Interface - Hi*Lite insulators use Ohio Brass' live silicone interface. This feature prevents intrusion of moisture and contaminating elements. If the exterior seal is damaged, redundant o-ring seals within the live silicone interface prohibit the lengthwise migration of intrusive elements between shed and rod.

Leakage Distance

Hi*Lite XL insulators feature high leakage distance for maximum resistance to contamination and leakage currents.

Washability

Hi*Lite Line Post insulators listed in this catalog are suitable for flood washing up to 200 psi. The design incorporates positive, labyrinth seals to ensure long-term security against water entry. Conventional dry-particle, air-pressure cleaning methods may also be employed. A cleaning guideline is available from Ohio Brass.

If your washing requirements exceed flood washing, contact Ohio Brass.

Mechanical Ratings

Line post insulators are basically cantilever support members, with ratings defined as follows:

Specified Cantilever Load (SCL)

SCL is the ultimate cantilever strength rating of the Hi*Lite XL line post insulator. SCL is identical to the minimum average breaking load (ABL) rating in previous catalogs.

Reference Cantilever Load (RCL)

RCL is the maximum recommended load in cantilever that a Hi*Lite XL post insulator is designed to withstand during its life, and is equal to 50% of the SCL. RCL is identical to maximum working load (MWL) listed in previous catalogs. Line design loads applied to post insulators often include tension, or compression, in addition to the primary vertical cantilever load. In addition, some longitudinal load is usually designed for as well.

Combined Load

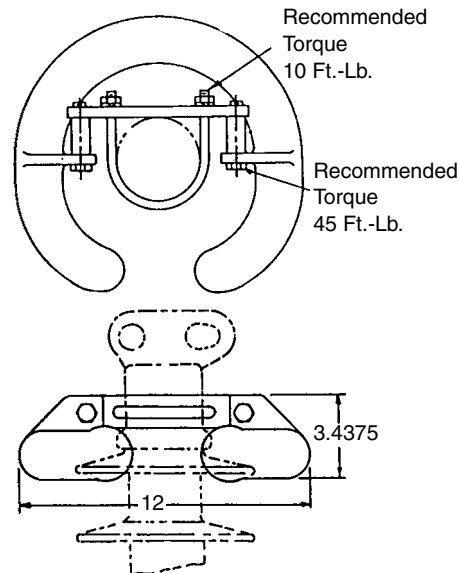
Contact your Hubbell Power Systems representative for combined load applications.

2.5" (63.5mm) Rod Diameter Horizontal Line Posts

Corona Rings

Hi*Lite XL line post insulators are corona free through 161 kV.

Application	161 kV & below	230 kV	345 kV
Line End Energized	Top - NONE Bott - NONE	Top - 2721273001 Bott - NONE	Top - 2721273001 Bott - NONE
Bottom End Energized	Top - NONE Bott - NONE	Top - NONE Bott - 2721273001	Top - NONE Bott - 2721273001



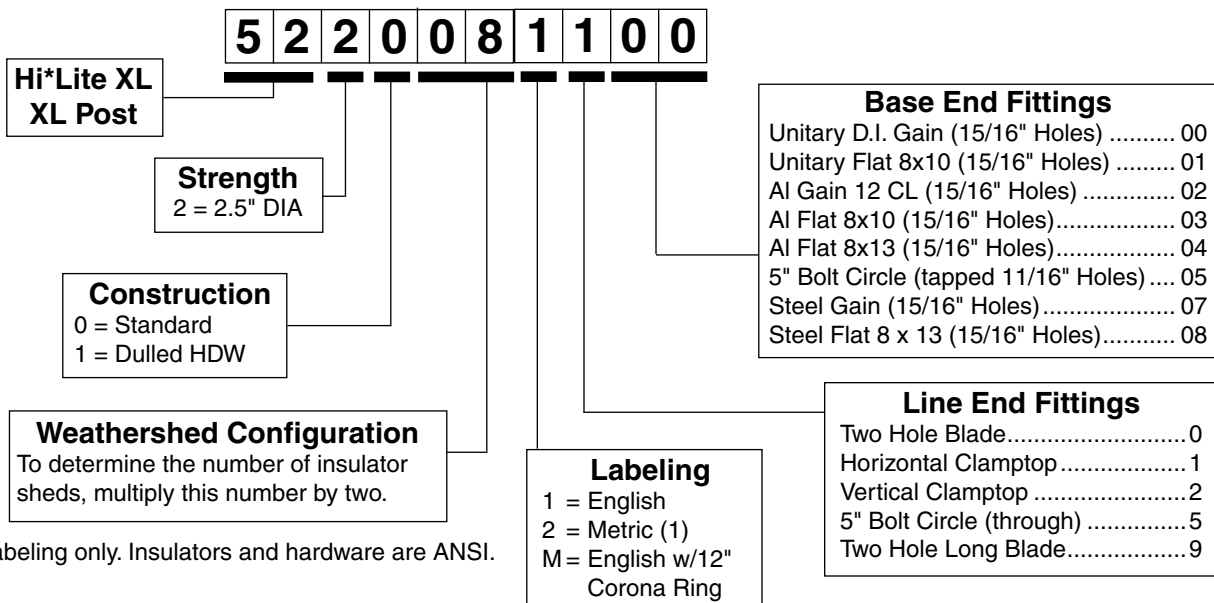
**Part Number 2721273001
Control Ring**

B

Packaging

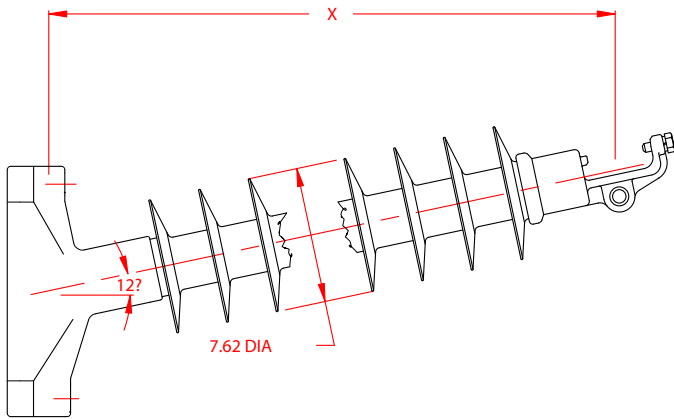
Hi*Lite XL line post insulators are packaged in appropriate quantities in open wood crates. As an option, Ohio Brass offers packaging of the insulators in individual sleeves.

Hi*Lite XL Line Post Insulators: Key to the Catalog Numbers

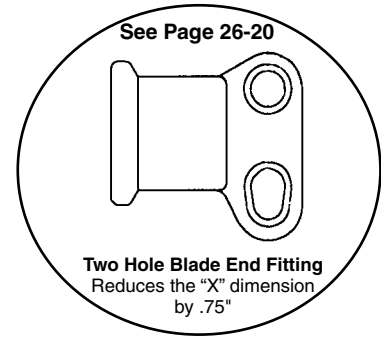


(1) Metric labeling only. Insulators and hardware are ANSI.

2.5" (63.5mm) Rod Diameter Horizontal Line Posts



Line & Base Detail see pages 26-19 & 26-20



Clamptop:

Maximum Design Tension = 2,500 lb (11.1 kN)

Two-Hole Blade:

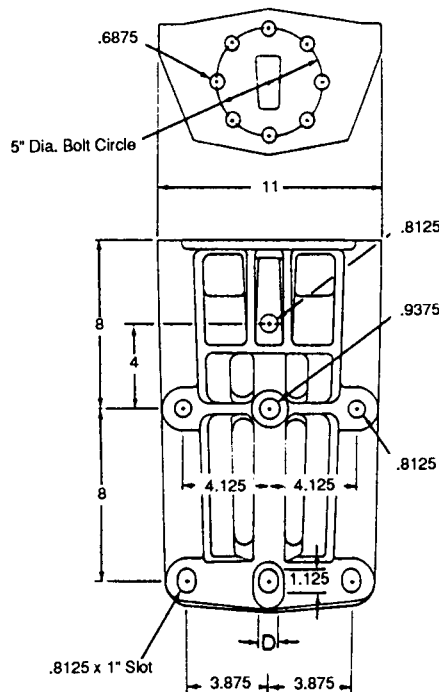
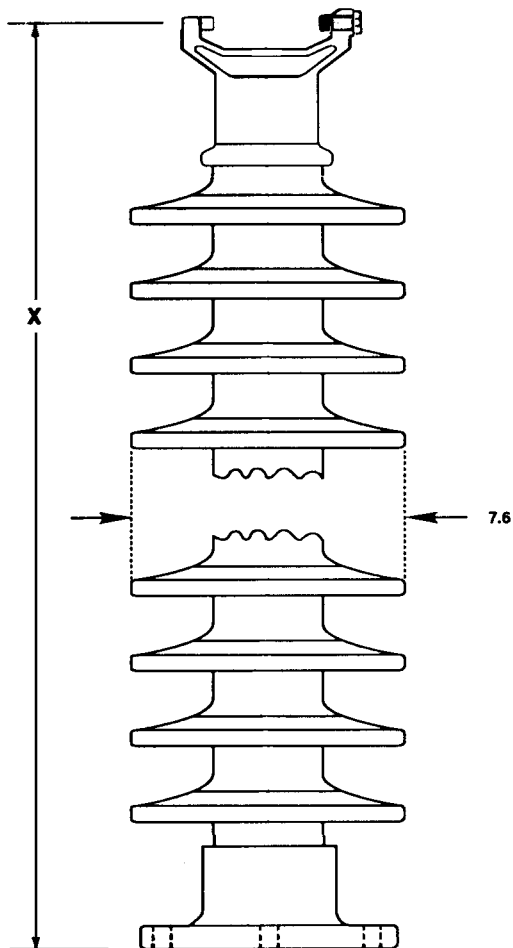
Maximum Design Tension = 7,500 lb. (33.4 kN)

Selection Guide Typical Line Voltage, kV						Catalog # with Gain Base & Clamptop End Fittings	"X" Length Inches (mm)	No. of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽¹⁾ 60 Flashover ANSI		⁽¹⁾ Critical Flashover ANSI		RCL pounds (kN)	Net Weight pounds (kg)
69	115	138	161	230	345						Dry-kV	Wet-kV	Pos-kV	Neg-kV		
						5220041100	33.5 (851)	8	23 (584)	54 (1372)	215	195	340	455	2500 (11.1)	47 (21.3)
						5220051100	38.6 (980)	10	28 (711)	68 (1727)	270	245	420	535	2500 (11.1)	50 (22.7)
						5220061100	43.9 (1115)	12	33 (838)	82 (2083)	325	295	505	620	2135 (9.5)	54 (24.5)
						5220071100	49.2 (1250)	14	39 (991)	96 (2438)	385	340	590	705	1865 (8.3)	57 (25.9)
						5220081100	54.5 (1384)	16	44 (1118)	110 (2794)	440	385	675	785	1650 (7.3)	61 (27.7)
						5220091100	59.6 (1514)	18	49 (1245)	124 (3150)	490	430	760	865	1490 (6.6)	65 (29.5)
						5220101100	64.8 (1646)	20	55 (1397)	138 (3505)	545	475	845	950	1350 (6.0)	68 (30.9)
						5220111100	70.1 (1781)	22	60 (1524)	152 (3861)	600	520	930	1035	1235 (5.5)	72 (32.7)
						5220121100	75.4 (1915)	24	65 (1651)	166 (4216)	650	560	1015	1115	1140 (5.0)	75 (34.1)
						5220131100	80.5 (2045)	26	71 (1803)	180 (4572)	700	600	1095	1195	1060 (4.7)	79 (35.9)
						5220141100	85.8 (2180)	28	76 (1930)	194 (4928)	755	635	1180	1280	990 (4.4)	82 (37.2)
						5220151100	91.1 (2314)	30	81 (2057)	208 (5283)	805	675	1265	1365	925 (4.1)	86 (39.0)
						5220161100	96.3 (2446)	32	87 (2210)	222 (5639)	855	710	1350	1445	870 (3.6)	89 (40.4)
						5220171100	101.4 (2575)	34	92 (2337)	236 (5994)	905	745	1435	1525	820 (3.6)	93 (42.2)
						5220181100	106.7 (2710)	36	97 (2464)	250 (6350)	955	780	1520	1610	780 (3.5)	97 (44.0)
						5220191100	112.0 (2845)	38	103 (2616)	264 (6706)	1005	810	1605	1695	740 (3.3)	100 (45.4)

Notes: (1) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 (2) RCL is the maximum continuous load at which the post should be applied.
 For voltages above 161 kV refer to Page 26-15 for Corona Rings.
 Dimensions are within allowable tolerances as specified in ANSI C29.11.

2.5" (63.5mm) Rod Diameter Vertical Line Posts

Maximum Design Tension
2,500 lb (11.1 kN)



Aluminum Alloy
A356-T6

Catalog No. 75115
134,400 In.-Lb. Rating

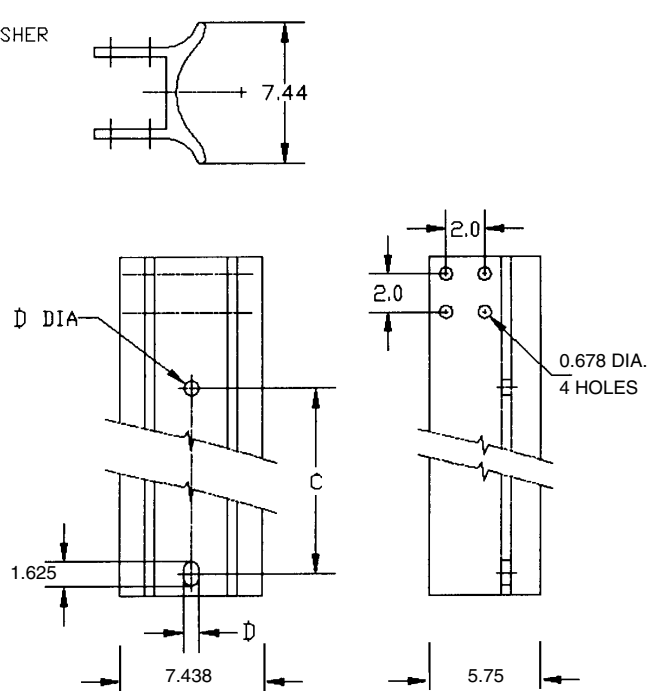
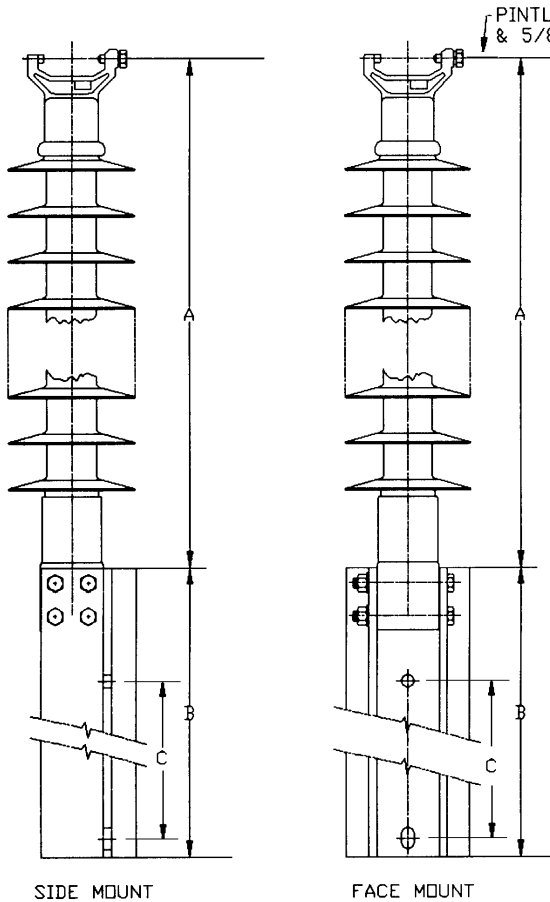
Line & Base Fitting Detail see pages 26-19 & 26-20

B

Selection Guide Typical Line Voltage, kV				Catalog # with 5" Bolt Circle & Vert. Clamtop ⁽³⁾	"X" Length Inches (mm)	No. of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽¹⁾ 60 Flashover ANSI		⁽¹⁾ Critical Flashover ANSI		RCL pounds (kN)	Net Weight pounds (kg)
69	115	138	161						Dry-kV	Wet-kV	Pos-kV	Neg-kV		
				5220041205	30.7 (780)	8	23 (584)	54 (1371)	215	195	340	455	2500 (11.1)	27 (12.3)
				5220051205	35.9 (912)	10	28 (711)	68 (1727)	270	245	420	535	2475 (11.0)	30 (13.6)
				5220061205	41.3 (1049)	12	33 (838)	82 (2083)	325	295	505	620	2115 (9.4)	34 (15.4)
				5220071205	46.7 (1186)	14	39 (991)	96 (2438)	385	340	590	705	1850 (8.2)	37 (16.8)
				5220081205	52.1 (1323)	16	44 (1118)	110 (2734)	440	385	675	785	1640 (7.3)	41 (18.6)
				5220091205	57.4 (1458)	18	49 (1245)	124 (3150)	490	430	760	865	1480 (6.6)	45 (20.4)

Notes: (1) Tests in accordance with ANSI C29.1-1982.
 (2) RCL is the maximum cantilever continuous load at which the post should be applied.
 (3) Mounting Base Catalog No. 75115 may be ordered with these Catalog numbers for a vertical assembly.

2.5" (63.5mm) Rod Diameter Vertical Line Post Assembly



Aluminum Alloy
6063-T5
Base Detail

To Order an Assembly - Pick an insulator from Table A based on your Electrical and Mechanical needs — next, select a Base configuration from Table B, for your mounting position needs.

Line End Fitting Detail see pages 26-19 & 26-20

Selection Guide Typical Line Voltage, kV				(1)Catalog # with Vertical Clamptop & Base Code	"A" Length Inches (mm)
69	115	138	161		
				52200412XX	30.4 (772)
				52200512XX	35.6 (904)
				52200612XX	41.0 (1041)
				52200712XX	46.4 (1179)
				52200812XX	51.8 (1316)
				52200912XX	57.0 (1448)

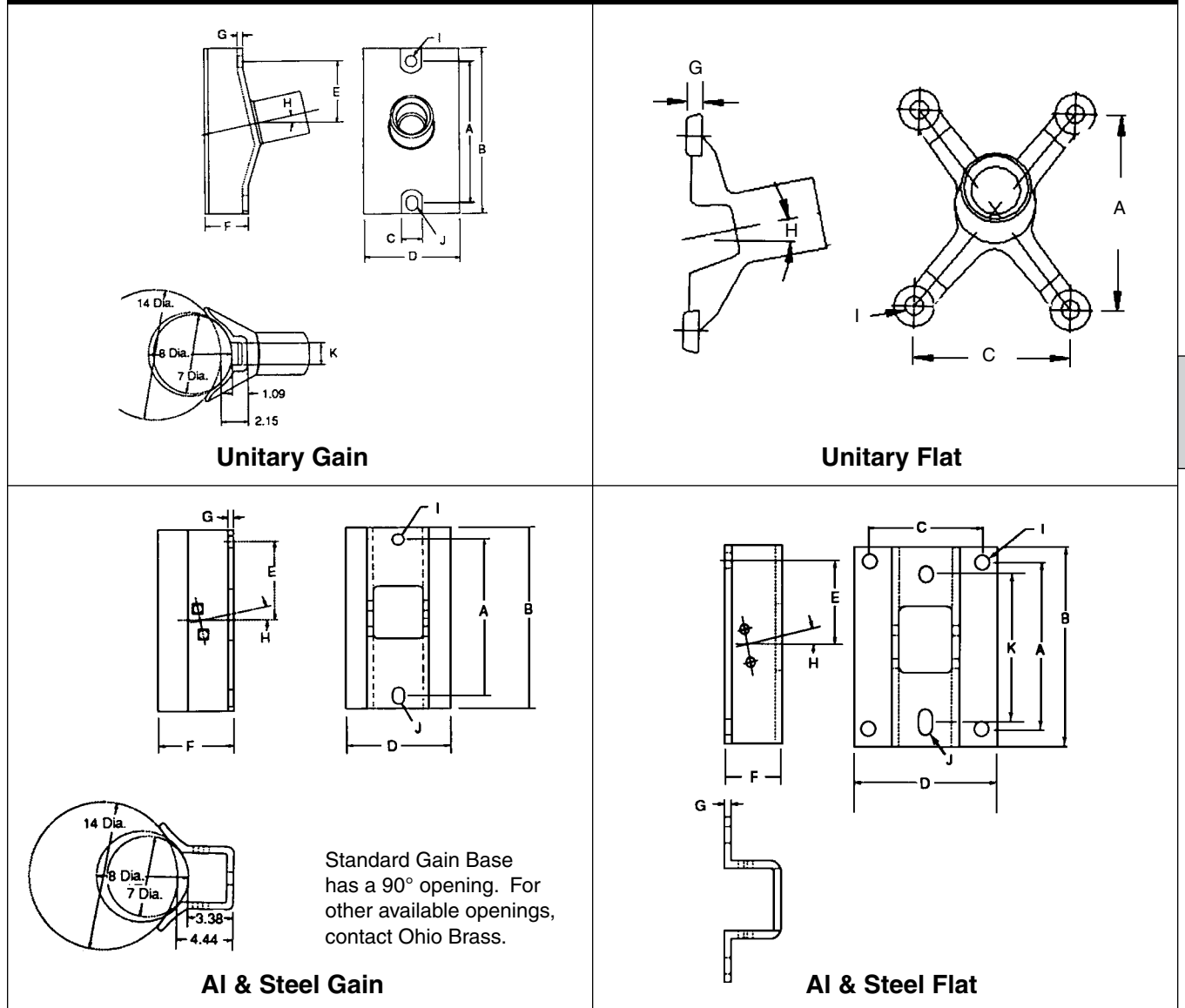
(1) Insulators in Table A have the same electrical and mechanical characteristics as those on Page 26-17 with Code 1205.

Table A

"XX" Code	Style	"B" Length Inches (mm)	"C" Length Inches (mm)	"D" Diameter Inches (mm)
20	Face	20 (508)	12 (305)	.8125 (21)
21	Side	20 (508)	12 (305)	.8125 (21)
22	Face	20 (508)	12 (305)	.9375 (24)
23	Side	20 (508)	12 (305)	.9375 (24)
24	Face	31.75 (806)	16 (406)	.8125 (21)
25	Side	31.75 (806)	16 (406)	.8125 (21)
26	Face	31.75 (806)	16 (406)	.9375 (24)
27	Side	31.75 (806)	16 (406)	.9375 (24)

Table B

2.5" (63.5 mm) Rod Diameter Base Fittings

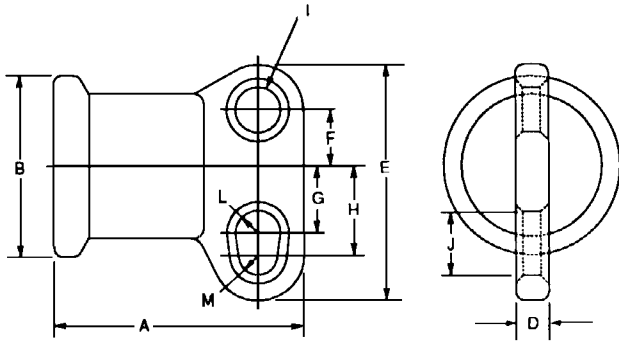

B

Horizontal & Vertical Bases Dimensions (in inches)

Type (Code)*	A	B	C	D	E	F	G	H	I	J	K	Material
Unitary D.I. Gain (00)	12.0	14.0	1.75	8.06	-	3.54	0.5	12°	0.94	0.94 x 1.31	1.90	60-45-12 D.I.
Unitary D.I. Flat (01)	10.0	12.2	8.0	10.0	5.0	-	0.8	12°	0.94	-	-	60-45-12 D.I.
5" B.C. (15)	4.75	6.25	3.63	0.90	5.0	-	-	-	0.69	-	-	60-45-12 D.I.
5" B.C. (05)	4.75	6.25	3.63	0.90	5.0	-	-	-	5/8 - 11 UFS	-	-	60-45-12 D.I.
Al Gain (02)	12.0	14.0	-	8.06	6.13	5.56	0.5	12°	0.94	0.94 x 1.31	-	6063 T5 Al
Al Gain (12)	12.0	14.0	-	8.06	6.13	5.56	0.5	12°	0.81	0.94 x 1.31	-	6063 T5 Al
Steel Gain (07)	12.0	15.0	-	8.33	6.5	6.04	0.38	12°	0.94	0.94 x 2.0	-	Low Carbon Steel
Al Flat (03)	10.0	12.0	8.0	10.0	5.0	4.0	0.5	12°	0.94	-	-	6063 T5 Al
Al Flat (13)	10.0	12.0	8.0	10.0	5.0	4.0	0.5	12°	0.81	-	-	6063 T5 Al
Steel Flat (08)	13.0	15.0	8.0	10.0	6.5	4.0	0.5	12°	1.125 x 0.94	0.94 x 2	12.0	Low Carbon Steel
Al Flat (04)	13.0	15.0	8.0	10.0	6.5	4.0	0.5	12°	0.94	0.94 x 1.31	12.0	6063 T5 Al
Al Flat (14)	13.0	15.0	8.0	10.0	6.5	4.0	0.5	12°	0.81	0.81 x 1.31	12.0	6063 T5 Al

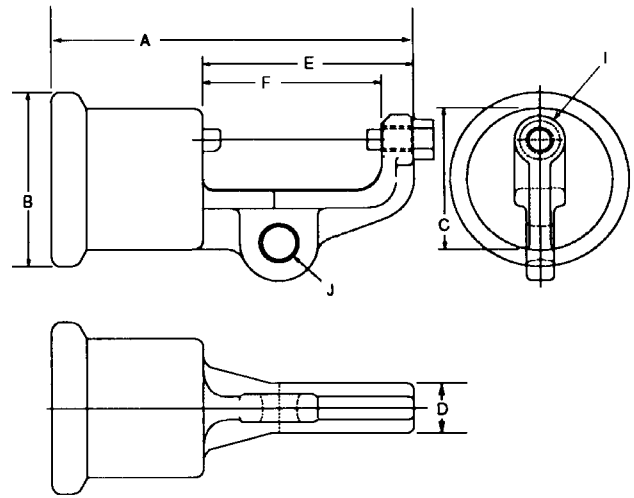
*Code is the third and fourth numbers in the Suffix Code of the Catalog Number.

2.5" (63.5 mm) Rod Diameter Line Fittings

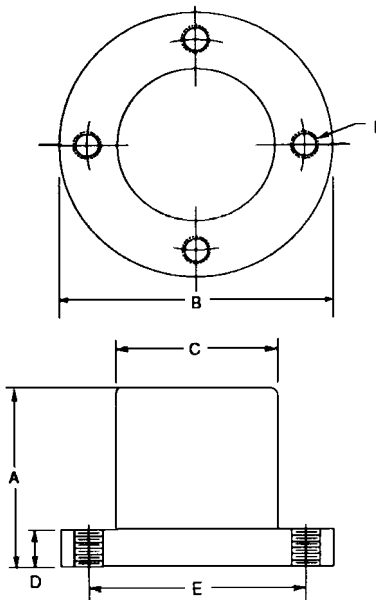


Transverse Compressing Swing Angle for Conductor Suspension Clamp	
2 Hole Blade (Std.)	2 Hole Long Blade
40 deg. max.	64 deg. max.

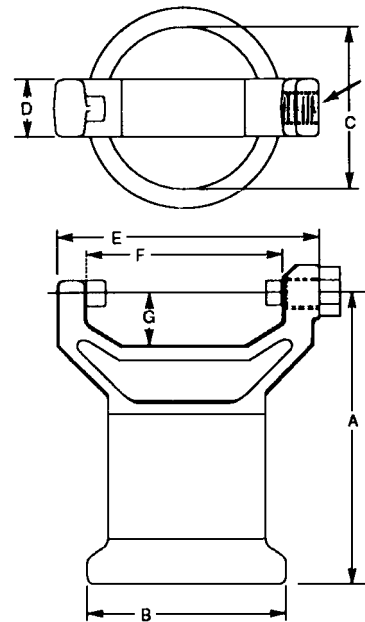
Two Hole Blade
*12° upsweep post angles



Horizontal Clamptop



5" Bolt Circle
Line or Base Fitting



Vertical Clamptop
Part per ANSI C29.7

Horizontal & Vertical End Fittings Dimensions (in inches)

Type (Code)*	A	B	C	D	E	F	G	H	I	J	L	M	Material
2 Hole Blade (0)	5.73	4.0	-	0.75	5.25	1.25	1.50	2.00	1.0	1.44	0.5R	0.44 R	60-40-18 D.I.
2 Hole Long Blade (9)	5.73	4.0	-	0.75	7.75	1.25	4.0	4.5	1.0	1.44	0.5R	0.44R	60-40-18 D.I.
H. Clamptop (1)	8.24	4.0	3.30	1.12	4.72	4.0	-	-	5/8 - 11 UFS	0.75	-	-	60-40-18 D.I.
5" B.C. (3)	4.75	6.25	3.63	0.90	5.0	-	-	-	5/8 - 11 UFS	-	-	-	60-45-12 D.I.
5" B.C. (5)	4.75	6.25	3.63	0.90	5.0	-	-	-	0.69 x Holes	-	-	-	60-45-12 D.I.
V. Clamptop (2)	5.88	4.0	3.30	1.12	5.37	4.0	1.06	-	5/8 - 11 UFS	-	-	-	60-40-18 D.I.

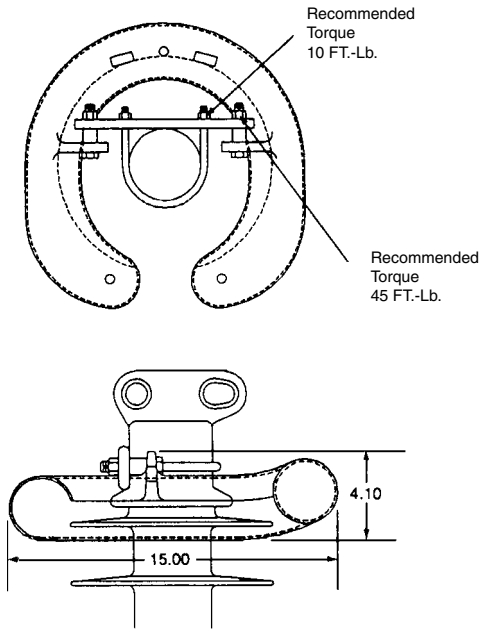
*Code is the 2nd number in the Suffix Code of the Catalog Number.

3.0" (76.2 mm) Rod Diameter Line Posts

Corona Rings

Hi*Lite XL line post insulators are corona-free through 230 kV line-to-ground.

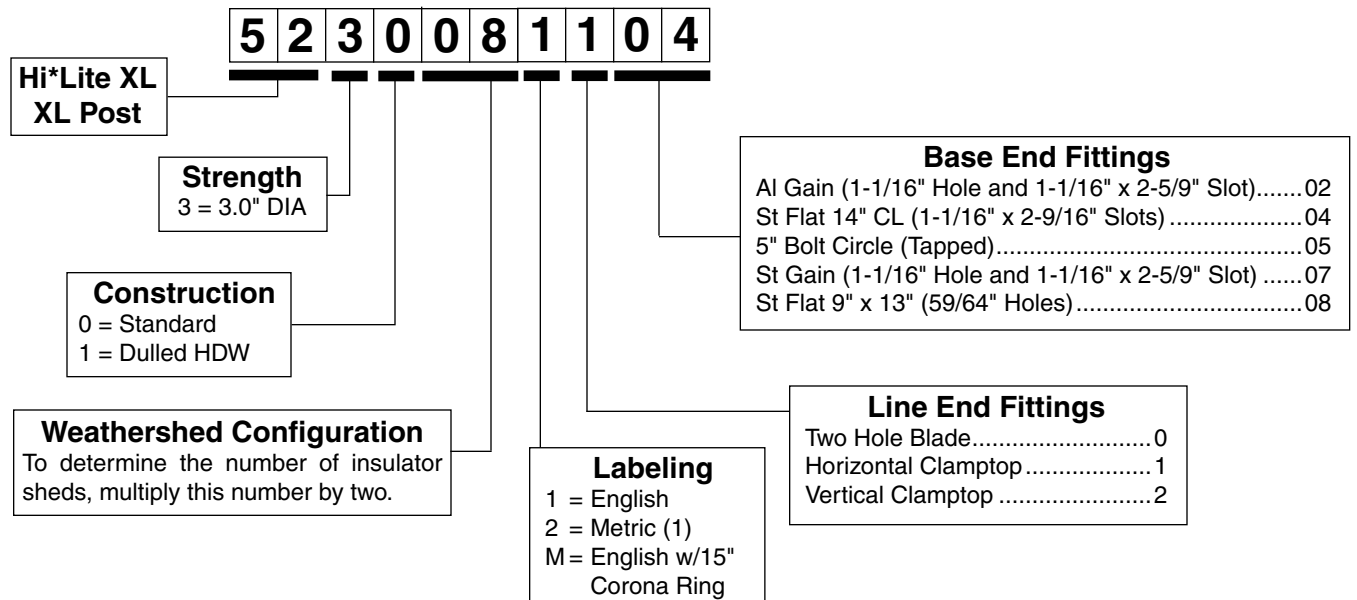
Application	138/161 kV	230 kV	345 kV
Line End Energized	Top - NONE Bott. - NONE	Top - NONE Bott. - NONE	Top - 2737743001 Bott. - NONE



Part Number 2737743001
Control Ring

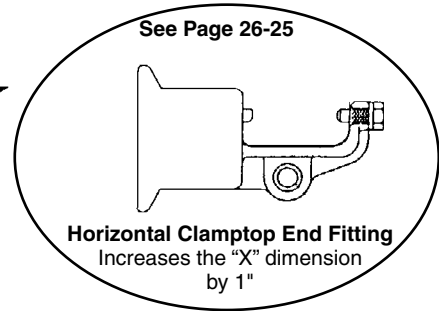
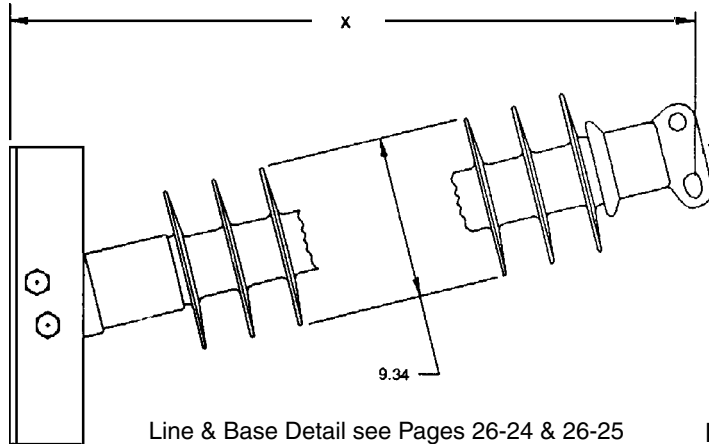
B

Hi*Lite XL Line Post Insulators: Key to the Catalog Numbers



(1) Metric labeling only. Insulators and hardware are ANSI.

3.0" (76.2mm) Rod Diameter Horizontal Line Posts



Clamptop:

Maximum Design Tension = 2,500 lb (11.1 kN)

Two-Hole Blade:

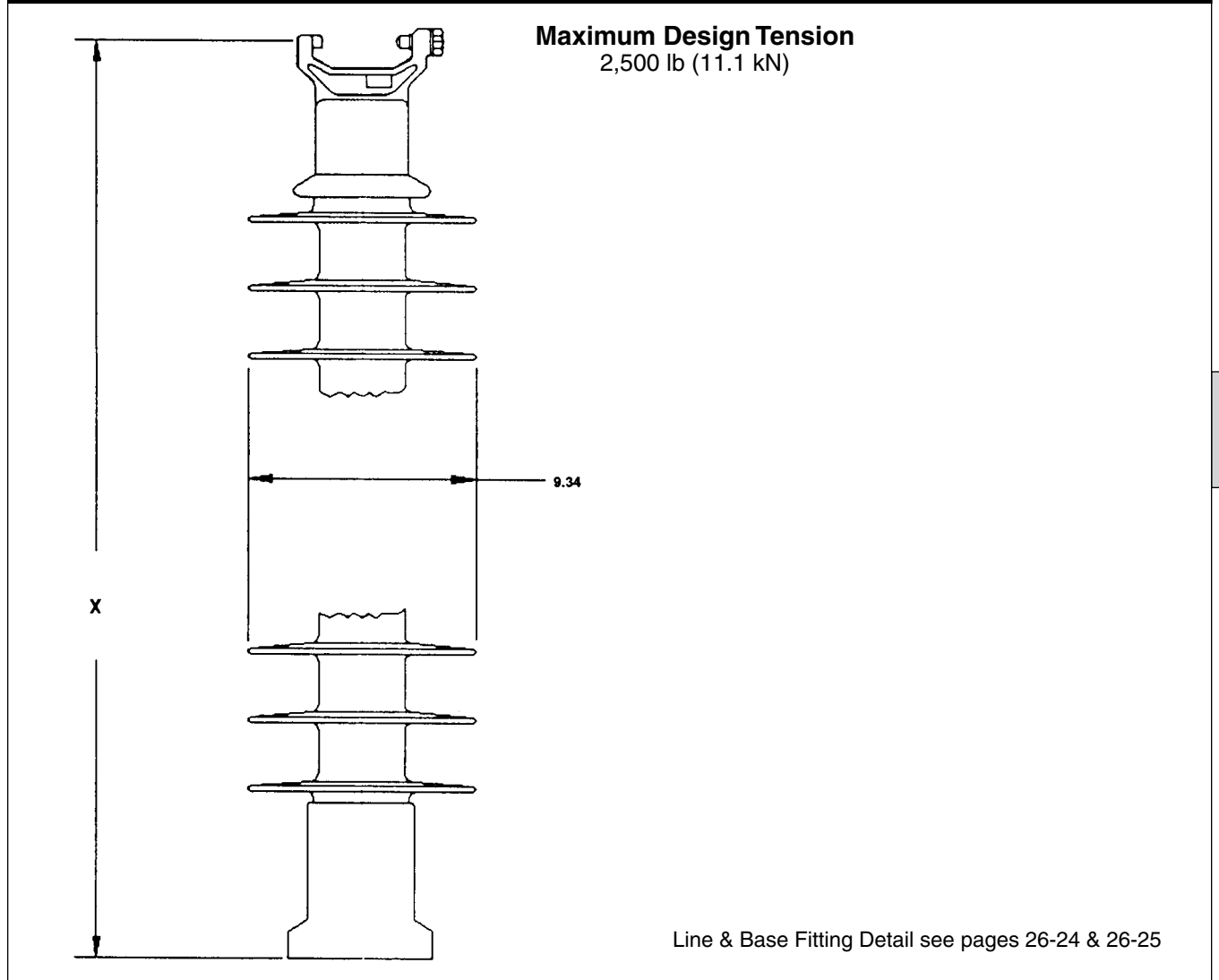
Maximum Design Tension = 12,500 lb. (55.6 kN)

Line & Base Detail see Pages 26-24 & 26-25

Selection Guide Typical Line Voltage, kV						Catalog # with Flat Base & Two Hole Blade	"X" Length Inches (mm)	No. of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽¹⁾ 60 Flashover ANSI		⁽¹⁾ Critical Flashover ANSI		⁽²⁾ RCL pounds (kN)	Net Weight pounds (kg)
69	115	138	161	230	345						Dry-kV	Wet-kV	Pos-kV	Neg-kV		
						5230051004	38.8 (986)	10	29 (737)	77 (1956)	295	250	445	540	4405 (19.6)	90 (40.8)
						5230061004	43.8 (1113)	12	34 (864)	93 (2362)	345	295	530	620	3780 (16.8)	95 (43.1)
						5230071004	49.0 (1245)	14	39 (991)	108 (2743)	395	335	615	705	3295 (14.7)	100 (40.9)
						5230081004	54.8 (1392)	16	45 (1143)	124 (3150)	445	380	695	790	2920 (13.0)	106 (48.1)
						5230091004	59.3 (1506)	18	50 (1270)	140 (3556)	495	420	780	870	2620 (11.7)	110 (49.9)
						5230101004	64.5 (1638)	20	55 (1397)	156 (3962)	545	465	865	955	2380 (10.6)	115 (52.2)
						5230111004	69.5 (1765)	22	60 (1524)	171 (4343)	590	505	950	1035	2185 (9.7)	120 (54.4)
						5230121004	74.7 (1897)	24	66 (1676)	187 (4750)	640	550	1035	1120	2015 (9.0)	125 (56.7)
						5230131004	79.9 (2029)	26	71 (1803)	203 (5156)	685	590	1120	1200	1865 (8.3)	130 (58.9)
						5230141004	85.0 (2159)	28	76 (1930)	218 (5537)	735	640	1205	1285	1740 (7.7)	135 (61.2)
						5230151004	90.2 (2291)	30	82 (2083)	234 (5944)	780	670	1290	1365	1630 (7.2)	141 (63.9)
						5230161004	95.2 (2418)	32	87 (2210)	250 (6350)	825	710	1370	1445	1535 (6.8)	146 (66.2)
						5230171004	100.4 (2550)	34	92 (2337)	265 (6731)	870	755	1455	1530	1450 (6.5)	151 (68.5)
						5230181004	105.5 (2680)	36	98 (2489)	281 (7137)	915	795	1540	1615	1370 (6.1)	156 (70.8)
						5230191004	110.7 (2812)	38	103 (2616)	297 (7544)	960	835	1625	1695	1300 (5.8)	161 (73.1)
						5230201004	115.9 (2944)	40	108 (2743)	313 (7950)	1000	875	1710	1780	1240 (5.5)	166 (75.3)

Notes: (1) Tests in accordance with ANSI C29.1-1982. Electrical values are without corona ring.
 (2) RCL is the maximum continuous load at which the post should be applied.
 For voltages above 230 kV refer to Page 26-21 for Corona Rings. Electrical values are shown for insulators without rings. For electricals with rings, contact Ohio Brass.

3.0" (76.2 mm) Rod Diameter Vertical Line Posts

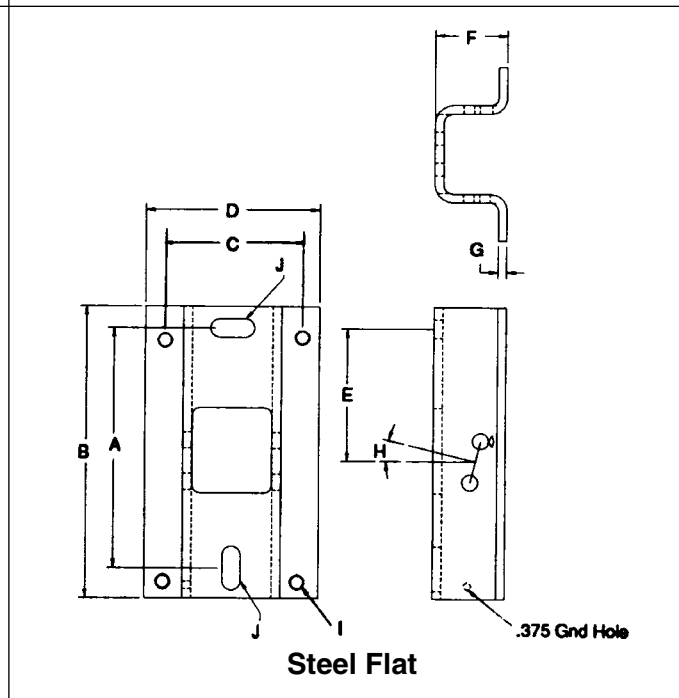
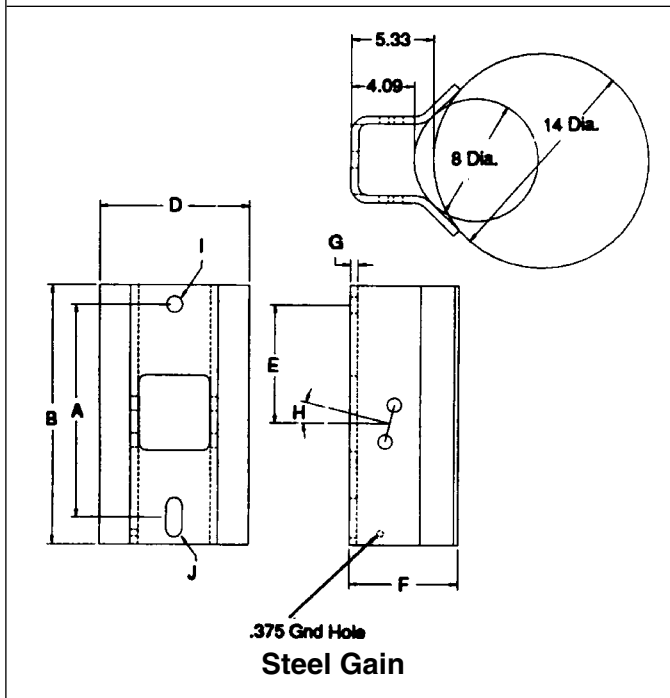
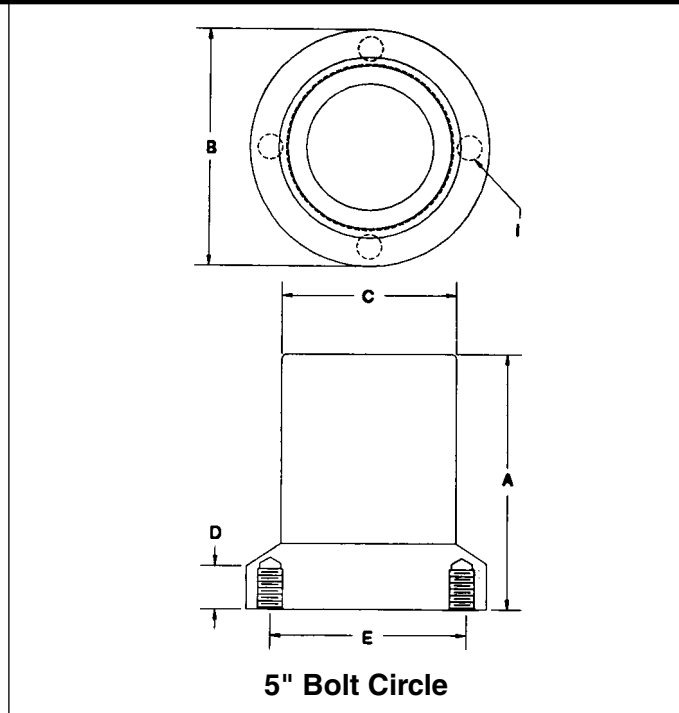
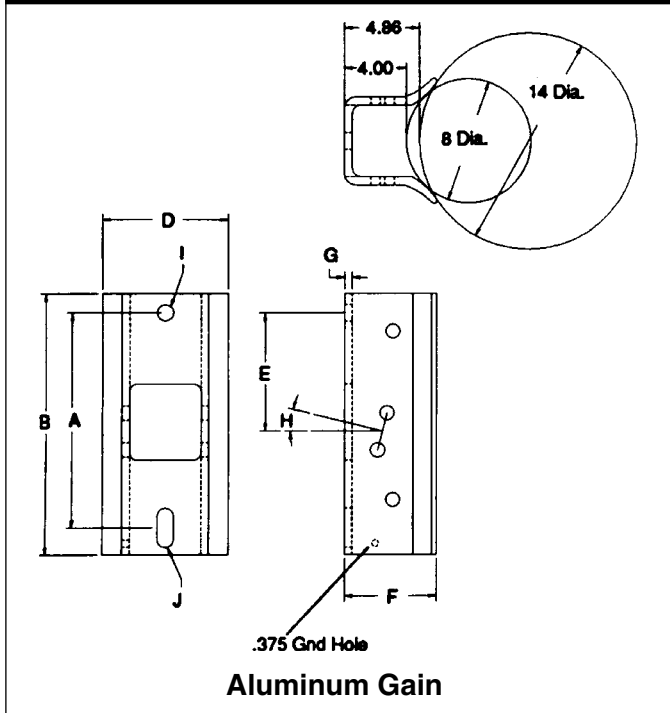


B

Selection Guide Typical Line Voltage, kV				Catalog # with 5" Bolt Circle & Vert. Clamptop	"X" Length Inches (mm)	No. of Sheds	Dry Arc Distance inches (mm)	Leakage Distance inches (mm)	⁽¹⁾ 60 Flashover ANSI		⁽¹⁾ Critical Flashover ANSI		⁽²⁾ RCL pounds (kN)	Net Weight pounds (kg)
69	115	138	161						Dry-kV	Wet-kV	Pos-kV	Neg-kV		
				5230051205	38.0 (965)	10	29 (737)	77 (1956)	295	250	445	540	2500 (11.1)	54 (24.5)
				5230061205	43.2 (1097)	12	34 (864)	93 (2362)	345	295	530	620	2500 (11.1)	59 (26.8)
				5230071205	48.5 (1219)	14	39 (991)	108 (2743)	395	335	615	705	2500 (11.1)	64 (29.1)
				5230081205	53.8 (1367)	16	45 (1143)	124 (3150)	445	380	695	785	2500 (11.1)	69 (31.4)
				5230091205	59.2 (1504)	18	50 (1270)	140 (3556)	495	420	780	870	2500 (11.1)	74 (33.6)
				5230101205	64.5 (1638)	20	55 (1397)	156 (3962)	545	465	865	950	2335 (10.4)	79 (35.9)

Notes: (1) Tests in accordance with ANSI C29.1-1982.
 (2) RCL is the maximum cantilever continuous load at which the post should be applied.

