Overview

Typically, Overhead Distribution Lines are prone to frequent outages and interruptions caused by insulation failures. Such failures can result from surface contamination or moisture on the line insulators, leading to flash overs or pole fires. To prevent these failures, regular maintenance and cleaning of the insulators are required, and appropriate protective measures should be taken to keep them dry and clean.

Silicone insulators provide an excellent solution for improved performance. Due to their hydro p ho bi city, these insulators inherently resist water filming, which limits leakage currents. Even when contaminated, insulators with reduced leakage currents require less frequent washing, resulting in cost savings for maintenance. Using silicone insulators offers the added benefit of lower maintenance costs.

GOTO ELECTRICAL manufactures silicone Insulators that comply with world-class standards for polymer insulators: CSA C411.5, ANSI C29.13, and IEC 61109. GOTO ELECTRICAL is registered under ISO 9001 Quality Systems.

Performance Benefits

Below are the performance benefits of GOTO Distribution eadend/Suspension Insulators

1.Improves reliability and reduces interruptions and outages in all kinds of environments.

2.Eliminates or Reduces Maintenance (such as washing and trouble calls) and is compatible with existing plant

3.Improves Power Quality (less RI and TVI)

4.Energy Efficiency (lower losses due to lower leakage currents)

5.Safety (light weight for handling and installation)

6.Service Life (consistent performance over its service life)

7.Life Cycle Cost (savings over porcelain insulators)

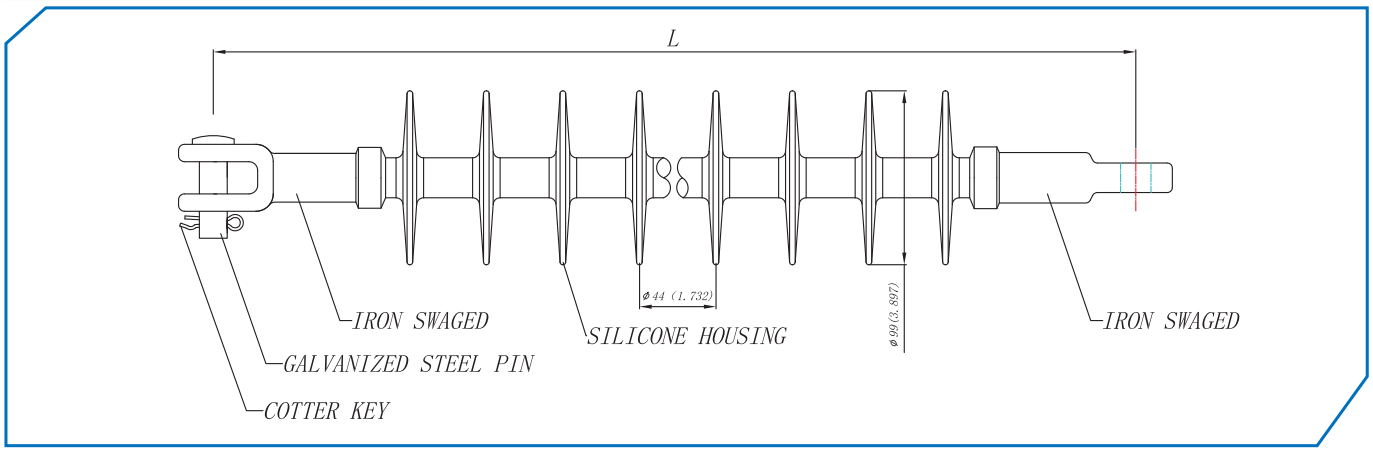
Core rod

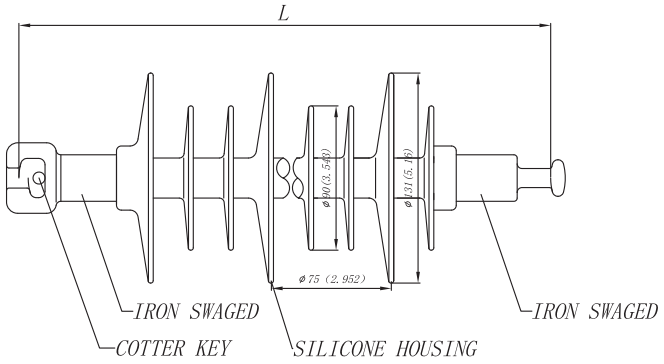
The core rod of the insulator is made of a high quality, epoxy resin, E-Glass fiberglass rod that has been specially formulated for electrical and mechanical applications.

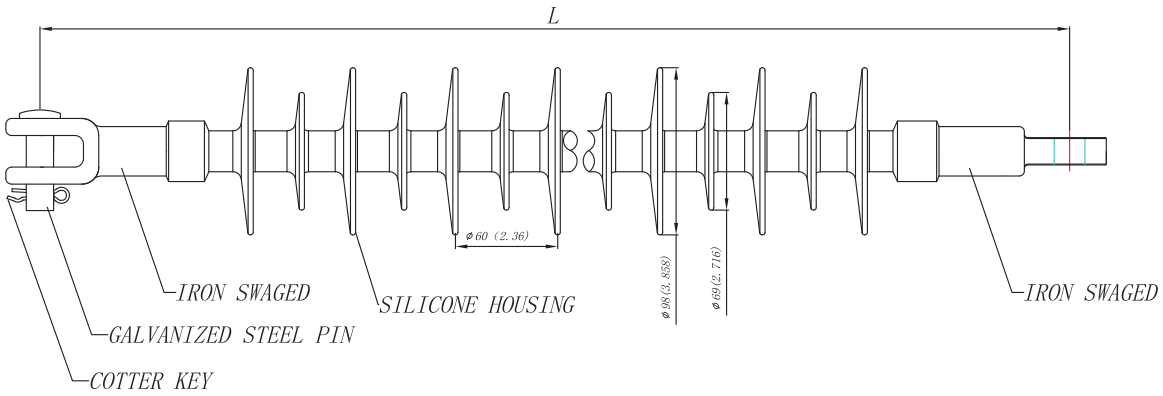
Housing

The housing (includes sheath and sheds) of the insulator is one piece, high temperature vulcanized, injection molded silicone rubber that is chemically bonded to the core rod. This ensures that the interface between the rubber and rod is impenetrable against moisture ingress. GOTO uses its own roprietary silicone rubber formula in the manufacture of its insulators. The formulation has silicone rubber as the base polymer material with additives to enhance its performance in wet and contaminated environments.

