



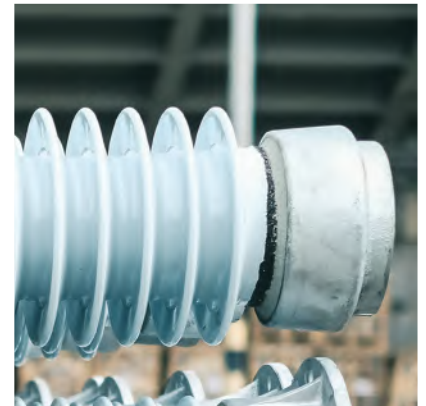
PPC Porcelain Solid Core Post Insulators and Operating Rods

ANSI

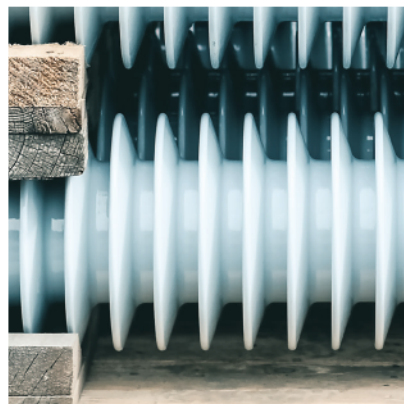
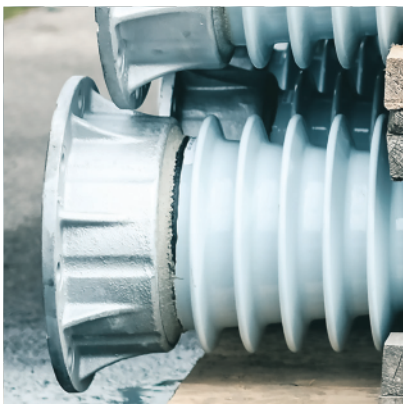
High Tech TR Post Insulators. Never compromise on safety!

Better design enables higher performance with less weight.

Under normal service conditions, post insulators are subjected to extreme electrical and mechanical stresses. These stresses vary with environmental conditions and electrical demands.



- Porcelain Solution for Unlimited Lifetime
- High Strength C130 Body for Advanced Performance Designs
- Below 1% of Quartz Composition for Superior Structural Rigidity
- Isostatic and Wet Process for Specific Product Requirements



PPC Insulators, with more than a century of experience in designing and manufacturing porcelain high voltage insulators, has developed insulators utilizing high strength C 130 body material improving design and reducing cost.



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ANSI Post Insulators.

The perfection of design.

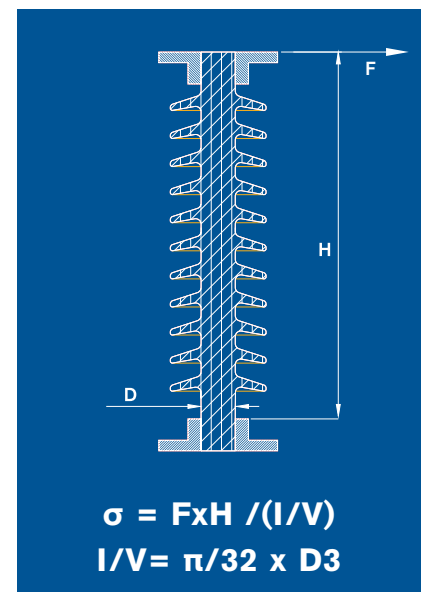
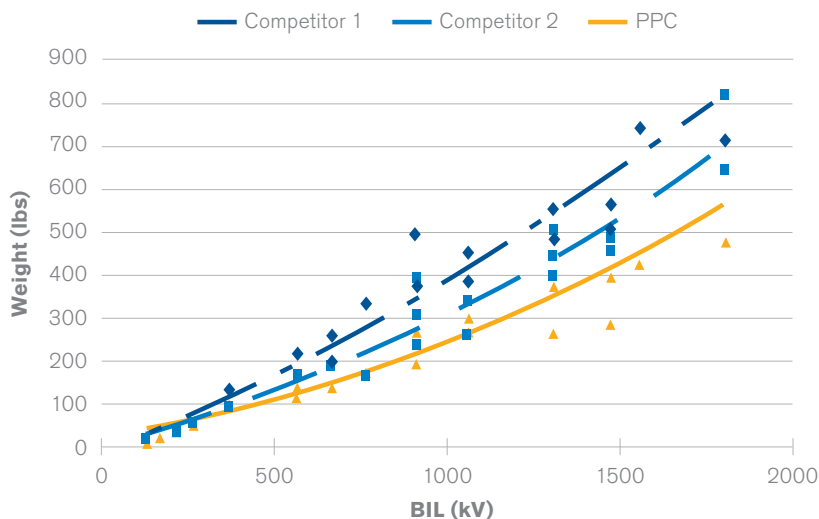
Mechanical Design

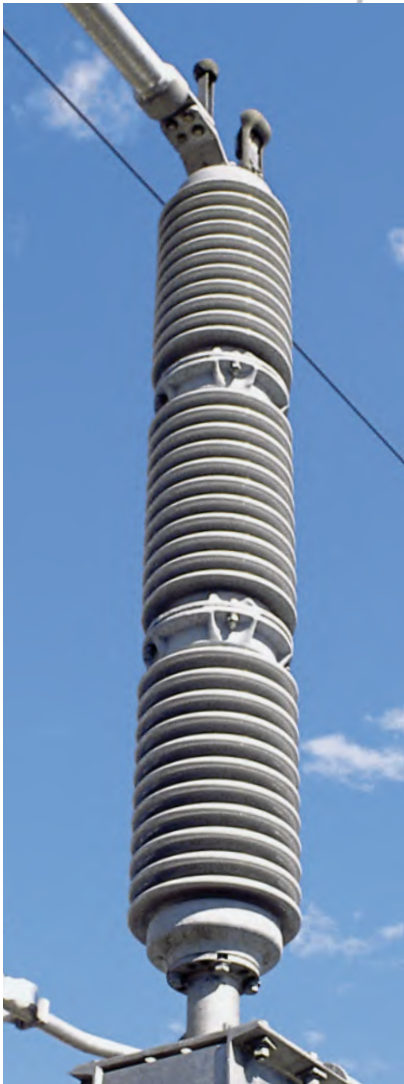
In-service stresses on post insulators are mainly due to cantilever loads, (e.g., weight, wind force, seismic conditions, short circuit loads). A few applications require compression strength, (e.g., capacitor banks) torsional strength (e.g., rotating disconnectors) or tensile strength (e.g., underhung post insulator).