Hi*Lite XL 3.0" Rod Dia. Base Fittings

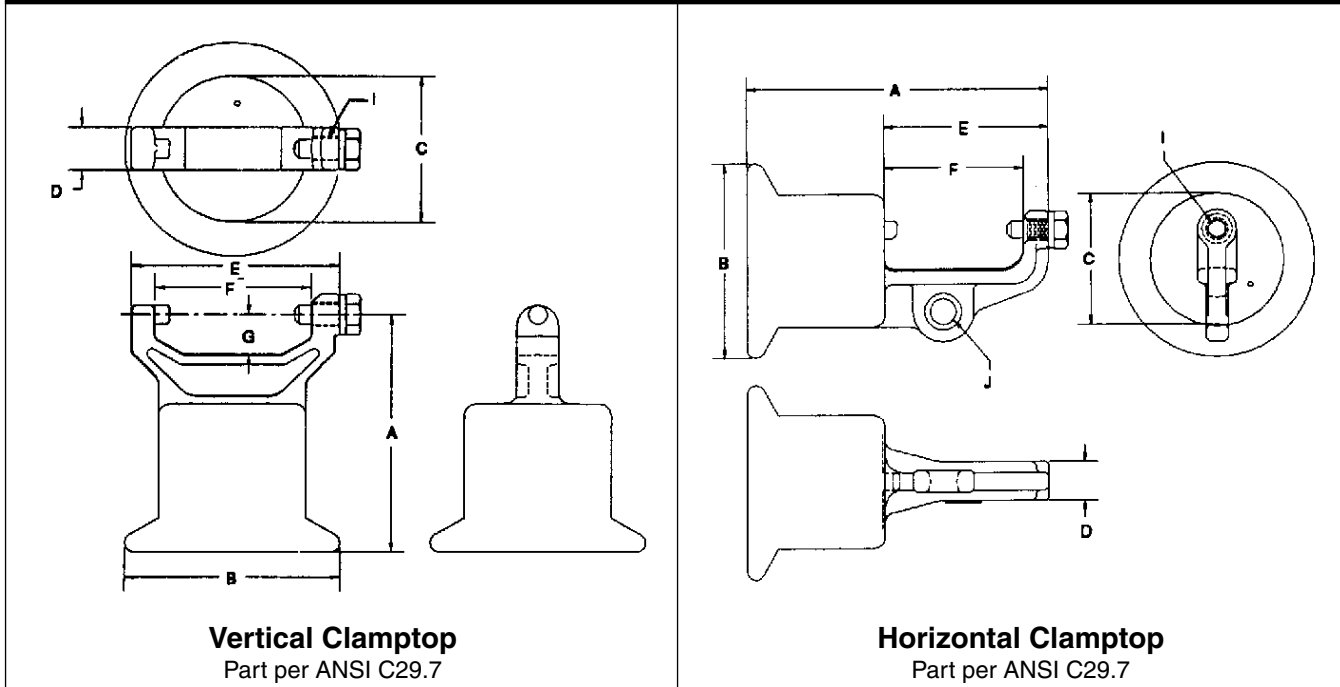


Horizontal & Vertical Bases Dimensions (in inches)

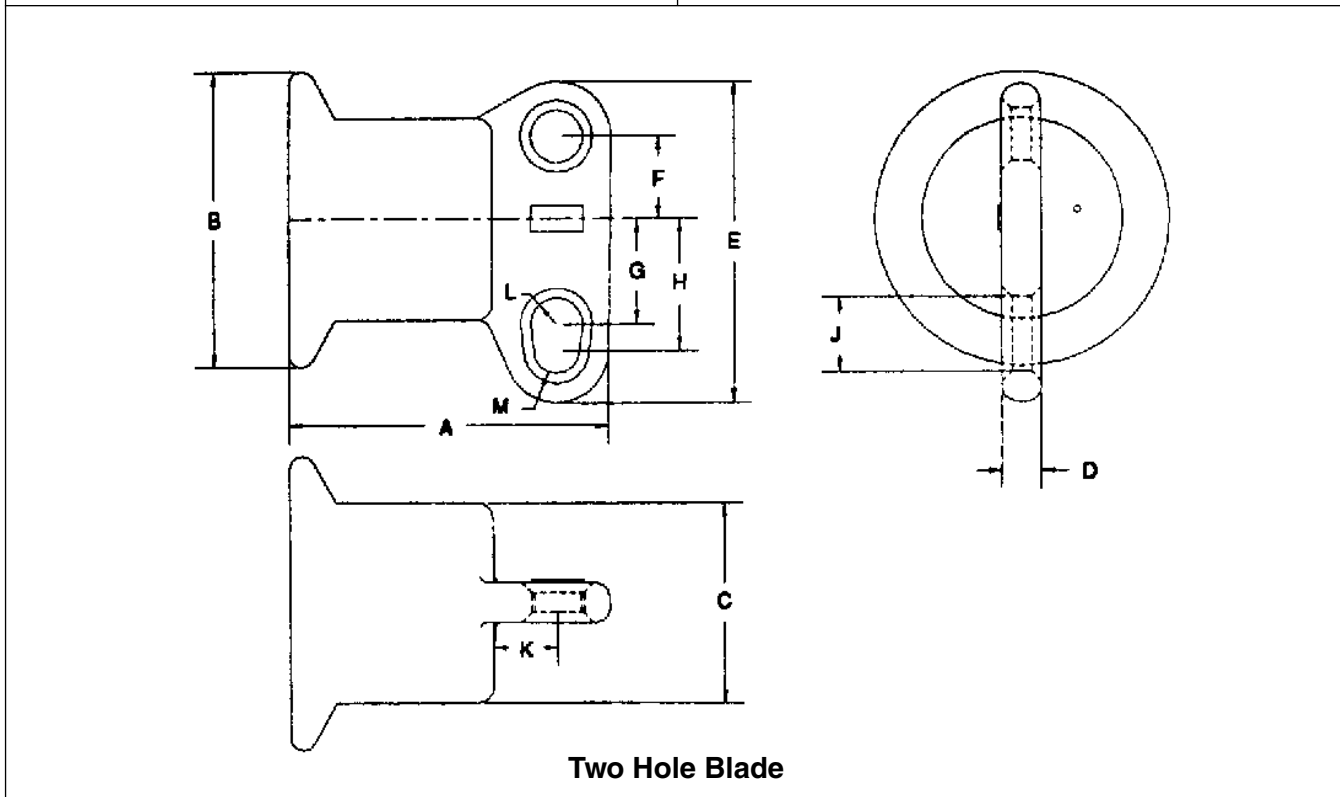
Type (Code)*	A	B	C	D	E	F	G	H	I	J	Material
5" B.C. (05)	6.36	5.9	4.37	1.2	5.0	-	-	-	5/8 - 11 UFS	-	60-40-18 D.I.
Al Gain (02)	14.0	17.0	-	8.079	7.75	5.949	0.53	14°	1.06	1.06 x 2.56	6063 T5 Al
Steel Gain (07)	14.0	17.0	-	9.65	7.75	7.03	0.5	14°	1.06	1.06 x 2.56	Low Carbon Steel
Steel Flat (08)	13.0	15.0	9.0	11.0	6.5	4.12	0.5	14°	0.938	-	Low Carbon Steel
Steel Flat (04)	14.0	17.0	-	10.0	7.75	4.12	0.5	14°	-	1.06 x 2.56	Low Carbon Steel

*Code is the 2nd number in the Suffix Code of the Catalog Number.

Hi*Lite XL 3.0" Rod Dia. Line Fittings



B



Horizontal & Vertical End Fittings Dimensions (in inches)

Type (Code)*	A	B	C	D	E	F	G	H	I	J	K	L	M	Material
2 Hole End (0)	6.16	5.63	3.84	0.75	6.12	1.57	2.0	2.5	-	1.44	1.24	0.5R	0.44 R	60-40-18 D.I.
H. Clamptop (1)	8.64	5.63	3.84	1.12	4.72	4.0	-	-	5/8 - 11 UFS	0.75	-	-	-	60-40-18 D.I.
V. Clamptop (2)	6.31	5.63	3.84	1.12	5.37	4.0	1.06	-	5/8 - 11 UFS	-	-	-	-	60-40-18 D.I.

*Code is the 2nd digit in the Suffix Code of the Catalog Number.

Clamptop Clamp

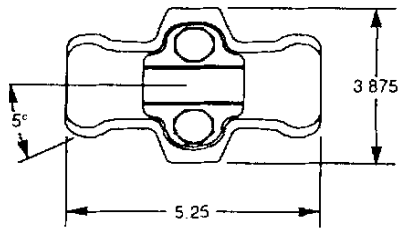


Figure 1

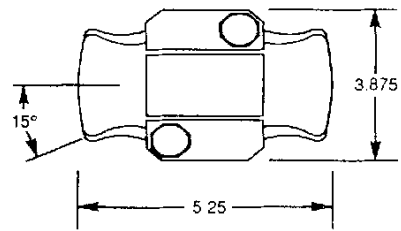
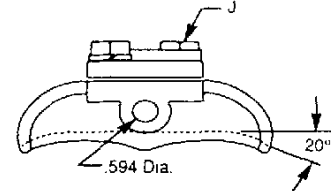
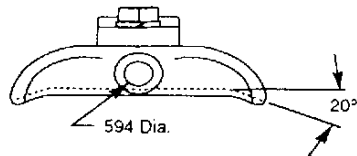


Figure 2



Clamptop clamps can be mounted directly on Hi*Lite XL 250 posts if the posts are ordered with the horizontal or vertical clamptop option.

Catalog Number	Fig. No.	Body & Keeper Material	Clamping Range Inches (mm)	Ultimate Body Strength Lbs. (kN)
TSC57	1	356-T6 Al	0.25-057 (6.3-14.4)	2800 (1.273)
TSC106	1	356-T6 Al	0.50-1.06 (12.7-26.9)	2800 (1.273)
TSC150	1	356-T6 Al	1.00-1.50 (25.4-38.1)	2800 (1.273)
TSC200	2	356-T6 Al	1.50-2.00 (38.1-50.8)	2800 (1.273)

Jumper Clamps and Assemblies

A practical application of Hi*Lite line posts is for support of jumper loops on transmission lines.

Horizontal motion of the jumper is restricted, and the factor of wind sway is eliminated. Additionally the crossarm length may be reduced. The Difference in cost of insulation is not significant but, the savings in tower cost can be attractive. Regardless of cost, the use of a jumper support improves construction.

If using a single clamp, clamp position relative to the insulator may be changed by bolting the clamp through the upper hole in the insulator end fitting.

Jumper clamps are not intended for tangent span applications.

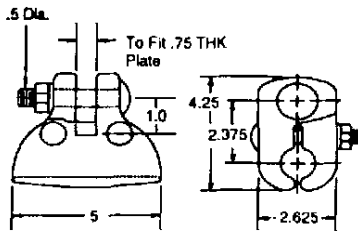


Figure 1

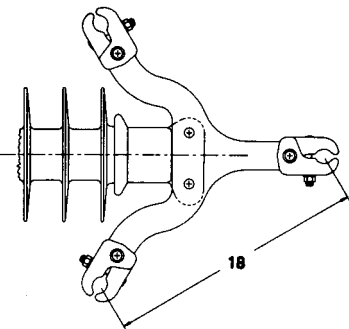


Figure 3

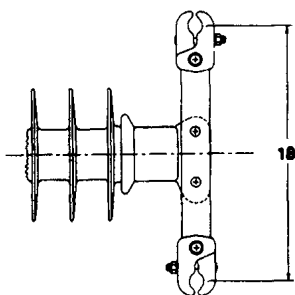


Figure 2

Figure	Catalog Number	Yoke Type	Clamping Range (Inches)	Post Type
1	976423002	None	1.00 - 1.40	Any
1	976423003	None	1.40 - 1.60	Any
1	600643001	None	1.60 - 2.00	Any
2	2717243001	Dual	1.00 - 1.40	250
2	2717253001	Dual	1.40 - 1.60	250
2	2717263001	Dual	1.60 - 2.00	250
2	2738383001	Dual	1.00 - 1.40	300
2	2738393001	Dual	1.40 - 1.60	300
2	2738403001	Dual	1.60 - 2.00	300
3	2721763001	Triple	1.00 - 1.40	250
3	2721773001	Triple	1.40 - 1.60	250
3	2721783001	Triple	1.60 - 2.00	250
3	2738413001	Triple	1.00 - 1.40	300
3	2738423001	Triple	1.40 - 1.60	300
3	2738433001	Triple	1.60 - 2.00	300
4	2721793001	Quad	1.00 - 1.40	250
4	2721803001	Quad	1.40 - 1.60	250
4	2721813001	Quad	1.60 - 2.00	250
4	2738443001	Quad	1.00 - 1.40	300
4	2738453001	Quad	1.40 - 1.60	300
4	2738463001	Quad	1.60 - 2.00	300

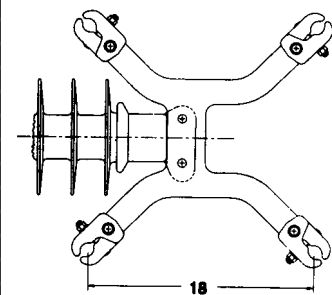
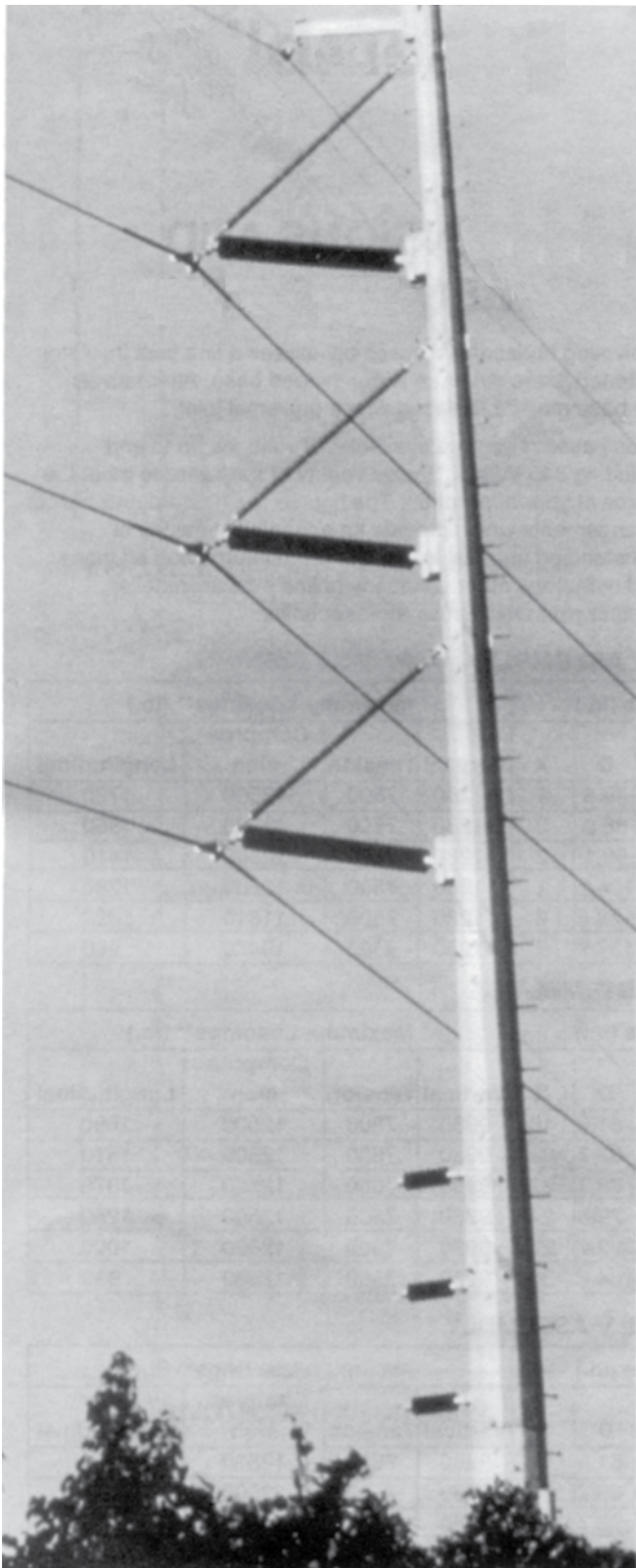


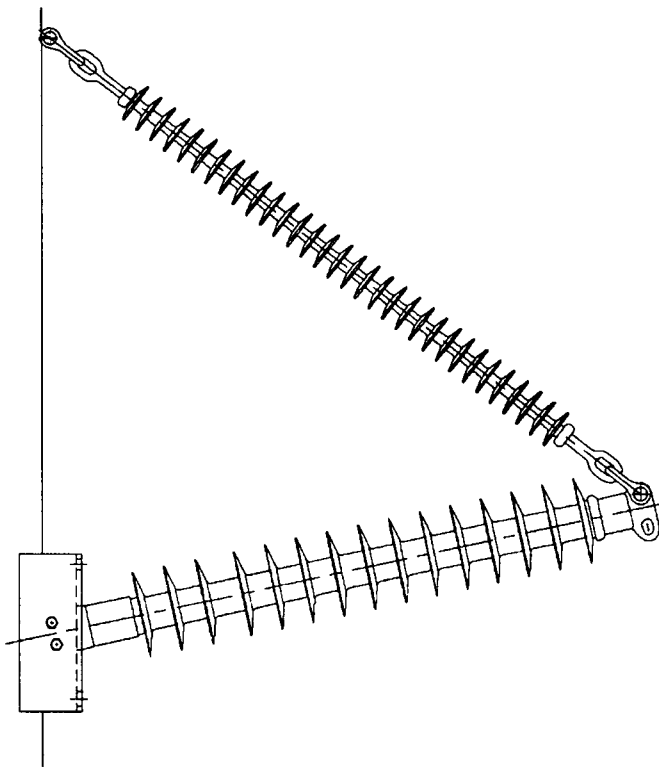
Figure 4



Hi*Lite[®] XL Braced Posts

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Assembly Drawings	26-29

C



Hi*Lite® XL Assemblies

Catalog number covers complete assembly including insulator and hardware as illustrated.

The need to minimize the tower size and visual impact of transmission lines has prompted increased interest in braced line posts, horizontal-V, and pivoting V assemblies. These insulating structures offer vastly improved vertical load capabilities over conventional lines posts while retaining the advantages of a fixed conductor position.

A braced line post uses a conventional line post with a suspension string tied to the tower face with a link. A horizontal-V replaces the link with a fixed offset extending from the tower face adding a stabilizing force to the assembly. Both these assemblies are available with flat or gain bases.

A pivoting horizontal-V assembly utilizes a line post insulator fastened to the structure with a hinged base. Alternatively, the base may be replaced with a universal joint.

These assemblies are available for voltages up to and including 345 kV with a wide variety of hardware to meet the needs of your application. The figures illustrated depict typical arrangements which provide an economical means of withstanding unusual loads. For more information on these and numerous other variations of line post assemblies, contact your Ohio Brass representative.

BRACED LINE POST ASSEMBLY

Typical System kV	Cat # Gain Base	Cat # Flat Base	Component Insulators		Dimensions (in.)					Maximum Loadings** (lb.)			
			Post	Suspension	A	B	C	D	X	Vertical	Tension	Compression	Longitudinal
115/138	234220	234221	522008	511010	53.7	72.8	74.0	79.8	2	11280	7500	12500	1730
115/138	234222	234223	522009	511211	58.8	81.9	83.0	88.9	2	11280	7500	12500	1550
161	234224	234225	522010	511013	64.1	91.1	91.0	98.1	2	11280	7500	12500	1410
161	234226	234227	522011	511014	69.4	97.2	96.0	104.2	2	11280	7500	12500	1280
230 *	234228	234229	522014	511018	85.0	121.6	118.0	128.6	2	11280	7500	11810	1020
230 *	234230	234231	522015	511219	90.3	130.7	127.0	137.7	2	11280	7500	10470	960

HORIZONTAL V ASSEMBLY

Typical System kV	Cat # Gain Base	Cat # Flat Base	Component Insulators		Dimensions (in.)					Maximum Loadings** (lb.)			
			Post	Suspension	A	B	C	D	X	Vertical	Tension	Compression	Longitudinal
115/138	234232	234233	522008	511007	54.9	54.6	51.0	61.6	18	9980	7500	12500	1680
115/138	234234	234235	522009	511008	60.1	60.7	56.0	67.7	20	9980	7500	12500	1510
161	234236	234237	522010	511009	65.5	66.7	61.0	73.7	22	9980	7500	12500	1370
161	234238	234239	522011	511010	70.9	72.8	66.0	79.8	24	9980	7500	12500	1250
230 *	234240	234241	522014	511013	86.9	91.1	80.0	98.1	28	9980	7500	12500	1000
230 *	234242	234243	522015	511014	92.3	97.2	85.0	104.2	30	9980	7500	12500	930

PIVOTING HORIZONTAL V ASSEMBLY

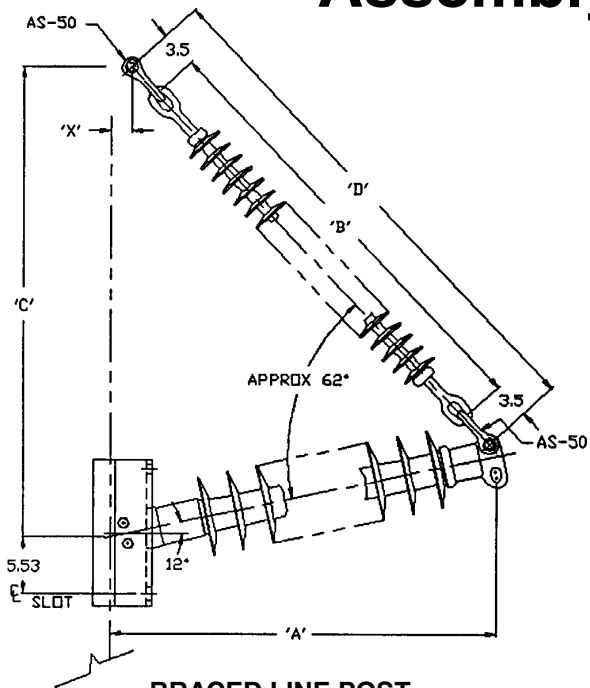
Typical System kV	Cat # Gain Base	Cat # Flat Base	Component Insulators		Dimensions (in.)					Maximum Loadings** (lb.)			
			Post	Suspension	A	B	C	D	X	Vertical	Tension	Compression	Longitudinal
115/138	—	234244	522008	511007	55.2	54.6	51.0	61.6	18	9980	7500	12500	—
115/138	—	234245	522009	511008	60.4	60.7	56.0	67.7	20	9980	7500	12500	—
161	—	234246	522010	511009	65.8	66.7	61.0	73.7	22	9980	7500	12500	—
161	—	234247	522011	511010	71.2	72.8	66.0	79.8	24	9980	7500	12500	—
230 *	—	234248	522014	511013	87.2	91.1	80.0	98.1	28	9980	7500	12500	—
230 *	—	234249	522015	511014	92.6	97.2	85.0	104.2	30	9980	7500	12500	—

Contact your Ohio Brass representative for designs utilizing the optional pivoting strut member.

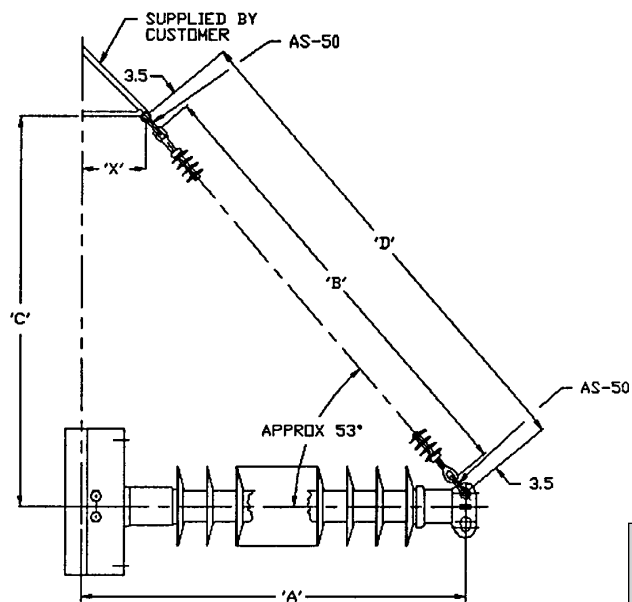
* Corona rings are required for 230 kV and above.

** Maximum loads are for single loads in the specified direction.

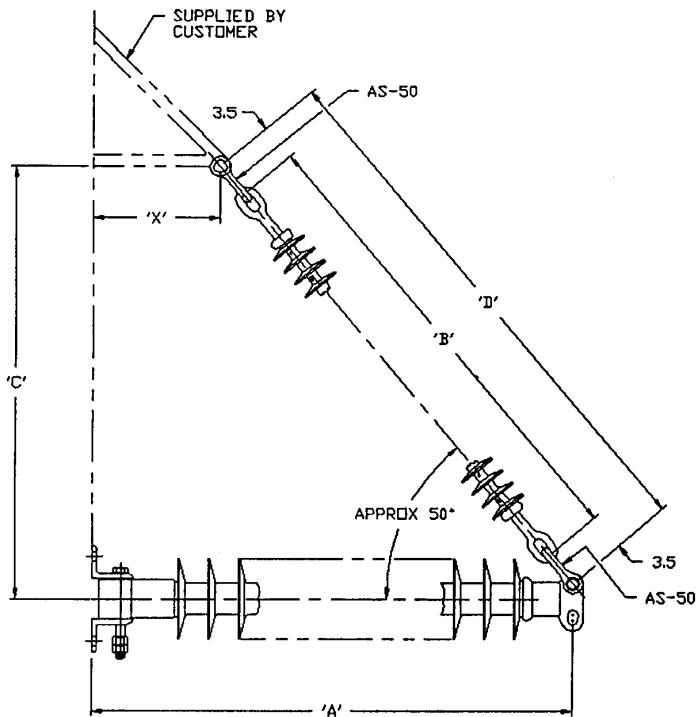
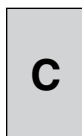
Assembly Drawings



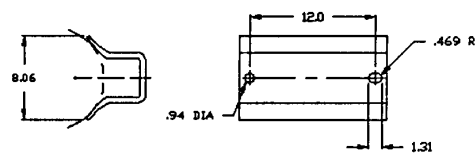
BRACED LINE POST



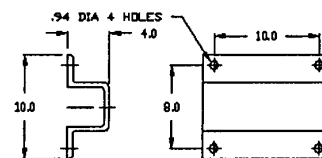
HORIZONTAL-V



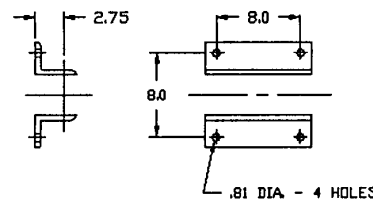
PIVOTING HORIZONTAL-V



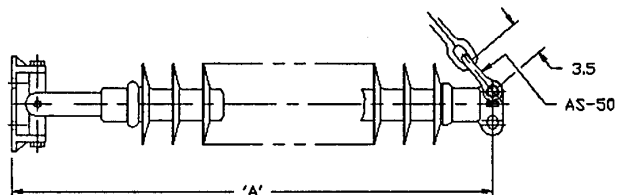
GAIN BASE MOUNTING



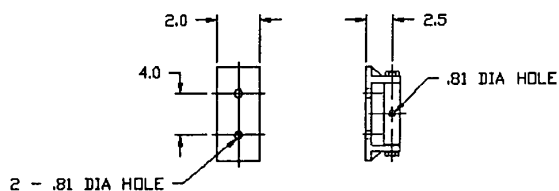
FLAT BASE MOUNTING



PIVOTING BASE MOUNTING



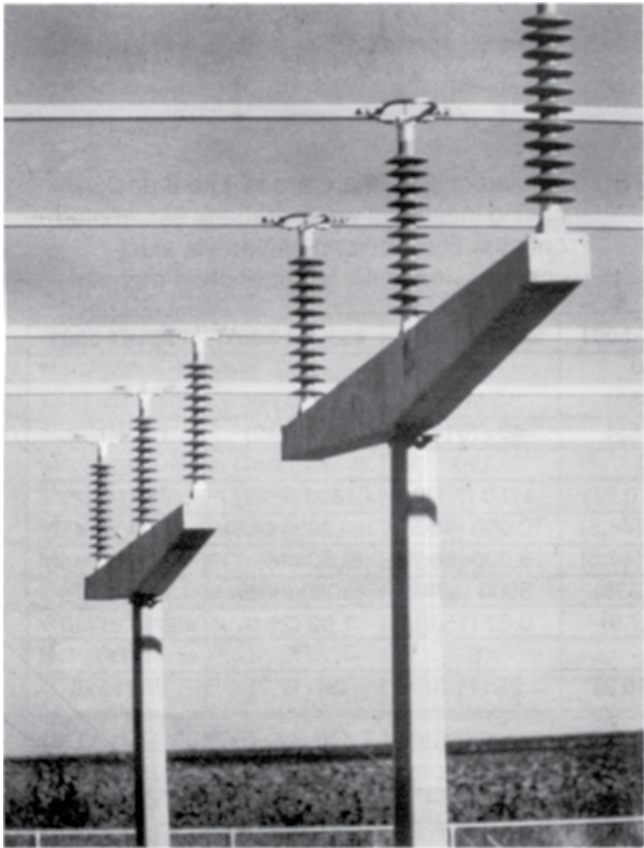
OPTIONAL PIVOTING STRUT MEMBER



HI*LITE II STATION POST INSULATORS

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Station Post Insulator Ratings	26-31
Series 175: 3" Bolt Circles	26-32
Series 250: 3" and 5" Bolt Circles.....	26-33



NOTE: Insulators listed here are Hi-Lite II design having individual weathersheds assembled to the core rod and sealed via axial compression in the polymer rubber material.

D

HI-LITE II POST INSULATORS

Maximum Design Cantilever Rating (MDC)

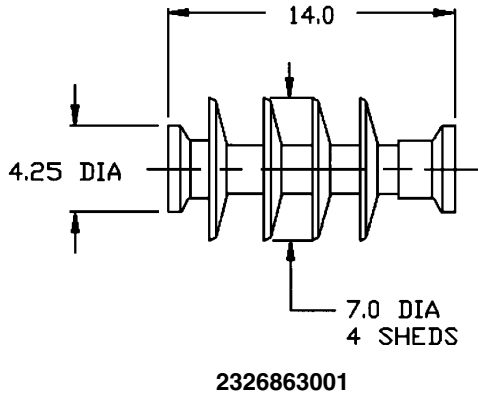
MDC is the maximum recommended load in cantilever that a Hi*Lite post insulator is designed to withstand during its service life.

Average Failing Load (AFL)

AFL is the average failing load of a Hi*Lite line or station post insulator. This value can be determined by multiplying the MDC by a factor of 2.5.

Selection

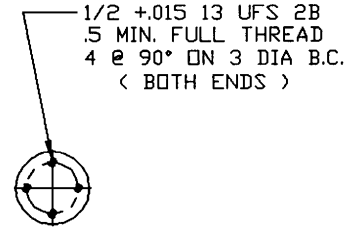
If you need a Hi*Lite post that is different from those shown in this catalog, please contact your OB representative. Hi*Lite station posts meet electrical and dimensional specifications of their porcelain equivalents. Mechanically, the Hi*Lite are less rigid with more deflection under both cantilever and torsional loading.



HI*LITE II STATION POST INSULATORS

Series 175

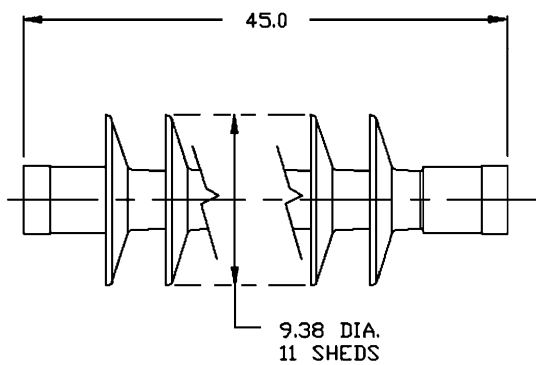
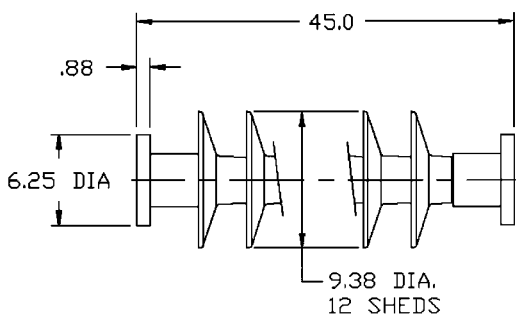
3" (76mm) Bolt Circles



NOTE: Insulators listed here are Hi-Lite II design having individual weathersheds assembled onto the core rod and sealed via axial compression in the polymer shed material.

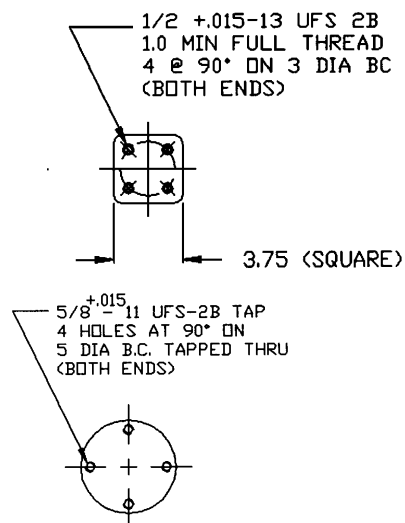
CATALOG NUMBER (3" BOLT CIRCLES)	2326863001	2326853001	2331923001	2331873001
BIL (kV)	150	200	250	350
Height — X in. (mm)	14 (356)	18 (457)	22 (559)	30 (762)
Leakage Distance in. (mm)	27 (685)	40 (1015)	49 (1240)	76 (1930)
60-Hz Withstand — 10 sec/wet (kV)	80	120	150	230
Maximum Design Cantilever lb. (kN)	2390 (10.67)	1750 (7.78)	1390 (6.23)	980 (4.39)
Maximum Design Tension lb. (kN)	10,000 (44.5)	10,000 (44.5)	10,000 (44.5)	10,000 (44.5)
Maximum Design Compression lb. (kN)	10,000 (44.5)	15,000 (66.7)	15,000 (66.7)	15,000 (66.7)
Maximum Design Torsion in.-lb. (N-meter)	3000 (339)	3000 (339)	3000 (339)	3000 (339)
Deflection at Stated Cantilever in. (mm)	0.31 (7.9)	0.62 (15.9)	1.02 (25.9)	2.16 (54.9)
Weathersheds	4	6	7	11
Net Weights lb. (kg.)	22.5 (10.2)	25 (11.3)	28 (12.7)	33 (15.0)

Note: Station Posts are also available in non-standard section lengths.
Contact your Ohio Brass representative.


2321993001

2323373001

HI*LITE II STATION POST INSULATORS Series 250

5" (127mm) Bolt Circles



CATALOG NUMBER (3" BOLT CIRCLES)	2323013001	2321993001	2323003001	2323093001
BIL (kV)	350	550	650	750
Height — X in. (mm)	30 (762)	45 (1143)	54 (1372)	62 (1575)
Leakage Distance in. (mm)	63 (1570)	102 (2590)	128 (3250)	148 (3760)
60-Hz Withstand — 10 sec/wet (kV)	190	300	380	430
Maximum Design Cantilever lb. (kN)	1400 (6.23)	930 (4.14)	770 (3.42)	670 (2.98)
Maximum Design Tension lb. (kN)	30,000 (133)	30,000 (133)	30,000 (133)	30,000 (133)
Maximum Design Compression lb. (kN)	50,000 (222)	50,000 (222)	50,000 (222)	50,000 (222)
Maximum Design Torsion in.-lb. (N-meter)	9,000 (1000)	9,000 (1000)	9,000 (1000)	9,000 (1000)
Deflection at Stated Cantilever in. (mm)	1.0 (25)	2.3 (58)	3.4 (86)	4.5 (114)
Weathersheds	7	11	14	16
Net Weights lb. (kg.)	30 (13.6)	42 (19)	51 (23)	54 (24.5)

CATALOG NUMBER (5" BOLT CIRCLES)	2323363001	2323373001	2323383001	2323393001	2323753001
BIL (kV)	350	550	650	750	900
Height — X in. (mm)	30 (762)	45 (1143)	54 (1372)	62 (1575)	80 (2032)
Leakage Distance in. (mm)	64 (1626)	109 (2770)	130 (3300)	156 (3960)	204 (5180)
60-Hz Withstand — 10 sec/wet (kV)	190	320	380	450	560
Maximum Design Cantilever lb. (kN)	2900 (12.90)	1850 (8.23)	1520 (6.76)	1310 (5.83)	990 (4.45)
Maximum Design Tension lb. (kN)	30,000 (133)	30,000 (133)	30,000 (133)	30,000 (133)	30,000 (133)
Maximum Design Compression lb. (kN)	50,000 (222)	50,000 (222)	50,000 (222)	50,000 (222)	35,000 (156)
Maximum Design Torsion in.-lb. (N-meter)	9000 (1000)	9000 (1000)	9000 (1000)	9000 (1000)	9,000 (66.7)
Deflection at Stated Cantilever in. (mm)	1.77 (45)	4.13 (105)	6.00 (152)	8.00 (203)	13.50 (343)
Weathersheds	8	12	14	17	22
Net Weights lb. (kg.)	30 (13.6)	42 (19)	51 (23)	54 (24.5)	72 (32.7)

- Notes: 1. Station Posts are also available in non-standard section lengths. Contact Ohio Brass.
 2. At 230 kV, corona ring 2721273001 may be required.
 3. For through holes, specify code 3002.

Sample Polymer Specification

Purpose: To ensure a suitable service life of polymer insulating materials.

I. Material Design Tests

- The following must be performed to certify a material for use in production.

1. Tracking test: Performed on a sample of material inclined at 30° and electrodes positioned 35mm apart. Samples are sprayed with a conductive solution (400Ωcm) and energized at 10kV. The cycle is repeated every 90 seconds. The sample passes if there is:

1. No carbonization or tracking.
2. No erosion through sample.
3. No leakage current flow at the end of 90 seconds.

The sample must withstand 15,000 test cycles.

2. Ultraviolet Test: Samples of the rubber must be tested in a QUV tester or equivalent cyclic weatherometer. The samples are exposed to high ultraviolet radiation and high humidity without cracking, checking or becoming hydrophilic.

The sample is judged to have passed this test if it exceeds 8,000 hours of exposure without damage.

3. Corona Cutting: Samples 5 cm by 7 cm are subjected to mechanical stress of 300,000 μstrain by bending samples around a grounded electrode. A needle-like electrode is placed 1 mm from the surface of the sample and energized at 12 kV in a controlled humidity chamber.

The sample is judged to have passed this test if there is no splitting or cutting. Samples must pass 1,000 hours of exposure to this test.

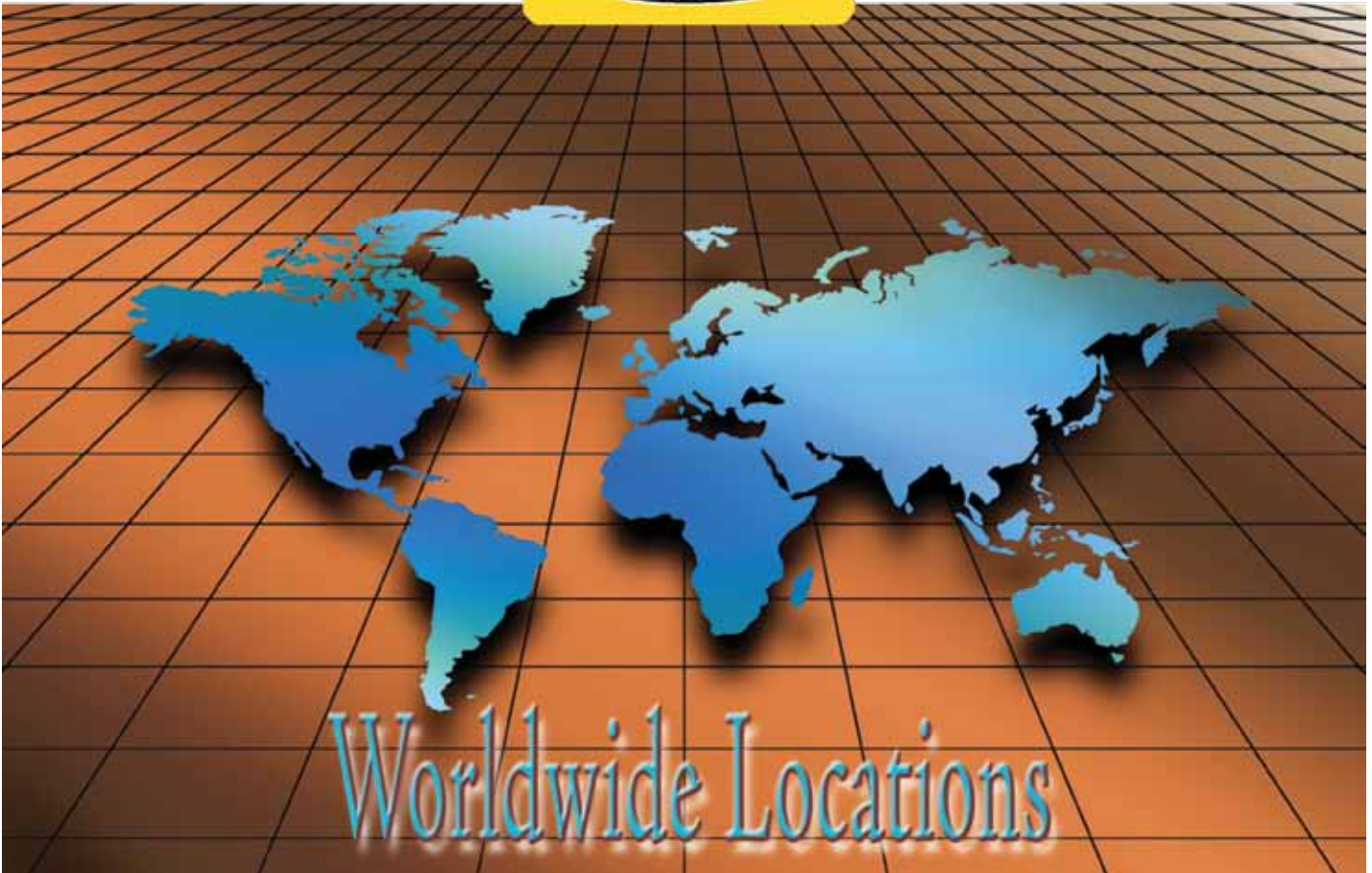
4. Oxidative Stability: Samples of the polymer compound are tested using differential scanning calorimetry. Samples are heated rapidly in a nitrogen atmosphere to the test temperature of 200°C. The atmosphere is then changed to air and the temperature is maintained until the antioxidant is consumed, as measured by an exothermic chemical reaction. The time to this reaction must exceed 300 minutes.

5. Tear Strength: Rubber test slabs are prepared in accordance with ASTM Standards and are tested to determine tear strength of the material. The minimum acceptable tear strength is 150 lb./in.

II. Other Requirements

- The manufacturer must supply upon request a listing of routine tests performed to ensure production compliance with design tests.

E



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Hi*Lite® XL Suspension Insulators



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Warranty - Material

Hubbell Power Systems, Inc. warrants all products sold by it to be merchantable (as such term is defined in the Uniform Commercial Code) and to be free from defects in material and workmanship. Buyer must notify the Company promptly of any claim under this warranty. The Buyer's exclusive remedy for breach of this warranty shall be the repair or replacement, F.O.B. factory, at the Company's option, of any product defective under the warranty which is returned to the Company within one year from the date of shipment. NO OTHER WARRANTY, WHETHER EXPRESS OR ARISING BY OPERATION OF LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE IMPLIED, SHALL EXIST IN CONNECTION WITH THE COMPANY'S PRODUCTS OR ANY SALE OR USE THEREOF. The Company shall in no event be liable for any loss of profits or any consequential or special damages incurred by Buyer. The Company's warranty shall run only to the first Buyer of a product from the Company, from the Company's distributor, or from an original equipment manufacturer reselling the Company's product, and is

non-assignable and non-transferable and shall be of no force and effect if asserted by any person other than such first Buyer. This warranty applies only to the use of the product as intended by Seller and does not cover any misapplication or misuse of said product.

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.

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.

ANSI C29.12/IEC 1109 TESTED



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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Hi*Lite® XL Insulators

Hi*Lite XL suspension insulators in this publication embody the latest features available in polymer insulator design and manufacture.

From the early prototypes in 1971, through full scale introduction in 1976, and through the succeeding years, Hi*Lite insulators have featured conservative design and high-quality manufacture.

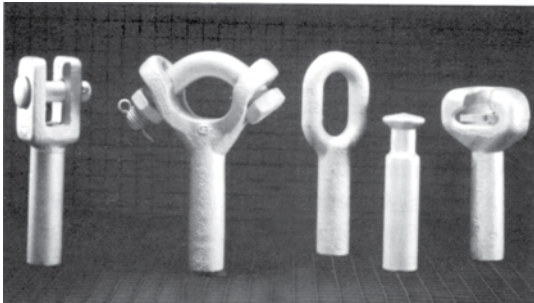
Today's Hi*Lite insulators will add to the over 1,000,000 Hi*Lite transmission insulators already in service worldwide.

Design

The structural design of the Hi*Lite XL consists of these basic parts:

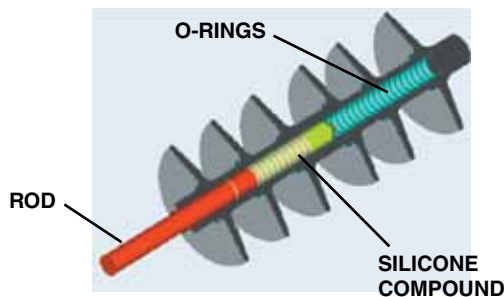
Rod - Hi*Lite insulator fiberglass rod is produced from the highest quality materials. Strands are aligned for maximum tensile strength. The rod is more than 50 percent glass fibers in cross section.

End Fittings - End fittings are steel or ductile iron. They are crimped directly to the rod by a special process originated by Ohio Brass, and later adopted by many other producers. The crimp develops a high percentage of the rod's inherent tensile strength. It requires no inter-movement of the parts to achieve high strength, nor does it introduce potting compounds or adhesives.



Weathersheds - Weathersheds are high pressure injection molded by Ohio Brass, from the proprietary compound ESP™. Housings manufactured with ESP silicone alloy rubber exhibit long-term hydrophobicity, high mechanical strength, excellent corona resistance and low permeability to moisture.

Interface - Hi*Lite insulators use Ohio Brass' live silicone interface. This feature prevents intrusion of moisture and contaminating elements. In the unlikely event the exterior seal is damaged, redundant o-ring seals within the live silicone interface will prohibit the lengthwise migration of intrusive elements between shed and rod.



Leakage Distance

Hi*Lite XL insulators feature high leakage distance for maximum resistance to contamination and leakage currents. Specific leakage distance (leakage divided by dry arcing distance) is higher than that of porcelain. Hi*Lite XL insulators are offered in standard uniform weathershed configuration and alternating (major/minor) weathershed configuration for applications requiring increased specified leakage distances.



Uniform Profile

Alternating Profile

Washability

Hi*Lite XL insulators listed in this catalog are suitable for flood washing up to 1,380 kPa (200 psi) at the ground pump level at a distance not less than 4.6 meters (15 ft.). The design incorporates positive, labyrinth seals to ensure long-term security against water entry. Conventional dry-particle, air-pressure cleaning methods may be employed.

High Pressure wash designs are also available. Washing is permissible for up to 6,900 kPa (1,000 psi) ground pump pressure at a distance no less than 1.8 meters (6 feet).

Cleaning guidelines (Ohio Brass publication #EU1272-H for flood and #EU1273-H for high pressure wash) are available from your representative.

Mechanical Ratings

Hi*Lite XL suspension insulators are rated and tested in accordance with IEC 1109-1992 and ANSI C29.12-1997. Certified test reports in detail are available.

SML ratings are 120 kN, 160 kN and 210 kN for insulators furnished with IEC fittings. For insulators furnished with ANSI fittings, SML ratings available are 111 kN (25K lbs.), 133 kN (30K lbs.), 160 kN (36K lbs.) and 222 kN (50K lbs.) RTL ratings are consistent with the IEC and ANSI standard. Actual factory routine tests are conducted at loads equal to or greater than the RTL rating.

Markings for XL insulator design are permanently embossed into the ground end corona shielding rings (CSR). Markings include SML and RTL, part number, assembly date code, and Ohio Brass identification. These marks are consistent with the IEC and ANSI standard.

Lengths Available

Hi*Lite XL suspension insulators are available in lengths appropriate for 69 kV through 765 kV. Longer lengths can be produced for special projects. Intermediate lengths (utilizing an additional 2 sheds) are also available (those that fall in between the catalog numbers listed in the tables). Length increments are approximately 76 mm (3 inches).

Testing

The Hi*Lite XL suspension insulator has been successfully "Design" tested to IEC 1109 at an independent laboratory. In addition, the Hi*Lite XL suspension insulator has successfully completed the 5,000 hour accelerated aging test detailed in Annex C of IEC 1109. A certified test report is available by contacting your Ohio Brass representative and requesting bulletin EU1348-H.

Since the ANSI "Prototype" and IEC "Design" testing requirements are virtually identical, the "Design" test report per IEC 1109 can serve as verification of compliance to ANSI.

Packaging

Hi*Lite suspension insulators are packaged in appropriate quantities in wooden crates 111.7 cm (44 inches) wide with the length of the crate determined by the length of the insulator. The height of the crate is normally less than 114.3 cm (45 inches). The gross weight will not exceed 909 kg (2,000 lbs.). Crates are available for both domestic and export transportation.



Export Crate

Corona Performance

Hi*Lite XL suspension insulators are RIV and corona free through 161 kV, by the use of integral Corona Shield Rings (CSR). Corona shielding is necessary at 220/230 kV and above. The table below details the rings necessary for voltages equal to or less than that listed in the column header.

Normal Applications: Top Grounded, Bottom Energized

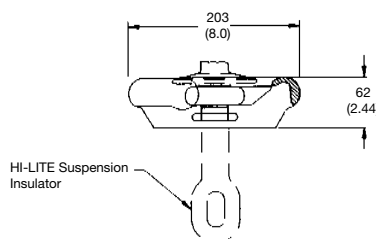
Insulator	Orientation	220/230 kV	330/345 kV	400 kV	500 kV
120 & 111 kN (25K lbs.)	Top Bottom	NONE 2717613001*	NONE 2717053001	2717613001 2717053001	2717613001 2717513001
160/210 kN & 133-222 kN (30-50K lbs.)	Top Bottom	NONE 2717613002*	NONE 2717053002	2717613002 2717053002	2717613002 2717513002

*For 96 mm (3.8") S.L. ratio designs, 271705 rings must be used in lieu of 271761 at the bottom end (energized) of insulator at 220/230 kV operating system voltage.

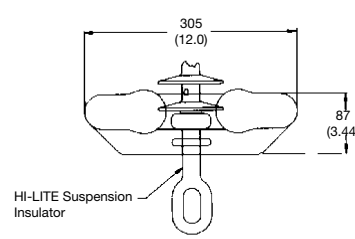
The physical and electrical values for the insulators on pages 5 through 8 are shown without corona protection. The table below yields the physical and electrical changes to the insulator when rings from table are installed for voltages above 161 kV.

