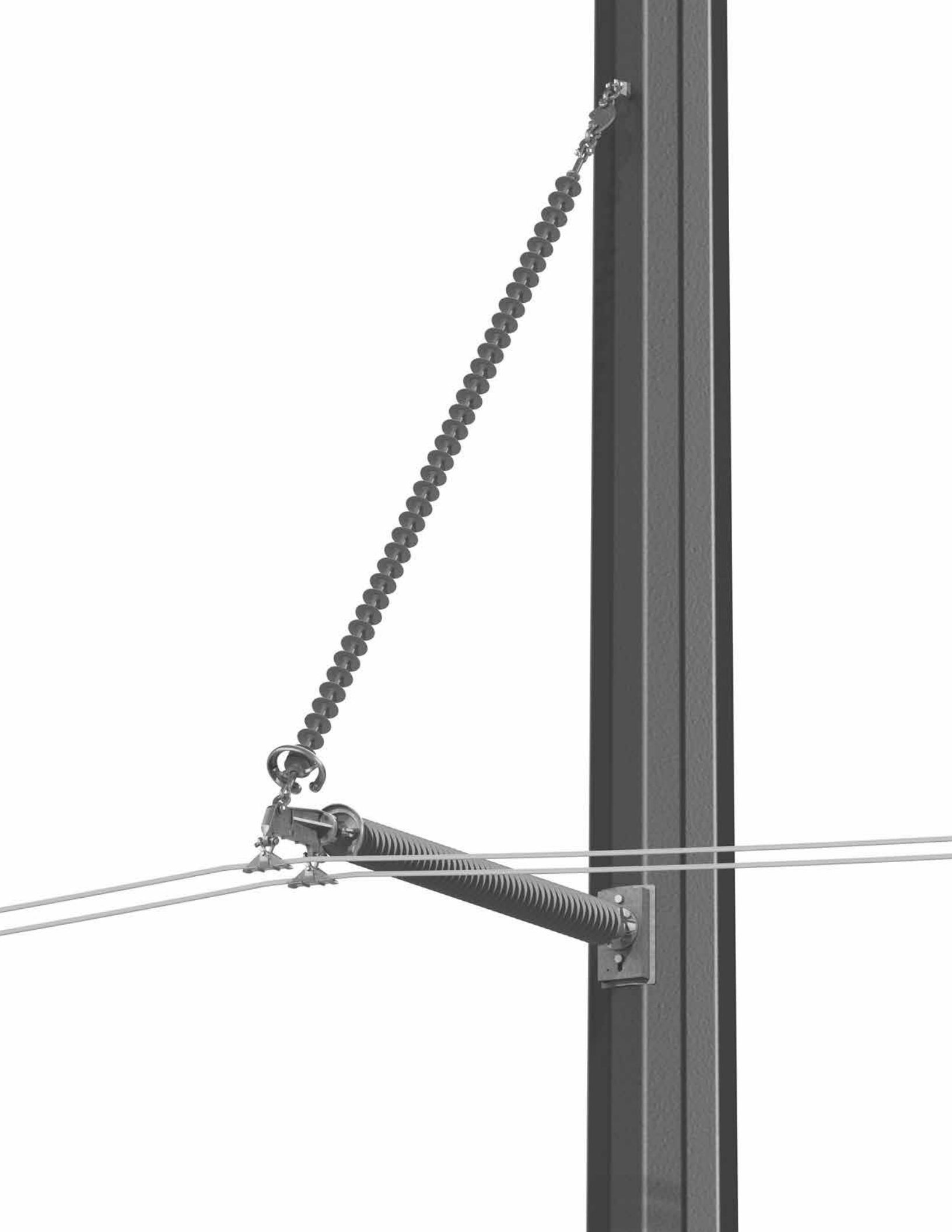


Transmission Insulators

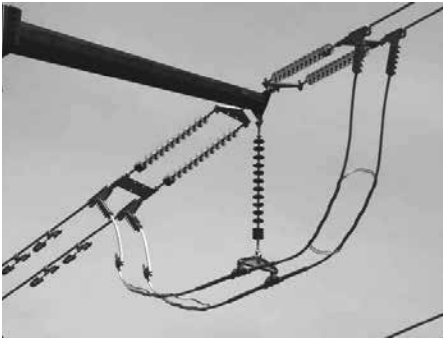
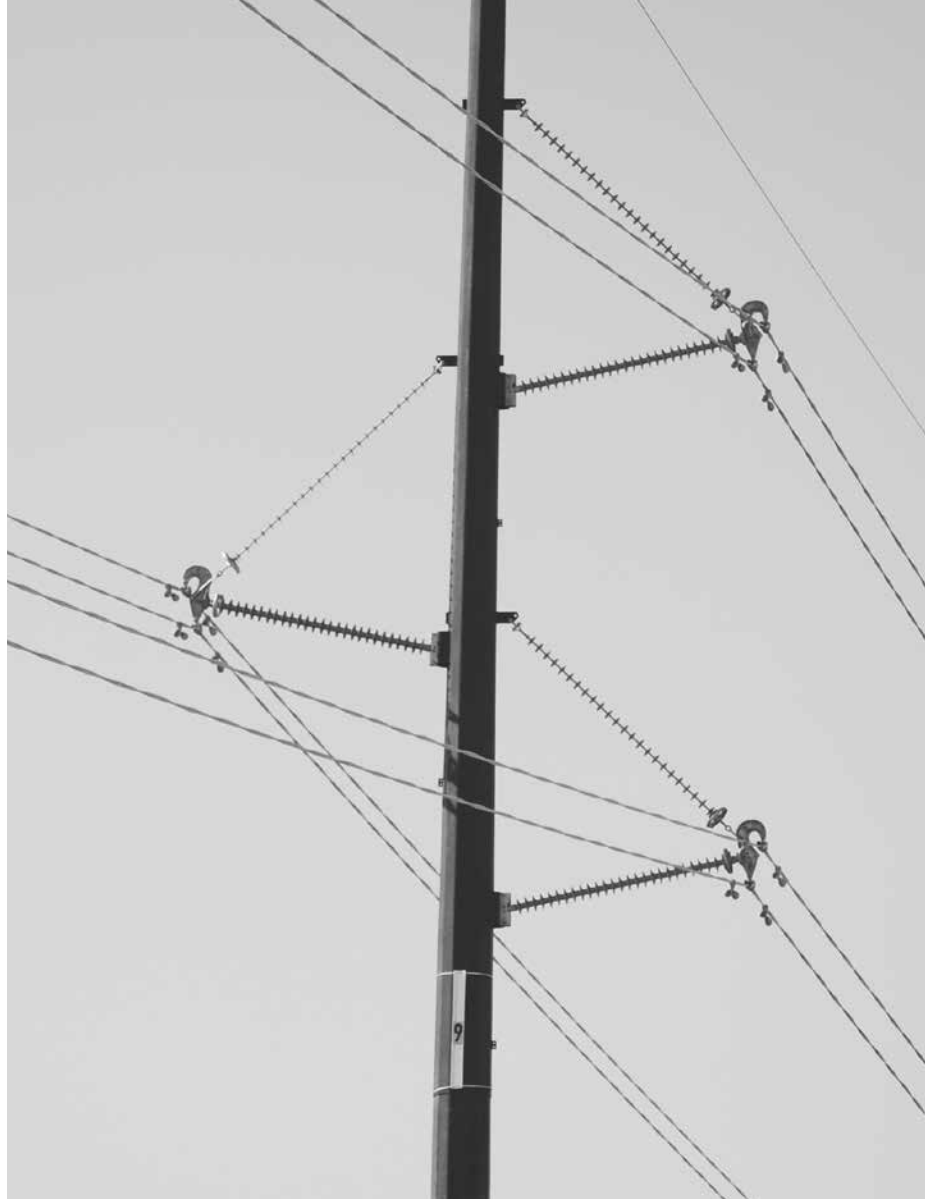


Proudly Distributed by





MPS Transmission Polymer Insulators



Dimensions in inches unless otherwise noted
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Technical information subject to change without notice

Who is MacLean Power Systems?

MacLean Power Systems (MPS), a MacLean-Fogg Company, is a leading global manufacturer of infrastructure products used on the transmission and distribution side of the electrical grid, telecommunications outside plant, and in a variety of civil construction applications. MPS product families include hardware, connectors, insulation as well as protection and construction products.

With global raw material sourcing capabilities, MPS offers over 20,000 items for sale, supported by

production facilities in North America and abroad. MPS products include: Automatic splices, bolted connectors, silicone and porcelain insulators, surge arresters, guy and foundation anchors, pole line hardware, iron clamps, fiberglass brackets, crossarms and guy strain insulators, steel fabrications, and polymer fuse cutouts, grounding equipment, formed wire, enclosures and pads, vibration control products and much more.

A Complete Transmission Polymer Insulator Offering

Polymer Insulators

- Brace Post Insulators
- Strut and Jumper Post Assemblies
- Line Post
- Polymer Suspension Insulators

MacLean Power Systems

Global Presence

We produce the building blocks to support the world's changing needs. With multiple worldwide manufacturing facilities, we offer a comprehensive line of products tailored to fit the needs of our customers in various regions. Our state-of-the-art factories use the latest equipment and techniques to maintain a high level of manufacturing quality. Additionally, our commitment to sustainability ensures that we will remain a leader in delivering responsible energy.



Storm Inventory

MPS maintains additional inventories of common products in case of natural disasters. During these events, MPS is one of the first suppliers to start shipping product for quick power line repairs. Today MPS leads the industry in storm preparedness and quick response.

Excellent Service

With a toll free customer service number and 20+ knowledgeable customer service personnel, MPS offers excellent support ensuring all your questions are answered. Also, 24 hour order status checking on-line gives you the added benefit of getting answers even after hours.



Table of Contents



U.S. Manufacturing

MacLean Power Systems believes that manufacturing in the U.S. is vital to remaining competitive in the power market. This allows MPS to better service the U.S. market, and continue to develop one of its most important core competencies: Manufacturing.

With our U.S. facilities employing over a thousand people MPS has a stable footing in the U.S. market and offers the best service and logistics in the industry. This can only be accomplished with local manufacturing and a large manufacturing presence.

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2 Strut and Jumper Post Assemblies

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Braced Post Insulators





Transmission line design must take into account economics, right-of-way, aesthetics, construction efficiency, and reliability. The composite braced post design is the clear choice to achieve each of these sometimes conflicting objectives. Composite Braced Posts allow the use of monopole structures vs. traditional lattice and H-frame construction significantly reducing the visual impact of the line as well as the right-of-way required to construct it.

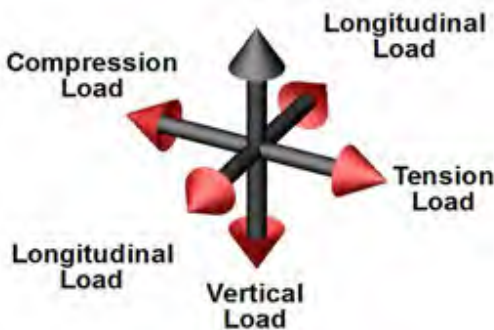
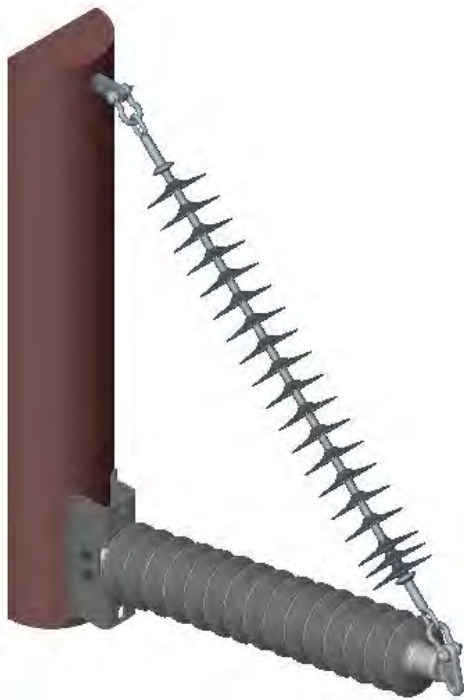
Composite Braced Posts vastly improve the vertical loading capability of conventional line posts allowing for greater span lengths and less total structures. Because they are composite and are made of silicone rubber, they also offer advantages of light weight, vandal resistance, and contamination performance unmatched by other insulator designs.

Braced Post Assemblies are used effectively at system voltages from 69kv to 345kv. The composite braced post offers both urban aesthetics as well as a low environmental impact.

Upper Left: Double Circuit Braced Post Structure
 Below: Braced Post vs. V-String Design
 Lower Left: Lattice Structure

Braced Post Smart Catalog Number Definition								
B2	90	1	057	B	1	1	068	MX
LP OD	Tower EF	Line EF	Section Length	Hardware Type	Brace SML	Brace EF	Height	Custom #
↓	↓	↓	↓	↓	↓	↓	↓	↓
B1 = 2.0" B2 = 2.5" B3 = 3.0" B4 = 3.5"	10 = Flat Base Upswept 11 = Flat Base 0 Deg. 1C = Flat Base Fixed 50 = 5" BC 6_ - Swivel Base 80 = Anchor Only 90 = Gain Base Upswept 91 = Gain Base 0 Deg.	1 = Drop Tongue 5 = 5" Bolt Circle C = Ext. Drop Tongue E = High Strength Bracket F = Vert. RAM Bracket H = Horiz. RAM Bracket	Pole to Conductor CL	B = Basic Hdwr T = Turnbuckle P = Adj. Plate X = None	1 = 25-27k 5 = 30k 6 = 36k 2 = 50k	1 = Eye / Eye 2 = Y / Ball 3 = Eye / Ball 4 = Y / Eye 5 = Y / Y 6 = Sock/Ball	Base to Vang Distance	M = Molded V = Modular X = No CR A = 8" CR B = 12" CR

Braced Post Insulators



Braced Post: Unique insulator design that combines the cantilever properties of a horizontal line post with the tension strength of a suspension insulator to make a high strength insulator assembly. The suspension insulator, or brace, is attached to the line post and to the tower via connection hardware. When loaded, the brace goes into tension, and is the primary support mechanism for the assembly. The line post provides stability for transverse (tension & compression) & longitudinal loads exerted onto the assembly.

Connection Hardware: The hardware used to connect the brace to the post and tower can be supplied in a variety of combinations. Typically, the hardware used is greater than or equal to the SML rating of the brace insulator, and the type of connection is determined by the end fittings supplied on the suspension. Options for connection hardware discussed in later sections.

Vertical Load: (MDCL) Downward load applied to the assembly, usually determined by the weight of the conductor.

Tension Load: Transverse load pulling perpendicularly away from the tower, essentially putting the line post in tension.

Compression Load: Transverse load pulling perpendicularly into the tower, compressing the line post towards the tower.

Longitudinal Load: Side load applied to the assembly. Ideally, the load on each side of the assembly will be equal / balanced, resulting in no longitudinal load. Longitudinal loading is critical when loads are unbalanced and for broken conductor consideration.

Combined Load Curves: Load curve that combines the effects of the various loads and plots working and ultimate strength of the assembly. Load curves are supplied upon request.

Working Load Curve: The maximum load that can be applied to the insulator for long periods of time, without damaging or fatiguing the insulator.

Ultimate Load Curve: The load at which the assembly approaches its ultimate strength, point of failure.

Braced Post Load Application: The maximum load (or worst case (wind, ice, etc)) applied along with the utilities safety factor practice. Max load applications that surpass the working curve require upgrades in strength for the braced post.

Strength Upgrades: Depending on the specific loading requirements, there are many ways to upgrade the strength of a braced post, listed below are a few of the most common upgrades.

- Increase the SML of the brace insulator [~ increase Vertical Loading Capability]
- Increase the rod diameter of the line post [~ higher Vertical / Transverse Loading Capability]
- Change from fixed base to swivel base [~ improves Longitudinal Loading Capability]
- Dimensional design changes (Changes to upsweep angle, brace angle, height, etc.)

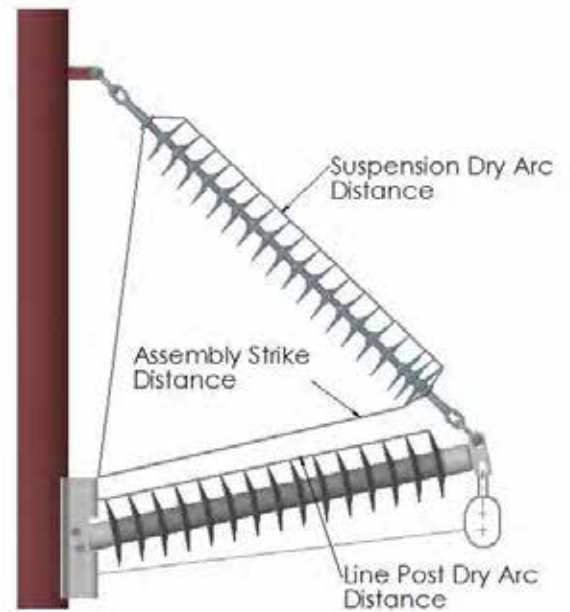
Insulator Electrical Performance: The electrical values of an insulator are driven by the dry arc distance, and the insulators' contamination performance is dictated by the leakage distance.

Dry Arc Distance: The shortest distance metal to metal up and along the insulator tangent to the sheds. The electrical values for 60Hz & critical impulse flashovers are statistically derived by the dry arc distance of the insulator.

Assembly Strike Distance: In a combination assembly, the individual dry arc distances of each insulator are usually not the shortest paths metal to metal. This shorter path or dry arc for the assembly is called the strike distance, which could be the distance from the post base to the brace end fitting or corona ring, or it could be the distance to the conductor hardware, especially on double bundled assemblies with horizontal yoke plates. The strike distance drives the electrical values of the braced post assembly.

Leakage Distance: The continuous path across the insulator from metal to metal, measured across the profile of each shed. The leakage distance is controlled by the number of sheds on the insulator.

Assembly Leakage Distance: The leakage distance for a braced post assembly is the shortest leakage distance of the 2 insulators that make up the assembly. If the post has 230" of leakage, and the brace has 180" of leakage, the braced post leakage distance is 180".



The strike distance of the braced post assembly is typically shorter than the dry arc distances of either the post or brace insulators. Therefore, the electrical values of the individual insulators are greater than the electrical values of the assembly. The sketch above shows the various strike distances of the assembly, the shortest of which determines the electrical values.

Recommended Corona Ring Application for the Braced Post



8" Corona Ring



12" Corona Ring

	230 kV	345 kV
Brace	8" Ring	12" Ring
Post	None	6" Ring

High voltages can result in unwanted noise (RIV) and corona. To minimize the effects of corona, corona rings are applied to one or both of the insulators of the assembly. Typically, for system voltages 230kV and above a corona ring or combination of rings is necessary. However, some applications may require rings at lower system voltages. The table above shows the recommended corona ring applications for 230kV & 345kV. The ultimate decision of corona ring application is determined by the customer and by the environmental factors where the assembly will be used.

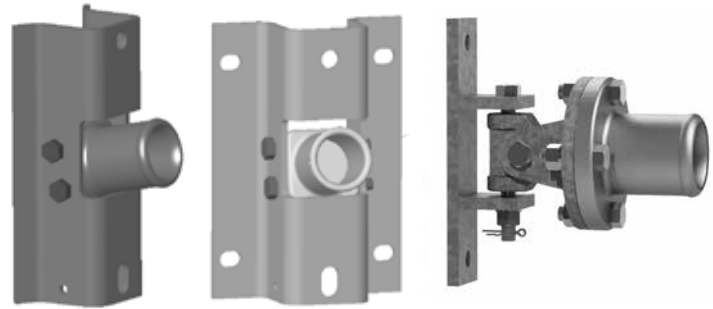
Braced Post Insulators

Braced Post Design Options

Insulator Options

Line Post: Typically, the line post of the braced post assembly will have a tongue line end fitting (F), and a bendable base tower connection (E). The bendable base is available as a gain or flat design type, or it can be replaced with a swivel or pivoting base, depending on the requirements of the application.

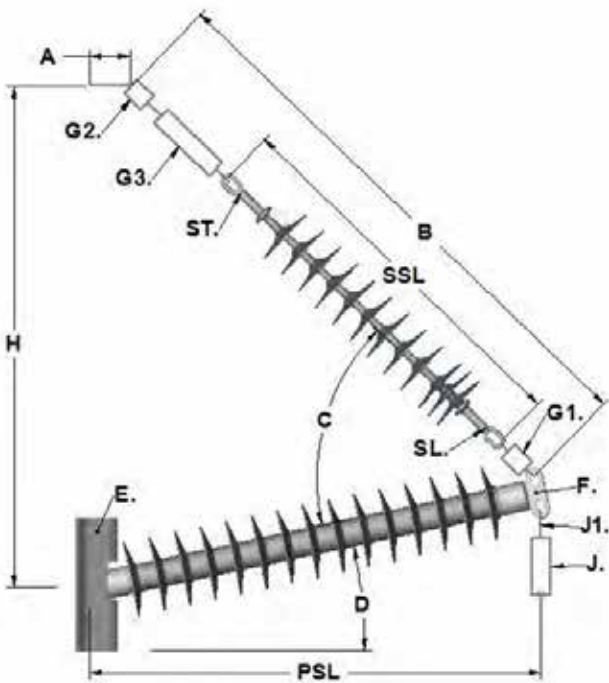
Brace Insulator: The suspension insulator that makes up the brace can be comprised of many end fitting combinations, per customer preference. The Eye / Eye combination is a commonly used design, it offers a greater degree of articulation when combined with anchor shackles.



Bendable Gain

Bendable Flat

Swivel Base



Bendable Base – Formed steel base that mates with an anchor end fitting on the insulator via 2 mounting bolts. These bases provide some vertical articulation of the post, which offers adjustment for the brace and connection hardware to the pole. Bendable bases come in gain and flat designs, with 0° & 12° up-sweep angles, as required for by application.

Gain Base – Base design used to mate the insulator to a round pole surface. This base is attached to the pole through the center bolt mount holes.

Flat Base – Base design used to mate the insulator to a flat surface, using either the 4 bolt holes along the ears of the base, or the 2 center mount bolt holes.

Swivel Base or Pivoting Base – This base provides articulation in the vertical and longitudinal directions. This design is typically used in areas where high longitudinal loading is required to compensate for unbalanced loads or broken conductor conditions.

Pole Band Assemblies – Another method of attaching a braced post assembly to a tower is by means of a pole band assembly. Pole bands are used on poles when mount holes are not available and cannot be drilled, or for maintenance / emergency response applications. Contact MPS for additional details.

Brace Connection Hardware Options

The brace of the braced post assembly can be made up of many different insulator and hardware combinations, depending on customer preference and design.

- The suspension insulator can make up the entire length of the brace, connected to the post and tower via anchor shackles. This is the simplest and more cost efficient design.
- The brace can consist of an electrically proportionate length suspension, combined with shackles for G1. & G2, and some form of steel hardware for item G3 (turnbuckle, straps, links, etc).

Options for G1	Options for G2	Options for G3	EF Options for SSL
Anchor Shackle (SL = Eye) Socket/Clevis (SL = Y-Clevis)	Anchor Shackle (SL = Eye)	Turnbuckle Steel Strap Chain Link	Eye / Eye Eye / Ball Y-Clevis / Ball

Custom Braced Post Designs

The MPS “Braced Post” section of this catalog has many standard designs available for system voltages 69kV through 230kV. If the designs shown in the catalog do not exactly satisfy the requirements of an application, custom braced post designs are available. At the end of the braced post section is a braced post worksheet, designed to communicate the specific details of a custom braced post design to MPS. The information provided on this sheet is used by MPS Design Engineering to develop the best fit design per customer request. In order to properly develop these designs, it is important to know the specific requirements of the application along with clarification about which details are most critical and which have some flexibility within the design. More Information = better designs and faster response time.

Braced Post Assembly Details: This section outlines the geometric/dimensional requirements of the assembly, including assembly height, section length, and angles. Ideally, the dimensions required would be expressed as a nominal value, with some +/- tolerances. When a specific dimension is absolutely required, it should be identified as “critical”. Not every dimension can be critical, as some dimensions of the assembly are driven by others, therefore only 2-3 dimensions should be marked as critical.

Mechanical Loading Requirements: This section identifies the loading characteristics of the application. These values should be ultimate loads the assembly will be expected to withstand over long periods of time, and should fit within the working load curve of the assembly.

Electrical Requirements: This section determines the minimal requirement of the assembly with respect to electrical performance.

- Minimum leakage distance (and / or description of contamination level for the application)
- Minimum strike distance / dry arc
- Minimum requirements for 2 of the 4 electrical values (ex. Dry FO & CIFO+)
- Corona ring requirement

Assembly Details: The remaining sections identify the various options of the assembly

- Line post base requirement
- Suspension end fitting requirements
- Hardware attachments
- Extension hardware
- Conductor information (armor rod)
- Conductor attachment hardware

Hardware Assemblies and Packaging

MPS provides a single catalog number & drawing for each braced post assembly, whether it is a standard catalog item, or a custom design. The catalog number includes all the insulators, connection hardware, and conductor hardware as required, with all the various catalog numbers of the individual components bundled into one catalog number.

Packaging: There are several options for packaging insulator assemblies. Typically, the individual components are bulk packed separately and mated in the field by the customer. Custom packs and tower packs are available upon request. These value added options reduce costs in the field, help minimize lost or missing parts, and reduce the time from receipt of goods to installation.

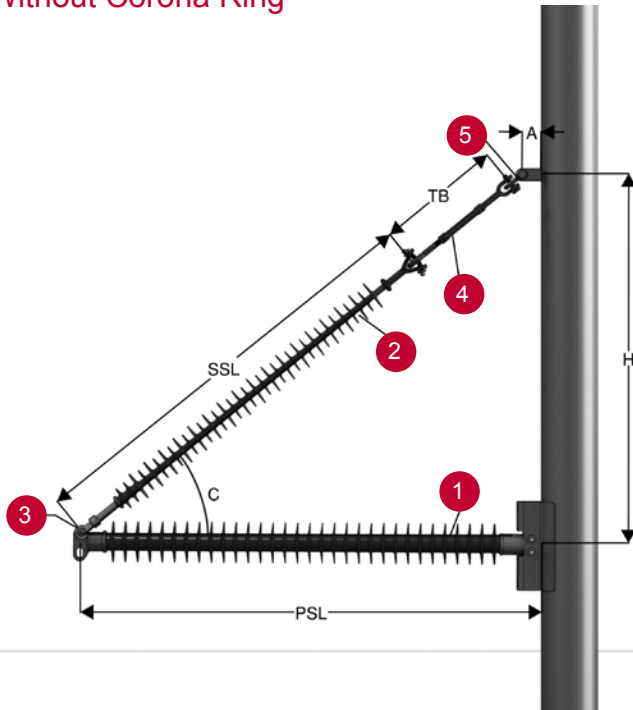
Tower Packs: Unique packaging where each component of the assembly is packed into one crate, usually in quantities of 3, 6, or 9. MPS verifies fit and quantity of the components of the assembly. The crate can be marshaled out to the job site and dropped at the tower, where it can then be assembled and installed.

Custom Packs: MPS packages components together as required by the customer.