Cantilever strength is in direct relationship to the core diameter. Thus, a high-strength insulator provides a high strength-to-weight ratio. Advantages include a smaller diameter, reduced quantity of and smaller

sized fittings, and lighter post insulators with less visual impact. The high strength C130 body also allows for a reduction in the number of components on insulators comprised of multiple units. The advantages provided by the reduction of additional fittings include increased strike distance/creep and less assembly time. All insulators up to and including the TR 369 are available in a one piece design.

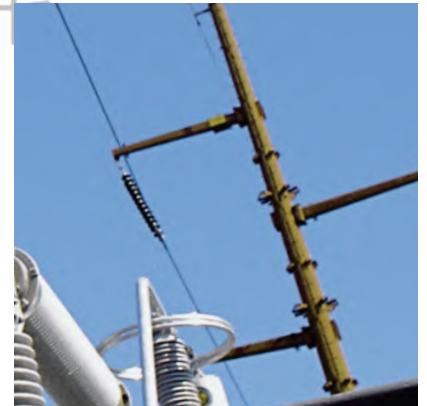
The weight savings are clearly shown on the below graph (TR weight per BIL level).





Style

Some styles can be designed with different features, number of sections, uniform or tapered as well as upright or underhung. The following codes are used throughout the catalog to clearly show the style.



Style codes

U = Uniform, Upright and Underhung
 T = Tapered, Upright Only
 V = Inverted Tapered

S = Standard Strength
 H = High Strength
 E = Extra High Strength

P = Pollution, High Leakage
 Y = Higher Cantilever Option
 Z = Higher Cantilever Option

Shed Design.

The shape of performance

Parameters Insulator Profile

1. Minimum distance, c , between sheds

- Shall be $\geq 1.18"$ (30 mm),

2. Ratio s/p between spacing and overhang

- ≥ 0.65 .

3. Ratio l_d/d between creepage distance and clearance

- This ratio must be calculated for the "worst case" on any section ($l_{d1}/d_1, l_{d2}/d_2$)
- It must be < 5 .

4. Alternating shed

- $> p_1 - p_2 \geq 0.59"$ (15mm)

Parameters give basic rules to assist design. They relate to vertically installed insulators.

Parameters Entire Insulator

1. Creepage factor C.F.

- C.F. ≤ 3.5 for pollution levels 1 and 2 (light and medium pollution level)
- C.F. ≤ 4 for pollution levels 3 and 4 (heavy and very heavy pollution level)

$$\text{C.F.} = l_t / S_t$$

l_t = total creepage distance of an insulator
 S_t = arcing distance

2. Profile factor P.F.

$$\text{P.F.} = \frac{2p_1 + 2p_2 + s}{l}$$

alternating sheds

$$\text{P.F.} = \frac{2p + s}{l}$$

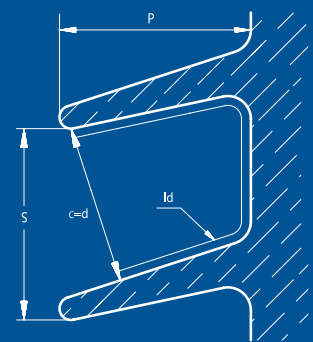
all other sheds

Creepage distance of the insulated leakage path measured between the two points which define s .

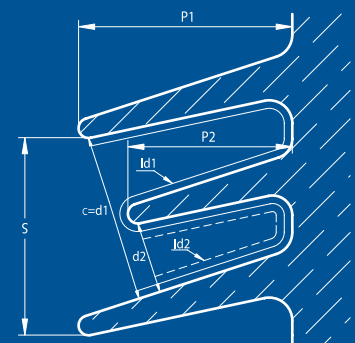
- P.F. > 0.8 for pollution levels 1 and 2. (light and medium pollution level)
- P.F. > 0.7 for pollution levels 3 and 4. (heavy and very heavy pollution level)