Physical & Electrical Change Table

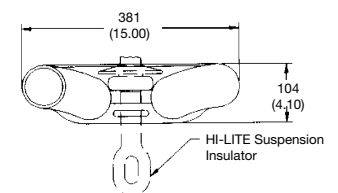
Physical & Electrical Characteristics	220/230 kV Ring	330/345 kV Ring	400 kV Rings	500 kV Rings
Dry Arc Distance mm (inches)	-20.3 (-1.2)	-50.8 (-2.0)	63.5 (2.5)	-127.0 (-5.0)
Leakage Distance mm (inches)	0	0	0	0
60 Hz Flashover Dry - kV (ANSI)	-10	-15	-20	-30
60 Hz Flashover Wet - kV (ANSI)	0	0	0	0
Critical Impulse Flashover Positive - kV (ANSI)	-15	-25	-35	-65
Critical Impulse Flashover Negative - kV (ANSI)	-20	-30	-35	-65
Power Frequency 1 minute Wet Withstand - kV (IEC)	0	0	0	0
Lightning Impulse Withstand Positive - kV (IEC)	-20	-25	-30	-60
Lightning Impulse Withstand Negative - kV (IEC)	-15	-25	-35	-65
Net Weight kg (pounds)	+0.9 (2.0)	+1.4 (3.0)	+ 2.3 (5.0)	+ 3.6 (8.0)



Part Number 271761

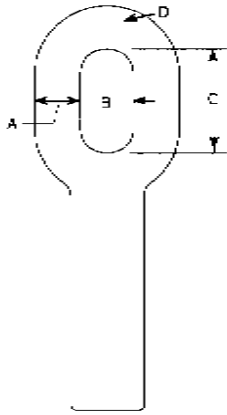


Part Number 271705

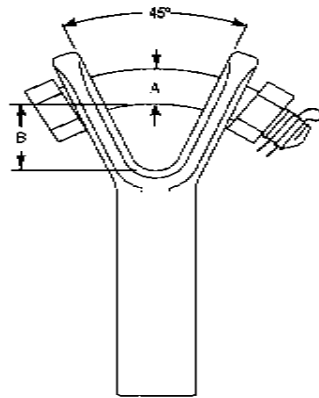


Part Number 271751

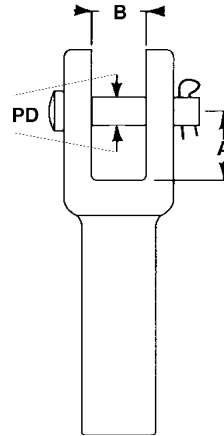
Most Common End Fittings



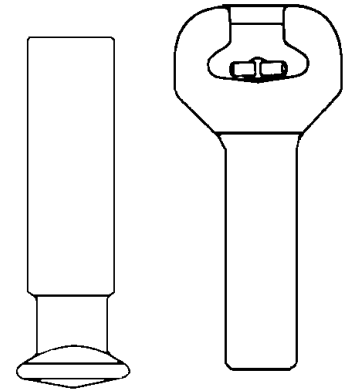
Chain Eye



Y-Clevis



Straight Clevis



Ball/Socket

SML	Dimensions mm (in.)			
	A	B	C	D
111 kN (25K lbs.)	15.74 (0.62)	25.4 (1.00)	50.8 (2.00)	15.74 (0.62)
120 kN	15.74 (0.62)	25.4 (1.00)	50.8 (2.00)	15.74 (0.62)
133 kN (30K lbs.)	19.05 (0.75)	25.4 (1.00)	50.8 (2.00)	21.59 (0.85)
160 kN (36K lbs.)	19.05 (0.75)	25.4 (1.00)	50.8 (2.00)	21.59 (0.85)
210 kN	19.05 (0.75)	25.4 (1.00)	50.8 (2.00)	21.59 (0.85)
222 kN (50K lbs.)	19.05 (0.75)	25.4 (1.00)	50.8 (2.00)	21.59 (0.85)

SML	Dimensions mm (in.)		
	A	B	Bolt Dia.
111 kN (25K lbs.)	19.05 (0.75)	38.86 (1.53)	19 (0.75)
120 kN	19.05 (0.75)	38.86 (1.53)	19 (0.75)
133 kN (30K lbs.)	22.35 (0.88)	40.39 (1.59)	22 (0.88)
160 kN (36K lbs.)	22.35 (0.88)	40.39 (1.59)	22 (0.88)
210 kN	22.35 (0.88)	40.39 (1.59)	22 (0.88)
222 kN (50K lbs.)	22.35 (0.88)	40.39 (1.59)	22 (0.88)

SML	Dimensions mm (in.)			
	Class	A	B	PD
111 kN (25K lbs.)	ANSI 52-6	36 (1.41)	19 (0.75)	16 (0.62)
120 kN	IEC 16C	36 (1.41)	19 (0.75)	16 (0.62)
133 kN (30K lbs.)	ANSI 52-6	36 (1.41)	19 (0.75)	16 (0.62)
160 kN (36K lbs.)	IEC 19L	46 (1.81)	21 (0.83)	19 (0.75)
210 kN	IEC 19L	46 (1.81)	21 (0.83)	19 (0.75)
222 kN (50K lbs.)	N/A			

SML	Class
111 kN (25K lbs.)	ANSI 52-5
120 kN	IEC 16 mm
133 kN (30K lbs.)	ANSI 52-5
160 kN (36K lbs.)	IEC 20 mm (ANSI 52-8)
210 kN	IEC 20 mm
222 kN (50K lbs.)	ANSI 52-11

Hi*Lite XL Suspension Insulators: Key to the Catalog Numbers

D 1 0 0 0 8 2 A 0 7

AA = Hi*Lite XL
 51 = 63 mm (2.5" S.L.)
 A1 = 73 mm (2.9" S.L.)
 D1 = 83 mm (3.3" S.L.)
 G1 = 96 mm (3.8" S.L.)
 S.L. = Specified Leak
 (approx. leak/dry arc)
 +These codes apply to our ESP
 silicone alloy compound. For other
 polymer materials contact Ohio Brass

B = Strength
 0 = 120 kN SML
 1 = 111 kN (25K lbs.) SML
 2 = 160 kN (36K lbs.), 133 kN (30K lbs.) SML
 3 = 210 kN, 222 kN (50K lbs.) SML

C = Construction
 0 = Standard Hardware/0 Added Sheds
 2 = Standard Hardware/2 Added Sheds

DD = Weathershed Configuration
 To determine the number of sheds in your insulator,
 multiply this number by four, then add any additional
 sheds as listed in the Construction digit.

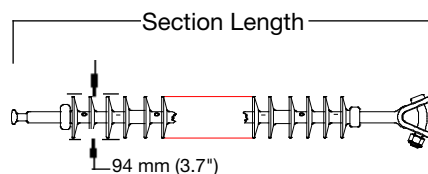
E = Labeling
 1 = English
 2 = Metric

GG = Line End Fittings
 Chain Eye00
 ANSI Ball01
 Y-Clevis02
 ANSI Straight Clevis04
 IEC Ball07*
 IEC Straight Clevis.....08
 *For 160 kN, 20 mm ball, use "09" code.

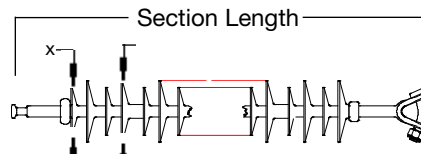
F = Ground End Fittings
 Chain Eye0
 Y-Clevis2
 ANSI Socket3
 ANSI Straight Clevis4
 IEC Straight Clevis.....8
 IEC Socket..... A

16 mm (5/8") Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 111 kN (25,000 lbs.)
RTL = 55 kN (12,500 lbs.)



Standard Design



High Leak Design

Type	x mm (in.)	y mm (in.)
A11..	97 (3.8)	114 (4.5)
D11..	109 (4.3)	140 (5.5)
G11..	130 (5.1)	160 (6.3)

Selection Guide Typical Line Voltage, kV ⁽¹⁾								Leakage Distance mm (in.) XX =				Catalog Number with ANSI 52-5 ball and Y-Clevis	Section Length mm (in.)	No. of Sheds	Dry Arc Distance mm (in.)	⁽²⁾ IEC Wet Switching Impulse Withstand (ANSI 60 Hz. Dry F.O.) kV	⁽²⁾ IEC Power Freq. Wet Withstand (ANSI 60 Hz. Wet F.O.) kV	⁽²⁾ IEC Light- ning Impulse Withstand (ANSI Critical Impulse F.O.) kV	
70	110	132	161	220	330	400	51	A1	D1	G1	Pos-kV							Neg-kV	
							1160 (45)	1340 (53)	1530 (60)	1760 (69)	XX10032201	725 (28.6)	12	470 (18.5)	260 (180)	135 (180)	275 (310)	255 (285)	
							1550 (61)	1790 (70)	2040 (80)	2350 (92)	XX10042201	881 (34.7)	16	625 (24.6)	345 (245)	180 (240)	365 (410)	350 (390)	
							1940 (76)	2230 (88)	2540 (100)	2920 (115)	XX10052201	1033 (40.7)	20	775 (30.6)	420 (310)	220 (295)	450 (505)	440 (490)	
							2320 (91)	2680 (105)	3060 (120)	3520 (138)	XX10062201	1189 (46.8)	24	930 (36.8)	500 (370)	260 (350)	540 (605)	530 (595)	
							2710 (107)	3130 (122)	3570 (140)	4110 (162)	XX10072201	1345 (53.0)	28	1090 (42.9)	570 (430)	305 (405)	630 (700)	620 (695)	
							3100 (122)	3580 (141)	4080 (160)	4700 (185)	XX10082201	1501 (59.1)	32	1245 (49.0)	650 (490)	340 (455)	715 (795)	710 (795)	
							3490 (137)	4020 (158)	4580 (180)	5280 (207)	XX10092201	1654 (65.1)	36	1395 (55.0)	720 (545)	380 (505)	800 (890)	800 (890)	
							3880 (152)	4480 (176)	5100 (200)	5870 (231)	XX10102201	1810 (71.3)	40	1555 (61.2)	790 (600)	420 (555)	885 (985)	890 (990)	
							4270 (168)	4930 (194)	5610 (221)	6460 (254)	XX10112201	1966 (77.4)	44	1710 (67.3)	860 (655)	455 (605)	970 (1080)	975 (1090)	
							4660 (183)	5370 (211)	6120 (241)	7050 (277)	XX10122201	2121 (83.5)	48	1865 (73.5)	930 (710)	490 (655)	1050 (1170)	1065 (1185)	
							5040 (198)	5820 (229)	6620 (261)	7630 (300)	XX10132201	2274 (89.5)	52	2015 (79.5)	995 (760)	525 (700)	1135 (1260)	1145 (1280)	
							5430 (214)	6270 (247)	7140 (281)	8220 (323)	XX10142201	2430 (95.7)	56	2175 (85.6)	1060 (810)	560 (750)	1215 (1350)	1230 (1370)	
							5820 (229)	6720 (264)	7650 (301)	8810 (347)	XX10152201	2586 (101.8)	60	2330 (91.7)	1120 (855)	595 (790)	1295 (1440)	1315 (1465)	
							6210 (244)	7170 (282)	8160 (321)	9400 (370)	XX10162201	2742 (108.0)	64	2485 (97.9)	1185 (905)	625 (835)	1375 (1530)	1400 (1560)	
							6600 (260)	7610 (299)	8670 (341)	9980 (393)	XX10172201	2894 (114.0)	68	2635 (103.9)	1240 (945)	655 (880)	1455 (1615)	1480 (1650)	
							6990 (275)	8060 (317)	9180 (361)	10570 (416)	XX10182201	3050 (120.1)	72	2795 (110.0)	1300 (990)	690 (920)	1530 (1705)	1565 (1740)	
							7380 (290)	8510 (335)	9700 (381)	11170 (439)	XX10192201	3206 (126.2)	76	2950 (116.2)	1355 (1030)	720 (960)	1610 (1790)	1645 (1830)	
							7770 (306)	8960 (353)	10210 (402)	11760 (463)	XX10202201	3362 (132.4)	80	3105 (122.3)	1410 (1070)	745 (1000)	1685 (1875)	1725 (1920)	
							8150 (321)	9400 (370)	10710 (421)	12330 (485)	XX10212201	3514 (138.4)	84	3260 (128.3)	1460 (1110)	775 (1040)	1760 (1960)	1800 (2005)	
							8540 (336)	9860 (388)	11220 (442)	12930 (509)	XX10222201	3670 (144.5)	88	3415 (134.4)	1510 (1145)	800 (1075)	1835 (2040)	1880 (2090)	
							8930 (351)	10310 (406)	11740 (462)	13520 (532)	XX10232201	3826 (150.7)	92	3570 (140.6)	1560 (1180)	830 (1110)	1910 (2125)	1955 (2175)	

Notes: (1) For voltages above 400 kV, and other section lengths, contact your Ohio Brass representative.

(2) Electrical values are without corona ring. For voltages above 161 kV refer to Page 3 for Corona Rings, and associated physical/electrical changes to above data. Dimensions are within allowable tolerances as specified by IEC 1109 and ANSI C29.12.

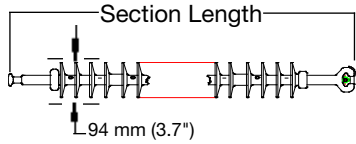
End Fitting Example

You need the electrical and mechanical characteristics of Catalog #5110102201. But chain eye is needed at the ground end instead of a Y-clevis. From the table at the right, find the code for the chain eye/ANSI ball configuration 2001. You should order catalog number 5110102001. The same process is used for other strength Hi*Lite XL insulators.

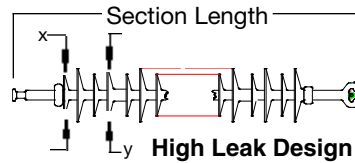
Ground Fitting	Line Fitting	Suffix Code	Length Change	
			mm	Inches
Eye	Eye	2000	+39	+1.5
Eye	ANSI 52-5 Ball	2001	+1	+0.0
ANSI 52-5 Socket	ANSI 52-5 Ball	2301	-25	-0.9
Y-Clevis	Eye	2200	+37	+1.4
ANSI 52-6 Clevis	Eye	2400	+11	+0.4

16 mm (5/8") Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 120 kN
RTL = 60 kN



Standard Design



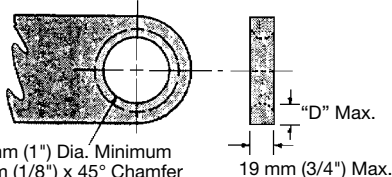
High Leak Design

Type	x mm (in.)	y mm (in.)
A10..	97 (3.8)	114 (4.5)
D10..	109 (4.3)	140 (5.5)
G10..	130 (5.1)	160 (6.3)

Selection Guide Typical Line Voltage, kV ⁽¹⁾								Leakage Distance mm (in.) XX =				Catalog Number with IEC 16 mm ball - socket	Section Length mm (in.)	No. of Sheds	Dry Arc Distance mm (in.)	⁽²⁾ IEC Wet Switching Impulse Withstand (ANSI 60 Hz. Dry F.O.) kV	⁽²⁾ IEC Power Freq. Wet Withstand (ANSI 60 Hz. Wet F.O.) kV	⁽²⁾ IEC Light- ning Impulse Withstand (ANSI Critical Impulse F.O.) kV	
																		Pos-kV	Neg-kV
70	110	132	161	220	330	400	51	A1	D1	G1	XX00032A07	731 (28.8)	12	470 (18.5)	260 (180)	135 (180)	275 (310)	255 (285)	
							1160 (45)	1340 (53)	1530 (60)	1760 (69)	XX00042A07	886 (34.9)	16	625 (24.6)	345 (245)	180 (240)	365 (410)	350 (390)	
							1940 (76)	2230 (88)	2540 (100)	2920 (115)	XX00052A07	1039 (40.9)	20	775 (30.6)	420 (310)	220 (295)	450 (505)	440 (490)	
							2320 (91)	2680 (105)	3060 (120)	3520 (138)	XX00062A07	1195 (47.1)	24	930 (36.8)	500 (370)	260 (350)	540 (605)	530 (595)	
							2710 (107)	3130 (122)	3570 (140)	4110 (162)	XX00072A07	1351 (53.2)	28	1090 (42.9)	570 (430)	305 (405)	630 (700)	620 (695)	
							3100 (122)	3580 (141)	4080 (160)	4700 (185)	XX00082A07	1507 (59.3)	32	1245 (49.0)	650 (490)	340 (455)	715 (795)	710 (795)	
							3490 (137)	4020 (158)	4580 (180)	5280 (207)	XX00092A07	1659 (65.3)	36	1395 (55.0)	720 (545)	380 (505)	800 (890)	800 (890)	
							3880 (152)	4480 (176)	5100 (200)	5870 (231)	XX00102A07	1815 (71.5)	40	1555 (61.2)	790 (600)	420 (555)	885 (985)	890 (990)	
							4270 (168)	4930 (194)	5610 (221)	6460 (254)	XX00112A07	1971 (77.6)	44	1710 (67.3)	860 (655)	455 (605)	970 (1080)	975 (1090)	
							4660 (183)	5370 (211)	6120 (241)	7050 (277)	XX00122A07	2127 (83.8)	48	1865 (73.5)	930 (710)	490 (655)	1050 (1170)	1065 (1185)	
							5040 (198)	5820 (229)	6620 (261)	7630 (300)	XX00132A07	2279 (89.8)	52	2015 (79.5)	995 (760)	525 (700)	1135 (1260)	1145 (1280)	
							5430 (214)	6270 (247)	7140 (281)	8220 (323)	XX00142A07	2435 (95.9)	56	2175 (85.6)	1060 (810)	560 (750)	1215 (1350)	1230 (1370)	
							5820 (229)	6720 (264)	7650 (301)	8810 (347)	XX00152A07	2591 (102.1)	60	2330 (91.7)	1120 (855)	595 (790)	1295 (1440)	1315 (1465)	
							6210 (244)	7170 (282)	8160 (321)	9400 (370)	XX00162A07	2747 (108.2)	64	2485 (97.9)	1185 (905)	625 (835)	1375 (1530)	1400 (1560)	
							6600 (260)	7610 (299)	8670 (341)	9980 (393)	XX00172A07	2900 (114.2)	68	2635 (103.9)	1240 (945)	655 (880)	1455 (1615)	1480 (1650)	
							6990 (275)	8060 (317)	9180 (361)	10570 (416)	XX00182A07	3056 (120.3)	72	2795 (110.0)	1300 (990)	690 (920)	1530 (1705)	1565 (1740)	
							7380 (290)	8510 (335)	9700 (381)	11170 (439)	XX00192A07	3212 (126.5)	76	2950 (116.2)	1355 (1030)	720 (960)	1610 (1790)	1645 (1830)	
							7770 (306)	8960 (353)	10210 (402)	11760 (463)	XX00202A07	3368 (132.6)	80	3105 (122.3)	1410 (1070)	745 (1000)	1685 (1875)	1725 (1920)	
							8150 (321)	9400 (370)	10710 (421)	12330 (485)	XX00212A07	3520 (138.6)	84	3260 (128.3)	1460 (1110)	775 (1040)	1760 (1960)	1800 (2005)	
							8540 (336)	9860 (388)	11220 (442)	12930 (509)	XX00222A07	3676 (144.8)	88	3415 (134.4)	1510 (1145)	800 (1075)	1835 (2040)	1880 (2090)	
							8930 (351)	10310 (406)	11740 (462)	13520 (532)	XX00232A07	3832 (150.9)	92	3570 (140.6)	1560 (1180)	830 (1110)	1910 (2125)	1955 (2175)	

Notes: (1) For voltages above 400 kV, and other section lengths, contact your Ohio Brass representative.
 (2) Electrical values are without corona ring. For voltages above 161 kV refer to Page 3 for Corona Rings, and associated physical/electrical changes to above data. Dimensions are within allowable tolerances as specified by IEC 1109 and ANSI C29.12.

Y-Clevis Tower Attachment Detail for all Hi*Lite XL Insulators



Rod Dia. mm (in.)	"D" Max. mm (in.)
16 (5/8")	13 (.53)
22 (7/8")	25 (1.0)

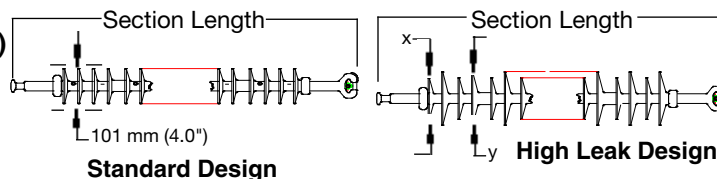
To achieve insulator SML value, proper grade steel should be used

Ground Fitting	Line Fitting	Suffix Code	Length Change	
			mm	Inches
Eye	Eye	2000	+59	+2.3
Eye	IEC 16 mm Ball	2007	+26	+1.0
Y-Clevis	IEC 16 mm Ball	2207	+24	+0.9
Y-Clevis	Eye	2200	+57	+2.2
IEC 16C Clevis	Eye	2800	+31	+1.2

22 mm (7/8") Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 160 kN (36,000 lbs.)
RTL = 80 kN (18,000 lbs.)

Insulators with either ANSI ball and/or socket end-fittings will be rated 133 kN (30,000 lbs.) SML and 66 kN (15,000 lbs.) RTL.



Type	x mm (in.)	y mm (in.)
A12..	97 (3.8)	114 (4.5)
D12..	109 (4.3)	140 (5.5)
G12..	130 (5.1)	160 (6.3)

Selection Guide Typical Line Voltage, kV ⁽¹⁾								Leakage Distance mm (in.) XX =				Catalog Number with IEC 20 mm ball and socket	Section Length mm (in.)	No. of Sheds	Dry Arc Distance mm (in.)	⁽²⁾ IEC Wet Switching Impulse Withstand (ANSI 60 Hz. Dry F.O.) kV	⁽²⁾ IEC Power Freq. Wet Withstand (ANSI 60 Hz. Wet F.O.) kV	⁽²⁾ IEC Light- ning Impulse Withstand (ANSI Critical Impulse F.O.) kV	
																		Pos-kV	Neg-kV
70	110	132	161	220	330	400	51 (45)	A1 1340 (53)	D1 1530 (60)	G1 1760 (69)	XX20032A09	795 (30.8)	12	470 (18.5)	260 (180)	135 (180)	275 (310)	255 (285)	
								1540 (60)	1790 (70)	2040 (80)	2350 (92)	XX20042A09	951 (37.0)	16	625 (24.6)	345 (245)	180 (240)	365 (410)	350 (390)
								1920 (75)	2230 (88)	2540 (100)	2920 (115)	XX20052A09	1104 (43.5)	20	775 (30.6)	420 (310)	220 (295)	450 (505)	440 (490)
								2310 (91)	2680 (105)	3060 (120)	3520 (138)	XX20062A09	1260 (49.6)	24	930 (36.8)	500 (370)	260 (350)	540 (605)	530 (595)
								2700 (106)	3130 (123)	3570 (140)	4110 (162)	XX20072A09	1416 (55.8)	28	1090 (42.9)	570 (430)	305 (405)	630 (700)	620 (695)
								3080 (121)	3580 (141)	4080 (160)	4700 (185)	XX20082A09	1572 (61.9)	32	1245 (49.0)	650 (490)	340 (455)	715 (795)	710 (795)
								3470 (136)	4020 (158)	4580 (180)	5280 (207)	XX20092A09	1724 (67.9)	36	1395 (55.0)	720 (545)	380 (505)	800 (890)	800 (890)
								3850 (151)	4480 (176)	5100 (200)	5870 (231)	XX20102A09	1880 (74.0)	40	1555 (61.2)	790 (600)	420 (555)	885 (985)	890 (990)
								4240 (167)	4930 (194)	5610 (221)	6460 (254)	XX20112A09	2036 (80.2)	44	1710 (67.3)	860 (655)	455 (605)	970 (1080)	975 (1090)
								4630 (182)	5370 (211)	6120 (241)	7050 (277)	XX20122A09	2192 (86.3)	48	1865 (73.5)	930 (710)	490 (655)	1050 (1170)	1065 (1185)
								5010 (197)	5820 (229)	6620 (261)	7630 (300)	XX20132A09	2344 (92.3)	52	2015 (79.5)	995 (760)	525 (700)	1135 (1260)	1145 (1280)
								5400 (212)	6270 (247)	7140 (281)	8220 (323)	XX20142A09	2500 (98.5)	56	2175 (85.6)	1060 (810)	560 (750)	1215 (1350)	1230 (1370)
								5790 (228)	6720 (264)	7650 (301)	8810 (347)	XX20152A09	2656 (104.6)	60	2330 (91.7)	1120 (855)	595 (790)	1295 (1440)	1315 (1465)
								6170 (243)	7170 (282)	8160 (321)	9400 (370)	XX20162A09	2812 (110.7)	64	2485 (97.9)	1185 (905)	625 (835)	1375 (1530)	1400 (1560)
								6560 (258)	7610 (299)	8670 (341)	9980 (393)	XX20172A09	2965 (116.7)	68	2635 (103.9)	1240 (945)	655 (880)	1455 (1615)	1480 (1650)
								6940 (273)	8060 (317)	9180 (361)	10570 (416)	XX20182A09	3120 (122.9)	72	2795 (110.0)	1300 (990)	690 (920)	1530 (1705)	1565 (1740)
								7330 (288)	8510 (335)	9700 (381)	11170 (439)	XX20192A09	3276 (128.9)	76	2950 (116.2)	1355 (1030)	720 (960)	1610 (1790)	1645 (1830)
								7720 (304)	8960 (353)	10210 (402)	11760 (463)	XX20202A09	3432 (135.2)	80	3105 (122.3)	1410 (1070)	745 (1000)	1685 (1875)	1725 (1920)
								8100 (319)	9400 (370)	10710 (421)	12330 (485)	XX20212A09	3585 (141.2)	84	3260 (128.3)	1460 (1110)	775 (1040)	1760 (1960)	1800 (2005)
								8490 (334)	9860 (388)	11220 (442)	12930 (509)	XX20222A09	3741 (147.3)	88	3415 (134.4)	1510 (1145)	800 (1075)	1835 (2040)	1880 (2090)
								8870 (349)	10310 (406)	11740 (462)	13520 (532)	XX20232A09	3897 (153.4)	92	3570 (140.6)	1560 (1180)	830 (1110)	1910 (2125)	1955 (2175)

Notes: (1) For voltages above 400 kV, and other section lengths, contact your Ohio Brass representative.
 (2) Electrical values are without corona ring. For voltages above 161 kV refer to Page 3 for Corona Rings, and associated physical/electrical changes to above data. Dimensions are within allowable tolerances as specified by IEC 1109 and ANSI C29.12.

Corona Ring Example

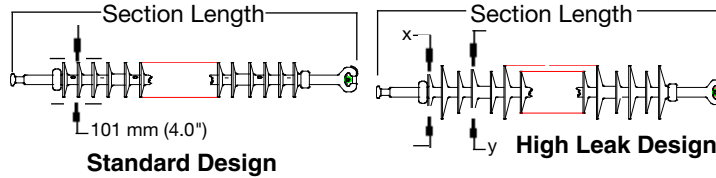
You have selected Catalog #D120122A09, the typical application is 220kV. From page 3, you would select ring 2717613002 on the bottom end. The physical/electrical characteristics would change per the table on page 3.

Ground Fitting	Line Fitting	SML kN (lbs.)	Suffix Code	Length Change	
				mm	In.
Eye	Eye	160 kN (36K)	2000	+40	+1.5
Eye	IEC 20 mm Ball	160 kN (36K)	2009	+21	+0.8
Y-Clevis	Eye	160 kN (36K)	2200	+27	+1.0
Eye	ANSI 52-5 Ball	133 kN (30K)	2001	+2	+0.1
Y-Clevis	IEC 20 mm Ball	160 kN (36K)	2209	+8	+0.3
Y-Clevis	ANSI 52-5 Ball	133 kN (30K)	2201	-11	-0.4
ANSI 52-5 Socket	ANSI 52-5 Ball	133 kN (30K)	2301	-35	-1.3

22 mm (7/8") Rod Diameter Suspension Insulators

Mechanical Ratings
SML = 210 kN
RTL = 55 kN

ANSI fittings are capable of 222 kN SML (50K lbs.)

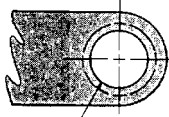


Type	x mm (in.)	y mm (in.)
A13..	97 (3.8)	114 (4.5)
D13..	109 (4.3)	140 (5.5)
G13..	130 (5.1)	160 (6.3)

Selection Guide Typical Line Voltage, kV ⁽¹⁾							Leakage Distance mm (in.) XX =				Catalog Number with IEC 20 mm ball and socket	Section Length mm (in.)	No. of Sheds	Dry Arc Distance mm (in.)	⁽²⁾ IEC Wet Switching Impulse Withstand (ANSI 60 Hz. Dry F.O.) kV	⁽²⁾ IEC Power Freq. Wet Withstand (ANSI 60 Hz. Wet F.O.) kV	⁽²⁾ IEC Light- ning Impulse Withstand (ANSI Critical Impulse F.O.) kV	
69	115	138	161	220	330	400	51	A1	D1	G1							Pos-kV	Neg-kV
							1150 (45)	1340 (53)	1530 (60)	1760 (69)	XX30032A07	795 (30.8)	12	470 (18.5)	260 (180)	135 (180)	275 (310)	255 (285)
							1540 (60)	1790 (70)	2040 (80)	2350 (92)	XX30042A07	951 (37.0)	16	625 (24.6)	345 (245)	180 (240)	365 (410)	350 (390)
							1920 (75)	2230 (88)	2540 (100)	2920 (115)	XX30052A07	1104 (43.5)	20	775 (30.6)	420 (310)	220 (295)	450 (505)	440 (490)
							2310 (91)	2680 (105)	3060 (120)	3520 (138)	XX30062A07	1260 (49.6)	24	930 (36.8)	500 (370)	260 (350)	540 (605)	530 (595)
							2700 (106)	3130 (123)	3570 (140)	4110 (162)	XX30072A07	1416 (55.8)	28	1090 (42.9)	570 (430)	305 (405)	630 (700)	620 (695)
							3080 (121)	3580 (141)	4080 (160)	4700 (185)	XX30082A07	1572 (61.9)	32	1245 (49.0)	650 (490)	340 (455)	715 (795)	710 (795)
							3470 (136)	4020 (158)	4580 (180)	5280 (207)	XX30092A07	1724 (67.9)	36	1395 (55.0)	720 (545)	380 (505)	800 (890)	800 (890)
							3850 (151)	4480 (176)	5100 (200)	5870 (231)	XX30102A07	1880 (74.0)	40	1555 (61.2)	790 (600)	420 (555)	885 (985)	890 (990)
							4240 (167)	4930 (194)	5610 (221)	6460 (254)	XX30112A07	2036 (80.2)	44	1710 (67.3)	860 (655)	455 (605)	970 (1080)	975 (1090)
							4630 (182)	5370 (211)	6120 (241)	7050 (277)	XX30122A07	2192 (86.3)	48	1865 (73.5)	930 (710)	490 (655)	1050 (1170)	1065 (1185)
							5010 (197)	5820 (229)	6620 (261)	7630 (300)	XX30132A07	2344 (92.3)	52	2015 (79.5)	995 (760)	525 (700)	1135 (1260)	1145 (1280)
							5400 (212)	6270 (247)	7140 (281)	8220 (323)	XX30142A07	2500 (98.5)	56	2175 (85.6)	1060 (810)	560 (750)	1215 (1350)	1230 (1370)
							5790 (228)	6720 (264)	7650 (301)	8810 (347)	XX30152A07	2656 (104.6)	60	2330 (91.7)	1120 (855)	595 (790)	1295 (1440)	1315 (1465)
							6170 (243)	7170 (282)	8160 (321)	9400 (370)	XX30162A07	2812 (110.7)	64	2485 (97.9)	1185 (905)	625 (835)	1375 (1530)	1400 (1560)
							6560 (258)	7610 (299)	8670 (341)	9980 (393)	XX30172A07	2965 (116.7)	68	2635 (103.9)	1240 (945)	655 (880)	1455 (1615)	1480 (1650)
							6940 (273)	8060 (317)	9180 (361)	10570 (416)	XX30182A07	3120 (122.9)	72	2795 (110.0)	1300 (990)	690 (920)	1530 (1705)	1565 (1740)
							7330 (288)	8510 (335)	9700 (381)	11170 (439)	XX30192A07	3276 (128.9)	76	2950 (116.2)	1355 (1030)	720 (960)	1610 (1790)	1645 (1830)
							7720 (304)	8960 (353)	10210 (402)	11760 (463)	XX30202A07	3432 (135.2)	80	3105 (122.3)	1410 (1070)	745 (1000)	1685 (1875)	1725 (1920)
							8100 (319)	9400 (370)	10710 (421)	12330 (485)	XX30212A07	3585 (141.2)	84	3260 (128.3)	1460 (1110)	775 (1040)	1760 (1960)	1800 (2005)
							8490 (334)	9860 (388)	11220 (442)	12930 (509)	XX30222A07	3741 (147.3)	88	3415 (134.4)	1510 (1145)	800 (1075)	1835 (2040)	1880 (2090)
							8870 (349)	10310 (406)	11740 (462)	13520 (532)	XX30232A07	3897 (153.4)	92	3570 (140.6)	1560 (1180)	830 (1110)	1910 (2125)	1955 (2175)

Notes: (1) For voltages above 400 kV, and other section lengths, contact your Ohio Brass representative.
 (2) Electrical values are without corona ring. For voltages above 161 kV refer to Page 3 for Corona Rings, and associated physical/electrical changes to above data. Dimensions are within allowable tolerances as specified by IEC 1109 and ANSI C29.12.

Y-Clevis Tower Attachment Detail for all Hi*Lite XL Insulators



25 mm (1") Dia. Minimum
 3 mm (1/8") x 45° Chamfer

"D" Max.
 19 mm (3/4") Max.

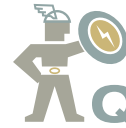
Rod Dia. mm (in.)	"D" Max. mm (in.)
16 (5/8")	13 (.53)
22 (7/8")	25 (1.0)

To achieve insulator SML value, proper grade steel should be used.

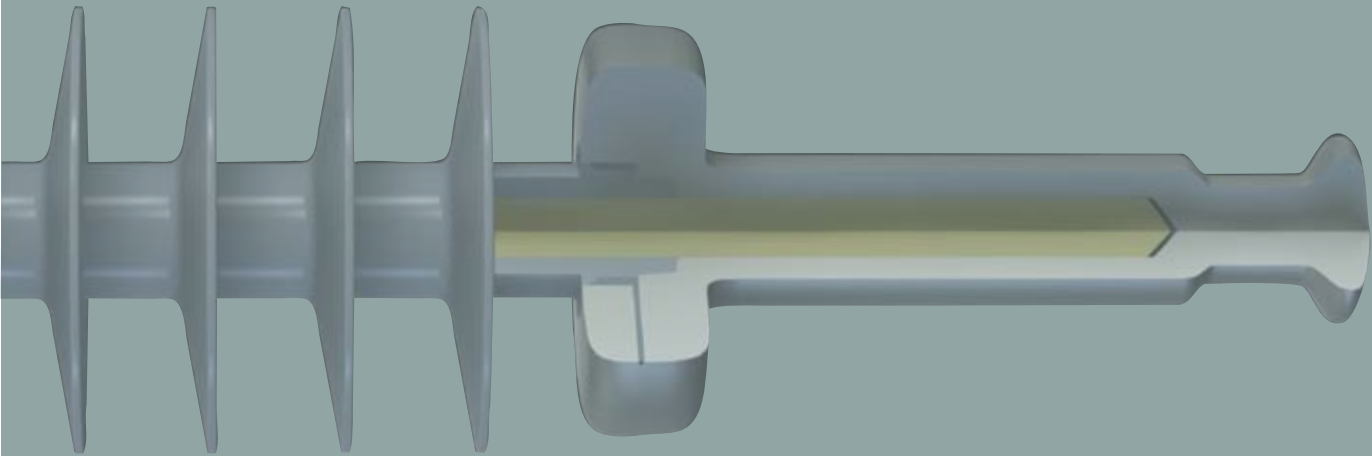
Ground Fitting	Line Fitting	Suffix Code	Length Change	
			mm	Inches
Eye	Eye	2000	+40	+1.5
Eye	IEC 20mm Ball	2007	+18	+0.7
ANSI 52-11 Socket	ANSI 52-11 Ball	2301	-16	-0.6
Eye	ANSI 52-11 Ball	2001	+2	+0.1
Y-Clevis	Eye	2200	+19	+0.7
Y-Clevis	ANSI 52-11 Ball	2201	-13	-0.5
Y-Clevis	IEC 20 mm Ball	2207	+4	+0.1
Eye	IEC 19L Clevis	2800	+31	+1.2



A Better Design. A Better Insulator.



Quadri*Sil[®]
Insulators



LIMITED WARRANTY AND LIMITATION OF LIABILITY

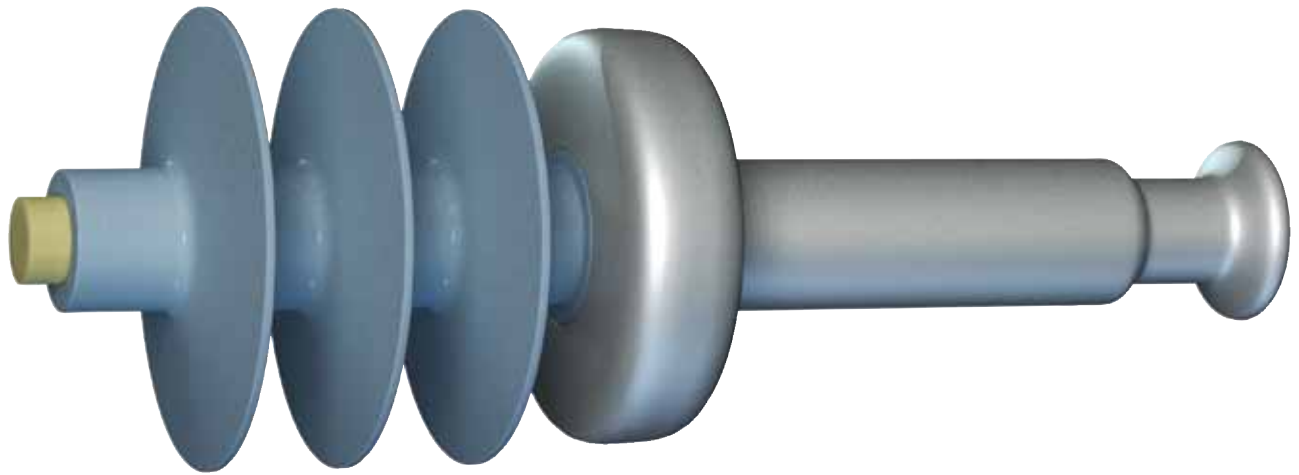
MATERIAL: HPS warrants all products sold by it to be merchantable (as such term is defined in the Uniform Commercial Code) and to be free from defects in material and workmanship. Buyer must notify HPS promptly of any claim under this warranty. The Buyer's exclusive remedy for breach of this warranty shall be the repair or replacement, F.O.B. factory, at HPS's option, of any product defective under the warranty, which is returned to HPS within one year from the date of shipment. NO OTHER WARRANTY, WHETHER EXPRESS OR ARISING BY OPERATION OF THE LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE IMPLIED, SHALL EXIST IN CONNECTION WITH HPS'S PRODUCTS OR ANY SALE OR USE THEREOF. HPS SHALL IN NO EVENT BE LIABLE FOR ANY LOSS OF PROFITS OR CONSEQUENTIAL OR SPECIAL DAMAGES INCURRED BY BUYER. HPS's warranty shall run only to the first Buyer of a product from HPS, from HPS's Buyer, or from an original equipment manufacturer reselling HPS's product, and is non-assignable and non-transferable and shall be of no force and effect if asserted by any person other than such first Buyer. This warranty applies only to the use of the product as intended by HPS and does not cover any modification, misapplication, or misuse of said product.

APPLICATION: HPS 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. 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 HPS, its liability will be limited to the reperformance of any such analysis or study.

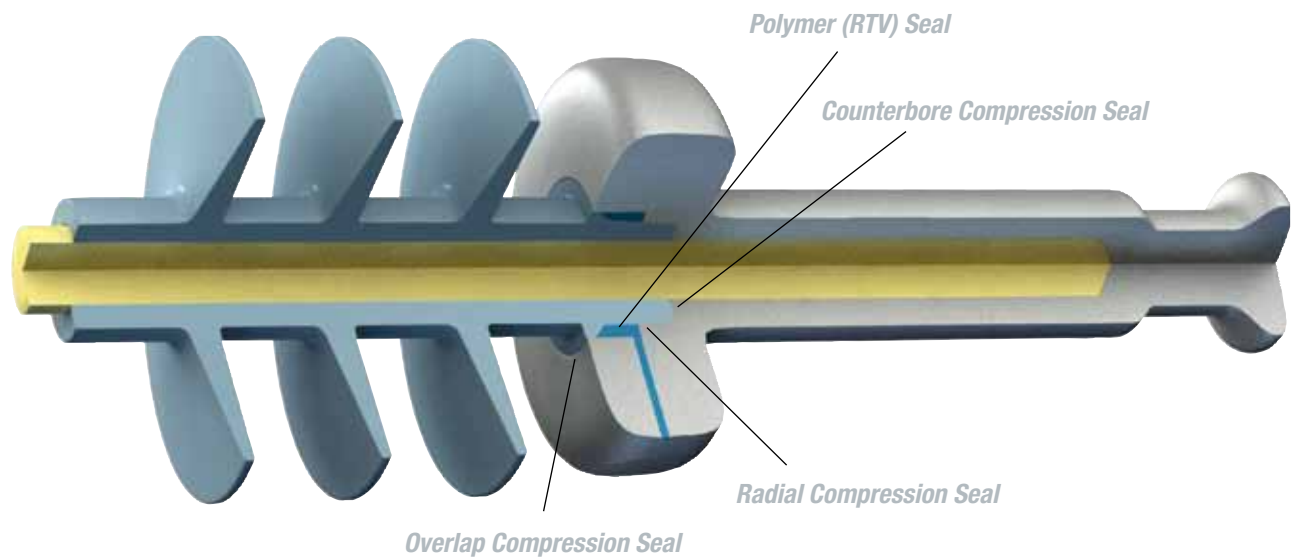
PURCHASER INSPECTIONS: Tests, inspections and acceptance of all material must be made at the factory. Purchasers' inspectors are welcome at the factories and are provided with the necessary facilities for carrying out their work. Name and phone number of who should be contacted for inspection should be given to HPS no later than two weeks prior to scheduled shipment date. LIMITATION OF LIABILITY: IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT OR WARRANTY OR ALLEGED NEGLIGENCE, SHALL HPS BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUE, LOSS OF USE OF THE EQUIPMENT OR ANY ASSOCIATED EQUIPMENT, LOSS OF CAPITAL, COST OF SUBSTITUTE EQUIPMENT, FACILITIES OR SERVICES, DOWNTIME COSTS, OR CLAIMS OF THIRD PARTIES OF THE BUYER FOR SUCH DAMAGES. Any claim by Buyer for breach of the foregoing warranty shall be deemed waived by Buyer unless submitted to HPS in writing within thirty (30) days from the date Buyer discovered, or by reasonable inspection should have discovered the alleged breach. Any cause of action for breach of the foregoing warranty shall be brought within one year after the cause of action has accrued.

1850 Richland Avenue East, Aiken, SC 29801
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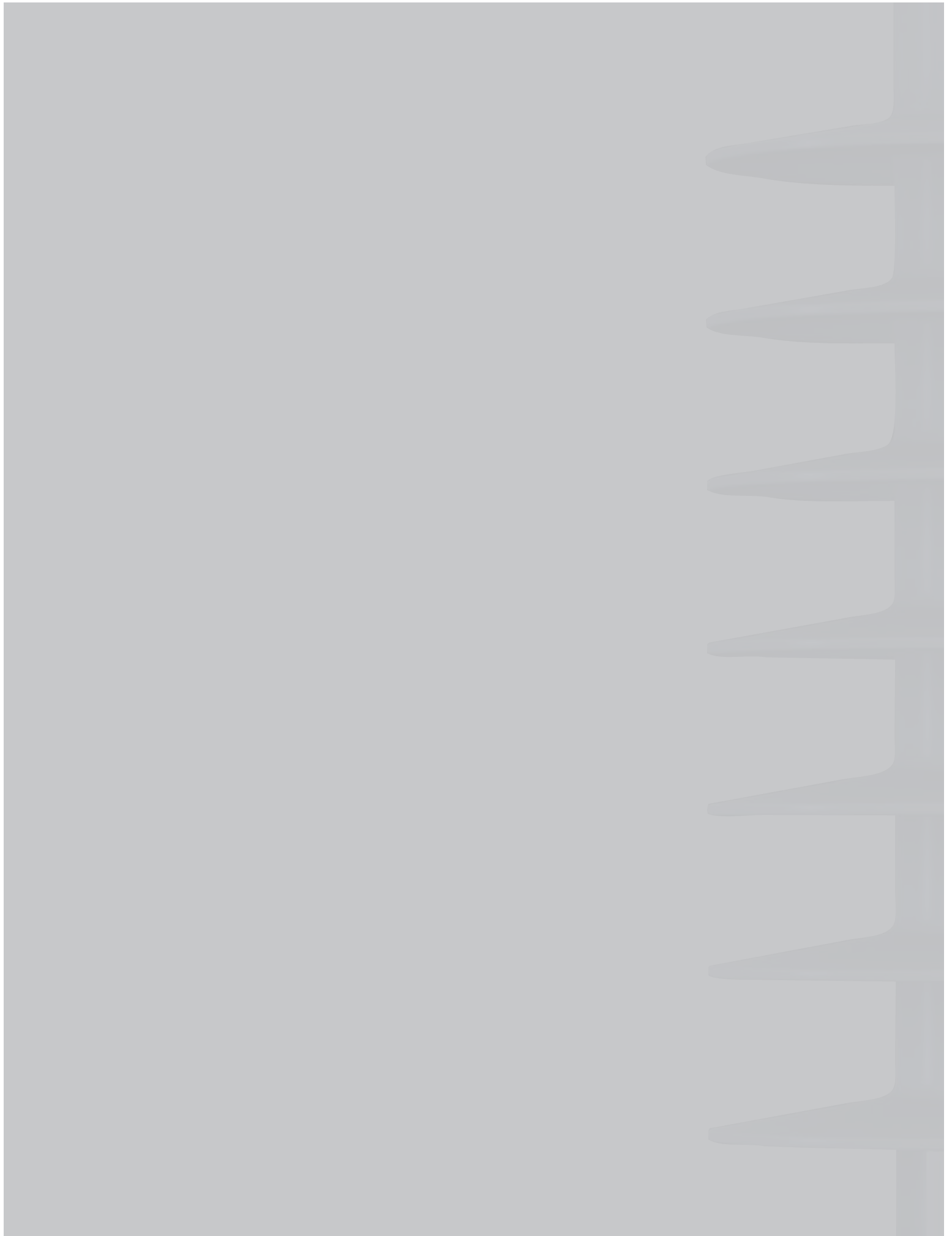
NOTE: Because Hubbell has a policy of continuous product improvement, we reserve the right to change design and specifications without notice.



A Better Design. A Better Insulator.



Our Exclusive Four-Point Seal



Quadri*Sil® Insulators — *A Century in the Making*

With nearly 100 years of Ohio Brass insulator experience and product innovation, it's no surprise that the next generation of insulator reliability carries the trusted name of Ohio Brass.

Ohio Brass (Hubbell Power Systems) is proud to offer a transmission insulator that triumphs over today's unpredictable environment. Appropriately named, the Quadri*Sil® insulator incorporates a revolutionary four-point seal that, quite simply. . . **prohibits moisture intrusion.**

The Ohio Brass commitment is simple and complete: we provide our customers the finest, most advanced products and expert technical assistance, before and after purchase. Every day. Worldwide.

In addition, the Quadri*Sil® insulator optimizes the Ohio Brass commitment to excellence and the advancement of processes and materials. With a **proprietary** silicone-rubber compound and end-seal design, this direct-bonded insulator offers assurance that **moisture penetration does not occur.**



Today's environment is unpredictable. Your insulator can't be.

QUADRI*SIL® GENERAL INFORMATION

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LINE POST INSULATORS

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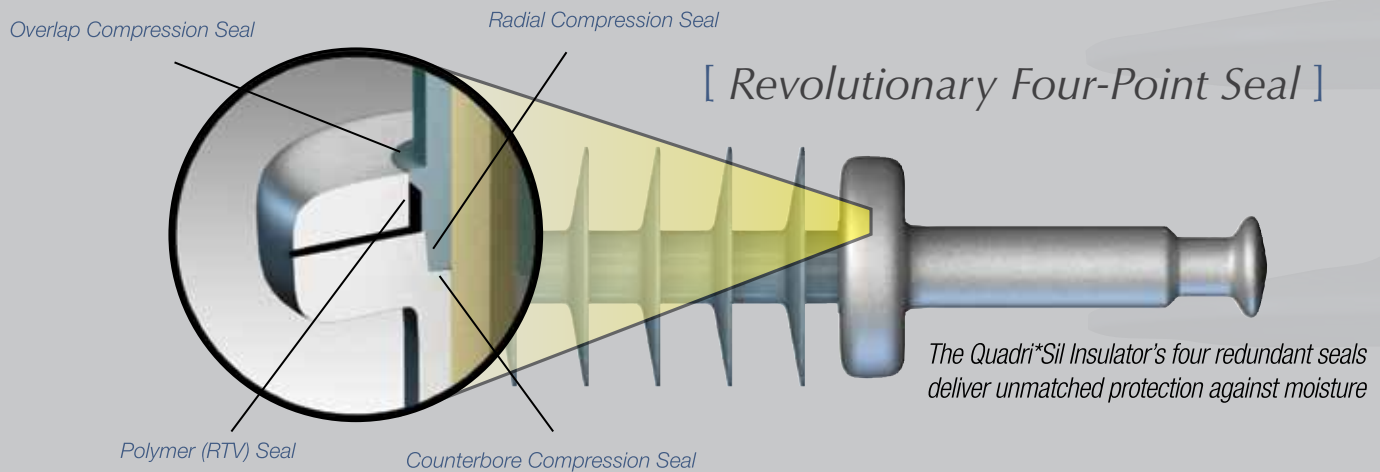
BRACED POST INSULATORS

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Design

Sealing System — This four-point sealing system provides **superior performance** by preventing moisture penetration between the silicone rubber and end-fitting interface. The design is based on four redundant seals that provide **unmatched protection** to the fiberglass core rod. RTV (Room Temperature Vulcanate) is completely encapsulated within the interior of the end-fitting and is not utilized as an exterior seal as with other silicone designs.



Corona Shielding Ring (CSR) — The Quadri*Sil® end-fitting design provides superior electric field shielding of the silicone rubber adjacent to the end-fitting. The superior shielding protects the silicone rubber on applications where an external corona ring is not required.

Direct Bond — The silicone rubber material is bonded directly to the fiberglass core rod during the molding process. The resulting bond between the silicone rubber and fiberglass rod is mechanically stronger than the tear strength of the silicone rubber.

Crimp Method — A circumferential crimp creates a more uniform stress distribution to ensure the mechanical integrity of the Quadri*Sil® insulator. Ohio Brass pioneered the crimping process in 1976 — today it has become the industry standard.

