Grid Solutions

GE VERNOVA TRANQUELL™ SURGE ARRESTERS

Product Selection & Application Guide

Heavy Duty Distribution Class-Polymer and Riser Pole Polymer Arresters IEEE®/ANSI® C62.11

GE Vernova Surge Protection

The performance and reliability of today's electric power systems can be enhanced with the unique characteristics of GE Vernova TRANQUELL arrester products. Since introducing the world's first metal oxide arrester in 1976, offering new concepts in surge arrester design and application, GE Vernova has developed and applied metal oxide technology for a variety of traditional and special applications. GE Vernova offers one of the most complete lines of surge arrester products in the world today; from distribution class to EHV arresters up to 612 kV rating as well as high energy varistors for series capacitor applications.

Product and power systems engineers work closely to optimize product performance on the system. GE Vernova is one of the world's leading supplier of metal oxide arresters and specialty varistors.

GE Vernova TRANQUELL Arresters are designed and manufactured in accordance with the latest revision of ANSI/IEEE C62.11. TRANQUELL polymer and porcelain arresters are designed to meet the most demanding service conditions.

Product Description

The GE Vernova TRANQUELL distribution and riser pole polymer line of surge arrester products provide excellent protective characteristics, temporary over voltage capability, and switching surge energy withstand to power systems of voltages less than 46kV rms.

GE Vernova polymer arresters are ideally suited for application in both indoor and outdoor situations. They are designed and manufactured in accordance with the latest revision of ANSI/IEEE C62.11 and IEC® 99-4.

GE VERNOVA

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Heavy Duty Distribution Arresters - 9L20 Series

Nominal System Suggested Arrester Ratings

		3 WIRE DELTA OR WYE	
	RATED VOLTAGE	RATED VOLTAGE	RATED VOLTAGE
Line-to-Line Voltage	4 Wire Multi-Grounded Neutral System	Low Impedance Ground	High Impedance or Ungrounded
4160	3	6	6
4800	6	6	6
6640	6	6	9
7200	6	9	9
7620	6	9	9
8320	6	9	10
9960	9	9	12
11000	9	10	12
11500	9	10	15
12000	9	12	15
12470	9	12	15
13200	10	12	15
13800	10	12	18
14400	12	15	18
17250	15	15	21
19750	15	18	21
20780	15	18	24
22860	18	21	27
24940	18	24	30
26400	21	24	30
27700	21	27	30
34500	27	30	36
36200	27	36	-

Heavy Duty Distribution Arresters - 9L20 Series - Characteristics

Heavy Duty Distribution Arresters 9L20 – Electrical/Protective Characteristics

				8/20 MAXIUM DISCHARGE VOLTAGE (kV) CREST					
RATED VOLTAGE (kV) RMS	MCOV (kV) RMS	0.5 µ SEC 10 kA MAX Ir-kV CREST	SWITCHING SURGE MAX Ir-kV CREST	1.5 kA	3.0 kA	5 kA	10 kA	20 kA	40 kA
3	2.6	10.6	7.6	8.0	8.5	9.0	9.9	11.1	13.2
6	5.1	21.3	15.3	15.9	17.0	18.0	19.8	22.3	26.5
9	7.7	31.2	22.4	23.3	24.9	26.4	29.0	32.6	38.8
10	8.4	34.0	24.4	25.4	27.1	28.8	31.6	35.6	42.3
12	10.2	40.4	29.0	30.3	32.3	34.2	37.6	42.3	50.3
15	12.7	51.4	36.9	38.5	41.1	43.5	47.8	53.8	64.0
18	15.3	60.6	43.5	45.4	48.4	51.3	56.4	63.5	75.5
21	17.0	68.3	49.0	51.1	54.5	57.8	63.5	71.4	85.0
24	19.5	81.9	58.8	61.3	65.5	69.3	76.2	85.7	102.0
27	22.0	91.9	65.9	68.8	73.4	77.8	85.5	96.2	114.4
30	24.4	101.1	72.5	75.7	80.7	85.5	94.0	105.8	125.8
36	29.0	121.4	87.0	90.9	97.0	102.7	112.9	127.0	151.1