Insulator Umbrella Style




L
IRON SWAGED
COTTER KEY
SILICONE HOUSING
IRON SWAGED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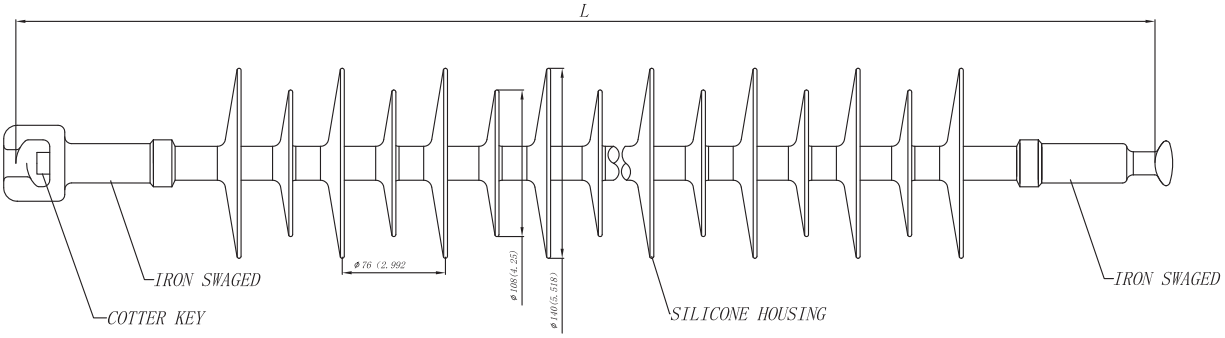
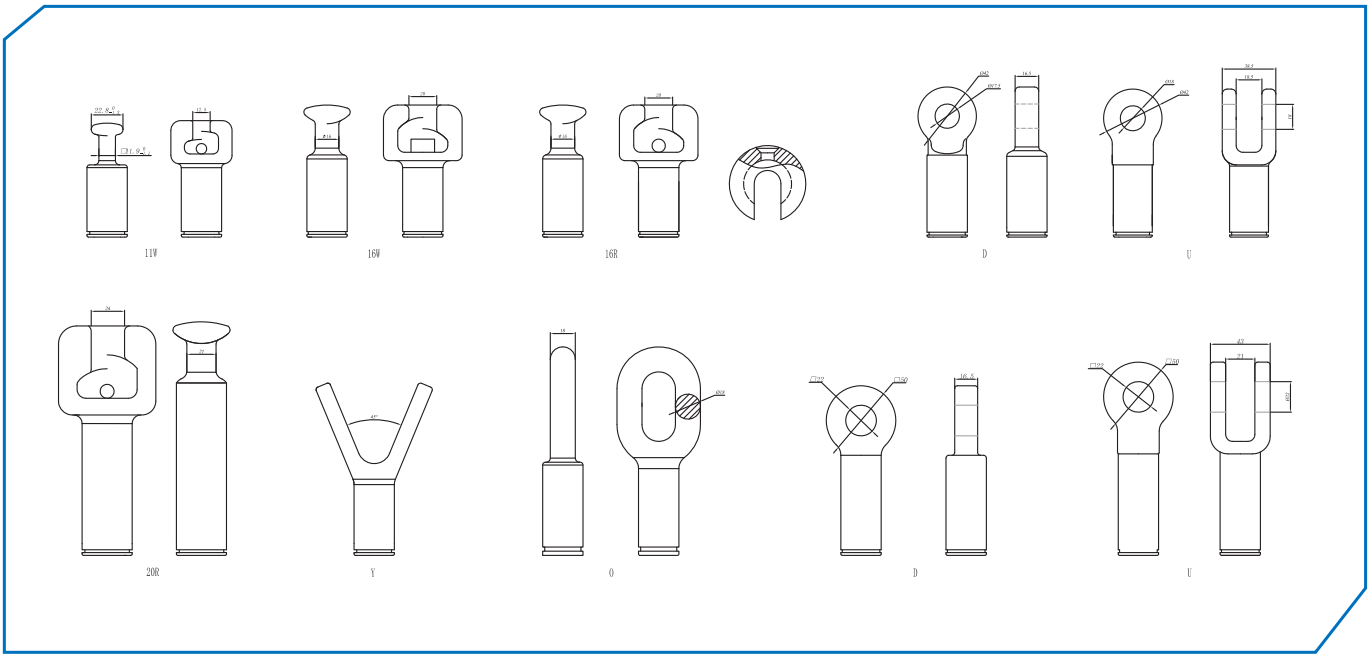

L
IRON SWAGED
COTTER KEY
SILICONE HOUSING
IRON SWAGED

Technical Data

SPECIFICATIONS		UNIT	DATA					
			GTPI15DU	GTPI28DU	GTPI35DU	KL46SCT	KL46SCTA	KL69HC1T116
Voltage Class		kV	15	28	35	46	46	69
							-	
Section Length "L"		mm(in)	322(12.7)	433(17.0)	486(19.1)	574(22.6)	646(25.4)	733(28.9)
Dry Arcing Distance		mm(in)	193(7.6)	290(11.4)	348(13.7)	419(16.5)	490(19.3)	627(24.7)
Leakage Distance		mm(in)	384(15.1)	590(23.2)	750(29.5)	988(38.9)	1059(41.7)	1798(70.8)
Low-Frequency Flashover	Dry	kV	100	135	155	180	200	260
	Wet	kV	75	100	145	150	155	205
Positive Critical Impulse Flashover		kV	150	225	265	300	360	425
Radio Influence Voltage (RIV) at 1 MHz	Test	kV	15	20	30	30	30	44
	Max.	μV	Below 1	Below 1	Below 3	Below 3	Below 3	1.2
Specified Mechanical Load (SML)		kN(lb)	70(15,750)	70(15,750)	70(15,750)	90(20,230)	90(20,230)	90(20,230)
Torsional Load		N·m(ft·lb)	62(45)	62(45)	62(45)	62(45)	62(45)	62(45)
Approx. Weight		kg(lb)	0.7(1.5)	0.8(1.8)	1.1(2.5)	1.4(3.0)	1.6(3.5)	2.2(4.8)
Standard Packaging		-	21	21	14	12	12	6

** The catalogue numbers in the above table are for "DU" clevis-tongue fittings. For other combinations of end fittings, specified mechanical strengths or material, see End Fittings Section.

Appearance and dimensions

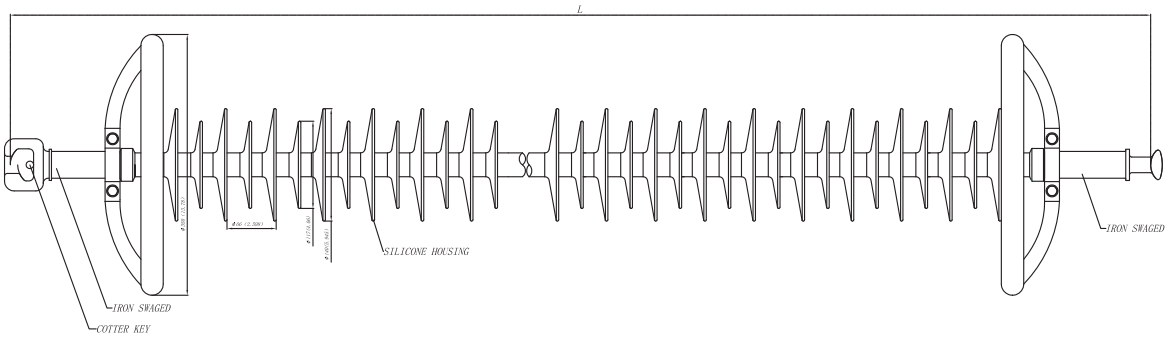


Transmission Silicone Insulators

Deadend / Suspension

69 kV to 230kV

TRANSMISSION DEADEND / SUSPENSION INSULATORS - 100 kN (20,000 lbs)