Sheds

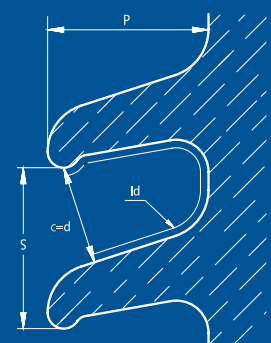
Plain



Alternating

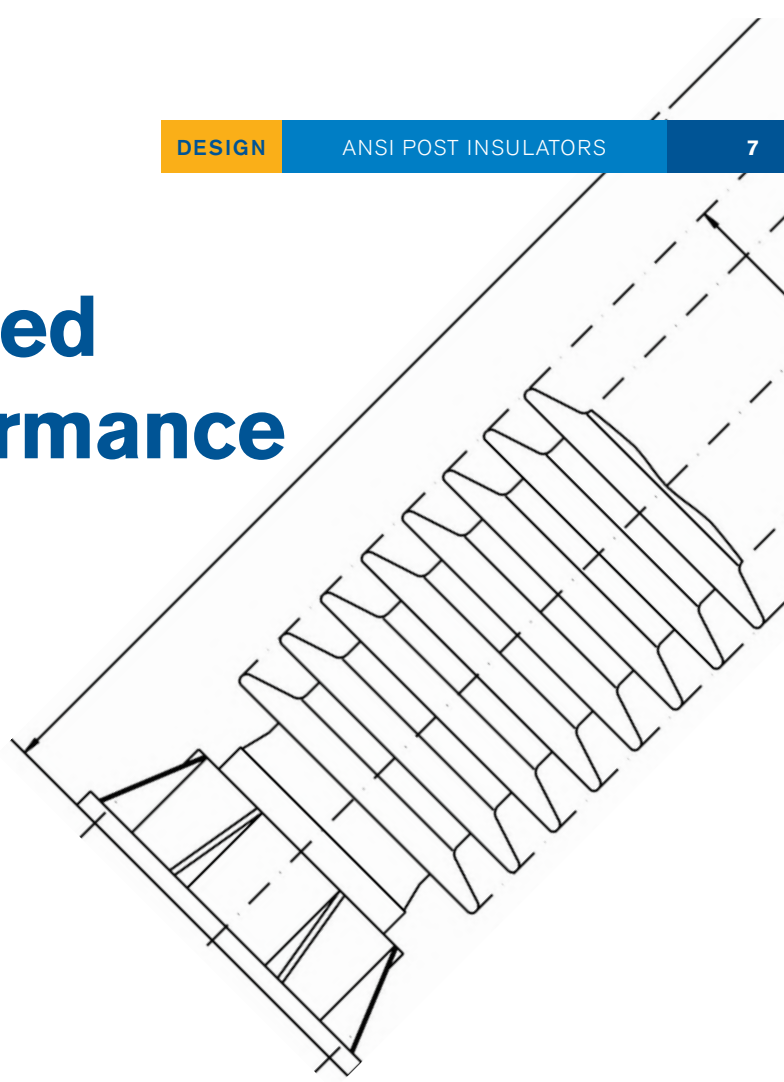


Standard



K-value Increased Pollution Performance Equalized Field Distribution

Basically, K-value design is a method to improve traditional creepage distance. In its full extent, K-value design is a method to reduce weight, volume and space while improving properties in-service by increasing pollution performance and equalizing electrical fields.



K-value is the unit for insulator shape and IEC 60507 defines the formula for form factor:

$$F = \int dl/p(l)$$

l the creepage distance
 $p(l)$ the circumference of the insulator as a function of l .



- **Form factor** used as a design method is referred to as K-value and can be used for different types of improvements.
- **Creepage distance** considers a leakage current as traveling over the insulator profile, in a linear path, identifying only distance.
- **K-value** considers a leakage current as traveling along the insulator, over its complete surface. It calculates reduced diameter and/or increased creepage distance for higher resistance against the leakage currents. K-value identifies an insulator's total shape, i.e., geometric (ohmic) resistance against leakage currents.

The shape of the insulator must be calculated for the optimum design of pollution performance. The traditional calculation of creepage distance is sometimes sufficient, but to achieve the best performance in relation to material and space used, K-value design is necessary.

PPC utilizes computer aided design methods for calculating K-value. Incorporating electrical, mechanical, dimensional, and material considerations.

Production

The PPC production facilities for TR station post insulators manufacture in full accordance with ANSI C29.9. Insulation requirements are available in ratings from 95kV to 2050kV BIL. Special requirements can be also offered upon request. This catalog, which includes standard ANSI TRs as well as extra high strength, additional creepage distance and different BCD, is updated continuously.

Quality Assurance

Quality procedures are applied throughout the production process according to ISO 9001. Per ANSI C29.9, insulators are tested to confirm design. Quality and Routine tests are performed on each unit throughout production.

Tested Items	Design Test § 7.2	Quality Conformance Test § 7.3	Routine Test § 7.4
Low Frequency Wet Withstand § 7.2.1	✓		
Critical Impulse Flashover, Positive § 7.2.2	✓		
Impulse Withstand § 7.2.3	✓		
Radio Influence Voltage § 7.2.4	✓		
Mechanical Failing load:			
Cantilever Strength § 7.3.4		✓	
Tensile Strength § 7.3.5		✓	
Compression Strength § 7.2.6	✓		
Torsional Strength § 7.2.7	✓		
Thermal Shock §7.2.5	✓		
Visual and Dimensional Tests §7.3.1		✓	
Porosity §7.3.2		✓	
Galvanizing Test §7.3.3		✓	
Mechanical Proof §7.4.2			✓

Post insulator mechanical strength is designed with regards to ANSI C29.9 cantilever ratings. Resulting mechanical values often exceed ANSI ratings for compression, torsion and tensile strengths. For standardization, ANSI ratings are used in the specification tables, pages 12 - 27. Actual ultimate breaking values are available upon request.

RIV

If corona rings are necessary to meet the requirements, this is indicated in the tables.

Tolerances

Alignment of fixing holes

The line between two opposite axes of holes of the top fitting have to be in line with corresponding line of the bottom fitting within the specified angle. 1° standard

Coaxiality and concentricity

The center line of the pitch circle diameter of the two fittings should fit into a cylinder with diameter equal to

- $2x (0.5 + \text{height of insulator in meters}) \text{ mm}$
- or $0.002x (20+ \text{height of insulator in inches}) \text{ in}$

Plane parallelism

- $0.5x (\text{height of insulator in meters}) \text{ mm}$
- or $0.0005x (\text{height of insulator in inches}) \text{ in}$

Conversion Table

1 inch	25.4 mm
1 pound	4.448 N
1 inch-pound	0.113 Nm

Fittings

Fittings are made of malleable cast or ductile iron, hot dip galvanized according ASTM A-153M.

Standard Sizes	
3 - inch bolt circle diameter:	4 tapped holes, 1/2 inch - 13 + .015 oversize 1/2" Full Thread Depth (tapped after hot dip galvanizing)
5 - inch bolt circle diameter:	4 tapped holes, 5/8 inch - 11 + .015 oversize 5/8" Full Thread Depth (tapped after hot dip galvanizing)
7 - inch bolt circle diameter:	4 tapped holes, 3/4 inch - 10 + .015 oversize 3/4" Full Thread Depth (tapped after hot dip galvanizing)

— The holes are tapped 0.015" oversize to allow for use of galvanized cap screws.

12 - inch bolt circle diameter:	8 holes, according to drawings
14 - inch bolt circle diameter:	8 holes, according to drawings

Note: When the insulator is made of more than one section, hardware required for assembly is delivered with the shipment.



Cementing

The fittings are assembled to the porcelain with a Portland base mortar. A bituminous coating is applied on the porcelain and the fittings to compensate for the difference in thermal expansion. This is especially important for extreme weather applications.



Glazing

Glazing is grey in accordance to ANSI Z55.1 and conforms to Munsell notation 5BG 7.0/0.4. Brown glaze is also available.