Table 1

3-36kV Heavy Duty Polymer Distribution Arresters 9L20 Series

CATALOG NUMBER	INSULATING BRACKET	DISCONNECT	BIRD CAP	X-ARM BRACKET	TRANSFORMER BRACKET	18" LINE LEAD	GROUND STRAP	DRAWING DETAILS	NOTES
9L20AXX0**AHS	X	X		X				1	"Z" Dimension is 6.8 inches for 3kV thru 9kV. 7.56 inches for 10kV thru 18kV and 8.56 inches for 21kV thru 36kV rated. For Drawings 5 & 6, the "W" Dimension is 11.0 inches for 3kV thru 10kV rated and 7.0 inches for 12kV thru 36kV rated.
9L20AXX4**AHS	X	X	X	X				2	
9L20AXA4**AHS	X	X	X	X		X		2	
9L20AXA0**AHS	X	X		X		X		1	
9L20AXX0**XHS	X	X						3	
9L20AXX4**XHS	X	X	X					4	
9L20AXA4**XHS	X	X	X			X		4	
9L20AXA0**XHS	X	X				X		3	
9L20AXX0**BHS	X	X			X			5	
9L20AXX4**BHS	X	X	X		X			6	
9L20AHA4**BHS	X	X	X		X	X	X	6	
9L20AHX4**BHS	X	X	X		X		X	6	
9L20AHX0**BHS	X	X			X		X	5	
9L20AFA4**BHS	X	X	X		X	X	X	6	
9L20AFX4**BHS	X	X	X		X		X	6	
9L20AFX0**BHS	X	X			X		X	5	
9L20BXX0**XHS	X							7	
9L20FXX0**XHS								8	

Heavy Duty Distribution Arresters 9L20 – Physical Characteristics

										MOUNTING CLEARANCE				WEIGHT			
VOLTAGE	MCOV	CREEP		STRIKE		MIN 1.2 X 50µs WITHSTAND	MIN POWER FREQUENCY	"X" OVERALL HEIGHT		CENTER LINE TO CENTER LINE		CENTER LINE TO GROUND		UNIT WITH INSULATING BRACKET		UNIT WITH XFORMER BRACKET	
kV RMS	kV RMS	IN	MM	IN	MM	(kV CREST)	(kV RMS) WET (10 SEC)	IN	MM	IN	MM	IN	MM	LBS	KGS	LBS	KGS
3	2.55	8.5	216	3.8	97	17.6	3.5	3.0	76	5	127	3	76	2.9	1.3	5.4	2.5
6	5.1	11.3	287	4.6	117	35.1	6.9	3.8	96	5.4	137	3.4	86	3.3	1.5	5.8	2.6
9	7.65	14.4	366	5.7	145	47.9	10.4	4.9	124	6	152	4	102	3.8	1.7	6.3	2.9
10	8.4	14.4	366	5.7	145	51.1	11.4	4.9	124	6.2	157	4.2	107	3.8	1.7	6.3	2.9
12	10.2	17	432	6.6	168	61.5	13.9	5.4	137	7.5	191	5.5	140	4.3	1.9	6.8	3.1
15	12.7	25.2	640	8.8	223	76.7	17.3	7.8	198	8.5	216	6.5	165	5.6	2.5	8.1	3.7
18	15.3	25.2	640	8.8	223	91.9	20.8	7.8	198	9.5	241	7.5	191	5.6	2.5	8.1	3.7
21	17	28.1	714	9.7	246	102.2	23.1	8.6	218	10	254	8	203	6.2	2.8	8.7	4.0
24	19.5	36.5	927	12.4	315	123.0	26.5	11.5	292	12	305	10	254	8.3	3.8	10.8	4.9
27	22	39.6	1006	13.4	340	138.2	29.9	12.6	320	13	330	11	279	8.7	4.0	11.3	5.1
30	24.4	42.2	1072	14.0	356	153.4	33.2	13.1	332	14	356	12	305	9.2	4.2	11.7	5.3
36	29	50.4	1280	16.2	411	183.7	39.4	15.5	393	16.5	419	14.5	368	10.3	4.7	12.8	5.8