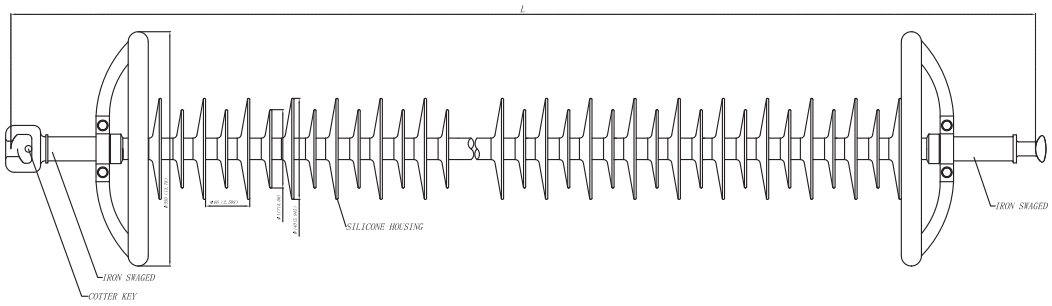
Technical Data

Model Specification	Voltage Class	Section Length (Note 2) L	Dry Arcing Distance	Leakage Distance	Positive Critical Impulse Flashover	Impulse Withstand	Low Frequency Dry		Low Frequency Wet		Weight (Note 3)
	kV	mm (in)	mm (in)	mm (in)	kV	kV	Flashover kV	Withstand kV	Flashover kV	Withstand kV	kg (lb)
FXBW4 69	69	632 (24.9)	526 (20.7)	1466 (57.7)	355	335	215	205	170	150	2.0 (4.3)
FXBW4 69		737 (29.0)	627 (24.7)	1798 (70.8)	425	400	260	245	205	180	2.4 (5.2)
FXBW4 69		841 (33.1)	732 (28.8)	2131 (83.9)	485	460	300	285	235	215	2.7 (6.0)
FXBW4 115	115	942 (37.1)	815 (32.1)	2461 (96.9)	535	505	335	315	265	240	3.3 (7.2)
FXBW4 115		1046 (41.2)	917 (36.1)	2794 (110.0)	600	565	370	355	300	275	3.6 (8.0)
FXBW4 115		1150 45.3)	1021 (40.2)	3127 (123.1)	660	625	415	395	335	310	4.1 (8.9)
FXBW4 138	138	1252 49.3)	1125 (44.3)	3460 (136.2)	725	685	455	430	365	340	4.5 (9.8)
FXBW4 138		1356 53.4)	1227 (48.3)	3792 (149.3)	785	745	490	465	400	370	4.9 (10.7)
FXBW4 138		1461 (57.5)	1331 52.4)	4125 (162.4)	845	805	530	505	430	400	5.2 (11.1)
FXBW4 161	161	1565 (61.6)	1420 55.9)	4458 (175.5)	900	855	565	535	460	430	6.6 (14.4)
FXBW4 161		1666 (65.6)	1521 (59.9)	4790(188.6)	965	915	605	580	495	460	7.0 (15.3)
FXBW4 161		1770 69.7)	1628 (64.1)	5123 (201.7)	1030	980	650	625	535	495	7.4 (16.2)
FXBW4 230	230	1875 (73.8)	1702 (67.0)	5456(214.8)	1080	1025	685	660	560	520	7.7 (17.0)
FXBW4 230		1979 77.9)	1803 (71.0)	5789 (227.9)	1140	1085	730	705	595	555	8.1 (17.9)
FXBW4 230		2080(81.9)	1908 (75.1)	6121 (241.0)	1210	1145	775	750	635	590	8.6(18.8)

Notes:

1. See page 8 for correction factors for values for insulators without corona rings.
2. Section lengths are based on ANSI ball and socket hardware and 90 kN (20,000 lbs) SML rating. For lengths of insulators with alternate end fittings combination see Section Lengths.

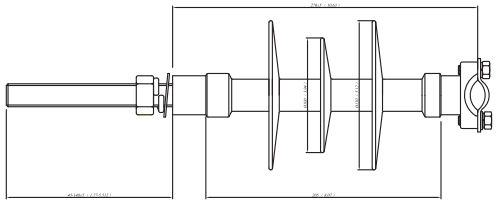
TRANSMISSION DEADEND / SUSPENSION INSULATORS - 160 kN (36,000 lbs)



Technical Data

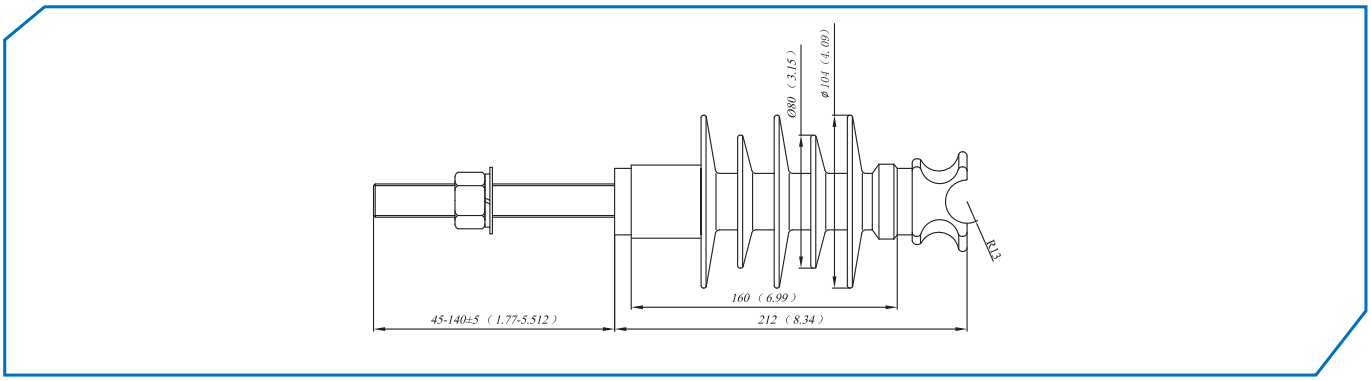
Catalogue Number	Voltage Class	Section Length (Note 2) L	Dry Arcing Distance	Leakage Distance	Positive Critical Impulse Flashover	Impulse Withstand	Low Frequency Dry		Low Frequency Wet		Weight (Note 3)
	kV	mm (in)	mm (in)	mm (in)	kV	kV	Flashover kV	Withstand kV	Flashover kV	Withstand kV	kg (lb)
KL161H1BS40H	161	1638(64.5)	1420 (55.9)	4458(175.5)	900	855	565	535	460	430	7.6 (16.7)
KL161H1BS43H		1742 (68.6)	1521 (59.9)	4790(188.6)	965	915	605	580	495	460	8.0(17.6)
KL161H1BS46H		1847 (72.7)	1626(64.0)	5123 (201.7)	1030	980	650	625	535	495	8.4(18.5)
KL230H1BS49H	230	1951 (76.8)	1702 (67.0)	5456 (214.8)	1080	1025	685	660	560	520	8.8 (19.3)
KL230H1BS52H		2052(80.8)	1803 (71.0)	5789 (227.9)	1140	1085	730	705	595	555	9.2 (20.2)
KL230H1BS55H		2156(84.9)	1908 (75.1)	6121 (241.0)	1210	1145	775	750	635	590	9.6 (21.1)
KL230H1BS58H		2261 (89.0)	2012 (79.2)	6454 (254.1)	1270	1205	815	790	665	620	10.0 (22.0)