Key Features Comparative Advantages.

PPC Insulators offers superior insulation solutions, designed and produced to deliver the best performance results.

High strength aluminium oxide porcelain body

- highest strength to weight ratio
- high compression and torsional strength
- minimum deflection
- high resistance to vandalism
- resistant to salt pollution

Below 1 % of quartzware residue

- free of internal stresses
- highest structural rigidity
- minimum porosity
- lowest maintenance costs

No measurable aging

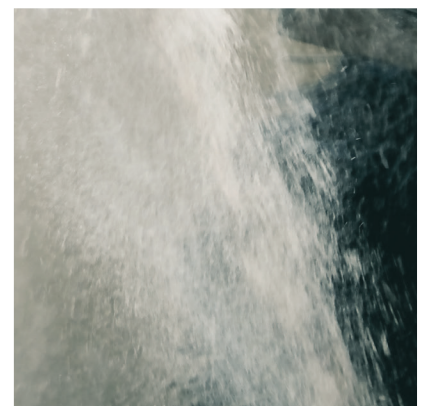
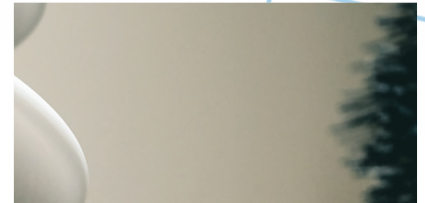
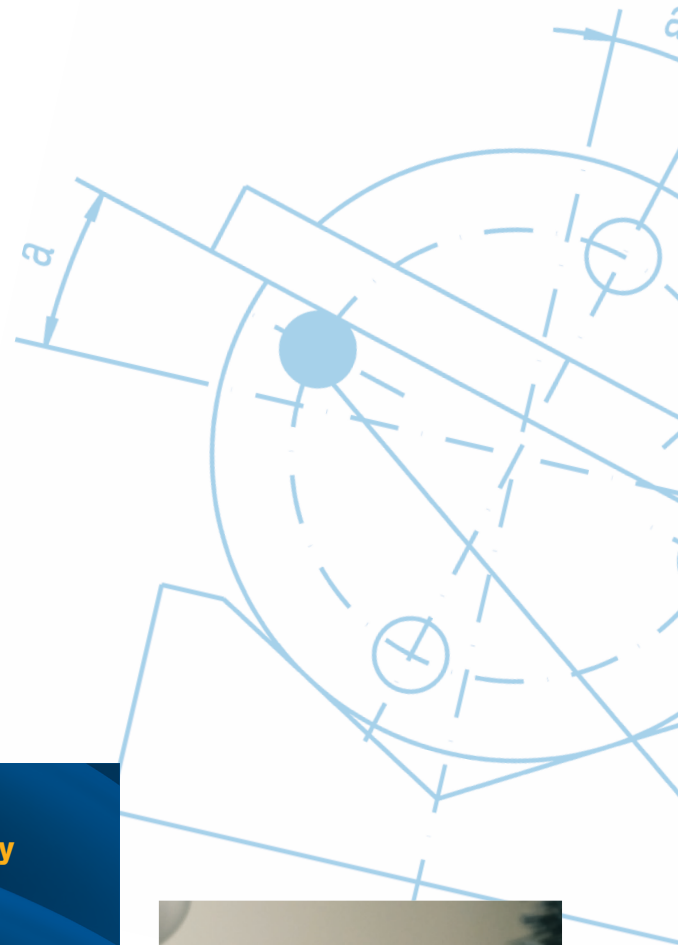
- high resistance to thermal stress
- high resistance to temperature variations
- minimum total life cycle costs

High performance consistency

- routine test load at 70 % of the min. failing load
- low surface leakage current
- separated electrical and mechanical zones
- good self-cleaning properties
- good insulation performance under pollution
- ultrasonic mechanical soundness inspection

Puncture proof

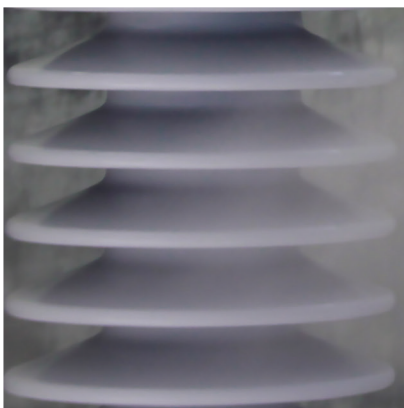
- The theoretical puncture path through the porcelain body is almost equal to the dry arcing distance. Since porcelain has several times the dielectric breakdown strength of air, flashover, if any, always occurs in the air outside the porcelain body



RTV Coating

Porcelain Strength Meets Hydrophobicity.

Extreme environmental conditions and high pollution areas such as industrial, desert and coastal regions cause excessive leakage currents. The surface condition of an insulator in such areas will subsequently lead to a pollution flashover and power system outages. To avoid the electrically conductive layer, resulting from an accumulation of pollutants in combination with moisture, frequent washing or greasing of the insulators is necessary to ensure safe operation. The consequences are high maintenance costs and profit losses due to regular station shut down and interruptions in power supply.



RTV Coating Benefits

- excellent self-cleaning characteristics and long-term resistance to weathering and harsh environments
- long-term hydrophobicity
- suppression of leakage current, discharges and pollution flashover
- reduces maintenance expenditures
- facilitate cleaning in case of extreme pollution deposition
- RTV coated surfaces withstand high-pressure jet washing
- minimum 15 years lifecycle
- nontoxic and environmentally friendly material

RTV Coating

A silicone layer is applied to insulators at the factory or in the field using a special spray coating technique. The silicone layer provides a hydrophobic surface, limiting the negative effects of contamination and enhancing the electrical characteristics and low leakage currents in highly polluted areas.