For additional information about braced post assemblies, contact your local MPS Sales Representative

Braced Post Insulators

Braced Post 0° Upswing Without Corona Ring



List of Materials:

1. 2.5" Line Post Insulator (1 each)
2. 25klb Suspension Insulator (1 each)
3. SYC-56 Socket Y-Clevis (1 each)
4. 26 k Turnbuckle (6" or 12" Adjustable Range)
5. ASH-55 Anchor Shackle (1 each)

A = 2"

Line Voltage (kV)					Catalog Number	Height (in)		Angle C		PSL		SSL	
69	115	138	161	230		min	max	min	max	in	mm	in	mm
					B2911034T12052MX	49	55	56	60				
					B2911034T12063MX	56	69	60	65	34.0	864	36.1	918
					B2911038T12049MX	46	53	51	55				
					B2911038T12061MX	53	67	56	62	38.0	965	36.1	918
					B2911046T12051MX	46	54	46	51				
					B2911046T12063MX	55	70	51	58	46.0	1168	42.2	1071
					B2911050T12055MX	51	59	46	50				
					B2911050T12067MX	60	74	51	57	50.0	1270	48.1	1223
					B2911053T12059MX	55	63	47	51				
					B2911053T12072MX	64	78	51	57	53.3	1353	54.1	1373
					B2911061T12061MX	57	65	43	47				
					B2911061T12074MX	67	81	48	54	61.0	1549	60.0	1525
					B2911069T12061MX	57	65	40	44				
					B2911069T12075MX	66	82	44	51	69.0	1753	66.0	1677
					B2911081T12066MX	62	70	37	41				
					B2911081T12080MX	72	88	42	48	81.0	2057	78.0	1982



Catalog Number	SCL	MDCL		Dry Arc		Leakage		Electrical Flashover (kV)			
								60 Hz		CIFO	
	lbs	50% (lbs)	40% (lbs)	in	mm	in	mm	Dry	Wet	Pos	Neg
B2911034T12052MX	20,600	10,300	8,240	22.9	581	63.8	1620	230	209	390	482
B2911034T12063MX	21,400	10,700	8,560	23.3	593	63.8	1620	234	213	397	489
B2911038T12049MX	19,200	9,600	7,680	26.2	666	74.4	1889	260	238	443	537
B2911038T12061MX	20,400	10,200	8,160	26.7	678	74.4	1889	265	242	451	545
B2911046T12051MX	17,800	8,900	7,120	32.0	813	85.0	2158	313	288	535	628
B2911046T12063MX	19,200	9,600	7,680	32.5	826	85.0	2158	317	292	543	636
B2911050T12055MX	17,800	8,900	7,120	37.6	955	102.6	2606	363	336	624	710
B2911050T12067MX	19,200	9,600	7,680	38.0	965	102.6	2606	366	339	630	715
B2911053T12059MX	17,800	8,900	7,120	41.6	1057	116.7	2965	399	369	687	764
B2911053T12072MX	19,200	9,600	7,680	42.0	1067	116.7	2965	402	372	693	769
B2911061T12061MX	17,000	8,500	6,800	48.3	1227	137.9	3503	458	424	793	849
B2911061T12074MX	18,400	9,200	7,360	48.7	1236	137.9	3503	461	427	800	854
B2911069T12061MX	15,800	7,900	6,320	55.9	1420	155.7	3955	525	484	913	958
B2911069T12075MX	17,200	8,600	6,880	55.9	1420	155.7	3955	525	484	913	958
B2911081T12066MX	15,000	7,500	6,000	65.9	1674	190.8	4847	612	561	1070	1106
B2911081T12080MX	16,400	8,200	6,560	66.0	1677	190.8	4847	612	562	1071	1108

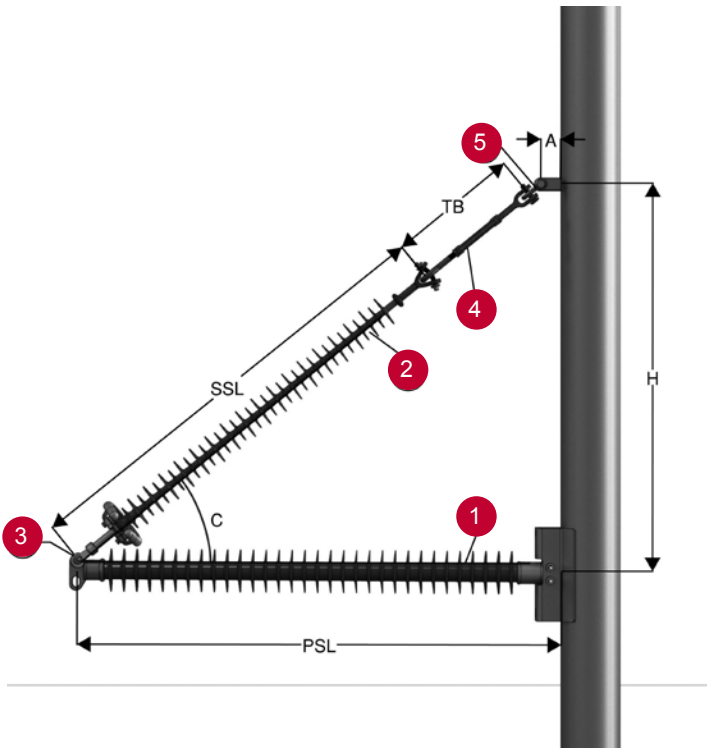
Notes:

- MDCL = Max. Design Cantilever Load (Load Curves provided upon request).
- Electrical Data is derived from the assembly "Strike Distance", without corona rings for 161kV and below. All 230 kV Braced Post assemblies supplied with a corona ring (Electrical values include the corona ring).
- For Higher Strength or Custom designs, please complete the Braced Post Request Worksheet at the end of this section and return the completed worksheet to MPS through your local MPS Sales Representative.
- Customized Designs include any dimensional changes, strength changes, hardware changes, end fitting changes, etc.

* CR = A Design Configuration that includes a corona ring at the specified Line Voltage

Braced Post Insulators

Braced Post 0° Upswing With Corona Ring



List of Materials:

1. 2.5" Line Post Insulator (1 each)
2. 25klb Suspension Insulator (1 each)
3. SYC-56 Socket Y-Clevis (1 each)
4. 26 k Turnbuckle (6" or 12" Adjustable Range)
5. ASH-55 Anchor Shackle (1 each)

A = 2"

Line Voltage (kV)					Catalog Number	Height (in)		Angle C		PSL		SSL	
69	115	138	161	230		min	max	min	max	in	mm	in	mm
	CR				B2911053T12059MA	55	63	47	51	53.3	1353	54.1	1373
	CR				B2911053T12072MA	65	78	51	57				
	CR	CR			B2911061T12061MA	57	65	43	47	61.0	1549	60.0	1525
	CR	CR			B2911061T12074MA	66	81	48	54				
		CR			B2911069T12061MA	57	65	40	44	69.0	1753	66.0	1677
		CR			B2911069T12075MA	66	82	44	51				
		CR	CR		B2911073T1268MA	64	72	41	45	73.0	1854	73.5	1868
		CR	CR		B2911073T12081MA	74	89	45	51				
			CR		B2911081T12066MA	62	70	37	41	81.0	2057	78.0	1982
			CR		B2911081T12080MA	72	88	42	48				
			CR	CR	B2911085T12070MA	66	75	38	42	85.0	2159	84.1	2135
			CR	CR	B2911085T12084MA	76	92	42	48				
				CR	B2911093T12070MA	65	74	35	39	93.0	2362	89.9	2284
				CR	B2911093T12084MA	76	93	39	45				

Catalog Number	SCL	MDCL		Dry Arc		Leakage		Electrical Flashover (kV)			
								60 Hz		CIFO	
	lbs	50% (lbs)	40% (lbs)	in	mm	in	mm	Dry	Wet	Pos	Neg
B2911053T12059MA	17,800	8,900	7,120	38.6	980	116.7	2965	372	344	639	724
B2911053T12072MA	19,200	9,600	7,680	38.8	987	116.7	2965	374	346	643	727
B2911061T12061MA	17,000	8,500	6,800	46.1	1171	137.9	3503	438	406	758	822
B2911061T12074MA	18,400	9,200	7,360	46.3	1177	137.9	3503	440	408	762	825
B2911069T12061MA	15,800	7,900	6,320	54.0	1372	155.7	3955	508	469	883	929
B2911069T12075MA	17,200	8,600	6,880	54.2	1376	155.7	3955	510	471	887	932
B2911073T1268MA	16,400	8,200	6,560	58.0	1474	169.7	4310	543	501	946	989
B2911073T12081MA	17,600	8,800	7,040	58.2	1479	169.7	4310	545	502	949	992
B2911081T12066MA	15,000	7,500	6,000	65.9	1674	190.8	4847	612	561	1070	1106
B2911081T12080MA	16,400	8,200	6,560	66.0	1677	190.8	4847	612	562	1071	1108
B2911085T12070MA	15,200	7,600	6,080	69.9	1776	201.4	5116	646	591	1131	1165
B2911085T12084MA	16,600	8,300	6,640	70.1	1780	201.4	5116	648	593	1135	1168
B2911093T12070MA	14,200	7,100	5,680	77.9	1978	222.6	5654	714	750	1254	1281
B2911093T12084MA	15,600	7,800	6,240	78.0	1980	222.6	5654	715	651	1256	1283

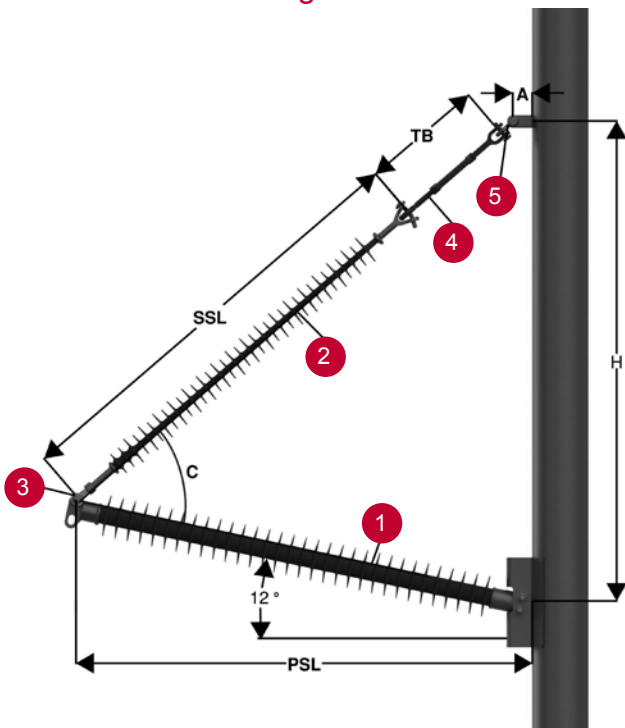
Notes:

- MDCL = Max. Design Cantilever Load (Load Curves provided upon request).
- Electrical Data is derived from the assembly "Strike Distance", without corona rings for 161kV and below. All 230 kV Braced Post assemblies supplied with a corona ring (Electrical values include the corona ring).
- For Higher Strength or Custom designs, please complete the Braced Post Request Worksheet at the end of this section and return the completed worksheet to MPS through your local MPS Sales Representative.
- Customized Designs include any dimensional changes, strength changes, hardware changes, end fitting changes, etc.

* CR = A Design Configuration that includes a corona ring at the specified Line Voltage

Braced Post Insulators

Braced Post 12° Upswing Without Corona Ring



List of Materials:

1. 2.5" Line Post Insulator (1 each)
2. 25klb Suspension Insulator (1 each)
3. SYC-56 Socket Y-Clevis (1 each)
4. 26 k Turnbuckle (6" or 12" Adjustable Range)
5. ASH-55 Anchor Shackle (1 each)

A = 2"

Line Voltage (kV)					Catalog Number	Height (in)		Angle C		PSL		SSL	
69	115	138	161	230		min	max	min	max	in	mm	in	mm
					B2901034T12060MX	56	63	69	72	33.7	856	36.1	918
					B2901034T12070MX	64	76	72	77				
					B2901038T12058MX	55	62	64	68	37.6	955	36.1	918
					B2901038T12069MX	62	76	68	74				
					B2901045T12061MX	57	65	59	63	45.4	1154	42.2	1071
					B2901045T12073MX	66	80	64	70				
					B2901049T12066MX	62	70	59	63	49.3	1253	48.1	1223
					B2901049T12078MX	71	85	64	69				
					B2901053T12071MX	68	75	59	63	53.3	1353	54.1	1373
					B2901053T12083MX	76	90	63	69				
					B2901060T12075MX	71	79	57	60	60.1	1527	60.0	1525
					B2901060T12087MX	80	94	61	66				
					B2901068T12077MX	73	81	53	57	67.9	1725	66.0	1677
					B2901068T12090MX	82	98	57	64				
					B2901080T12084MX	80	89	51	55	79.7	2024	78.0	1982
					B2901080T12098MX	90	106	55	61				



Catalog Number	SCL	MDCL		Dry Arc		Leakage		Electrical Flashover (kV)			
								60 Hz		CIFO	
	lbs	50% (lbs)	40% (lbs)	in	mm	in	mm	Dry	Wet	Pos	Neg
B2901034T12060MX	23,600	11,800	9,440	24.8	631	63.8	1620	247	226	421	514
B2901034T12070MX	24,200	12,100	9,680	25.3	643	63.8	1620	252	230	429	522
B2901038T12058MX	22,900	11,450	9,160	26.8	681	74.4	1889	266	243	452	547
B2901038T12069MX	23,600	11,800	9,440	26.8	681	74.4	1889	266	243	452	547
B2901045T12061MX	21,800	10,900	8,720	32.0	813	85.0	2158	313	288	535	628
B2901045T12073MX	22,800	11,400	9,120	32.5	826	85.0	2158	317	292	543	636
B2901049T12066MX	21,800	10,900	8,720	38.0	965	102.6	2606	366	339	630	715
B2901049T12078MX	22,800	11,400	9,120	38.0	965	102.6	2606	366	339	630	715
B2901053T12071MX	21,800	10,900	8,720	43.3	1101	116.7	2965	414	383	714	787
B2901053T12083MX	22,600	11,300	9,040	43.8	1113	116.7	2965	418	387	722	793
B2901060T12075MX	21,200	10,600	8,480	49.9	1267	137.9	3503	472	437	819	868
B2901060T12087MX	22,200	11,100	8,880	49.9	1267	137.9	3503	472	437	819	868
B2901068T12077MX	20,200	10,100	8,080	55.9	1420	155.7	3955	525	484	913	958
B2901068T12090MX	21,400	10,700	8,560	55.9	1420	155.7	3955	525	484	913	958
B2901080T12084MX	19,600	9,800	7,840	67.0	1701	190.8	4847	621	570	1087	1123
B2901080T12098MX	20,800	10,400	8,320	67.2	1708	190.8	4847	623	571	1090	1125

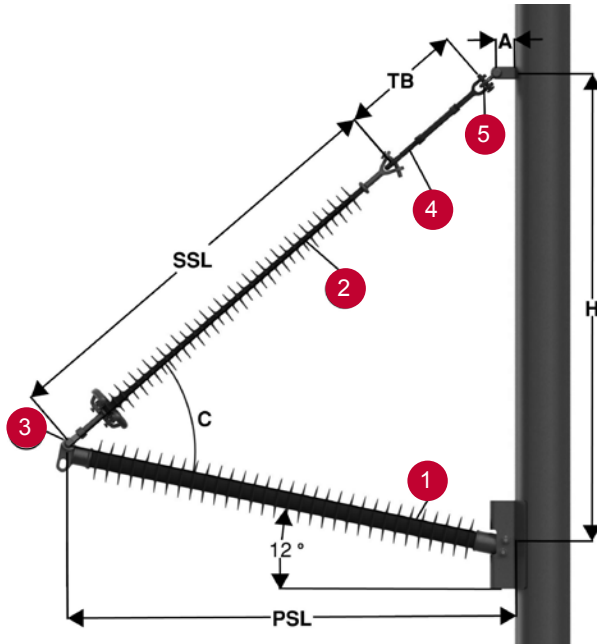
Notes:

- MDCL = Max. Design Cantilever Load (Load Curves provided upon request).
- Electrical Data is derived from the assembly "Strike Distance", without corona rings for 161kV and below. All 230 kV Braced Post assemblies supplied with a corona ring (Electrical values include the corona ring).
- For Higher Strength or Custom designs, please complete the Braced Post Request Worksheet at the end of this section and return the completed worksheet to MPS through your local MPS Sales Representative.
- Customized Designs include any dimensional changes, strength changes, hardware changes, end fitting changes, etc.

* CR = A Design Configuration that includes a corona ring at the specified Line Voltage

Braced Post Insulators

Braced Post 12° Upswing With Corona Ring



List of Materials:

1. 2.5" Line Post Insulator (1 each)
2. 25klb Suspension Insulator (1 each)
3. SYC-56 Socket Y-Clevis (1 each)
4. 26 k Turnbuckle (6" or 12" Adjustable Range)
5. ASH-55 Anchor Shackle (1 each)

A = 2"

Line Voltage (kV)					Catalog Number	Height (in)		Angle C		PSL		SSL	
69	115	138	161	230		min	max	min	max	in	mm	in	mm
	CR				B2901053T12071MA	68	75	59	63				
	CR				B2901053T12083MA	67	90	63	69	53.3	1353	54.1	1373
	CR	CR			B2901060T12075MA	71	79	57	60				
		CR			B2901060T12087MA	80	94	61	66	60.1	1527	60.0	1525
		CR			B2901068T12077MA	73	81	53	57				
		CR			B2901068T12090MA	82	98	57	64	67.9	1725	66.0	1677
		CR	CR		B2901072T12085MA	81	89	55	58				
			CR		B2901072T12098MA	90	105	58	64	71.9	1825	73.5	1868
			CR		B2901080T12084MA	80	89	51	55				
			CR		B2901080T12098MA	90	106	55	61	79.7	2024	78.0	1982
			CR	CR	B2901084T12090MA	86	94	51	55				
				CR	B2901084T12104MA	95	111	55	61	83.6	2123	84.1	2135
				CR	B2901091T12091MA	87	96	49	52				
				CR	B2901091T12106MA	97	114	53	58	91.4	2322	89.9	2284
				CR	B2901098T12083MA	78	88	42	47				
				CR	B2901098T12099MA	90	108	47	54	98.3	2496		



Catalog Number	SCL	MDCL		Dry Arc		Leakage		Electrical Flashover (kV)			
								60 Hz		CIFO	
	lbs	50% (lbs)	40% (lbs)	in	mm	in	mm	Dry	Wet	Pos	Neg
B2901053T12071MA	21,800	10,900	8,720	40.7	1033	116.7	2965	391	362	673	752
B2901053T12083MA	22,600	11,300	9,040	41.0	1042	116.7	2965	393	364	678	756
B2901060T12075MA	21,200	10,600	8,480	47.4	1204	137.9	3503	450	417	779	838
B2901060T12087MA	22,200	11,100	8,880	47.8	1213	137.9	3503	454	420	785	843
B2901068T12077MA	20,200	10,100	8,080	55.1	1400	155.7	3955	482	446	836	884
B2901068T12090MA	21,400	10,700	8,560	55.4	1408	155.7	3955	520	480	905	950
B2901072T12085MA	20,800	10,400	8,320	59.2	1504	169.7	4310	553	510	965	1007
B2901072T12098MA	21,600	10,800	8,640	59.5	1512	169.7	4310	556	513	970	1012
B2901080T12084MA	19,600	9,800	7,840	67.0	1701	190.8	4847	621	570	1087	1123
B2901080T12098MA	20,800	10,400	8,320	67.2	1708	190.8	4847	623	571	1090	1125
B2901084T12090MA	19,800	9,900	7,920	71.0	1803	201.4	5116	655	600	1148	1181
B2901084T12104MA	20,800	10,400	8,320	71.2	1810	201.4	5116	657	601	1152	1184
B2901091T12091MA	19,000	9,500	7,600	78.8	2002	222.6	5654	722	656	1268	1294
B2901091T12106MA	20,200	10,100	8,080	79.1	2008	222.6	5654	724	659	1272	1299
B2901098T12083MA	16,800	8,400	6,720	80.7	2050	241.1	6124	738	670	1296	1322
B2901098T12099MA	18,600	9,300	7,440	80.7	2050	241.1	6124	738	670	1296	1322

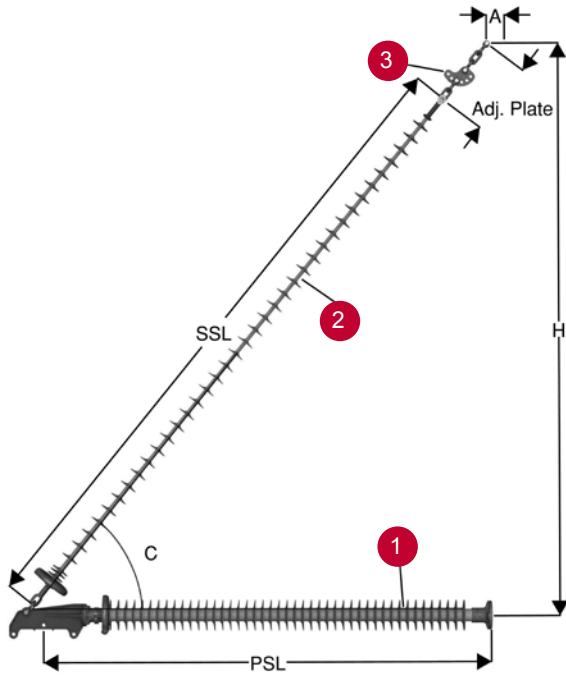
Notes:

- MDCL = Max. Design Cantilever Load (Load Curves provided upon request).
- Electrical Data is derived from the assembly "Strike Distance", without corona rings for 161kV and below. All 230 kV Braced Post assemblies supplied with a corona ring (Electrical values include the corona ring).
- For Higher Strength or Custom designs, please complete the Braced Post Request Worksheet at the end of this section and return the completed worksheet to MPS through your local MPS Sales Representative.
- Customized Designs include any dimensional changes, strength changes, hardware changes, end fitting changes, etc.

* CR = A Design Configuration that includes a corona ring at the specified Line Voltage

Braced Post Insulators

345kV Braced Post



Notes:

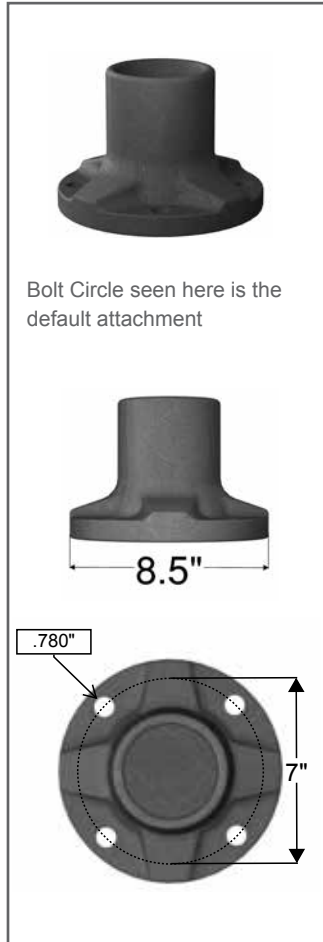
1. Line Post B4 = 3.5" rod with a 7" bolt circle structure attachment
(B3 = 3.0" rod with a 5" bolt circle structure attachment)
 2. Brace (Suspension Insulator, 50k SML)
 3. Anchor Shackle
 4. Adjustment Plate (2.5" to 5" Range)
- Vang length A = 3"

Catalog Number	Height H		Angle C	PSL		SSL	
	in	mm	deg	in	mm	in	mm
B470H125P24170MB	170	4326	50	124.8	3170	196.0	4978
B470H125P24156MB	156	3955	48	124.8	3170	185.0	4699
B350H125P24170MB	170	4326	50	124.8	3170	196.0	4978
B350H125P24156MB	156	3955	48	124.8	3170	185.0	4699

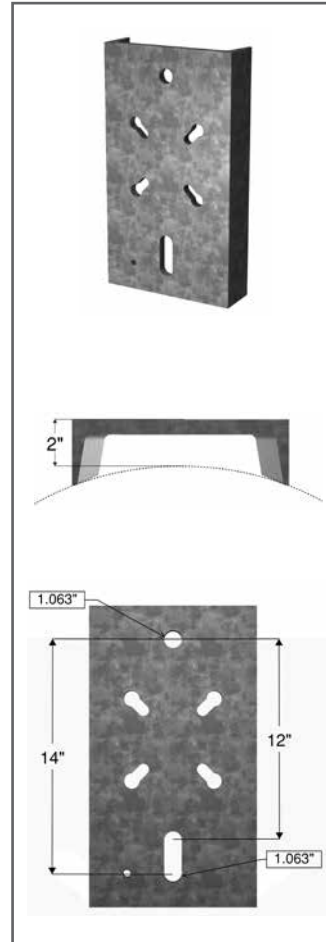
Catalog Number	SCL	MDCL		Dry Arc		Leakage		Electrical Flashover (kV)			
								60 Hz		CIFO	
	lbs	50% (lbs)	40% (lbs)	in	mm	in	mm	Dry	Wet	Pos	Neg
B470H125P24170MB	38,300	19,150	15,320	109.5	2781	334.8	8504	977	846	1717	1721
B470H125P24156MB	37,000	18,500	14,800	109.5	2781	334.8	8504	977	846	1717	1721
B350H125P24170MB	32600	16300	13,040	109.5	2781	334.8	8504	977	846	1717	1721
B350H125P24156MB	30380	15190	12,152	109.5	2781	334.8	8504	977	846	1717	1721

Structural Attachment Options

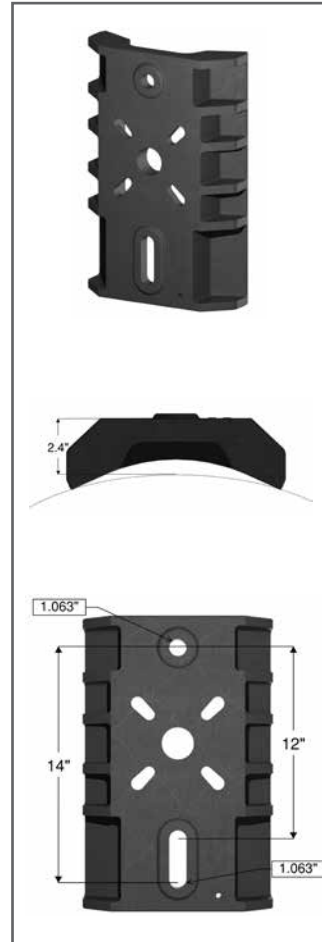
**7" Bolt Circle
B470**



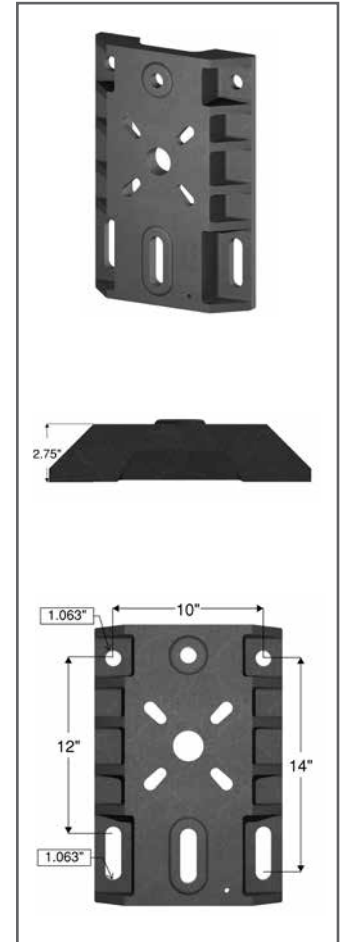
**Gain Base Steel
B47N / B35N**



**Gain Base Cast
B497 / B395**

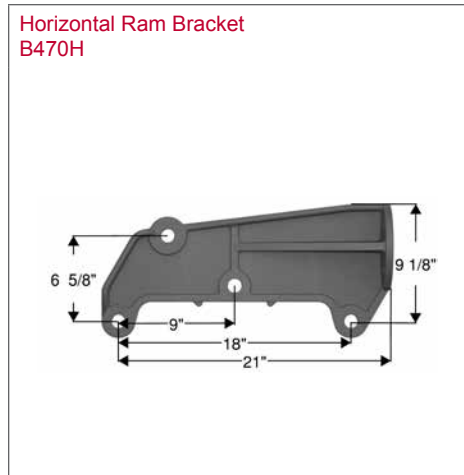


**Flat Base Cast
B417 / B31H**

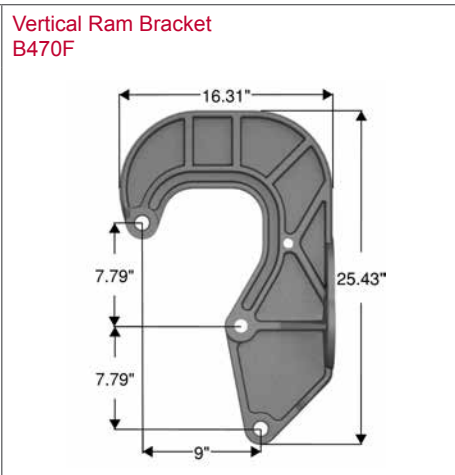


345 kV Line Hardware

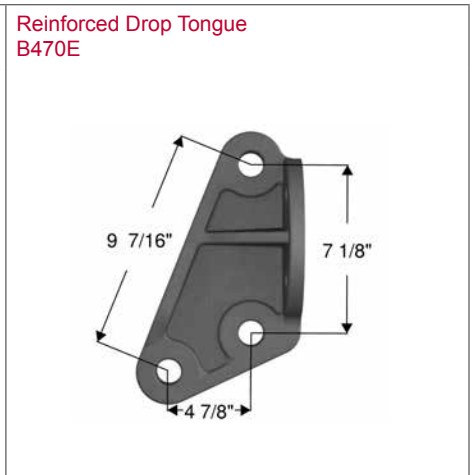
**Horizontal Ram Bracket
B470H**



**Vertical Ram Bracket
B470F**



**Reinforced Drop Tongue
B470E**



Note: Contact MacLean Power Systems for any additional design options.