Heavy Duty Distribution Arresters - 9L20 Series - Drawings

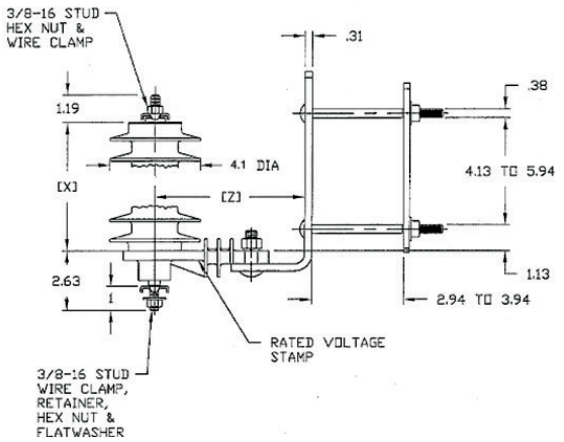
The drawings below are general drawings to provide all options and dimensional information.

See: **3-36kV Heavy Duty Polymer Distribution Arresters 9L20 Series** for specific options (page two, **Table 1**).

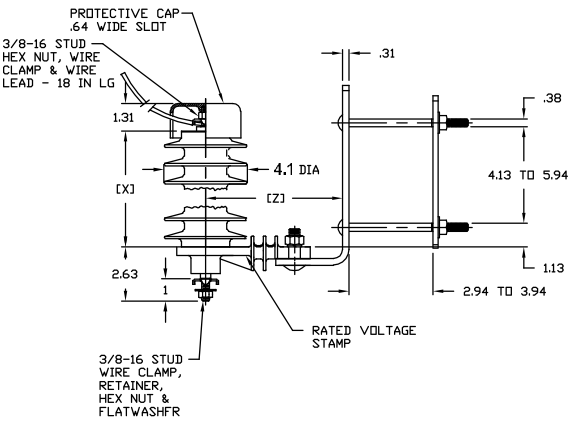
Notes from 3-36kV Heavy Duty Polymer Distribution Arresters 9L20 Series:

1) Contains 18" line lead
2) Contains 18" line lead and ground strap
3) Contains ground strap
4) Product ratings from 12kV to 36kV
5) Product ratings from 3kV to 10kV