TYPE

BIL 95-110 kV

BIL	95 kV			110 kV		
Style	UNIFORM			UNIFORM		
Catalog Number	95 SU	95 HU	95 EU	110 SU	110 HU	110 EU
ANSI Technical Reference	TR202	TR222		TR205	TR225	
Non ANSI Description	95-2000	95-4000	95-8000	110-2000	110-4000	110-8000

Dimensions

Leakage Distance (in)	10.5	10.5	10.5	15.5	15.5	17
Height (in)	7.5	10	10	10	12	12
Max Shed Diameter (in)	7.1	8	8.9	7	8.2	10.2
Top BCD (in)	3	5	5	3	5	5
Diameter Dt (in)	3.9	6.2	6.2	4.1	6.2	6.3
Bottom BCD (in)	3	5	5	3	5	5
Diameter Db (in)	3.9	6.2	6.2	4.1	6.2	6.3

Mechanical Values

Cantilever Strength, Upright, Pounds	2000	4000	8000	2000	4000	8000
Tensile Strength, Pounds	7000	15000	28000	8500	20000	28000
Torsion Strength, Inch-Pounds	6000	12000	40000	7000	14000	40000
Compression Strength, Pounds	10000	20000	40000	10000	20000	40000

Electrical Values

Impulse Flashover, Positive, kV	105	105	105	125	125	125
Low Frequency Withstand, 10 Sec. Wet, kV	30	30	30	45	45	45
Impulse Withstand, kV	95	95	95	110	110	110

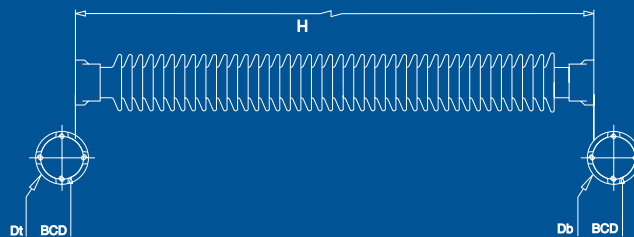
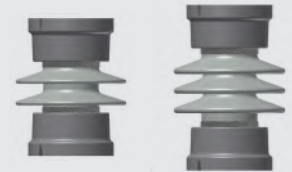
Radio Influence Voltage Data

Test Voltage, Rms to Ground, kV	5	5	5	10	10	10
Maximum RIV, Microvolts at 1000kHz	50	50	50	50	50	50

Weight

Approximate Net Weight, Pounds	13	31	37	17	36	53
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S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting



TYPE

BIL 150-200 kV

BIL	150 kV			200 kV		
Style	UNIFORM			UNIFORM		
Catalog Number	150 SU	150 HU	150 EU	200 SU	200 HU	200 EU
ANSI Technical Reference	TR208	TR227		TR210	TR231	
Non ANSI Description	150-2000	150-4000	150-8000	200-2000	200-4000	200-8000

Dimensions

Leakage Distance (in)	24	24	24	37	37	37
Height (in)	14	15	15	18	20	20
Max Shed Diameter (in)	6.3	7.1	10.8	6.9	8.6	10.5
Top BCD (in)	3	5	5	3	5	5
Diameter Dt (in)	4.3	6.2	6.3	4.3	6.2	6.4
Bottom BCD (in)	3	5	5	3	5	5
Diameter Db (in)	4.3	6.2	6.3	4.3	6.2	6.4

Mechanical Values

Cantilever Strength, Upright, Pounds	2000	4000	8000	2000	4000	8000
Tensile Strength, Pounds	10000	20000	28000	12000	25000	28000
Torsion Strength, Inch-Pounds	8000	16000	40000	10000	20000	40000
Compression Strength, Pounds	10000	20000	40000	15000	30000	60000

Electrical Values

Impulse Flashover, Positive, kV	170	170	170	225	225	225
Low Frequency Withstand, 10 Sec. Wet, kV	60	60	60	80	80	80
Impulse Withstand, kV	150	150	150	200	200	200

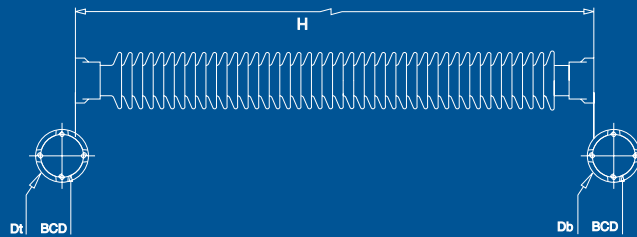
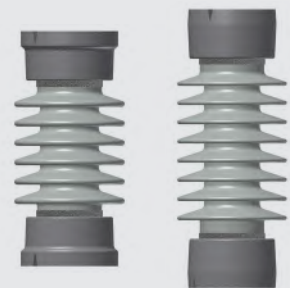
Radio Influence Voltage Data

Test Voltage, Rms to Ground, kV	15	15	15	22	22	22
Maximum RIV, Microvolts at 1000kHz	100	100	100	100	100	100

Weight

Approximate Net Weight, Pounds	29	41	66	43	62	87
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- S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
- H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
- E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting



TYPE

BIL 250-350 kV

BIL	250 kV			350 kV		
Style	UNIFORM			UNIFORM		
Catalog Number	250 SU	250 HU	250 EU	350 SU	350 HU	350 EU
ANSI Technical Reference	TR214	TR267		TR216	TR278	
Non ANSI Description	250-2000	250-4000	250-8000	350-1500	350-3000	350-6000

Dimensions

Leakage Distance (in)	43	43	43	72	72	72
Height (in)	22	24	25	30	30	32
Max Shed Diameter (in)	7.3	9	10.6	7.1	9.8	11.1
Top BCD (in)	3	5	7	3	5	7
Diameter Dt (in)	4.3	6.4	8.7	4.3	6.4	8.7
Bottom BCD (in)	3	5	7	3	5	7
Diameter Db (in)	4.3	6.4	8.7	4.3	6.4	8.7

Mechanical Values

Cantilever Strength, Upright, Pounds	2000	4000	8000	1500	3000	6000
Tensile Strength, Pounds	14000	25000	28000	16000	25000	40000
Torsion Strength, Inch-Pounds	12000	20000	90000	15000	40000	90000
Compression Strength, Pounds	15000	60000	120000	25000	60000	120000

Electrical Values

Impulse Flashover, Positive, kV	280	280	280	390	390	390
Low Frequency Withstand, 10 Sec. Wet, kV	100	100	100	145	145	145
Impulse Withstand, kV	250	250	250	350	350	350