345 kV Braced Post Working Load Curves

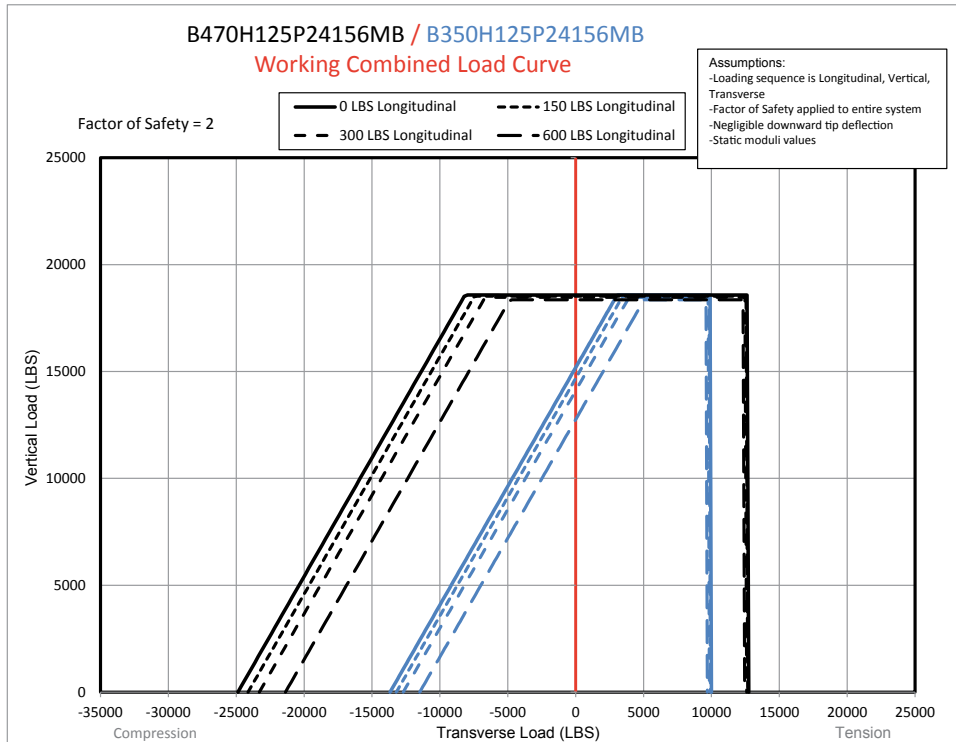


Figure 1: Height of 170"

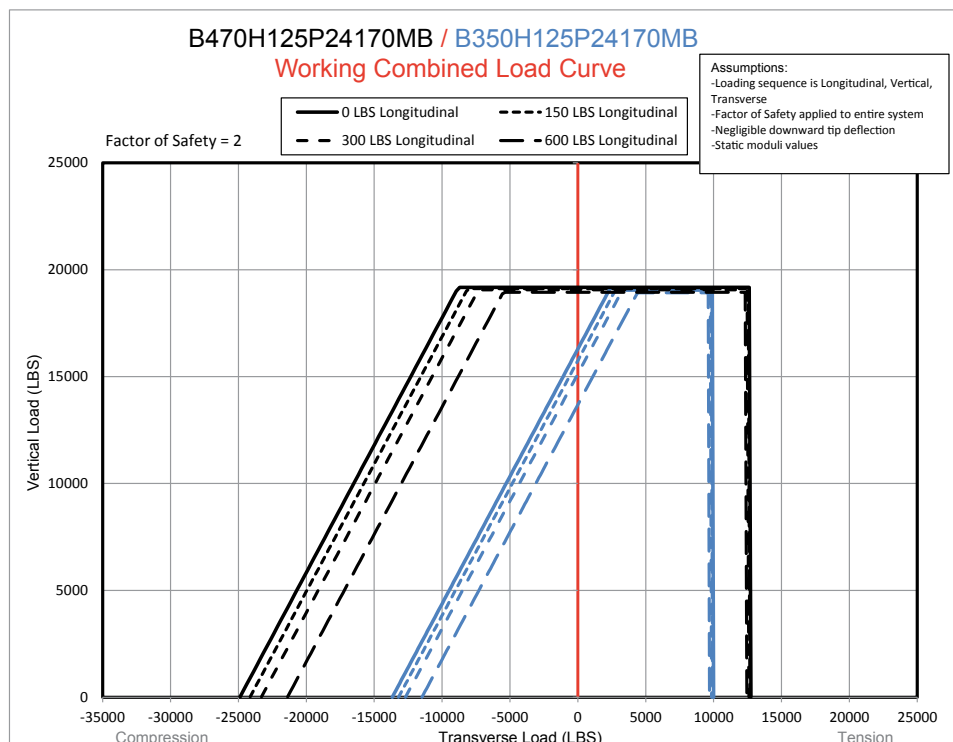


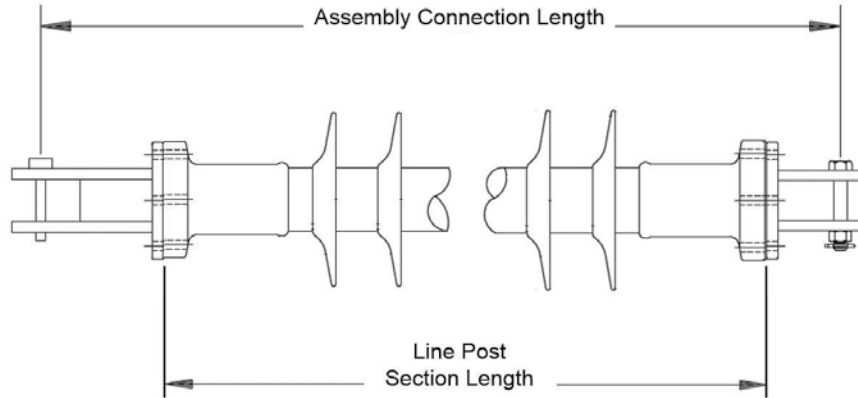
Figure 2: Height of 156"

Strut and Jumper Post Assemblies



Strut Line Post Assemblies

Strut Line Post Assembly - Clevis / Clevis Type

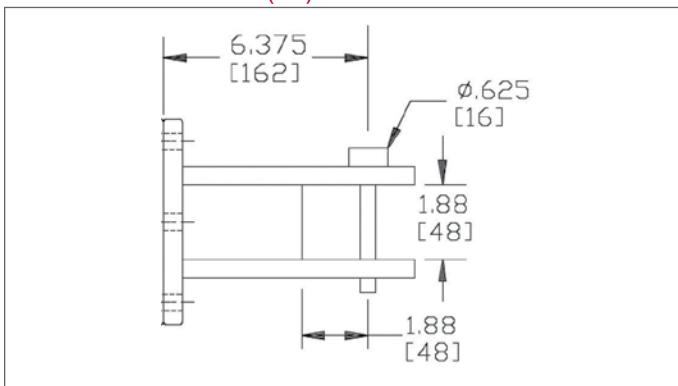


Strut Assembly Catalog Number	Assembly Connection Length		Line post Catalog Number	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
	in	mm		in	mm	in	mm	in	mm	60Hz		CIFO	
										Dry	Wet	Pos	Neg
T2C1C2X052062	52.3	1329	H25050035VXSS006	43.7	1110	37.7	958	62.0	1575	364	336	625	711
T2C1C2X063082	63.3	1607	H25050046VXSS008	54.7	1389	48.7	1237	82.0	2083	461	427	800	854
T2C1C2X080126	80.3	2039	H25050063VXSS014	43.4	1821	43.4	1669	126.0	3200	610	560	1066	1103
T2C1C2X099154	99.3	2523	H25050082VXSS016	90.7	2304	84.7	2151	154.0	3912	772	698	1357	1379
T2C1C2X109200	109.3	2777	H25050092VXSS024	100.7	2558	94.7	2405	200.0	5080	855	767	1505	1521
T3C1C2X052059	52.0	1321	H35050030VXSS006	43.4	1102	32.9	836	59.2	1504	321	398	549	642
T3C1C2X063080	63.0	1600	H35050041VXSS008	54.4	1382	43.9	1115	79.9	2029	419	411	724	794
T3C1C2X080126	80.0	2032	H35050058VXSS014	43.4	1814	60.9	1547	126.1	3203	568	425	992	1032
T3C1C2X099155	99.0	2515	H35050077VXSS016	90.4	2296	79.9	2029	154.9	3934	731	430	1284	1310
T3C1C2X109204	109.0	2769	H35050087VXSS024	100.4	2550	89.9	2283	203.8	5177	815	428	1434	1453

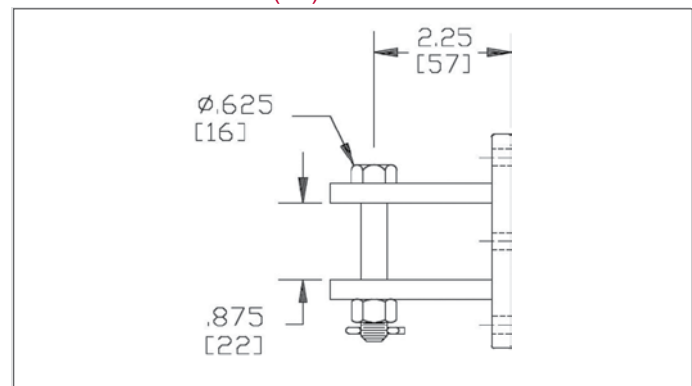
Notes:

- T2 Series STL (Specified Tensile Load) - 15,000 lbs [67kN]
- T3 Series STL (Specified Tensile Load) - 20,000 lbs [89kN]
- Both Clevis adaptors can be rotated 90° (as required)
- For additional length & leakage insulator designs, contact your local MPS Sales Representative

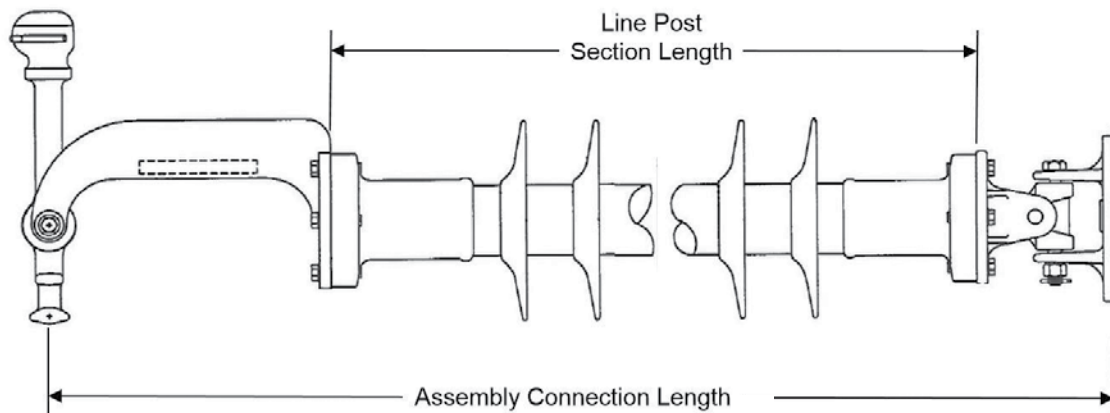
1 7/8" Clevis – Line End (C2)



7/8" Clevis – Tower End (C1)



Strut Line Post Assembly - Swivel Base / Gooseneck Type

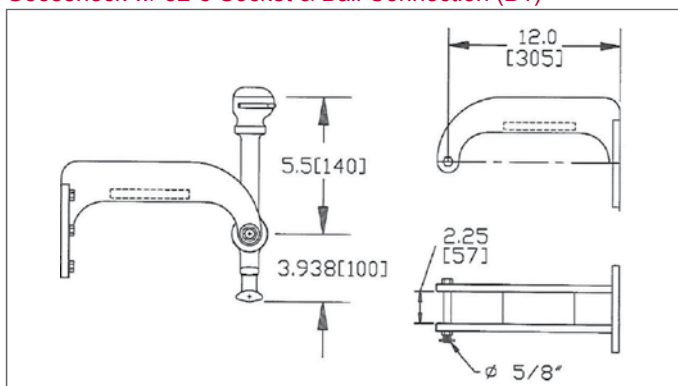


Strut Assembly Catalog Number	Assembly Connection Length		Line post Catalog Number	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
										60Hz		CIFO	
	in	mm		in	mm	in	mm	in	mm	Dry	Wet	Pos	Neg
T260B1X062062	62.1	1577	H25050035VXSS006	43.7	1110	37.7	958	62.0	1575	364	336	625	711
T260B1X073082	73.1	1856	H25050046VXSS008	54.7	1389	48.7	1237	82.0	2083	461	427	800	854
T260B1X090126	90.1	2288	H25050063VXSS014	43.4	1821	43.4	1669	126.0	3200	610	560	1066	1103
T260B1X109154	109.1	2771	H25050082VXSS016	90.7	2304	84.7	2151	154.0	3912	772	698	1357	1379
T260B1X119200	119.1	3025	H25050092VXSS024	100.7	2558	94.7	2405	200.0	5080	855	767	1505	1521
T360B1X062059	61.8	1569	H35050030VXSS006	43.4	1102	32.9	836	59.2	1504	321	398	549	642
T360B1X073080	72.8	1849	H35050041VXSS008	54.4	1382	43.9	1115	79.9	2029	419	411	724	794
T360B1X090126	89.8	2281	H35050058VXSS014	43.4	1814	60.9	1547	126.1	3203	568	425	992	1032
T360B1X109155	108.8	2763	H35050077VXSS016	90.4	2296	79.9	2029	154.9	3934	731	430	1284	1310
T360B1X119204	118.8	3017	H35050087VXSS024	100.4	2550	89.9	2283	203.8	5177	815	428	1434	1453

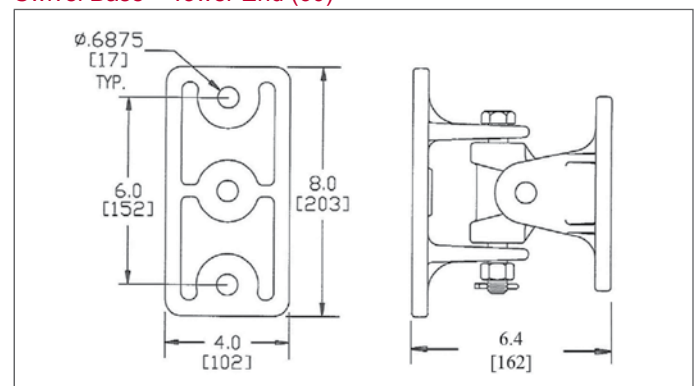
Notes:

- T2 Series STL (Specified Tensile Load) - 15,000 lbs [67kN]
- T3 Series STL (Specified Tensile Load) - 20,000 lbs [89kN]
- Gooseneck can be supplied less the Socket & Ball hardware. Change B1 to B0
- Swivel Base can be upswept 5°, 10°, 12°, as required. Can also be supplied with a suspension insulator upon request
- For additional length & leakage insulator designs, contact your local MPS Sales Representative

Gooseneck w/ 52-5 Socket & Ball Connection (B1)



Swivel Base – Tower End (60)





Line Post Insulators

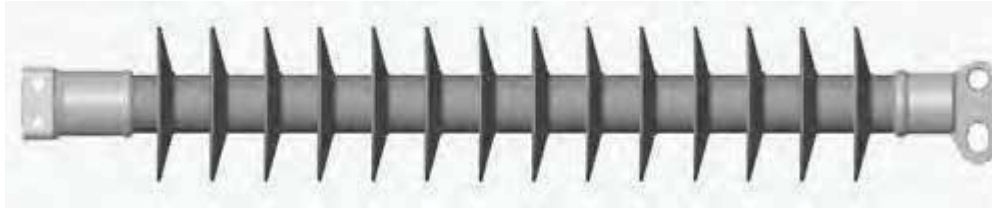


Line Post Insulators



Dimensions in inches unless otherwise noted
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Technical information subject to change without notice

MPS can supply silicone line post insulators using one of two efficient manufacturing processes to satisfy the various needs of the market place. Process #1 is an injection molded process that produces molded line posts, while process #2 uses the extruded assembly process that produces modular line posts. Both use the same proven MPS Silicone Formulation, E-Glass Core, end fittings, and PST Sealing system.



Molded Line Posts

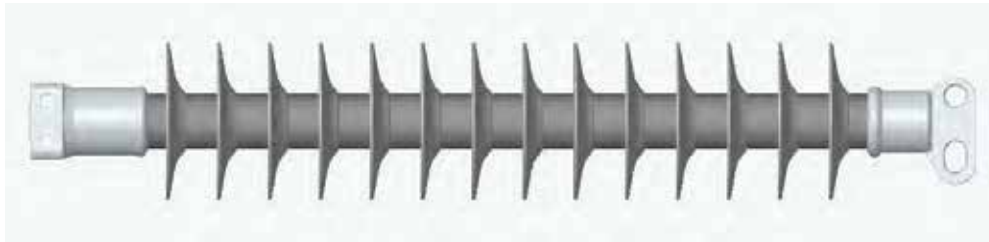
The Molded posts are standard products that are ideal for post applications from 69kV to 161kV system voltages. The silicone housing is injection molded, using high temperature and high pressure injection, onto the FRP rod. The end fittings are crimped onto the molded sub-assembly using the MPS “P-S-T” triple seal to prevent moisture ingress to the core.

Features

- Molded Silicone Housing
- Volume Production / Stock
- Standard Designs
- Fixed Length & Leakage

Molded Post Series

- 20XG Series – 1.75” Rod
- 30XH Series – 2.5” Rod
- 40XV Series – 3.5” Rod



Modular Line Posts

The Modular posts are custom products that are ideal for special applications (high leakage), for applications 230kV and above, and also as a back-up to the molded standard products. The “Modular” design line post insulator offers the unique ability to custom design for any application, with the flexibility to produce custom section lengths (in 1” increments) and leakage distances. The silicone rubber is extruded onto the FRP to produce a seamless concentric sheath. The sheds are assembled and vulcanized to the sheath as a secondary process. Variable shed count and spacing is used to provide custom leakage distances, or leakage in accordance to the IEC60815 Recommendation for Polluted Areas.

Features

- Extruded Seamless Sheath/ Assembled Sheds
- Manufactured to Order
- Custom Designs
- Variable Length & Leakage
- 69kV – 765kV [EHV]

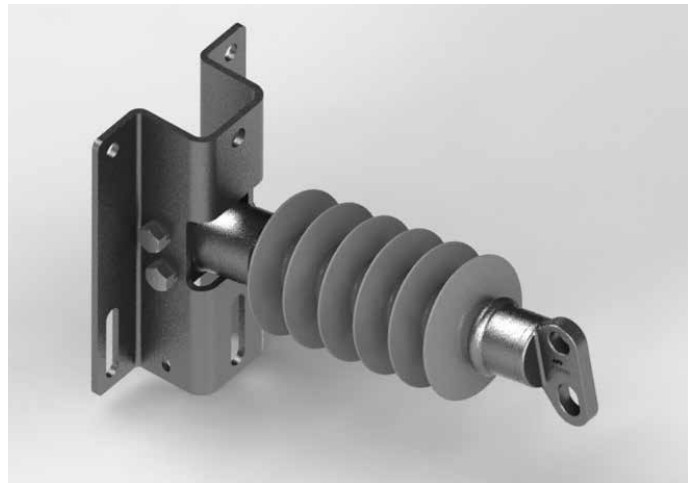
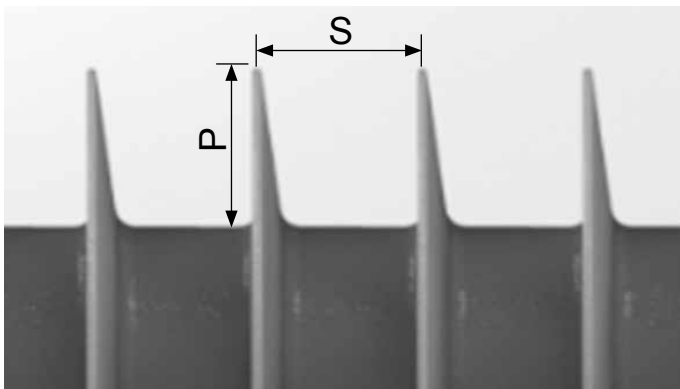
Modular Post Series

- H1 Series – 2.0” Rod
- H2 Series – 2.5” Rod
- H3 Series – 3.0” Rod

Line Post Insulators

Line Posts

MPS can supply silicone line post insulators using one of two efficient manufacturing processes to satisfy the various needs of the market place. Process #1 is an injection molded process that produces molded line posts, while process #2 uses the extruded assembly process that produces modular line posts. Both use the same proven MPS Silicone Formulation, E-Glass core, end fittings, and PST Sealing system.



MPS Features

- MPS Silicone Rubber Formulation
- Multi-Layer PST Sealing System
- Standardized fittings and fitting attachment
- MPS Load Curve System
- Leader in Mechanical Performance
- World Class Customer Support
- Manufacturing & Quality Assurance
- MPS Commitment to Polymer Technology

Newest features

- Improved Performance
 - S/P Ratio = 1.0
 - Improved surface finish
 - Less parting line / trim imperfections
- Smart Catalog Number
 - Consistent for Molded & Modular
 - Customer Friendly / Easy to Use
- Unified Load Curve for Both Molded (MX) and Modular (VX) Line posts

Smart Catalog Numbers

The catalog number for an insulator is intended to identify the characteristics and critical performance criteria of the insulator in an easy to understand format, ideally with consistency across the entire insulator product family.

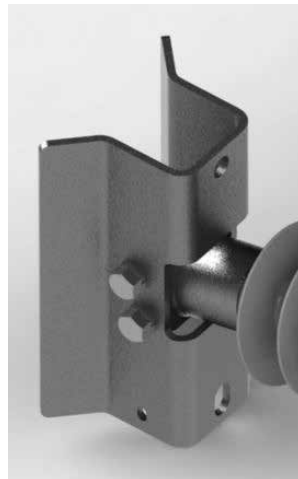
Line Post Smart Catalog Number

H2	90	10	045	V	X	SS	022												
SML	Tower EF	Line EF	Rubber Length	Leakage	Corona Ring	Shed Pattern	Shed Count												
<p>H = Horiz. V = Vert.</p> <p>0 = 1.5" 1 = 2.0" 2 = 2.5" 3 = 3.0" 4 = 3.5" 7 = 1.75"</p>	<p>1_ = Flat Base 3_ = 3" Bolt Circle 4_ = Stud Base 5_ = 5" Bolt Circle 6_ = Swivel Base 7_ = 7" Bolt circle 8_ = Anchor 9_ = Gain Base X0 = No EF</p>	<p>1_ = Drop Tongue 2_ = Trunion 3_ = 3" Bolt Circle 5_ = 5" Bolt Circle 6_ = Vert. Trunion 7_ = F-Neck C_ = Ext. Drop Tongue D_ = Double Trunion E_ = High Str. Bracket F_ = Vert. RAM Bracket H_ = Horiz. RAM Bracket X0 = No EF</p>	<p>Linear Disance EF to EF</p>	<p>V = Variable M = Molded</p>	<table border="1"> <thead> <tr> <th>Tower</th> <th>Line</th> </tr> </thead> <tbody> <tr> <td>X = None</td> <td>None</td> </tr> <tr> <td>A = None</td> <td>6"</td> </tr> <tr> <td>B = None</td> <td>12"</td> </tr> <tr> <td>C = None</td> <td>17"</td> </tr> <tr> <td>E = 12"</td> <td>12"</td> </tr> </tbody> </table>	Tower	Line	X = None	None	A = None	6"	B = None	12"	C = None	17"	E = 12"	12"	<p>SS = Standard AL = Standard Alt. XG = Shed Profile XH = Shed Profile XV = Shed Profile</p>	
Tower	Line																		
X = None	None																		
A = None	6"																		
B = None	12"																		
C = None	17"																		
E = 12"	12"																		
				<p>V = Variable Leakage Modular / Extruded MFG M = Molded Leakage Injection Molded MFG</p>															

Bases



Fixed Gain - H2 9C



Bendable Gain - H2 90



Bendable Flat - H2 10

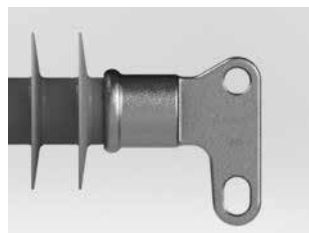


5" Bolt Circle - H2 50

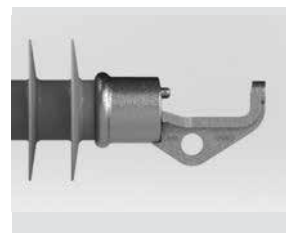
End Fittings



Drop Tongue H2-XX-10



Extended Drop Tongue H2-XX-C0



Horizontal Trunion H2-XX-20



Vertical Trunion V2-XX-60

Corona Rings



High voltages can result in unwanted noise (RIV) and corona. To minimize the effects of corona, corona rings are applied to one or both ends of the insulator (attached onto the end fittings). Typically, for system voltages 230 kV and above, a corona ring or combination of rings is necessary. However, some applications may require rings are lower system voltages. Refer to the Corona Ring section of the Application Guide for detailed information or contact the factory.

Recommended Corona Ring Applications

Class	End Fitting	138 kV	161 kV	230 kV	345 kV	500 kV
2 - 2.50"	Line End	None	None	6"	12"	12"
	Tower End	None	None	None	None	17"
3 - 3.50"	Line End	None	None	None	12"	12"
	Tower End	None	None	None	None	12"



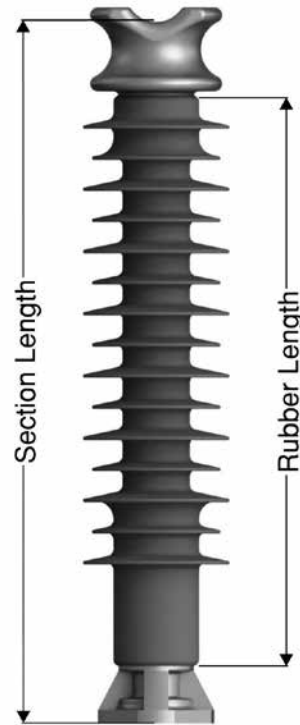
6" Corona Ring



12" Corona Ring

For insulators 230 kV and above, MPS recommends use of Corona Rings. The Application Table above depicts typical corona ring usage on MPS suspension Insulators. For corona ring usage on special applications, environments, and elevations, please contact MPS.

Tie-Top — F-Neck / 3/4" Stud Base



Line Voltage (kV)					Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
										60 Hz		CIFO		SCL	MDCL	
15	28	35	46	69		inch	in [mm]	in [mm]	in [mm]	Dry	Wet	Dry	Wet			50%
					V04A7A006MXXB003	6	11.0 [279]	7.2 [183]	11.3 [287]	86	66	146	193	2,800	1,400	1,120
					V04A7A010MXXB005	10	15.0 [381]	11.2 [284]	18.8 [478]	122	103	208	271	2,800	1,400	1,120
					V04A7A012MXXB006	12	17.0 [432]	13.2 [335]	22.4 [569]	141	122	239	309	2,800	1,400	1,120
					V74070008MXXG007	8	12.7 [323]	9.0 [228]	19.1 [485]	102	83	174	228	2,800	1,400	1,120
					V74070010MXXG009	10	14.7 [374]	11.0 [279]	25.0 [634]	121	101	204	267	2,800	1,400	1,120
					V74070012MXXG011	12	16.7 [425]	13.0 [330]	30.8 [782]	139	120	236	306	2,800	1,400	1,120
					V74070014MXXG013	14	18.7 [476]	15.0 [381]	36.7 [931]	158	138	267	343	2,800	1,400	1,120
					V74070016MXXG015	16	20.7 [527]	17.0 [432]	42.5 [1079]	176	156	298	380	2,800	1,400	1,120
					V74070018MXXG017	18	22.7 [578]	19.0 [483]	48.3 [1228]	195	174	330	415	2,800	1,400	1,120
					V74070020MXXG019	20	24.7 [629]	21.0 [534]	54.2 [1376]	213	192	361	450	2,800	1,400	1,120

Notes:

STL (Specified Tensile Load) - 5,000 lbs [22 kN]

V0 Series = 1.5" Core Rod

V7 Series = 1.75" Core Rod

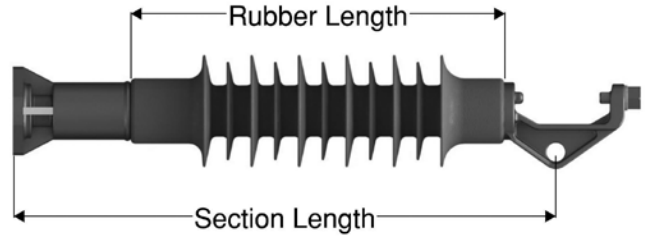
MX = Electrical data is without Corona Ring

For M20 Stud Base on V7 Series, change from V7 40 70... to V7 44 70...

For other ratings or custom insulator designs, contact your local MPS Sales Representative

Line Post Insulators

1.75" Line Post - Horizontal Trunnion / 3/4" Stud Base



Line Voltage (kV)				Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
									60 Hz		CIFO		SCL	MDCL	
35	46	69		inch	in [mm]	in [mm]	in [mm]	Dry	Wet	Pos	Neg	50%		40%	
				H74020014MXXG009	14	18.0 [457]	14.3 [363]	30.6 [777]	151	131	255	329	2,800	1,400	1,120
				H74020016MXXG011	16	20.0 [508]	16.3 [414]	36.5 [927]	169	149	286	366	2,800	1,400	1,120
				H74020018MXXG013	18	22.0 [559]	18.3 [465]	42.3 [1074]	188	168	318	403	2,800	1,400	1,120
				H74020020MXXG015	20	24.0 [610]	20.3 [516]	47.9 [1217]	206	186	349	437	2,800	1,400	1,120
				H74020022MXXG017	22	26.0 [660]	22.3 [566]	54.0 [1509]	224	203	381	472	2,800	1,400	1,120
				H74020022MXXG021	22	26.0 [660]	23.0 [584]	59.4 [1509]	231	210	392	484	2,800	1,400	1,120
				H74020024MXXG025	24	30.0 [762]	27.0 [686]	71.1 [1806]	267	245	455	550	2,500	1,250	1,000

Notes:

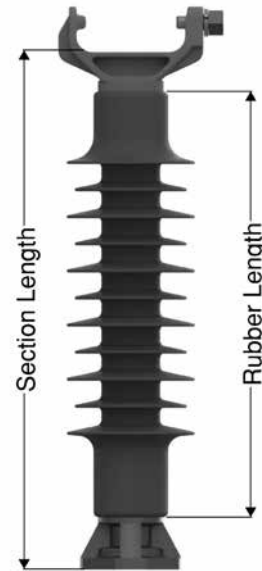
STL (Specified Tensile Load) - 5,000 lbs [22 kN]

MX = Electrical data is without Corona Ring.

For M20 Stud Base on V7 Series, change from H7 40 20... to H7 44 20...

For other ratings or custom insulator designs, contact your local MPS Sales Representative

1.75" Line Post - Vertical Trunnion / 3/4" Stud Base



Line Voltage (kV)				Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
									60 Hz		CIFO		SCL	MDCL	
35	46	69			inch	in [mm]	in [mm]	in [mm]	Dry	Wet	Pos	Neg		50%	40%
				V74060014MXXG009	14	18.0 [457]	14.3 [363]	30.6 [777]	151	131	255	329	2,800	1,400	1,120
				V74060016MXXG011	16	20.0 [508]	16.3 [414]	36.5 [927]	169	149	286	366	2,800	1,400	1,120
				V74060018MXXG013	18	22.0 [559]	18.3 [465]	42.3 [1074]	188	168	318	403	2,800	1,400	1,120
				V74060020MXXG015	20	24.0 [610]	20.3 [516]	47.9 [1217]	206	186	349	437	2,800	1,400	1,120
				V74060022MXXG017	22	26.0 [660]	22.3 [566]	54.0 [1509]	224	203	381	472	2,800	1,400	1,120
				V74060022MXXG021	22	26.0 [660]	23.0 [584]	59.4 [1509]	231	210	392	484	2,800	1,400	1,120
				V74060024MXXG025	24	30.0 [762]	27.0 [686]	71.1 [1806]	267	245	455	550	2,500	1,250	1,000

Notes:

STL (Specified Tensile Load) - 5,000 lbs [22 kN]

MX = Electrical data is without Corona Ring.