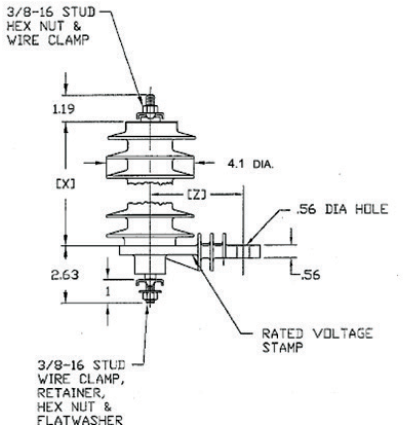
Drawing 1



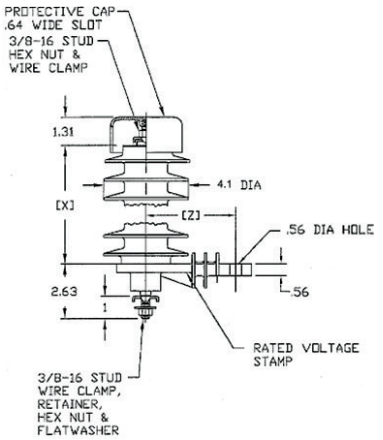
Drawing 2



Drawing 3



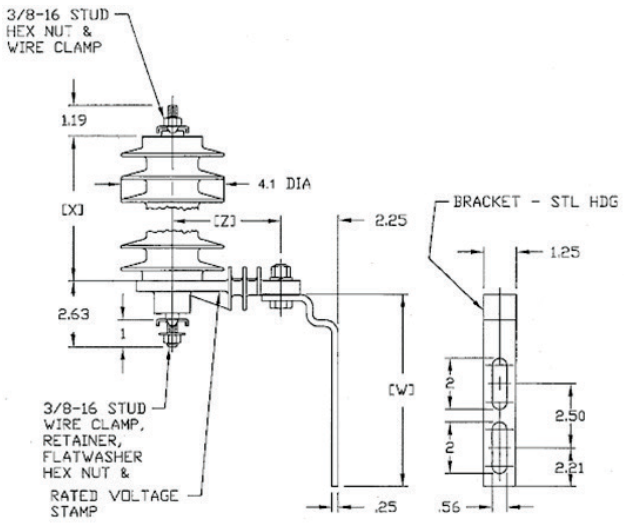
Drawing 4



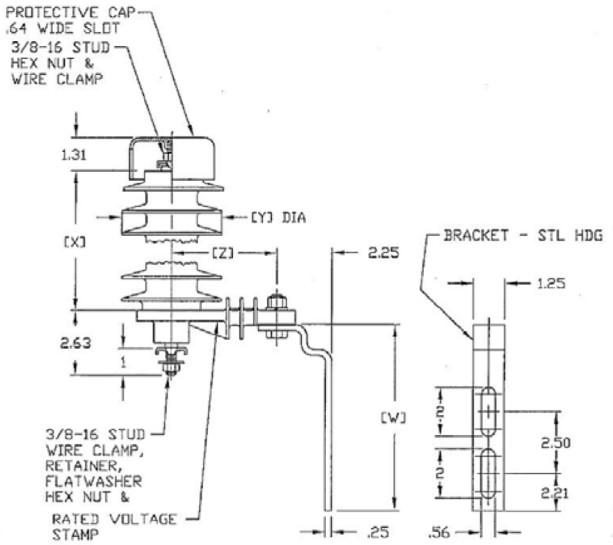
NOTE: For all Drawings, “Z” Dimension is 6.8 inches for 3kV thru 9kV. 7.56 inches for 10kV thru 18kV and 8.56 inches for 21kV thru 36kV rated.

NOTE: For Drawings 5 & 6, the “W” Dimension is 11.0 inches for 3kV thru 10kV rated and 7.0 inches for 12kV thru 36kV rated.