Pin Type



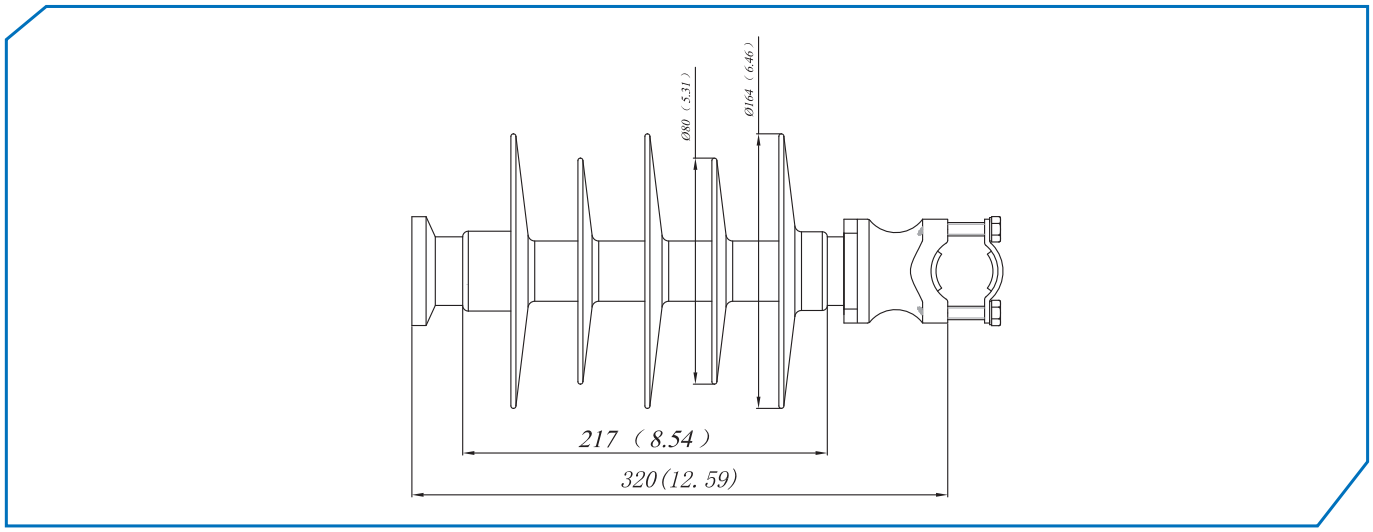
General dimension and characteristic of 12ky composite post insulator

No.	Type	Rated voltage KV	Specified mechanical Bending load KN	Section height H,mm	Minimum arcing distance h,mm	Lareg shed diameter D,mm	Small shed diameter d,mm	Shed spacing B,mm	Minimum nominal creepage distance L,mm	Lighting impulse withstand voltage ≥	Wet power frequency voltage ≥	Weight kg
1	FPQ-11/5	11	5	270 5	240	130	100	45	465	95	40	1.7



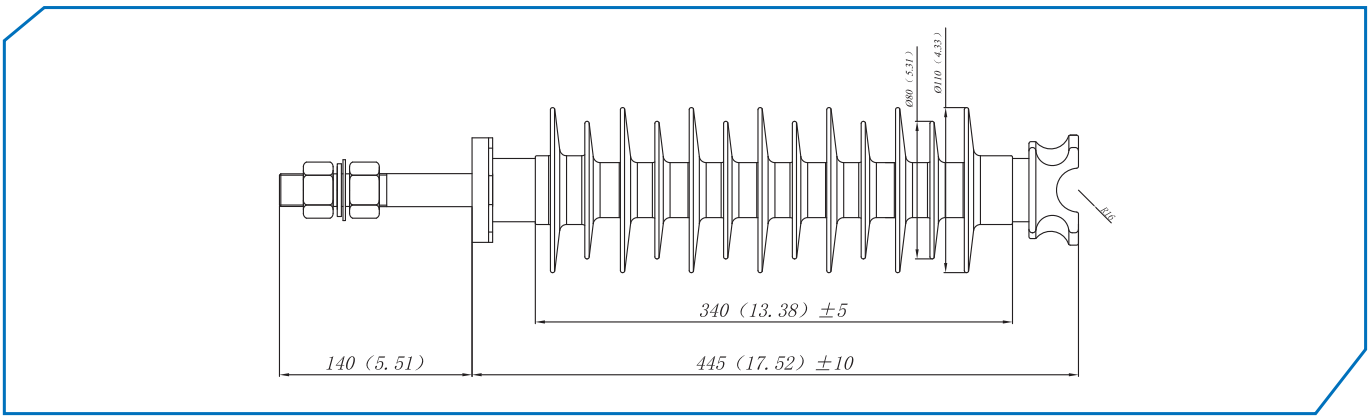
General dimension and characteristic of 12kV composite post insulator

No.	Type	Rated voltage KV	Specified mechanical Bending load KN	Section height H,mm	Minimum arcing distance h,mm	Lareg shed diameter D,mm	Small shed diameter d,mm	Shed spacing B,mm	Minimum nominal creepage distance L,mm	Lighting impulse withstand voltage ≥	Wet power frequency voltage ≥	Weight kg
1	FZ-11/10	11	10	212 5	185	104	80	22	425	95	40	1.9