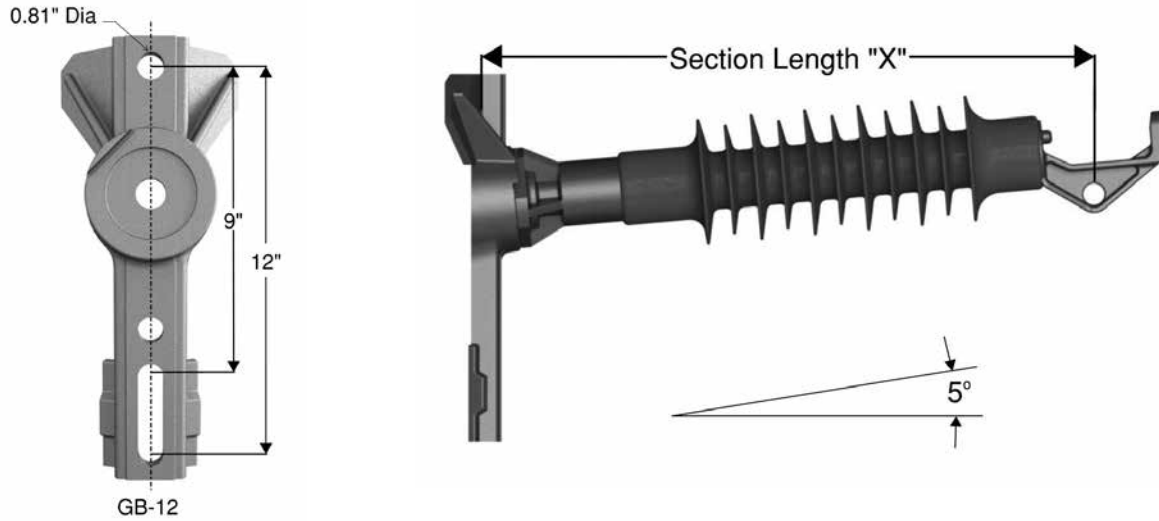
For M20 Stud Base on V7 Series, change from V7 40 60... to V7 44 60...

For other ratings or custom insulator designs, contact your local MPS Sales Representative

Line Post Insulators

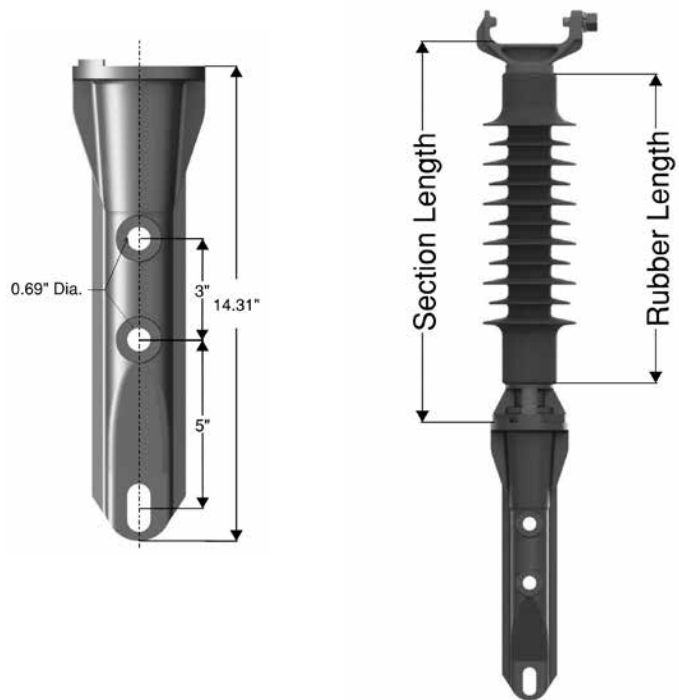
1.75" Line Post - Horizontal Trunnion / Gain Base

- Specified Tensile Load (STL) = 5,000 lbs [22.2 kN]
- NPKG Series supplied with 12" fixed gain base
- S0 = Electrical data is without corona ring



Line Voltage (kV)		Catalog No.	MDCL	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)			
							60 Hz		CIFO	
46	69		lbs [kN]	in [mm]	in [mm]	in [mm]	Dry	Wet	Pos	Neg
		NPKG20XGO09S0	1250 [5.6]	19.4 [493]	14.3 [363]	30.6 [777]	151	131	255	329
		NPKG20XGO13S0	1250 [5.6]	23.4 [594]	18.3 [465]	42.3 [1074]	188	168	318	403
		NPKG20XGO17S0	1250 [5.6]	27.4 [696]	22.3 [566]	54.0 [1372]	224	203	381	472
		NPKG20XGM21S0	1250 [5.6]	27.4 [696]	22.3 [566]	59.4 [1509]	221	210	392	484
		NPKG20XGM25S0	921 [4.1]	31.4 [798]	27.0 [686]	71.1 [1806]	267	245	455	550

1.75" Line Post - Vertical Trunnion / Gain Base

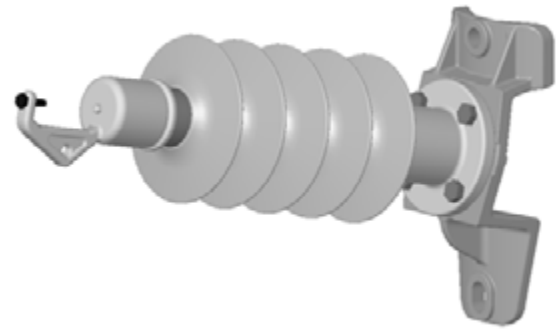
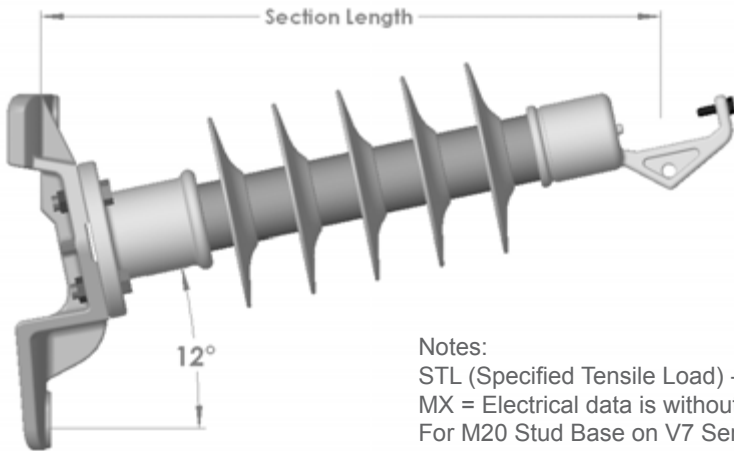


- Specified Tensile Load (STL) = 5,000 lbs [22.2 kN]
- NPVG Series supplied with 12" fixed gain base
- S0 = Electrical data is without corona ring

Line Voltage (kV)		Catalog No.	MDCL	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)			
							60 Hz		CIFO	
46	69		lbs [kN]	in [mm]	in [mm]	in [mm]	Dry	Wet	Pos	Neg
		NPVG20XGO09S0	1250 [5.6]	18 [457]	14.3 [363]	30.6 [777]	151	131	255	329
		NPVG20XGO13S0	1250 [5.6]	22 [559]	18.3 [465]	42.3 [1074]	188	168	318	403
		NPVG20XGO17S0	1250 [5.6]	26 [660]	22.3 [566]	54.0 [1372]	224	203	381	472
		NPVG20XGM21S0	1250 [5.6]	26 [660]	22.3 [566]	59.4 [1509]	221	210	392	484
		NPVG20XGM25S0	921 [4.1]	30 [762]	27.0 [686]	71.1 [1806]	267	245	455	550

Polymer Insulators

2" Line Post - Fixed Gain Base / Trunnion



Notes:

STL (Specified Tensile Load) - 5,000 lbs [22 kN]

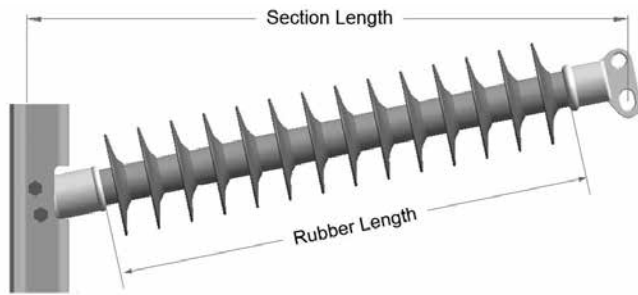
MX = Electrical data is without Corona Ring.

For M20 Stud Base on V7 Series, change from V7 40 60... to V7 44 60...

For other ratings or custom insulator designs, contact your local MPS Sales Representative

Line Voltage (kV)					Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
										60 Hz		CIFO		SCL	MDCL	
35	46	69	115	138		in	in [mm]	in [mm]	in [mm]	Dry	Wet	Pos	Neg			50%
					H19C20011VXSS003	11	21.1 [536]	13.9 [353]	26.2 [665]	148	128	250	323	5,000	2,500	2,000
					H19C20011VXSS004	11	21.1 [536]	13.9 [353]	31.2 [792]	148	128	250	323	5,000	2,500	2,000
					H19C20015VXSS004	15	25 [635]	17.9 [455]	35.2 [894]	184	164	312	396	4,166	2,083	1,666
					H19C20015VXSS005	15	25 [635]	17.9 [455]	40.3 [1024]	184	164	312	396	4,166	2,083	1,666
					H19C20019VXSS004	19	28.9 [734]	21.9 [556]	39.2 [996]	221	200	375	465	3,452	1,726	1,381
					H19C20019VXSS007	19	28.9 [734]	21.9 [556]	54.4 [1382]	221	200	375	465	3,452	1,726	1,381
					H19C20023VXSS004	23	32.8 [833]	25.9 [658]	43.2 [1098]	257	235	438	532	2,954	1,477	1,182
					H19C20023VXSS008	23	32.8 [833]	25.9 [658]	63.5 [1613]	257	235	438	532	2,954	1,477	1,182
					H19C20027VXSS004	27	36.7 [932]	29.9 [759]	47.2 [1199]	294	270	501	596	2,576	1,288	1,030
					H19C20027VXSS009	27	36.7 [932]	29.9 [759]	72.5 [1842]	294	270	501	596	2,576	1,288	1,030
					H19C20031VXSS008	31	40.7 [1034]	33.9 [861]	71.5 [1816]	330	304	565	657	2,266	1,133	906
					H19C20031VXSS011	31	40.7 [1034]	33.9 [861]	86.6 [2200]	330	304	565	657	2,266	1,133	906
					H19C20035VXSS008	35	44.6 [1133]	37.9 [963]	75.5 [1918]	366	338	628	714	2,050	1,025	820
					H19C20035VXSS012	35	44.6 [1133]	37.9 [963]	95.7 [2431]	366	338	628	714	2,050	1,025	820
					H19C20039VXSS008	39	48.5 [1232]	41.9 [1064]	79.5 [2019]	401	372	692	768	1,844	922	738
					H19C20039VXSS013	39	48.5 [1232]	41.9 [1064]	104.7 [2659]	401	372	692	768	1,844	922	738
					H19C20043VXSS009	43	52.4 [1331]	45.9 [1166]	88.5 [2248]	437	404	755	820	1,700	850	680
					H19C20043VXSS014	43	52.4 [1331]	45.9 [1166]	113.8 [2891]	437	404	755	820	1,700	850	680
					H19C20047VXSS010	47	56.3 [1430]	49.9 [1267]	97.6 [2479]	472	437	819	868	1,558	779	623
					H19C20047VXSS016	47	56.3 [1430]	49.9 [1267]	127.9 [3249]	472	437	819	868	1,558	779	623
					H19C20051VXSS010	51	60.2 [1529]	53.9 [1369]	101.6 [2581]	507	469	882	928	1,452	726	581
					H19C20051VXSS017	51	60.2 [1529]	53.9 [1369]	137 [3480]	507	469	882	928	1,452	726	581

2" Line Post - Gain Base / Drop Tongue



Line Voltage (kV)					Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
										60 Hz		CIFO		SCL	MDCL	
35	46	69	115	138		in	in [mm]	in [mm]	in [mm]	Dry	Wet	Pos	Neg			50%
					H19010011VXSS003	11	20.4 [518]	13.9 [353]	26.2 [665]	148	128	250	323	5,308	2,654	2,123
					H19010011VXSS004	11	20.4 [518]	13.9 [353]	31.2 [792]	148	128	250	323	5,308	2,654	2,123
					H19010015VXSS004	15	24.3 [617]	17.9 [455]	35.2 [894]	184	164	312	396	4,188	2,094	1,675
					H19010015VXSS005	15	24.3 [617]	17.9 [455]	40.3 [1024]	184	164	312	396	4,188	2,094	1,675
					H19010019VXSS004	19	28.2 [716]	21.9 [556]	39.2 [996]	221	200	375	465	3,460	1,730	1,384
					H19010019VXSS007	19	28.2 [716]	21.9 [556]	54.4 [1382]	221	200	375	465	3,460	1,730	1,384
					H19010023VXSS004	23	32.2 [818]	25.9 [658]	43.2 [1098]	257	235	438	532	2,968	1,484	1,187
					H19010023VXSS008	23	32.2 [818]	25.9 [658]	63.5 [1613]	257	235	438	532	2,968	1,484	1,187
					H19010027VXSS004	27	36.1 [917]	29.9 [759]	47.2 [1199]	294	270	501	596	2,580	1,290	1,032
					H19010027VXSS009	27	36.1 [917]	29.9 [759]	72.5 [1842]	294	270	501	596	2,580	1,290	1,032
					H19010031VXSS008	31	40 [1016]	33.9 [861]	71.5 [1816]	330	304	565	657	2,268	1,134	907
					H19010031VXSS011	31	40 [1016]	33.9 [861]	86.6 [2200]	330	304	565	657	2,268	1,134	907
					H19010035VXSS008	35	43.9 [1115]	37.9 [963]	75.5 [1918]	366	338	628	714	2,060	1,030	824
					H19010035VXSS012	35	43.9 [1115]	37.9 [963]	95.7 [2431]	366	338	628	714	2,060	1,030	824
					H19010039VXSS008	39	47.8 [1214]	41.9 [1064]	79.5 [2019]	401	372	692	768	1,850	925	740
					H19010039VXSS013	39	47.8 [1214]	41.9 [1064]	104.7 [2659]	401	372	692	768	1,850	925	740
					H19010043VXSS009	43	51.7 [1313]	45.9 [1166]	88.5 [2248]	437	404	755	820	1,708	854	683
					H19010043VXSS014	43	51.7 [1313]	45.9 [1166]	113.8 [2891]	437	404	755	820	1,708	854	683
					H19010047VXSS010	47	55.6 [1412]	49.9 [1267]	97.6 [2479]	472	437	819	868	1,568	784	627
					H19010047VXSS016	47	55.6 [1412]	49.9 [1267]	127.9 [3249]	472	437	819	868	1,568	784	627
					H19010051VXSS010	51	59.5 [1511]	53.9 [1369]	101.6 [2581]	507	469	882	928	1,456	728	582
					H19010051VXSS017	51	59.5 [1511]	53.9 [1369]	137 [3480]	507	469	882	928	1,456	728	582

Notes:

STL (Specified Tensile Load) - 5,000 lbs [22 kN]

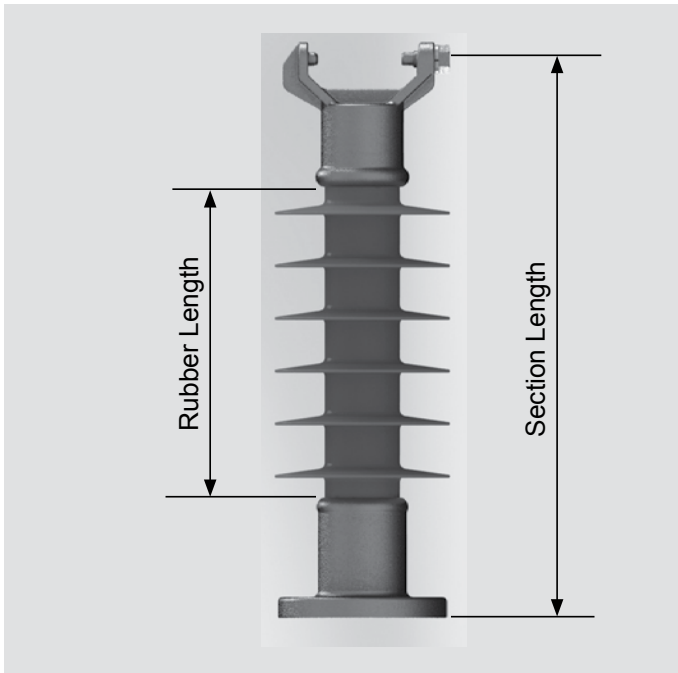
MX = Electrical data is without Corona Ring.

For M20 Stud Base on V7 Series, change from V7 40 60... to V7 44 60...

For other ratings or custom insulator designs, contact your local MPS Sales Representative

Line Post Insulators

Molded 2.5" Line Post - Vertical Trunion H25160 MX Series

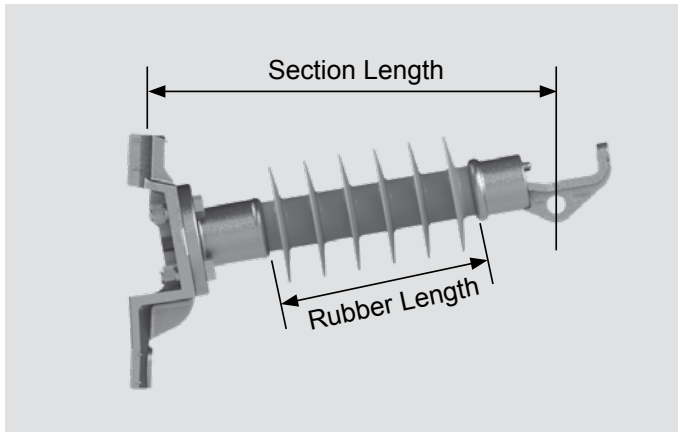


Notes:

- STL (Specified Tensile Load) - 5,000 lbs [22.2kN]
- For Fixed Flat Base H2 1C..., change characters 3 & 4 from "9C" in H2 9C... to "1C" [See base section for details]
- For Drop Tongue end fitting, change characters 5 & 6 from "20" in H2 9C 20... to "10" = H2 9C 10...
- MX = Electrical data is without Corona Ring. [MA = 6" Corona Ring, MB = 12" Corona Ring]
- For other ratings or custom insulator designs, contact your local MPS Sales Representative

Line Voltage (kV)					Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
46	69	115	138	161						60 Hz		CIFO		SCL	MDCL	
										Dry	Wet	Pos	Neg		50%	40%
					H25160011MXSS006	11	20.1	511	13.8	351	32.0	813	147	5,000	2,500	2,000
					H25160015MXSS008	15	24.1	612	17.7	450	42.6	1082	183	5,000	2,500	2,000
					H25160019MXSS010	19	28.1	714	21.7	550	53.2	1351	219	5,000	2,500	2,000
					H25160023MXSS012	23	32.1	815	25.6	649	63.8	1620	254	5,000	2,500	2,000
					H25160027MXSS014	27	36.1	917	29.5	749	74.4	1889	290	5,000	2,500	2,000
					H25160031MXSS016	31	40.1	1019	33.4	848	85.0	2158	325	4,681	2,340	1,872
					H25160035MXSS018	35	44.1	1120	37.3	947	95.6	2427	360	4,199	2,099	1,680
					H25160039MXSS020	39	48.1	1222	41.2	1046	106.1	2696	395	3,811	1,905	1,524
					H25160043MXSS022	43	52.1	1323	45.1	1145	116.7	2965	429	3,508	1,754	1,403
					H25160047MXSS024	47	56.1	1425	49.0	1244	127.3	3234	464	3,207	1,604	1,283
					H25160050MXSS026	50	59.1	1501	52.9	1343	137.9	3503	498	3,061	1,531	1,225

Molded 2.5" Line Post - Fixed Gain Base / Trunion H29C20 MX Series



Notes:

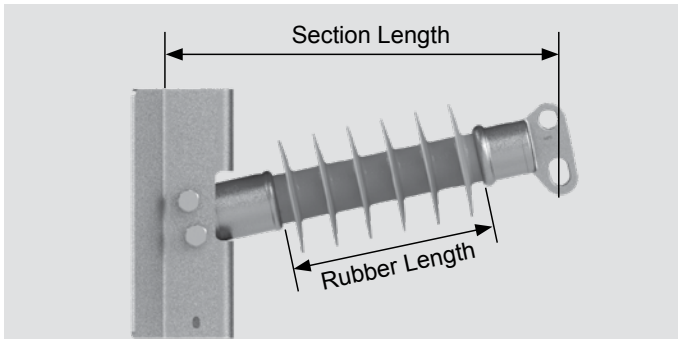
- STL (Specified Tensile Load) - 5,000 lbs [22.2kN]
- For Fixed Flat Base H2 1C..., change characters 3 & 4 from "9C" in H2 9C... to "1C" [See base section for details]
- For Drop Tongue end fitting, change characters 5 & 6 from "20" in H2 9C 20... to "10" = H2 9C 10...
- MX = Electrical data is without Corona Ring. [MA = 6" Corona Ring, MB = 12" Corona Ring]
- For other ratings or custom insulator designs, contact your local MPS Sales Representative

Line Voltage (kV)						Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
46	69	115	138	161	230						60 Hz		CIFO		SCL	MDCL	
											Dry	Wet	Pos	Neg		50%	40%
						H29C20011MXSS006	11	23.4 [593]	13.8 [351]	32 [813]	147	127	248	321	5,000	2,500	2,000
						H29C20015MXSS008	15	27.3 [693]	17.7 [450]	42.6 [1082]	183	163	309	392	5,000	2,500	2,000
						H29C20019MXSS010	19	31.2 [792]	21.7 [550]	53.2 [1351]	219	198	371	461	5,000	2,500	2,000
						H29C20023MXSS012	23	35.1 [891]	25.6 [649]	63.8 [1620]	254	232	432	527	5,000	2,500	2,000
						H29C20027MXSS014	27	39 [991]	29.5 [749]	74.4 [1889]	290	266	495	589	5,000	2,500	2,000
						H29C20031MXSS016	31	42.9 [1090]	33.4 [848]	85 [2158]	325	300	557	649	4,656	2,328	1,862
						H29C20035MXSS018	35	46.8 [1190]	37.3 [947]	95.6 [2427]	360	333	618	705	4,126	2,063	1,650
						H29C20039MXSS020	39	50.7 [1289]	41.2 [1046]	106.1 [2696]	395	366	680	759	3,786	1,893	1,514
						H29C20043MXSS022	43	54.7 [1388]	45.1 [1145]	116.7 [2965]	429	398	742	809	3,462	1,731	1,385
						H29C20047MXSS024	47	58.6 [1488]	49 [1244]	127.3 [3234]	464	429	804	857	3,180	1,590	1,272
						H29C20050MXSS026	50	61.5 [1562]	52.9 [1343]	137.9 [3503]	498	461	866	912	3,030	1,515	1,212
						H29C20054MXSS028	54	65.4 [1662]	56.8 [1442]	148.5 [3772]	532	491	927	971	2,761	1,380	1,104
						H29C20058MXSS030	58	69.3 [1761]	60.7 [1541]	159.1 [4041]	566	522	988	1029	2,563	1,282	1,025
						CR H29C20062MXSS032	62	73.2 [1860]	64.6 [1640]	169.7 [4310]	600	551	1049	1087	2,435	1,217	974
						CR H29C20066MXSS034	66	77.2 [1960]	68.5 [1739]	180.3 [4579]	634	581	1109	1144	2,307	1,153	923
						CR H29C20070MXSS036	70	81.1 [2059]	72.4 [1838]	190.8 [4847]	667	610	1170	1201	2,179	1,089	871
						CR H29C20074MXSS038	74	85 [2159]	76.3 [1937]	201.4 [5116]	700	638	1229	1258	2,051	1,025	820
						CR H29C20078MXSS040	78	88.9 [2258]	80.2 [2036]	212 [5385]	733	666	1288	1314	1,970	985	788
						CR H29C20082MXSS042	82	92.8 [2357]	84.1 [2135]	222.6 [5654]	766	694	1347	1370	1,890	945	756
						CR H29C20086MXSS044	86	96.7 [2457]	88 [2235]	233.2 [5923]	799	721	1405	1426	1,810	905	724
						CR H29C20089MXSS046	89	99.7 [2531]	91.9 [2334]	243.8 [6192]	832	748	1463	1481	1,750	875	700

CR = Corona Ring is Required

Polymer Insulators

Molded 2.5" Line Post - Bendable Gain Base / Drop Tongue H29010 MX Series



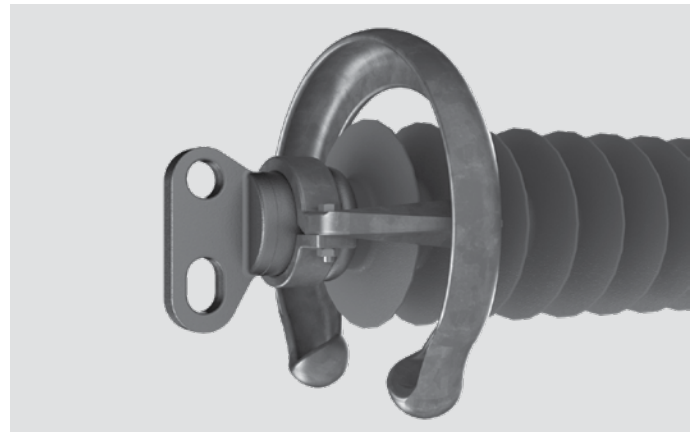
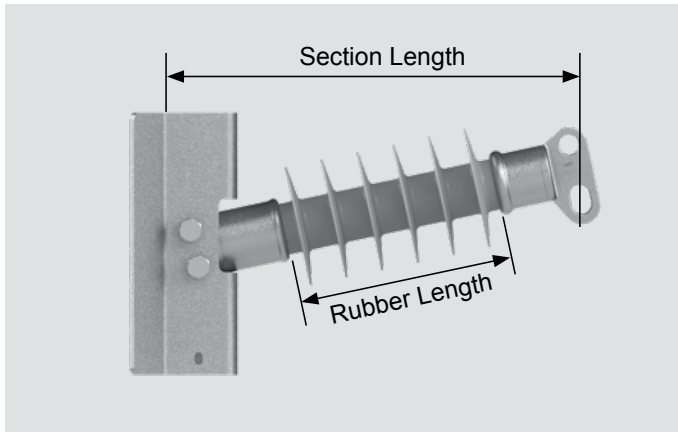
Notes:

- STL (Specified Tensile Load) - 15,000 lbs [66.7 kN]
- For Bendable Flat Base H2 10..., change characters 3 & 4 from "90" in H2 90... to "10" (See base section for details)
- For Trunnion end fitting, change characters 5 & 6 from "10" in H2 90 10... to "20" = H2 90 20...(Trunnion limits MDCL to 2500 lbs)
- MX = Electrical data is without Corona Ring. (MA = 6" Corona Ring, MB = 12" Corona Ring)
- For other ratings or custom insulator designs, contact your local MPS Sales Representative

Line Voltage (kV)						Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
46	69	115	138	161	230						60 Hz		CIFO		SCL	MDCL	
											Dry	Wet	Pos	Neg		50%	40%
						H29010015MXSS008	15	25.9 [657]	17.7 [450]	42.6 [1082]	183	163	309	392	8,412	4,206	3,365
						H29010019MXSS010	19	29.8 [757]	21.7 [550]	53.2 [1351]	219	198	371	461	6,946	3,473	2,778
						H29010023MXSS012	23	33.7 [856]	25.6 [649]	63.8 [1620]	254	232	432	527	6,030	3,015	2,412
						H29010027MXSS014	27	37.6 [955]	29.5 [749]	74.4 [1889]	290	266	495	589	5,200	2,600	2,080
						H29010031MXSS016	31	41.5 [1055]	33.4 [848]	85 [2158]	325	300	557	649	4,676	2,338	1,870
						H29010035MXSS018	35	45.4 [1154]	37.3 [947]	95.6 [2427]	360	333	618	705	4,152	2,076	1,661
						H29010039MXSS020	39	49.3 [1253]	41.2 [1046]	106.1 [2696]	395	366	680	759	3,800	1,900	1,520
						H29010043MXSS022	43	53.3 [1353]	45.1 [1145]	116.7 [2965]	429	398	742	809	3,470	1,735	1,388
						H29010047MXSS024	47	57.2 [1452]	49 [1244]	127.3 [3234]	464	429	804	857	3,186	1,593	1,274
						H29010050MXSS026	50	60.1 [1527]	52.9 [1343]	137.9 [3503]	498	461	866	912	3,036	1,518	1,214
						H29010054MXSS028	54	64 [1626]	56.8 [1442]	148.5 [3772]	532	491	927	971	2,832	1,416	1,133
						H29010058MXSS030	58	67.9 [1725]	60.7 [1541]	159.1 [4041]	566	522	988	1029	2,624	1,312	1,050
						H29010062MXSS032	62	71.8 [1825]	64.6 [1640]	169.7 [4310]	600	551	1049	1087	2,482	1,241	993
						H29010066MXSS034	66	75.8 [1924]	68.5 [1739]	180.3 [4579]	634	581	1109	1144	2,355	1,178	942
						H29010070MXSS036	70	79.7 [2024]	72.4 [1838]	190.8 [4847]	667	610	1170	1201	2,229	1,114	891
						H29010074MXSS038	74	83.6 [2123]	76.3 [1937]	201.4 [5116]	700	638	1229	1258	2,102	1,051	841
						H29010078MXSS040	78	87.5 [2222]	80.2 [2036]	212 [5385]	733	666	1288	1314	2,005	1,003	802
						H29010082MXSS042	82	91.4 [2322]	84.1 [2135]	222.6 [5654]	766	694	1347	1370	1,925	963	770
						H29010086MXSS044	86	95.3 [2421]	88 [2235]	233.2 [5923]	799	721	1405	1426	1,845	923	738
						H29010089MXSS046	89	98.3 [2496]	91.9 [2334]	243.8 [6192]	832	748	1463	1481	1,786	893	714
						H29010093MXSS048	93	102.2 [2595]	95.8 [2433]	254.4 [6461]	864	774	1520	1536	1,706	853	682
						H29010097MXSS050	97	106.1 [2694]	99.7 [2532]	265 [6730]	896	800	1577	1591	1,634	817	654
						H29010101MXSS052	101	110 [2794]	103.6 [2631]	275.5 [6999]	928	818	1633	1645	1,584	792	634