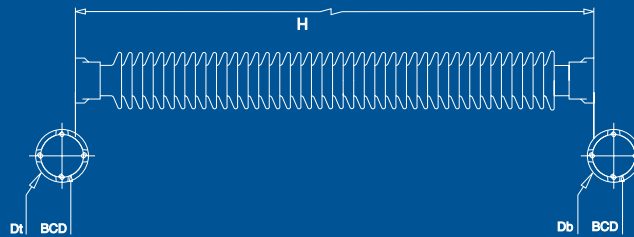
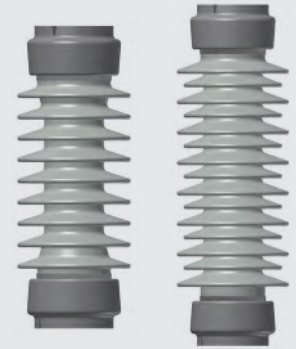
Radio Influence Voltage Data

Test Voltage, Rms to Ground, kV	30	30	30	44	44	44
Maximum RIV, Microvolts at 1000kHz	200	200	200	200	200	200

Weight

Approximate Net Weight, Pounds	49	91	168	63	118	206
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S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting



TYPE

BIL 550 kV

BIL	550 kV					
Style	UNIFORM			UNIFORM - HIGH LEAKAGE		
Catalog Number	550 SU	550 HU	550 EU	550 SUP	550 HUP	550 EUP
ANSI Technical Reference	TR286	TR287				
Non ANSI Description	550-1700	550-2600	550-5000	550-1700	550-2600	550-5000

Dimensions

Leakage Distance (in)	99	99	99	125	125	120
Height (in)	45	45	45	45	45	45
Max Shed Diameter (in)	7.1	7.4	10.4	9.3	10	11.5
Top BCD (in)	5	5	7	5	5	7
Diameter Dt (in)	6.2	6.4	8.7	6.2	6.3	8.7
Bottom BCD (in)	5	5	7	5	5	7
Diameter Db (in)	6.2	6.4	8.7	6.2	6.3	8.7

Mechanical Values

Cantilever Strength, Upright, Pounds	1700	2600	5000	1700	2600	5000
Tensile Strength, Pounds	20000	25000	40000	20000	25000	40000
Torsion Strength, Inch-Pounds	40000	90000	120000	40000	90000	120000
Compression Strength, Pounds	60000	75000	120000	60000	75000	120000

Electrical Values

Impulse Flashover, Positive, kV	610	610	610	610	610	610
Low Frequency Withstand, 10 Sec. Wet, kV	230	230	230	230	230	230
Impulse Withstand, kV	550	550	550	550	550	550

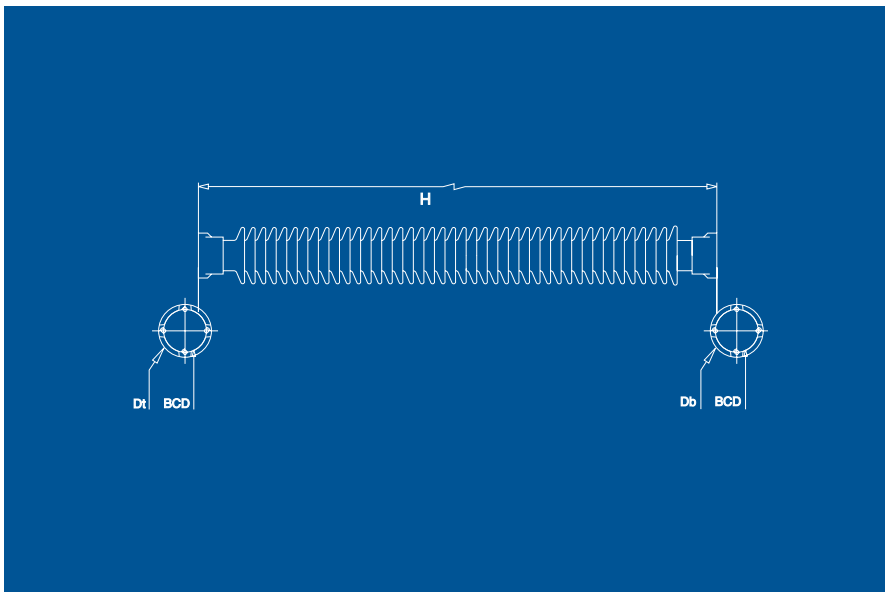
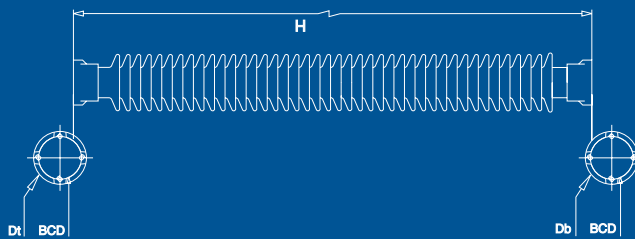
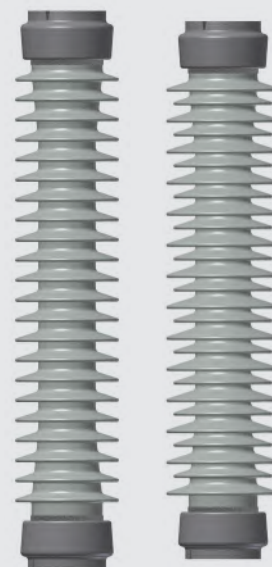
Radio Influence Voltage Data

Test Voltage, Rms to Ground, kV	73	73	73	73	73	73
Maximum RIV, Microvolts at 1000kHz	200	200	200	200	200	200

Weight

Approximate Net Weight, Pounds	114	135	262	147	178	265
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- S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
- H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
- E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting



TYPE

BIL 650 kV

BIL	650 kV					
Style	UNIFORM			UNIFORM - HIGH LEAKAGE		
Catalog Number	650 SU	650 HU	650 EU	650 SUP	650 HUP	650 EUP
ANSI Technical Reference	TR288	TR289				
Non ANSI Description	650-1450	650-2200	650-4100	650-1450	650-2200	650-4100