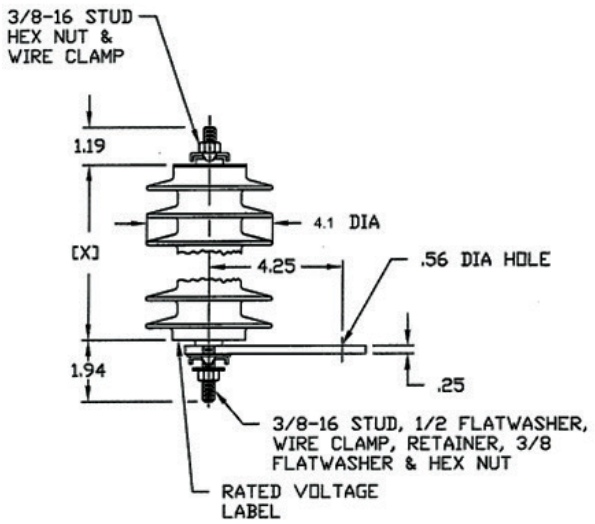
Drawing 5



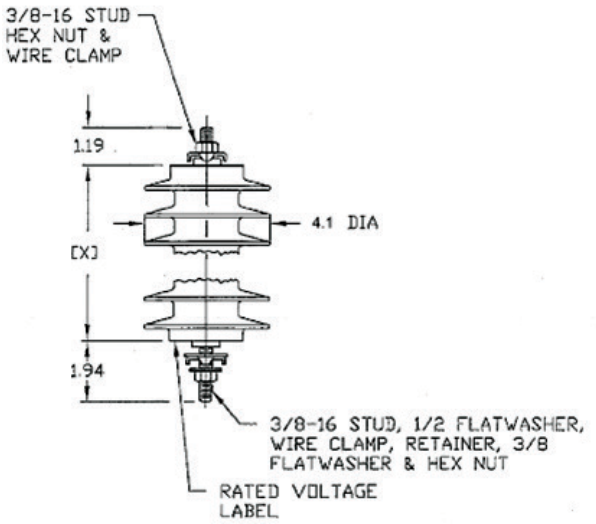
Drawing 6



Drawing 7

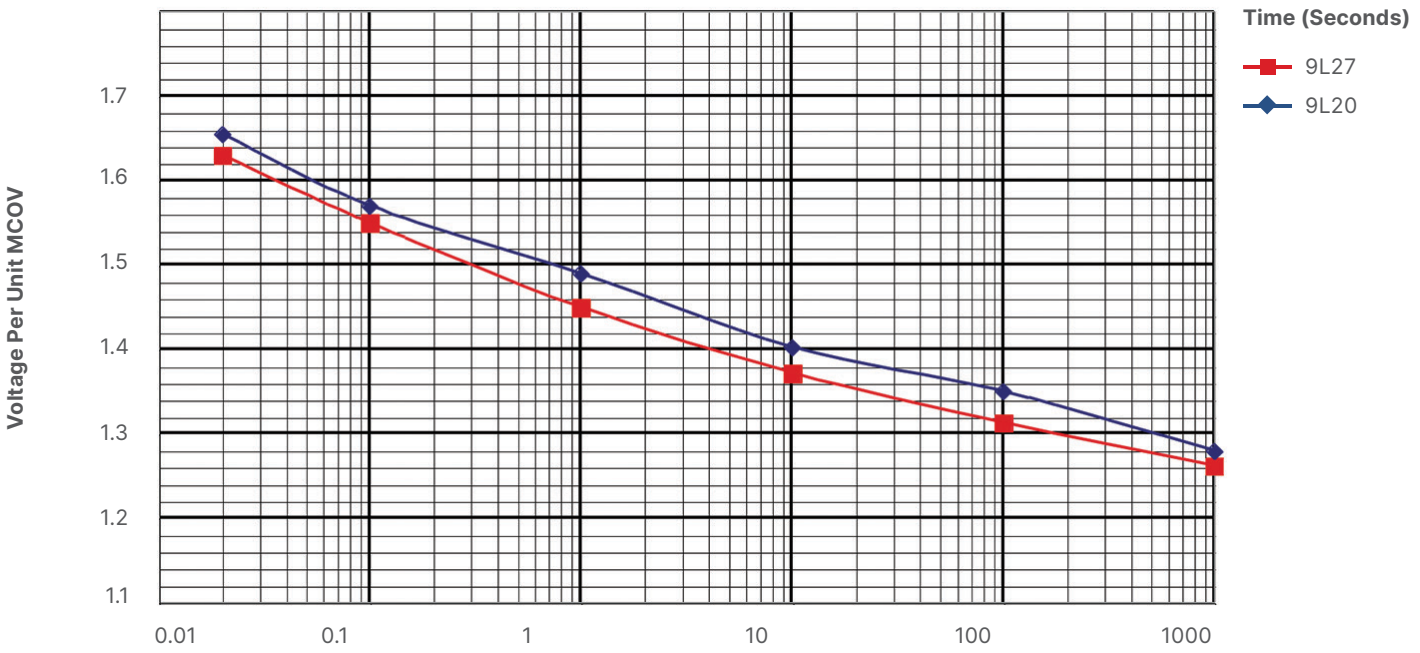


Drawing 8

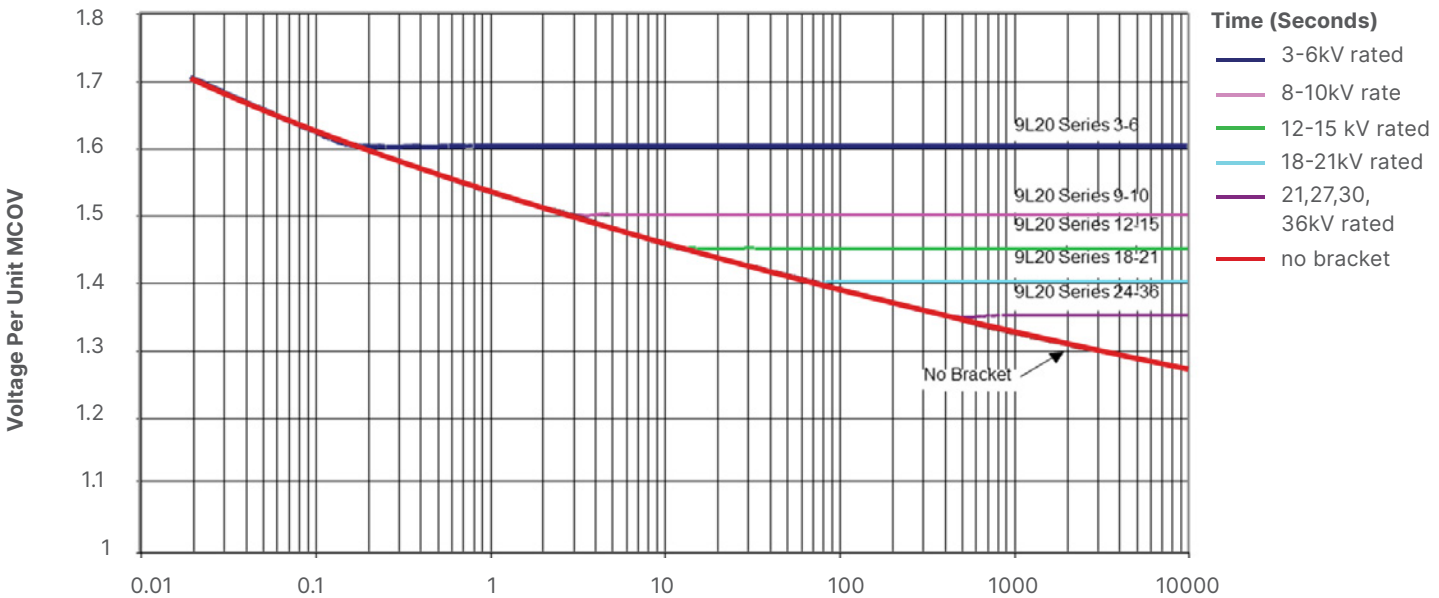


Heavy Duty Distribution Arresters - 9L20 Series - TOV Curves

No Prior Duty TOV Curves, Distribution Arresters 9L20FXX Series WIthout Bracket



Temporary Power Frequency Voltage vs. Time for 9L20 Series Polymer Distribution Arresters



Riser Pole Arresters - 9L27 Series

Product Series

PRODUCT NUMBER	INSULATING BRACKET	DISCONNECT	BIRD CAP	X-ARM BRACKET
9L27HXX4**XHS	x	x	x	
9L27HXX4**AHS	x	x	x	x

Electrical/Protective Characteristics

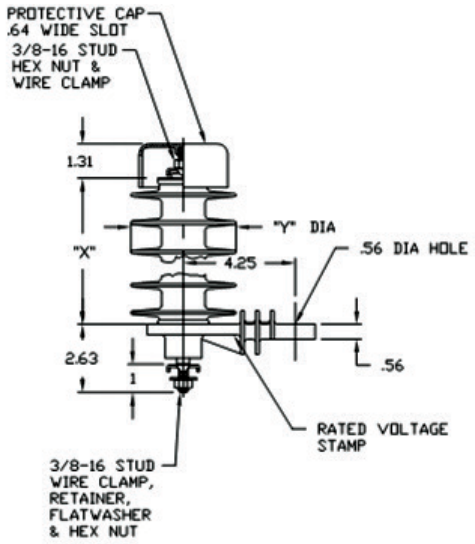