CR = Corona Ring is Required

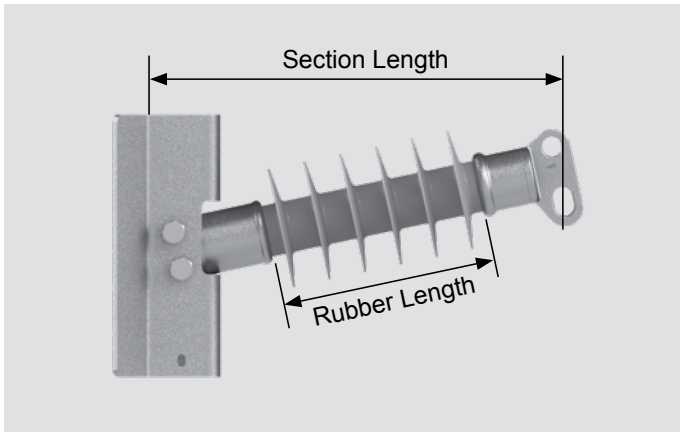
Molded 2.5" Line Post - Bendable Gain Base / Drop Tongue / with Corona Ring H29010 MX Series with Corona Ring



138	161	230	345	Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
									60 Hz		CIFO		SCL	MDCL	
									Dry	Wet	Pos	Neg		50%	40%
				H29010050MASS026	50	60.1 [1527]	51.7 [1312]	137.9 [3503]	487	451	846	894	3,036	1,518	1,214
				H29010054MASS028	54	64 [1626]	55.6 [1411]	148.5 [3772]	522	482	908	953	2,832	1,416	1,133
				H29010058MASS030	58	67.9 [1725]	59.5 [1510]	159.1 [4041]	556	512	969	1011	2,624	1,312	1,050
				H29010062MASS032	62	71.8 [1825]	63.4 [1609]	169.7 [4310]	589	542	1030	1069	2,482	1,241	993
				H29010066MASS034	66	75.8 [1924]	67.3 [1708]	180.3 [4579]	623	572	1091	1126	2,355	1,178	942
				H29010070MASS036	70	79.7 [2024]	71.2 [1807]	190.8 [4847]	657	601	1151	1183	2,229	1,114	891
				H29010074MASS038	74	83.6 [2123]	75.1 [1906]	201.4 [5116]	690	629	1211	1240	2,102	1,051	841
				H29010078MASS040	78	87.5 [2222]	79 [2005]	212 [5385]	723	658	1270	1297	2,005	1,003	802
				H29010082MASS042	82	91.4 [2322]	82.9 [2104]	222.6 [5654]	756	685	1329	1353	1,925	963	770
				H29010086MASS044	86	95.3 [2421]	86.8 [2204]	233.2 [5923]	789	712	1387	1409	1,845	923	738
				H29010089MASS046	89	98.3 [2496]	90.7 [2303]	243.8 [6192]	822	739	1445	1464	1,786	893	714
				H29010093MASS048	93	102.2 [2595]	94.6 [2402]	254.4 [6461]	854	766	1502	1519	1,706	853	682
				H29010097MASS050	97	106.1 [2694]	98.5 [2501]	265 [6730]	886	792	1559	1574	1,634	817	654
				H29010101MASS052	101	110 [2794]	102.4 [2600]	275.5 [6999]	918	813	1615	1628	1,584	792	634
				H29010093MBSS048	93	102.2 [2595]	93.5 [2374]	254.4 [6461]	845	758	1486	1503	1,706	853	682
				H29010097MBSS050	97	106.1 [2694]	97.4 [2473]	265 [6730]	877	784	1543	1558	1,634	817	654
				H29010101MBSS052	101	110 [2794]	101.3 [2572]	275.5 [6999]	909	807	1600	1613	1,584	792	634

Line Post Insulators

Modular 3" Line Post - Gain Base / Drop Tongue H39010 VX Series



Notes:

- STL (Specified Tensile Load) - 20,000 lbs [89 kN]
- For Bendable Flat Base H3 10..., change characters 3 & 4 from "90" in H3 90... to "10"
- For Trunnion end fitting, change characters 5 & 6 from "10" in H3 90 10... to "20" = H3 90 20... [Trunnion limits MDCL to 2500 lbs]
- VX = Electrical data is without Corona Ring. [VA = 6" Corona Ring, VB = 12" Corona Ring]
- For other ratings or custom insulator designs, contact your local MPS Sales Representative

Line Voltage (kV)					Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)			
46	69	115	138	161						230	60 Hz		CIFO		SCL	MDCL	
											Dry	Wet	Pos	Neg		50%	40%
						H39010015VXSS004	15	30.2 [767]	17.9 [455]	34.5 [876]	184	164	312	396	12,962	6,481	5,185
						H39010019VXSS007	19	34 [864]	21.9 [556]	53.1 [1349]	221	200	375	465	11,152	5,576	4,461
						H39010023VXSS004	23	37.9 [963]	25.9 [658]	42.5 [1080]	257	235	438	532	9,484	4,742	3,794
						H39010023VXSS008	23	37.9 [963]	25.9 [658]	61.9 [1572]	257	235	438	532	9,484	4,742	3,794
						H39010027VXSS008	27	41.7 [1059]	29.9 [759]	65.9 [1674]	294	270	501	596	8,466	4,233	3,386
						H39010027VXSS010	27	41.7 [1059]	29.9 [759]	75.7 [1923]	294	270	501	596	8,466	4,233	3,386
						H39010031VXSS008	31	45.5 [1156]	33.9 [861]	69.9 [1775]	330	304	565	657	7,450	3,725	2,980
						H39010031VXSS011	31	45.5 [1156]	33.9 [861]	84.5 [2146]	330	304	565	657	7,450	3,725	2,980
						H39010035VXSS008	35	49.4 [1255]	37.9 [963]	73.9 [1877]	366	338	628	714	6,778	3,389	2,711
						H39010035VXSS012	35	49.4 [1255]	37.9 [963]	93.4 [2372]	366	338	628	714	6,778	3,389	2,711
						H39010039VXSS008	39	53.2 [1351]	41.9 [1064]	77.9 [1979]	401	372	692	768	6,178	3,089	2,471
						H39010039VXSS014	39	53.2 [1351]	41.9 [1064]	107.1 [2720]	401	372	692	768	6,178	3,089	2,471
						H39010043VXSS011	43	57 [1448]	45.9 [1166]	96.5 [2451]	437	404	755	820	5,640	2,820	2,256
						H39010043VXSS015	43	57 [1448]	45.9 [1166]	116 [2946]	437	404	755	820	5,640	2,820	2,256
						H39010047VXSS012	47	60.8 [1544]	49.9 [1267]	105.4 [2677]	472	437	819	868	5,272	2,636	2,109
						H39010047VXSS017	47	60.8 [1544]	49.9 [1267]	129.7 [3294]	472	437	819	868	5,272	2,636	2,109
						H39010050VXSS013	50	63.7 [1618]	52.9 [1344]	113.3 [2878]	498	461	866	913	4,990	2,495	1,996
						H39010050VXSS018	50	63.7 [1618]	52.9 [1344]	137.6 [3495]	498	461	866	913	4,990	2,495	1,996



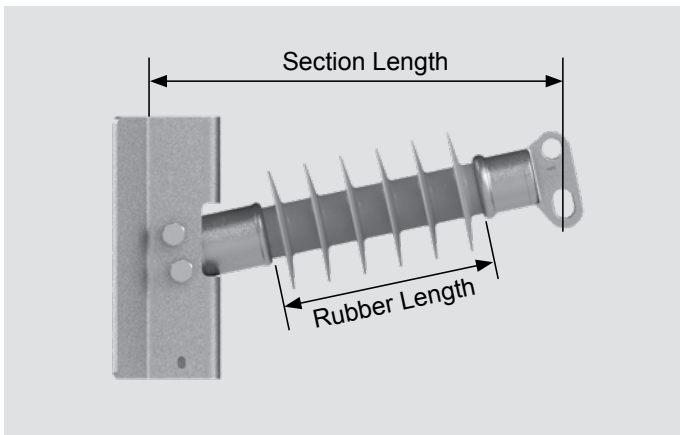
H39010 VX Series Continued

Line Voltage (kV)						Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
46	69	115	138	161	230						60 Hz		CIFO		SCL	MDCL	
											Dry	Wet	Pos	Neg		50%	40%
						in	in [mm]	in [mm]	in [mm]								
						H39010054VXSS013	54	67.5 [1714]	56.9 [1445]	117.3 [2979]	533	492	929	973	4,624	2,312	1,850
						H39010054VXSS019	54	67.5 [1714]	56.9 [1445]	146.5 [3721]	533	492	929	973	4,624	2,312	1,850
						H39010058VXSS014	58	71.3 [1811]	60.9 [1547]	126.1 [3203]	568	523	992	1032	4,342	2,171	1,737
						H39010058VXSS021	58	71.3 [1811]	60.9 [1547]	160.2 [4069]	568	523	992	1032	4,342	2,171	1,737
						H39010062VXSS015	62	75.2 [1910]	64.9 [1648]	135 [3429]	603	554	1054	1092	4,110	2,055	1,644
						H39010062VXSS022	62	75.2 [1910]	64.9 [1648]	169.1 [4295]	603	554	1054	1092	4,110	2,055	1,644
						H39010066VXSS016	66	79 [2007]	68.9 [1750]	143.9 [3655]	637	584	1116	1150	3,884	1,942	1,554
						H39010066VXSS024	66	79 [2007]	68.9 [1750]	182.8 [4643]	637	584	1116	1150	3,884	1,942	1,554
						CR H39010070VXSS018	70	82.8 [2103]	72.9 [1852]	157.6 [4003]	672	614	1178	1209	3,656	1,828	1,462
						CR H39010070VXSS025	70	82.8 [2103]	72.9 [1852]	191.7 [4869]	672	614	1178	1209	3,656	1,828	1,462
						CR H39010074VXSS018	74	86.6 [2200]	76.9 [1953]	161.6 [4105]	706	643	1239	1267	3,468	1,734	1,387
						CR H39010074VXSS026	74	86.6 [2200]	76.9 [1953]	200.5 [5093]	706	643	1239	1267	3,468	1,734	1,387
						CR H39010078VXSS020	78	90.5 [2299]	80.9 [2055]	175.3 [4453]	740	671	1299	1325	3,324	1,662	1,330
						CR H39010078VXSS028	78	90.5 [2299]	80.9 [2055]	214.3 [5443]	740	671	1299	1325	3,324	1,662	1,330
						CR H39010082VXSS021	82	94.3 [2395]	84.9 [2156]	184.2 [4679]	773	700	1360	1382	3,184	1,592	1,274
						CR H39010082VXSS029	82	94.3 [2395]	84.9 [2156]	223.1 [5667]	773	700	1360	1382	3,184	1,592	1,274

CR = Corona Ring is Required

Line Post Insulators

Molded 3" Line Post H39010 VX and VA Series



Notes:

- STL (Specified Tensile Load) - 20,000 lbs [89 kN]
- For Bendable Flat Base H3 10..., change characters 3 & 4 from "90" in H3 90... to "10"
- For Trunnion end fitting, change characters 5 & 6 from "10" in H3 90 10... to "20" = H3 90 20... [Trunnion limits MDCL to 2500 lbs]
- VX = Electrical data is without Corona Ring. [VA = 6" Corona Ring, VB = 12" Corona Ring]
- For other ratings or custom insulator designs, contact your local MPS Sales Representative

Line Voltage (kV)					Catalog No.	Rubber Length	Section Length	Dry Arc	Leakage	Electrical Flashover (kV)				Cantilever Load (lbs)		
115	138	161	230	345						60 Hz		CIFO		SCL	MDCL	
										Dry	Wet	Pos	Neg		50%	40%
					H39010043VASS011	43	57 [1448]	44.7 [1135]	96.5 [2451]	426	395	736	805	5,640	2,820	2,256
					H39010043VASS015	43	57 [1448]	44.7 [1135]	116 [2946]	426	395	736	805	5,640	2,820	2,256
					H39010047VASS012	47	60.8 [1544]	48.7 [1237]	105.4 [2677]	461	427	800	854	5,272	2,636	2,109
					H39010047VASS017	47	60.8 [1544]	48.7 [1237]	129.7 [3294]	461	427	800	854	5,272	2,636	2,109
					H39010050VASS013	50	63.7 [1618]	51.7 [1313]	113.3 [2878]	488	451	847	895	4,990	2,495	1,996
					H39010050VASS018	50	63.7 [1618]	51.7 [1313]	137.6 [3495]	488	451	847	895	4,990	2,495	1,996
					H39010054VASS013	54	67.5 [1714]	55.7 [1415]	117.3 [2979]	523	483	910	955	4,624	2,312	1,850
					H39010054VASS019	54	67.5 [1714]	55.7 [1415]	146.5 [3721]	523	483	910	955	4,624	2,312	1,850
					H39010058VASS014	58	71.3 [1811]	59.7 [1516]	126.1 [3203]	558	514	973	1015	4,342	2,171	1,737
					H39010058VASS021	58	71.3 [1811]	59.7 [1516]	160.2 [4069]	558	514	973	1015	4,342	2,171	1,737
					H39010062VASS015	62	75.2 [1910]	63.7 [1618]	135 [3429]	592	545	1035	1074	4,110	2,055	1,644
					H39010062VASS022	62	75.2 [1910]	63.7 [1618]	169.1 [4295]	592	545	1035	1074	4,110	2,055	1,644
					H39010066VASS016	66	79 [2007]	67.7 [1720]	143.9 [3655]	627	575	1097	1133	3,884	1,942	1,554
					H39010066VASS024	66	79 [2007]	67.7 [1720]	182.8 [4643]	627	575	1097	1133	3,884	1,942	1,554
					H39010070VASS018	70	82.8 [2103]	71.7 [1821]	157.6 [4003]	661	605	1159	1191	3,656	1,828	1,462
					H39010070VASS025	70	82.8 [2103]	71.7 [1821]	191.7 [4869]	661	605	1159	1191	3,656	1,828	1,462
					H39010074VASS018	74	86.6 [2200]	75.7 [1923]	161.6 [4105]	695	634	1220	1250	3,468	1,734	1,387
					H39010074VASS026	74	86.6 [2200]	75.7 [1923]	200.5 [5093]	695	634	1220	1250	3,468	1,734	1,387



Line Voltage		Line End	Tower End
230 kV	VA	6" Ring	None
345 kV	VB	12" Ring	None

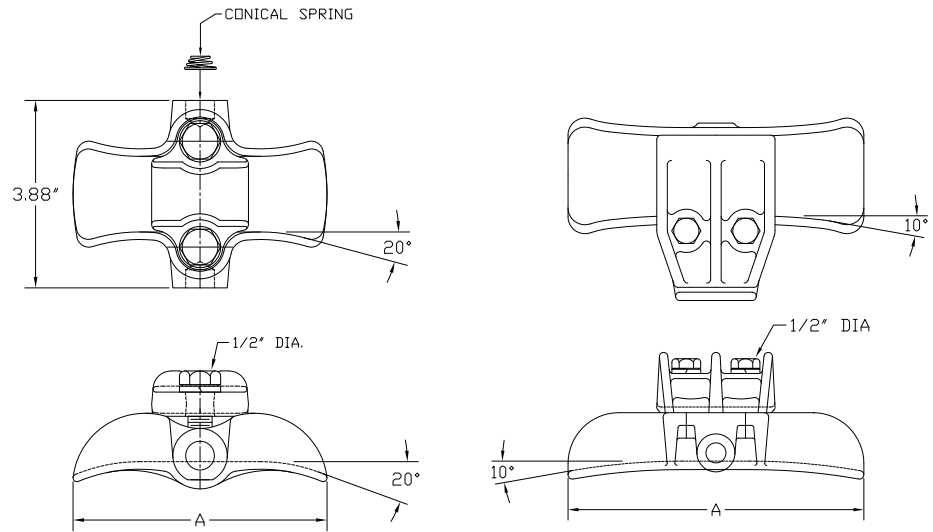
H39010 VX Series continued

Line Voltage (kV)					Catalog No.	Rubber Length in	Section Length in [mm]	Dry Arc in [mm]	Leakage in [mm]	Electrical Flashover (kV)				Cantilever Load (lbs)		
115	138	161	230	345						60 Hz		CIFO		SCL	MDCL	
										Dry	Wet	Pos	Neg		50%	40%
					H39010078VASS020	78	90.5 [2299]	79.7 [2024]	175.3 [4453]	729	663	1281	1307	3,324	1,662	1,330
					H39010078VASS028	78	90.5 [2299]	79.7 [2024]	214.3 [5443]	729	663	1281	1307	3,324	1,662	1,330
					H39010082VASS021	82	94.3 [2395]	83.7 [2126]	184.2 [4679]	763	691	1342	1365	3,184	1,592	1,274
					H39010082VASS029	82	94.3 [2395]	83.7 [2126]	223.1 [5667]	763	691	1342	1365	3,184	1,592	1,274
					H39010086VASS028	86	97.2 [2469]	86.7 [2202]	221.3 [5621]	788	712	1386	1408	3,078	1,539	1,231
					H39010086VASS035	86	97.2 [2469]	86.7 [2202]	255.3 [6485]	788	712	1386	1408	3,078	1,539	1,231
					H39010089VASS029	89	101 [2565]	90.7 [2304]	230.1 [5845]	822	740	1446	1465	2,938	1,469	1,175
					H39010089VASS038	89	101 [2565]	90.7 [2304]	273.9 [6957]	822	740	1446	1465	2,938	1,469	1,175
					H39010089VBSS029	89	101 [2565]	89.4 [2271]	230.1 [5845]	811	731	1427	1446	2,938	1,469	1,175
					H39010089VBSS038	89	101 [2565]	89.4 [2271]	273.9 [6957]	811	731	1427	1446	2,938	1,469	1,175
					H39010093VBSS033	93	104.8 [2662]	93.4 [2372]	253.6 [6441]	844	758	1486	1503	2,800	1,400	1,120
					H39010093VBSS041	93	104.8 [2662]	93.4 [2372]	292.5 [7430]	844	758	1486	1503	2,800	1,400	1,120
					H39010097VBSS035	97	108.6 [2758]	97.4 [2474]	267.3 [6789]	878	785	1544	1559	2,710	1,355	1,084
					H39010097VBSS040	97	108.6 [2758]	97.4 [2474]	291.7 [7409]	878	785	1544	1559	2,710	1,355	1,084
					H39010101VBSS026	101	112.5 [2858]	101.4 [2576]	227.5 [5778]	911	808	1602	1615	2,620	1,310	1,048
					H39010101VBSS032	101	112.5 [2858]	101.4 [2576]	276.2 [7015]	911	808	1602	1615	2,620	1,310	1,048

Line Post Insulators

Clamps

ACTS Trunnion Clamps

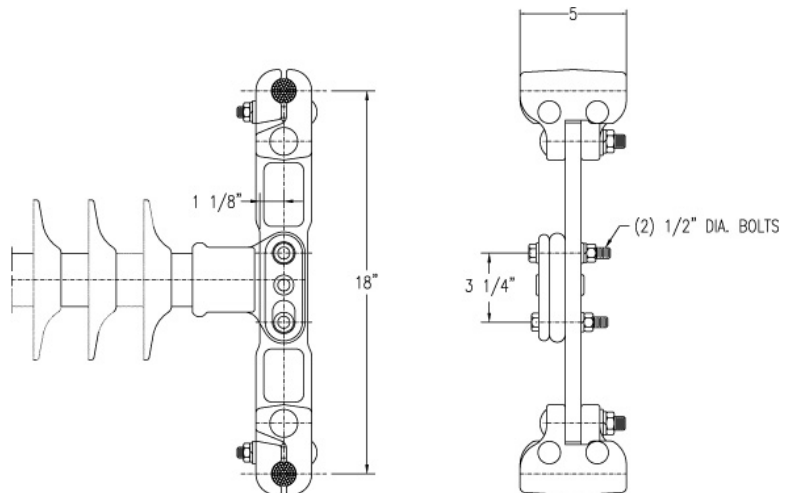


Catalog Number	Fig	A	Conductor Range			Weight/ 100 (lbs)
			Inches	ACSR	Aluminum	
ACTS-057	1	5.25	0.23 - 0.57	4 - 4/0	4 - 4/0	82
ACTS-084	1	5.25	0.35 - 0.84	1 - 477	1/0 - 477	95
ACTS-118	1	5.25	0.50 - 1.18	3/0 - 795	4/0 - 1033.5	117
ACTS-150	1	5.25	0.93 - 1.50	556.5 - 1510.5	715.5 - 1590	127
ACTS-200	1	6.50	1.50 - 2.00	605 - 113*	795 - 1192.5	225
ACTS-230	2	8.75	1.90 - 2.30	1033.5 - 1431*	1192.5 - 1510.5*	242
ACTS-270	2	8.50	2.00 - 2.70	1272* - 2167*	—	275

- Notes:**
 1) For spring in one trunnion, add suffix "-SL1"
 2) For spring in both trunnions, add suffix "-SL2"
 3) For stainless steel hardware, add suffix "-SS"
 4) "*" = over formed armor rods

LPH3D Series Jumper Clamp

Leakage	Clamping Range
LPH3D-18-106	0.90" - 1.06"
LPH3D-18-140	1.00" - 1.40"
LPH3D-18-175	1.40" - 1.75"
LPH3D-18-200	1.60" - 2.00"
LPH3D-18-225	2.00" - 2.25"
LPH3D-18-T2-HAWK	T2-HAWK
LPH3D-18-T2-DOVE	T2-DOVE
LPH3D-18-T2-IBIS	T2-IBIS
LPH3D-18-T2-ROOK	T2-ROOK



Dimensions in inches unless otherwise noted
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 Technical information subject to change without notice

Polymer Suspension Insulators



Polymer Suspension Insulators

MPS Quality Insulators

Housing Material

- High Quality Silicone Compound
- Proven With 30+ Years of Field Experience

FRP Core Protection

- Corrosion Resistant E-Glass Core
- Housing Fully Bonded to Core
- Multi-Layer Sealing System - PST Seal

Designed to Withstand the Environment

- Leakage Distance Appropriate for Contamination Zone
- Variable Alternating Shed Patterns
- Shed Spacing / Projection Ratio (S/P)

Optimal Electric Field Control

- Corona Ball End Fittings
- Smart Fit Corona Rings
- Stacked Sheds - Sheath Protection from Premature Aging

Commitment to the Technology

- Continual Improvement - New Features
- Rigorous Mechanical and Electrical Testing
- Stringent Quality Manufacturing Standards and Processes

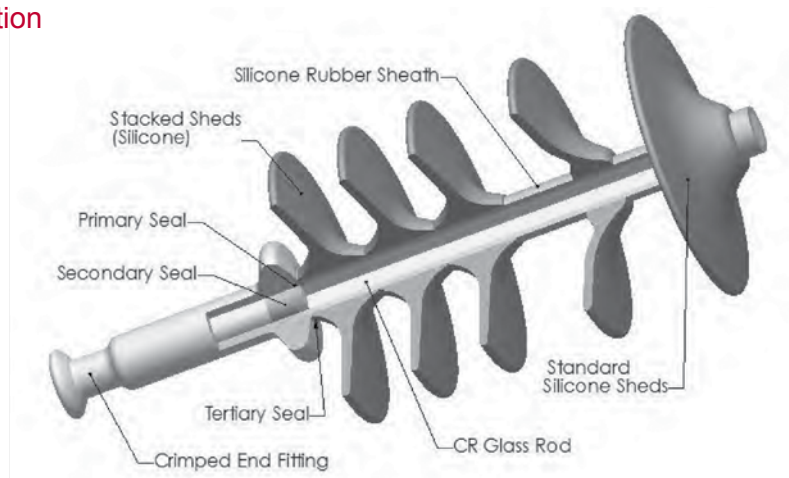
30 Years of Proven Performance

Polymer insulators have performed well over the last 30 years, typically in applications where porcelain had issues with contamination and vandalism. First generation MacLean Reliable insulators are still in service today in some very extreme environments and applications.

As good as early generation polymer insulators were, through innovation and engineering MacLean has led the industry in improvements in polymer technology. MacLean was the first supplier to offer a multi-layer seal, CR E-glass, and stacked sheds to mitigate the effects of water droplet corona.



The Complete Solution



Silicone Rubber

MPS uses a Silicone formulation that has been unchanged since the early 80's. The Si-O molecular bonds (inorganic backbone of Silicone) are very stable and have bond strengths higher than sunlight, making the silicone resistant to UV degradation. In addition to providing protection against the effects of ultraviolet radiation, electrical aging, and corona effect, silicone exhibits hydrophobic properties; which provide excellent recovery characteristics to control leakage currents in highly polluted or coastal environments.

The MPS silicone rubber formation has consistently outperformed other silicone formulations in its hydrophobicity, its hydrophobicity recovery rate, and enhanced electrical properties in contaminated environments.

P-S-T End Fitting Seal

The P-S-T sealing system is a triple seal design with built-in redundancies. Primary Seal - rubber sheath compressed into chamfer of end fitting. Secondary seal - RTV silicone applied to core / end fitting interface. Tertiary seal - final external RTV seal applied to sheath / end fitting interface. The P-S-T system has clearly shown its superiority to withstand moisture penetration.

CR E-Glass Core

MPS uses "Boron Free" Corrosion Resistant E-Glass on all its insulators for its High Electrical Integrity & High Resistance to acid corrosion. The boron free formulation of the fiberglass core makes it resistant to nitric acid attacks and stress corrosion. There has never been a brittle fracture of a CR E-glass Insulator in over 30 years of use.

Stacked Shed

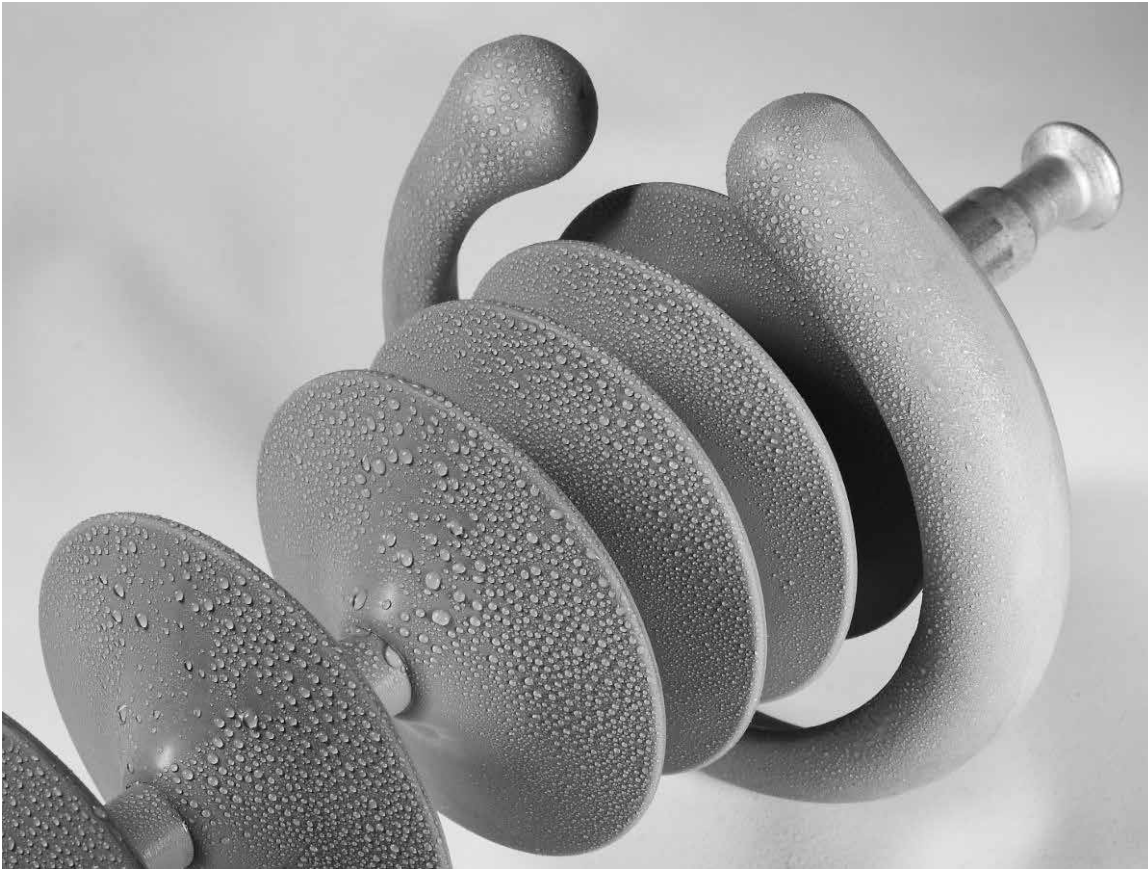
The MPS Stacked Shed configuration offers inherent protection against material aging in critical areas of the sheath and resists the resultant material erosion when installed in highly contaminated environments (resistance to Water Droplet Corona). In addition, stacked shed profiles enhance the ability of the insulator to resist mechanical damage in these most critical areas during transportation and installation.