Dimensions

Leakage Distance (in)	116	116	116	155	155	155
Height (in)	54	54	54	54	54	54
Max Shed Diameter (in)	7.3	7.8	10.2	9.5	9.9	11.7
Top BCD (in)	5	5	7	5	5	7
Diameter Dt (in)	6.3	6.3	8.7	6.3	6.3	8.7
Bottom BCD (in)	5	5	7	5	5	7
Diameter Db (in)	6.3	6.3	8.7	6.3	6.3	8.7

Mechanical Values

Cantilever Strength, Upright, Pounds	1400	2200	4100	1450	2200	4100
Tensile Strength, Pounds	20000	25000	40000	20000	25000	40000
Torsion Strength, Inch-Pounds	40000	90000	120000	60000	90000	120000
Compression Strength, Pounds	60000	75000	120000	60000	75000	120000

Electrical Values

Impulse Flashover, Positive, kV	710	710	710	710	710	710
Low Frequency Withstand, 10 Sec. Wet, kV	275	275	275	275	275	275
Impulse Withstand, kV	650	650	650	650	650	650

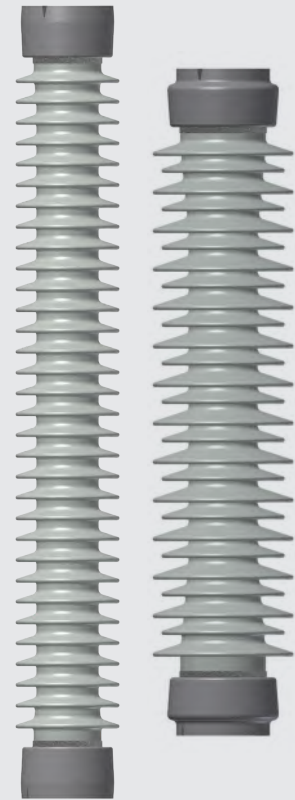
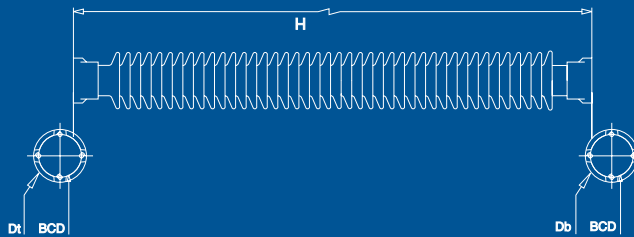
Radio Influence Voltage Data

Test Voltage, Rms to Ground, kV	88	88	88	88	88	88
Maximum RIV, Microvolts at 1000kHz	200	200	200	200	200	200

Weight

Approximate Net Weight, Pounds	137	187	294	168	203	338
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S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
 H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
 E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting



TYPE

BIL 750 kV

BIL	750 kV					
	UNIFORM			UNIFORM - HIGH LEAKAGE		
Style						
Catalog Number	750 SU	750 HU	750 EU	750 SUP	750 HUP	750 EUP
ANSI Technical Reference	TR291	TR295				
Non ANSI Description	750-1200	750-1850	750-3500	750-1200	750-1850	750-3500

Dimensions

Leakage Distance (in)	132	132	132	180	180	180
Height (in)	62	62	62	62	62	62
Max Shed Diameter (in)	7.3	8.6	10.2	9.5	10	11.6
Top BCD (in)	5	5	7	5	5	7
Diameter Dt (in)	6.2	6.3	8.7	6.3	6.3	8.7
Bottom BCD (in)	5	5	7	5	5	7
Diameter Db (in)	6.2	6.3	8.7	6.3	6.3	8.7

Mechanical Values

Cantilever Strength, Upright, Pounds	1200	1850	3500	1200	1850	3500
Tensile Strength, Pounds	20000	25000	40000	20000	25000	40000
Torsion Strength, Inch-Pounds	40000	90000	120000	40000	90000	120000
Compression Strength, Pounds	60000	75000	120000	60000	75000	120000

Electrical Values

Impulse Flashover, Positive, kV	810	810	810	810	810	810
Low Frequency Withstand, 10 Sec. Wet, kV	315	315	315	315	315	315
Impulse Withstand, kV	750	750	750	750	750	750