RATED VOLTAGE (kV) RMS	MCOV (kV) RMS	0.5 µ SEC 10 kA MAX Ir-kV CREST	500 SWITCHING SURGE MAX Ir-kV CREST	8/20 MAXIUM DISCHARGE VOLTAGE (kV) CREST					
				1.5 kA	3 kA	5 kA	10 kA	20 kA	40 kA
3	2.55	9.9	7.6	7.2	7.8	8.2	9.1	10.4	12.3
6	5.1	20	13.3	14.6	15.7	16.6	18.3	21	24.8
9	7.65	26.8	17.8	19.5	21	22.2	24.5	28.1	33.2
10	8.4	29.5	19.6	21.5	23.1	24.4	27	31	36.6
12	10.2	35.5	23.6	25.9	27.9	29.4	32.5	37.3	44
15	12.7	44.2	29.4	32.2	34.7	36.7	40.5	46.5	54.8
18	15.3	53.4	35.5	38.9	41.9	44.3	48.9	56.1	66.2
21	17	60.7	40.3	44.3	47.6	50.3	55.6	63.8	75.3
24	19.5	70.9	47.1	51.7	55.6	58.7	64.9	74.4	87.9
27	22	78.6	52.2	57.3	61.7	65.2	72	82.6	97.5
30	24.4	88.5	58.7	64.5	69.4	73.3	81	92.9	110
36	29	105	69.7	76.5	82.4	87	96.1	110	130