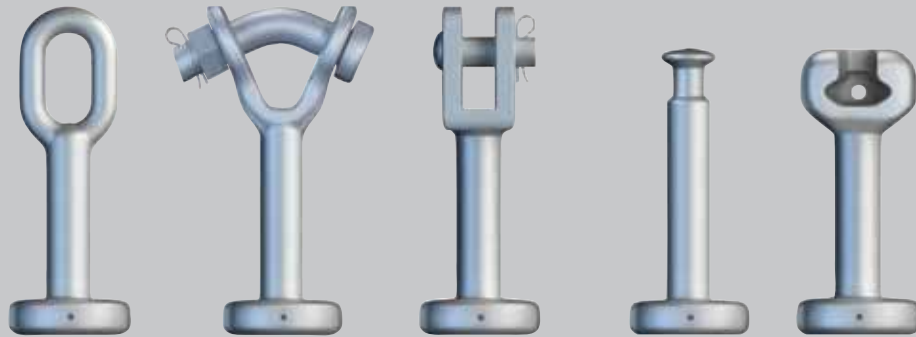


Components and Materials

Polymer Weathersheds — The polymer weathershed material utilized in the Quadri*Sil® insulator design is a proprietary silicone-rubber compound specifically designed by Ohio Brass engineers for high-voltage insulator applications. The polymer weathershed material starts with **100-percent base silicone rubber** before additives and fillers are compounded with the base rubber. Hubbell Power Systems (HPS) **controls the entire process** from the proprietary formulation to the complete mixing process. The proprietary formulation incorporates the inherent hydrophobicity and UV performance of silicone rubber while providing **superior tracking performance** as demonstrated in dry-band arcing tests. **For more information about our silicone rubber, please contact your HPS representative.**

Fiberglass Core Rod — The Quadri*Sil® suspension insulator's fiberglass core rod is produced with boron-free, corrosion-resistant E-glass and epoxy resin. Quadri*Sil® line post insulators are manufactured with electrical grade glass and epoxy resin.

End Fittings — Made of steel or ductile iron, the end-fittings are directly attached to the fiberglass core rod by a circumferential crimping process. This crimping process allows the end fittings to utilize the rod's inherent tensile strength.



Grading Rings — Also known as corona rings, grading rings are manufactured using high-grade aluminum alloy, making them strong, light, and corrosion-resistant. Grading (corona) rings can be packaged separately or inside the insulator crates with all mounting hardware included.

Leakage Distance

Quadri*Sil® suspension insulators feature standard and high leakage distance weathershed profiles for maximum resistance to contamination and leakage currents in various environmental applications. The hydrophobic nature of our silicone rubber ensures superior performance in contaminated environments.

High Pressure Washing

Quadri*Sil® transmission insulators normally do not require washing or other routine maintenance. Washing may be required if the insulators are installed in an area of severe environmental contamination. In the event that washing is required, the procedures outlined in Section IX of the “IEEE GUIDE FOR INSULATOR CLEANING,” IEEE STD 957-2005 are generally applicable.

Mechanical Ratings

Quadri*Sil® suspension insulators are rated and tested in accordance with IEC 61109 and ANSI C29.12. Quadri*Sil® line post insulators are rated and tested in accordance with IEC 61952 and ANSI C29.17. Certified test reports are available.

For suspension insulators, SML ratings are 120 kN, 160 kN, 210 kN, 25 kip, 30 kip, and 50 kip with appropriate rod size and end fittings. RTL ratings are consistent with the IEC and ANSI standards. Factory routine tests are conducted on 100 percent of all insulators to the RTL rating.

Markings

Markings for Quadri*Sil® suspension insulators are placed on a UV-resistant label located on the ground end fitting. Markings for Quadri*Sil® line post insulators are placed on a metal plate on the mounting base of the insulator. Markings include SML and RTL (for suspension), SCL and RCL (for line post), part number, assembly date code, and Hubbell Power Systems identification.

These markings are consistent with applicable IEC and ANSI standards.

Insulator Lengths

Quadri*Sil® suspension insulators are available in lengths appropriate for 69 kV through 765 kV. Longer lengths can be produced for special projects. Intermediate lengths – those that fall in between the catalog numbers listed in the tables – are also available. Length increments are approximately 2.2 inches (56 mm) for suspension insulators and 2.4 inches (61 mm) for vertical and horizontal line post insulators.



Testing

Quadri*Sil® insulators have been tested successfully to meet the requirements of IEC 61109 and ANSI C29.11. For a certified test report or additional information related to product testing, please contact your HPS representative.



Packaging

Quadri*Sil® suspension insulators are packaged in wooden crates 44 inches (111.7 cm) wide with the length of the crate determined by the length of the insulator. The height of the crate is normally less than 45 inches (114.3 cm). The gross weight will not exceed 2,000 pounds (909 kg). Crates are available for both domestic and export transportation.

The Quadri*Sil® line post insulators are packaged in appropriate quantities in open wood crates. Line post insulators are packaged to prevent the metal bases from resting on the polymer weathershed material.



CATALOG NUMBER KEY

The Quadri*Sil® Insulators Numbering Scheme is organized according to a smart numbering system. Each group of digits defines a characteristic of the product you are ordering. To fill out this form, start on “a: Insulator Type.” Then, fill in your selection in the box corresponding to the letter “a.” Apply the same rule for all the other sections.

a Insulator Type **P** — Post or **S** — Suspension

a) **Insulator Type.** Defines your insulator type: Post or Suspension. Select “P” or “S” for Post or Suspension, respectively, and fill in your selection in the box designated for “a.” In this example, we selected a suspension insulator.

S

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

b Mechanical Strength

Suspension (SML), Rod Diameter

- 025** — 25 kip, 5/8” (16 mm)
- 030** — 30 kip, 5/8” (16 mm)
- 050** — 50 kip, 7/8” (22 mm)
- 120** — 120 kN, 5/8” (16 mm)
- 160** — 160 kN, 7/8” (22 mm)
- 210** — 210 kN, 7/8” (22 mm)

Post

- 250** — Series 250, standard strength 2.5”, (63.5 mm)

b) **Strength.** Defines the mechanical strength of your insulator. Fill in your selection in the boxes designated for “b.”

Note: kip = Kilopound, kN = Kilonewton

For example, if you want a Suspension insulator with 25 kip, this is what your form would look like so far:

S **0** **2** **5**

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

c Polymer Length

3 digits for distance between metal parts, in inches

c) **Polymer Length.** Defines the polymer length of the insulator (please use catalog tables for possible polymer lengths). Fill in your selection in the boxes designated for section “c.” For example, if you want a 49-inch polymer length, enter:

S **0** **2** **5** **0** **4** **9**

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

d Weathershed Profile

Suspension

- S** — Standard Leakage Distance (2.5)
- H** — High Leakage Distance (2.9 or 3.3)

Post

- S** — Standard Leakage Distance

d) **Weathershed Profile.** Defines the leakage distance design. For a suspension insulator with standard leakage distance, use “S.” For a suspension insulator with high leakage distance, use “H.” For a line post, only the standard leakage distance design is available. Fill in your selection in the box designated for “d.” For example, if you want an insulator with high leakage distance, you would place an “H” in the box designated “d.”

S **0** **2** **5** **0** **4** **9** **H**

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

e Top Fitting

<i>Suspension Insulators</i>	<i>Line Post Insulators</i>
0 — Chain Eye	0 — Tear Drop Blade
1 — ANSI Ball	1 — Horizontal Clamptop
2 — Y-Clevis	2 — Vertical Clamptop
3 — ANSI Socket	3 — 5” (127 mm) Bolt Circle 5/8” (16 mm) Tapped Hole
4 — ANSI Straight Clevis	5 — 5” (127 mm) Bolt Circle 5/8” (16 mm) Through Hole
7 — IEC Ball Fitting 16 mm for 120 kN 20 mm for 160 kN and 210 kN	9 — Long Tear Drop Blade
8 — IEC Straight Clevis	
A — IEC Socket 16 mm for 120 kN 20 mm for 160 kN and 210 kN	

e) **Top Fitting.** Defines the top end fitting of your insulator. Fill in your selection in the box designated for “e.” For example, if you want a suspension insulator with a Y-clevis top end fitting, you would place a “2” in the box designated for “e.”

S **0** **2** **5** **0** **4** **9** **H** **2**

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

f**Bottom Fitting**

f) **Bottom Fitting.** Defines the bottom end fitting of your insulator. Fill in your selection in the boxes designated for "f." For example, if you want an ANSI ball bottom end fitting, you would place "01" in the boxes designated for "f."

a b b b c c c d e f f g

Suspension Insulators	Line Post Insulators
00 - Chain Eye	02 - Aluminum Gain 12" (305 mm) CL ¹ mounting
01 - ANSI Ball	03 - Aluminum Flat 8"x 10" (203 mm x 254 mm), 15/16" (24 mm) hole diameter
02 - Y-Clevis	04 - Aluminum Flat 8"x 13" (203 mm x 330 mm), 15/16" (24 mm) hole diameter
03 - ANSI Socket	05 - 5" (127 mm) Bolt Circle, 5/8" (16 mm) tapped hole
04 - ANSI Straight Clevis	07 - Steel Gain 12" (305 mm) CL mounting, 15/16" (24 mm) hole diameter
07 - IEC Ball Fitting 16 mm for 120 kN or 20 mm for 160 kN and 210 kN	08 - Steel Flat 8"x 13" (203 mm x 330 mm) MS ² , 15/16" (24 mm) hole diameter
08 - IEC Straight Clevis	15 - 5" (127 mm) Bolt Circle, 5/8" (16 mm) through hole
0A - IEC Socket 16 mm for 120 kN or 20 mm for 160 kN and 210 kN	Vertical Gain - See page 23 Table B
	¹ Center Line ² Horizontal x Vertical Mounting Pattern Spacing

g**Rings**

- 0 — No ring required
- A — ≥220 kV, 8" (203 mm) ring for suspension, 12" (305 mm) ring for series 250 post
- B — ≥330 kV, 12" (305 mm) ring for suspension, 15" (381 mm) ring for series 250 post
- C — ≥400 kV, 12" (305 mm) line end and 8" (203 mm) ground end ring for suspension
- D — ≥500 kV, 15" (381 mm) line end and 8" (203 mm) ground end ring for suspension
- E — ≥735 kV, 15" (381 mm) line end and 12" (305 mm) ground end ring for suspension

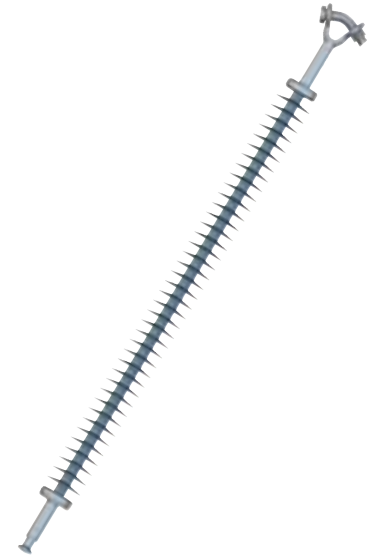
g) **Rings.** Defines your need for a Corona Ring. Fill in your selection in the box designated for "g." The example below shows a selection of a corona ring for 220 kV, 8" (203 mm) for a suspension insulator. Thus, "A" was placed in the box designated for "g."

a b b b c c c d e f f g

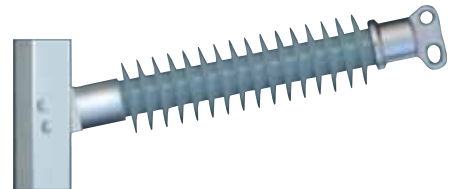
Your complete part number will be S025049H201A

Examples:

Suspension Insulator, 25 kip, 49" of Polymer Length, Standard Leakage Distance Profile (2.5), Top Fitting: Y-Clevis, Bottom Fitting: ANSI Ball, No Corona Ring
S025049S2010



Line Post Insulator, 2.5" (63.5 mm) Rod Diameter, 21.9" Polymer Length, Standard Leakage Distance, Top Fitting: Tear Drop Blade, Bottom Fitting: 2-Piece Aluminum Gain Base, No Corona Ring
P250021S0020



Your final catalog number should look like this

Fill out boxes according to instructions

a b b b c c c d e f f g



Suspension Insulators

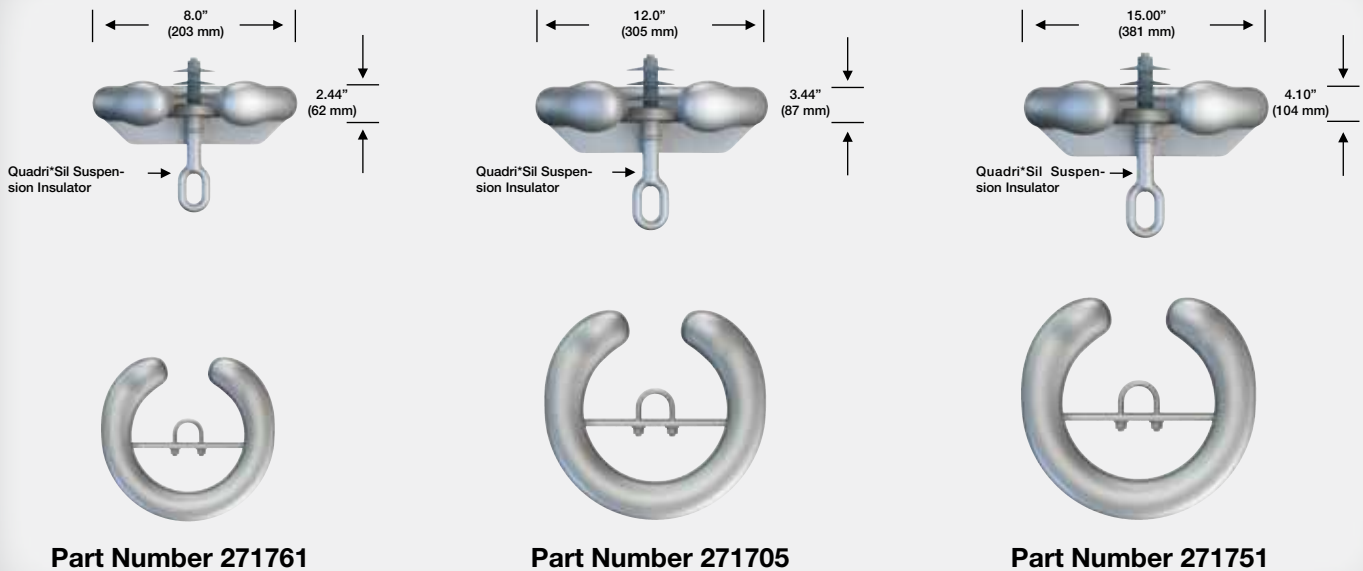
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Corona Performance

Quadri*Sil® insulators are RIV and corona free through 161 kV. The use of an external corona shielding ring is required at 220 / 230 kV and above. The table below details the rings necessary for 220 / 230 kV and above.

Recommended Corona Ring Installation Table Normal Applications: Top Grounded, Bottom Energized

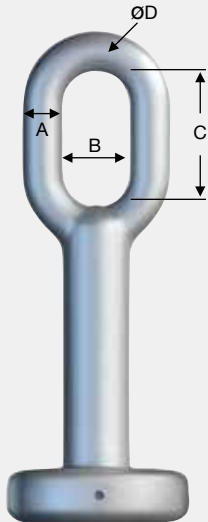
Line Voltage (kV)	Recommended Corona Rings by Line Voltage			Corona Ring Part Numbers			
	Ground End	Line End		25 kip, 30 kip, 120 kN, 133 kN		50 kip, 160 kN, 210 kN	
				Ground End	Line End	Ground End	Line End
220/230 kV	None	8" (203 mm)		-	2717613001	-	2717613002
330/345 kV	None	12" (305 mm)		-	2717053001	-	2717053002
400 kV	8" (203 mm)	12" (305 mm)		2717613001	2717053001	2717613002	2717053002
500 kV	8" (203 mm)	15" (381 mm)		2717613001	2717513001	2717613002	2717513002



Electrical/Dimensional Changes to the Suspension Insulator with External Corona Ring

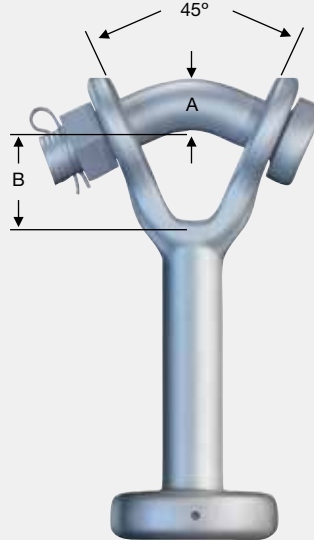
Physical and Electrical Characteristics	220/230 kV Ring	330/345 kV Ring	400 kV Ring	500 kV Ring
Dry Arc Distance inches (mm)	-0.63 (-16)	-1.32 (33.5)	-1.95 (49.5)	-2.67 (67.8)
Leakage Distance inches (mm)	0	0	0	0
ANSI 60 Hz Flashover Dry — kV	-10	-20	-20	-30
ANSI 60 Hz Flashover Wet — kV	-10	-10	-20	-30
ANSI Critical Flashover Positive — kV	-10	-20	-30	-40
ANSI Critical Flashover Negative — kV	-10	-20	-30	-50
IEC Wet Switching Impulse Withstand — kV	N/A	N/A	N/A	N/A
IEC Power Frequency Wet Withstand — kV	-10	-10	-20	-30
IEC Lightning Impulse Withstand Positive — kV	-10	-20	-30	-40
IEC Lightning Impulse Withstand Negative — kV	-10	-20	-30	-50
Net Weight pounds (kg)	2.1 (1.0)	2.9 (1.3)	5.0 (2.3)	6.5 (2.9)

MOST COMMON END FITTINGS



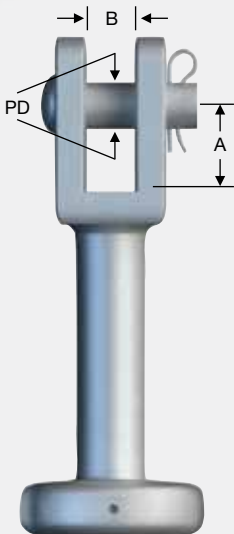
Chain Eye

SML	Dimensions in. (mm)			
	A	B	C	D
25 kip (111 kN)	0.62 (15.74)	1.00 (25.4)	2.00 (50.8)	0.62 (15.74)
120 kN	0.62 (15.74)	1.00 (25.4)	2.00 (50.8)	0.62 (15.74)
30 kip (133 kN)	0.75 (19.05)	1.00 (25.4)	2.00 (50.8)	0.85 (21.59)
36 kip (160 kN)	0.75 (19.05)	1.00 (25.4)	2.00 (50.8)	0.85 (21.59)
210 kN	0.75 (19.05)	1.00 (25.4)	2.00 (50.8)	0.85 (21.59)
50 kip (222 kN)	0.75 (19.05)	1.00 (25.4)	2.00 (50.8)	0.85 (21.59)



Y-Clevis

SML	Dimensions in. (mm)		
	A	B	Bolt Dia.
25 kip (111 kN)	0.75 (19.05)	1.53 (38.86)	0.75 (19)
120 kN	0.75 (19.05)	1.53 (38.86)	0.75 (19)
30 kip (133 kN)	0.88 (22.35)	1.59 (40.39)	0.88 (22)
36 kip (160 kN)	0.88 (22.35)	1.59 (40.39)	0.88 (22)
210 kN	0.88 (22.35)	1.59 (40.39)	0.88 (22)
50 kip (222 kN)	0.88 (22.35)	1.59 (40.39)	0.88 (22)



Straight Clevis

SML	Dimensions in. (mm)			
	Class	A	B	PD
25 kip (111 kN)	ANSI 52-6	1.41 (36)	0.75 (19)	0.62 (16)
120 kN	IEC 16C	1.41 (36)	0.75 (19)	0.62 (16)
30 kip (133 kN)	ANSI 52-6	1.41 (36)	0.75 (19)	0.62 (16)
36 kip (160 kN)	IEC 19L	1.81 (46)	0.83 (21)	0.75 (19)
210 kN	IEC 19L	1.81 (46)	0.83 (21)	0.75 (19)
50 kip (222 kN)	N/A			



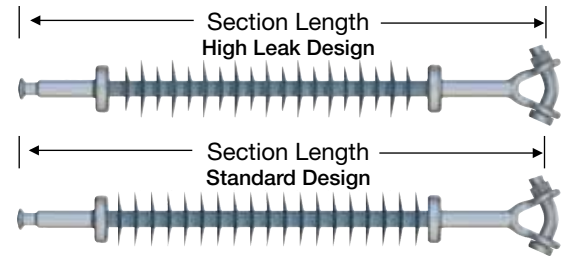
Ball/Socket

SML	Class
25 kip (111 kN)	ANSI 52-5
120 kN	IEC 16 mm
30 kip (133 kN)	ANSI 52-5
36 kip (160 kN)	ANSI 52-8 (IEC 20 mm)
210 kN	IEC 20 mm
50 kip (222 kN)	ANSI 52-11

Suspension Insulators

Mechanical Ratings SML = 25 kip/120 kN RTL = 12.5 kip/60 kN

Rod Diameter: 5/8" (16 mm)



Selection Guide: Typical Line Voltage, kV	Catalog Numbers ANSI / IEC	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values		
						60-Hz Dry Flashover (kV)	60-Hz Wet Flashover (kV)	Critical Impulse Positive (kV)	Critical Impulse Negative (kV)	60-Hz 1-minute Wet Withstand (kV)	Impulse Positive Withstand (kV)	Impulse Negative Withstand (kV)
69	S025021S2010 / S120021S2010	021	33.3 (846)	21.5 (546)	55 (1397)	220	210	370	350	145	315	300
110	S025021H2010 / S120021H2010	021	33.3 (846)	22 (559)	64 (1626)	220	210	370	350	150	325	305
132	S025023S2010 / S120023S2010	023	35.4 (899)	23.7 (602)	60 (1524)	250	235	415	395	165	350	330
161	S025023H2010 / S120023H2010	023	35.4 (899)	24.1 (612)	71 (1803)	250	235	415	395	165	355	335
220	S025030S2010 / S120030S2010	030	41.9 (1064)	30.2 (767)	77 (1956)	315	305	525	510	210	445	430
330	S025030H2010 / S120030H2010	030	41.9 (1064)	30.6 (777)	90 (2286)	320	305	535	515	210	450	435
400	S025036S2010 / S120036S2010	036	48.4 (1229)	36.6 (930)	93 (2362)	385	365	635	620	255	540	525
	S025036H2010 / S120036H2010	036	48.4 (1229)	37.1 (942)	110 (2794)	390	370	645	620	260	540	535
	S025043S2010 / S120043S2010	043	54.9 (1394)	43.1 (1095)	110 (2794)	460	435	730	725	300	630	625
	S025043H2010 / S120043H2010	043	54.9 (1394)	43.6 (1107)	129 (3277)	465	440	740	730	305	635	630
	S025047S2010 / S120047S2010	047	59.2 (1504)	47.4 (1204)	121 (3073)	500	475	800	795	330	690	685
	S025047H2010 / S120047H2010	047	59.2 (1504)	47.9 (1217)	142 (3607)	510	475	805	800	330	695	690
	S025051S2010 / S120051S2010	051	63.5 (1613)	51.8 (1316)	132 (3353)	540	510	865	865	360	750	750
	S025051H2010 / S120051H2010	051	63.5 (1613)	52.2 (1326)	155 (3937)	540	510	875	870	360	760	755
	S025056S2010 / S120056S2010	056	67.8 (1722)	56.1 (1425)	143 (3632)	585	545	935	935	385	810	810
	S025056H2010 / S120056H2010	056	67.8 (1722)	56.5 (1435)	168 (4267)	585	550	940	940	390	815	815
	S025060S2010 / S120060S2010	060	72.1 (1831)	60.4 (1534)	154 (3912)	625	580	1000	1005	410	870	875
	S025060H2010 / S120060H2010	060	72.1 (1831)	60.9 (1547)	181 (4597)	625	585	1010	1010	415	880	880
	S025064S2010 / S120064S2010	064	76.5 (1943)	64.7 (1643)	165 (4191)	660	615	1065	1075	435	930	940
	S025064H2010 / S120064H2010	064	76.5 (1943)	65.2 (1656)	194 (4928)	665	615	1070	1075	440	940	945
	S025069S2010 / S120069S2010	069	80.8 (2052)	69 (1753)	176 (4470)	695	650	1130	1140	465	990	995
	S025069H2010 / S120069H2010	069	80.8 (2052)	69.5 (1765)	207 (5258)	700	650	1135	1145	465	995	1005
	S025073S2010 / S120073S2010	073	85.1 (2162)	73.4 (1864)	187 (4750)	735	685	1200	1210	490	1050	1060
	S025073H2010 / S120073H2010	073	85.1 (2162)	73.8 (1875)	220 (5588)	740	690	1205	1215	495	1055	1065
	S025077S2010 / S120077S2010	077	89.4 (2271)	77.7 (1974)	198 (5029)	780	720	1260	1275	515	1105	1120
	S025077H2010 / S120077H2010	077	89.4 (2271)	78.1 (1984)	233 (5918)	780	720	1270	1280	515	1115	1125
	S025081S2010 / S120081S2010	081	93.7 (2380)	82 (2083)	209 (5309)	815	745	1325	1345	540	1165	1180
	S025081H2010 / S120081H2010	081	93.7 (2380)	82.5 (2096)	246 (6248)	820	750	1330	1345	540	1170	1185
	S025086S2010 / S120086S2010	086	98.1 (2492)	86.3 (2192)	220 (5588)	860	780	1400	1420	560	1220	1240
	S025086H2010 / S120086H2010	086	98.1 (2492)	86.8 (2205)	259 (6579)	860	795	1410	1420	565	1225	1245
	S025090S2010 / S120090S2010	090	102.4 (2601)	90.6 (2301)	231 (5867)	890	815	1460	1485	585	1275	1300
	S025090H2010 / S120090H2010	090	102.4 (2601)	91.1 (2314)	272 (6909)	895	820	1470	1495	585	1285	1305
	S025094S2010 / S120094S2010	094	106.7 (2710)	95 (2413)	242 (6147)	925	850	1520	1545	610	1335	1355
	S025094H2010 / S120094H2010	094	106.7 (2710)	95.4 (2423)	285 (7239)	930	855	1540	1560	615	1340	1365
	S025099S2010 / S120099S2010	099	111 (2819)	99.3 (2522)	253 (6426)	960	875	1575	1600	630	1395	1415
	S025099H2010 / S120099H2010	099	111 (2819)	99.7 (2532)	298 (7569)	965	880	1585	1610	635	1395	1425
	S025103S2010 / S120103S2010	103	115.3 (2929)	103.6 (2631)	264 (6706)	990	890	1640	1670	655	1445	1475
	S025103H2010 / S120103H2010	103	115.3 (2929)	104.1 (2644)	310 (7874)	995	895	1645	1670	660	1450	1485
	S025107S2010 / S120107S2010	107	119.7 (3040)	107.9 (2741)	275 (6985)	1010	920	1690	1725	675	1500	1530
	S025107H2010 / S120107H2010	107	119.7 (3040)	108.4 (2753)	323 (8204)	1015	920	1695	1730	675	1510	1535
	S025112S2010 / S120112S2010	112	124 (3150)	112.2 (2850)	286 (7264)	1040	945	1750	1790	695	1555	1590
	S025112H2010 / S120112H2010	112	124 (3150)	112.7 (2863)	336 (8534)	1045	950	1755	1795	700	1565	1595
	S025116S2010 / S120116S2010	116	128.3 (3259)	116.6 (2962)	297 (7544)	1070	975	1815	1850	720	1615	1645
	S025116H2010 / S120116H2010	116	128.3 (3259)	117 (2972)	349 (8865)	1075	980	1820	1855	720	1620	1655
	S025120S2010 / S120120S2010	120	132.6 (3368)	120.9 (3071)	308 (7823)	1100	1000	1875	1915	735	1665	1705
	S025120H2010 / S120120H2010	120	132.6 (3368)	121.3 (3081)	362 (9195)	1105	1005	1880	1920	740	1670	1710
	S025125S2010 / S120125S2010	125	136.9 (3477)	125.2 (3180)	319 (8103)	1125	1030	1935	1975	760	1720	1755
	S025125H2010 / S120125H2010	125	136.9 (3477)	125.7 (3193)	375 (9525)	1130	1035	1940	1980	760	1725	1765
	S025129S2010 / S120129S2010	129	141.3 (3589)	129.5 (3289)	330 (8382)	1155	1055	1990	2040	780	1770	1815
	S025129H2010 / S120129H2010	129	141.3 (3589)	130 (3302)	388 (9855)	1160	1060	1995	2045	780	1780	1820
	S025133S2010 / S120133S2010	133	145.6 (3698)	133.8 (3399)	341 (8661)	1180	1080	2050	2100	795	1825	1870
	S025133H2010 / S120133H2010	133	145.6 (3698)	134.3 (3411)	401 (10185)	1185	1085	2055	2105	800	1830	1875
	S025138S2010 / S120138S2010	138	149.9 (3807)	138.2 (3510)	352 (8941)	1205	1105	2110	2160	815	1880	1925
	S025138H2010 / S120138H2010	138	149.9 (3807)	138.6 (3520)	414 (10516)	1210	1110	2115	2165	820	1885	1930
	S025142S2010 / S120142S2010	142	154.2 (3917)	142.5 (3620)	363 (9220)	1230	1130	2165	2220	835	1930	1980
	S025142H2010 / S120142H2010	142	154.2 (3917)	142.9 (3630)	427 (10846)	1235	1135	2170	2225	835	1935	1980

Notes:

- Dimensional and electrical values displayed in main table are for an insulator with Y-clevis and Ball end fittings.
- For voltages above 400 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 12 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61109 and ANSI C29.12.

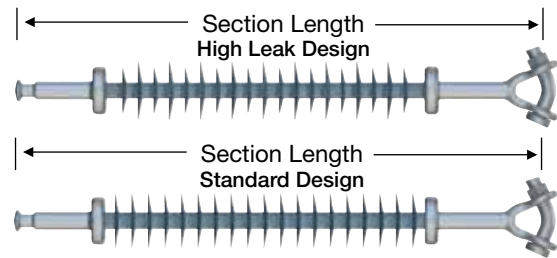
Section Length Adjustment Table, Base End Fittings: Y-clevis-Ball (201)

Top Fitting	Bottom Fitting	Top and Bottom End Fitting Digits ("e" & "f") in Catalog Number	Length Change inches (mm)
Y-Clevis	Eye	200	1.62 (41)
Eye	ANSI 52-5 Ball	001	0.02 (0)
Eye	Eye	000	1.64 (42)
ANSI 52-5 Socket	ANSI 52-5 Ball	301	-1.15 (-29)
IEC 16 mm Socket	IEC 16 mm Ball	A07	-0.03 (-1)
ANSI 52-6 Clevis	Eye	400	0.82 (21)
ANSI 52-6 Clevis	ANSI 52-5 Ball	401	-0.8 (-20)

To determine the section length for an insulator with a different end fitting combination, please add or subtract the displayed length change in the table above. For configurations not shown, use the Catalog Number Key or contact your HPS representative.

Suspension Insulators

Mechanical Ratings SML = 30 kip RTL = 15 kip
Rod Diameter: 5/8" (16 mm)



Selection Guide: Typical Line Voltage, kV	Catalog Numbers ANSI	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values		
						60-Hz Dry Flashover (kV)	60-Hz Wet Flashover (kV)	Critical Impulse Positive (kV)	Critical Impulse Negative (kV)	60-Hz 1-minute Wet Withstand (kV)	Impulse Positive Withstand (kV)	Impulse Negative Withstand (kV)
69	S030021S2010	021	33.3 (846)	21.5 (546)	55 (1397)	220	210	370	350	145	315	300
110	S030021H2010	021	33.3 (846)	22 (559)	64 (1626)	220	210	370	350	150	325	305
132	S030023S2010	023	35.4 (899)	23.7 (602)	60 (1524)	250	235	415	395	165	350	330
161	S030023H2010	023	35.4 (899)	24.1 (612)	71 (1803)	250	235	415	395	165	355	335
220	S030030S2010	030	41.9 (1064)	30.2 (767)	77 (1956)	315	305	525	510	210	445	430
330	S030030H2010	030	41.9 (1064)	30.6 (777)	90 (2286)	320	305	535	515	210	450	435
400	S030036S2010	036	48.4 (1229)	36.6 (930)	93 (2362)	385	365	635	620	255	540	525
	S030036H2010	036	48.4 (1229)	37.1 (942)	110 (2794)	390	370	645	620	260	540	535
	S030043S2010	043	54.9 (1394)	43.1 (1095)	110 (2794)	460	435	730	725	300	630	625
	S030043H2010	043	54.9 (1394)	43.6 (1107)	129 (3277)	465	440	740	730	305	635	630
	S030047S2010	047	59.2 (1504)	47.4 (1204)	121 (3073)	500	475	800	795	330	690	685
	S030047H2010	047	59.2 (1504)	47.9 (1217)	142 (3607)	510	475	805	800	330	695	690
	S030051S2010	051	63.5 (1613)	51.8 (1316)	132 (3353)	540	510	865	865	360	750	750
	S030051H2010	051	63.5 (1613)	52.2 (1326)	155 (3937)	540	510	875	870	360	760	755
	S030056S2010	056	67.8 (1722)	56.1 (1425)	143 (3632)	585	545	935	935	385	810	810
	S030056H2010	056	67.8 (1722)	56.5 (1435)	168 (4267)	585	550	940	940	390	815	815
	S030060S2010	060	72.1 (1831)	60.4 (1534)	154 (3912)	625	580	1000	1005	410	870	875
	S030060H2010	060	72.1 (1831)	60.9 (1547)	181 (4597)	625	585	1010	1010	415	880	880
	S030064S2010	064	76.5 (1943)	64.7 (1643)	165 (4191)	660	615	1065	1075	435	930	940
	S030064H2010	064	76.5 (1943)	65.2 (1656)	194 (4928)	665	615	1070	1075	440	940	945
	S030069S2010	069	80.8 (2052)	69 (1753)	176 (4470)	695	650	1130	1140	465	990	995
	S030069H2010	069	80.8 (2052)	69.5 (1765)	207 (5258)	700	650	1135	1145	465	995	1005
	S030073S2010	073	85.1 (2162)	73.4 (1864)	187 (4750)	735	685	1200	1210	490	1050	1060
	S030073H2010	073	85.1 (2162)	73.8 (1875)	220 (5588)	740	690	1205	1215	495	1055	1065
	S030077S2010	077	89.4 (2271)	77.7 (1974)	198 (5029)	780	720	1260	1275	515	1105	1120
	S030077H2010	077	89.4 (2271)	78.1 (1984)	233 (5918)	780	720	1270	1280	515	1115	1125
	S030081S2010	081	93.7 (2380)	82 (2083)	209 (5309)	815	745	1325	1345	540	1165	1180
	S030081H2010	081	93.7 (2380)	82.5 (2096)	246 (6248)	820	750	1330	1345	540	1170	1185
	S030086S2010	086	98.1 (2492)	86.3 (2192)	220 (5588)	860	780	1400	1420	560	1220	1240
	S030086H2010	086	98.1 (2492)	86.8 (2205)	259 (6579)	860	795	1410	1420	565	1225	1245
	S030090S2010	090	102.4 (2601)	90.6 (2301)	231 (5867)	890	815	1460	1485	585	1275	1300
	S030090H2010	090	102.4 (2601)	91.1 (2314)	272 (6909)	895	820	1470	1495	585	1285	1305
	S030094S2010	094	106.7 (2710)	95 (2413)	242 (6147)	925	850	1520	1545	610	1335	1355
	S030094H2010	094	106.7 (2710)	95.4 (2423)	285 (7239)	930	855	1540	1560	615	1340	1365
	S030099S2010	099	111 (2819)	99.3 (2522)	253 (6426)	960	875	1575	1600	630	1395	1415
	S030099H2010	099	111 (2819)	99.7 (2532)	298 (7569)	965	880	1585	1610	635	1395	1425
	S030103S2010	103	115.3 (2929)	103.6 (2631)	264 (6706)	990	890	1640	1670	655	1445	1475
	S030103H2010	103	115.3 (2929)	104.1 (2644)	310 (7874)	995	895	1645	1670	660	1450	1485
	S030107S2010	107	119.7 (3040)	107.9 (2741)	275 (6985)	1010	920	1690	1725	675	1500	1530
	S030107H2010	107	119.7 (3040)	108.4 (2753)	323 (8204)	1015	920	1695	1730	675	1510	1535
	S030112S2010	112	124 (3150)	112.2 (2850)	286 (7264)	1040	945	1750	1790	695	1555	1590
	S030112H2010	112	124 (3150)	112.7 (2863)	336 (8534)	1045	950	1755	1795	700	1565	1595
	S030116S2010	116	128.3 (3259)	116.6 (2962)	297 (7544)	1070	975	1815	1850	720	1615	1645
	S030116H2010	116	128.3 (3259)	117 (2972)	349 (8865)	1075	980	1820	1855	720	1620	1655
	S030120S2010	120	132.6 (3368)	120.9 (3071)	308 (7823)	1100	1000	1875	1915	735	1665	1705
	S030120H2010	120	132.6 (3368)	121.3 (3081)	362 (9195)	1105	1005	1880	1920	740	1670	1710
	S030125S2010	125	136.9 (3477)	125.2 (3180)	319 (8103)	1125	1030	1935	1975	760	1720	1755
	S030125H2010	125	136.9 (3477)	125.7 (3193)	375 (9525)	1130	1035	1940	1980	760	1725	1765
	S030129S2010	129	141.3 (3589)	129.5 (3289)	330 (8382)	1155	1055	1990	2040	780	1770	1815
	S030129H2010	129	141.3 (3589)	130 (3302)	388 (9855)	1160	1060	1995	2045	780	1780	1820
	S030133S2010	133	145.6 (3698)	133.8 (3399)	341 (8661)	1180	1080	2050	2100	795	1825	1870
	S030133H2010	133	145.6 (3698)	134.3 (3411)	401 (10185)	1185	1085	2055	2105	800	1830	1875
	S030138S2010	138	149.9 (3807)	138.2 (3510)	352 (8941)	1205	1105	2110	2160	815	1880	1925
	S030138H2010	138	149.9 (3807)	138.6 (3520)	414 (10516)	1210	1110	2115	2165	820	1885	1930
	S030142S2010	142	154.2 (3917)	142.5 (3620)	363 (9220)	1230	1130	2165	2220	835	1930	1980
	S030142H2010	142	154.2 (3917)	142.9 (3630)	427 (10846)	1235	1135	2170	2225	835	1935	1980

Notes:

- Dimensional and electrical values displayed in main table are for an insulator with Y-clevis and Ball end fittings.
- For voltages above 400 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 12 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61109 and ANSI C29.12.

Section Length Adjustment Table, Base End Fittings: Y-clevis-Ball (201)

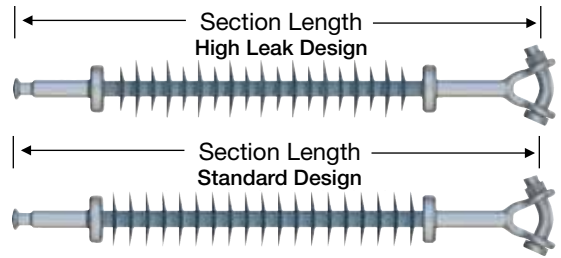
Top Fitting	Bottom Fitting	Top and Bottom End Fitting Digits ("e" & "f") in Catalog Number	Length Change inches (mm)
Y-Clevis	Eye	200	1.62 (41)
Eye	ANSI 52-5 Ball	001	0.02 (0)
Eye	Eye	000	1.64 (42)
ANSI 52-5 Socket	ANSI 52-5 Ball	301	-1.15 (-29)
IEC 16 mm Socket	IEC 16 mm Ball	A07	-0.03 (-1)
ANSI 52-6 Clevis	Eye	400	0.82 (21)
ANSI 52-6 Clevis	ANSI 52-5 Ball	401	-0.8 (-20)

To determine the section length for an insulator with a different end fitting combination, please add or subtract the displayed length change in the table above. For configurations not shown, use the Catalog Number Key or contact your HPS representative.

Suspension Insulators

Mechanical Ratings SML = 160 kN RTL = 80 kN

Rod Diameter: 7/8" (22 mm)



Selection Guide: Typical Line Voltage, kV	Catalog Numbers IEC	Nominal Polymer Length inches (mm)	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values		
						60-Hz Dry Flashover (kV)	60-Hz Wet Flashover (kV)	Critical Impulse Positive (kV)	Critical Impulse Negative (kV)	60-Hz 1-minute Wet Withstand (kV)	Impulse Positive Withstand (kV)	Impulse Negative Withstand (kV)
69 110 132 161 220 330 400	S160021S2010	021	35.7 (907)	21.6 (549)	55 (1397)	220	210	370	350	145	315	300
	S160021H2010	021	35.7 (907)	22.5 (572)	74 (1880)	225	215	375	355	150	330	315
	S160023S2010	023	37.9 (963)	23.8 (605)	60 (1524)	250	235	415	395	165	350	330
	S160023H2010	023	37.9 (963)	24.7 (627)	82 (2083)	255	240	420	400	170	360	345
	S160030S2010	030	44.4 (1128)	30.3 (770)	77 (1956)	320	305	525	510	210	445	430
	S160030H2010	030	44.4 (1128)	31.1 (790)	104 (2642)	320	310	540	520	215	455	445
	S160036S2010	036	50.8 (1290)	36.8 (935)	93 (2362)	385	365	635	625	260	540	530
	S160036H2010	036	50.8 (1290)	37.6 (955)	126 (3200)	395	375	650	625	265	550	540
	S160043S2010	043	57.3 (1455)	43.2 (1097)	110 (2794)	460	435	730	725	300	630	625
	S160043H2010	043	57.3 (1455)	44.1 (1120)	149 (3785)	470	445	745	735	310	640	635
	S160047S2010	047	61.6 (1565)	47.6 (1209)	121 (3073)	500	475	800	800	330	690	690
	S160047H2010	047	61.6 (1565)	48.4 (1229)	164 (4166)	515	480	810	805	335	705	700
	S160051S2010	051	66 (1676)	51.9 (1318)	132 (3353)	540	510	865	860	360	755	750
	S160051H2010	051	66 (1676)	52.7 (1339)	179 (4547)	545	515	880	875	365	765	765
	S160056S2010	056	70.3 (1786)	56.2 (1427)	143 (3632)	585	545	935	935	385	810	810
	S160056H2010	056	70.3 (1786)	57.1 (1450)	194 (4928)	590	555	945	945	390	825	825
	S160060S2010	060	74.6 (1895)	60.5 (1537)	154 (3912)	625	580	1000	1005	410	870	875
	S160060H2010	060	74.6 (1895)	61.4 (1560)	209 (5309)	630	590	1015	1015	420	885	890
	S160064S2010	064	78.9 (2004)	64.8 (1646)	165 (4191)	660	615	1065	1075	435	930	940
	S160064H2010	064	78.9 (2004)	65.7 (1669)	224 (5690)	670	620	1075	1080	445	945	950
	S160069S2010	069	83.2 (2113)	69.2 (1758)	176 (4470)	695	650	1130	1140	465	990	1000
	S160069H2010	069	83.2 (2113)	70 (1778)	239 (6071)	705	655	1140	1150	470	1000	1010
	S160073S2010	073	87.6 (2225)	73.5 (1867)	187 (4750)	735	685	1200	1210	490	1050	1060
	S160073H2010	073	87.6 (2225)	74.3 (1887)	254 (6452)	745	695	1210	1220	495	1060	1075
	S160077S2010	077	91.9 (2334)	77.8 (1976)	198 (5029)	780	720	1260	1275	515	1110	1125
	S160077H2010	077	91.9 (2334)	78.7 (1999)	268 (6807)	785	725	1275	1285	520	1120	1130
	S160081S2010	081	96.2 (2443)	82.1 (2085)	209 (5309)	815	745	1325	1345	540	1165	1180
	S160081H2010	081	96.2 (2443)	83 (2108)	283 (7188)	825	755	1335	1350	545	1175	1195
	S160086S2010	086	100.5 (2553)	86.4 (2195)	220 (5588)	860	780	1400	1420	565	1220	1240
	S160086H2010	086	100.5 (2553)	87.3 (2217)	298 (7569)	865	800	1415	1425	570	1235	1255
	S160090S2010	090	104.8 (2662)	90.8 (2306)	231 (5867)	890	815	1460	1485	585	1280	1305
	S160090H2010	090	104.8 (2662)	91.6 (2327)	313 (7950)	900	825	1475	1500	590	1290	1310
	S160094S2010	094	109.2 (2774)	95.1 (2416)	242 (6147)	925	850	1520	1545	610	1340	1360
	S160094H2010	094	109.2 (2774)	95.9 (2436)	328 (8331)	935	860	1545	1565	615	1350	1370
	S160099S2010	099	113.5 (2883)	99.4 (2525)	253 (6426)	960	875	1575	1605	630	1395	1420
	S160099H2010	099	113.5 (2883)	100.3 (2548)	343 (8712)	970	885	1590	1615	635	1405	1430
	S160103S2010	103	117.8 (2992)	103.7 (2634)	264 (6706)	990	890	1640	1670	655	1445	1475
	S160103H2010	103	117.8 (2992)	104.6 (2657)	358 (9093)	1000	900	1650	1675	660	1460	1485
	S160107S2010	107	122.1 (3101)	108 (2743)	275 (6985)	1010	920	1695	1725	675	1505	1530
	S160107H2010	107	122.1 (3101)	108.9 (2766)	373 (9474)	1020	925	1700	1735	680	1515	1545
	S160112S2010	112	126.4 (3211)	112.4 (2855)	286 (7264)	1045	950	1755	1790	700	1560	1590
	S160112H2010	112	126.4 (3211)	113.2 (2875)	388 (9855)	1050	955	1760	1800	705	1570	1600
	S160116S2010	116	130.8 (3322)	116.7 (2964)	297 (7544)	1070	975	1815	1855	720	1615	1650
	S160116H2010	116	130.8 (3322)	117.5 (2985)	403 (10236)	1080	985	1825	1860	720	1620	1660
	S160120S2010	120	135.1 (3432)	121 (3073)	308 (7823)	1100	1005	1875	1915	740	1665	1705
	S160120H2010	120	135.1 (3432)	121.9 (3096)	418 (10617)	1110	1010	1885	1925	745	1680	1715
	S160125S2010	125	139.4 (3541)	125.3 (3183)	319 (8103)	1125	1030	1935	1980	760	1720	1760
	S160125H2010	125	139.4 (3541)	126.2 (3205)	433 (10998)	1135	1040	1945	1985	765	1730	1770
	S160129S2010	129	143.7 (3650)	129.6 (3292)	330 (8382)	1155	1055	1995	2040	780	1775	1815
	S160129H2010	129	143.7 (3650)	130.5 (3315)	448 (11379)	1165	1065	2000	2050	780	1785	1825
	S160133S2010	133	148 (3759)	134 (3404)	341 (8661)	1180	1080	2055	2100	795	1830	1870
	S160133H2010	133	148 (3759)	134.8 (3424)	463 (11760)	1190	1090	2060	2110	800	1840	1885
	S160138S2010	138	152.4 (3871)	138.3 (3513)	352 (8941)	1205	1105	2110	2160	815	1880	1925
	S160138H2010	138	152.4 (3871)	139.1 (3533)	478 (12141)	1215	1115	2120	2170	820	1890	1935
	S160142S2010	142	156.7 (3980)	142.6 (3622)	363 (9220)	1230	1130	2170	2220	835	1935	1980
	S160142H2010	142	156.7 (3980)	143.5 (3645)	493 (12522)	1240	1140	2175	2230	840	1940	1990

Notes:

- Dimensional and electrical values displayed in main table are for an insulator with Y-clevis and Ball end fittings.
- For voltages above 400 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 12 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61109 and ANSI C29.12.

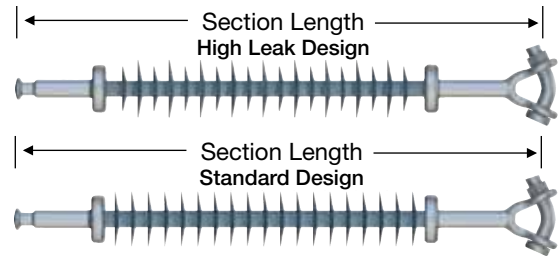
Section Length Adjustment Table, Base End Fittings: Y-clevis-Ball (201)

Top Fitting	Bottom Fitting	Top and Bottom End Fitting Digits ("e" & "f") in Catalog Number	Length Change inches (mm)
Y-Clevis	Eye	200	1.71 (43)
Eye	ANSI 52-8 Ball	001	0.31 (8)
Eye	Eye	000	2.02 (51)
ANSI 52-8 Socket	ANSI 52-8 Ball	301	-1.27 (-32)
IEC 20 mm Socket	IEC 20 mm Ball	A07	0.26 (7)
Clevis IEC 19-L	Eye	800	0.80 (20)
Clevis IEC 19-L	IEC 20 mm Ball	807	0.06 (2)

To determine the section length for an insulator with a different end fitting combination, please add or subtract the displayed length change in the table above. For configurations not shown, use the Catalog Number Key or contact your HPS representative.