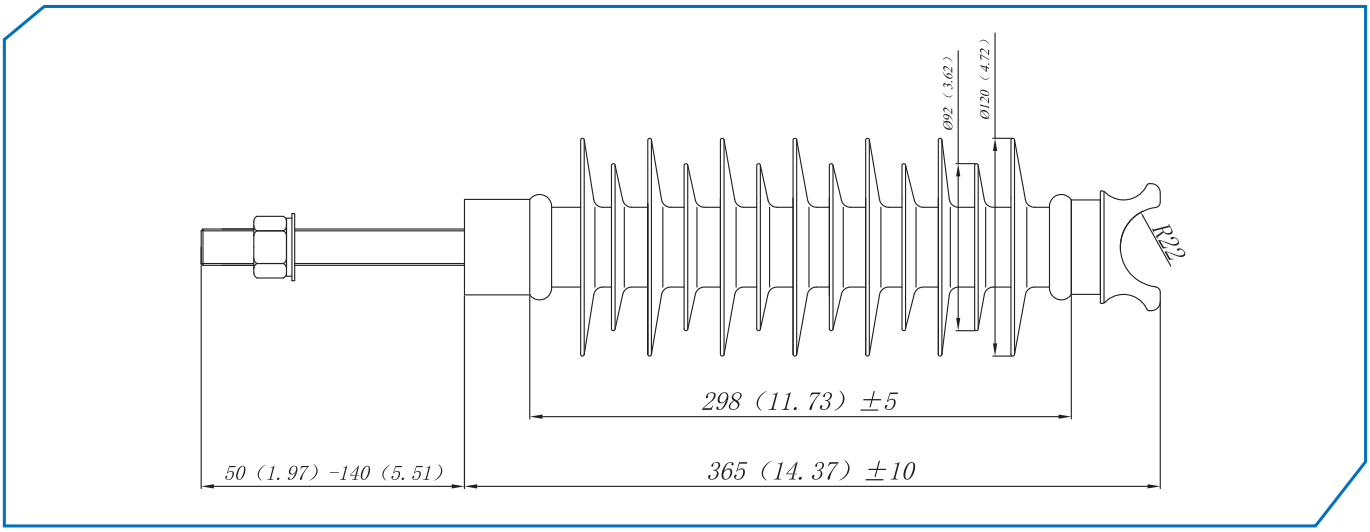
General dimension and characteristic of 12ky composite post insulator

No.	Type	Rated voltage KV	Specified mechanical Bending load KN	Section height H,mm	Minimum arcing distance h,mm	Lareg shed diameter D,mm	Small shed diameter d,mm	Shed spacing B,mm	Minimum nominal creepage distance L,mm	Lighting impulse withstand voltage ≥	Wet power frequency voltage ≥	Weight kg
1	FPQ-24/8	24	6	210 5	150	145	115	60	390	95	40	2.7



General dimension and characteristic of 12ky composite post insulator

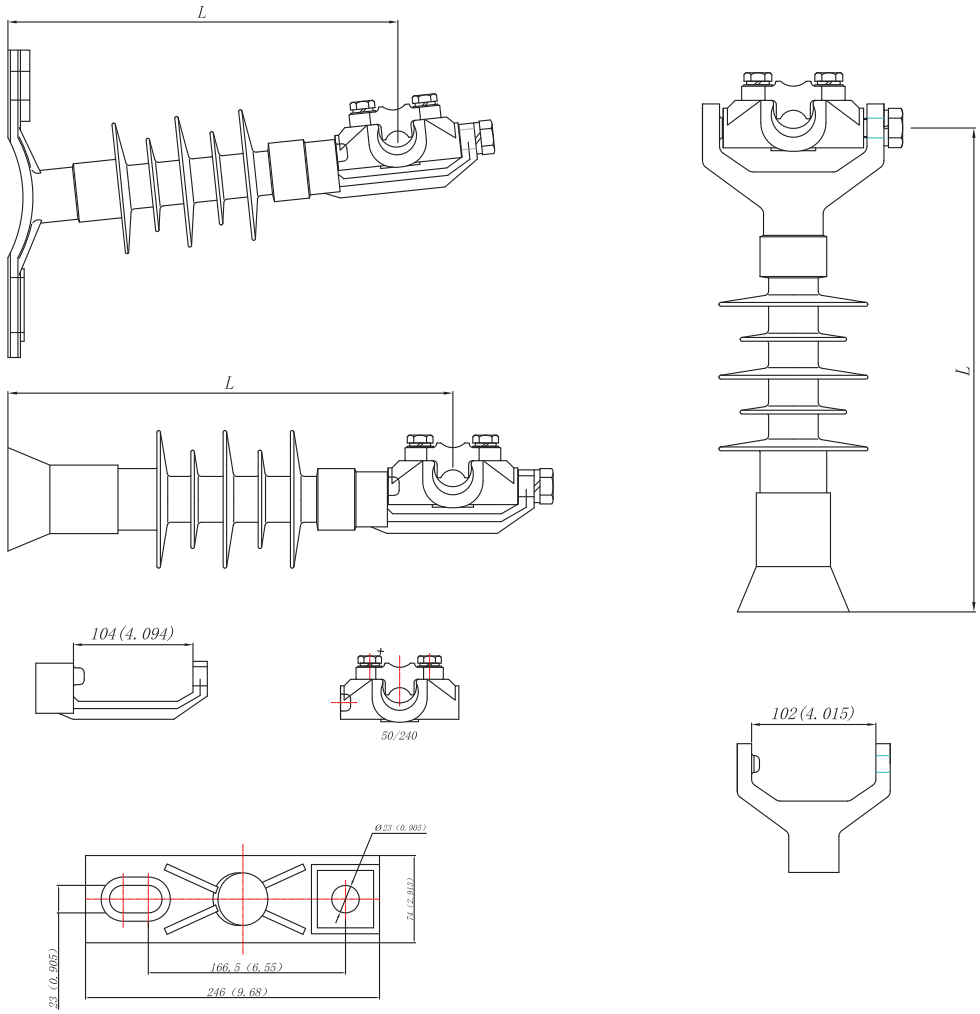
No.	Type	Rated voltage KV	Specified mechanical Bending load KN	Section height H,mm		Minimum arcing distance h,mm	Lareg shed diameter D,mm	Small shed diameter d,mm	Shed spacing B,mm	Minimum nominal creepage distance L,mm	Lighting impulse withstand voltage ≥	Wet power frequency voltage ≥	Weight kg
1	FPQ 24/12.5	24	12.5	445	10	390	120	100	25	1170	150	80	4.2



General dimension and characteristic of 12ky composite post insulator

No.	Type	Rated voltage KV	Specified mechanical Bending load KN	Section height H,mm		Minimum arcing distance h,mm	Lareg shed diameter D,mm	Small shed diameter d,mm	Shed spacing B,mm	Minimum nominal creepage distance L,mm	Lighting impulse withstand voltage ≥	Wet power frequency voltage ≥	Weight kg
1	FPQ-36/10	36	10	365	10	328	120	92	20	1080	185	80	2.7