Insulation and Physical Characteristics

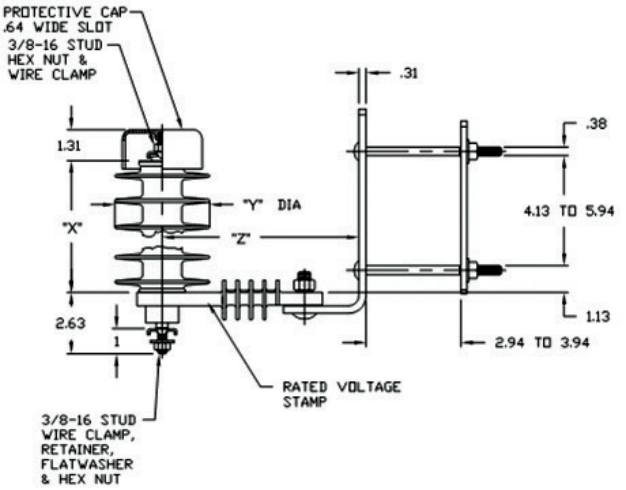
RATING								DRAWING DIMENSIONS						MOUNTING CLEARANCE				WEIGHT			
VOLT-AGE	MCOV	CREEP		STRIKE		MIN 1.2 X 50MS WITHSTAND	MIN POWER FREQUENCY	"X" HEIGHT		"Y" DIA		"Z" DIM		CENTER LINE TO CENTER LINE		CENTER LINE TO GROUND		UNIT WITH INSULATING BRACKET		UNIT WITH XFORMER BRACKET	
kV RMS	kV RMS	IN	MM	IN	MM	(kV CREST)	(kV RMS) WET (10 SEC)	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	LBS	KGS	LBS	KGS
3	2.55	8	203	3.8	97	45.0	13.0	7	178	4	102	6.81	173	5	127	3	76	3.3	1.5	5.8	2.6
6	5.1	15.4	391	4.6	117	60.0	20.0	9.4	239	4	102	6.81	173	5.3	135	3.3	84	4.1	1.9	6.6	3.0
9	7.65	15.4	391	5.7	145	75.0	24.0	9.4	239	4	102	6.81	173	5.8	147	3.8	97	4.1	1.9	6.6	3.0
10	8.4	15.4	391	5.7	145	75.0	24.0	9.4	239	4	102	6.81	173	6	152	4	102	4.1	1.9	6.6	3.0
12	10.2	15.4	391	6.6	168	85.0	27.0	9.4	239	4	102	7.56	192	7.3	185	5.3	135	4.3	2.0	6.8	3.1
15	12.7	26	660	8.8	223	95.0	30.0	12.4	315	4.5	114	7.56	192	8.3	211	6.3	160	5.5	2.5	8.0	3.6
18	15.3	26	660	8.8	223	125.0	36.0	12.4	315	4.5	114	7.56	192	9.2	234	7.2	183	6.1	2.8	8.6	3.9
21	17	26	660	9.7	246	125.0	36.0	12.4	315	4.5	114	7.56	192	9.7	246	7.7	196	6.1	2.8	8.6	3.9
24	19.5	30.8	782	12.4	315	125.0	60.0	14.7	373	4.5	114	8.56	217	11.6	295	9.6	244	7.4	3.4	9.9	4.5
27	22	52	1321	13.4	340	150.0	60.0	21.1	536	4.5	114	8.56	217	12.5	318	10.5	267	9.6	4.4	12.1	5.5
30	24.4	52	1321	14.0	356	150.0	60.0	21.1	536	4.5	114	8.56	217	13.5	343	11.5	292	9.6	4.4	12.1	5.5
36	29	52	1321	16.2	411	200.0*	80.0*	21.1	536	4.5	114	8.56	217	16	406	14	356	10.8	4.9	13.3	6.0