Suspension Insulators

Mechanical Ratings SML = 50 kip/210 kN RTL = 25 kip/105 kN
Rod Diameter: 7/8" (22 mm)



Selection Guide: Typical Line Voltage, kV	Catalog Numbers ANSI / IEC	Nominal Polymer Length inches (mm)	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values		
						60-Hz Dry Flashover (kV)	60-Hz Wet Flashover (kV)	Critical Impulse Positive (kV)	Critical Impulse Negative (kV)	60-Hz 1-minute Wet Withstand (kV)	Impulse Positive Withstand (kV)	Impulse Negative Withstand (kV)
69	S050021S2010 / S210021S2010	021	35.7 (907)	21.6 (549)	55 (1397)	220	210	370	350	145	315	300
110	S050021H2010 / S210021H2010	021	35.7 (907)	22.5 (572)	74 (1880)	225	215	375	355	150	330	315
132	S050023S2010 / S210023S2010	023	37.9 (963)	23.8 (605)	60 (1524)	250	235	415	395	165	350	330
161	S050023H2010 / S210023H2010	023	37.9 (963)	24.7 (627)	82 (2083)	255	240	420	400	170	360	345
220	S050030S2010 / S210030S2010	030	44.4 (1128)	30.3 (770)	77 (1956)	315	305	525	510	210	445	430
330	S050030H2010 / S210030H2010	030	44.4 (1128)	31.1 (790)	104 (2642)	320	310	540	520	215	455	445
400	S050036S2010 / S210036S2010	036	50.8 (1290)	36.8 (935)	93 (2362)	385	365	635	625	260	540	530
	S050036H2010 / S210036H2010	036	50.8 (1290)	37.6 (955)	126 (3200)	395	375	650	625	265	550	540
	S050043S2010 / S210043S2010	043	57.3 (1455)	43.2 (1097)	110 (2794)	460	435	730	725	300	630	625
	S050043H2010 / S210043H2010	043	57.3 (1455)	44.1 (1120)	149 (3785)	470	445	745	735	310	640	635
	S050047S2010 / S210047S2010	047	61.6 (1565)	47.6 (1209)	121 (3073)	500	475	800	800	330	690	690
	S050047H2010 / S210047H2010	047	61.6 (1565)	48.4 (1229)	164 (4166)	510	480	810	805	335	705	700
	S050051S2010 / S210051S2010	051	66 (1676)	51.9 (1318)	132 (3353)	540	510	865	860	360	755	750
	S050051H2010 / S210051H2010	051	66 (1676)	52.7 (1339)	179 (4547)	545	515	880	875	365	765	765
	S050056S2010 / S210056S2010	056	70.3 (1786)	56.2 (1427)	143 (3632)	585	545	935	935	385	810	810
	S050056H2010 / S210056H2010	056	70.3 (1786)	57.1 (1450)	194 (4928)	590	555	945	945	390	825	825
	S050060S2010 / S210060S2010	060	74.6 (1895)	60.5 (1537)	154 (3912)	625	580	1000	1005	410	870	875
	S050060H2010 / S210060H2010	060	74.6 (1895)	61.4 (1560)	209 (5309)	630	590	1015	1015	420	885	890
	S050064S2010 / S210064S2010	064	78.9 (2004)	64.8 (1646)	165 (4191)	660	615	1065	1075	435	930	940
	S050064H2010 / S210064H2010	064	78.9 (2004)	65.7 (1669)	224 (5690)	670	620	1075	1080	445	945	950
	S050069S2010 / S210069S2010	069	83.2 (2113)	69.2 (1758)	176 (4470)	695	650	1130	1140	465	990	1000
	S050069H2010 / S210069H2010	069	83.2 (2113)	70 (1778)	239 (6071)	705	655	1140	1150	470	1000	1010
	S050073S2010 / S210073S2010	073	87.6 (2225)	73.5 (1867)	187 (4750)	735	685	1200	1210	490	1050	1060
	S050073H2010 / S210073H2010	073	87.6 (2225)	74.3 (1887)	254 (6452)	745	695	1210	1220	495	1060	1075
	S050077S2010 / S210077S2010	077	91.9 (2334)	77.8 (1976)	198 (5029)	780	720	1260	1275	515	1110	1125
	S050077H2010 / S210077H2010	077	91.9 (2334)	78.7 (1999)	268 (6807)	785	725	1275	1285	520	1120	1130
	S050081S2010 / S210081S2010	081	96.2 (2443)	82.1 (2085)	209 (5309)	815	745	1325	1345	540	1165	1180
	S050081H2010 / S210081H2010	081	96.2 (2443)	83 (2108)	283 (7188)	825	755	1335	1350	545	1175	1195
	S050086S2010 / S210086S2010	086	100.5 (2553)	86.4 (2195)	220 (5588)	860	780	1400	1420	565	1220	1240
	S050086H2010 / S210086H2010	086	100.5 (2553)	87.3 (2217)	298 (7569)	865	800	1415	1425	570	1235	1255
	S050090S2010 / S210090S2010	090	104.8 (2662)	90.8 (2306)	231 (5867)	890	815	1460	1485	585	1280	1305
	S050090H2010 / S210090H2010	090	104.8 (2662)	91.6 (2327)	313 (7950)	900	825	1475	1500	590	1290	1310
	S050094S2010 / S210094S2010	094	109.2 (2774)	95.1 (2416)	242 (6147)	925	850	1520	1545	610	1340	1360
	S050094H2010 / S210094H2010	094	109.2 (2774)	95.9 (2436)	328 (8331)	935	860	1545	1565	615	1350	1370
	S050099S2010 / S210099S2010	099	113.5 (2883)	99.4 (2525)	253 (6426)	960	875	1575	1605	630	1395	1420
	S050099H2010 / S210099H2010	099	113.5 (2883)	100.3 (2548)	343 (8712)	970	885	1590	1615	635	1405	1430
	S050103S2010 / S210103S2010	103	117.8 (2992)	103.7 (2634)	264 (6706)	990	890	1640	1670	655	1445	1475
	S050103H2010 / S210103H2010	103	117.8 (2992)	104.6 (2657)	358 (9093)	1000	900	1650	1675	660	1460	1485
	S050107S2010 / S210107S2010	107	122.1 (3101)	108 (2743)	275 (6985)	1010	920	1695	1725	675	1505	1530
	S050107H2010 / S210107H2010	107	122.1 (3101)	108.9 (2766)	373 (9474)	1020	925	1700	1735	680	1515	1545
	S050112S2010 / S210112S2010	112	126.4 (3211)	112.4 (2855)	286 (7264)	1045	950	1755	1790	700	1560	1590
	S050112H2010 / S210112H2010	112	126.4 (3211)	113.2 (2875)	388 (9855)	1050	955	1760	1800	705	1570	1600
	S050116S2010 / S210116S2010	116	130.8 (3322)	116.7 (2964)	297 (7544)	1070	975	1815	1855	720	1615	1650
	S050116H2010 / S210116H2010	116	130.8 (3322)	117.5 (2985)	403 (10236)	1080	985	1825	1860	720	1620	1660
	S050120S2010 / S210120S2010	120	135.1 (3432)	121 (3073)	308 (7823)	1100	1005	1875	1915	740	1665	1705
	S050120H2010 / S210120H2010	120	135.1 (3432)	121.9 (3096)	418 (10617)	1110	1010	1885	1925	745	1680	1715
	S050125S2010 / S210125S2010	125	139.4 (3541)	125.3 (3183)	319 (8103)	1125	1030	1935	1980	760	1720	1760
	S050125H2010 / S210125H2010	125	139.4 (3541)	126.2 (3205)	433 (10998)	1135	1040	1945	1985	765	1730	1770
	S050129S2010 / S210129S2010	129	143.7 (3650)	129.6 (3292)	330 (8382)	1155	1055	1995	2040	780	1775	1815
	S050129H2010 / S210129H2010	129	143.7 (3650)	130.5 (3315)	448 (11379)	1165	1065	2000	2050	780	1785	1825
	S050133S2010 / S210133S2010	133	148 (3759)	134 (3404)	341 (8661)	1180	1080	2055	2100	795	1830	1870
	S050133H2010 / S210133H2010	133	148 (3759)	134.8 (3424)	463 (11760)	1190	1090	2060	2110	800	1840	1885
	S050138S2010 / S210138S2010	138	152.4 (3871)	138.3 (3513)	352 (8941)	1205	1105	2110	2160	815	1880	1925
	S050138H2010 / S210138H2010	138	152.4 (3871)	139.1 (3533)	478 (12141)	1215	1115	2120	2170	820	1890	1935
	S050142S2010 / S210142S2010	142	156.7 (3980)	142.6 (3622)	363 (9220)	1230	1130	2170	2220	835	1935	1980
	S050142H2010 / S210142H2010	142	156.7 (3980)	143.5 (3645)	493 (12522)	1240	1140	2175	2230	840	1940	1990

Notes:

- Dimensional and electrical values displayed in main table are for an insulator with Y-clevis and Ball end fittings.
- For voltages above 400 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 12 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61109 and ANSI C29.12.

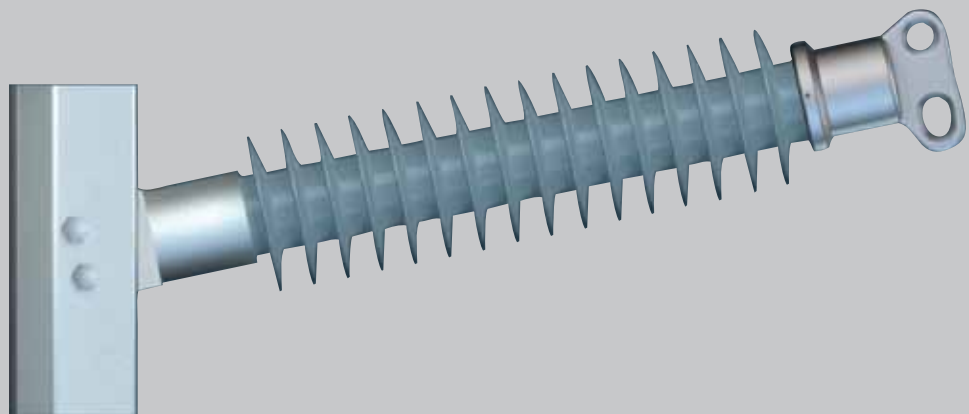
Section Length Adjustment Table, Base End Fittings: Y-clevis-Ball (201)

Top Fitting	Bottom Fitting	Top and Bottom End Fitting Digits ("e" & "f") in Catalog Number	Length Change inches (mm)
Y-Clevis	Eye	200	1.71 (43)
Eye	ANSI 52-11 Ball	001	0.31 (8)
Eye	Eye	000	2.02 (51)
ANSI 52-11 Socket	ANSI 52-11 Ball	301	-0.71 (-18)
IEC 20 mm Socket	IEC 20 mm Ball	A07	0.26 (7)
Clevis IEC 19-L	Eye	800	0.80 (20)
Clevis IEC 19-L	IEC 20 mm Ball	807	0.06 (2)

To determine the section length for an insulator with a different end fitting combination, please add or subtract the displayed length change in the table above. For configurations not shown, use the Catalog Number Key or contact your HPS representative.

Line Post Insulators

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Quadri*Sil® Base Fittings	24
Quadri*Sil® Line Fittings	25
Clamps and Assemblies	26



Mechanical Ratings

Line post insulators are cantilever support members, with ratings defined as follows:

Specified Cantilever Load (SCL)

SCL is the ultimate cantilever strength rating of the Quadri*Sil® line post insulator. SCL is identical to the minimum average breaking load (ABL) rating in previous catalogs.

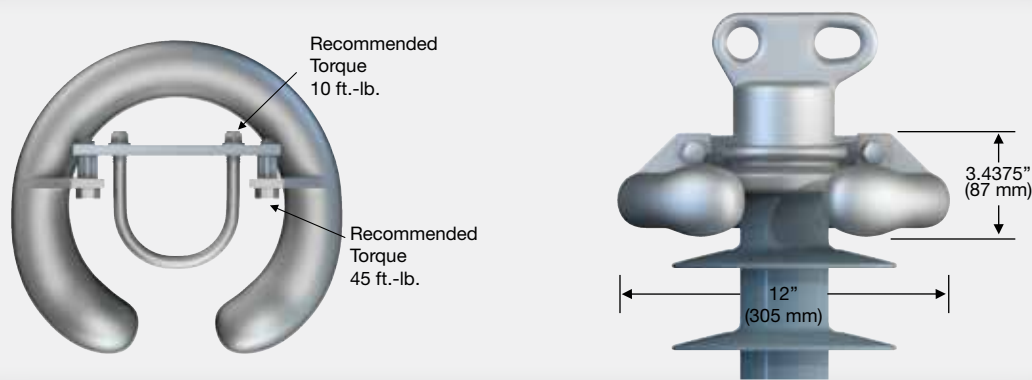
Reference Cantilever Load (RCL)

RCL represents the maximum recommended load in cantilever that a Quadri*Sil® post insulator is designed to withstand during its life span. RCL equals 50 percent of the SCL, and is identical to the insulator's maximum working load (MWL) and maximum design cantilever load (MDCL).

Combined Load Charts

Line design loads for most insulators include tension, or compression, in addition to the primary vertical cantilever load. Longitudinal loading should also be considered. Contact your Hubbell Power Systems representative to request combined load charts.

Corona Performance



Line Post Insulators 2.5" (63.5 mm) Rod Diameter Horizontal

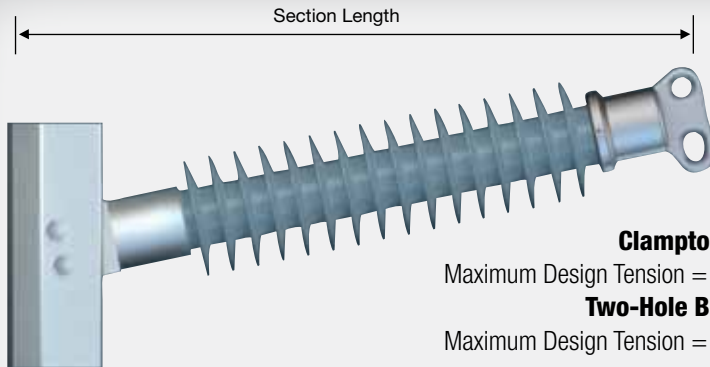
Application	161 kv & Below	230 kv	345 kv
Line End Energized	Top - NONE Bott - NONE	Top - 2721273001 Bott - NONE	Top - 2721273001 Bott - NONE
Bottom End Energized	Top - NONE Bott - NONE	Top - NONE Bott - 2721273001	Top - NONE Bott - 2721273001

Electrical/Dimensional Changes to the Insulator with External Corona Ring

Physical & Electrical Characteristics	220/230 kV Ring	330/345 kV Ring	400 kV Rings	500 kV Rings
Dry Arc Distance inches (mm)	-1.86 (-47)	-2.58 (-66)	N/A	N/A
Leakage Distance inches (mm)	0	0	N/A	N/A
ANSI 60 Hz Flashover Dry — kV	-20	-30	N/A	N/A
ANSI 60 Hz Flashover Wet — kV	-20	-20	N/A	N/A
ANSI Critical Flashover Positive — kV	-30	-40	N/A	N/A
ANSI Critical Flashover Negative — kV	-30	-40	N/A	N/A
IEC Wet Switching Impulse Withstand — kV	N/A	N/A	N/A	N/A
IEC Power Frequency Wet Withstand — kV	-20	-20	N/A	N/A
IEC Lightning Impulse Withstand Positive — kV	-30	-40	N/A	N/A
IEC Lightning Impulse Withstand Negative — kV	-30	-40	N/A	N/A
Net Weight pounds (kg)	3.4 (1.5)	3.4 (1.5)	N/A	N/A

Horizontal Line Post Insulators

2.5" (63.5 mm) Rod Diameter

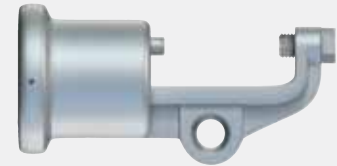


Clamptop:

Maximum Design Tension = 2,500 lbs. (11.1 kN)

Two-Hole Blade:

Maximum Design Tension = 7,500 lbs. (33.4 kN)



Horizontal Clamptop End Fitting
Increases the section length
dimensions by 0.75"

Horizontal Line Post Insulators

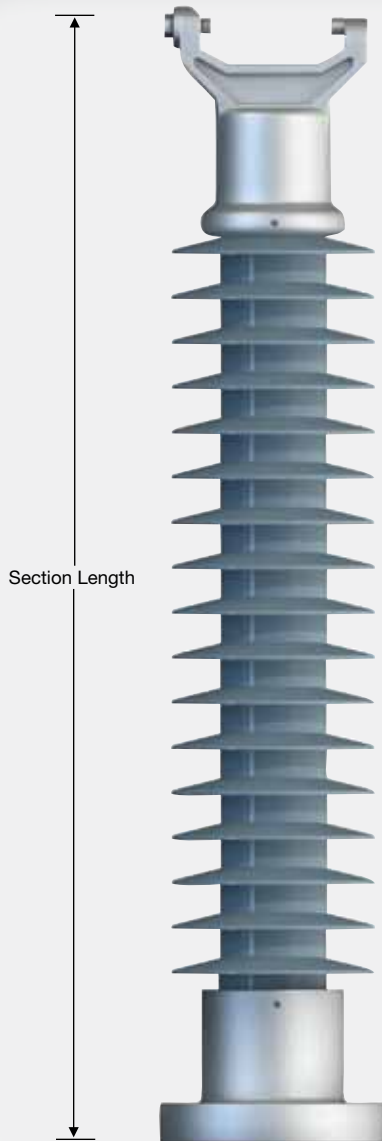
2.5" (63.5 mm) Rod Diameter

Selection Guide: Typical Line Voltage, kV ⁽¹⁾	Catalog Numbers ⁽³⁾	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values			SCL lbs. (kN)	
						⁽²⁾ 60-Hz Dry Flashover (kV)	⁽²⁾ 60-Hz Wet Flashover (kV)	⁽²⁾ Critical Impulse Positive (kV)	⁽²⁾ Critical Impulse Negative (kV)	⁽²⁾ 60-Hz 1-minute Wet Withstand (kV)	⁽²⁾ Impulse Positive Withstand (kV)	⁽²⁾ Impulse Negative Withstand (kV)		
69 110 132 161 220 330														
	P250024S0020	024	36.9 (937)	25.0 (635)	63 (1600)	255	235	385	505	195	365	475	5000 (22.2)	
	P250026S0020	026	39.3 (998)	27.4 (696)	69 (1753)	280	255	425	540	215	400	510	5000 (22.2)	
	P250031S0020	031	44.0 (1117)	32.2 (818)	82 (2083)	330	300	510	615	255	480	580	4490 (20.0)	
	P250036S0020	036	48.8 (1239)	37.1 (942)	95 (2413)	380	345	580	690	290	550	655	3950 (17.6)	
	P250043S0020	043	55.9 (1419)	44.3 (1125)	113 (2870)	455	405	700	800	340	665	760	3340 (14.9)	
	P250048S0020	048	60.6 (1539)	49.2 (1250)	126 (3200)	515	450	770	880	380	730	835	3030 (13.5)	
	P250053S0020	053	65.3 (1658)	54.0 (1372)	139 (3531)	565	495	855	950	420	810	900	2770 (12.3)	
	P250058S0020	058	70.1 (1780)	58.8 (1494)	151 (3835)	600	525	920	1025	445	870	970	2550 (11.3)	
	P250060S0020	060	72.4 (1838)	61.3 (1557)	158 (4013)	625	540	955	1065	455	905	1010	2460 (10.9)	
	P250065S0020	065	77.2 (1960)	66.1 (1679)	170 (4318)	675	580	1035	1140	490	980	1080	2280 (10.1)	
	P250070S0020	070	81.9 (2080)	70.9 (1801)	183 (4648)	720	615	1115	1215	520	1055	1150	2130 (9.5)	
	P250075S0020	075	86.6 (2199)	75.8 (1925)	196 (4978)	765	650	1190	1290	550	1130	1225	2000 (8.9)	
	P250080S0020	080	91.4 (2321)	80.6 (2047)	208 (5283)	815	680	1265	1360	575	1200	1290	1890 (8.4)	
	P250087S0020	087	98.5 (2501)	87.9 (2233)	227 (5766)	880	735	1380	1475	620	1310	1400	1740 (7.7)	
	P250092S0020	092	103.2 (2621)	92.7 (2355)	240 (6096)	925	765	1455	1550	650	1380	1470	1650 (7.3)	
	P250096S0020	096	107.9 (2740)	97.6 (2479)	252 (6401)	975	800	1535	1625	680	1455	1540	1570 (7.0)	
	P250101S0020	101	112.7 (2862)	102.4 (2601)	265 (6731)	1015	830	1610	1700	705	1525	1615	1500 (6.7)	
	P250104S0020	104	115.1 (2923)	104.8 (2662)	271 (6883)	1040	845	1650	1735	715	1565	1645	1460 (6.5)	
	P250106S0020	106	117.4 (2981)	107.2 (2723)	278 (7061)	1060	860	1685	1770	730	1600	1680	1430 (6.4)	
	P250109S0020	109	119.8 (3042)	109.7 (2786)	284 (7214)	1085	875	1725	1810	740	1635	1715	1400 (6.2)	
	P250111S0020	111	122.2 (3103)	112.1 (2847)	290 (7366)	1105	890	1765	1850	755	1675	1755	1370 (6.1)	

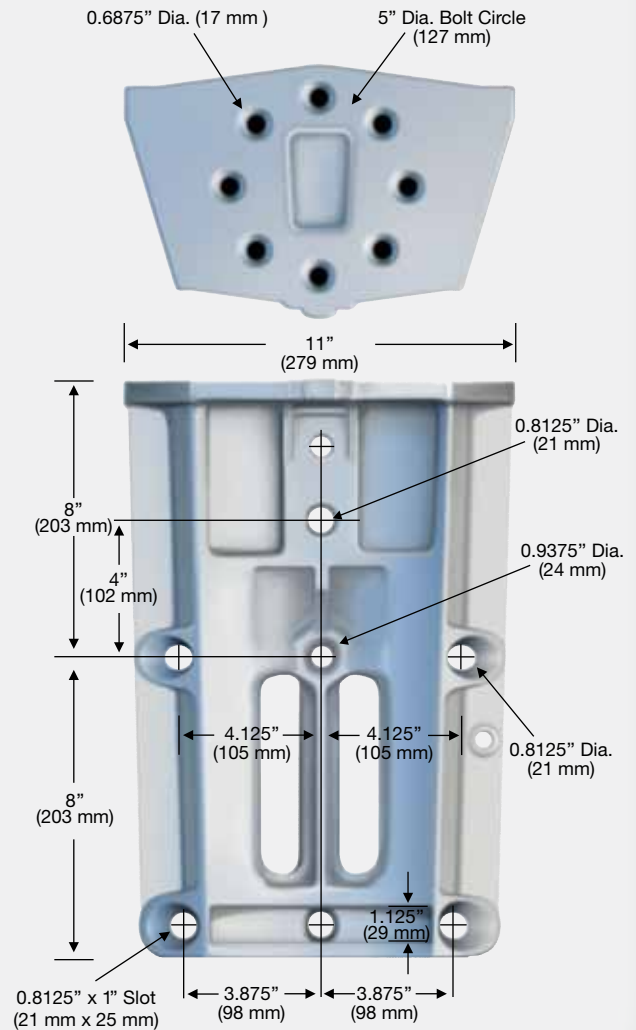
Notes:

- 1) For voltages above 330 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- 2) Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 20 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61952 and ANSI C29.17.
- 3) The catalog number shown in the table is for a 2.5" (63.5mm) rod diameter line post with a two hole blade on the line end and a gain base on the tower end. For other end fitting combinations, please refer to the Catalog Number Key on page 8.

Vertical Line Post Insulators 2.5" (63.5 mm) Rod Diameter



Maximum Design Tension = 2,500 lbs. (11.1 kN)



Cat. No. 75115
Rated 134,400 lb.-in.

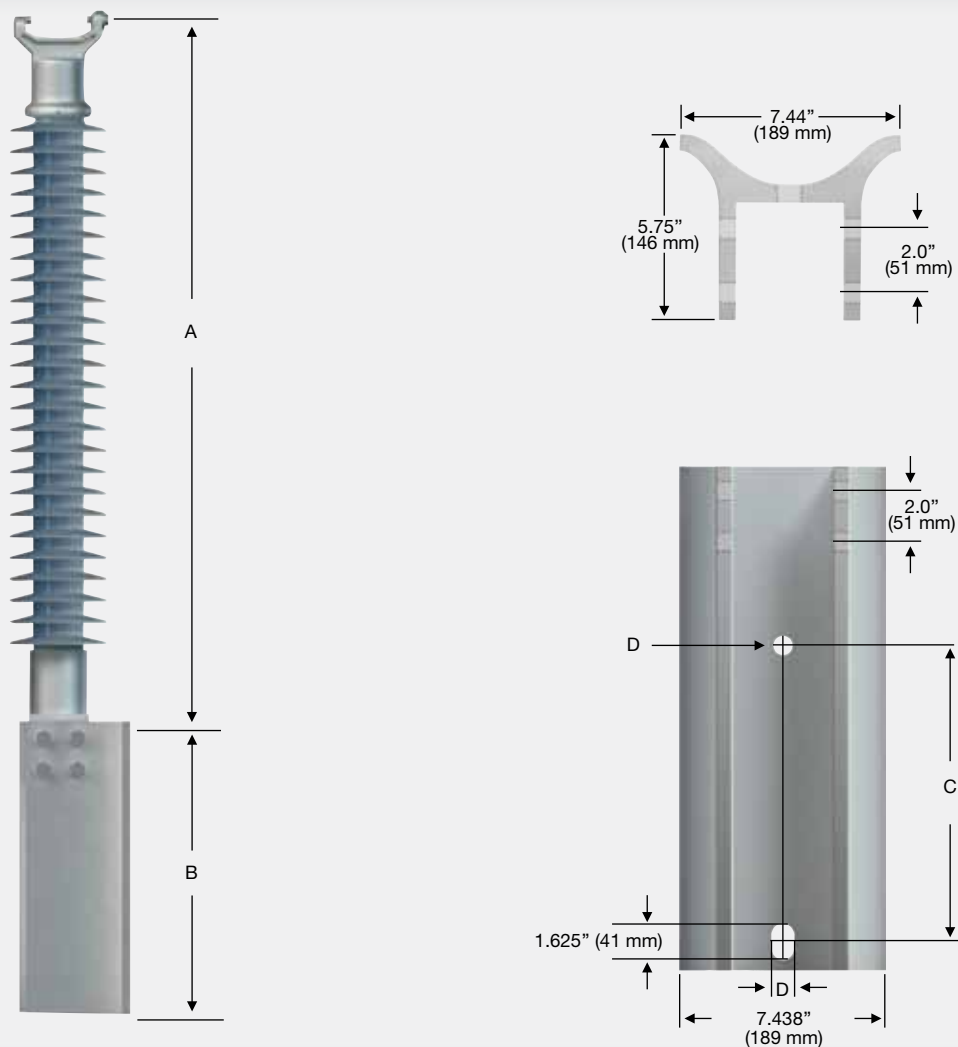
Vertical Line Post Insulators 2.5" (63.5 mm) Rod Diameter

Selection Guide: Typical Line Voltage, kV ⁽¹⁾	Catalog Numbers ⁽²⁾	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values			SCL lbs. (kN)
						⊕60-Hz Dry Flashover (kV)	⊕60-Hz Wet Flashover (kV)	⊕Critical Impulse Positive (kV)	⊖Critical Impulse Negative (kV)	⊕60-Hz 1-minute Wet Withstand (kV)	⊕Impulse Positive Withstand (kV)	⊖Impulse Negative Withstand (kV)	
69 110 132 161													
	P250024S2050	024	35.0 (889)	25.0 (635)	63 (1600)	255	235	385	505	195	365	475	5000 (22.3)
	P250026S2050	026	37.4 (950)	27.4 (696)	69 (1753)	280	255	425	540	215	400	510	5000 (22.3)
	P250031S2050	031	42.3 (1074)	32.2 (818)	82 (2083)	330	300	510	615	255	480	580	4200 (18.7)
	P250036S2050	036	47.1 (1196)	37.1 (942)	95 (2413)	380	345	580	690	290	550	655	3720 (16.6)
	P250043S2050	043	54.4 (1382)	44.3 (1125)	113 (2870)	455	405	700	800	340	665	760	3180 (14.2)
	P250048S2050	048	59.2 (1504)	49.2 (1250)	126 (3200)	515	450	770	880	380	730	835	2900 (12.9)
	P250053S2050	053	64.1 (1628)	54.0 (1372)	139 (3531)	565	495	855	950	420	810	900	2660 (11.8)
	P250058S2050	058	68.9 (1750)	58.8 (1494)	151 (3835)	600	525	920	1025	445	870	970	2460 (10.9)
	P250060S2050	060	71.3 (1811)	61.3 (1557)	158 (4013)	625	540	955	1065	455	905	1010	2370 (10.5)

Notes:

- 1) For voltages above 161 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- 2) Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 20 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61952 and ANSI C29.17.
- 3) The catalog number shown on the table is for a 2.5" (63.5mm) rod diameter line post with a vertical clamptop on the line end and a 5" Bolt Circle with tapped holes on the ground end. For other end fitting combinations, please refer to the Catalog Number Key on page 8.

Vertical Line Post Assembly 2.5" (63.5 mm) Rod Diameter



Vertical Line Post Insulators 2.5" (63.5 mm) Rod Diameter

Table A

Selection Guide: Typical Line Voltage, kV ⁽¹⁾	Catalog Numbers ⁽²⁾	Nominal Polymer Length inches	"A" Length inches (mm)
69 110 132 161	P250024S2XX0	024	34.7 (881)
	P250026S2XX0	026	37.1 (942)
	P250031S2XX0	031	42 (1067)
	P250036S2XX0	036	46.8 (1189)
	P250043S2XX0	043	54.1 (1374)
	P250048S2XX0	048	58.9 (1496)
	P250053S2XX0	053	63.6 (1615)
	P250058S2XX0	058	68.4 (1737)
	P250060S2XX0	060	70.7 (1796)

Table B

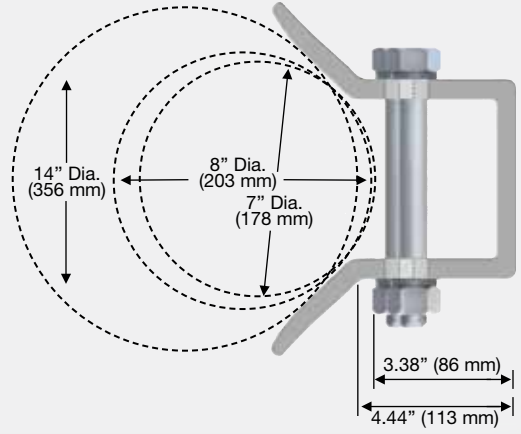
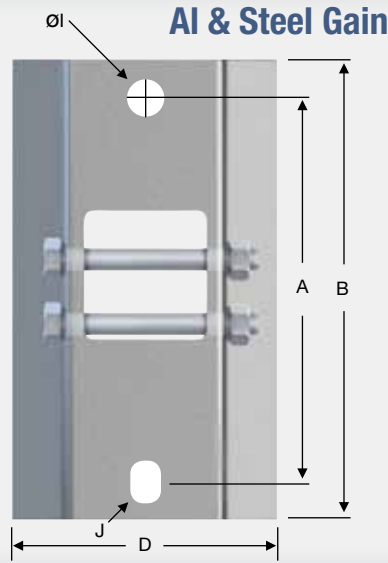
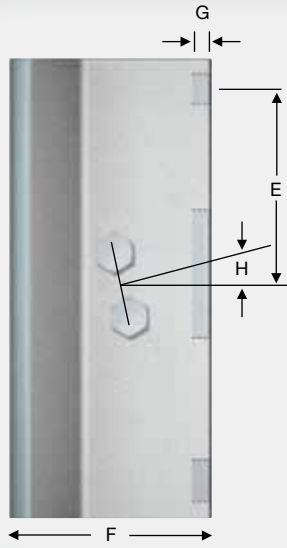
"XX" Code ⁽²⁾	Style	"B" Length inches (mm)	"C" Length inches (mm)	"D" Diameter inches (mm)
20	Face	20 (508)	12 (305)	0.8125 (21)
21	Side	20 (508)	12 (305)	0.8125 (21)
22	Face	20 (508)	12 (305)	0.9375 (24)
23	Side	20 (508)	12 (305)	0.9375 (24)
24	Face	31.75 (806)	16 (406)	0.8125 (21)
25	Side	31.75 (806)	16 (406)	0.8125 (21)
26	Face	31.75 (806)	16 (406)	0.9375 (24)
27	Side	31.75 (806)	16 (406)	0.9375 (24)

Notes:

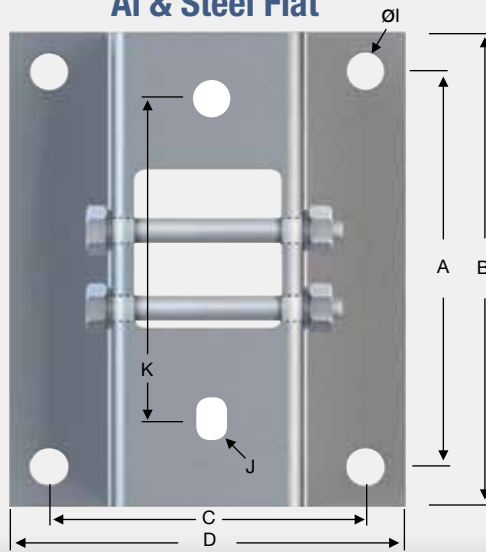
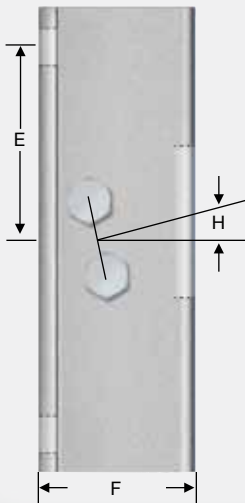
1) Insulators in Table A have the same electrical and mechanical characteristics as those on page 22 with a vertical clamptop on the line end and a 5" Bolt Circle on the ground end.

2) According to your preferred mounting configuration, replace the "xx" in catalog number from Table A with the two-digit "xx" code from Table B.

Base Fittings for 2.5" (63.5 mm) Rod Diameter



AI & Steel Flat

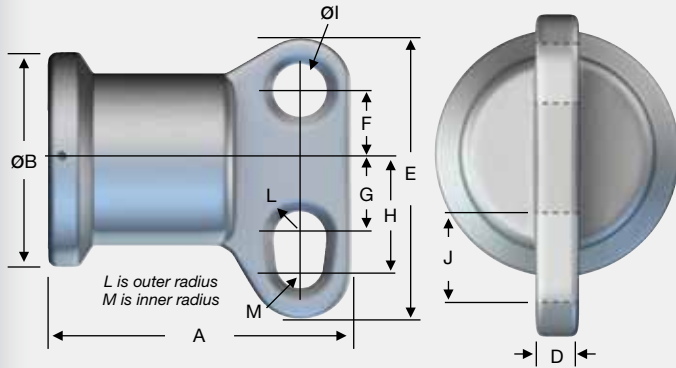


Horizontal & Vertical Bases inches (mm)

Type (Code)	A	B	C	D	E	F	G	H	I	J	K	Material
5" Bolt Circle (15)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	0.69 (18)	-	-	60-40-18 D.I.
5" Bolt Circle (05)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	5/8 - 11 UFS	-	-	60-40-18 D.I.
Aluminum Gain (02)	12.0 (305)	14.0 (356)	-	8.06 (205)	6.13 (156)	5.56 (141)	0.5 (13)	12°	0.94 (24)	0.94 X 1.31 (24x33)	-	6063 T5 AL
Aluminum Gain (12)	12.0 (305)	14.0 (356)	-	8.06 (205)	6.13 (156)	5.56 (141)	0.5 (13)	12°	0.81 (21)	0.94 X 1.31 (24x33)	-	6063 T5 AL
Steel Gain (07)	12.0 (305)	15.0 (381)	-	8.33 (212)	6.5 (165)	6.04 (153)	0.38 (10)	12°	0.94 (24)	0.94 X 2.0 (24x51)	-	Low Carbon Steel
Aluminum Flat (03)	10.0 (254)	12.0 (305)	8.0 (203)	10.0 (254)	5.0 (127)	4.0 (102)	0.5 (13)	12°	0.94 (24)	-	-	6063 T5 AL
Aluminum Flat (13)	10.0 (254)	12.0 (305)	8.0 (203)	10.0 (254)	5.0 (127)	4.0 (102)	0.5 (13)	12°	0.81 (21)	-	-	6063 T5 AL
Steel Flat (08)	13.0 (330)	15.0 (381)	8.0 (203)	10.0 (254)	6.5 (165)	4.0 (102)	0.38 (10)	12°	1.125 X 0.94 (26x24)	0.94 X 2.0 (24x51)	12.0 (305)	Low Carbon Steel
Aluminum Flat (04)	13.0 (330)	15.0 (381)	8.0 (203)	10.0 (254)	6.5 (165)	4.0 (102)	0.5 (13)	12°	0.94 (24)	0.94 X 1.31 (24x33)	12.0 (305)	6063 T5 AL
Aluminum Flat (14)	13.0 (330)	15.0 (381)	8.0 (203)	10.0 (254)	6.5 (165)	4.0 (102)	0.5 (13)	12°	0.81 (21)	0.81 X 1.31 (21x33)	12.0 (305)	6063 T5 AL

Line Fittings for 2.5" (63.5 mm) Rod Diameter

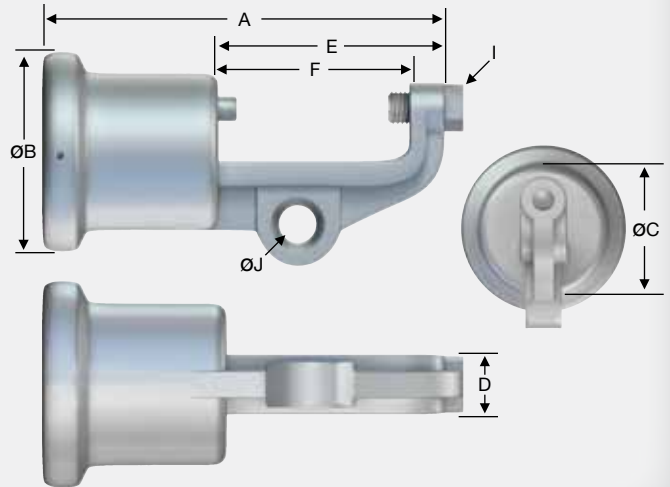
Two Hole Blade



Transverse Compressing Swing Angle for Conductor Suspension Clamp	
2 Hole Blade (std.)	2 Hole Long Blade
40 deg. max.	64 deg. max.

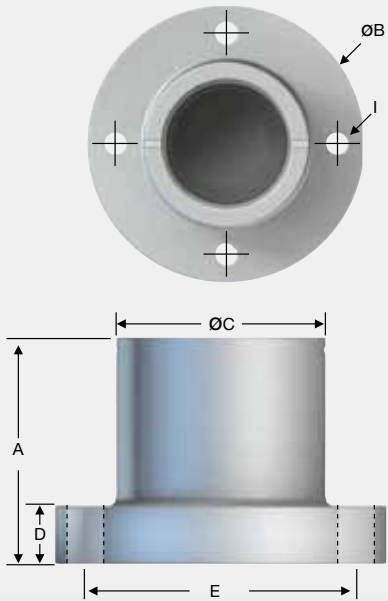
Note: 12° upsweep is already included

Horizontal Clamptop



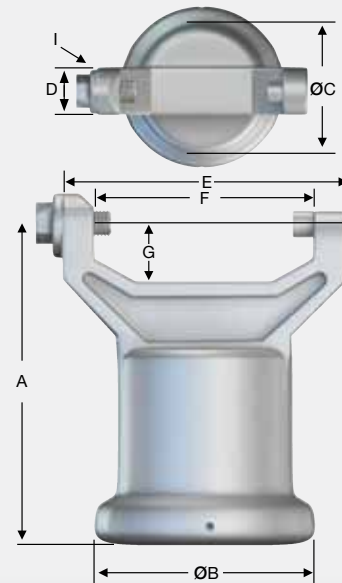
5" Bolt Circle

Line or Base Fitting



Vertical Clamptop

Part per ANSI C29.7



Horizontal & Vertical End Fittings inches (mm)

Type (Code)	A	B	C	D	E	F	G	H	I	J	L	M	Material
2 Hole Blade (0)	5.73 (146)	4.0 (102)	-	0.75 (19)	5.25 (133)	1.25 (32)	1.50 (38)	2.00 (51)	1.0 (25)	1.44 (37)	0.5R (12.7R)	0.44R (11R)	60-40-18 D.I.
2 Hole Long Blade (9)	5.73 (146)	4.0 (102)	-	0.75 (19)	7.75 (197)	1.25 (32)	4.0 (102)	4.5 (114)	1.0 (25)	1.44 (37)	0.5R (12.7R)	0.44R (11R)	60-40-18 D.I.
H. Clamptop (1)	8.24 (209)	4.0 (102)	3.30 (84)	1.12 (28)	4.72 (120)	4.0 (102)	-	-	5/8-11 UFS	0.75 (19)	-	-	60-40-18 D.I.
5" Bolt Circle (3)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	5/8-11 UFS	-	-	-	60-40-18 D.I.
5" Bolt Circle (5)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	0.69 x Holes (18 x Holes)	-	-	-	60-40-18 D.I.
V. Clamptop (2)	5.88 (149)	4.0 (102)	3.30 (84)	1.12 (28)	5.37 (136)	4.0 (102)	1.06 (27)	-	5/8-11 UFS	-	-	-	60-40-18 D.I.

Clamtop Clamps inches (mm)

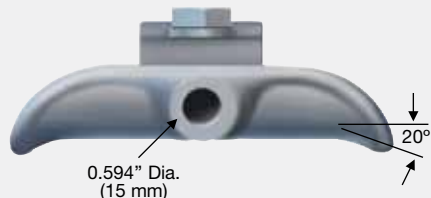
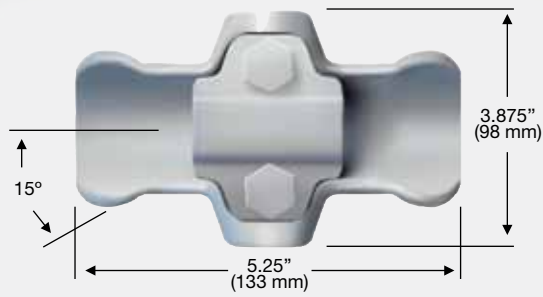


Figure 1

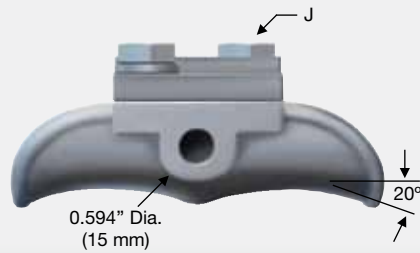
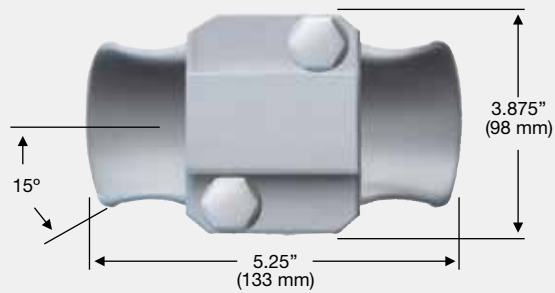


Figure 2

Fig. No.	Catalog Number	Body & Keeper Material	Clamping Range inches (mm)	Ultimate Body Strength lbs. (kN)
1	TSC57	356-T6 AL	0.25 - 0.57 (6.3 - 14.4)	2800 (1.273)
1	TSC106	356-T6 AL	0.50 - 1.06 (12.7 - 26.9)	2800 (1.273)
1	TSC150	356-T6 AL	1.00 - 1.50 (25.4 - 38.1)	2800 (1.273)
2	TSC200	356-T6 AL	1.50 - 2.00 (38.1 - 50.8)	2800 (1.273)

Jumper Clamps and Assemblies

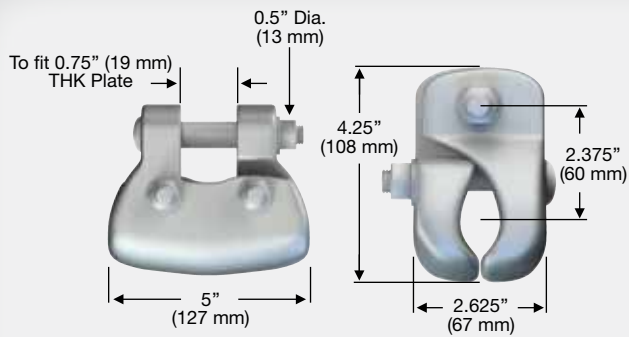


Figure 1

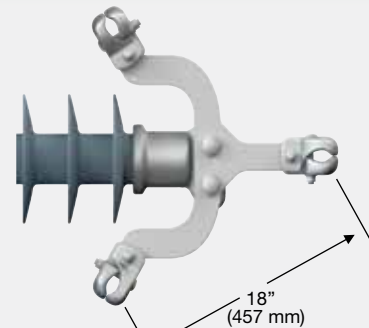


Figure 3

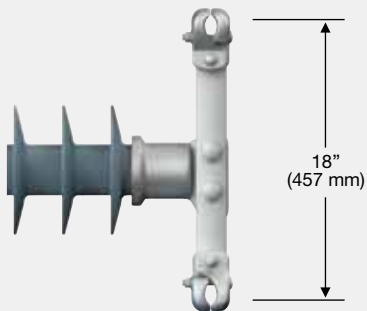


Figure 2

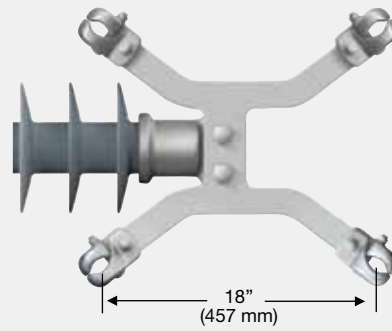


Figure 4

A practical application of Quadri*Sil® line posts is for support of jumper loops on transmission lines.

Horizontal motion of the jumper is restricted, and the factor of wind sway is eliminated. Additionally, the crossarm length may be reduced. The difference in cost of insulation is not significant, but the saving in tower cost can be attractive. Regardless of cost, the use of a jumper support improves construction.

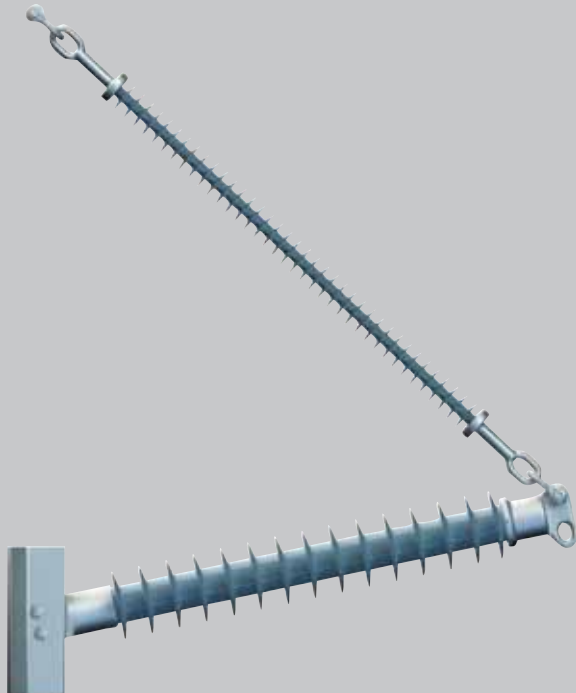
If using a single clamp, clamp position relative to the insulator may be changed by bolting the clamp through the upper hole in the insulator end fitting.

Jumper clamps are not intended for tangent span applications.

Figure	Catalog Number	Yoke Type	Clamping Range inches (mm)
1	976423002	None	1.00 - 1.40 (25 - 36)
1	976423003	None	1.40 - 1.60 (36 - 41)
1	600643001	None	1.60 - 2.00 (41 - 51)
2	2717243001	Dual	1.00 - 1.40 (25 - 36)
2	2717253001	Dual	1.40 - 1.60 (36 - 41)
2	2717263001	Dual	1.60 - 2.00 (41 - 51)
3	2721763001	Triple	1.00 - 1.40 (25 - 36)
3	2721773001	Triple	1.40 - 1.60 (36 - 41)
3	2721783001	Triple	1.60 - 2.00 (41 - 51)
4	2721793001	Quad	1.00 - 1.40 (25 - 36)
4	2721803001	Quad	1.40 - 1.60 (36 - 41)
4	2721813001	Quad	1.60 - 2.00 (41 - 51)

Braced Post Insulators

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Assembly Drawings.....	31
Dimensions and Strength Ratings	32



Braced Line Post Assemblies

The need to minimize tower size and visual impact of transmission lines has prompted increased interest in braced line posts, horizontal-V, and pivoting V assemblies. These insulating structures offer vastly improved vertical load capabilities over conventional line posts, while retaining the advantages of a fixed conductor position.

A **braced line post insulator** uses a conventional line post with a suspension string tied to the tower face. Some of the characteristics of a braced line post are:

- It uses a traditional fixed base line post.
- The longitudinal strength is limited to the RCL rating of the line post component.
- It generates high tower torque (Z-direction) under longitudinal loading.

A **horizontal-V insulator** uses a conventional line post with a suspension string at a fixed offset extending from the tower face, adding a stabilizing force to the assembly. Some of the characteristics of a horizontal-V assembly are:

- It uses a fixed base horizontal line post (zero degree upsweep).
- It has an inclined hinge axis to add resistance to longitudinal movement.
- It employs a suspension insulator ground end stub arm (vang).
- The longitudinal strength is limited to the RCL rating of the line post component.
- It generates high tower torque (Z-direction) under longitudinal loading.