Dual Manufacturing Processes

MPS offers suspension insulators made using two unique manufacturing processes, Molded and Modular, to meet the various needs of the transmission market. Both designs use the same features and materials; MPS Silicone, PST Seal, CR E-Glass, Stacked Sheds, & Smart Fit Corona Rings.

<p>MX Series – MPS “Standard” Suspensions</p> <p>Molded Suspension Insulators are produced in high pressure injection molding presses that produce standard shed profiles and leakage distances. These are ideal standard suspension products.</p>	<p>MX Benefits</p> <ul style="list-style-type: none"> • Standard Length & Leakage • Volume Production • MFG to Stock • 69kV – 230kV
<p>VX Series – Application Specific Suspensions</p> <p>Modular Suspensions are extruded insulators, where the silicone rubber is applied to the core rod via a controlled extrusion process that produces a seamless sheath. Individual sheds are assembled and vulcanized to the sheath to create various shed patterns and leakage distances; standard, high, and extra high.</p>	<p>VX Benefits</p> <ul style="list-style-type: none"> • Custom Length & Leakage • Engineered Solutions – S/P • MFG to Order • 69kV – 500kV • UHV & DC Applications

Polymer Suspension Insulators



Corona Rings

High voltages can result in unwanted noise (RIV) and corona. To minimize the effects of corona, corona rings are applied to one or both ends of the insulator (attached onto the end fittings). Typically, for system voltages 230kV and above a corona ring or combination of rings is necessary. However, some applications may require rings at lower system voltages when additional corona protection is required; high contamination, high altitude, or applications with tight phase to phase or phase to ground spacing. For these special cases or any corona ring application assistance, contact MPS.

The corona ring is needed at the line end of the insulator, right at the end fitting and rubber interface, which is the area of highest electrical stress on the sheath of the insulator. As the application voltage increases, the diameter of the corona ring increases to effectively disperse the Electric Fields.

E-Field Modeling is a good way to determine when a corona ring is needed, what size corona ring is required for a specific application, and whether rings are needed on the hot and cold ends of the insulator. At some EHV voltages, there is need for a corona ring on the tower end fitting as well as the line end to grade E-Fields and Stress on both the tower and line end of the insulator.

MPS corona rings are designed around the needs of the end user. They are easy to install, unidirectional (not able to install in the wrong direction), and can be installed or removed with hot stick tools. The corona ring attaches to the corona ball feature of the end fitting via a keeper clamping mechanism. The geometry of the keeper and corona ball fit together such that the ring can only be installed in one direction, which eliminates the problem of misapplied rings, and locates the ring at the critical interface of the end fitting and housing.

Suspension Corona Ring Family

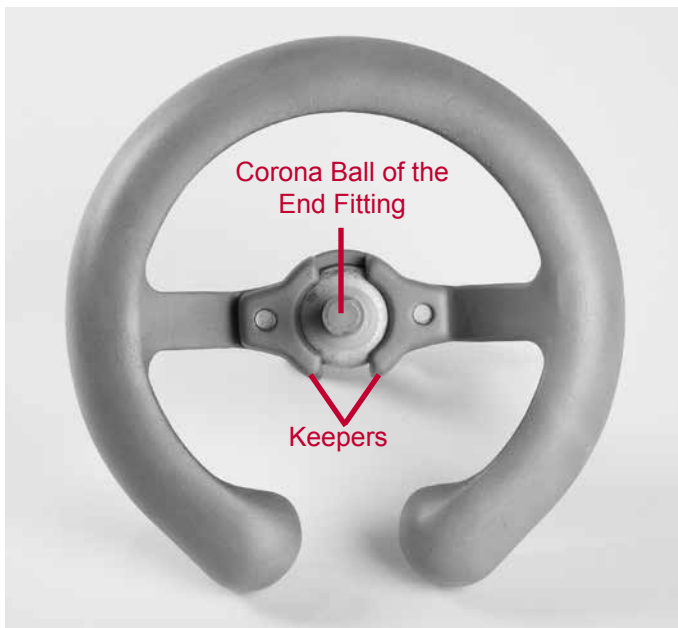
MPS Smart Fit Corona Rings come in three standard sizes; 8", 12", & 17", and are designed for use on all "VX" and "MX" Series Suspension Insulators.



Recommended Corona Ring Applications								
	115kV	138kV	161kV	230kV	345kV	500kV	765kV	
Catalog Ref.	X	X	A	A	B	G	V	H
Line End	*	*	8"	8"	12"	12"	17"	17"
Tower End	—	—	—	—	—	8"	8"	12"
Stacked Shed	SS	SS	SS	SS	SS / EHV	EHV	UHV	

* 8" Corona Ring available if required by customer or to satisfy modeling

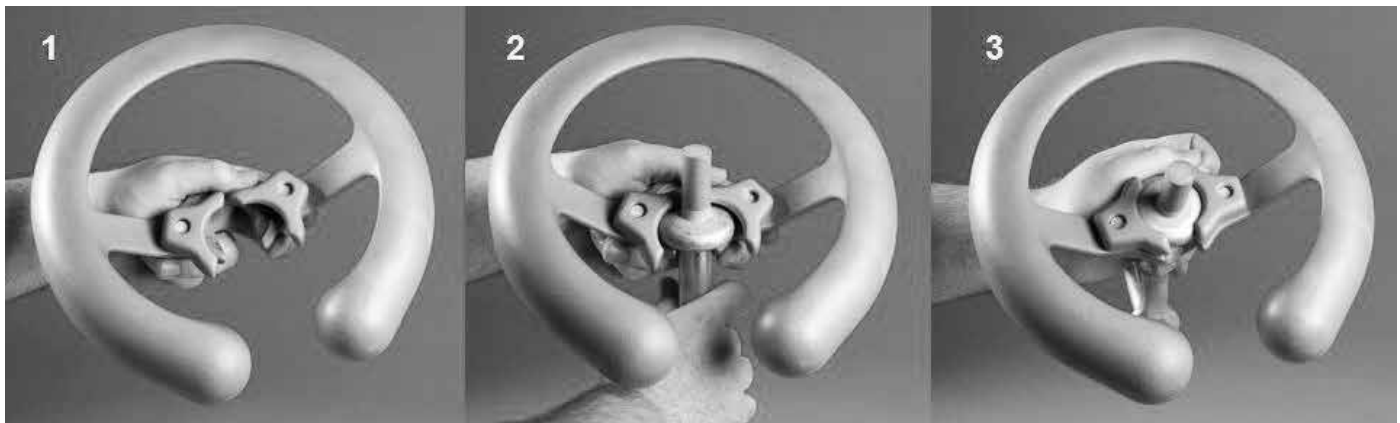
Note: A 8" corona ring is desirable at 161kV, but must have CR at $\geq 230kV$
 The corona ring is a part of the suspension catalog number
 To include an 8" CR, change VX to VA or MX to MA4
 Adding a corona ring will reduce the dry arc distance 1.5" to 3.0"



Features

- Unidirectional Fit
- Located onto Corona Ball
- 2 Piece Keeper System
- Maximum Protection
- Easy Installation
- Hot Stick Workable

Smart Fit Corona Ring Installation



Step 1: Open Keepers

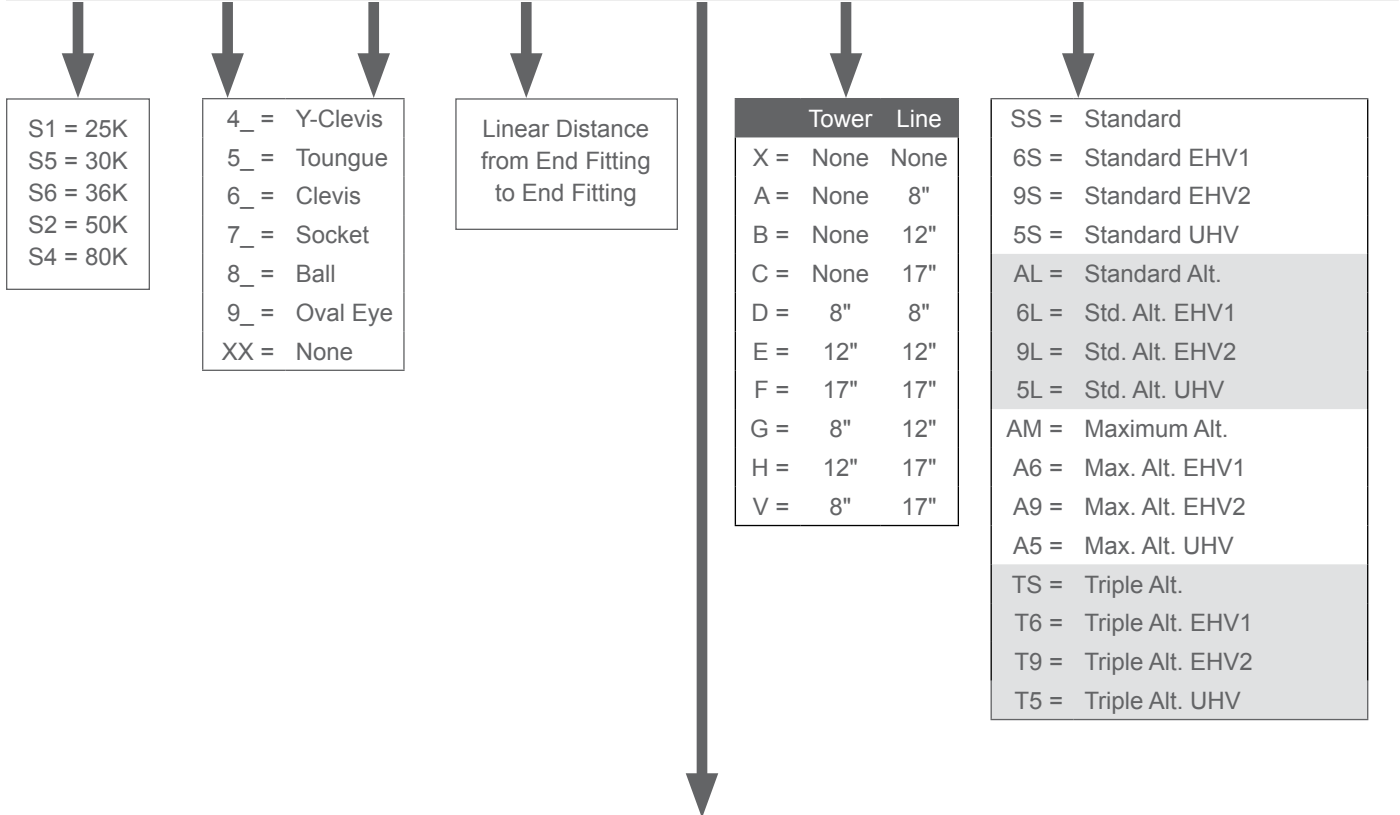
Step 2: Fit Onto Corona Ball

Step 3: Close & Tighten

Polymer Suspension Insulators

Suspension Insulator Smart Catalog Number

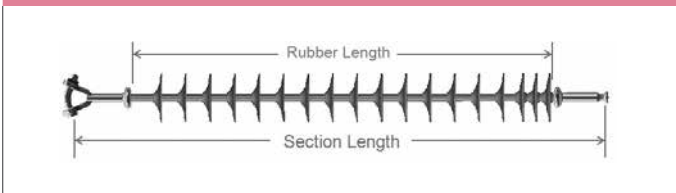
S1	40	80	045	V	X	SS	022
SML	Tower EF	Line EF	Rubber Length	Leakage	Corona Ring	Shed Pattern	Shed Count



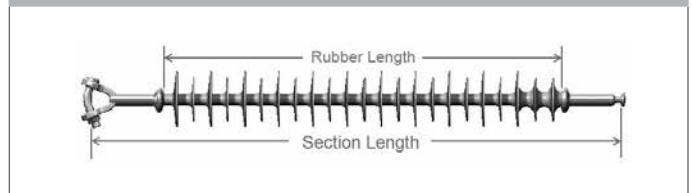
V = Variable Leakage = Modular / Extruded Manufacturing Process

M = Molded Leakage = Injection Molding Manufacturing Process

VX Modular Suspension



MX Molded Suspension



Standard End Fitting Combinations

S_40 80		
S1 =	Y-Clevis	52-5 Ball
S5 =	Y-Clevis	52-5 Ball
S6 =	Y-Clevis	52-8 Ball
S2 =	Y-Clevis	52-11 Ball

S_90 80		
S1 =	Oval Eye	52-5 Ball
S5 =	Oval Eye	52-5 Ball
S6 =	Oval Eye	52-8 Ball
S2 =	Oval Eye	52-11 Ball

S_70 80		
S1 =	52-5 Socket	52-5 Ball
S5 =	52-5 Socket	52-5 Ball
S6 =	52-8 Socket	52-8 Ball
S2 =	52-11 Socket	52-11 Ball

S_90 90		
S1 =	Oval Eye	Oval Eye
S5 =	Oval Eye	Oval Eye
S6 =	Oval Eye	Oval Eye
S2 =	Oval Eye	Oval Eye
S4 =	Oval Eye	Oval Eye

S_40 90		
S1 =	Y-Clevis	Oval Eye
S5 =	Y-Clevis	Oval Eye
S6 =	Y-Clevis	Oval Eye
S2 =	Y-Clevis	Oval Eye
—	—	—

S_40 40		
S1 =	Y-Clevis	Y-Clevis
S5 =	Y-Clevis	Y-Clevis
S6 =	Y-Clevis	Y-Clevis
S2 =	Y-Clevis	Y-Clevis
—	—	—

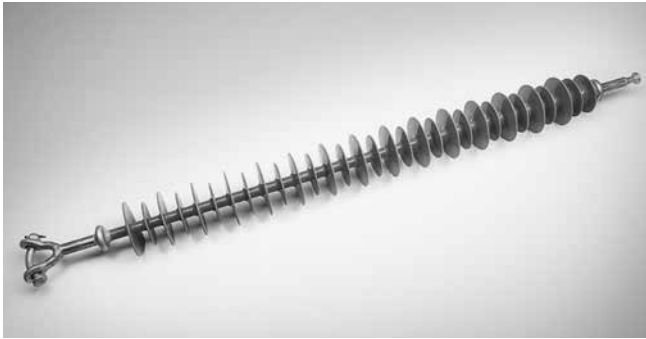
S_90 91		
S1 =	Oval Eye	Oval Eye
S5 =	Oval Eye	Oval Eye
S6 =	Oval Eye	Oval Eye
S2 =	Oval Eye	Oval Eye
S4 =	Oval Eye	Oval Eye

S_40 91		
S1 =	Y-Clevis	Oval Eye
S5 =	Y-Clevis	Oval Eye
S6 =	Y-Clevis	Oval Eye
S2 =	Y-Clevis	Oval Eye
—	—	—

S_40 41		
S1 =	Y-Clevis	Y-Clevis
S5 =	Y-Clevis	Y-Clevis
S6 =	Y-Clevis	Y-Clevis
S2 =	Y-Clevis	Y-Clevis
—	—	—

Polymer Suspension Insulators

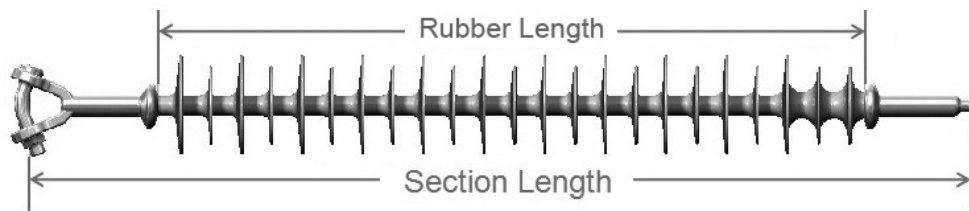
25 kip Molded Insulators



Features

- S1 - MX Series is the Standard MPS Suspension for 25K SML
- Available in all standard end fitting combinations (see below)
- For additional end fitting combinations, log into MacLean Real-Time™ Design
- Published FO values are without corona ring
- For Corona Ring Applications, see the next page
- For custom leakage, see the S1 - VX Series

Insulator Strength Ratings		
S1	SML	RTL
	25 klb	12.5 klb
	111.2 kN	55.6 kN



S14080 - MX Series Molded Suspension — Y-Clevis / 52-5 Ball

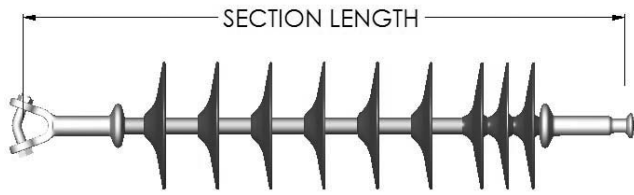
Line Voltage		Catalog No.	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)						
				inch	in	mm	in	mm	in	mm	60 Hz		CIFO			
46	69	115	138	161	230	inch	mm	in	mm	Dry	Wet	Pos	Neg			
						24.5	36.2	919	26.8	681	66.9	1699	269	243	468	503
						30.5	42.2	1072	32.8	833	85.2	2164	327	295	566	605
						36.6	48.2	1224	38.8	986	103.5	2629	384	346	662	705
						42.4	54.0	1372	44.8	1138	121.8	3094	441	395	757	803
						48.4	60.0	1524	50.7	1288	140.1	3559	497	443	849	898
						54.4	66.0	1676	56.7	1440	158.4	4023	554	491	942	994
						61.9	73.5	1867	63.7	1618	180.7	4590	621	545	1048	1103
						66.4	78.0	1981	68.7	1745	195.0	4953	669	583	1124	1180
					CR	72.4	84.0	2134	74.7	1897	213.3	5418	726	627	1213	1272
					CR	78.3	89.9	2283	80.7	2050	231.6	5883	783	670	1302	1362

CR = Corona Rings required for applications 230kV and above

Optional End Fittings	Section Length Change
S17080 -- ANSI 52-5 Socket & Ball	-1.1"
S19080 -- Oval Eye/52-5 Ball	+0.1"
S19090 -- Oval Eye/Oval Eye	+1.7"
S14090 -- Y-Clevis/Oval Eye	+1.6"

Polymer Suspension Insulators

25 kip Modular Insulators



Features

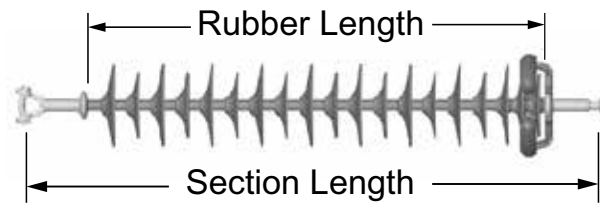
- 8" Corona ring required at 230kV and above, but can be added to any voltage as required
- Available in all standard end fitting combinations (see below)
- For additional end fitting combinations, log into MacLean Real-Time™ Design
- Published FO values are without corona ring
- For Corona Ring Applications, see next page

S14080 - VX Series Modular Suspension — Y-Clevis / 52-5 Ball

Line Voltage						Catalog No.	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
46	69	115	138	161	230			inch	in	mm	in	mm	in	mm	60 Hz		CIFO
												Dry	Wet	Pos	Neg		
						S14080025VXSS009	25	36.2	919	28.1	714	59.5	1511	282	254	490	525
						S14080025VXSS015	25	36.2	919	28.1	714	81.5	2070	282	254	490	525
						S14080031VXSS012	31	42.2	1072	34.1	866	77.4	1965	339	306	588	627
						S14080031VXSS017	31	42.2	1072	34.1	866	97.1	2466	339	306	588	627
						S14080036VXSS016	36	47.2	1199	39.1	993	98.2	2493	387	348	668	710
						S14080036VXSS021	36	47.2	1199	39.1	993	118.0	2997	387	348	668	710
						S14080042VXSS014	42	53.2	1351	45.1	1146	96.3	2445	444	398	763	808
						S14080042VXSS024	42	53.2	1351	45.1	1146	134.2	3409	444	398	763	808
						S14080048VXSS017	48	59.2	1504	51.1	1298	114.1	2898	501	446	856	905
						S14080048VXSS024	48	59.2	1504	51.1	1298	140.2	3561	501	446	856	905
						S14080048VXSS031	48	59.2	1504	51.1	1298	167.4	4252	501	446	856	905
						S14080054VXSS011	54	65.2	1656	57.1	1450	96.4	2449	558	494	948	1000
						S14080054VXSS021	54	65.2	1656	57.1	1450	136.0	3454	558	494	948	1000
						S14080054VXSS027	54	65.2	1656	57.1	1450	157.9	4011	558	494	948	1000
						S14080062VXSS014	62	73.2	1859	65.1	1654	116.0	5481	634	555	1070	1125
						S14080062VXSS031	62	73.2	1859	65.1	1654	180.9	2953	634	555	1070	1125
						S14080062VXSS040	62	73.2	1859	65.1	1654	215.8	2953	634	555	1070	1125
						S14080066VXSS014	66	77.2	1961	69.1	1755	120.3	3054	672	585	1130	1186
						S14080066VXSS030	66	77.2	1961	69.1	1755	183.5	4660	672	585	1130	1186
						S14080066VXSS036	66	77.2	1961	69.1	1755	207.2	5262	672	585	1130	1186
						S14080072VXSS011	72	83.2	2113	75.1	1908	114.4	2906	729	630	1220	1278
						S14080072VXSS040	72	83.2	2113	75.1	1908	226.3	5748	729	630	1220	1278
						S14080072VXSS047	72	83.2	2113	75.1	1908	253.5	6439	729	630	1220	1278
						S14080078VXSS017	78	89.2	2266	81.1	2060	144.1	3660	787	673	1309	1368
						S14080078VXSS029	78	89.2	2266	81.1	2060	191.0	4851	787	673	1309	1368
						S14080078VXSS043	78	89.2	2266	81.1	2060	243.8	6193	787	673	1309	1368

CR = Corona Rings required for applications 230kV and above

25 kip Modular Insulators with Corona Ring



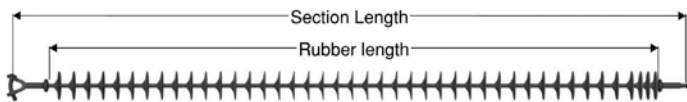
Insulator Strength Ratings		
S1	SML	RTL
	25 klb	12.5 klb
	111.2 kN	55.6 kN

S14080 - VX Series Modular Suspension with Corona Ring — Y-Clevis / 52-5 Ball

Line Voltage			Catalog No. Including Corona Ring	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
											60 Hz		CIFO	
161	230	345		inch	in	mm	in	mm	in	mm	Dry	Wet	Pos	Neg
			S14080066VASS022	66	77.2	1961	66.6	1692	151.9	3857	649	567	1092	1148
			S14080066VASS032	66	77.2	1961	66.6	1692	191.4	4860	649	567	1092	1148
			S14080072VASS020	72	83.2	2113	72.6	1844	150.0	3809	706	611	1182	1240
			S14080072VASS031	72	83.2	2113	72.6	1844	193.4	4912	706	611	1182	1240
			S14080078VASS029	78	89.2	2266	78.6	1996	191.5	4864	763	655	1272	1331
			S14080078VASS042	78	89.2	2266	78.6	1996	242.9	6168	763	655	1272	1331
			S14080084VASS028	84	95.2	2418	84.6	2149	193.6	4916	820	697	1360	1421
			S14080084VASS041	84	95.2	2418	84.6	2149	244.9	6220	820	697	1360	1421
			S14080090VASS026	90	101.2	2570	90.6	2301	191.7	4868	877	1610	1449	1510
			S14080090VASS039	90	101.2	2570	90.6	2301	243.0	6172	877	1610	1449	1510
			S14080096VASS025	96	107.2	2723	96.6	2454	193.7	4920	934	1712	1536	1599
			S14080096VASS038	96	107.2	2723	96.6	2454	245.1	6224	934	1712	1536	1599
			S14080102VBSS034	102	113.2	2875	105.2	2672	235.3	5975	1005	1858	1661	1726
			S14080102VBSS049	102	113.2	2875	105.2	2672	294.5	7480	1005	1858	1661	1726
			S14080108VBSS032	108	119.2	3028	111.2	2824	233.4	5927	1049	1959	1748	1814
			S14080108VBSS047	108	119.2	3028	111.2	2824	292.6	7432	1049	1959	1748	1814
			S14080114VBSS030	114	125.2	3180	117.2	2977	231.5	5879	1092	2059	1835	1901
			S14080114VBSS046	114	125.2	3180	117.2	2977	294.7	7484	1092	2059	1835	1901
			S14080120VBSS029	120	131.2	3332	123.2	3129	233.5	5931	1136	986	1921	1988
			S14080120VBSS044	120	131.2	3332	123.2	3129	292.8	7436	1136	986	1921	1988
			S14080126VBSS043	126	137.2	3485	129.2	3282	294.8	7488	1180	1019	2007	2075
			S14080126VBSS061	126	137.2	3485	129.2	3282	365.9	9294	1180	1019	2007	2075
			S14080132VBSS041	132	143.2	3637	135.2	3434	292.9	7440	1224	1050	2093	2162
			S14080132VBSS059	132	143.2	3637	135.2	3434	364.0	9246	1224	1050	2093	2162
			S14080138VBSS040	138	149.2	3790	141.2	3586	295.0	7492	1268	1080	2179	2248
			S14080138VBSS058	138	149.2	3790	141.2	3586	366.1	9298	1268	1080	2179	2248

Polymer Insulators

30 kip Molded Insulators



Features

- 8" Corona ring required at 230kV and above, but can be added to any voltage as required
- Available in all standard end fitting combinations (see below)
- For additional end fitting combinations, log into MacLean Real-Time™ Design
- Published FO values are without corona ring
- For Corona Ring Applications, see next page

S54080 - VX Series Modular Suspension -- Y-Clevis/52-5 Ball

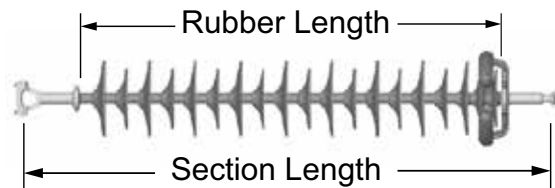
Line Voltage							Catalog No.	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
46	69	115	138	161	230	inch			in	mm	in	mm	in	mm	60 Hz		CIFO	
														Dry	Wet	Pos	Neg	
						S54080025VXSS011	25	36.6	930	28.6	726	66.4	1687	287	259	498	534	
						S54080031VXSS014	31	42.6	1082	34.6	879	84.1	2136	344	310	595	635	
						S54080037VXSS018	37	48.6	1234	40.6	1031	105.6	2682	401	361	691	735	
						S54080042VXSS021	42	53.6	1361	45.6	1158	122.2	3104	449	402	770	816	
						S54080048VXSS024	48	59.6	1514	51.6	1311	139.9	3553	506	450	863	913	
						S54080054VXSS027	54	65.6	1666	57.6	1463	157.5	4000	563	498	955	1008	
						S54080062VXSS031	62	73.6	1869	65.6	1666	181	4597	639	559	1077	1132	
						S54080066VXSS034	66	77.6	1971	69.6	1768	196.7	4996	677	589	1137	1194	
						S54080072VXSS037	72	83.6	2123	75.6	1920	214.3	5443	734	633	1227	1285	
						S54080078VXSS040	78	89.6	2276	81.6	2073	231.9	5890	791	676	1316	1376	

CR = Corona Rings required for applications 230kV and above

End Fitting Effect on Section Length

Optional End Fittings	Section Length Change
S57080 -- ANSI 52-5 Socket & Ball	- 1"
S59080 -- Oval Eye/52-5 Ball	+ 0.2"
S59090 -- Oval Eye/Oval Eye	+ 1.8"
S54090 -- Y-Clevis/Oval Eye	+ 1.7"

30 kip Modular Insulators with Corona Ring



Line Voltage		Line End	Tower End
230 kV	VA	8" Ring	None
345 kV	VB	12" Ring	None
400 kV	VG	12" Ring	8" Ring
500 kV	VV	17" Ring	8" Ring

Insulator Strength Ratings		
S5	SML	RTL
	30 klb	15 klb
	133 kN	66.5 kN

S54080 - VX Series Modular Suspension — Y-Clevis / 52-5 Ball

Line Voltage			Catalog No. Including Corona Ring	Rubber Length inch	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
161	230	345			in	mm	in	mm	in	mm	60 Hz		CIFO	
										Dry	Wet	Pos	Neg	
			S54080066VASS022	66	77.2	1961	66.6	1692	151.9	3857	649	567	1092	1148
			S54080066VASS032	66	77.2	1961	66.6	1692	191.4	4860	649	567	1092	1148
			S54080072VASS020	72	83.2	2113	72.6	1844	150.0	3809	706	611	1182	1240
			S54080072VASS031	72	83.2	2113	72.6	1844	193.4	4912	706	611	1182	1240
			S54080078VASS029	78	89.2	2266	78.6	1996	191.5	4864	763	655	1272	1331
			S54080078VASS042	78	89.2	2266	78.6	1996	242.9	6168	763	655	1272	1331
			S54080084VASS028	84	95.2	2418	84.6	2149	193.6	4916	820	697	1360	1421
			S54080084VASS041	84	95.2	2418	84.6	2149	244.9	6220	820	697	1360	1421
			S54080090VASS026	90	101.2	2570	90.6	2301	191.7	4868	877	745	1449	1510
			S54080090VASS039	90	101.2	2570	90.6	2301	243.0	6172	877	745	1449	1510
			S54080096VASS025	96	107.2	2723	96.6	2454	193.7	4920	934	790	1536	1599
			S54080096VASS038	96	107.2	2723	96.6	2454	245.1	6224	934	790	1536	1599
			S54080102VBSS034	102	113.2	2875	105.2	2672	235.3	5975	1005	835	1661	1726
			S54080102VBSS049	102	113.2	2875	105.2	2672	294.5	7480	1005	835	1661	1726
			S54080108VBSS032	108	119.2	3028	111.2	2824	233.4	5927	1049	880	1748	1814
			S54080108VBSS047	108	119.2	3028	111.2	2824	292.6	7432	1049	880	1748	1814
			S54080114VBSS030	114	125.2	3180	117.2	2977	231.5	5879	1092	923	1835	1901
			S54080114VBSS046	114	125.2	3180	117.2	2977	294.7	7484	1092	923	1835	1901
			S54080120VBSS029	120	131.2	3332	123.2	3129	233.5	5931	1136	986	1921	1988
			S54080120VBSS044	120	131.2	3332	123.2	3129	292.8	7436	1136	986	1921	1988
			S54080126VBSS043	126	137.2	3485	129.2	3282	294.8	7488	1180	1019	2007	2075
			S54080126VBSS061	126	137.2	3485	129.2	3282	365.9	9294	1180	1019	2007	2075
			S54080132VBSS041	132	143.2	3637	135.2	3434	292.9	7440	1224	1050	2093	2162
			S54080132VBSS059	132	143.2	3637	135.2	3434	364.0	9246	1224	1050	2093	2162
			S54080138VBSS040	138	149.2	3790	141.2	3586	295.0	7492	1268	1080	2179	2248
			S54080138VBSS058	138	149.2	3790	141.2	3586	366.1	9298	1268	1080	2179	2248