Composite line post insulators

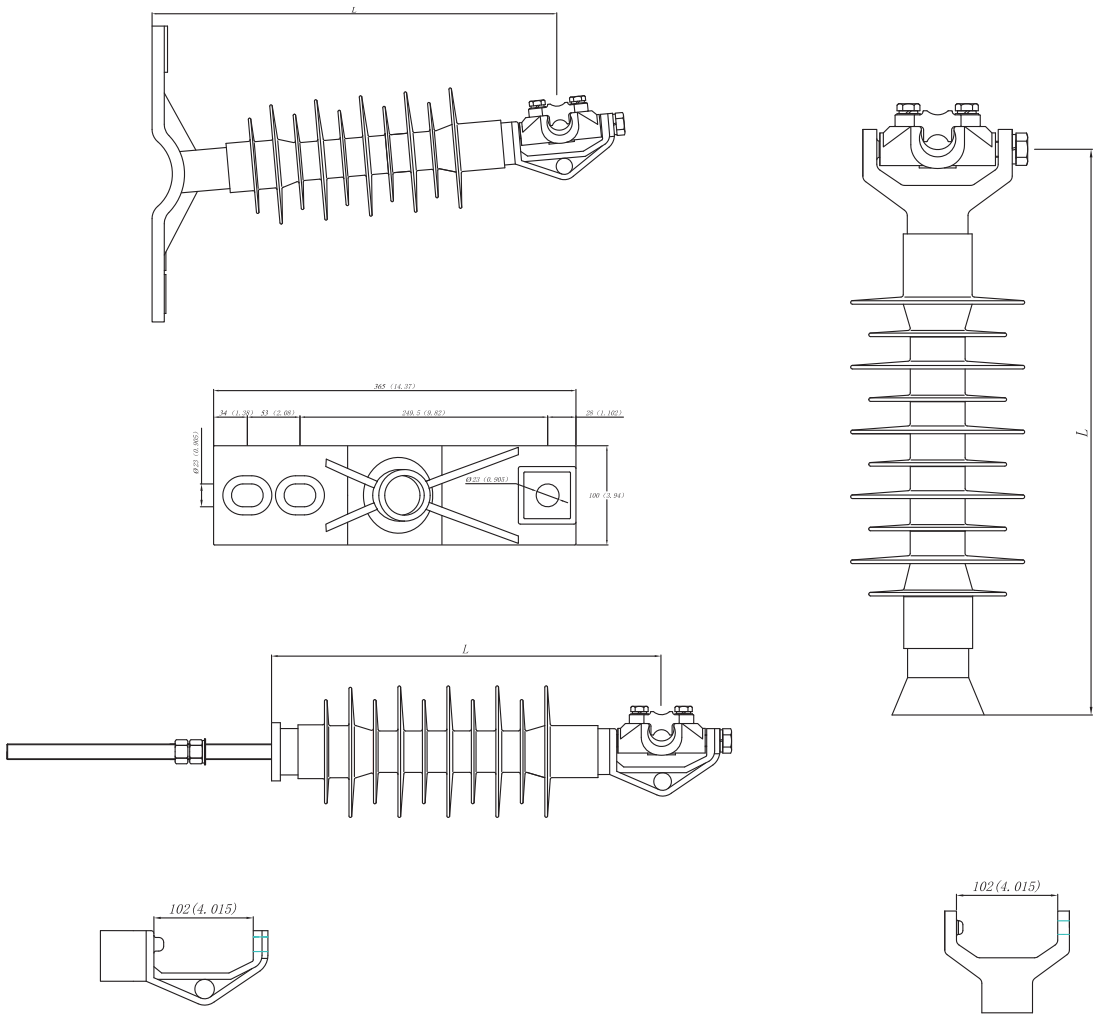


Design Tension Strength:11kN

Item NO.	Post Style	Usual System Voltage (kV)	"X" Length (mm)	Dry Arc distance (mm)	Leakage Distance (mm)	Low Freq. Flashover (kV)		Critical Flashover (kV)		SCL (kN)	RCL (kN)	Net Weight (kg)
						Dry	Wet	Pos.	Neg.			
1	Horiz.	35	427	299	591	135	100	195	210	10	5	4.2
2	Horiz.	35	450	299	591	145	110	205	215	10	5	3.4
3	Ver.	35	450	299	591	145	110	205	215	10	5	3.4

NOTE:1.SCL is the ultimate cantilever strength rating.