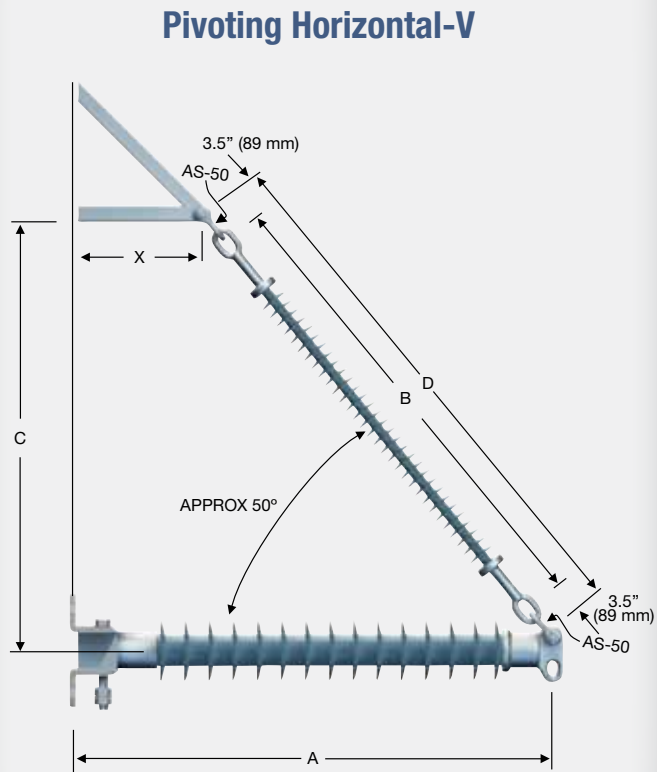
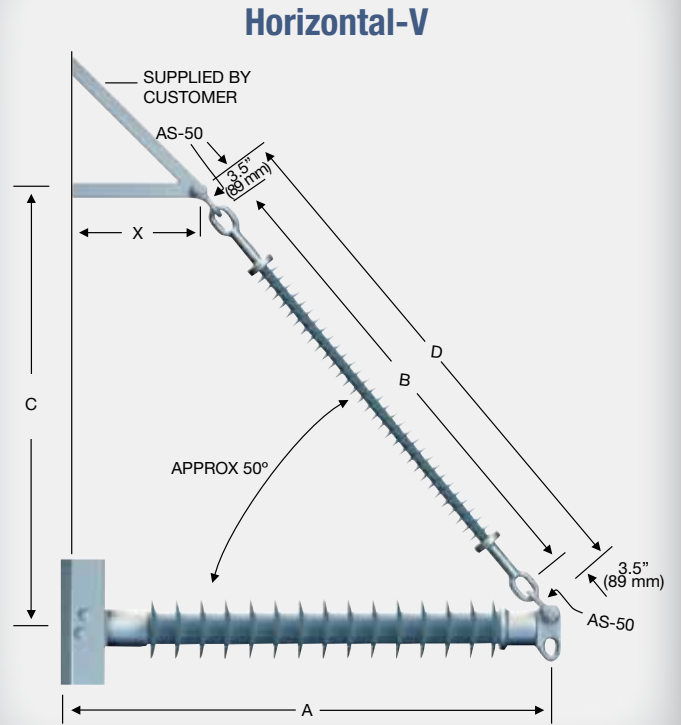
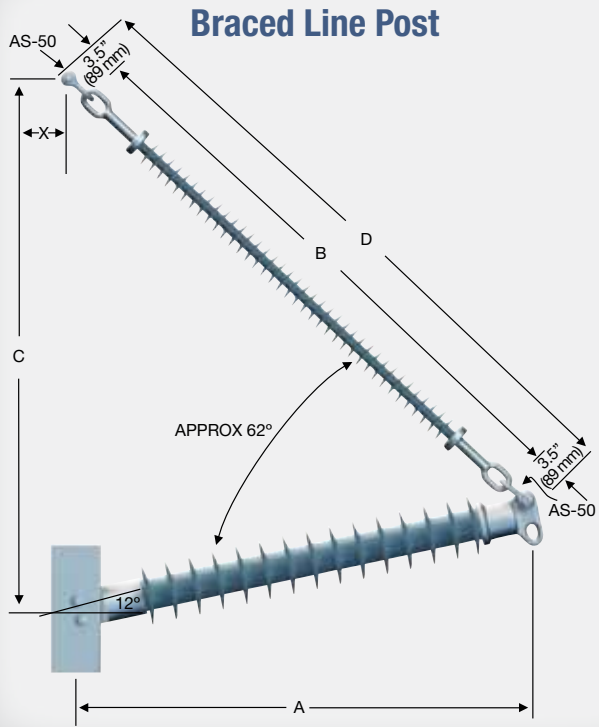
A **pivoting horizontal-V insulator** uses a conventional suspension string with a line post insulator fastened to the structure with a hinged base. Some of the characteristics of a pivoting horizontal-V are:

- It pivots about an inclined axis.
- It employs a suspension insulator ground end stub arm (vang).
- It uses a universal joint or pivot base on the strut.
- It has high longitudinal strength.
- It generates low tower torque (Z-direction) under longitudinal loading.
- The assembly's swing angle is a function of the vertical load and the tower offset pivot angle.
- The assembly's maximum longitudinal loading is a function of the tensile rating of the strut.

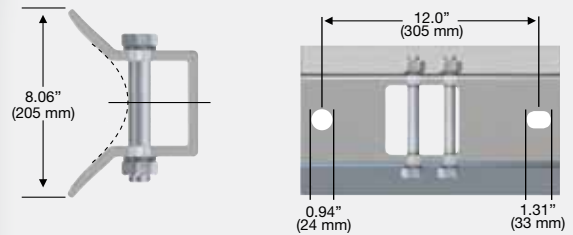
The tables included on the following pages — and the images on the assembly drawings page — cover typical arrangements that provide an efficient means of withstanding unusual loads. **For more information on these and numerous other variations of line post assemblies, contact your Hubbell Power Systems representative.**



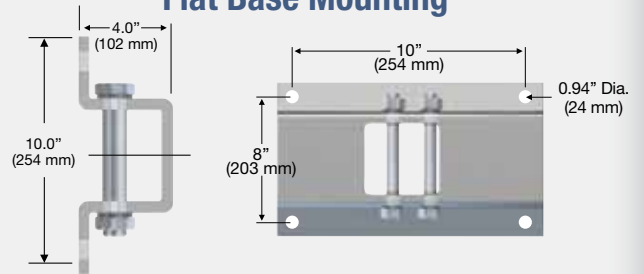
Assembly Drawings



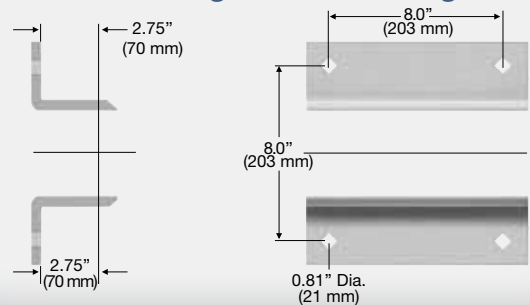
Gain Base Mounting



Flat Base Mounting



Pivoting Base Mounting

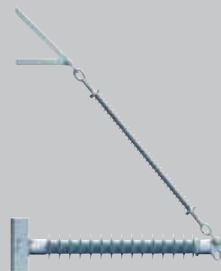


Dimensions and Strength Ratings



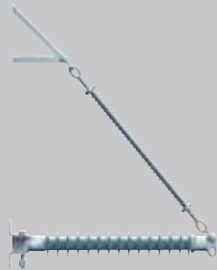
Braced Line Post Assembly

Typical System kV	Catalog Number Gain Base	Catalog Number Flat Base	Component Insulators		A inches (mm)	B inches (mm)	C inches (mm)	D inches (mm)	X inches (mm)	Maximum Loadings			
			Post	Suspension						Vertical lbs (kN)	Tension lbs (kN)	Compression lbs (kN)	Longitudinal lbs (kN)
115/138	BLP043G12000	BLP043F12000	P250043S0XX0	S025060S0000	55.9 (1420)	73.8 (1875)	74.0 (1880)	80.8 (2052)	2.0 (51)	11130 (49.5)	7500 (33.4)	7500 (33.4)	1625 (7.2)
115/138	BLP046G12000	BLP046F12000	P250046S0XX0	S025066S0000	58.2 (1478)	80.3 (2040)	82.0 (2083)	87.3 (2217)	2.0 (51)	11350 (50.5)	7500 (33.4)	7500 (33.4)	1550 (6.9)
161	BLP051G12000	BLP051F12000	P250051S0XX0	S025075S0000	63.0 (1600)	88.9 (2258)	90.0 (2286)	95.9 (2436)	2.0 (51)	11390 (50.7)	7500 (33.4)	7500 (33.4)	1415 (6.3)
161	BLP058G12000	BLP058F12000	P250058S0XX0	S025084S0000	70.1 (1781)	97.5 (2477)	96.0 (2438)	104.5 (2654)	2.0 (51)	11240 (50)	7500 (33.4)	7500 (33.4)	1250 (5.6)
230	BLP075G12000	BLP075F12000	P250075S0XX0	S025107S000A	86.6 (2200)	121.3 (3081)	118.0 (2997)	128.3 (3259)	2.0 (51)	11220 (49.9)	7500 (33.4)	7500 (33.4)	985 (4.4)
230	BLP080G12000	BLP080F12000	P250080S0XX0	S025116S000A	91.4 (2322)	129.9 (3299)	127.0 (3226)	136.9 (3477)	2.0 (51)	11260 (50.2)	7500 (33.4)	7500 (33.4)	930 (4.1)



Horizontal-V Assembly

Typical System kV	Catalog Number Gain Base	Catalog Number Flat Base	Component Insulators		A inches (mm)	B inches (mm)	C inches (mm)	D inches (mm)	X inches (mm)	Maximum Loadings			
			Post	Suspension						Vertical lbs (kN)	Tension lbs (kN)	Compression lbs (kN)	Longitudinal lbs (kN)
115/138	BLP041G00000	BLP041F00000	P250041S0XX0	S025040S0000	54.7 (1389)	54.3 (1379)	51.0 (1295)	61.3 (1557)	18.0 (457)	10050 (44.7)	7500 (33.4)	7500 (33.4)	1715 (7.6)
115/138	BLP046G00000	BLP046F00000	P250046S0XX0	S025045S0000	59.5 (1511)	58.7 (1491)	55.0 (1397)	65.7 (1669)	20.0 (508)	10070 (44.8)	7500 (33.4)	7500 (33.4)	1550 (6.9)
161	BLP053G00000	BLP053F00000	P250053S0XX0	S025053S0000	66.8 (1697)	67.3 (1709)	61.0 (1549)	74.3 (1887)	22.0 (559)	10000 (44.5)	7500 (33.4)	7500 (33.4)	1355 (6.0)
161	BLP055G00000	BLP055F00000	P250055S0XX0	S025058S0000	69.2 (1758)	71.6 (1819)	66.0 (1676)	78.6 (1996)	24.0 (610)	10240 (45.5)	7500 (33.4)	7500 (33.4)	1300 (5.8)
230	BLP072G00000	BLP072F00000	P250072S0XX0	S025075S000A	86.1 (2187)	88.9 (2258)	79.0 (2007)	95.9 (2436)	28.0 (711)	10010 (44.5)	7500 (33.4)	7500 (33.4)	1015 (4.5)
230	BLP080G00000	BLP080F00000	P250080S0XX0	S025084S000A	93.4 (2372)	97.5 (2477)	85.0 (2159)	104.5 (2654)	30.0 (762)	9960 (44.3)	7500 (33.4)	7500 (33.4)	930 (4.1)



Pivoting Horizontal-V Assembly

Typical System kV	Catalog Number Gain Base	Catalog Number Flat Base	Component Insulators		A inches (mm)	B inches (mm)	C inches (mm)	D inches (mm)	X inches (mm)	Maximum Loadings			
			Post	Suspension						Vertical lbs (kN)	Tension lbs (kN)	Compression lbs (kN)	Longitudinal lbs (kN)
115/138	—	BLP041P00000	P250041S0390	S025043S0000	53.1 (1349)	52.2 (1326)	50.0 (1270)	59.2 (1504)	18.0 (457)	10140 (45.1)	7500 (33.4)	7500 (33.4)	7500 (33.4)
115/138	—	BLP048P00000	P250048S0390	S025049S0000	57.9 (1471)	58.7 (1491)	56.0 (1422)	65.7 (1669)	20.0 (508)	10270 (45.7)	7500 (33.4)	7500 (33.4)	7500 (33.4)
161	—	BLP053P00000	P250053S0390	S025051S0000	65.2 (1656)	65.1 (1654)	60.0 (1524)	72.1 (1831)	22.0 (559)	10070 (44.8)	7500 (33.4)	7500 (33.4)	7500 (33.4)
161	—	BLP055P00000	P250055S0390	S025056S0000	67.6 (1717)	69.5 (1765)	65.0 (1651)	76.5 (1943)	24.0 (610)	10310 (45.9)	7500 (33.4)	7500 (33.4)	7500 (33.4)
230	—	BLP072P00000	P250070S0390	S025075S000A	84.5 (2146)	88.9 (2258)	81.0 (2057)	95.9 (2436)	28.0 (711)	10150 (45.1)	7500 (33.4)	7500 (33.4)	7500 (33.4)
230	—	BLP080P00000	P250080S0390	S025081S000A	91.8 (2332)	95.4 (2423)	84.0 (2134)	102.4 (2601)	30.0 (762)	10150 (45.1)	7500 (33.4)	7500 (33.4)	7500 (33.4)


Notes:

- Corona rings are required and included for 220 kV and above.
- Base end fitting for posts is code "02" for a gain base or "03" for a flat base. Replace the "XX" with the appropriate code.
- Maximum loads are for single loads in the specified direction.
- Contact your Hubbell Power Systems representative to request combined load charts.

CATALOG NUMBER KEY

Due to the numerous variations available for braced line post assemblies, the following catalog number scheme is presented primarily **for informational purposes**. For custom-made braced line post assemblies, please refer to publication *Insulator Selection Guide – Transmission* (EF9091T), available via www.hubbellpowersystems.com under “Literature” > “Literature Brochures” > “Ohio Brass Insulators and Arresters.”

Please follow the instructions in the *Insulator Selection Guide* and return the filled-out form to your Hubbell Power Systems representative. Filling out the form with as much information as possible will ensure that our engineers receive all the critical dimensions and information needed to design your braced line post assembly. For information on braced line post assemblies not included in this catalog, please contact your HPS representative.

<p>a Assembly Type</p> <p>The first three digits define the insulator type. In this example, we picked a Braced Line Post; therefore, we entered “BLP” in the boxes designated for “a.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> a a a b b b c d d e e e </p>	<p>e Internal Use</p> <p>000 – Sequential number to address each variation or model.</p> <p>Fill in your selection in the box designated for section “e.” In this example, the braced line post is the first in a series, as designated by “001.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text" value="0"/> <input type="text" value="7"/> <input type="text" value="5"/> <input type="text" value="F"/> <input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> a a a b b b c d d e e e </p> <p>Your complete part number will be BLP075F12001</p>
<p>b Polymer Length</p> <p>Polymer length of the line post member (in inches). The nominal polymer length (in inches) of the line post insulator is specified to help define voltage rating of the braced line post assembly. Refer to the Horizontal Line Post Insulators table on page 21 for appropriate polymer lengths.</p> <p>Fill in your selection in the boxes designated for section “b.” For example, if you want a Braced Line Post with a 75-inch polymer length, enter “075.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text" value="0"/> <input type="text" value="7"/> <input type="text" value="5"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> a a a b b b c d d e e e </p>	<p>Example:</p> <p>Braced Line Post Insulator, 75" Line Post Polymer Length, Flat Base, 12 degrees of Upsweep Angle, Variation/Model 001 BLP075F12001</p> 
<p>c Type of Line Post Base</p> <p>A single letter is used to identify the type of base. Please refer to the base drawings for hole patterns and dimensions located on page 24 or page 31.</p> <p> F – Flat G – Gain P – Pivoting </p> <p>Fill in your selection in the box designated for section “c.” For example, if you want a flat base, enter “F.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text" value="0"/> <input type="text" value="7"/> <input type="text" value="5"/> <input type="text" value="F"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> a a a b b b c d d e e e </p>	
<p>d Upsweep Angle</p> <p>The upsweep angle of the assembly is defined to help identify the assembly. Typically, braced line post assemblies will have 12 degrees of upsweep angle, and horizontal-V and pivoting-V assemblies will have 0 degrees.</p> <p>Fill in your selection in the box designated for section “d” for the upsweep angle. For example, if you chose a braced line post assembly, enter “12.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text" value="0"/> <input type="text" value="7"/> <input type="text" value="5"/> <input type="text" value="F"/> <input type="text" value="1"/> <input type="text" value="2"/> <input type="text"/> <input type="text"/> <input type="text"/> a a a b b b c d d e e e </p>	

TECHNICAL TERMS REFERENCE GUIDE

ANSI – The American National Standards Institute verifies that the standard developers are complying with the consensus and all other approval criteria.

Boron-free E-Glass – Electrical grade fiberglass that has corrosion resistance greater than boron containing E-glass; it is environmentally friendly due to the lack of boron and fluorine.

Combined Load Charts – Also referred to as application curves; a graphical representation that shows how the maximum working loads interact for a given line post or braced line post assembly.

Corona – A luminous discharge resulting from ionization of the air surrounding a conductor around which a voltage gradient exceeding a certain critical value exists.

Dry Band Arcing – Electrical flashes that occur between wet and dry spots over the contaminated surface of an insulator.

E-Glass – Electrical grade fiberglass; the first glass used for high-voltage insulators.

Flashover – A disruptive discharge that is capable of breaking the insulation level provided by the air around the insulator, which creates an arc between parts of different potential or polarity.

IEC – The International Electrotechnical Commission develops and publishes international standards for all electrical technologies.

Leakage Distance – The distance between the conductive end fittings of the insulator across the insulator surface, moving in and out of the sheds; also commonly referred to as the creep or creepage distance.

RCL – Reference Cantilever Load is the maximum design cantilever load (MDCL), which is rated at 50 percent of the part's SCL.

RIV – Radio-Interference Voltages are caused by electric currents that produce magnetic and electrostatic fields that are capable of inducing high-frequency voltage pulses in nearby radio antennas. The RIV of an insulator is measured under conditions specified by industry standards.

RTV – Room Temperature Vulcanate (elastomer sealant) is a silicone rubber that cures at room temperature.

RTL – Routine Test Load is the maximum design tension load, which is rated at 50 percent of the part's SML. All parts are tested at this rating prior to being shipped.

Section Length – The straight-line distance between the coupling points of the insulator's end fittings.

SCL – Specified Cantilever Load is the minimum ultimate cantilever strength of the part.

SML – Specified Mechanical Load is the minimum ultimate tensile strength of the part.

Strike Distance – The shortest distance across the insulator surface, between the end fittings of the insulator; also commonly referred to as the dry arc distance or tight string distance.





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January 2011



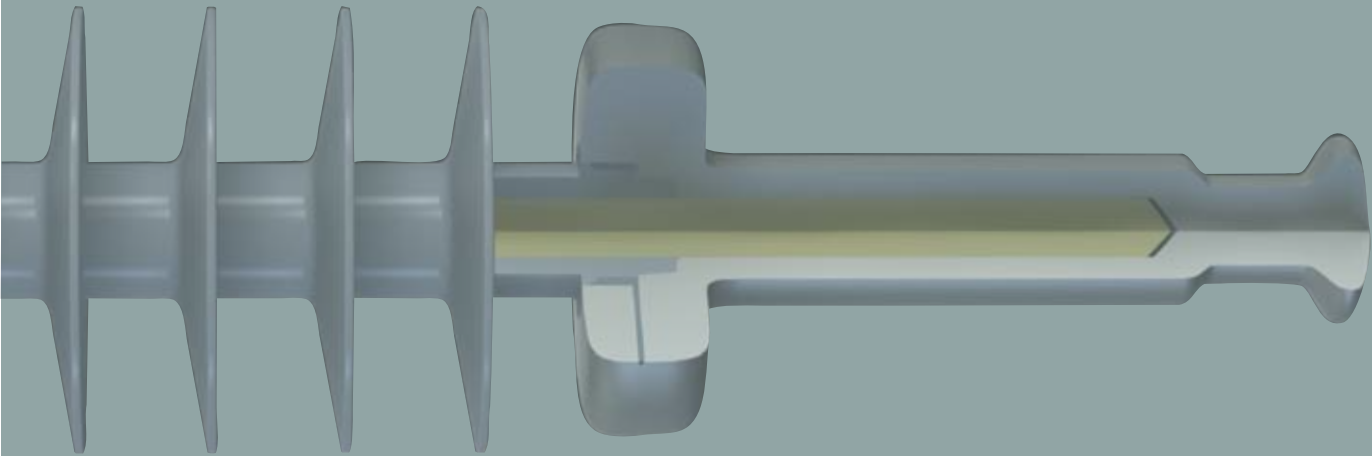
A&J 1M



A Better Design. A Better Insulator.



Quadri*Sil[®]
Insulators



LIMITED WARRANTY AND LIMITATION OF LIABILITY

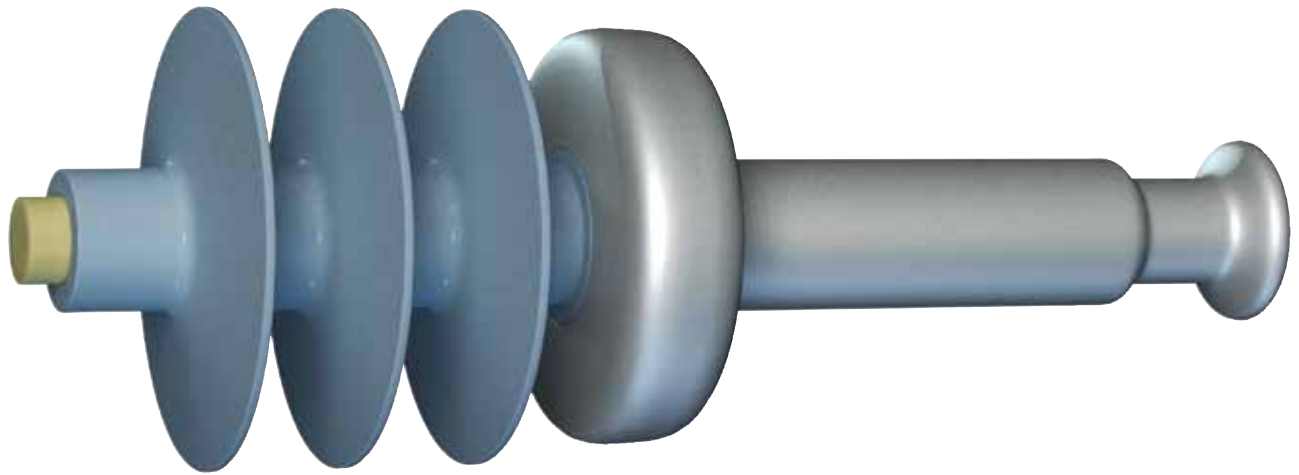
MATERIAL: HPS warrants all products sold by it to be merchantable (as such term is defined in the Uniform Commercial Code) and to be free from defects in material and workmanship. Buyer must notify HPS promptly of any claim under this warranty. The Buyer's exclusive remedy for breach of this warranty shall be the repair or replacement, F.O.B. factory, at HPS's option, of any product defective under the warranty, which is returned to HPS within one year from the date of shipment. NO OTHER WARRANTY, WHETHER EXPRESS OR ARISING BY OPERATION OF THE LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE IMPLIED, SHALL EXIST IN CONNECTION WITH HPS'S PRODUCTS OR ANY SALE OR USE THEREOF. HPS SHALL IN NO EVENT BE LIABLE FOR ANY LOSS OF PROFITS OR CONSEQUENTIAL OR SPECIAL DAMAGES INCURRED BY BUYER. HPS's warranty shall run only to the first Buyer of a product from HPS, from HPS's Buyer, or from an original equipment manufacturer reselling HPS's product, and is non-assignable and non-transferable and shall be of no force and effect if asserted by any person other than such first Buyer. This warranty applies only to the use of the product as intended by HPS and does not cover any modification, misapplication, or misuse of said product.

APPLICATION: HPS 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. 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 HPS, its liability will be limited to the reperformance of any such analysis or study.

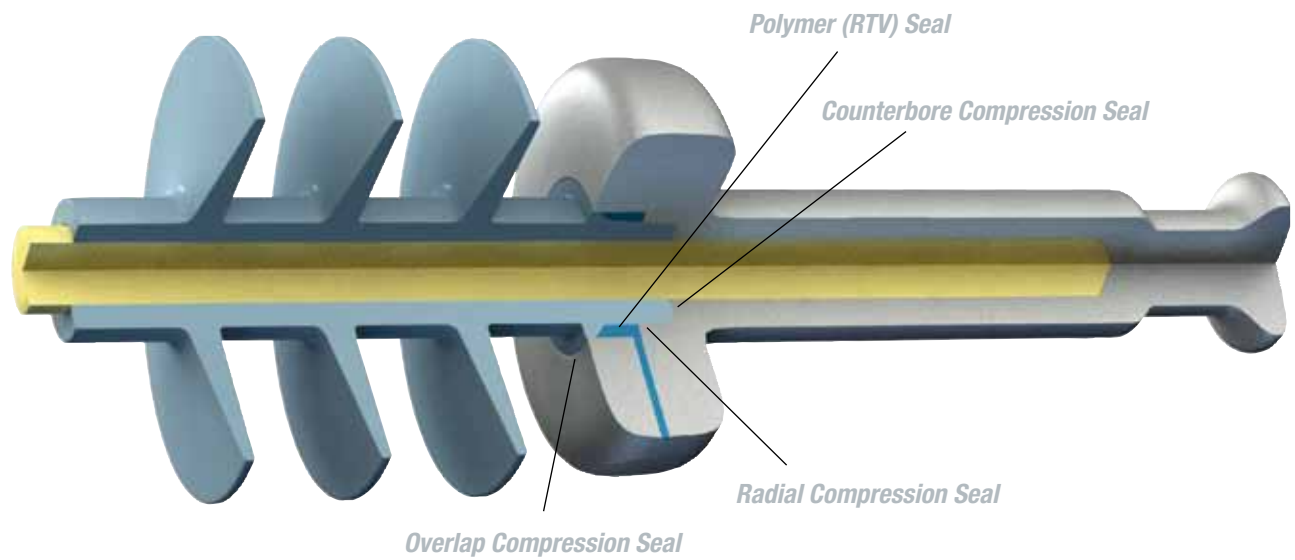
PURCHASER INSPECTIONS: Tests, inspections and acceptance of all material must be made at the factory. Purchasers' inspectors are welcome at the factories and are provided with the necessary facilities for carrying out their work. Name and phone number of who should be contacted for inspection should be given to HPS no later than two weeks prior to scheduled shipment date. LIMITATION OF LIABILITY: IN NO EVENT, WHETHER AS A RESULT OF BREACH OF CONTRACT OR WARRANTY OR ALLEGED NEGLIGENCE, SHALL HPS BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR REVENUE, LOSS OF USE OF THE EQUIPMENT OR ANY ASSOCIATED EQUIPMENT, LOSS OF CAPITAL, COST OF SUBSTITUTE EQUIPMENT, FACILITIES OR SERVICES, DOWNTIME COSTS, OR CLAIMS OF THIRD PARTIES OF THE BUYER FOR SUCH DAMAGES. Any claim by Buyer for breach of the foregoing warranty shall be deemed waived by Buyer unless submitted to HPS in writing within thirty (30) days from the date Buyer discovered, or by reasonable inspection should have discovered the alleged breach. Any cause of action for breach of the foregoing warranty shall be brought within one year after the cause of action has accrued.

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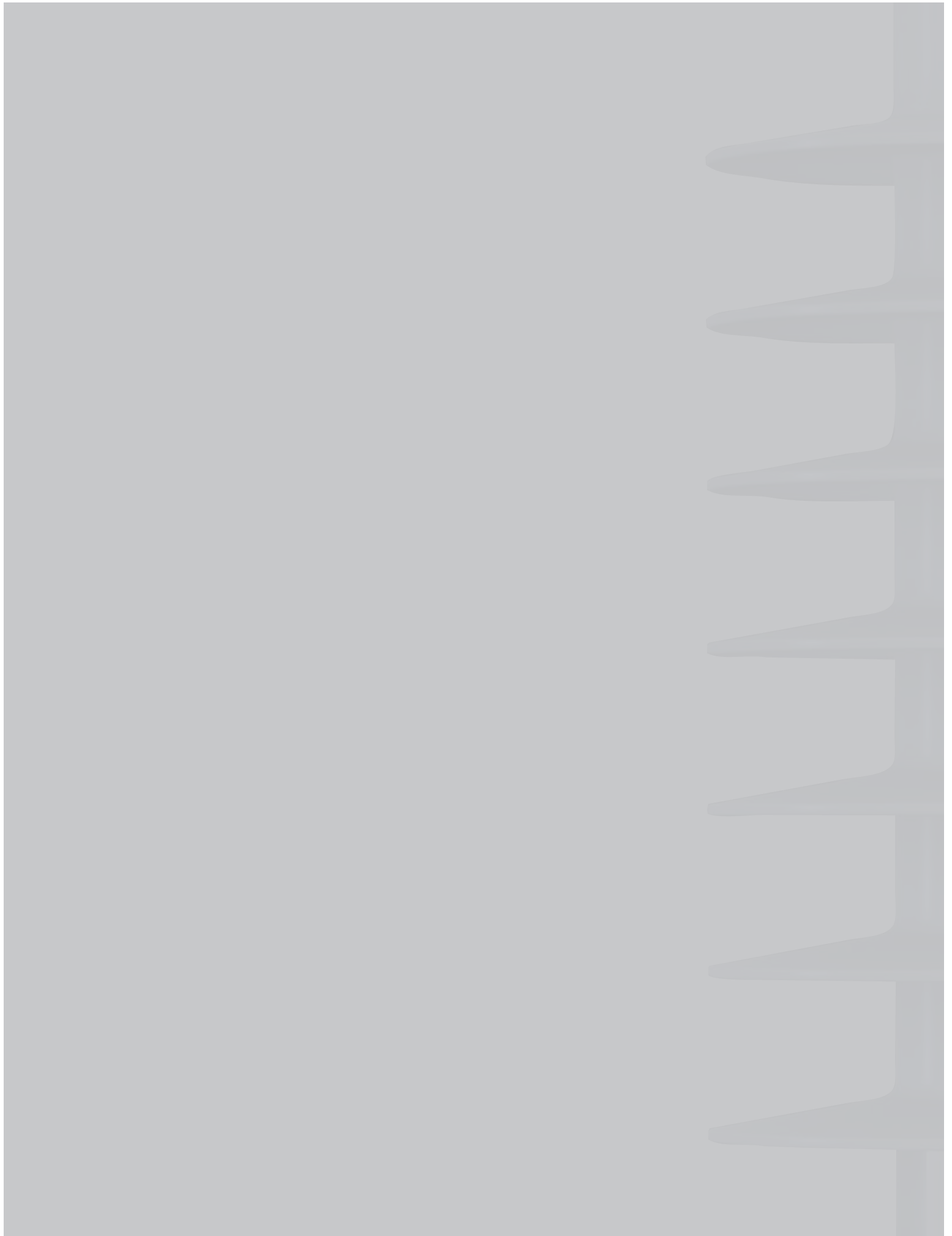
NOTE: Because Hubbell has a policy of continuous product improvement, we reserve the right to change design and specifications without notice.



A Better Design. A Better Insulator.



Our Exclusive Four-Point Seal



Quadri*Sil® Insulators — *A Century in the Making*

With nearly 100 years of Ohio Brass insulator experience and product innovation, it's no surprise that the next generation of insulator reliability carries the trusted name of Ohio Brass.



Ohio Brass (Hubbell Power Systems) is proud to offer a transmission insulator that triumphs over today's unpredictable environment. Appropriately named, the Quadri*Sil® insulator incorporates a revolutionary four-point seal that, quite simply. . . **prohibits moisture intrusion.**

The Ohio Brass commitment is simple and complete: we provide our customers the finest, most advanced products and expert technical assistance, before and after purchase. Every day. Worldwide.

In addition, the Quadri*Sil® insulator optimizes the Ohio Brass commitment to excellence and the advancement of processes and materials. With a **proprietary** silicone-rubber compound and end-seal design, this direct-bonded insulator offers assurance that **moisture penetration does not occur.**



Today's environment is unpredictable. Your insulator can't be.

QUADRI*SIL® GENERAL INFORMATION

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LINE POST INSULATORS

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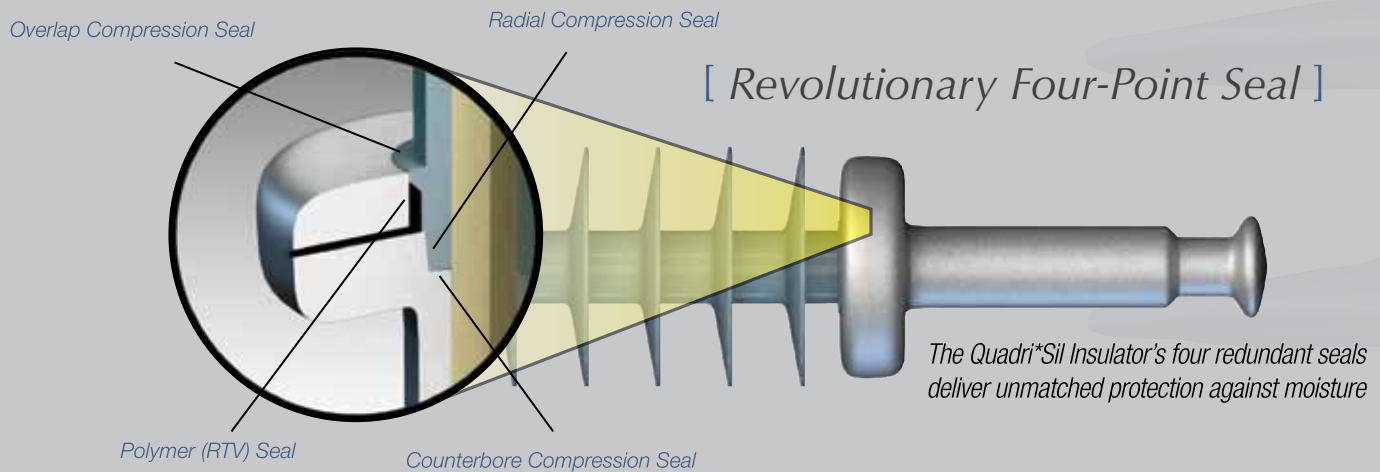
BRACED POST INSULATORS

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Design

Sealing System — This four-point sealing system provides **superior performance** by preventing moisture penetration between the silicone rubber and end-fitting interface. The design is based on four redundant seals that provide **unmatched protection** to the fiberglass core rod. RTV (Room Temperature Vulcanate) is completely encapsulated within the interior of the end-fitting and is not utilized as an exterior seal as with other silicone designs.



Corona Shielding Ring (CSR) — The Quadri*Sil® end-fitting design provides superior electric field shielding of the silicone rubber adjacent to the end-fitting. The superior shielding protects the silicone rubber on applications where an external corona ring is not required.

Direct Bond — The silicone rubber material is bonded directly to the fiberglass core rod during the molding process. The resulting bond between the silicone rubber and fiberglass rod is mechanically stronger than the tear strength of the silicone rubber.

Crimp Method — A circumferential crimp creates a more uniform stress distribution to ensure the mechanical integrity of the Quadri*Sil® insulator. Ohio Brass pioneered the crimping process in 1976 — today it has become the industry standard.

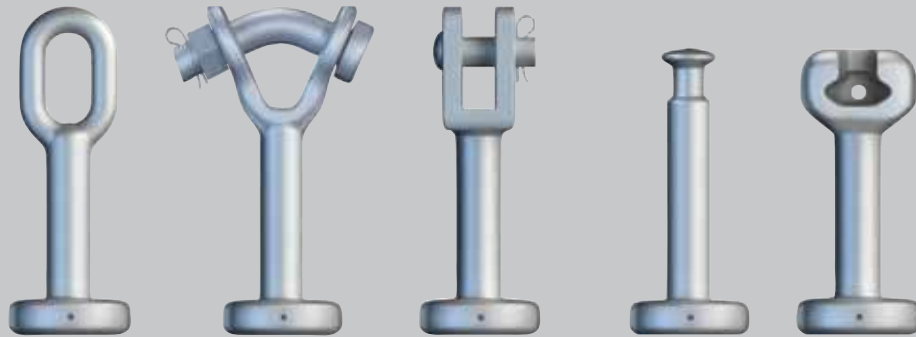


Components and Materials

Polymer Weathersheds — The polymer weathershed material utilized in the Quadri*Sil® insulator design is a proprietary silicone-rubber compound specifically designed by Ohio Brass engineers for high-voltage insulator applications. The polymer weathershed material starts with **100-percent base silicone rubber** before additives and fillers are compounded with the base rubber. Hubbell Power Systems (HPS) **controls the entire process** from the proprietary formulation to the complete mixing process. The proprietary formulation incorporates the inherent hydrophobicity and UV performance of silicone rubber while providing **superior tracking performance** as demonstrated in dry-band arcing tests. **For more information about our silicone rubber, please contact your HPS representative.**

Fiberglass Core Rod — The Quadri*Sil® suspension insulator's fiberglass core rod is produced with boron-free, corrosion-resistant E-glass and epoxy resin. Quadri*Sil® line post insulators are manufactured with electrical grade glass and epoxy resin.

End Fittings — Made of steel or ductile iron, the end-fittings are directly attached to the fiberglass core rod by a circumferential crimping process. This crimping process allows the end fittings to utilize the rod's inherent tensile strength.



Grading Rings — Also known as corona rings, grading rings are manufactured using high-grade aluminum alloy, making them strong, light, and corrosion-resistant. Grading (corona) rings can be packaged separately or inside the insulator crates with all mounting hardware included.

Leakage Distance

Quadri*Sil® suspension insulators feature standard and high leakage distance weathershed profiles for maximum resistance to contamination and leakage currents in various environmental applications. The hydrophobic nature of our silicone rubber ensures superior performance in contaminated environments.

High Pressure Washing

Quadri*Sil® transmission insulators normally do not require washing or other routine maintenance. Washing may be required if the insulators are installed in an area of severe environmental contamination. In the event that washing is required, the procedures outlined in Section IX of the “IEEE GUIDE FOR INSULATOR CLEANING,” IEEE STD 957-2005 are generally applicable.

Mechanical Ratings

Quadri*Sil® suspension insulators are rated and tested in accordance with IEC 61109 and ANSI C29.12. Quadri*Sil® line post insulators are rated and tested in accordance with IEC 61952 and ANSI C29.17. Certified test reports are available.

For suspension insulators, SML ratings are 120 kN, 160 kN, 210 kN, 25 kip, 30 kip, and 50 kip with appropriate rod size and end fittings. RTL ratings are consistent with the IEC and ANSI standards. Factory routine tests are conducted on 100 percent of all insulators to the RTL rating.

Markings

Markings for Quadri*Sil® suspension insulators are placed on a UV-resistant label located on the ground end fitting. Markings for Quadri*Sil® line post insulators are placed on a metal plate on the mounting base of the insulator. Markings include SML and RTL (for suspension), SCL and RCL (for line post), part number, assembly date code, and Hubbell Power Systems identification.

These markings are consistent with applicable IEC and ANSI standards.

Insulator Lengths

Quadri*Sil® suspension insulators are available in lengths appropriate for 69 kV through 765 kV. Longer lengths can be produced for special projects. Intermediate lengths – those that fall in between the catalog numbers listed in the tables – are also available. Length increments are approximately 2.2 inches (56 mm) for suspension insulators and 2.4 inches (61 mm) for vertical and horizontal line post insulators.



Testing

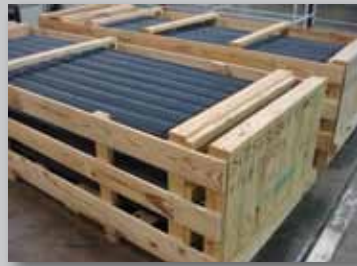
Quadri*Sil® insulators have been tested successfully to meet the requirements of IEC 61109 and ANSI C29.11. For a certified test report or additional information related to product testing, please contact your HPS representative.



Packaging

Quadri*Sil® suspension insulators are packaged in wooden crates 44 inches (111.7 cm) wide with the length of the crate determined by the length of the insulator. The height of the crate is normally less than 45 inches (114.3 cm). The gross weight will not exceed 2,000 pounds (909 kg). Crates are available for both domestic and export transportation.

The Quadri*Sil® line post insulators are packaged in appropriate quantities in open wood crates. Line post insulators are packaged to prevent the metal bases from resting on the polymer weathershed material.



CATALOG NUMBER KEY

The Quadri*Sil® Insulators Numbering Scheme is organized according to a smart numbering system. Each group of digits defines a characteristic of the product you are ordering. To fill out this form, start on “a: Insulator Type.” Then, fill in your selection in the box corresponding to the letter “a.” Apply the same rule for all the other sections.

a Insulator Type **P** — Post or **S** — Suspension

a) **Insulator Type.** Defines your insulator type: Post or Suspension. Select “P” or “S” for Post or Suspension, respectively, and fill in your selection in the box designated for “a.” In this example, we selected a suspension insulator.

S

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

b Mechanical Strength

Suspension (SML), Rod Diameter

025 — 25 kip, 5/8” (16 mm)
030 — 30 kip, 5/8” (16 mm)
050 — 50 kip, 7/8” (22 mm)
120 — 120 kN, 5/8” (16 mm)
160 — 160 kN, 7/8” (22 mm)
210 — 210 kN, 7/8” (22 mm)

Post

250 — Series 250, standard strength 2.5”, (63.5 mm)

b) **Strength.** Defines the mechanical strength of your insulator. Fill in your selection in the boxes designated for “b.”

Note: kip = Kilopound, kN = Kilonewton

For example, if you want a Suspension insulator with 25 kip, this is what your form would look like so far:

S **0** **2** **5**

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

c Polymer Length

3 digits for distance between metal parts, in inches

c) **Polymer Length.** Defines the polymer length of the insulator (please use catalog tables for possible polymer lengths). Fill in your selection in the boxes designated for section “c.” For example, if you want a 49-inch polymer length, enter:

S **0** **2** **5** **0** **4** **9**

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

d Weathershed Profile

Suspension

S — Standard Leakage Distance (2.5)
H — High Leakage Distance (2.9 or 3.3)

Post

S — Standard Leakage Distance

d) **Weathershed Profile.** Defines the leakage distance design. For a suspension insulator with standard leakage distance, use “S.” For a suspension insulator with high leakage distance, use “H.” For a line post, only the standard leakage distance design is available. Fill in your selection in the box designated for “d.” For example, if you want an insulator with high leakage distance, you would place an “H” in the box designated “d.”

S **0** **2** **5** **0** **4** **9** **H**

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

e Top Fitting

<i>Suspension Insulators</i>	<i>Line Post Insulators</i>
0 — Chain Eye	0 — Tear Drop Blade
1 — ANSI Ball	1 — Horizontal Clamptop
2 — Y-Clevis	2 — Vertical Clamptop
3 — ANSI Socket	3 — 5” (127 mm) Bolt Circle 5/8” (16 mm) Tapped Hole
4 — ANSI Straight Clevis	5 — 5” (127 mm) Bolt Circle 5/8” (16 mm) Through Hole
7 — IEC Ball Fitting 16 mm for 120 kN 20 mm for 160 kN and 210 kN	9 — Long Tear Drop Blade
8 — IEC Straight Clevis	
A — IEC Socket 16 mm for 120 kN 20 mm for 160 kN and 210 kN	

e) **Top Fitting.** Defines the top end fitting of your insulator. Fill in your selection in the box designated for “e.” For example, if you want a suspension insulator with a Y-clevis top end fitting, you would place a “2” in the box designated for “e.”

S **0** **2** **5** **0** **4** **9** **H** **2**

a **b** **b** **b** **c** **c** **c** **d** **e** **f** **f** **g**

f

Bottom Fitting

f) **Bottom Fitting.** Defines the bottom end fitting of your insulator. Fill in your selection in the boxes designated for "f." For example, if you want an ANSI ball bottom end fitting, you would place "01" in the boxes designated for "f."

S 0 2 5 0 4 9 H 2 0 1
 a b b b c c c d e f f g

Suspension Insulators	Line Post Insulators
00 - Chain Eye	02 - Aluminum Gain 12" (305 mm) CL ¹ mounting
	03 - Aluminum Flat 8"x 10" (203 mm x 254 mm), 15/16" (24 mm) hole diameter
01 - ANSI Ball	04 - Aluminum Flat 8"x 13" (203 mm x 330 mm), 15/16" (24 mm) hole diameter
02 - Y-Clevis	05 - 5" (127 mm) Bolt Circle, 5/8" (16 mm) tapped hole
03 - ANSI Socket	07 - Steel Gain 12" (305 mm) CL mounting, 15/16" (24 mm) hole diameter
04 - ANSI Straight Clevis	08 - Steel Flat 8"x 13" (203 mm x 330 mm) MS ² , 15/16" (24 mm) hole diameter
07 - IEC Ball Fitting 16 mm for 120 kN or 20 mm for 160 kN and 210 kN	15 - 5" (127 mm) Bolt Circle, 5/8" (16 mm) through hole
08 - IEC Straight Clevis	Vertical Gain - See page 23 Table B
0A - IEC Socket 16 mm for 120 kN or 20 mm for 160 kN and 210 kN	¹ Center Line ² Horizontal x Vertical Mounting Pattern Spacing

g

Rings

- 0** — No ring required
- A** — ≥220 kV, 8" (203 mm) ring for suspension, 12" (305 mm) ring for series 250 post
- B** — ≥330 kV, 12" (305 mm) ring for suspension, 15" (381 mm) ring for series 250 post
- C** — ≥400 kV, 12" (305 mm) line end and 8" (203 mm) ground end ring for suspension
- D** — ≥500 kV, 15" (381 mm) line end and 8" (203 mm) ground end ring for suspension
- E** — ≥735 kV, 15" (381 mm) line end and 12" (305 mm) ground end ring for suspension

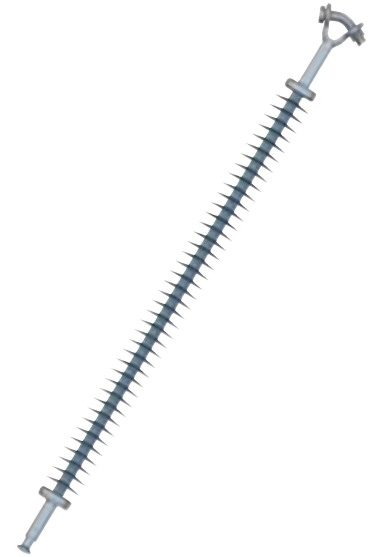
g) **Rings.** Defines your need for a Corona Ring. Fill in your selection in the box designated for "g." The example below shows a selection of a corona ring for 220 kV, 8" (203 mm) for a suspension insulator. Thus, "A" was placed in the box designated for "g."

S 0 2 5 0 4 9 H 2 0 1 A
 a b b b c c c d e f f g

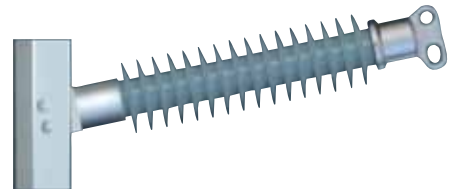
Your complete part number will be S025049H201A

Examples:

Suspension Insulator, 25 kip, 49" of Polymer Length, Standard Leakage Distance Profile (2.5), Top Fitting: Y-Clevis, Bottom Fitting: ANSI Ball, No Corona Ring
S025049S2010



Line Post Insulator, 2.5" (63.5 mm) Rod Diameter, 21.9" Polymer Length, Standard Leakage Distance, Top Fitting: Tear Drop Blade, Bottom Fitting: 2-Piece Aluminum Gain Base, No Corona Ring
P250021S0020



Your final catalog number should look like this

Fill out boxes according to instructions

□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
 a b b b c c c d e f f g



Suspension Insulators

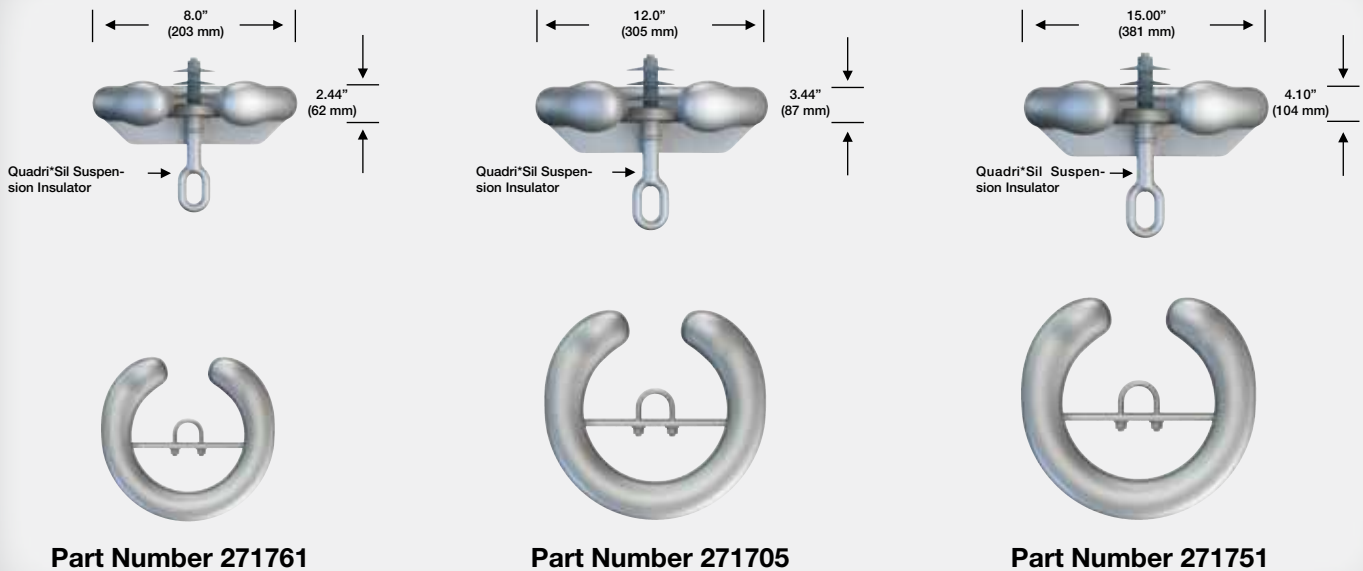
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Corona Performance

Quadri*Sil® insulators are RIV and corona free through 161 kV. The use of an external corona shielding ring is required at 220 / 230 kV and above. The table below details the rings necessary for 220 / 230 kV and above.