Riser Pole Arresters - 9L27 Series - Drawings

Drawings



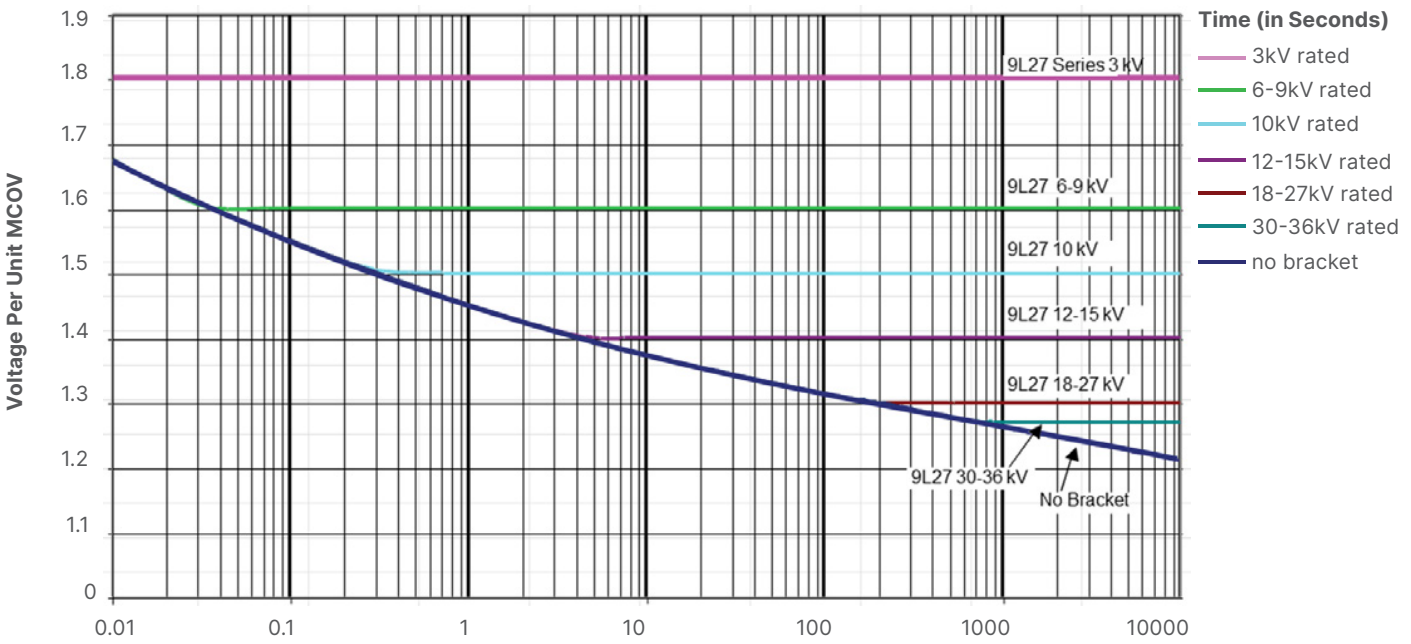
Insulating Bracket/Bird Cap/Disconnect



Insulating Bracket/Cross-arm Bracket/Bird Cap/Disconnect

Riser Pole Arresters - 9L27 Series - TOV

ANSI TOV (No Prior Duty) for 9L27FXX Series Polymer Riser Pole Arresters



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