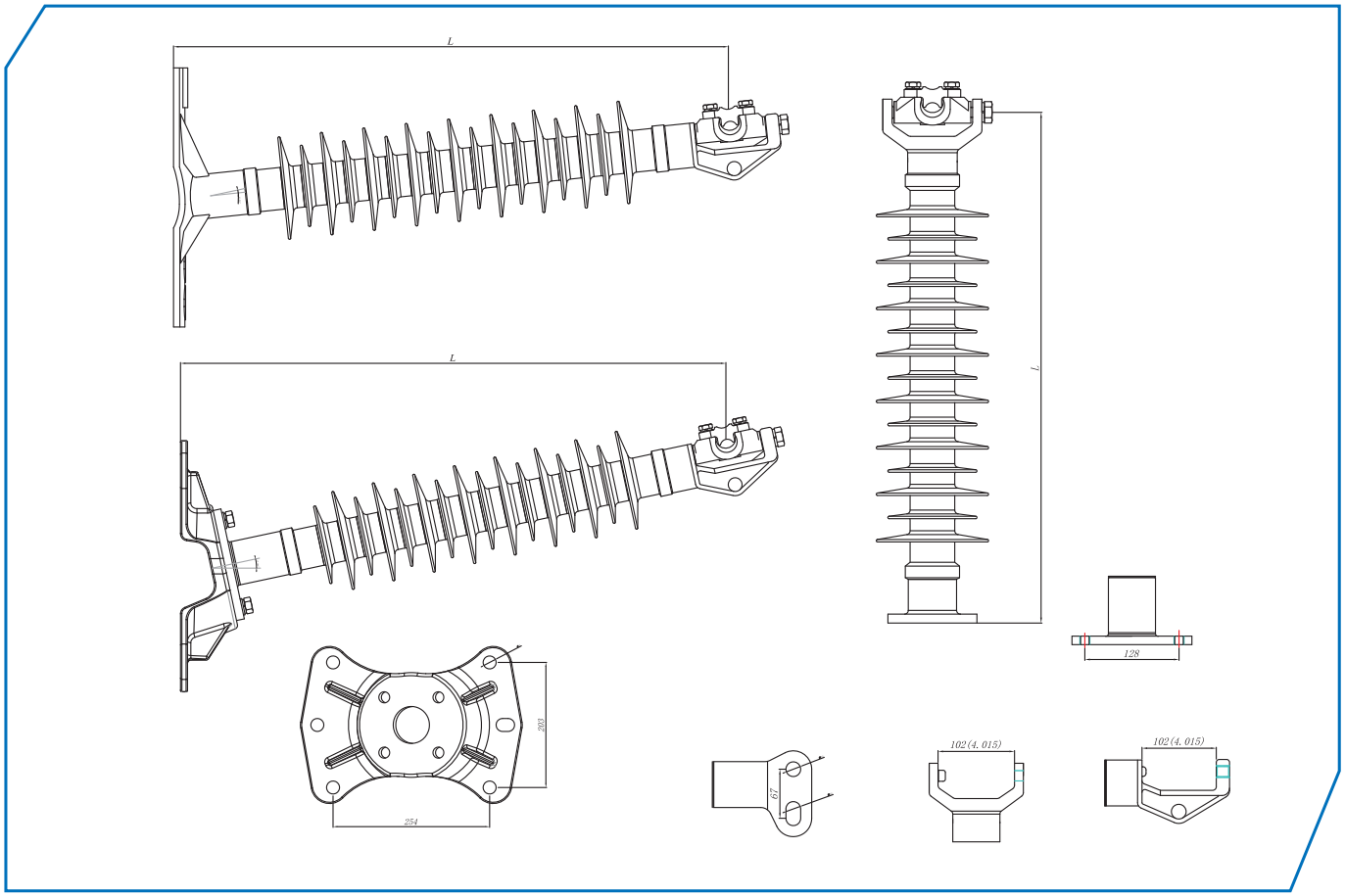
Composite line post insulators



Design Tension Strength:11kN

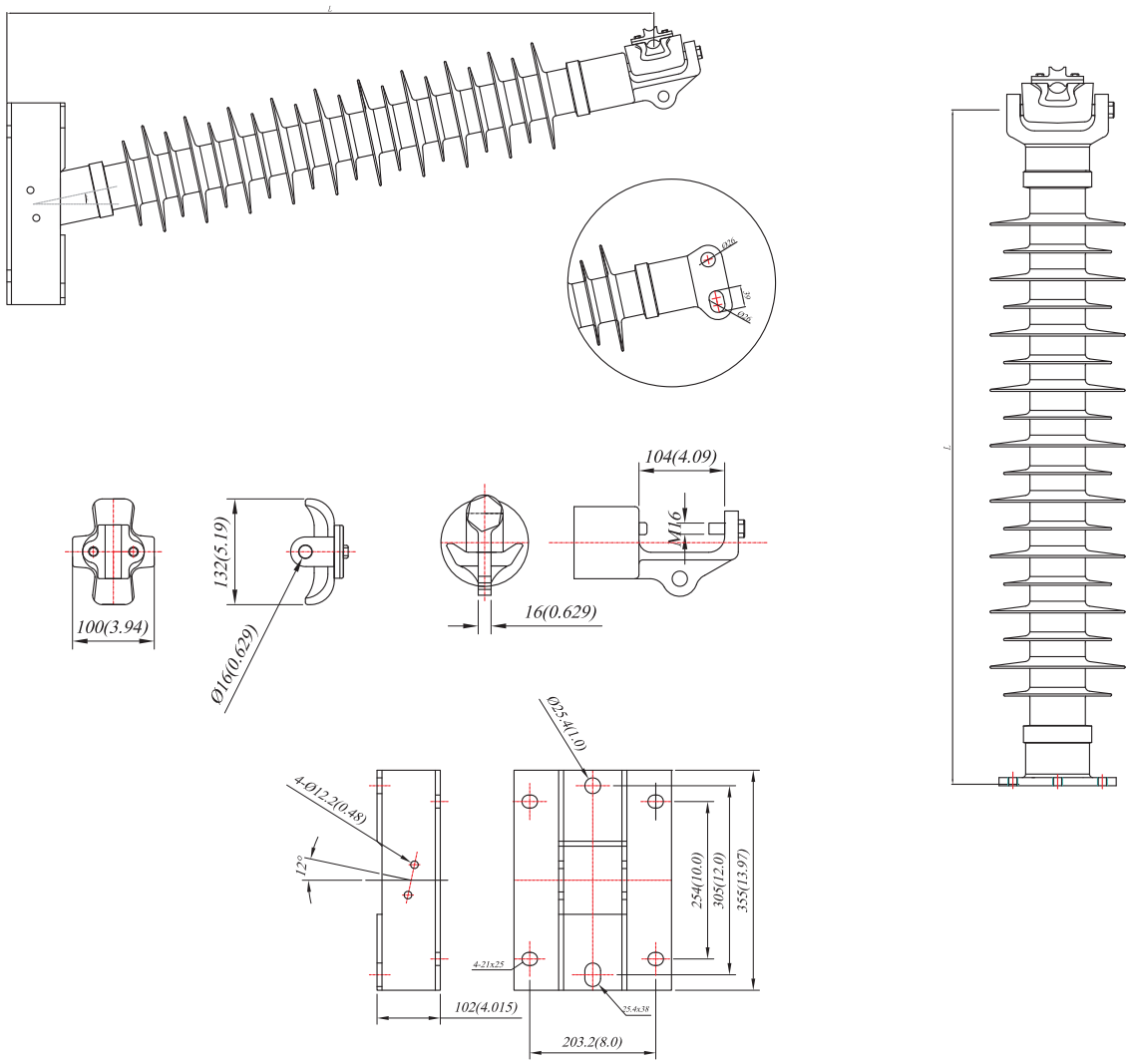
Item NO.	Post Style	Usual System Voltage (kV)	"X" Length (mm)	Dry Arc distance (mm)	Leakage Distance (mm)	Low Freq. Flashover (kV)		Critical Flashover (kV)		SCL (kN)	RCL (kN)	Net Weight (kg)
						Dry	Wet	Pos.	Neg.			
1	Horiz.	35	427	299	591	135	100	195	210	10	5	4.2
2	Horiz.	35	450	299	591	145	110	205	215	10	5	3.4
3	Ver.	35	450	299	591	145	110	205	215	10	5	3.4

NOTE:1.SCL is the ultimate cantilever strength rating.



Technical Data

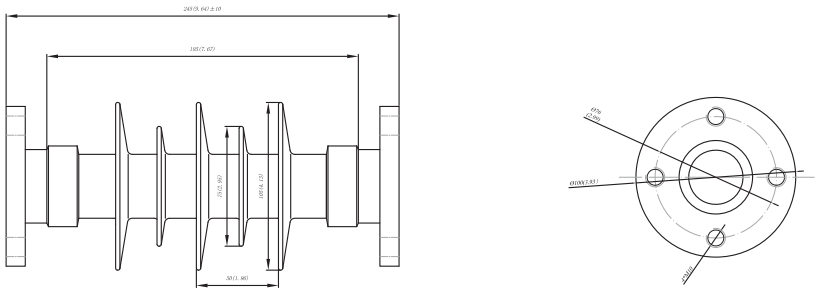
Item NO.	Post Style	Usual System Voltage (kV)	"X" Length (mm)	Dry Arc distance (mm)	Leakage Distance (mm)	Low Freq. Flashover (kV)		Critical Flashover (kV)		SCL (kN)	RCL (kN)	Net Weight (kg)
						Dry	Wet	Pos.	Neg.			
02011001-01	Horiz.	69	654	533	1295	210	190	350	425	10.9	5.4	12.4
02011001-02	Horiz.	69	641	533	1295	210	190	350	425	10.9	5.4	12.2
02011001-03	Horiz.	69	641	533	1295	210	190	350	425	10.9	5.4	12.4
02011001-04	Horiz.	69	692	533	1295	210	190	350	425	10.9	5.4	8.3
02011001-05	Horiz.	69	692	533	1295	210	190	350	425	10.9	5.4	8.3
02011001-06	Horiz.	69	679	533	1295	210	190	350	425	10.9	5.4	8.1
02011001-07	Horiz.	69	679	533	1295	210	190	350	425	10.9	5.4	8.1
02011001-08	Horiz.	69	679	533	1295	210	190	350	425	10.9	5.4	8.3
02011001-09	Horiz.	69	679	533	1295	210	190	350	425	10.9	5.4	8.3
02011001-10	Ver.	69	699	533	1295	210	170	350	425	10.9	5.4	9.1
02011001-11	Ver.	69	699	533	1295	210	170	350	425	10.9	5.4	9.1