Recommended Corona Ring Installation Table Normal Applications: Top Grounded, Bottom Energized

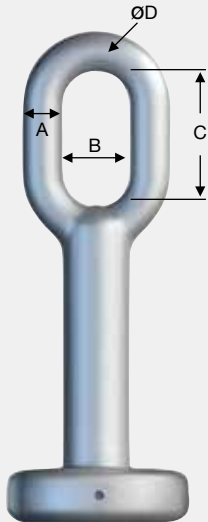
Line Voltage (kV)	Recommended Corona Rings by Line Voltage		Corona Ring Part Numbers			
			25 kip, 30 kip, 120 kN, 133 kN		50 kip, 160 kN, 210 kN	
	Ground End	Line End	Ground End	Line End	Ground End	Line End
220/230 kV	None	8" (203 mm)	-	2717613001	-	2717613002
330/345 kV	None	12" (305 mm)	-	2717053001	-	2717053002
400 kV	8" (203 mm)	12" (305 mm)	2717613001	2717053001	2717613002	2717053002
500 kV	8" (203 mm)	15" (381 mm)	2717613001	2717513001	2717613002	2717513002



Electrical/Dimensional Changes to the Suspension Insulator with External Corona Ring

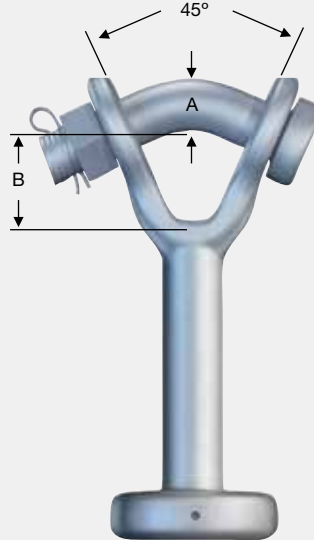
Physical and Electrical Characteristics	220/230 kV Ring	330/345 kV Ring	400 kV Ring	500 kV Ring
Dry Arc Distance inches (mm)	-0.63 (-16)	-1.32 (33.5)	-1.95 (49.5)	-2.67 (67.8)
Leakage Distance inches (mm)	0	0	0	0
ANSI 60 Hz Flashover Dry — kV	-10	-20	-20	-30
ANSI 60 Hz Flashover Wet — kV	-10	-10	-20	-30
ANSI Critical Flashover Positive — kV	-10	-20	-30	-40
ANSI Critical Flashover Negative — kV	-10	-20	-30	-50
IEC Wet Switching Impulse Withstand — kV	N/A	N/A	N/A	N/A
IEC Power Frequency Wet Withstand — kV	-10	-10	-20	-30
IEC Lightning Impulse Withstand Positive — kV	-10	-20	-30	-40
IEC Lightning Impulse Withstand Negative — kV	-10	-20	-30	-50
Net Weight pounds (kg)	2.1 (1.0)	2.9 (1.3)	5.0 (2.3)	6.5 (2.9)

MOST COMMON END FITTINGS



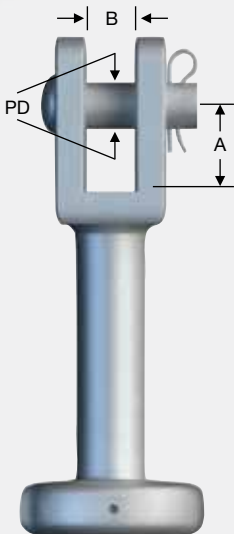
Chain Eye

SML	Dimensions in. (mm)			
	A	B	C	D
25 kip (111 kN)	0.62 (15.74)	1.00 (25.4)	2.00 (50.8)	0.62 (15.74)
120 kN	0.62 (15.74)	1.00 (25.4)	2.00 (50.8)	0.62 (15.74)
30 kip (133 kN)	0.75 (19.05)	1.00 (25.4)	2.00 (50.8)	0.85 (21.59)
36 kip (160 kN)	0.75 (19.05)	1.00 (25.4)	2.00 (50.8)	0.85 (21.59)
210 kN	0.75 (19.05)	1.00 (25.4)	2.00 (50.8)	0.85 (21.59)
50 kip (222 kN)	0.75 (19.05)	1.00 (25.4)	2.00 (50.8)	0.85 (21.59)



Y-Clevis

SML	Dimensions in. (mm)		
	A	B	Bolt Dia.
25 kip (111 kN)	0.75 (19.05)	1.53 (38.86)	0.75 (19)
120 kN	0.75 (19.05)	1.53 (38.86)	0.75 (19)
30 kip (133 kN)	0.88 (22.35)	1.59 (40.39)	0.88 (22)
36 kip (160 kN)	0.88 (22.35)	1.59 (40.39)	0.88 (22)
210 kN	0.88 (22.35)	1.59 (40.39)	0.88 (22)
50 kip (222 kN)	0.88 (22.35)	1.59 (40.39)	0.88 (22)



Straight Clevis

SML	Dimensions in. (mm)			
	Class	A	B	PD
25 kip (111 kN)	ANSI 52-6	1.41 (36)	0.75 (19)	0.62 (16)
120 kN	IEC 16C	1.41 (36)	0.75 (19)	0.62 (16)
30 kip (133 kN)	ANSI 52-6	1.41 (36)	0.75 (19)	0.62 (16)
36 kip (160 kN)	IEC 19L	1.81 (46)	0.83 (21)	0.75 (19)
210 kN	IEC 19L	1.81 (46)	0.83 (21)	0.75 (19)
50 kip (222 kN)	N/A			



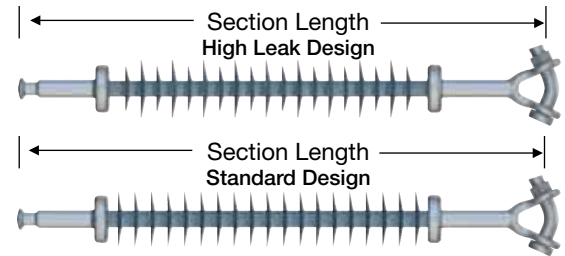
Ball/Socket

SML	Class
25 kip (111 kN)	ANSI 52-5
120 kN	IEC 16 mm
30 kip (133 kN)	ANSI 52-5
36 kip (160 kN)	ANSI 52-8 (IEC 20 mm)
210 kN	IEC 20 mm
50 kip (222 kN)	ANSI 52-11

Suspension Insulators

Mechanical Ratings SML = 25 kip/120 kN RTL = 12.5 kip/60 kN

Rod Diameter: 5/8" (16 mm)



Selection Guide: Typical Line Voltage, kV	Catalog Numbers ANSI / IEC	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values		
						60-Hz Dry Flashover (kV)	60-Hz Wet Flashover (kV)	Critical Impulse Positive (kV)	Critical Impulse Negative (kV)	60-Hz 1-minute Wet Withstand (kV)	Impulse Positive Withstand (kV)	Impulse Negative Withstand (kV)
69	S025021S2010 / S120021S2010	021	33.3 (846)	21.5 (546)	55 (1397)	220	210	370	350	145	315	300
110	S025021H2010 / S120021H2010	021	33.3 (846)	22 (559)	64 (1626)	220	210	370	350	150	325	305
132	S025023S2010 / S120023S2010	023	35.4 (899)	23.7 (602)	60 (1524)	250	235	415	395	165	350	330
161	S025023H2010 / S120023H2010	023	35.4 (899)	24.1 (612)	71 (1803)	250	235	415	395	165	355	335
220	S025030S2010 / S120030S2010	030	41.9 (1064)	30.2 (767)	77 (1956)	315	305	525	510	210	445	430
330	S025030H2010 / S120030H2010	030	41.9 (1064)	30.6 (777)	90 (2286)	320	305	535	515	210	450	435
	S025036S2010 / S120036S2010	036	48.4 (1229)	36.6 (930)	93 (2362)	385	365	635	620	255	540	525
	S025036H2010 / S120036H2010	036	48.4 (1229)	37.1 (942)	110 (2794)	390	370	645	620	260	540	535
	S025043S2010 / S120043S2010	043	54.9 (1394)	43.1 (1095)	110 (2794)	460	435	730	725	300	630	625
	S025043H2010 / S120043H2010	043	54.9 (1394)	43.6 (1107)	129 (3277)	465	440	740	730	305	635	630
	S025047S2010 / S120047S2010	047	59.2 (1504)	47.4 (1204)	121 (3073)	500	475	800	795	330	690	685
	S025047H2010 / S120047H2010	047	59.2 (1504)	47.9 (1217)	142 (3607)	510	475	805	800	330	695	690
	S025051S2010 / S120051S2010	051	63.5 (1613)	51.8 (1316)	132 (3353)	540	510	865	865	360	750	750
	S025051H2010 / S120051H2010	051	63.5 (1613)	52.2 (1326)	155 (3937)	540	510	875	870	360	760	755
	S025056S2010 / S120056S2010	056	67.8 (1722)	56.1 (1425)	143 (3632)	585	545	935	935	385	810	810
	S025056H2010 / S120056H2010	056	67.8 (1722)	56.5 (1435)	168 (4267)	585	550	940	940	390	815	815
	S025060S2010 / S120060S2010	060	72.1 (1831)	60.4 (1534)	154 (3912)	625	580	1000	1005	410	870	875
	S025060H2010 / S120060H2010	060	72.1 (1831)	60.9 (1547)	181 (4597)	625	585	1010	1010	415	880	880
	S025064S2010 / S120064S2010	064	76.5 (1943)	64.7 (1643)	165 (4191)	660	615	1065	1075	435	930	940
	S025064H2010 / S120064H2010	064	76.5 (1943)	65.2 (1656)	194 (4928)	665	615	1070	1075	440	940	945
	S025069S2010 / S120069S2010	069	80.8 (2052)	69 (1753)	176 (4470)	695	650	1130	1140	465	990	995
	S025069H2010 / S120069H2010	069	80.8 (2052)	69.5 (1765)	207 (5258)	700	650	1135	1145	465	995	1005
	S025073S2010 / S120073S2010	073	85.1 (2162)	73.4 (1864)	187 (4750)	735	685	1200	1210	490	1050	1060
	S025073H2010 / S120073H2010	073	85.1 (2162)	73.8 (1875)	220 (5588)	740	690	1205	1215	495	1055	1065
	S025077S2010 / S120077S2010	077	89.4 (2271)	77.7 (1974)	198 (5029)	780	720	1260	1275	515	1105	1120
	S025077H2010 / S120077H2010	077	89.4 (2271)	78.1 (1984)	233 (5918)	780	720	1270	1280	515	1115	1125
	S025081S2010 / S120081S2010	081	93.7 (2380)	82 (2083)	209 (5309)	815	745	1325	1345	540	1165	1180
	S025081H2010 / S120081H2010	081	93.7 (2380)	82.5 (2096)	246 (6248)	820	750	1330	1345	540	1170	1185
	S025086S2010 / S120086S2010	086	98.1 (2492)	86.3 (2192)	220 (5588)	860	780	1400	1420	560	1220	1240
	S025086H2010 / S120086H2010	086	98.1 (2492)	86.8 (2205)	259 (6579)	860	795	1410	1420	565	1225	1245
	S025090S2010 / S120090S2010	090	102.4 (2601)	90.6 (2301)	231 (5867)	890	815	1460	1485	585	1275	1300
	S025090H2010 / S120090H2010	090	102.4 (2601)	91.1 (2314)	272 (6909)	895	820	1470	1495	585	1285	1305
	S025094S2010 / S120094S2010	094	106.7 (2710)	95 (2413)	242 (6147)	925	850	1520	1545	610	1335	1355
	S025094H2010 / S120094H2010	094	106.7 (2710)	95.4 (2423)	285 (7239)	930	855	1540	1560	615	1340	1365
	S025099S2010 / S120099S2010	099	111 (2819)	99.3 (2522)	253 (6426)	960	875	1575	1600	630	1395	1415
	S025099H2010 / S120099H2010	099	111 (2819)	99.7 (2532)	298 (7569)	965	880	1585	1610	635	1395	1425
	S025103S2010 / S120103S2010	103	115.3 (2929)	103.6 (2631)	264 (6706)	990	890	1640	1670	655	1445	1475
	S025103H2010 / S120103H2010	103	115.3 (2929)	104.1 (2644)	310 (7874)	995	895	1645	1670	660	1450	1485
	S025107S2010 / S120107S2010	107	119.7 (3040)	107.9 (2741)	275 (6985)	1010	920	1690	1725	675	1500	1530
	S025107H2010 / S120107H2010	107	119.7 (3040)	108.4 (2753)	323 (8204)	1015	920	1695	1730	675	1510	1535
	S025112S2010 / S120112S2010	112	124 (3150)	112.2 (2850)	286 (7264)	1040	945	1750	1790	695	1555	1590
	S025112H2010 / S120112H2010	112	124 (3150)	112.7 (2863)	336 (8534)	1045	950	1755	1795	700	1565	1595
	S025116S2010 / S120116S2010	116	128.3 (3259)	116.6 (2962)	297 (7544)	1070	975	1815	1850	720	1615	1645
	S025116H2010 / S120116H2010	116	128.3 (3259)	117 (2972)	349 (8865)	1075	980	1820	1855	720	1620	1655
	S025120S2010 / S120120S2010	120	132.6 (3368)	120.9 (3071)	308 (7823)	1100	1000	1875	1915	735	1665	1705
	S025120H2010 / S120120H2010	120	132.6 (3368)	121.3 (3081)	362 (9195)	1105	1005	1880	1920	740	1670	1710
	S025125S2010 / S120125S2010	125	136.9 (3477)	125.2 (3180)	319 (8103)	1125	1030	1935	1975	760	1720	1755
	S025125H2010 / S120125H2010	125	136.9 (3477)	125.7 (3193)	375 (9525)	1130	1035	1940	1980	760	1725	1765
	S025129S2010 / S120129S2010	129	141.3 (3589)	129.5 (3289)	330 (8382)	1155	1055	1990	2040	780	1770	1815
	S025129H2010 / S120129H2010	129	141.3 (3589)	130 (3302)	388 (9855)	1160	1060	1995	2045	780	1780	1820
	S025133S2010 / S120133S2010	133	145.6 (3698)	133.8 (3399)	341 (8661)	1180	1080	2050	2100	795	1825	1870
	S025133H2010 / S120133H2010	133	145.6 (3698)	134.3 (3411)	401 (10185)	1185	1085	2055	2105	800	1830	1875
	S025138S2010 / S120138S2010	138	149.9 (3807)	138.2 (3510)	352 (8941)	1205	1105	2110	2160	815	1880	1925
	S025138H2010 / S120138H2010	138	149.9 (3807)	138.6 (3520)	414 (10516)	1210	1110	2115	2165	820	1885	1930
	S025142S2010 / S120142S2010	142	154.2 (3917)	142.5 (3620)	363 (9220)	1230	1130	2165	2220	835	1930	1980
	S025142H2010 / S120142H2010	142	154.2 (3917)	142.9 (3630)	427 (10846)	1235	1135	2170	2225	835	1935	1980

Notes:

- Dimensional and electrical values displayed in main table are for an insulator with Y-clevis and Ball end fittings.
- For voltages above 400 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 12 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61109 and ANSI C29.12.

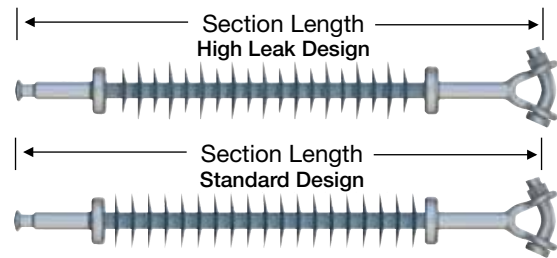
Section Length Adjustment Table, Base End Fittings: Y-clevis-Ball (201)

Top Fitting	Bottom Fitting	Top and Bottom End Fitting Digits ("e" & "f") in Catalog Number	Length Change inches (mm)
Y-Clevis	Eye	200	1.62 (41)
Eye	ANSI 52-5 Ball	001	0.02 (0)
Eye	Eye	000	1.64 (42)
ANSI 52-5 Socket	ANSI 52-5 Ball	301	-1.15 (-29)
IEC 16 mm Socket	IEC 16 mm Ball	A07	-0.03 (-1)
ANSI 52-6 Clevis	Eye	400	0.82 (21)
ANSI 52-6 Clevis	ANSI 52-5 Ball	401	-0.8 (-20)

To determine the section length for an insulator with a different end fitting combination, please add or subtract the displayed length change in the table above. For configurations not shown, use the Catalog Number Key or contact your HPS representative.

Suspension Insulators

Mechanical Ratings SML = 30 kip RTL = 15 kip
Rod Diameter: 5/8" (16 mm)



Selection Guide: Typical Line Voltage, kV	Catalog Numbers ANSI	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values		
						60-Hz Dry Flashover (kV)	60-Hz Wet Flashover (kV)	Critical Impulse Positive (kV)	Critical Impulse Negative (kV)	60-Hz 1-minute Wet Withstand (kV)	Impulse Positive Withstand (kV)	Impulse Negative Withstand (kV)
69	S030021S2010	021	33.3 (846)	21.5 (546)	55 (1397)	220	210	370	350	145	315	300
110	S030021H2010	021	33.3 (846)	22 (559)	64 (1626)	220	210	370	350	150	325	305
132	S030023S2010	023	35.4 (899)	23.7 (602)	60 (1524)	250	235	415	395	165	350	330
161	S030023H2010	023	35.4 (899)	24.1 (612)	71 (1803)	250	235	415	395	165	355	335
220	S030030S2010	030	41.9 (1064)	30.2 (767)	77 (1956)	315	305	525	510	210	445	430
330	S030030H2010	030	41.9 (1064)	30.6 (777)	90 (2286)	320	305	535	515	210	450	435
400	S030036S2010	036	48.4 (1229)	36.6 (930)	93 (2362)	385	365	635	620	255	540	525
	S030036H2010	036	48.4 (1229)	37.1 (942)	110 (2794)	390	370	645	620	260	540	535
	S030043S2010	043	54.9 (1394)	43.1 (1095)	110 (2794)	460	435	730	725	300	630	625
	S030043H2010	043	54.9 (1394)	43.6 (1107)	129 (3277)	465	440	740	730	305	635	630
	S030047S2010	047	59.2 (1504)	47.4 (1204)	121 (3073)	500	475	800	795	330	690	685
	S030047H2010	047	59.2 (1504)	47.9 (1217)	142 (3607)	510	475	805	800	330	695	690
	S030051S2010	051	63.5 (1613)	51.8 (1316)	132 (3353)	540	510	865	865	360	750	750
	S030051H2010	051	63.5 (1613)	52.2 (1326)	155 (3937)	540	510	875	870	360	760	755
	S030056S2010	056	67.8 (1722)	56.1 (1425)	143 (3632)	585	545	935	935	385	810	810
	S030056H2010	056	67.8 (1722)	56.5 (1435)	168 (4267)	585	550	940	940	390	815	815
	S030060S2010	060	72.1 (1831)	60.4 (1534)	154 (3912)	625	580	1000	1005	410	870	875
	S030060H2010	060	72.1 (1831)	60.9 (1547)	181 (4597)	625	585	1010	1010	415	880	880
	S030064S2010	064	76.5 (1943)	64.7 (1643)	165 (4191)	660	615	1065	1075	435	930	940
	S030064H2010	064	76.5 (1943)	65.2 (1656)	194 (4928)	665	615	1070	1075	440	940	945
	S030069S2010	069	80.8 (2052)	69 (1753)	176 (4470)	695	650	1130	1140	465	990	995
	S030069H2010	069	80.8 (2052)	69.5 (1765)	207 (5258)	700	650	1135	1145	465	995	1005
	S030073S2010	073	85.1 (2162)	73.4 (1864)	187 (4750)	735	685	1200	1210	490	1050	1060
	S030073H2010	073	85.1 (2162)	73.8 (1875)	220 (5588)	740	690	1205	1215	495	1055	1065
	S030077S2010	077	89.4 (2271)	77.7 (1974)	198 (5029)	780	720	1260	1275	515	1105	1120
	S030077H2010	077	89.4 (2271)	78.1 (1984)	233 (5918)	780	720	1270	1280	515	1115	1125
	S030081S2010	081	93.7 (2380)	82 (2083)	209 (5309)	815	745	1325	1345	540	1165	1180
	S030081H2010	081	93.7 (2380)	82.5 (2096)	246 (6248)	820	750	1330	1345	540	1170	1185
	S030086S2010	086	98.1 (2492)	86.3 (2192)	220 (5588)	860	780	1400	1420	560	1220	1240
	S030086H2010	086	98.1 (2492)	86.8 (2205)	259 (6579)	860	795	1410	1420	565	1225	1245
	S030090S2010	090	102.4 (2601)	90.6 (2301)	231 (5867)	890	815	1460	1485	585	1275	1300
	S030090H2010	090	102.4 (2601)	91.1 (2314)	272 (6909)	895	820	1470	1495	585	1285	1305
	S030094S2010	094	106.7 (2710)	95 (2413)	242 (6147)	925	850	1520	1545	610	1335	1355
	S030094H2010	094	106.7 (2710)	95.4 (2423)	285 (7239)	930	855	1540	1560	615	1340	1365
	S030099S2010	099	111 (2819)	99.3 (2522)	253 (6426)	960	875	1575	1600	630	1395	1415
	S030099H2010	099	111 (2819)	99.7 (2532)	298 (7569)	965	880	1585	1610	635	1395	1425
	S030103S2010	103	115.3 (2929)	103.6 (2631)	264 (6706)	990	890	1640	1670	655	1445	1475
	S030103H2010	103	115.3 (2929)	104.1 (2644)	310 (7874)	995	895	1645	1670	660	1450	1485
	S030107S2010	107	119.7 (3040)	107.9 (2741)	275 (6985)	1010	920	1690	1725	675	1500	1530
	S030107H2010	107	119.7 (3040)	108.4 (2753)	323 (8204)	1015	920	1695	1730	675	1510	1535
	S030112S2010	112	124 (3150)	112.2 (2850)	286 (7264)	1040	945	1750	1790	695	1555	1590
	S030112H2010	112	124 (3150)	112.7 (2863)	336 (8534)	1045	950	1755	1795	700	1565	1595
	S030116S2010	116	128.3 (3259)	116.6 (2962)	297 (7544)	1070	975	1815	1850	720	1615	1645
	S030116H2010	116	128.3 (3259)	117 (2972)	349 (8865)	1075	980	1820	1855	720	1620	1655
	S030120S2010	120	132.6 (3368)	120.9 (3071)	308 (7823)	1100	1000	1875	1915	735	1665	1705
	S030120H2010	120	132.6 (3368)	121.3 (3081)	362 (9195)	1105	1005	1880	1920	740	1670	1710
	S030125S2010	125	136.9 (3477)	125.2 (3180)	319 (8103)	1125	1030	1935	1975	760	1720	1755
	S030125H2010	125	136.9 (3477)	125.7 (3193)	375 (9525)	1130	1035	1940	1980	760	1725	1765
	S030129S2010	129	141.3 (3589)	129.5 (3289)	330 (8382)	1155	1055	1990	2040	780	1770	1815
	S030129H2010	129	141.3 (3589)	130 (3302)	388 (9855)	1160	1060	1995	2045	780	1780	1820
	S030133S2010	133	145.6 (3698)	133.8 (3399)	341 (8661)	1180	1080	2050	2100	795	1825	1870
	S030133H2010	133	145.6 (3698)	134.3 (3411)	401 (10185)	1185	1085	2055	2105	800	1830	1875
	S030138S2010	138	149.9 (3807)	138.2 (3510)	352 (8941)	1205	1105	2110	2160	815	1880	1925
	S030138H2010	138	149.9 (3807)	138.6 (3520)	414 (10516)	1210	1110	2115	2165	820	1885	1930
	S030142S2010	142	154.2 (3917)	142.5 (3620)	363 (9220)	1230	1130	2165	2220	835	1930	1980
	S030142H2010	142	154.2 (3917)	142.9 (3630)	427 (10846)	1235	1135	2170	2225	835	1935	1980

Notes:

- Dimensional and electrical values displayed in main table are for an insulator with Y-clevis and Ball end fittings.
- For voltages above 400 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 12 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61109 and ANSI C29.12.

Section Length Adjustment Table, Base End Fittings: Y-clevis-Ball (201)

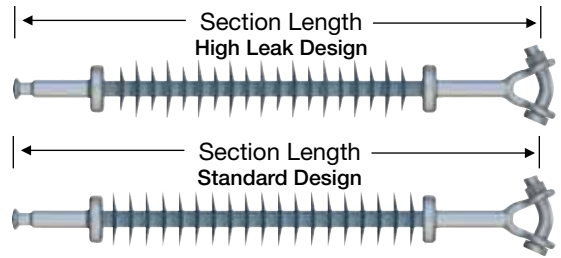
Top Fitting	Bottom Fitting	Top and Bottom End Fitting Digits ("e" & "f") in Catalog Number	Length Change inches (mm)
Y-Clevis	Eye	200	1.62 (41)
Eye	ANSI 52-5 Ball	001	0.02 (0)
Eye	Eye	000	1.64 (42)
ANSI 52-5 Socket	ANSI 52-5 Ball	301	-1.15 (-29)
IEC 16 mm Socket	IEC 16 mm Ball	A07	-0.03 (-1)
ANSI 52-6 Clevis	Eye	400	0.82 (21)
ANSI 52-6 Clevis	ANSI 52-5 Ball	401	-0.8 (-20)

To determine the section length for an insulator with a different end fitting combination, please add or subtract the displayed length change in the table above. For configurations not shown, use the Catalog Number Key or contact your HPS representative.

Suspension Insulators

Mechanical Ratings SML = 160 kN RTL = 80 kN

Rod Diameter: 7/8" (22 mm)



Selection Guide: Typical Line Voltage, kV	Catalog Numbers IEC	Nominal Polymer Length inches (mm)	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values		
						60-Hz Dry Flashover (kV)	60-Hz Wet Flashover (kV)	Critical Impulse Positive (kV)	Critical Impulse Negative (kV)	60-Hz 1-minute Wet Withstand (kV)	Impulse Positive Withstand (kV)	Impulse Negative Withstand (kV)
69 110 132 161 220 330 400	S160021S2010	021	35.7 (907)	21.6 (549)	55 (1397)	220	210	370	350	145	315	300
	S160021H2010	021	35.7 (907)	22.5 (572)	74 (1880)	225	215	375	355	150	330	315
	S160023S2010	023	37.9 (963)	23.8 (605)	60 (1524)	250	235	415	395	165	350	330
	S160023H2010	023	37.9 (963)	24.7 (627)	82 (2083)	255	240	420	400	170	360	345
	S160030S2010	030	44.4 (1128)	30.3 (770)	77 (1956)	320	305	525	510	210	445	430
	S160030H2010	030	44.4 (1128)	31.1 (790)	104 (2642)	320	310	540	520	215	455	445
	S160036S2010	036	50.8 (1290)	36.8 (935)	93 (2362)	385	365	635	625	260	540	530
	S160036H2010	036	50.8 (1290)	37.6 (955)	126 (3200)	395	375	650	625	265	550	540
	S160043S2010	043	57.3 (1455)	43.2 (1097)	110 (2794)	460	435	730	725	300	630	625
	S160043H2010	043	57.3 (1455)	44.1 (1120)	149 (3785)	470	445	745	735	310	640	635
	S160047S2010	047	61.6 (1565)	47.6 (1209)	121 (3073)	500	475	800	800	330	690	690
	S160047H2010	047	61.6 (1565)	48.4 (1229)	164 (4166)	515	480	810	805	335	705	700
	S160051S2010	051	66 (1676)	51.9 (1318)	132 (3353)	540	510	865	860	360	755	750
	S160051H2010	051	66 (1676)	52.7 (1339)	179 (4547)	545	515	880	875	365	765	765
	S160056S2010	056	70.3 (1786)	56.2 (1427)	143 (3632)	585	545	935	935	385	810	810
	S160056H2010	056	70.3 (1786)	57.1 (1450)	194 (4928)	590	555	945	945	390	825	825
	S160060S2010	060	74.6 (1895)	60.5 (1537)	154 (3912)	625	580	1000	1005	410	870	875
	S160060H2010	060	74.6 (1895)	61.4 (1560)	209 (5309)	630	590	1015	1015	420	885	890
	S160064S2010	064	78.9 (2004)	64.8 (1646)	165 (4191)	660	615	1065	1075	435	930	940
	S160064H2010	064	78.9 (2004)	65.7 (1669)	224 (5690)	670	620	1075	1080	445	945	950
	S160069S2010	069	83.2 (2113)	69.2 (1758)	176 (4470)	695	650	1130	1140	465	990	1000
	S160069H2010	069	83.2 (2113)	70 (1778)	239 (6071)	705	655	1140	1150	470	1000	1010
	S160073S2010	073	87.6 (2225)	73.5 (1867)	187 (4750)	735	685	1200	1210	490	1050	1060
	S160073H2010	073	87.6 (2225)	74.3 (1887)	254 (6452)	745	695	1210	1220	495	1060	1075
	S160077S2010	077	91.9 (2334)	77.8 (1976)	198 (5029)	780	720	1260	1275	515	1110	1125
	S160077H2010	077	91.9 (2334)	78.7 (1999)	268 (6807)	785	725	1275	1285	520	1120	1130
	S160081S2010	081	96.2 (2443)	82.1 (2085)	209 (5309)	815	745	1325	1345	540	1165	1180
	S160081H2010	081	96.2 (2443)	83 (2108)	283 (7188)	825	755	1335	1350	545	1175	1195
	S160086S2010	086	100.5 (2553)	86.4 (2195)	220 (5588)	860	780	1400	1420	565	1220	1240
	S160086H2010	086	100.5 (2553)	87.3 (2217)	298 (7569)	865	800	1415	1425	570	1235	1255
	S160090S2010	090	104.8 (2662)	90.8 (2306)	231 (5867)	890	815	1460	1485	585	1280	1305
	S160090H2010	090	104.8 (2662)	91.6 (2327)	313 (7950)	900	825	1475	1500	590	1290	1310
	S160094S2010	094	109.2 (2774)	95.1 (2416)	242 (6147)	925	850	1520	1545	610	1340	1360
	S160094H2010	094	109.2 (2774)	95.9 (2436)	328 (8331)	935	860	1545	1565	615	1350	1370
	S160099S2010	099	113.5 (2883)	99.4 (2525)	253 (6426)	960	875	1575	1605	630	1395	1420
	S160099H2010	099	113.5 (2883)	100.3 (2548)	343 (8712)	970	885	1590	1615	635	1405	1430
	S160103S2010	103	117.8 (2992)	103.7 (2634)	264 (6706)	990	890	1640	1670	655	1445	1475
	S160103H2010	103	117.8 (2992)	104.6 (2657)	358 (9093)	1000	900	1650	1675	660	1460	1485
	S160107S2010	107	122.1 (3101)	108 (2743)	275 (6985)	1010	920	1695	1725	675	1505	1530
	S160107H2010	107	122.1 (3101)	108.9 (2766)	373 (9474)	1020	925	1700	1735	680	1515	1545
	S160112S2010	112	126.4 (3211)	112.4 (2855)	286 (7264)	1045	950	1755	1790	700	1560	1590
	S160112H2010	112	126.4 (3211)	113.2 (2875)	388 (9855)	1050	955	1760	1800	705	1570	1600
	S160116S2010	116	130.8 (3322)	116.7 (2964)	297 (7544)	1070	975	1815	1855	720	1615	1650
	S160116H2010	116	130.8 (3322)	117.5 (2985)	403 (10236)	1080	985	1825	1860	720	1620	1660
	S160120S2010	120	135.1 (3432)	121 (3073)	308 (7823)	1100	1005	1875	1915	740	1665	1705
	S160120H2010	120	135.1 (3432)	121.9 (3096)	418 (10617)	1110	1010	1885	1925	745	1680	1715
	S160125S2010	125	139.4 (3541)	125.3 (3183)	319 (8103)	1125	1030	1935	1980	760	1720	1760
	S160125H2010	125	139.4 (3541)	126.2 (3205)	433 (10998)	1135	1040	1945	1985	765	1730	1770
	S160129S2010	129	143.7 (3650)	129.6 (3292)	330 (8382)	1155	1055	1995	2040	780	1775	1815
	S160129H2010	129	143.7 (3650)	130.5 (3315)	448 (11379)	1165	1065	2000	2050	780	1785	1825
	S160133S2010	133	148 (3759)	134 (3404)	341 (8661)	1180	1080	2055	2100	795	1830	1870
	S160133H2010	133	148 (3759)	134.8 (3424)	463 (11760)	1190	1090	2060	2110	800	1840	1885
	S160138S2010	138	152.4 (3871)	138.3 (3513)	352 (8941)	1205	1105	2110	2160	815	1880	1925
	S160138H2010	138	152.4 (3871)	139.1 (3533)	478 (12141)	1215	1115	2120	2170	820	1890	1935
	S160142S2010	142	156.7 (3980)	142.6 (3622)	363 (9220)	1230	1130	2170	2220	835	1935	1980
	S160142H2010	142	156.7 (3980)	143.5 (3645)	493 (12522)	1240	1140	2175	2230	840	1940	1990

Notes:

- Dimensional and electrical values displayed in main table are for an insulator with Y-clevis and Ball end fittings.
- For voltages above 400 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 12 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61109 and ANSI C29.12.

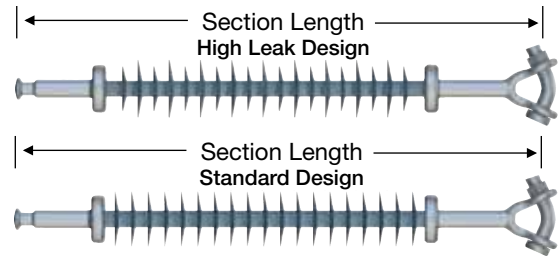
Section Length Adjustment Table, Base End Fittings: Y-clevis-Ball (201)

Top Fitting	Bottom Fitting	Top and Bottom End Fitting Digits ("e" & "f") in Catalog Number	Length Change inches (mm)
Y-Clevis	Eye	200	1.71 (43)
Eye	ANSI 52-8 Ball	001	0.31 (8)
Eye	Eye	000	2.02 (51)
ANSI 52-8 Socket	ANSI 52-8 Ball	301	-1.27 (-32)
IEC 20 mm Socket	IEC 20 mm Ball	A07	0.26 (7)
Clevis IEC 19-L	Eye	800	0.80 (20)
Clevis IEC 19-L	IEC 20 mm Ball	807	0.06 (2)

To determine the section length for an insulator with a different end fitting combination, please add or subtract the displayed length change in the table above. For configurations not shown, use the Catalog Number Key or contact your HPS representative.

Suspension Insulators

Mechanical Ratings SML = 50 kip/210 kN RTL = 25 kip/105 kN
 Rod Diameter: 7/8" (22 mm)



Selection Guide: Typical Line Voltage, kV	Catalog Numbers ANSI / IEC	Nominal Polymer Length inches (mm)	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values		
						60-Hz Dry Flashover (kV)	60-Hz Wet Flashover (kV)	Critical Impulse Positive (kV)	Critical Impulse Negative (kV)	60-Hz 1-minute Wet Withstand (kV)	Impulse Positive Withstand (kV)	Impulse Negative Withstand (kV)
69 110 132 161 220 330 400	S050021S2010 / S210021S2010	021	35.7 (907)	21.6 (549)	55 (1397)	220	210	370	350	145	315	300
	S050021H2010 / S210021H2010	021	35.7 (907)	22.5 (572)	74 (1880)	225	215	375	355	150	330	315
	S050023S2010 / S210023S2010	023	37.9 (963)	23.8 (605)	60 (1524)	250	235	415	395	165	350	330
	S050023H2010 / S210023H2010	023	37.9 (963)	24.7 (627)	82 (2083)	255	240	420	400	170	360	345
	S050030S2010 / S210030S2010	030	44.4 (1128)	30.3 (770)	77 (1956)	315	305	525	510	210	445	430
	S050030H2010 / S210030H2010	030	44.4 (1128)	31.1 (790)	104 (2642)	320	310	540	520	215	455	445
	S050036S2010 / S210036S2010	036	50.8 (1290)	36.8 (935)	93 (2362)	385	365	635	625	260	540	530
	S050036H2010 / S210036H2010	036	50.8 (1290)	37.6 (955)	126 (3200)	395	375	650	625	265	550	540
	S050043S2010 / S210043S2010	043	57.3 (1455)	43.2 (1097)	110 (2794)	460	435	730	725	300	630	625
	S050043H2010 / S210043H2010	043	57.3 (1455)	44.1 (1120)	149 (3785)	470	445	745	735	310	640	635
	S050047S2010 / S210047S2010	047	61.6 (1565)	47.6 (1209)	121 (3073)	500	475	800	800	330	690	690
	S050047H2010 / S210047H2010	047	61.6 (1565)	48.4 (1229)	164 (4166)	510	480	810	805	335	705	700
	S050051S2010 / S210051S2010	051	66 (1676)	51.9 (1318)	132 (3353)	540	510	865	860	360	755	750
	S050051H2010 / S210051H2010	051	66 (1676)	52.7 (1339)	179 (4547)	545	515	880	875	365	765	765
	S050056S2010 / S210056S2010	056	70.3 (1786)	56.2 (1427)	143 (3632)	585	545	935	935	385	810	810
	S050056H2010 / S210056H2010	056	70.3 (1786)	57.1 (1450)	194 (4928)	590	555	945	945	390	825	825
	S050060S2010 / S210060S2010	060	74.6 (1895)	60.5 (1537)	154 (3912)	625	580	1000	1005	410	870	875
	S050060H2010 / S210060H2010	060	74.6 (1895)	61.4 (1560)	209 (5309)	630	590	1015	1015	420	885	890
	S050064S2010 / S210064S2010	064	78.9 (2004)	64.8 (1646)	165 (4191)	660	615	1065	1075	435	930	940
	S050064H2010 / S210064H2010	064	78.9 (2004)	65.7 (1669)	224 (5690)	670	620	1075	1080	445	945	950
	S050069S2010 / S210069S2010	069	83.2 (2113)	69.2 (1758)	176 (4470)	695	650	1130	1140	465	990	1000
	S050069H2010 / S210069H2010	069	83.2 (2113)	70 (1778)	239 (6071)	705	655	1140	1150	470	1000	1010
	S050073S2010 / S210073S2010	073	87.6 (2225)	73.5 (1867)	187 (4750)	735	685	1200	1210	490	1050	1060
	S050073H2010 / S210073H2010	073	87.6 (2225)	74.3 (1887)	254 (6452)	745	695	1210	1220	495	1060	1075
	S050077S2010 / S210077S2010	077	91.9 (2334)	77.8 (1976)	198 (5029)	780	720	1260	1275	515	1110	1125
	S050077H2010 / S210077H2010	077	91.9 (2334)	78.7 (1999)	268 (6807)	785	725	1275	1285	520	1120	1130
	S050081S2010 / S210081S2010	081	96.2 (2443)	82.1 (2085)	209 (5309)	815	745	1325	1345	540	1165	1180
	S050081H2010 / S210081H2010	081	96.2 (2443)	83 (2108)	283 (7188)	825	755	1335	1350	545	1175	1195
	S050086S2010 / S210086S2010	086	100.5 (2553)	86.4 (2195)	220 (5588)	860	780	1400	1420	565	1220	1240
	S050086H2010 / S210086H2010	086	100.5 (2553)	87.3 (2217)	298 (7569)	865	800	1415	1425	570	1235	1255
	S050090S2010 / S210090S2010	090	104.8 (2662)	90.8 (2306)	231 (5867)	890	815	1460	1485	585	1280	1305
	S050090H2010 / S210090H2010	090	104.8 (2662)	91.6 (2327)	313 (7950)	900	825	1475	1500	590	1290	1310
	S050094S2010 / S210094S2010	094	109.2 (2774)	95.1 (2416)	242 (6147)	925	850	1520	1545	610	1340	1360
	S050094H2010 / S210094H2010	094	109.2 (2774)	95.9 (2436)	328 (8331)	935	860	1545	1565	615	1350	1370
	S050099S2010 / S210099S2010	099	113.5 (2883)	99.4 (2525)	253 (6426)	960	875	1575	1605	630	1395	1420
	S050099H2010 / S210099H2010	099	113.5 (2883)	100.3 (2548)	343 (8712)	970	885	1590	1615	635	1405	1430
	S050103S2010 / S210103S2010	103	117.8 (2992)	103.7 (2634)	264 (6706)	990	890	1640	1670	655	1445	1475
	S050103H2010 / S210103H2010	103	117.8 (2992)	104.6 (2657)	358 (9093)	1000	900	1650	1675	660	1460	1485
	S050107S2010 / S210107S2010	107	122.1 (3101)	108 (2743)	275 (6985)	1010	920	1695	1725	675	1505	1530
	S050107H2010 / S210107H2010	107	122.1 (3101)	108.9 (2766)	373 (9474)	1020	925	1700	1735	680	1515	1545
	S050112S2010 / S210112S2010	112	126.4 (3211)	112.4 (2855)	286 (7264)	1045	950	1755	1790	700	1560	1590
	S050112H2010 / S210112H2010	112	126.4 (3211)	113.2 (2875)	388 (9855)	1050	955	1760	1800	705	1570	1600
	S050116S2010 / S210116S2010	116	130.8 (3322)	116.7 (2964)	297 (7544)	1070	975	1815	1855	720	1615	1650
	S050116H2010 / S210116H2010	116	130.8 (3322)	117.5 (2985)	403 (10236)	1080	985	1825	1860	720	1620	1660
	S050120S2010 / S210120S2010	120	135.1 (3432)	121 (3073)	308 (7823)	1100	1005	1875	1915	740	1665	1705
	S050120H2010 / S210120H2010	120	135.1 (3432)	121.9 (3096)	418 (10617)	1110	1010	1885	1925	745	1680	1715
	S050125S2010 / S210125S2010	125	139.4 (3541)	125.3 (3183)	319 (8103)	1125	1030	1935	1980	760	1720	1760
	S050125H2010 / S210125H2010	125	139.4 (3541)	126.2 (3205)	433 (10998)	1135	1040	1945	1985	765	1730	1770
	S050129S2010 / S210129S2010	129	143.7 (3650)	129.6 (3292)	330 (8382)	1155	1055	1995	2040	780	1775	1815
	S050129H2010 / S210129H2010	129	143.7 (3650)	130.5 (3315)	448 (11379)	1165	1065	2000	2050	780	1785	1825
	S050133S2010 / S210133S2010	133	148 (3759)	134 (3404)	341 (8661)	1180	1080	2055	2100	795	1830	1870
	S050133H2010 / S210133H2010	133	148 (3759)	134.8 (3424)	463 (11760)	1190	1090	2060	2110	800	1840	1885
	S050138S2010 / S210138S2010	138	152.4 (3871)	138.3 (3513)	352 (8941)	1205	1105	2110	2160	815	1880	1925
	S050138H2010 / S210138H2010	138	152.4 (3871)	139.1 (3533)	478 (12141)	1215	1115	2120	2170	820	1890	1935
	S050142S2010 / S210142S2010	142	156.7 (3980)	142.6 (3622)	363 (9220)	1230	1130	2170	2220	835	1935	1980
	S050142H2010 / S210142H2010	142	156.7 (3980)	143.5 (3645)	493 (12522)	1240	1140	2175	2230	840	1940	1990

Notes:

- Dimensional and electrical values displayed in main table are for an insulator with Y-clevis and Ball end fittings.
- For voltages above 400 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 12 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61109 and ANSI C29.12.

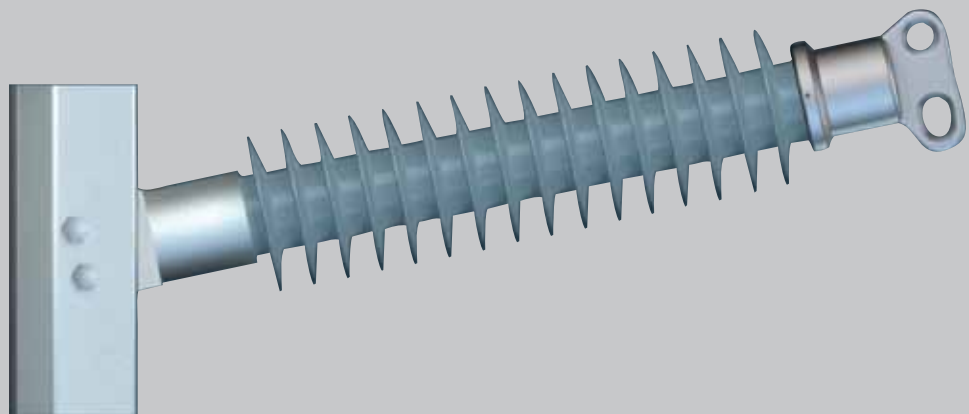
Section Length Adjustment Table, Base End Fittings: Y-clevis-Ball (201)

Top Fitting	Bottom Fitting	Top and Bottom End Fitting Digits ("e" & "f") in Catalog Number	Length Change inches (mm)
Y-Clevis	Eye	200	1.71 (43)
Eye	ANSI 52-11 Ball	001	0.31 (8)
Eye	Eye	000	2.02 (51)
ANSI 52-11 Socket	ANSI 52-11 Ball	301	-0.71 (-18)
IEC 20 mm Socket	IEC 20 mm Ball	A07	0.26 (7)
Clevis IEC 19-L	Eye	800	0.80 (20)
Clevis IEC 19-L	IEC 20 mm Ball	807	0.06 (2)

To determine the section length for an insulator with a different end fitting combination, please add or subtract the displayed length change in the table above. For configurations not shown, use the Catalog Number Key or contact your HPS representative.

Line Post Insulators

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Mechanical Ratings

Line post insulators are cantilever support members, with ratings defined as follows:

Specified Cantilever Load (SCL)

SCL is the ultimate cantilever strength rating of the Quadri*Sil® line post insulator. SCL is identical to the minimum average breaking load (ABL) rating in previous catalogs.

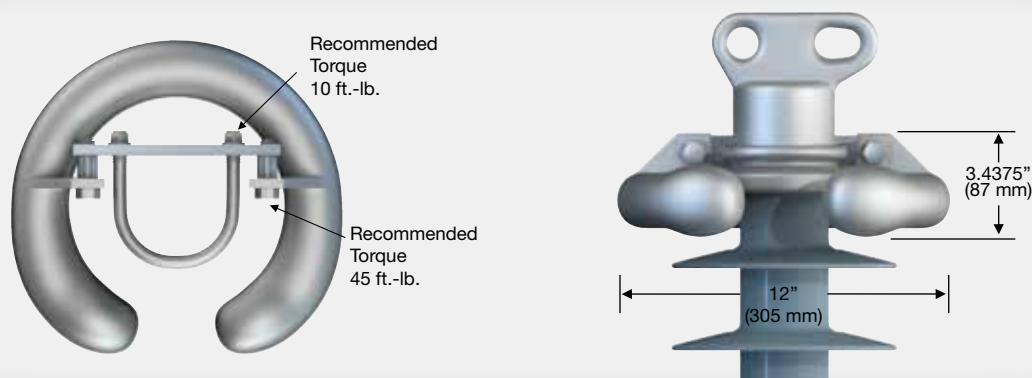
Reference Cantilever Load (RCL)

RCL represents the maximum recommended load in cantilever that a Quadri*Sil® post insulator is designed to withstand during its life span. RCL equals 50 percent of the SCL, and is identical to the insulator's maximum working load (MWL) and maximum design cantilever load (MDCL).

Combined Load Charts

Line design loads for most insulators include tension, or compression, in addition to the primary vertical cantilever load. Longitudinal loading should also be considered. Contact your Hubbell Power Systems representative to request combined load charts.

Corona Performance



Line Post Insulators 2.5" (63.5 mm) Rod Diameter Horizontal

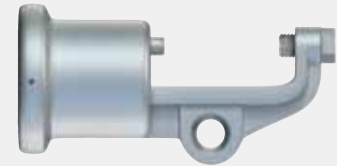
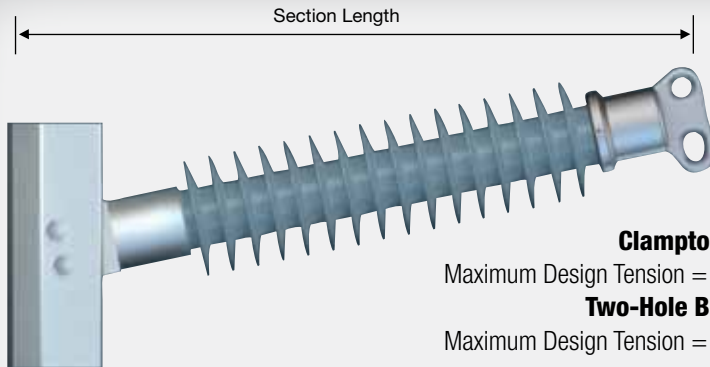
Application	161 kv & Below	230 kv	345 kv
Line End Energized	Top - NONE Bott - NONE	Top - 2721273001 Bott - NONE	Top - 2721273001 Bott - NONE
Bottom End Energized	Top - NONE Bott - NONE	Top - NONE Bott - 2721273001	Top - NONE Bott - 2721273001

Electrical/Dimensional Changes to the Insulator with External Corona Ring

Physical & Electrical Characteristics	220/230 kV Ring	330/345 kV Ring	400 kV Rings	500 kV Rings
Dry Arc Distance inches (mm)	-1.86 (-47)	-2.58 (-66)	N/A	N/A
Leakage Distance inches (mm)	0	0	N/A	N/A
ANSI 60 Hz Flashover Dry — kV	-20	-30	N/A	N/A
ANSI 60 Hz Flashover Wet — kV	-20	-20	N/A	N/A
ANSI Critical Flashover Positive — kV	-30	-40	N/A	N/A
ANSI Critical Flashover Negative — kV	-30	-40	N/A	N/A
IEC Wet Switching Impulse Withstand — kV	N/A	N/A	N/A	N/A
IEC Power Frequency Wet Withstand — kV	-20	-20	N/A	N/A
IEC Lightning Impulse Withstand Positive — kV	-30	-40	N/A	N/A
IEC Lightning Impulse Withstand Negative — kV	-30	-40	N/A	N/A
Net Weight pounds (kg)	3.4 (1.5)	3.4 (1.5)	N/A	N/A

Horizontal Line Post Insulators

2.5" (63.5 mm) Rod Diameter



Horizontal Clamptop End Fitting
Increases the section length
dimensions by 0.75"

Horizontal Line Post Insulators

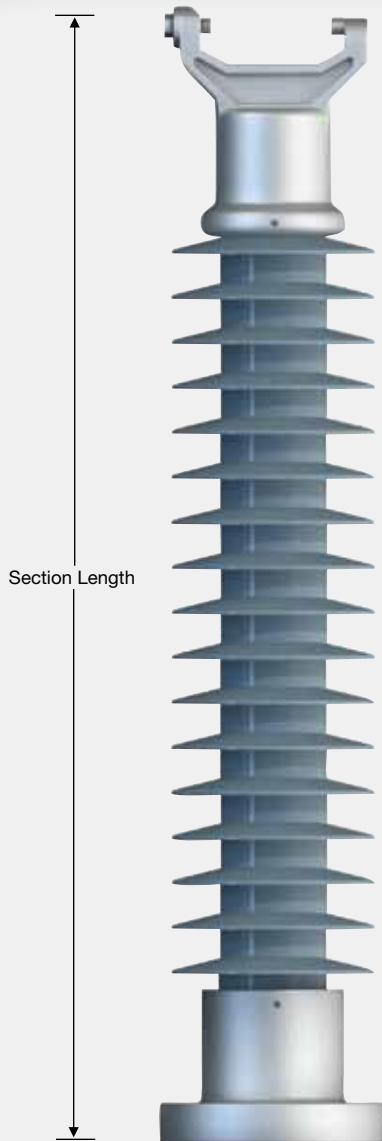
2.5" (63.5 mm) Rod Diameter

Selection Guide: Typical Line Voltage, kV ⁽¹⁾	Catalog Numbers ⁽³⁾	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values			SCL lbs. (kN)	
						⁽²⁾ 60-Hz Dry Flashover (kV)	⁽²⁾ 60-Hz Wet Flashover (kV)	⁽²⁾ Critical Impulse Positive (kV)	⁽²⁾ Critical Impulse Negative (kV)	⁽²⁾ 60-Hz 1-minute Wet Withstand (kV)	⁽²⁾ Impulse Positive Withstand (kV)	⁽²⁾ Impulse Negative Withstand (kV)		
69 110 132 161 220 330														
	P250024S0020	024	36.9 (937)	25.0 (635)	63 (1600)	255	235	385	505	195	365	475	5000 (22.2)	
	P250026S0020	026	39.3 (998)	27.4 (696)	69 (1753)	280	255	425	540	215	400	510	5000 (22.2)	
	P250031S0020	031	44.0 (1117)	32.2 (818)	82 (2083)	330	300	510	615	255	480	580	4490 (20.0)	
	P250036S0020	036	48.8 (1239)	37.1 (942)	95 (2413)	380	345	580	690	290	550	655	3950 (17.6)	
	P250043S0020	043	55.9 (1419)	44.3 (1125)	113 (2870)	455	405	700	800	340	665	760	3340 (14.9)	
	P250048S0020	048	60.6 (1539)	49.2 (1250)	126 (3200)	515	450	770	880	380	730	835	3030 (13.5)	
	P250053S0020	053	65.3 (1658)	54.0 (1372)	139 (3531)	565	495	855	950	420	810	900	2770 (12.3)	
	P250058S0020	058	70.1 (1780)	58.8 (1494)	151 (3835)	600	525	920	1025	445	870	970	2550 (11.3)	
	P250060S0020	060	72.4 (1838)	61.3 (1557)	158 (4013)	625	540	955	1065	455	905	1010	2460 (10.9)	
	P250065S0020	065	77.2 (1960)	66.1 (1679)	170 (4318)	675	580	1035	1140	490	980	1080	2280 (10.1)	
	P250070S0020	070	81.9 (2080)	70.9 (1801)	183 (4648)	720	615	1115	1215	520	1055	1150	2130 (9.5)	
	P250075S0020	075	86.6 (2199)	75.8 (1925)	196 (4978)	765	650	1190	1290	550	1130	1225	2000 (8.9)	
	P250080S0020	080	91.4 (2321)	80.6 (2047)	208 (5283)	815	680	1265	1360	575	1200	1290	1890 (8.4)	
	P250087S0020	087	98.5 (2501)	87.9 (2233)	227 (5766)	880	735	1380	1475	620	1310	1400	1740 (7.7)	
	P250092S0020	092	103.2 (2621)	92.7 (2355)	240 (6096)	925	765	1455	1550	650	1380	1470	1650 (7.3)	
	P250096S0020	096	107.9 (2740)	97.6 (2479)	252 (6401)	975	800	1535	1625	680	1455	1540	1570 (7.0)	
	P250101S0020	101	112.7 (2862)	102.4 (2601)	265 (6731)	1015	830	1610	1700	705	1525	1615	1500 (6.7)	
	P250104S0020	104	115.1 (2923)	104.8 (2662)	271 (6883)	1040	845	1650	1735	715	1565	1645	1460 (6.5)	
	P250106S0020	106	117.4 (2981)	107.2 (2723)	278 (7061)	1060	860	1685	1770	730	1600	1680	1430 (6.4)	
	P250109S0020	109	119.8 (3042)	109.7 (2786)	284 (7214)	1085	875	1725	1810	740	1635	1715	1400 (6.2)	
	P250111S0020	111	122.2 (3103)	112.1 (2847)	290 (7366)	1105	890	1765	1850	755	1675	1755	1370 (6.1)	

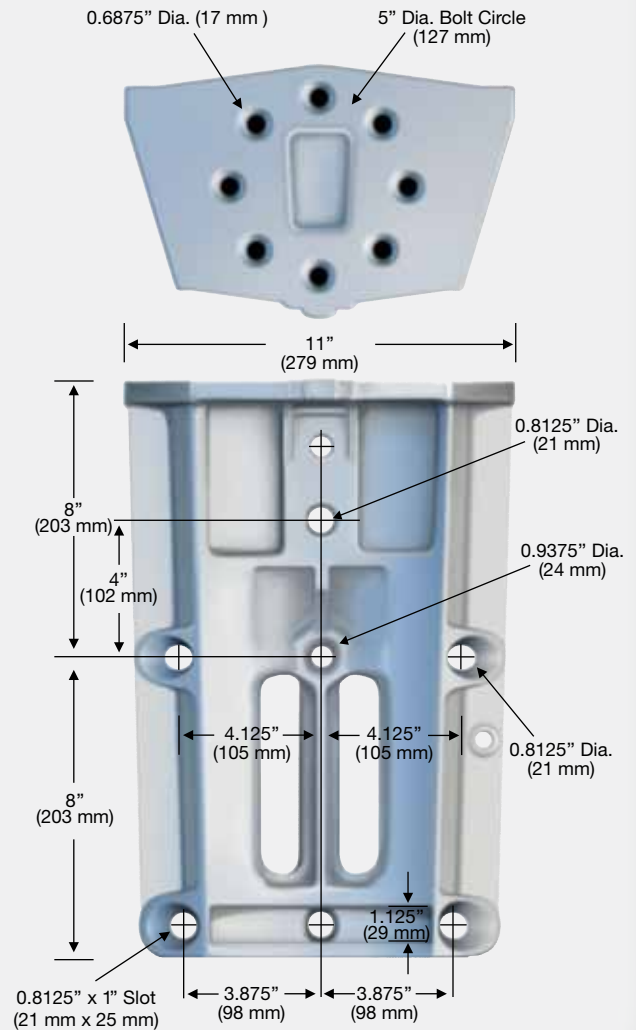
Notes:

- 1) For voltages above 330 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- 2) Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 20 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61952 and ANSI C29.17.
- 3) The catalog number shown in the table is for a 2.5" (63.5mm) rod diameter line post with a two hole blade on the line end and a gain base on the tower end. For other end fitting combinations, please refer to the Catalog Number Key on page 8.