Insulator Strength Ratings		
S6	SML	RTL
	36 klb	18 klb
	160 kN	80 kN

S64080 - VX Series Continued

Line Voltage						Catalog No.	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
46	69	115	138	161	230			inch	in	mm	in	mm	in	mm	60 Hz		CIFO
															Dry	Wet	Pos
						S64082040VXSS015	40	53.3	1354	43.6	1107	96.8	2459	429	386	738	784
						S64082040VXSS024	40	53.3	1354	43.6	1107	131.8	3348	429	386	738	784
						S64082043VXSS015	43	56.3	1430	46.6	1184	99.8	2535	458	410	785	833
						S64082043VXSS026	43	56.3	1430	46.6	1184	142.5	3620	458	410	785	833
						S64082046VXSS015	46	59.3	1506	49.6	1260	102.8	2611	487	434	832	881
						S64082046VXSS025	46	59.3	1506	49.6	1260	141.6	3597	487	434	832	881
						S64082049VXSS015	49	62.3	1582	52.6	1336	105.8	2687	515	458	879	929
						S64082049VXSS026	49	62.3	1582	52.6	1336	148.5	3772	515	458	879	929
						S64082052VXSS016	52	65.3	1659	55.6	1412	112.7	2863	544	482	925	976
						S64082052VXSS026	52	65.3	1659	55.6	1412	151.5	3848	544	482	925	976
						S64082055VXSS015	55	68.3	1735	54.9	1394	111.8	2840	572	506	971	1023
						S64082055VXSS026	55	68.3	1735	54.9	1394	154.5	3924	572	506	971	1023
						S64082058VXSS017	58	71.3	1811	61.6	1565	122.6	3114	601	529	1016	1070
						S64082058VXSS027	58	71.3	1811	61.6	1565	161.4	4100	601	529	1016	1070
						S64082061VXSS016	61	74.3	1887	64.6	1641	121.7	3091	629	552	1062	1117
						S64082061VXSS026	61	74.3	1887	64.6	1641	160.5	4077	629	552	1062	1117
						S64082064VXSS017	64	77.3	1963	67.6	1717	128.6	3266	658	574	1107	1163
						S64082064VXSS028	64	77.3	1963	67.6	1717	171.3	4351	658	574	1107	1163
					CR	S64082067VXSS018	67	80.3	2040	70.6	1793	135.5	3442	687	597	1152	1209
					CR	S64082067VXSS030	67	80.3	2040	70.6	1793	182.0	4623	687	597	1152	1209
					CR	S64082070VXSS028	70	83.3	2116	73.6	1869	177.3	4503	715	619	1197	1255
					CR	S64082070VXSS041	70	83.3	2116	73.6	1869	227.7	5784	715	619	1197	1255
					CR	S64082073VXSS030	73	86.3	2192	76.6	1946	188.0	4775	744	641	1242	1300
					CR	S64082073VXSS043	73	86.3	2192	76.6	1946	238.5	6058	744	641	1242	1300

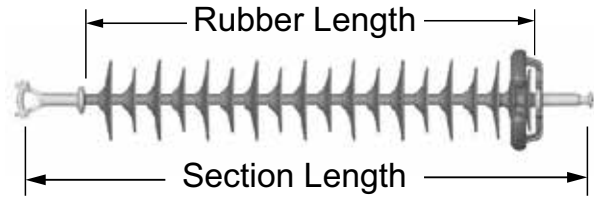
Polymer Suspension Insulators

36 kip Modular Insulators with Corona Ring



Features

- 8" Corona ring required at 230kV and above, but can be added to any voltage as required
- Available in all standard end fitting combinations (see below)
- For additional end fitting combinations, log into MacLean Real-Time™ Design



S64080 - VX Series Modular Insulators with Corona Ring — Y-Clevis / 52-5 Ball

Line Voltage				Catalog No. Including Corona Ring	Rubber Length		Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
					inch	in	mm	in	mm	in	mm	in	mm	60 Hz		CIFO
115	138	161	230									Dry	Wet	Pos	Neg	
				S64082028VASS009	28	41.3	1049	28.1	714	61.6	1565	282	254	490	525	
				S64082028VASS017	28	41.3	1049	28.1	714	92.6	2352	282	254	490	525	
				S64082031VASS015	31	44.3	1125	31.1	790	87.8	2230	310	280	539	576	
				S64082031VASS019	31	44.3	1125	31.1	790	103.4	2626	310	280	539	576	
				S64082034VASS015	34	47.3	1201	34.1	866	90.8	2306	339	306	587	627	
				S64082034VASS021	34	47.3	1201	34.1	866	114.1	2898	339	306	587	627	
				S64082037VASS014	37	50.3	1278	37.1	942	90.0	2286	368	331	635	677	
				S64082037VASS023	37	50.3	1278	37.1	942	124.9	3172	368	331	635	677	
				S64082040VASS015	40	53.3	1354	40.1	1018	96.8	2459	396	357	683	727	
				S64082040VASS024	40	53.3	1354	40.1	1018	131.8	3348	396	357	683	727	
				S64082043VASS015	43	56.3	1430	43.1	1095	99.8	2535	425	381	731	776	
				S64082043VASS026	43	56.3	1430	43.1	1095	142.5	3620	425	381	731	776	
				S64082046VASS015	46	59.3	1506	46.1	1171	102.8	2611	453	406	778	824	
				S64082046VASS025	46	59.3	1506	46.1	1171	141.6	3597	453	406	778	824	
				S64082049VASS015	49	62.3	1582	49.1	1247	105.8	2687	482	430	824	873	
				S64082049VASS026	49	62.3	1582	49.1	1247	148.5	3772	482	430	824	873	
				S64082052VASS016	52	65.3	1659	52.1	1323	112.7	2863	510	454	871	921	
				S64082052VASS026	52	65.3	1659	52.1	1323	151.5	3848	510	454	871	921	
				S64082055VASS015	55	68.3	1735	51.4	1305	111.8	2840	539	478	917	968	



Line Voltage	Line End	Tower End	
230 kV	VA	8" Ring	None
345 kV	VB	12" Ring	None
400 kV	VG	12" Ring	8" Ring
500 kV	VV	17" Ring	8" Ring

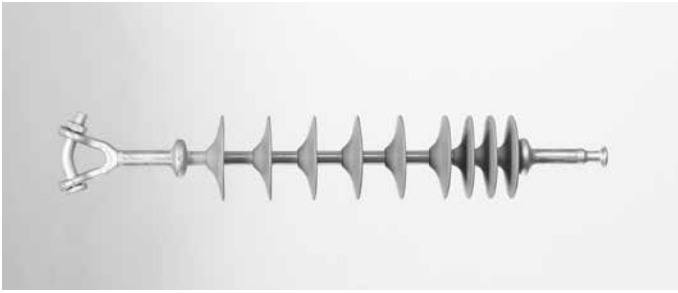
Insulator Strength Ratings			
S6	SML	RTL	
	36 klb	18 klb	
	160 kN	80 kN	

S64080 - VX Series Continued

Line Voltage				Catalog No. Including Corona Ring	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)				
115	138	161	230			inch	in	mm	in	mm	in	mm	60 Hz		CIFO	
													Dry	Wet	Pos	Neg
				S64082055VASS026	55	68.3	1735	51.4	1305	154.5	3924	539	478	917	968	
				S64082058VASS017	58	71.3	1811	58.1	1476	122.6	3114	568	502	963	1016	
				S64082058VASS027	58	71.3	1811	58.1	1476	161.4	4100	568	502	963	1016	
				S64082061VASS016	61	74.3	1887	61.1	1552	121.7	3091	596	525	1009	1062	
				S64082061VASS026	61	74.3	1887	61.1	1552	160.5	4077	596	525	1009	1062	
				S64082064VASS017	64	77.3	1963	64.1	1628	128.6	3266	625	548	1054	1109	
				S64082064VASS028	64	77.3	1963	64.1	1628	171.3	4351	625	548	1054	1109	
				S64082067VASS018	67	80.3	2040	67.1	1704	135.5	3442	653	571	1100	1155	
				S64082067VASS030	67	80.3	2040	67.1	1704	182.0	4623	653	571	1100	1155	
				S64082070VASS028	70	83.3	2116	70.1	1780	177.3	4503	682	593	1145	1201	
				S64082070VASS041	70	83.3	2116	70.1	1780	227.7	5784	682	593	1145	1201	
				S64082073VASS030	73	86.3	2192	73.1	1857	188.0	4775	710	615	1189	1247	
				S64082073VASS043	73	86.3	2192	73.1	1857	238.5	6058	710	615	1189	1247	
				S64082076VASS030	76	89.3	2268	76.1	1933	191.0	4851	739	637	1234	1293	
				S64082076VASS043	76	89.3	2268	76.1	1933	241.5	6134	739	637	1234	1293	
				S64082079VASS029	79	92.3	2344	79.1	2009	190.2	4831	768	659	1279	1338	
				S64082079VASS042	79	92.3	2344	79.1	2009	240.6	6111	768	659	1279	1338	
				S64082082VASS029	82	95.3	2421	82.1	2085	193.2	4907	796	680	1323	1383	
				S64082082VASS042	82	95.3	2421	82.1	2085	243.6	6187	796	680	1323	1383	
				S64082085VASS030	85	98.3	2497	85.1	2162	200.0	5080	825	701	1367	1428	
				S64082085VASS043	85	98.3	2497	85.1	2162	250.5	6363	825	701	1367	1428	
				S64082088VASS030	88	101.3	2573	88.1	2238	203.0	5156	853	722	1411	1473	
				S64082088VASS043	88	101.3	2573	88.1	2238	253.5	6439	853	722	1411	1473	
				S64082091VASS029	91	104.3	2649	91.1	2314	202.2	5136	882	752	1455	1518	
				S64082091VASS042	91	104.3	2649	91.1	2314	252.6	6416	882	752	1455	1518	
				S64082094VASS028	94	107.3	2725	94.1	2390	201.3	5113	910	775	1499	1562	
				S64082094VASS041	94	107.3	2725	94.1	2390	251.7	6393	910	775	1499	1562	

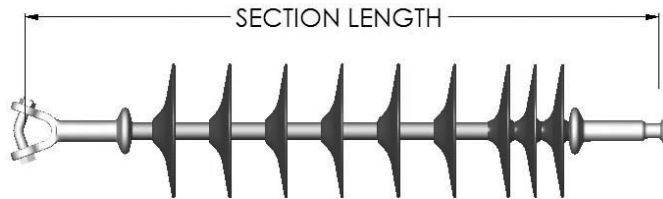
Polymer Suspension Insulators

50 kip Modular Insulators



Features

- 8" Corona ring required at 230kV and above, but can be added to any voltage as required
- Available in all standard end fitting combinations (see below)
- For additional end fitting combinations, log into MacLean Real-Time™ Design
- Published FO values are without corona ring
- For Corona Ring Applications, see next spread



S24080 - VX Series Modular Insulators — Y-Clevis / 52-5 Ball

Line Voltage	Catalog No.	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)				
			inch	in	mm	in	mm	in	mm	60 Hz		CIFO	
46 69 115 138 161 230										Dry	Wet	Pos	Neg
	S24080013VXSS005	13	27.5	698	16.6	422	31.1	790	172	153	298	323	
	S24080013VXSS007	13	27.5	698	16.6	422	38.8	986	172	153	298	323	
	S24080016VXSS005	16	30.5	775	19.6	498	34.1	866	201	180	349	377	
	S24080016VXSS009	16	30.5	775	19.6	498	49.6	1260	201	180	349	377	
	S24080019VXSS005	19	33.5	851	22.6	574	37.1	942	229	206	399	430	
	S24080019VXSS011	19	33.5	851	22.6	574	60.4	1534	229	206	399	430	
	S24080022VXSS007	22	36.5	927	25.6	650	47.8	1214	258	233	449	482	
	S24080022VXSS013	22	36.5	927	25.6	650	71.1	1806	258	233	449	482	
	S24080025VXSS006	25	39.5	1003	28.6	726	47.0	1194	287	259	498	534	
	S24080025VXSS014	25	39.5	1003	28.6	726	78.0	1981	287	259	498	534	
	S24080028VXSS009	28	42.5	1080	31.6	803	61.6	1565	315	285	547	585	
	S24080028VXSS017	28	42.5	1080	31.6	803	92.6	2352	315	285	547	585	
	S24080031VXSS015	31	45.5	1156	34.6	879	87.9	2233	344	310	595	635	
	S24080031VXSS019	31	45.5	1156	34.6	879	103.4	2626	344	310	595	635	
	S24080034VXSS015	34	48.5	1232	37.6	955	90.9	2309	372	336	643	685	
	S24080034VXSS021	34	48.5	1232	37.6	955	114.2	2901	372	336	643	685	
	S24080037VXSS014	37	51.5	1308	40.6	1031	90.0	2286	401	361	691	735	
	S24080037VXSS023	37	51.5	1308	40.6	1031	124.9	3172	401	361	691	735	
	S24080040VXSS015	40	54.5	1384	43.6	1107	96.9	2461	429	386	738	784	



Insulator Strength Ratings		
S2	SML	RTL
	50 klb	25 klb
	210 kN	105 kN

S24080 - VX Series Continued

Line Voltage						Catalog No.	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)				
46	69	115	138	161	230			inch	in	mm	in	mm	in	mm	60 Hz		CIFO	
															Dry	Wet	Pos	Neg
						S24080040VXSS024	40	54.5	1384	43.6	1107	131.8	3348	429	386	738	784	
						S24080043VXSS015	43	57.5	1460	46.6	1184	99.9	2537	458	410	785	833	
						S24080043VXSS026	43	57.5	1460	46.6	1184	142.6	3622	458	410	785	833	
						S24080046VXSS015	46	60.5	1537	49.6	1260	102.9	2614	487	434	832	881	
						S24080046VXSS025	46	60.5	1537	49.6	1260	141.7	3599	487	434	832	881	
						S24080049VXSS015	49	63.5	1613	52.6	1336	105.9	2690	515	458	879	929	
						S24080049VXSS026	49	63.5	1613	52.6	1336	148.6	3774	515	458	879	929	
						S24080052VXSS016	52	66.5	1689	55.6	1412	112.8	2865	544	482	925	976	
						S24080052VXSS026	52	66.5	1689	55.6	1412	151.6	3851	544	482	925	976	
						S24080055VXSS015	55	69.5	1765	58.6	1488	111.9	2842	572	506	971	1023	
						S24080055VXSS025	55	69.5	1765	58.6	1488	150.7	3828	572	506	971	1023	
						S24080058VXSS017	58	72.5	1842	61.6	1565	122.6	3114	601	529	1016	1070	
						S24080058VXSS027	58	72.5	1842	61.6	1565	161.4	4100	601	529	1016	1070	
						S24080061VXSS016	61	75.5	1918	64.6	1641	121.8	3094	629	552	1062	1117	
						S24080061VXSS026	61	75.5	1918	64.6	1641	160.6	4079	629	552	1062	1117	
						S24080064VXSS017	64	78.5	1994	67.6	1717	128.6	3266	658	574	1107	1163	
						S24080064VXSS028	64	78.5	1994	67.6	1717	171.3	4351	658	574	1107	1163	
					CR	S24080067VXSS018	67	81.5	2070	70.6	1793	135.5	3442	687	597	1152	1209	
					CR	S24080067VXSS030	67	81.5	2070	70.6	1793	182.1	4625	687	597	1152	1209	
					CR	S24080070VXSS028	70	84.5	2146	73.6	1869	177.3	4503	715	619	1197	1255	
					CR	S24080070VXSS041	70	84.5	2146	73.6	1869	227.8	5786	715	619	1197	1255	
					CR	S24080073VXSS030	73	87.5	2222	76.6	1946	188.1	4778	744	641	1242	1300	
					CR	S24080073VXSS043	73	87.5	2222	76.6	1946	238.5	6058	744	641	1242	1300	

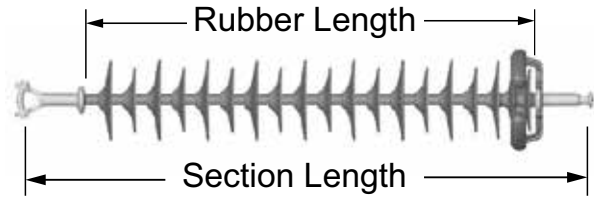
Polymer Suspension Insulators

50 kip Modular Insulators with Corona Ring



Features

- 8" Corona ring required at 230kV and above, but can be added to any voltage as required
- Available in all standard end fitting combinations (see below)
- For additional end fitting combinations, log into MacLean Real-Time™ Design



S24080 - VX Series Modular Insulators with Corona Ring — Y-Clevis / 52-5 Ball

Line Voltage				Catalog No. Including Corona Ring	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
												60 Hz		CIFO	
115	138	161	230		inch	in	mm	in	mm	in	mm	Dry	Wet	Pos	Neg
				S24080028VASS009	28	42.5	1080	28.1	714	61.6	1565	282	254	490	525
				S24080028VASS017	28	42.5	1080	28.1	714	92.6	2352	282	254	490	525
				S24080031VASS015	31	45.5	1156	31.1	790	87.9	2233	310	280	539	576
				S24080031VASS019	31	45.5	1156	31.1	790	103.4	2626	310	280	539	576
				S24080034VASS015	34	48.5	1232	34.1	866	90.9	2309	339	306	587	627
				S24080034VASS021	34	48.5	1232	34.1	866	114.2	2901	339	306	587	627
				S24080037VASS014	37	51.5	1308	37.1	942	90.0	2286	368	331	635	677
				S24080037VASS023	37	51.5	1308	37.1	942	124.9	3172	368	331	635	677
				S24080040VASS015	40	54.5	1384	40.1	1018	96.9	2461	396	357	683	727
				S24080040VASS024	40	54.5	1384	40.1	1018	131.8	3348	396	357	683	727
				S24080043VASS015	43	57.5	1460	43.1	1095	99.9	2537	425	381	731	776
				S24080043VASS026	43	57.5	1460	43.1	1095	142.6	3622	425	381	731	776
				S24080046VASS015	46	60.5	1537	46.1	1171	102.9	2614	453	406	778	824
				S24080046VASS025	46	60.5	1537	46.1	1171	141.7	3599	453	406	778	824
				S24080049VASS015	49	63.5	1613	49.1	1247	105.9	2690	482	430	824	873
				S24080049VASS026	49	63.5	1613	49.1	1247	148.6	3774	482	430	824	873
				S24080052VASS016	52	66.5	1689	52.1	1323	112.8	2865	510	454	871	921
				S24080052VASS026	52	66.5	1689	52.1	1323	151.6	3851	510	454	871	921
				S24080055VASS015	55	69.5	1765	55.1	1399	111.9	2842	539	478	917	968



Insulator Strength Ratings			
S2	SML	RTL	
	50 klb	25 klb	
	210 kN	105 kN	

S24080 - VX Series Continued

Line Voltage				Catalog No. Including Corona Ring	Rubber Length	Section Length		Dry Arc		Leakage		Electrical Flashover (kV)			
												60 Hz		CIFO	
115	138	161	230		inch	in	mm	in	mm	in	mm	Dry	Wet	Pos	Neg
				S24080055VASS025	55	69.5	1765	55.1	1399	150.7	3828	539	478	917	968
				S24080058VASS017	58	72.5	1842	58.1	1476	122.6	3114	568	502	963	1016
				S24080058VASS027	58	72.5	1842	58.1	1476	161.4	4100	568	502	963	1016
				S24080061VASS016	61	75.5	1918	61.1	1552	121.8	3094	596	525	1009	1062
				S24080061VASS026	61	75.5	1918	61.1	1552	160.6	4079	596	525	1009	1062
				S24080064VASS017	64	78.5	1994	64.1	1628	128.6	3266	625	548	1054	1109
				S24080064VASS028	64	78.5	1994	64.1	1628	171.3	4351	625	548	1054	1109
				S24080067VASS018	67	81.5	2070	67.1	1704	135.5	3442	653	571	1100	1155
				S24080067VASS030	67	81.5	2070	67.1	1704	182.1	4625	653	571	1100	1155
				S24080070VASS028	70	84.5	2146	70.1	1780	177.3	4503	682	593	1145	1201
				S24080070VASS041	70	84.5	2146	70.1	1780	227.8	5786	682	593	1145	1201
				S24080072VASS030	72	86.5	2197	72.1	1831	187.1	4752	701	608	1175	1232
				S24080072VASS043	72	86.5	2197	72.1	1831	237.5	6032	701	608	1175	1232
				S24080075VASS030	75	89.5	2273	75.1	1908	190.1	4829	729	630	1219	1278
				S24080075VASS043	75	89.5	2273	75.1	1908	240.5	6109	729	630	1219	1278
				S24080078VASS030	78	92.5	2350	78.1	1984	193.1	4905	758	651	1264	1323
				S24080078VASS043	78	92.5	2350	78.1	1984	243.5	6185	758	651	1264	1323
				S24080081VASS029	81	95.5	2426	81.1	2060	192.2	4882	787	673	1308	1368
				S24080081VASS042	81	95.5	2426	81.1	2060	242.6	6162	787	673	1308	1368
				S24080084VASS031	84	98.5	2502	84.1	2136	203.0	5156	815	694	1353	1413
				S24080084VASS044	84	98.5	2502	84.1	2136	253.4	6436	815	694	1353	1413
				S24080087VASS030	87	101.5	2578	87.1	2212	202.1	5133	844	715	1397	1458
				S24080087VASS043	87	101.5	2578	87.1	2212	252.5	6414	844	715	1397	1458
				S24080090VASS029	90	104.5	2654	90.1	2289	201.2	5110	872	745	1441	1503
				S24080090VASS042	90	104.5	2654	90.1	2289	251.6	6391	872	745	1441	1503
				S24080093VASS028	93	107.5	2731	93.1	2365	200.3	5088	901	768	1485	1548
				S24080093VASS041	43	107.5	2731	93.1	2365	250.8	6370	901	768	1485	1548

Polymer Insulators

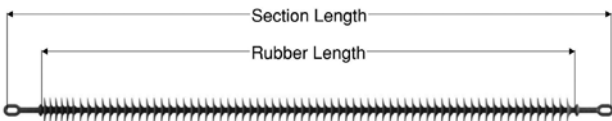
80 kip Modular Insulators Without Corona Ring



Features

- 8" Corona ring required at 230kV and above, but can be added to any voltage as required
- Available in all standard end fitting combinations (see below)
- For additional end fitting combinations, log into MacLean Real-Time™ Design
- Published FO values are without corona ring
- For Corona Ring Applications, see next spread

S49090 - VX Series Modular Suspension Without Corona Ring -- Eye/Eye



Line Voltage						Catalog No. Including Corona Ring	Rubber Length inch	Section Length	
115	138	161	230	345	500			in	mm
						S49090045VXSS018	45	66.1	1679
						S49090045VXSS026			
						S49090051VXSS017	51	72.1	1831
						S49090051VXSS024			
						S49090057VXSS020	57	78.1	1984
						S49090057VXSS029			
						S49090063VXSS019	63	84.1	2136
						S49090063VXSS027			



Insulator Strength Ratings		
S4	SML	RTL
	80 klb	40 klb
	356 kN	178 kN

S49090 - VX Series Modular Suspension Without Corona Ring -- Eye/Eye

Line Voltage						Catalog No. Including Corona Ring	Dry Arc		Leakage		Electrical Flashover (kV)			
115	138	161	230	345	500		in	mm	in	mm	60 Hz		CIFO	
											Dry	Wet	Pos	Neg
						S49090045VXSS018	48.8	1240	113.6	2885	479	428	820	868
						S49090051VXSS017	54.8	1392	115.7	2939	536	476	913	964
						S49090057VXSS020	60.8	1544	133.3	3386	593	523	1004	1058
						S49090063VXSS019	66.8	1697	135.5	3442	650	568	1095	1151

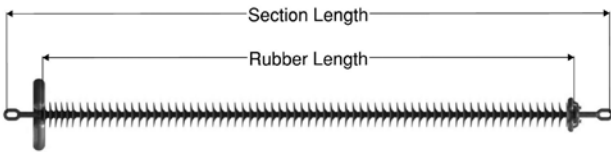
Other design configurations are available. Contact MacLean Power Systems for a custom design.

Polymer Insulators

80 kip Modular Insulators With Corona Ring



S49090 - VA/B Series Modular Suspension With Corona Ring -- Eye/Eye



Insulator Strength Ratings		
S4	SML	RTL
	80 klb	40 klb
	356 kN	178 kN

Line Voltage						Catalog No. Including Corona Ring	Rubber Length		Section Length	
115	138	161	230	345	500		inch	in	mm	
						S49090045VASS018	45	66.1	1679	
						S49090045VASS026				
						S49090051VASS017	51	72.1	1831	
						S49090051VASS024				
						S49090057VASS020	57	78.1	1984	
						S49090057VASS029				
						S49090063VASS019	63	84.1	2136	
						S49090063VASS027				
						S49090072VASS031	72	93.1	2365	
						S49090072VASS043				
						S49090078VASS030	78	99.1	2517	
						S49090078VASS042				
						S49090084VASS028	84	105.1	2670	
						S49090084VASS040				
						S49090100VBAL043	100	121.1	3076	
						S49090100VBAL059				
						S49090106VBAL041	106	127.1	3228	
						S49090106VBAL057				
						S49090112VBAL039	112	133.1	3381	
						S49090112VBAL055)				
						S49090118VBAL039	118	139.1	3533	
						S49090118VBAL055				
						S49090124VBAL037	124	145.1	3686	
						S49090124VBAL053				
						S49090130VBAL035	130	151.1	3838	
						S49090130VBAL051				
						S49090148VV6S070	148	169.1	4295	
						S49090148VV6S096				
						S49090154VV6S068	155	176.0	4470	
						S49090154VV6S094				
						S49090160VV6S067	160	181.1	4600	
						S49090160VV6S093				
						S49090166VV6S065	166	187.1	4752	
						S49090166VV6S091				



Line Voltage						Catalog No. Including Corona Ring	Dry Arc		Leakage 1		Leakage 2		Electrical Flashover (kV)			
													60 Hz		CIFO	
115	138	161	230	345	500		in	mm	in	mm	in	mm	Dry	Wet	Pos	Neg
						S49090045VASS018	45.3	1151	113.6	2885	446	399	765	812	765	812
						S49090045VASS026			144.6	3673						
						S49090051VASS017	51.3	1303	115.7	2939	503	448	859	908	859	908
						S49090051VASS024			142.9	3630						
						S49090057VASS020	57.3	1455	133.3	3386	560	495	951	1003	951	1003
						S49090057VASS029			168.3	4275						
						S49090063VASS019	63.3	1608	135.5	3442	617	542	1042	1097	1042	1097
						S49090063VASS027			166.5	4229						
						S49090072VASS031	72.3	1836	191	4851	703	609	1177	1235	1177	1235
						S49090072VASS043			237.6	6035						
						S49090078VASS030	78.3	1989	193.1	4905	760	653	1267	1326	1267	1326
						S49090078VASS042			239.7	6088						
						S49090084VASS028	84.3	2141	191.4	4862	817	695	1356	1416	1356	1416
						S49090084VASS040			237.9	6043						
						S49090100VBAL043	100.8	2560	292.1	7419	973	826	1597	1661	1597	1661
						S49090100VBAL059			364.3	9253						
						S49090106VBAL041	106.8	2713	289.1	7343	1016	870	1684	1749	1684	1749
						S49090106VBAL057			361.3	9177						
						S49090112VBAL039	112.8	2865	286.1	7267	1060	914	1771	1837	1771	1837
						S49090112VBAL055)			358.2	9098						
						S49090118VBAL039	118.8	3018	292.1	7419	1104	957	1857	1925	1857	1925
						S49090118VBAL055			364.2	9251						
						S49090124VBAL037	124.8	3170	189.1	7343	1148	995	1944	2012	1944	2012
						S49090124VBAL053			361.2	9174						
						S49090130VBAL035	130.8	3322	286	7264	1192	1027	2030	2098	2030	2098
						S49090130VBAL051			358.2	9098						
						S49090148VV6S070	145	3683	417.1	10594	1296	1098	2233	2303	2233	2303
						S49090148VV6S096			518	13157						
						S49090154VV6S068	151.0	3835	415.3	10549	1340	1125	2318	2319	2318	2319
						S49090154VV6S094			516	13106						
						S49090160VV6S067	157	3988	417.4	10602	1384	1151	2403	2474	2403	2474
						S49090160VV6S093			518	13157						
						S49090166VV6S065	163	4140	415.7	10559	1428	1176	2488	2560	2488	2560
						S49090166VV6S091			516.6	13122						

Other design configurations are available. Contact MacLean Power Systems for a custom design.