Technical Data

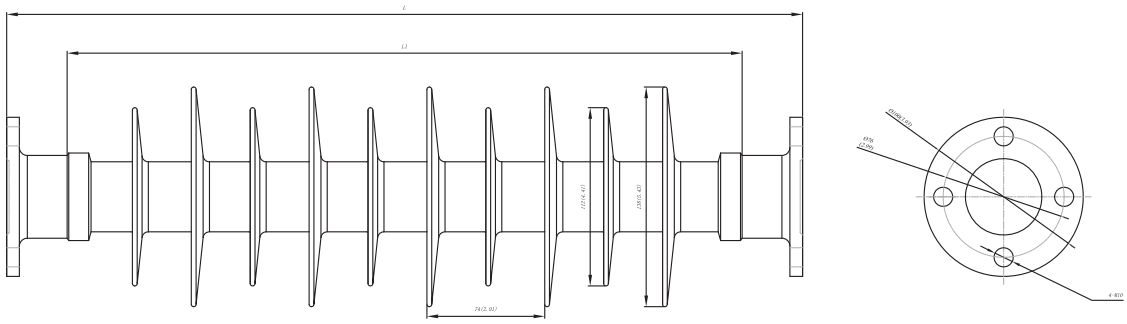
Catalog# With Gain Base& Clamptop end Fittings	Usual System Voltage (kV)	"X" Length (mm)	No. Of Sheds	Dry Arc Distance (mm)	Leakage Distance (mm)	Low Freq. Flashover (kV)		Critical Flashover (kV)		RCL (kN)	Net Weight (kg)
						Dry	Wet	Pos.	Neg.		
02011002H-01	69	851	8	584	1372	215	195	340	455	11.1	21.3
02011002H-02	69	980	10	711	1727	270	245	420	535	11.1	22.7
02011002H-03	69	1115	12	838	2083	325	295	505	620	9.5	24.5

Transmission Silicone Insulators



General dimension and characteristic of 12kv composite post insulator

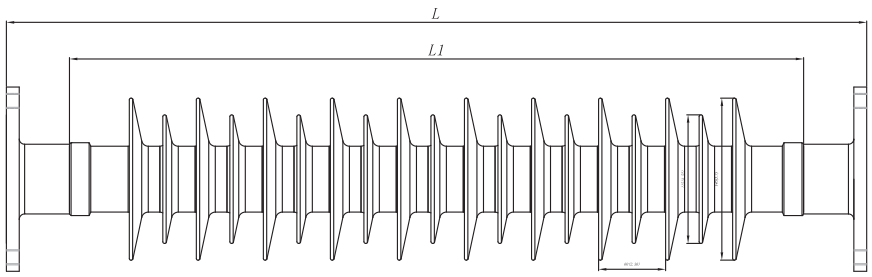
No.	Fig.	Type.	Rated voltage KV	Spectfied mechanical Bending load KN	Section height H,mm	Minimum arcing distance h,mm	Large shed diameter D.mm	Small shed diameter d,mm	Shed spacing B,mm	Mimimum nominal creepage distance	Lighting impulse withstand voltage	Vet power frequency voltage	Weight kg
1	31	FZ-12/6	12	6	210 5	150	145	115	60	390	95	40	3.7

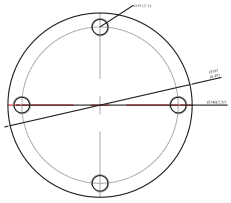


General dimension and characteristic of 12kv composite post insulator

No.	Fig.	Type.	Rated voltage KV	Spectfied mechanical Bending load KN	Section height H,mm	Minimum arcing distance h,mm	Large shed diameter D.mm	Small shed diameter d,mm	Shed spacing B,mm	Mimimum nominal creepage distance	Lighting impulse withstand voltage	Vet power frequency voltage	Weight kg
1	32	FZ-24/8	24	8	410 5	280	157	105	51	900	150	80	4.2
2	33	FZ-40/4	40.5	4	500 5	300	157	105	51	1100	185	80	6.0

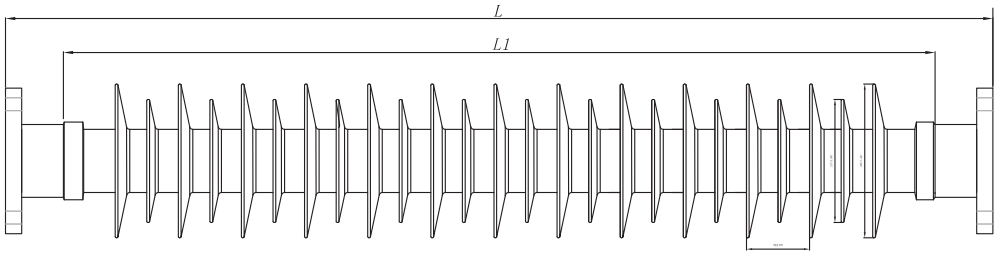
Transmission Silicone Insulators

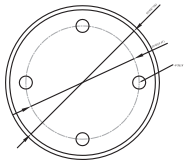




General dimension and characteristic of 12kv composite post insulator

No.	Fig.	Type.	Rated voltage KV	Spectfied mechanical Bending load KN	Section height H,mm	Minimum arcing distance h,mm	Large shed diameter D.mm	Small shed diameter d,mm	Shed spacing B,mm	Mimimum nominal creepage distance	Lighting impulse withstand voltage	Vet power frequency voltage	Weight kg
1	31	FZ-12/6	12	6	210 5	150	145	115	60	390	95	40	3.7
2	33	FZ-40.5/4	40.5	4	500 5	300	157	105	51	1100	185	80	6.0





General dimension and characteristic of 12kv composite post insulator

No.	Fig.	Type.	Rated voltage KV	Spectfied mechanical Bending load KN	Section height H,mm	Minimum arcing distance h,mm	Large shed diameter D.mm	Small shed diameter d,mm	Shed spacing B,mm	Mimimum nominal creepage distance	Lighting impulse withstand voltage	Vet power frequency voltage	Weight kg
1	32	FZ-24/8	24	8	410 5	280	157	105	51	900	150	80	4.2
2	33	FZ-40.5/4	40.5	4	500 5	300	157	105	51	1100	185	80	6.0