Vertical Line Post Insulators 2.5" (63.5 mm) Rod Diameter



Maximum Design Tension = 2,500 lbs. (11.1 kN)



Cat. No. 75115
Rated 134,400 lb.-in.

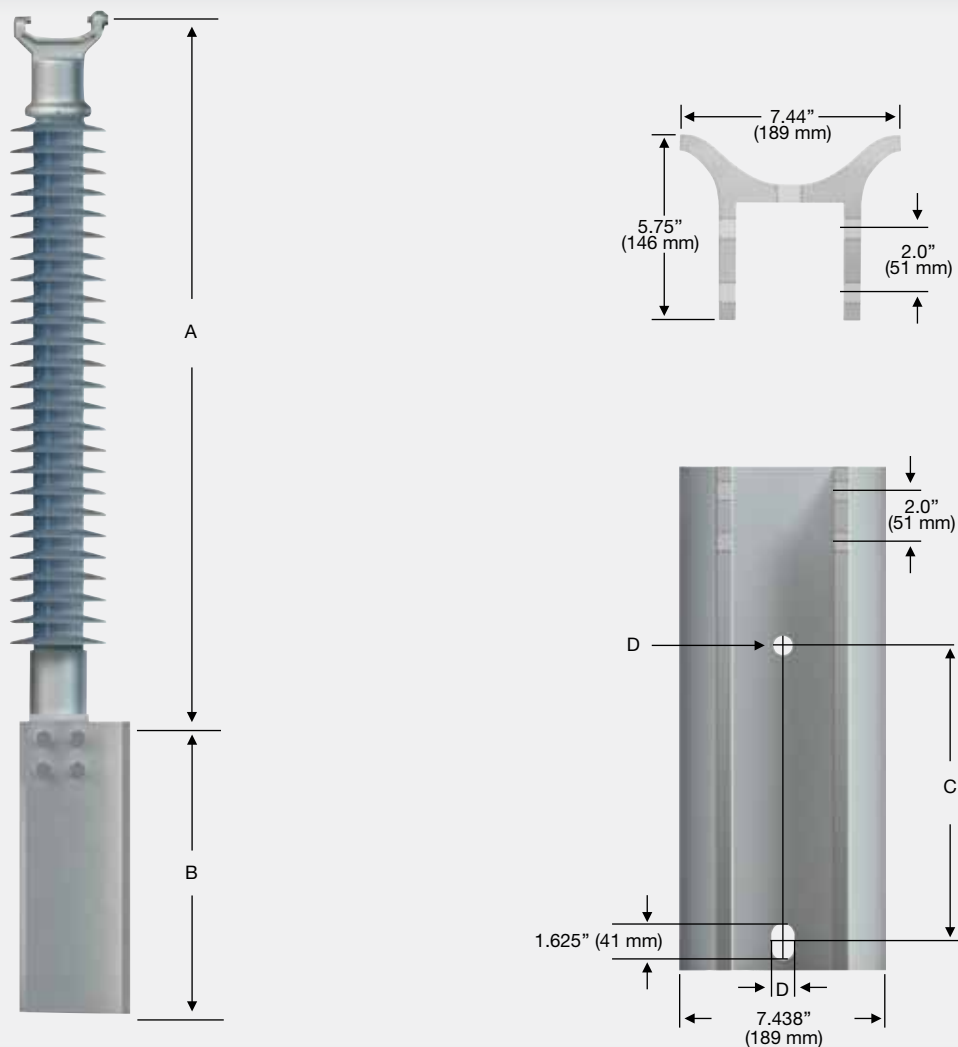
Vertical Line Post Insulators 2.5" (63.5 mm) Rod Diameter

Selection Guide: Typical Line Voltage, kV ⁽¹⁾	Catalog Numbers ⁽²⁾	Nominal Polymer Length inches	Section Length inches (mm)	Strike Distance inches (mm)	Leakage Distance inches (mm)	ANSI Values				IEC Values			SCL lbs. (kN)
						⊕60-Hz Dry Flashover (kV)	⊕60-Hz Wet Flashover (kV)	⊕Critical Impulse Positive (kV)	⊕Critical Impulse Negative (kV)	⊕60-Hz 1-minute Wet Withstand (kV)	⊕Impulse Positive Withstand (kV)	⊕Impulse Negative Withstand (kV)	
69 110 132 161													
	P250024S2050	024	35.0 (889)	25.0 (635)	63 (1600)	255	235	385	505	195	365	475	5000 (22.3)
	P250026S2050	026	37.4 (950)	27.4 (696)	69 (1753)	280	255	425	540	215	400	510	5000 (22.3)
	P250031S2050	031	42.3 (1074)	32.2 (818)	82 (2083)	330	300	510	615	255	480	580	4200 (18.7)
	P250036S2050	036	47.1 (1196)	37.1 (942)	95 (2413)	380	345	580	690	290	550	655	3720 (16.6)
	P250043S2050	043	54.4 (1382)	44.3 (1125)	113 (2870)	455	405	700	800	340	665	760	3180 (14.2)
	P250048S2050	048	59.2 (1504)	49.2 (1250)	126 (3200)	515	450	770	880	380	730	835	2900 (12.9)
	P250053S2050	053	64.1 (1628)	54.0 (1372)	139 (3531)	565	495	855	950	420	810	900	2660 (11.8)
	P250058S2050	058	68.9 (1750)	58.8 (1494)	151 (3835)	600	525	920	1025	445	870	970	2460 (10.9)
	P250060S2050	060	71.3 (1811)	61.3 (1557)	158 (4013)	625	540	955	1065	455	905	1010	2370 (10.5)

Notes:

- For voltages above 161 kV, other section lengths, or end fitting combinations, please contact your HPS representative.
- Electrical values are without corona ring. For voltages equal to or greater than 220 kV, refer to page 20 for corona rings and associated physical/electrical changes to the above data. Dimensions are within allowable tolerances as specified by IEC 61952 and ANSI C29.17.
- The catalog number shown on the table is for a 2.5" (63.5mm) rod diameter line post with a vertical clamptop on the line end and a 5" Bolt Circle with tapped holes on the ground end. For other end fitting combinations, please refer to the Catalog Number Key on page 8.

Vertical Line Post Assembly 2.5" (63.5 mm) Rod Diameter



Vertical Line Post Insulators 2.5" (63.5 mm) Rod Diameter

Table A

Selection Guide: Typical Line Voltage, kV ⁽¹⁾	Catalog Numbers ⁽²⁾	Nominal Polymer Length inches	"A" Length inches (mm)
69 110 132 161	P250024S2XX0	024	34.7 (881)
	P250026S2XX0	026	37.1 (942)
	P250031S2XX0	031	42 (1067)
	P250036S2XX0	036	46.8 (1189)
	P250043S2XX0	043	54.1 (1374)
	P250048S2XX0	048	58.9 (1496)
	P250053S2XX0	053	63.6 (1615)
	P250058S2XX0	058	68.4 (1737)
	P250060S2XX0	060	70.7 (1796)

Table B

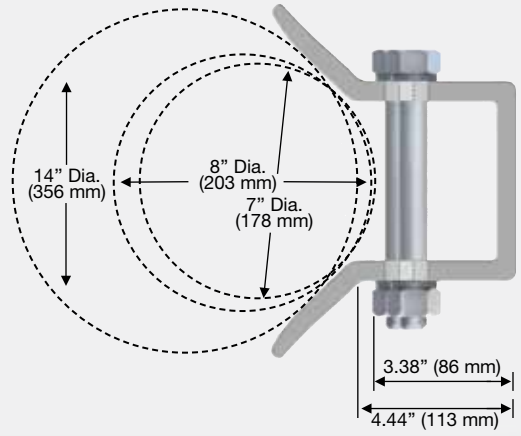
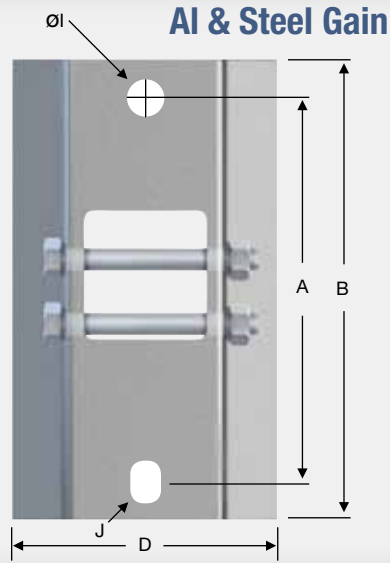
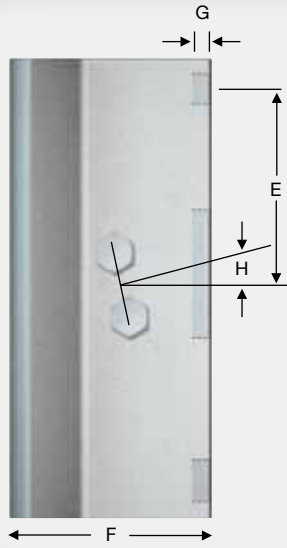
"XX" Code ⁽²⁾	Style	"B" Length inches (mm)	"C" Length inches (mm)	"D" Diameter inches (mm)
20	Face	20 (508)	12 (305)	0.8125 (21)
21	Side	20 (508)	12 (305)	0.8125 (21)
22	Face	20 (508)	12 (305)	0.9375 (24)
23	Side	20 (508)	12 (305)	0.9375 (24)
24	Face	31.75 (806)	16 (406)	0.8125 (21)
25	Side	31.75 (806)	16 (406)	0.8125 (21)
26	Face	31.75 (806)	16 (406)	0.9375 (24)
27	Side	31.75 (806)	16 (406)	0.9375 (24)

Notes:

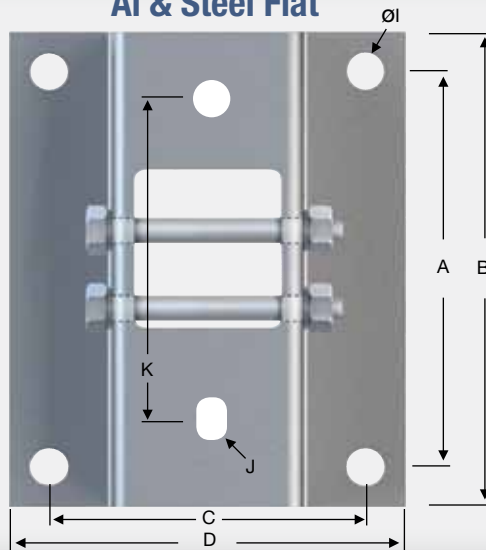
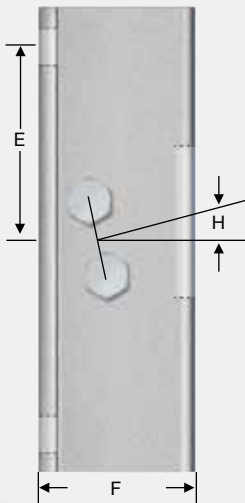
1) Insulators in Table A have the same electrical and mechanical characteristics as those on page 22 with a vertical clamptop on the line end and a 5" Bolt Circle on the ground end.

2) According to your preferred mounting configuration, replace the "xx" in catalog number from Table A with the two-digit "xx" code from Table B.

Base Fittings for 2.5" (63.5 mm) Rod Diameter



AI & Steel Flat

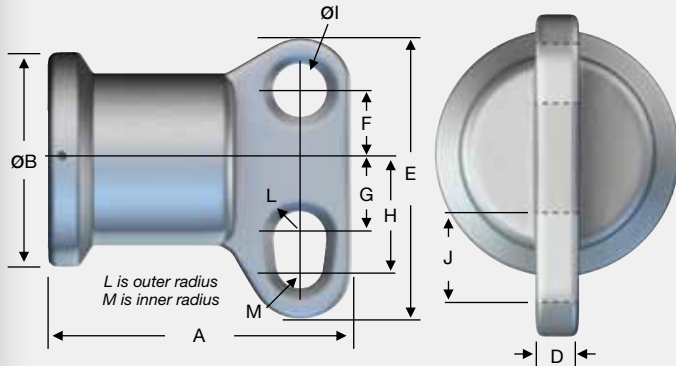


Horizontal & Vertical Bases inches (mm)

Type (Code)	A	B	C	D	E	F	G	H	I	J	K	Material
5" Bolt Circle (15)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	0.69 (18)	-	-	60-40-18 D.I.
5" Bolt Circle (05)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	5/8 - 11 UFS	-	-	60-40-18 D.I.
Aluminum Gain (02)	12.0 (305)	14.0 (356)	-	8.06 (205)	6.13 (156)	5.56 (141)	0.5 (13)	12°	0.94 (24)	0.94 X 1.31 (24x33)	-	6063 T5 AL
Aluminum Gain (12)	12.0 (305)	14.0 (356)	-	8.06 (205)	6.13 (156)	5.56 (141)	0.5 (13)	12°	0.81 (21)	0.94 X 1.31 (24x33)	-	6063 T5 AL
Steel Gain (07)	12.0 (305)	15.0 (381)	-	8.33 (212)	6.5 (165)	6.04 (153)	0.38 (10)	12°	0.94 (24)	0.94 X 2.0 (24x51)	-	Low Carbon Steel
Aluminum Flat (03)	10.0 (254)	12.0 (305)	8.0 (203)	10.0 (254)	5.0 (127)	4.0 (102)	0.5 (13)	12°	0.94 (24)	-	-	6063 T5 AL
Aluminum Flat (13)	10.0 (254)	12.0 (305)	8.0 (203)	10.0 (254)	5.0 (127)	4.0 (102)	0.5 (13)	12°	0.81 (21)	-	-	6063 T5 AL
Steel Flat (08)	13.0 (330)	15.0 (381)	8.0 (203)	10.0 (254)	6.5 (165)	4.0 (102)	0.38 (10)	12°	1.125 X 0.94 (26x24)	0.94 X 2.0 (24x51)	12.0 (305)	Low Carbon Steel
Aluminum Flat (04)	13.0 (330)	15.0 (381)	8.0 (203)	10.0 (254)	6.5 (165)	4.0 (102)	0.5 (13)	12°	0.94 (24)	0.94 X 1.31 (24x33)	12.0 (305)	6063 T5 AL
Aluminum Flat (14)	13.0 (330)	15.0 (381)	8.0 (203)	10.0 (254)	6.5 (165)	4.0 (102)	0.5 (13)	12°	0.81 (21)	0.81 X 1.31 (21x33)	12.0 (305)	6063 T5 AL

Line Fittings for 2.5" (63.5 mm) Rod Diameter

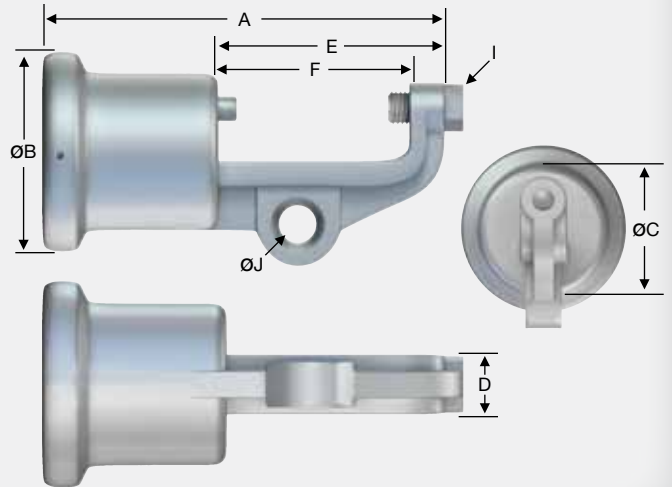
Two Hole Blade



Transverse Compressing Swing Angle for Conductor Suspension Clamp	
2 Hole Blade (std.)	2 Hole Long Blade
40 deg. max.	64 deg. max.

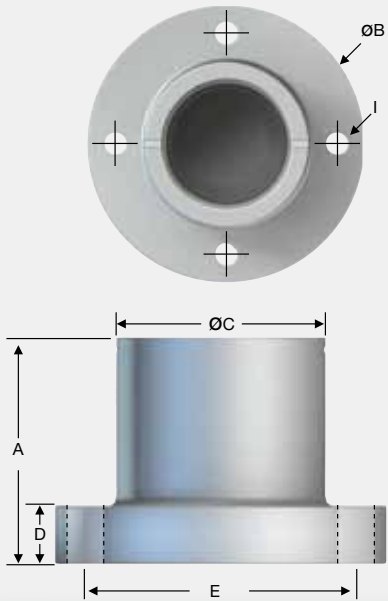
Note: 12° upsweep is already included

Horizontal Clamptop



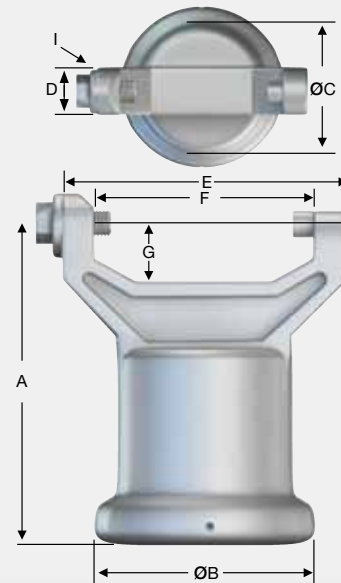
5" Bolt Circle

Line or Base Fitting



Vertical Clamptop

Part per ANSI C29.7



Horizontal & Vertical End Fittings inches (mm)

Type (Code)	A	B	C	D	E	F	G	H	I	J	L	M	Material
2 Hole Blade (0)	5.73 (146)	4.0 (102)	-	0.75 (19)	5.25 (133)	1.25 (32)	1.50 (38)	2.00 (51)	1.0 (25)	1.44 (37)	0.5R (12.7R)	0.44R (11R)	60-40-18 D.I.
2 Hole Long Blade (9)	5.73 (146)	4.0 (102)	-	0.75 (19)	7.75 (197)	1.25 (32)	4.0 (102)	4.5 (114)	1.0 (25)	1.44 (37)	0.5R (12.7R)	0.44R (11R)	60-40-18 D.I.
H. Clamptop (1)	8.24 (209)	4.0 (102)	3.30 (84)	1.12 (28)	4.72 (120)	4.0 (102)	-	-	5/8-11 UFS	0.75 (19)	-	-	60-40-18 D.I.
5" Bolt Circle (3)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	5/8-11 UFS	-	-	-	60-40-18 D.I.
5" Bolt Circle (5)	4.75 (121)	6.25 (159)	3.63 (92)	0.90 (23)	5.0 (127)	-	-	-	0.69 x Holes (18 x Holes)	-	-	-	60-40-18 D.I.
V. Clamptop (2)	5.88 (149)	4.0 (102)	3.30 (84)	1.12 (28)	5.37 (136)	4.0 (102)	1.06 (27)	-	5/8-11 UFS	-	-	-	60-40-18 D.I.

Clamtop Clamps inches (mm)

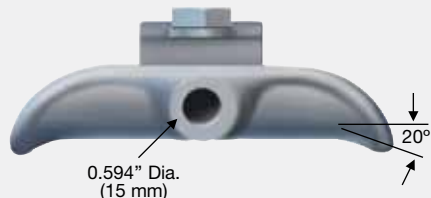
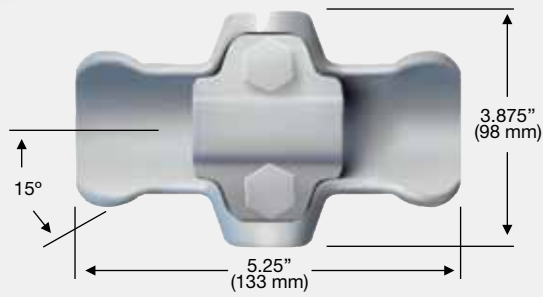


Figure 1

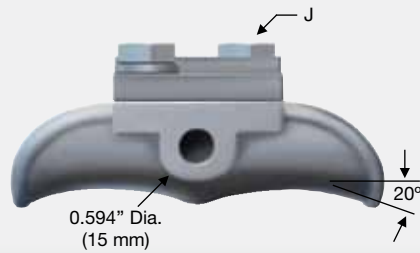
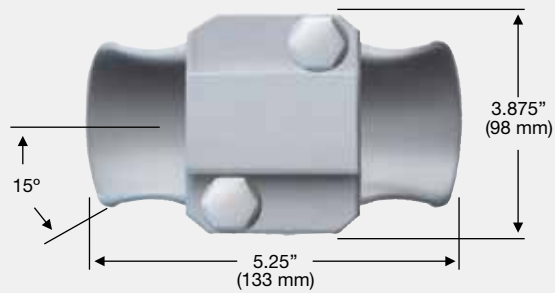


Figure 2

Fig. No.	Catalog Number	Body & Keeper Material	Clamping Range inches (mm)	Ultimate Body Strength lbs. (kN)
1	TSC57	356-T6 AL	0.25 - 0.57 (6.3 - 14.4)	2800 (1.273)
1	TSC106	356-T6 AL	0.50 - 1.06 (12.7 - 26.9)	2800 (1.273)
1	TSC150	356-T6 AL	1.00 - 1.50 (25.4 - 38.1)	2800 (1.273)
2	TSC200	356-T6 AL	1.50 - 2.00 (38.1 - 50.8)	2800 (1.273)

Jumper Clamps and Assemblies

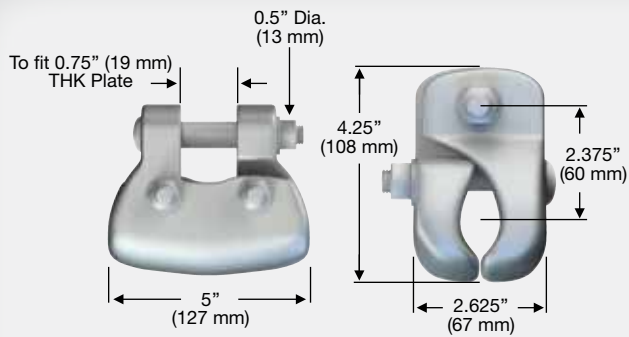


Figure 1

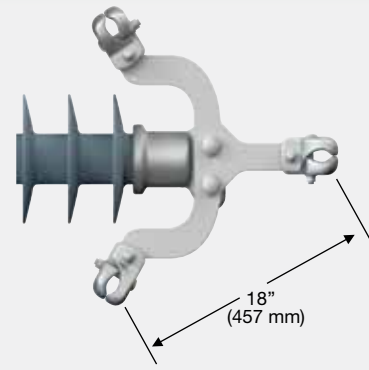


Figure 3

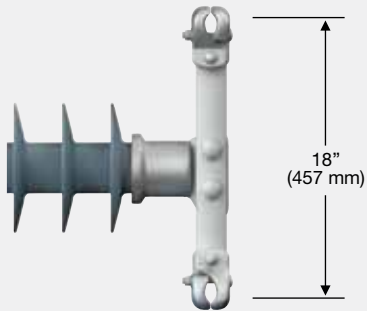


Figure 2

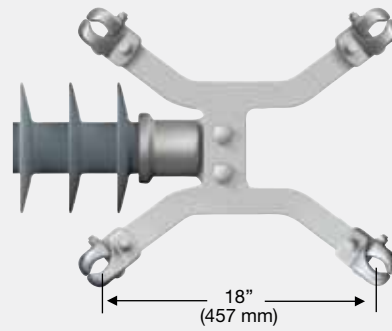


Figure 4

A practical application of Quadri*Sil® line posts is for support of jumper loops on transmission lines.

Horizontal motion of the jumper is restricted, and the factor of wind sway is eliminated. Additionally, the crossarm length may be reduced. The difference in cost of insulation is not significant, but the saving in tower cost can be attractive. Regardless of cost, the use of a jumper support improves construction.

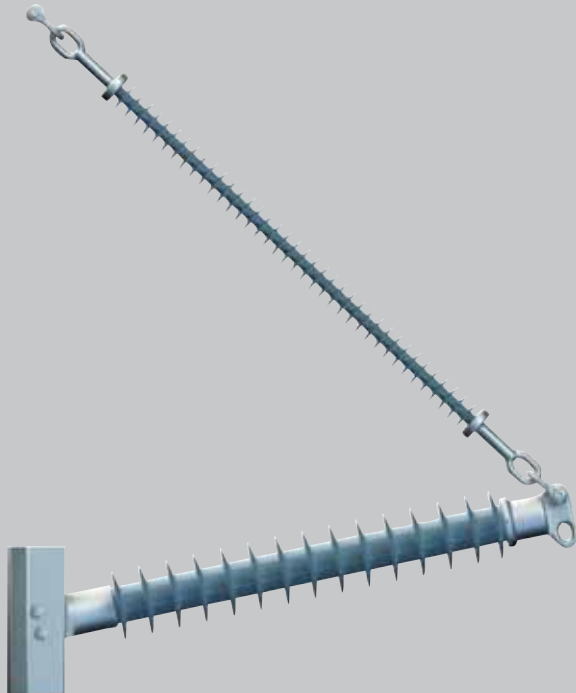
If using a single clamp, clamp position relative to the insulator may be changed by bolting the clamp through the upper hole in the insulator end fitting.

Jumper clamps are not intended for tangent span applications.

Figure	Catalog Number	Yoke Type	Clamping Range inches (mm)
1	976423002	None	1.00 - 1.40 (25 - 36)
1	976423003	None	1.40 - 1.60 (36 - 41)
1	600643001	None	1.60 - 2.00 (41 - 51)
2	2717243001	Dual	1.00 - 1.40 (25 - 36)
2	2717253001	Dual	1.40 - 1.60 (36 - 41)
2	2717263001	Dual	1.60 - 2.00 (41 - 51)
3	2721763001	Triple	1.00 - 1.40 (25 - 36)
3	2721773001	Triple	1.40 - 1.60 (36 - 41)
3	2721783001	Triple	1.60 - 2.00 (41 - 51)
4	2721793001	Quad	1.00 - 1.40 (25 - 36)
4	2721803001	Quad	1.40 - 1.60 (36 - 41)
4	2721813001	Quad	1.60 - 2.00 (41 - 51)

Braced Post Insulators

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Braced Line Post Assemblies	30
Assembly Drawings.....	31
Dimensions and Strength Ratings	32



Braced Line Post Assemblies

The need to minimize tower size and visual impact of transmission lines has prompted increased interest in braced line posts, horizontal-V, and pivoting V assemblies. These insulating structures offer vastly improved vertical load capabilities over conventional line posts, while retaining the advantages of a fixed conductor position.

A **braced line post insulator** uses a conventional line post with a suspension string tied to the tower face. Some of the characteristics of a braced line post are:

- It uses a traditional fixed base line post.
- The longitudinal strength is limited to the RCL rating of the line post component.
- It generates high tower torque (Z-direction) under longitudinal loading.

A **horizontal-V insulator** uses a conventional line post with a suspension string at a fixed offset extending from the tower face, adding a stabilizing force to the assembly. Some of the characteristics of a horizontal-V assembly are:

- It uses a fixed base horizontal line post (zero degree upsweep).
- It has an inclined hinge axis to add resistance to longitudinal movement.
- It employs a suspension insulator ground end stub arm (vang).
- The longitudinal strength is limited to the RCL rating of the line post component.
- It generates high tower torque (Z-direction) under longitudinal loading.

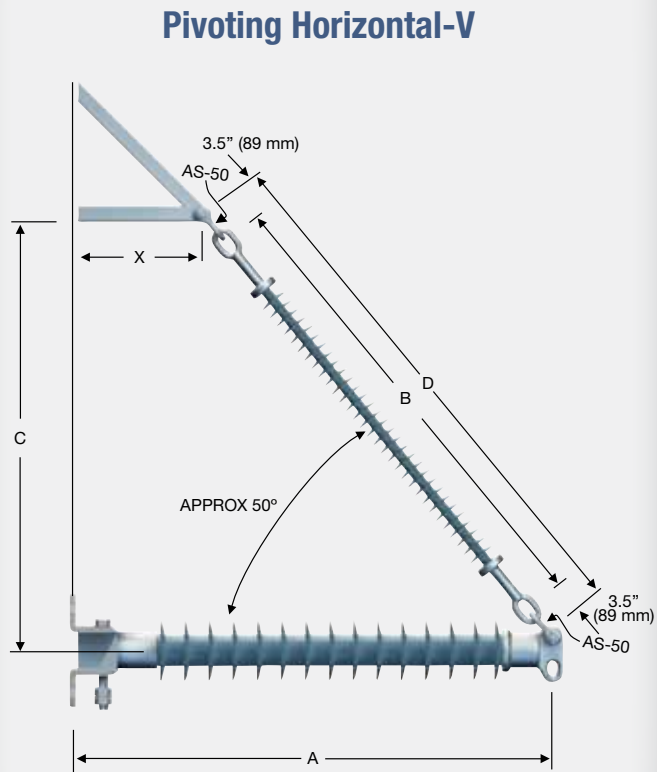
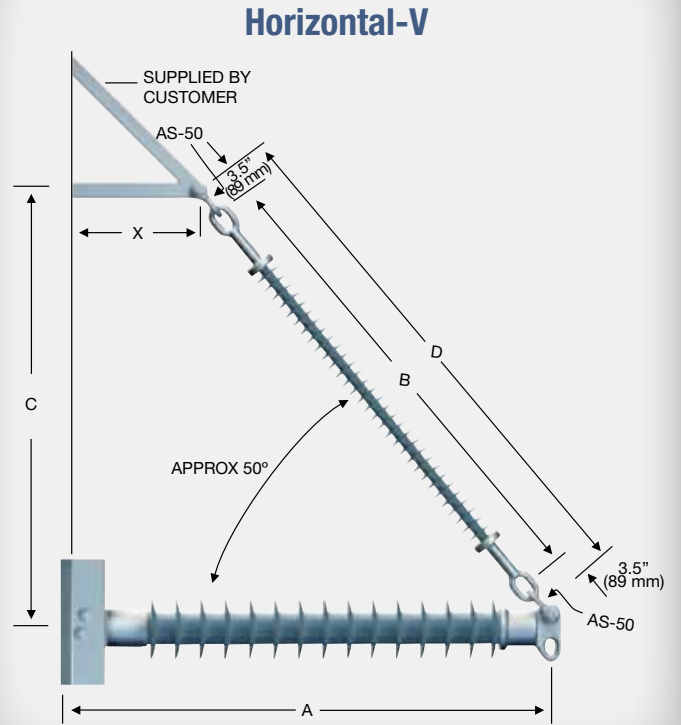
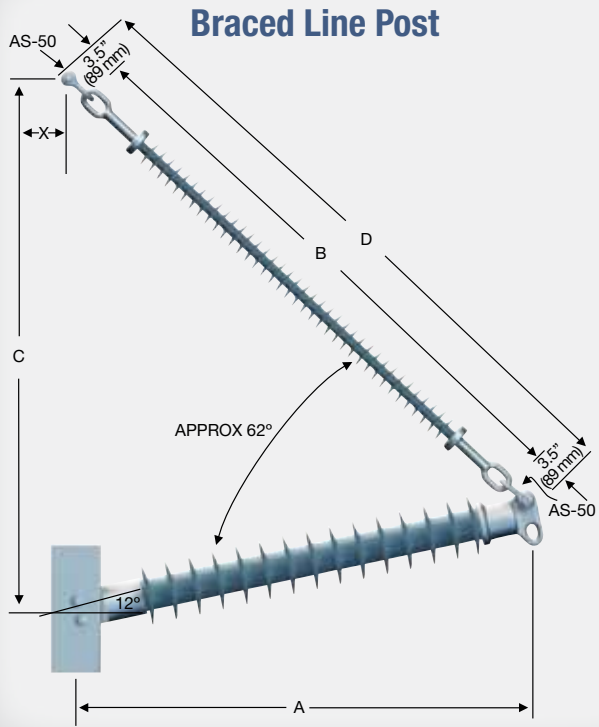
A **pivoting horizontal-V insulator** uses a conventional suspension string with a line post insulator fastened to the structure with a hinged base. Some of the characteristics of a pivoting horizontal-V are:

- It pivots about an inclined axis.
- It employs a suspension insulator ground end stub arm (vang).
- It uses a universal joint or pivot base on the strut.
- It has high longitudinal strength.
- It generates low tower torque (Z-direction) under longitudinal loading.
- The assembly's swing angle is a function of the vertical load and the tower offset pivot angle.
- The assembly's maximum longitudinal loading is a function of the tensile rating of the strut.

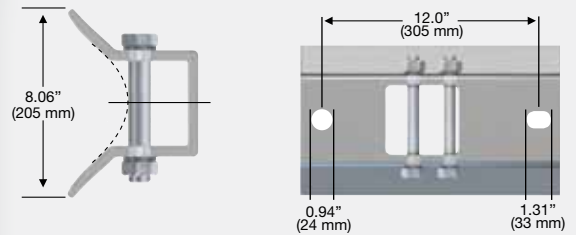
The tables included on the following pages — and the images on the assembly drawings page — cover typical arrangements that provide an efficient means of withstanding unusual loads. **For more information on these and numerous other variations of line post assemblies, contact your Hubbell Power Systems representative.**



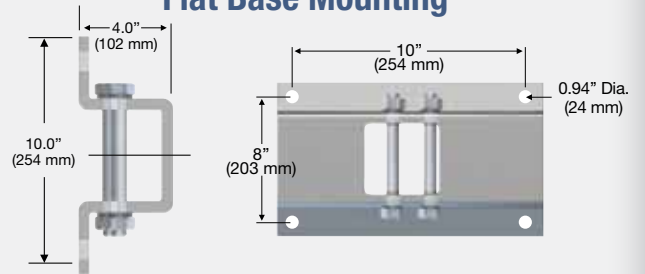
Assembly Drawings



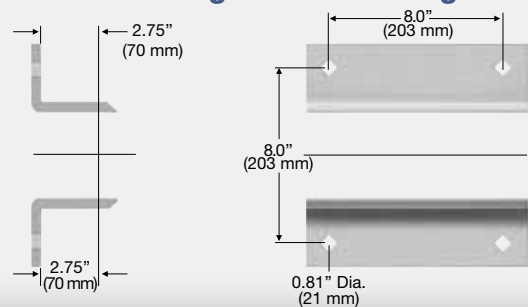
Gain Base Mounting



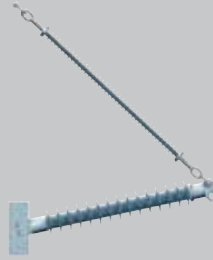
Flat Base Mounting



Pivoting Base Mounting

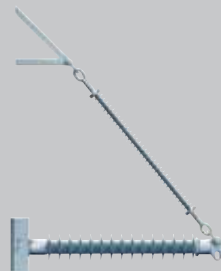


Dimensions and Strength Ratings



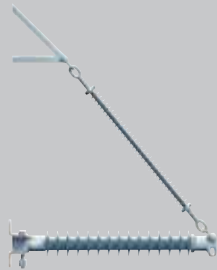
Braced Line Post Assembly

Typical System kV	Catalog Number Gain Base	Catalog Number Flat Base	Component Insulators		A inches (mm)	B inches (mm)	C inches (mm)	D inches (mm)	X inches (mm)	Maximum Loadings			
			Post	Suspension						Vertical lbs (kN)	Tension lbs (kN)	Compression lbs (kN)	Longitudinal lbs (kN)
115/138	BLP043G12000	BLP043F12000	P250043S0XX0	S025060S0000	55.9 (1420)	73.8 (1875)	74.0 (1880)	80.8 (2052)	2.0 (51)	11130 (49.5)	7500 (33.4)	7500 (33.4)	1625 (7.2)
115/138	BLP046G12000	BLP046F12000	P250046S0XX0	S025066S0000	58.2 (1478)	80.3 (2040)	82.0 (2083)	87.3 (2217)	2.0 (51)	11350 (50.5)	7500 (33.4)	7500 (33.4)	1550 (6.9)
161	BLP051G12000	BLP051F12000	P250051S0XX0	S025075S0000	63.0 (1600)	88.9 (2258)	90.0 (2286)	95.9 (2436)	2.0 (51)	11390 (50.7)	7500 (33.4)	7500 (33.4)	1415 (6.3)
161	BLP058G12000	BLP058F12000	P250058S0XX0	S025084S0000	70.1 (1781)	97.5 (2477)	96.0 (2438)	104.5 (2654)	2.0 (51)	11240 (50)	7500 (33.4)	7500 (33.4)	1250 (5.6)
230	BLP075G12000	BLP075F12000	P250075S0XX0	S025107S000A	86.6 (2200)	121.3 (3081)	118.0 (2997)	128.3 (3259)	2.0 (51)	11220 (49.9)	7500 (33.4)	7500 (33.4)	985 (4.4)
230	BLP080G12000	BLP080F12000	P250080S0XX0	S025116S000A	91.4 (2322)	129.9 (3299)	127.0 (3226)	136.9 (3477)	2.0 (51)	11260 (50.2)	7500 (33.4)	7500 (33.4)	930 (4.1)



Horizontal-V Assembly

Typical System kV	Catalog Number Gain Base	Catalog Number Flat Base	Component Insulators		A inches (mm)	B inches (mm)	C inches (mm)	D inches (mm)	X inches (mm)	Maximum Loadings			
			Post	Suspension						Vertical lbs (kN)	Tension lbs (kN)	Compression lbs (kN)	Longitudinal lbs (kN)
115/138	BLP041G00000	BLP041F00000	P250041S0XX0	S025040S0000	54.7 (1389)	54.3 (1379)	51.0 (1295)	61.3 (1557)	18.0 (457)	10050 (44.7)	7500 (33.4)	7500 (33.4)	1715 (7.6)
115/138	BLP046G00000	BLP046F00000	P250046S0XX0	S025045S0000	59.5 (1511)	58.7 (1491)	55.0 (1397)	65.7 (1669)	20.0 (508)	10070 (44.8)	7500 (33.4)	7500 (33.4)	1550 (6.9)
161	BLP053G00000	BLP053F00000	P250053S0XX0	S025053S0000	66.8 (1697)	67.3 (1709)	61.0 (1549)	74.3 (1887)	22.0 (559)	10000 (44.5)	7500 (33.4)	7500 (33.4)	1355 (6.0)
161	BLP055G00000	BLP055F00000	P250055S0XX0	S025058S0000	69.2 (1758)	71.6 (1819)	66.0 (1676)	78.6 (1996)	24.0 (610)	10240 (45.5)	7500 (33.4)	7500 (33.4)	1300 (5.8)
230	BLP072G00000	BLP072F00000	P250072S0XX0	S025075S000A	86.1 (2187)	88.9 (2258)	79.0 (2007)	95.9 (2436)	28.0 (711)	10010 (44.5)	7500 (33.4)	7500 (33.4)	1015 (4.5)
230	BLP080G00000	BLP080F00000	P250080S0XX0	S025084S000A	93.4 (2372)	97.5 (2477)	85.0 (2159)	104.5 (2654)	30.0 (762)	9960 (44.3)	7500 (33.4)	7500 (33.4)	930 (4.1)



Pivoting Horizontal-V Assembly

Typical System kV	Catalog Number Gain Base	Catalog Number Flat Base	Component Insulators		A inches (mm)	B inches (mm)	C inches (mm)	D inches (mm)	X inches (mm)	Maximum Loadings			
			Post	Suspension						Vertical lbs (kN)	Tension lbs (kN)	Compression lbs (kN)	Longitudinal lbs (kN)
115/138	—	BLP041P00000	P250041S0390	S025043S0000	53.1 (1349)	52.2 (1326)	50.0 (1270)	59.2 (1504)	18.0 (457)	10140 (45.1)	7500 (33.4)	7500 (33.4)	7500 (33.4)
115/138	—	BLP048P00000	P250048S0390	S025049S0000	57.9 (1471)	58.7 (1491)	56.0 (1422)	65.7 (1669)	20.0 (508)	10270 (45.7)	7500 (33.4)	7500 (33.4)	7500 (33.4)
161	—	BLP053P00000	P250053S0390	S025051S0000	65.2 (1656)	65.1 (1654)	60.0 (1524)	72.1 (1831)	22.0 (559)	10070 (44.8)	7500 (33.4)	7500 (33.4)	7500 (33.4)
161	—	BLP055P00000	P250055S0390	S025056S0000	67.6 (1717)	69.5 (1765)	65.0 (1651)	76.5 (1943)	24.0 (610)	10310 (45.9)	7500 (33.4)	7500 (33.4)	7500 (33.4)
230	—	BLP072P00000	P250070S0390	S025075S000A	84.5 (2146)	88.9 (2258)	81.0 (2057)	95.9 (2436)	28.0 (711)	10150 (45.1)	7500 (33.4)	7500 (33.4)	7500 (33.4)
230	—	BLP080P00000	P250080S0390	S025081S000A	91.8 (2332)	95.4 (2423)	84.0 (2134)	102.4 (2601)	30.0 (762)	10150 (45.1)	7500 (33.4)	7500 (33.4)	7500 (33.4)


Notes:

- Corona rings are required and included for 220 kV and above.
- Base end fitting for posts is code "02" for a gain base or "03" for a flat base. Replace the "XX" with the appropriate code.
- Maximum loads are for single loads in the specified direction.
- Contact your Hubbell Power Systems representative to request combined load charts.

CATALOG NUMBER KEY

Due to the numerous variations available for braced line post assemblies, the following catalog number scheme is presented primarily **for informational purposes**. For custom-made braced line post assemblies, please refer to publication *Insulator Selection Guide – Transmission* (EF9091T), available via www.hubbellpowersystems.com under “Literature” > “Literature Brochures” > “Ohio Brass Insulators and Arresters.”

Please follow the instructions in the *Insulator Selection Guide* and return the filled-out form to your Hubbell Power Systems representative. Filling out the form with as much information as possible will ensure that our engineers receive all the critical dimensions and information needed to design your braced line post assembly. For information on braced line post assemblies not included in this catalog, please contact your HPS representative.

<p>a Assembly Type</p> <p>The first three digits define the insulator type. In this example, we picked a Braced Line Post; therefore, we entered “BLP” in the boxes designated for “a.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> a a a b b b c d d e e e </p>	<p>e Internal Use</p> <p>000 – Sequential number to address each variation or model.</p> <p>Fill in your selection in the box designated for section “e.” In this example, the braced line post is the first in a series, as designated by “001.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text" value="0"/> <input type="text" value="7"/> <input type="text" value="5"/> <input type="text" value="F"/> <input type="text" value="1"/> <input type="text" value="2"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="1"/> a a a b b b c d d e e e </p> <p>Your complete part number will be BLP075F12001</p>
<p>b Polymer Length</p> <p>Polymer length of the line post member (in inches). The nominal polymer length (in inches) of the line post insulator is specified to help define voltage rating of the braced line post assembly. Refer to the Horizontal Line Post Insulators table on page 21 for appropriate polymer lengths.</p> <p>Fill in your selection in the boxes designated for section “b.” For example, if you want a Braced Line Post with a 75-inch polymer length, enter “075.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text" value="0"/> <input type="text" value="7"/> <input type="text" value="5"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> a a a b b b c d d e e e </p>	<p>Example:</p> <p>Braced Line Post Insulator, 75" Line Post Polymer Length, Flat Base, 12 degrees of Upsweep Angle, Variation/Model 001 BLP075F12001</p> 
<p>c Type of Line Post Base</p> <p>A single letter is used to identify the type of base. Please refer to the base drawings for hole patterns and dimensions located on page 24 or page 31.</p> <p> F – Flat G – Gain P – Pivoting </p> <p>Fill in your selection in the box designated for section “c.” For example, if you want a flat base, enter “F.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text" value="0"/> <input type="text" value="7"/> <input type="text" value="5"/> <input type="text" value="F"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> a a a b b b c d d e e e </p>	
<p>d Upsweep Angle</p> <p>The upsweep angle of the assembly is defined to help identify the assembly. Typically, braced line post assemblies will have 12 degrees of upsweep angle, and horizontal-V and pivoting-V assemblies will have 0 degrees.</p> <p>Fill in your selection in the box designated for section “d” for the upsweep angle. For example, if you chose a braced line post assembly, enter “12.”</p> <p> <input type="text" value="B"/> <input type="text" value="L"/> <input type="text" value="P"/> <input type="text" value="0"/> <input type="text" value="7"/> <input type="text" value="5"/> <input type="text" value="F"/> <input type="text" value="1"/> <input type="text" value="2"/> <input type="text"/> <input type="text"/> <input type="text"/> a a a b b b c d d e e e </p>	

TECHNICAL TERMS REFERENCE GUIDE

ANSI – The American National Standards Institute verifies that the standard developers are complying with the consensus and all other approval criteria.

Boron-free E-Glass – Electrical grade fiberglass that has corrosion resistance greater than boron containing E-glass; it is environmentally friendly due to the lack of boron and fluorine.

Combined Load Charts – Also referred to as application curves; a graphical representation that shows how the maximum working loads interact for a given line post or braced line post assembly.

Corona – A luminous discharge resulting from ionization of the air surrounding a conductor around which a voltage gradient exceeding a certain critical value exists.

Dry Band Arcing – Electrical flashes that occur between wet and dry spots over the contaminated surface of an insulator.

E-Glass – Electrical grade fiberglass; the first glass used for high-voltage insulators.

Flashover – A disruptive discharge that is capable of breaking the insulation level provided by the air around the insulator, which creates an arc between parts of different potential or polarity.

IEC – The International Electrotechnical Commission develops and publishes international standards for all electrical technologies.

Leakage Distance – The distance between the conductive end fittings of the insulator across the insulator surface, moving in and out of the sheds; also commonly referred to as the creep or creepage distance.

RCL – Reference Cantilever Load is the maximum design cantilever load (MDCL), which is rated at 50 percent of the part's SCL.

RIV – Radio-Interference Voltages are caused by electric currents that produce magnetic and electrostatic fields that are capable of inducing high-frequency voltage pulses in nearby radio antennas. The RIV of an insulator is measured under conditions specified by industry standards.

RTV – Room Temperature Vulcanate (elastomer sealant) is a silicone rubber that cures at room temperature.

RTL – Routine Test Load is the maximum design tension load, which is rated at 50 percent of the part's SML. All parts are tested at this rating prior to being shipped.

Section Length – The straight-line distance between the coupling points of the insulator's end fittings.

SCL – Specified Cantilever Load is the minimum ultimate cantilever strength of the part.

SML – Specified Mechanical Load is the minimum ultimate tensile strength of the part.

Strike Distance – The shortest distance across the insulator surface, between the end fittings of the insulator; also commonly referred to as the dry arc distance or tight string distance.





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