Dimensions in inches unless otherwise noted

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Technical information subject to change without notice

Polymer Suspension Insulators

25 kip Molded Insulators



Corona Ring

Features

- 46kV - 138kV
- Molded Silicone Rubber
- Molded Stacked Shed
- Corrosion Resistant E-Glass
- Y-Clevis & ANSI 52-5 Ball
- Corona Ring available as req'd (change MX to MA for ring)

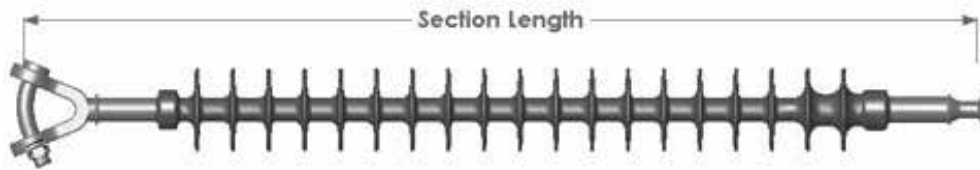


Molded Stacked Shed

Catalog Number Definition

S1	4	8	035	M	X	01
Insulator Type	End Fitting Type	Section Length	Molded Housing	Corona Ring	Design Type	
S1 = 25 kSML ANSI 52-5 S1 = 120kN SML IEC - 16	4 = Y-Clevis 7 = Socket 8 = Ball	Fixed	Fixed Leakage Distance	X = None A = Corona Ring	01 = ANSI Standard 11 = IEC Standard Leakage	

Y-Clevis ANSI 52-5 Ball



Insulator Strength Ratings		
S1	SML	RTL
	25 klb	12.5 klb
	111.2 kN	55.6 kN

Y-Clevis ANSI 52-5 Ball									
Catalog Number	Line Voltage (kV)	Section Length (in)	Dry Arc (in)	Leakage (in)	Dry Electrical Flashover (kV) 60 Hz	Wet Electrical Flashover (kV) 60 Hz	Pos (kV) CIFO	Neg (kV) CIFO	Crate QTY
S148035MX01	46 & 69	35.4	27.2	60.8	273	247	475	510	122
S148041MX01	69 & 115	41.7	33.5	76.8	333	301	578	617	122
S148046MX01	115	46.4	38.2	89.0	378	341	653	696	108
S148054MX01	115 & 138	54.3	46.1	109.2	453	406	778	825	108
S148060MX01	138	60.6	52.4	125.2	513	457	876	926	95
S148065MX01	138 & 161	65.3	57.1	137.4	558	494	948	1000	95
S148071MX01	161	71.7	63.4	154.7	681	543	1044	1099	95

Y-Clevis ANSI 52-5 Ball with Corona Ring



Y-Clevis ANSI 52-5 Ball with Corona Ring									
Catalog No. Including Corona Ring	Line Voltage (kV)	Section Length (in)	Dry Arc (in)	Leakage (in)	Dry Electrical Flashover (kV) 60 Hz	Wet Electrical Flashover (kV) 60 Hz	Pos (kV) CIFO	Neg (kV) CIFO	Crate QTY
S148035MA01	46 & 69	35.4	25.8	60.8	260	234	452	485	122
S148041MA01	69 & 115	41.7	32.1	76.8	320	289	555	593	122
S148046MA01	115	46.4	36.8	89.0	365	329	631	672	108
S148054MA01	115 & 138	54.3	44.7	109.2	440	394	755	802	108
S148060MA01	138	60.6	51.0	125.2	500	445	854	903	95
S148065MA01	138 & 161	65.3	55.7	137.4	545	483	926	978	95
S148071MA01	161	71.7	63.4	154.7	628	543	1044	1099	95

Bell Equivalent Suspension Insulators



Insulator Strength Ratings		
	SML	RTL
S1	25 klb	12.5 klb
	112 kN	56 kN

BE Series 35 kV - 69 kV

MacLean Power Systems' polymer mold-on bell equivalent insulator is targeted at maintenance applications where insulators need to be the same length. Traditionally with insulators 69kV and under, to achieve the same electrical and strength ratings of a porcelain insulator, the polymer insulator needs to be longer, which isn't possible on existing lines.

The strength of the polymer insulator is achieved by crimping metal end fittings to the fiberglass core. These end fittings are approximately the length of one porcelain or glass disk causing that much shorter of a dry arcing distance, which is necessary for the electrical ratings of the insulator. MPS designed the "Bell Equivalent" to overcome this length obstacle by molding the silicone housing over the end fittings, leaving just the socket and ball exposed for the connection to the conductor hardware and tower. By molding over the metal end fittings, the polymer insulator now has the same electrical properties and length as its porcelain counterpart.

Some of the benefits of using MacLean Power Systems' Bell Equivalent insulators over porcelain or glass insulators include:

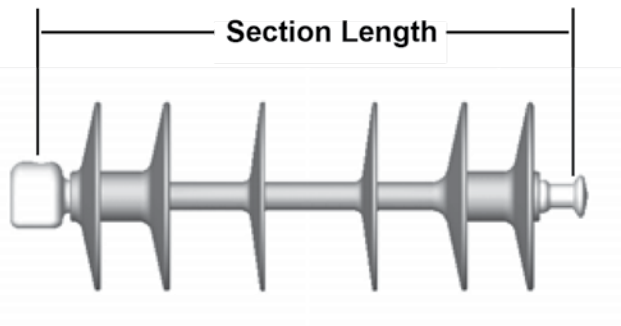
- Installation right out of the box – eliminates the assembly of the individual bells of a porcelain string
- Silicone housing has 20% more leakage distance – superior performance in contaminated environment
- Corrosion resistant E-glass core – eliminates concern of brittle fracture failure
- Higher mechanical strength – 25k SML v. 15k SML

Features

- 4, 5, & 6 Bell equivalents
- High strength 25k SML
- Silicone housing
- 20% higher leakage than porcelain
- Corrosion Resistant E-Glass
- ANSI 52-5 socket & ball end fittings
- 82% lighter weight compared to porcelain

Benefits

- Direct length replacement for bells
- 15k SML for bells
- Hydrophobicity / encapsulation
- Superior performance for contamination
- Eliminates brittle fracture concerns
- Fits standard socket / ball hardware
- Lower installation labor



Catalog Number	# Bells	Section Length		Leakage Distance		Dry Arcing Distance		Dry kV	Wet kV	CIFO+ kV	CIFO- kV	Weight lbs
		in	mm	in	mm	in	mm					
S178023BE04	4	23.0	584	55.1	1400	24.0	610	255	190	420	435	5.6
S178029BE05	5	28.7	730	69.4	1763	29.8	756	315	245	500	510	6.3
S178035BE06	6	34.5	876	84.0	2134	35.4	900	375	305	580	310	7.3

Notes:

- 1) BE Series = ideal for maintenance
- 2) Standard Package Quantity = 6 pcs [skid quantity available]
- 3) To order Bell Equivalent Insulators, contact you local MPS sales representative.

Conductor X-Reference



Conductor Index

Aluminum Cable, Steel Reinforced (ACSR)

Code Word	Cross Section Alum Cir Mills or AWG	Stranding Number and Dia of Strands in inches		Diameter in inches		Ultimate Strength in lbs	Weight per 1000 ft in lbs
		Alum	Steel	Complete Cable	Over Armor Rods		
Turkey	6			0.198	0.440	1170	36.1
Swan	4	6	1 x 0.0834	0.250	0.542	1830	57.4
Swanate	4	7	1 x 0.1029	0.257	0.549	2288	67.1
Sparrow	2	6	1 x 0.1052	0.316	0.608	2790	91.3
Sparate	2	7	1 x 0.1299	0.325	0.617	3525	106.7
Robin	1	6	1 x 0.1327	0.355	0.647	3480	115.2
Raven	1/0	6 x 0.1327	1 x 0.1327	0.398	0.732	4280	145.2
Quail	2/0	6 x 0.1490	1 x 0.1490	0.447	0.781	5345	183.1
Pigeon	3/0	6 x 0.1672	1 x 0.1672	0.502	0.836	6675	230.9
Penguin	4/0	6 x 0.1878	1 x 0.1878	0.563	0.927	8420	291.1
Waxwing	266,800	18 x 0.1217	1 x 0.1217	0.609	0.973	7100	289.7
Owl	266,800	6 x 0.2109	7 x 0.0703	0.633	0.997	9645	343.3
Partridge	266,800	26 x 0.1013	7 x 0.0788	0.642	1.006	11,250	367.3
Ostrich	300,000	26 x 0.1074	7 x 0.0835	0.680	1.088	12,650	412.9
Merlin	336,400	18 x 0.1367	1 x 0.1367	0.684	1.092	8950	366.0
Linnet	336,400	26 x 0.1138	7 x 0.0885	0.721	1.129	14,050	463.0
Oriole	336,400	30 x 0.1059	7 x 0.1059	0.741	1.149	17,040	527.1
Chickadee	397,500	18 x 0.1486	1 x 0.1486	0.743	1.151	10,400	432.0
Brant	397,500	24 x 0.1287	7 x 0.0858	0.772	1.272	14,690	512.1
Ibis	397,500	26 x 0.1236	7 x 0.0961	0.783	1.283	16,190	547.2
Lark	397,500	26 x 0.1151	7 x 0.1151	0.806	1.306	19,980	622.8
Pelican	477,000	18 x 0.1628	1 x 0.1628	0.814	1.314	12,300	518.0
Flicker	477,000	24 x 0.1410	7 x 0.0940	0.846	1.346	17,200	514.0
Hawk	477,000	26 x 0.1355	7 x 0.1054	0.858	1.358	19,430	656.0
Hen	477,000	30 x 0.1261	7 x 0.1261	0.883	1.383	23,300	747.3
Osprey	556,500	18 x 0.1758	1 x 0.1758	0.879	1.379	13,850	604.0
Parakeet	556,500	24 x 0.1523	7 x 0.1015	0.914	1.414	19,850	717.0
Dove	556,500	26 x 0.1463	7 x 0.1138	0.927	1.427	22,400	766.0
Eagle	556,500	30 x 0.1362	7 x 0.1362	0.953	1.453	27,200	872.0
Peacock	605,000	24 x 0.1588	7 x 0.1059	0.953	1.453	21,500	780.0
Squab	605,000	26 x 0.1525	7 x 0.1186	0.966	1.466	24,100	833.0
Teal	605,000	30 x 0.1420	19 x 0.0852	0.994	1.614	30,000	939.0
Swift	636,000	36 x 0.1329	1 x 0.1329	0.930	1.430	13,450	644.0
Kingbird	636,000	18 x 0.1880	1 x 0.1880	0.940	1.440	15,830	691.0
Rook	636,000	24 x 0.1628	7 x 0.1085	0.977	1.597	22,600	819.0
Grosbeak	636,000	26 x 0.1564	7 x 0.1216	0.990	1.610	25,000	875.0
Egret	636,000	30 x 0.1456	19 x 0.0874	1.019	1.639	31,500	988.0
Flamingo	666,600	24 x 0.1667	7 x 0.1111	1.000	1.620	23,700	859.0
Stilt	715,500	24 x 0.1727	7 x 0.1151	1.036	1.656	25,500	921.0

Dimensions in inches unless otherwise noted

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Aluminum Cable, Steel Reinforced (ACSR) continued

Starling	715,500	26 x 0.1659	7 x 0.1290	1.051	1.671	28,100	985.0
Redwing	715,500	30 x 0.1544	19 x 0.0926	1.081	1.701	34,600	1111.0
Coot	795,000	36 x 0.1486	1 x 0.1486	1.040	1.660	16,540	805.0
Tern	795,000	45 x 0.1329	7 x 0.0886	1.063	1.683	22,900	896.0
Cuckoo	795,000	24 x 0.1820	7 x 0.1214	1.092	1.713	27,900	1024.0
Condor	795,000	54 x 0.1214	7 x 0.1214	1.093	1.713	28,500	1024.0
Drake	795,000	26 x 0.1749	7 x 0.1360	1.108	1.728	31,200	1094.0
Mallard	795,000	30 x 0.1628	19 x 0.0977	1.140	1.760	38,400	1235.0
Ruddy	900,000	45 x 0.1414	7 x 0.0943	1.131	1.740	25,400	1015.0
Canary	900,000	54 x 0.1291	7 x 0.1291	1.162	1.782	32,300	1159.0
Catbird	954,000	36 x 0.1628	1 x 0.1628	1.140	1.760	19,520	966.0
Rail	954,000	45 x 0.1456	7 x 0.0971	1.165	1.785	26,900	1075.0
Cardinal	954,000	54 x 0.1329	7 x 0.1329	1.196	1.816	34,200	1229
Tanager	1,033,500	36 x 0.1694	1 x 0.1694	1.186	1.850	21,100	1046
Ortlan	1,033,500	45 x 0.1516	7 x 0.1011	1.213	1.943	28,900	1165
Curfew	1,033,500	54 x 0.1384	7 x 0.1384	1.246	1.976	37,100	1331
Bluejay	1,113,000	45 x 0.1573	7 x 9.1049	1.259	1.989	30,900	1255
Finch	1,113,000	19 x 0.0862	19 x 0.0862	1.293	2.023	40,200	1431
Bunting	1,192,500	45 x 0.1628	7 x 0.1085	1.302	2.032	33,200	1344
Grackle	1,192,500	19 x 0.0892	19 x 0.0892	1.333	2.068	43,100	1533
Bittern	1,272,000	45 x 0.1681	7 x 0.1121	1,345	2.075	35,400	1434
Pheasant	1,272,000	54 x 0.1535	19 x 0.0921	1.382	2.112	44,800	1635.0
Dipper	1,341,500	45 x 0.1733	7 x 0.1151	1.385	2.116	37,600	1523.0
Martin	1,351,500	54 x 0.1582	19 x 0.0949	1.424	2.296	47,600	1737.0
Bobolink	1,431,000	45 x 0.1783	7 x 0.1189	1.427	2.299	39,800	1613.0
Plover	1,431,000	54 x 0.1628	19 x 0.0977	1.465	2.337	50,400	1840.0
Nuthatch	1,510,500	45 x 0.1832	7 x 0.1211	1.466	2.338	41,600	1702.0
Parrot	1,510,500	54 x 0.1675	19 x 0.1004	1.506	2.378	53,200	1942.0
Lapwing	1,590,000	45 x 0.1878	7 x 0.1252	1.502	2.374	43,800	1792.0
Falcon	1,590,000	54 x 0.1716	19 x 0.1030	1.545	2.417	56,000	2044.0
Chukar	1,780,000	84 x 0.1456	19 x 0.0874	1.602	2.474	53,600	2074.0
Bluebird	2,156,000	84 x 0.1602	19 x 0.0961	1.762	2.634	63,400	2512.0
Kiwi	2,167,000	72 x 0.1735	7 x 0.1157	1.737	2.609	53,000	2304.0
Grouse	80,000	8 x 0.1000	1 x 0.1670	0.367	0.659	5206	149.0
Petrel	101,800	12 x 0.0921	7 x 0.0921	0.461	0.795	9860	254.1
Minorca	110,800	12 x 0.0961	7 x 0.0961	0.481	0.815	10,730	276.6
Leghorn	134,600	12 x 0.1059	7 x 0.1059	0.530	0.864	12,920	336.0
Guinea	159,000	12 x 0.1151	7 x 0.1151	0.576	0.940	15,200	396.8
Dotterel	176,900	12 x 0.1214	7 x 0.1214	0.607	0.971	16,400	441.5
Dorking	190,800	12 x 0.1261	7 x 0.1261	0.631	0.995	17,730	476.3
Cochin	211,300	12 x 0.1327	7 x 0.1327	0.663	1.027	19,640	527.5
Brahma	203,200	16 x 0.1127	19 x 0.0977	0.714	1.122	27,500	676.7

Dimensions in inches unless otherwise noted
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Conductor Index

AAAC

Code Word	Area		Stranding No. x Dia. (in)	Ultimate Strength (lbs)	Weight per 1000 ft. (lbs)
	CM	Approx. EC Equivalent AWG or CM			
Akron	30,580	6	7 x 0.0661	1,095	28.7
Alton	48,690	4	7 x 0.0834	1,744	45.7
Ames	77,470	2	7 x 0.1052	2,775	72.7
Azusa	123,300	1/0	7 x 0.1327	4,415	115.7
Anaheim	155,400	2/0	7 x 0.1490	5,334	145.9
Amherst	195,700	3/0	7 x 0.1672	6,717	183.7
Alliance	246,900	4/0	7 x 0.1878	8,473	231.8
Butte	312,800	266,800	19 x 0.1283	10,610	293.6
Canton	394,500	336,400	19 x 0.1441	12,830	370.3
Cairo	465,400	397,500	19 x 0.1565	15,130	436.9
Darien	559,500	477,00	19 x 0.1716	18,190	525.2
Elgin	652,400	556,500	19 x 0.1853	21,210	612.4
Flint	740,800	636,00	37 x 0.1415	24,090	695.4
Greeley	927,200	795,000	37 x 0.1583	30,150	870.4

Code Word	Size MCM	Stranding		Outside Dia. (In)	Ultimate Strength (lbs)	Weight per 1000 ft. (lbs)
		No.	Dia. (In)			
Kazoo	30.58	7	.0661	.198	915	28.7
Kaki	48.69	7	.0834	.250	1415	45.7
Kench	77.47	7	.1052	.316	2195	72.7
Kibe	123.3	7	.1327	.398	3405	115.7
Kayak	155.4	7	.1490	.447	4230	145.9
Kopeck	195.7	7	.1672	.502	4965	183.7
Kittle	246.9	7	.1878	.563	6265	231.8
Ratch	281.4	19	.1217	.609	7360	264.2
Ramie	312.8	19	.1283	.642	8180	293.6
Radar	355.1	19	.1367	.684	9290	333.3
Radian	394.5	19	.1441	.721	10,180	370.3
Rede	419.6	19	.1486	.743	10,830	393.9
Ragout	465.4	19	.1565	.783	11,840	436.9
Rex	503.6	19	.1628	.814	12,100	472.7
Remex	559.5	19	.1716	.858	13,450	525.2
Ruble	587.2	19	.1758	.879	14,110	551.2
Rune	652.4	19	.1853	.927	15,680	612.4
Sural	704.6	37	.1380	.966	18,430	661.4
Spar	740.8	37	.1415	.990	19,110	695.4
Sora	833.6	37	.1501	1.051	21,210	782.5
Solar	927.2	37	.1583	1.108	23,590	870.4



ACSS

Code Word	kcmil	Stranding Number and Dia of Strands (in)		Dia. (in)		ACSS GA/MA Rated Strength (lbs)	Weight per 1000 ft in lbs		
		Aluminum	Steel	Complete Cable	Steel Core		Total	Aluminum	Steel
Partridge	266.8	26 x 0.1013	7 x 0.0788	0.642	0.236	8880	366.9	251.3	115.6
Linnet	336.4	26 x 0.1137	7 x 0.0788	0.721	0.265	11,200	462.0	316.6	145.4
Oriole	336.4	30 x 0.1059	7 x 0.1059	0.741	0.317	14,800	526.4	317.7	208.7
Ibis	397.5	30 x 0.1236	7 x 0.0961	0.783	0.288	13,000	546.0	374.1	171.9
Lark	397.5	30 x 0.1151	7 x 0.1151	0.806	0.345	17,500	621.8	375.3	246.5
Flicker	477	24 x 0.1410	7 x 0.0940	0.846	0.282	13,000	613.9	449.4	164.5
Hawk	477	26 x 0.1354	7 x 0.1053	0.858	0.316	15,600	655.3	449.0	206.3
Hen	477	30 x 0.1261	7 x 0.1261	0.883	0.378	21,000	746.4	450.4	296.0
Parakeet	556.5	24 x 0.1523	7 x 0.1015	0.914	0.304	15,200	716.1	524.3	191.8
Dove	556.5	26 x 0.1493	7 x 0.1138	0.927	0.341	18,200	765.2	524.2	241.0
Eagle	556.5	30 x 0.1362	7 x 0.1362	0.953	0.409	24,500	870.7	525.5	345.2
Peacock	605	24 x 0.1588	7 x 0.1059	0.953	0.318	16,500	778.8	570.1	208.7
Rook	636	24 x 0.1628	7 x 0.1085	0.977	0.326	17,300	818.2	599.1	219.1
Grosbeak	636	26 x 0.1564	7 x 0.1216	0.990	0.365	20,700	874.2	599.0	275.2
Egret	636	30 x 0.1456	19 x 0.0874	1.019	0.437	28,000	987.2	600.5	386.7
Flamingo	666.6	24 x 0.1667	7 x 0.1111	1.000	0.333	18,200	857.9	628.2	229.7
Starling	715.5	26 x 0.1659	7 x 0.1290	1.051	0.387	23,300	983.7	674.0	309.7
Redwing	715.5	30 x 0.1544	19 x 0.0926	1.081	0.463	30,800	1109.3	675.3	434.0
Tern	795	45 x 0.1329	7 x 0.0886	1.063	0.266	14,200	895.0	748.6	146.4
Cuckoo	795	24 x 0.1820	7 x 0.1213	1.092	0.364	21,700	1023.0	748.8	274.2
Condor	795	54 x 0.1213	7 x 0.1213	1.093	0.364	21,700	1022.0	748.4	273.6
Drake	795	26 x 0.1749	7 x 0.1360	1.108	0.408	25,900	1093.0	749.1	343.9
Mallard	795	30 x 0.1628	19 x 0.0977	1.140	0.489	34,300	1233.9	750.7	483.2
Ruddy	900	45 x 0.1414	7 x 0.0943	1.131	0.283	15,800	1013.0	847.4	165.6
Canary	900	54 x 0.1291	7 x 0.1291	1.162	0.387	24,600	1158.0	847.7	310.3
Rail	954	45 x 0.1456	7 x 0.0971	1.165	0.291	16,700	1074.0	898.5	175.5
Cardinal	954	54 x 0.1329	7 x 0.1329	1.196	0.399	26,000	1227.1	898.3	328.8
Ortolan	1033.5	45 x 0.1515	7 x 0.1010	1.212	0.303	18,100	1163.0	972.8	190.2
Curlew	1033.5	54 x 0.1383	7 x 0.1383	1.245	0.415	28,200	1329.0	972.8	356.2
Bluejay	1113	45 x 0.1573	7 x 0.1049	1.259	0.315	19,500	1254.0	1048.7	205.3
Finch	1113	54 x 0.1436	19 x 0.0862	1.293	0.431	30,400	1430.01	1053.9	376.1
Bunting	1192.5	45 x 0.1628	7 x 0.1085	1.302	0.326	21,400	1345.0	1123.4	221.6
Grackle	1192.5	54 x 0.1486	19 x 0.0892	1.338	0.446	32,600	1531.0	1128.6	402.4
Bittern	1272	45 x 0.1681	7 x 0.1121	1.345	0.336	22,300	1432.0	1197.7	234.3
Pheasant	1272	54 x 0.1535	19 x 0.0921	1.382	0.461	24,100	1634.0	1204.3	429.7
Dipper	1351.5	45 x 0.1733	7 x 0.1155	1.386	0.347	23,700	1521.0	1272.9	248.1
Martin	1351.5	54 x 0.1582	19 x 0.0949	1.424	0.475	36,200	1735.0	1279.2	455.8
Bobolink	1431	45 x 0.1783	7 x 0.1189	1.427	0.357	25,100	1611.0	1347.5	263.5
Plover	1431	54 x 0.1628	19 x 0.0977	1.465	0.489	38,400	1838.0	1354.6	483.4
Lapwing	1590	45 x 0.1881	7 x 0.1253	1.504	0.376	27,900	1790.0	1498.1	291.9
Falcon	1590	54 x 0.1716	19 x 0.1030	1.545	0.515	42,600	2040.0	1505.0	535.0
Chukar	1780	84 x 0.1456	19 x 0.0874	1.602	0.437	35,400	2072.0	1685.5	386.5
Bluebird	2156	84 x 0.1602	19 x 0.0961	1.762	0.481	42,100	2508.0	2040.4	467.6
Kiwi	2167	72 x 0.1735	7 x 0.1157	1.735	0.347	29,000	2310.0	2051.4	258.6
Thrasher	2312	76 x 0.1744	19 x 0.0814	1.802	0.407	35,600	2523.0	2187.9	335.1

Conductor Index

Bare Aluminum Conductor

Code Word	Stranding		Conductor Size Circular mils or AWG	Cable Dia. (In)	Ultimate Strength (lbs)	Weight per 1000 ft. (lbs)
	Class	No. x Dia. of wires (in)				
Peachbell	A	7 x 0.0612	6	0.184	528	24.6
Rose	A	7 x 0.0772	4	0.232	826	39.2
Lily	A	7 x 0.0867	3	0.260	1022	49.4
Iris	AA, A	7 x 0.0974	2	0.292	1266	62.3
Pansy	AA, A	7 x 0.1094	1	0.328	1537	78.5
Poppy	AA, A	7 x 0.1228	1/0	0.368	1865	99.1
Aster	AA, A	7 x 0.1379	2/0	0.414	2350	124.9
Phlox	AA, A	7 x 0.1548	3/0	0.464	2845	157.5
Oxlip	AA, A	7 x 0.1739	4/0	0.522	3590	198.6
Daisy	---	7 x 0.1953	266,800	0.586	4525	250.4
Laurel	A	19 x 0.1185	266,800	0.593	4800	250.4
Tulip	AA, A	19 x 0.1331	336,400	0.666	5940	315.8
Canna	AA, A	19 x 0.1447	397,500	0.724	6880	372.5
Cosmos	AA	19 x 0.1585	477,000	0.793	8090	447.8
Syringa	A	37 x 0.1135	477,000	0.795	8600	447.8
Dahlia	---	37 x 0.1711	556,500	0.856	9440	522.4
Mistletoe	AA, A	37 x 0.1226	556,500	0.858	9830	522.4
Orchid	AA, A	61 x 0.1311	636,000	0.918	11,240	597.0
Violet	AA	37 x 0.1391	715,500	0.974	12,640	671.6
Nasturtium	A	61 x 0.1083	715,500	0.975	13,150	671.6
Arbutus	AA	37 x 0.1466	795,000	1.026	13,770	746.3
Lilac	A	61 x 0.1142	795,000	1.028	14,300	746.3
Anemone	AA	37 x 0.1538	874,500	1.077	14,830	820.9
Crocus	A	61 x 0.1198	874,500	1.078	15,760	820.9
Magnolia	AA	37 x 0.1606	954,000	1.124	16,180	895.5
Goldenrod	A	61 x 0.1251	954,000	1.126	16,860	895.5
Bluebell	AA	37 x 0.1672	1,033,500	1.170	17,530	970.1
Larkspur	A	61 x 0.1302	1,033,500	1.172	18,260	970.1
Marigold	AA, A	61 x 0.1351	1,113,000	1.216	19,660	1045.0
Hawthorn	AA, A	61 x 0.1398	1,192,500	1.258	21,000	1119.0
Narcissus	AA, A	61 x 0.1444	1,272,000	1.300	22,000	1193.0
Columbine	AA, A	61 x 0.1489	1,351,500	1.340	23,400	1269.0
Carnation	AA, A	61 x 0.1532	1,431,000	1.379	24,300	1343.0
Gladiolus	AA, A	61 x 0.1574	1,510,500	1.417	25,600	1418.0
Coreopsis	AA	61 x 0.1615	1,590,000	1.454	27,000	1493.0
Dogwood	A	91 x 0.1322	1,590,000	1.454	28,100	1493.0



Bare Copper Wire, Stranded

Conductor Size		Stranding Class	Total Number of Wires	Wire Dia. (in)	Cable Dia. (in)	Min. Breaking Strength (lbs. hard)	Weight per 1000 ft (lbs.)
Mcm	AWG						
1.02	20	B	7	0.0121	0.0363	50.04	3.154
1.62	18	B	7	0.0152	0.0456	78.99	5.015
2.58	16	B	7	0.0192	0.0576	124.7	7.974
4.11	14	B	7	0.0242	0.0726	197.1	12.68
6.53	12	B	7	0.0305	0.0915	311.1	20.16
10.38	10	B	7	0.0385	0.116	491.7	32.09
13.09	9	B	7	0.0432	0.130	618.2	40.42
16.51	8	B	7	0.0486	0.146	777.2	50.97
20.82	7	B	7	0.0545	0.164	977.1	64.28
26.24	6	B	7	0.0612	0.184	1,288	81.05
33.09	5	B	7	0.0688	0.206	1,542	102.2
41.74	4	AA	3	0.1180	0.254	1,879	127.6
41.74	4	B & A	7	0.0772	0.232	1,938	128.9
52.62	3	AA	3	0.1325	0.286	2,359	160.9
52.62	3	B & A	7	0.0867	0.260	2,433	162.5
66.36	2	AA	3	0.1487	0.320	2,913	202.9
66.36	2	B & A	7	0.0974	0.292	3,045	204.9
83.69	1	AA	3	0.1670	0.360	3,621	255.9
83.69	1	A	7	0.1093	0.328	3,804	258.4
83.69	1	B	19	0.0664	0.332	3,899	258.4
105.6	1/0	A & AA	7	0.1228	0.368	4,752	325.8
105.6	1/0		12*	0.0938	0.390	4,841	325.8
105.6	1/0	B	19	0.0745	0.372	4,901	325.8
133.1	2/0	A & AA	7	0.1379	0.414	5,926	410.9
133.1	2/0		12*	0.1053	0.438	6,048	410.9
133.1	2/0	B	19	0.0837	0.419	6,152	410.9
167.8	3/0	A & AA	7	0.1548	0.464	7,366	518.1
167.8	3/0		12*	0.1183	0.492	7,556	518.1
167.8	3/0	B	19	0.0940	0.470	7,698	518.1
211.6	4/0	A & AA	7	0.1739	0.522	9,154	653.3
211.6	4/0		12*	0.1328	0.522	9,483	653.3
211.6	4/0	B	19	0.1055	0.528	9,617	653.3
250	---	AA	12	0.1443	0.600	11,130	771.9
250	---	A	19	0.1147	0.574	11,360	771.9
250	---	B	37	0.0822	0.575	11,560	771.9

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