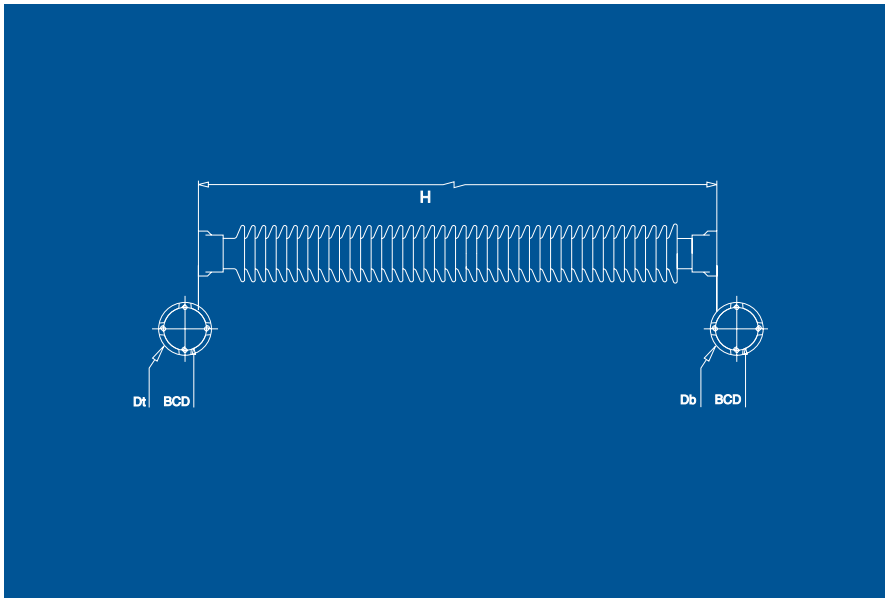
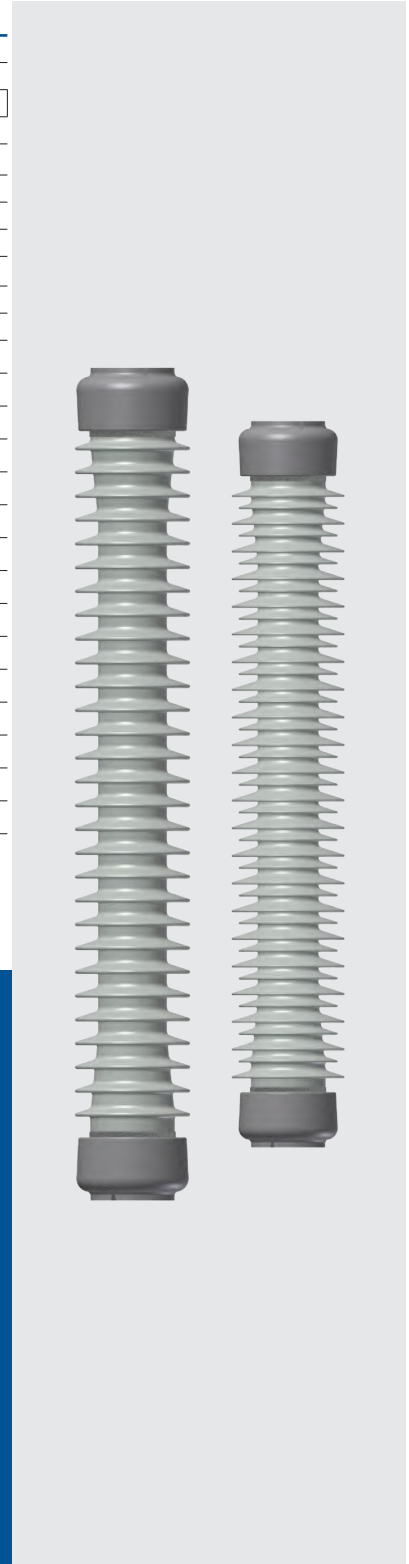
Radio Influence Voltage Data

Test Voltage, Rms to Ground, kV	103	103	103	103	103	103
Maximum RIV, Microvolts at 1000kHz	500	500	500	500	500	500

Weight

Approximate Net Weight, Pounds	155	224	324	197	230	366
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- S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
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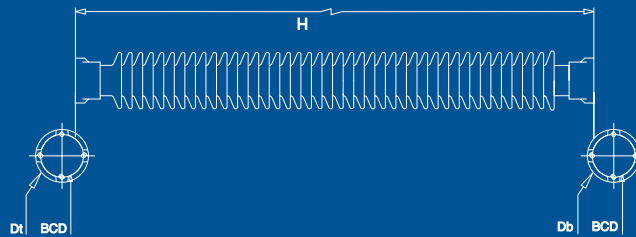


TYPE

BIL 900 kV

BIL	900 kV				
Style	TAPERED		UNIFORM		
Catalog Number	900 HT	900 ET	900 SU	900 HU	900 EU
ANSI Technical Reference	TR308		TR304	TR308	
Non ANSI Description	900-1450	900-2750	900-950	900-1450	900-2750
Dimensions					
Leakage Distance (in)	165	165	165	165	165
Height (in)	80	80	80	80	80
Max Shed Diameter (in)	7.9	8.7	7	7.7	8.6
Top BCD (in)	5	5	5	5	7
Diameter Dt (in)	6.3	6.3	6.2	6.3	8.7
Bottom BCD (in)	5	7	5	5	7
Diameter Db (in)	6.3	8.7	6.2	6.3	8.7
Mechanical Values					
Cantilever Strength, Upright, Pounds	1450	2750	950	1450	2750
Tensile Strength, Pounds	25000	25000	20000	25000	40000
Torsion Strength, Inch-Pounds	90000	90000	40000	90000	133000
Compression Strength, Pounds	75000	90000	60000	75000	150000
Electrical Values					
Impulse Flashover, Positive, kV	1010	1010	1010	1010	1010
Low Frequency Withstand, 10 Sec. Wet, kV	385	385	385	385	385
Impulse Withstand, kV	900	900	900	900	900
Radio Influence Voltage Data					
Test Voltage, Rms to Ground, kV	146	146	146	146	146
Maximum RIV, Microvolts at 1000kHz	500	500	500	500	500
Weight					
Approximate Net Weight, Pounds	226	303	181	246	335

S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
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 E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting

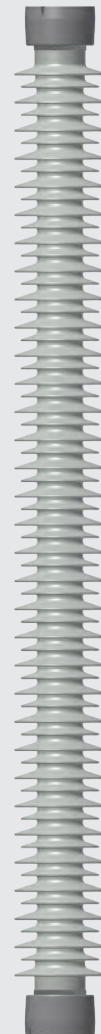
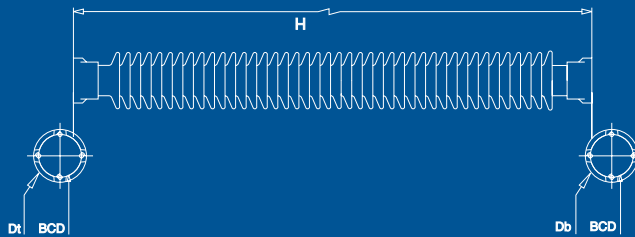


TYPE

BIL 900 kV

BIL	900 kV				
Style	TAPERED		UNIFORM	TAPERED	
	HIGH STRENGTH		HIGH LEAKAGE		
Catalog Number	900 YT	900 ZT	900 SUP	900 HTP	900 ETP
ANSI Technical Reference					
Non ANSI Description	900-3000	900-4000	900-950	900-1450	900-2750
Dimensions					
Leakage Distance (in)	165	171	227	229	228
Height (in)	80	80	80	80	80
Max Shed Diameter (in)	8.7	9.4	8.7	8.9	10.1
Top BCD (in)	5	5	5	5	5
Diameter Dt (in)	6.3	6.3	6.2	6.3	6.3
Bottom BCD (in)	7	12	5	5	7
Diameter Db (in)	8.7	13.2	6.2	6.3	8.7
Mechanical Values					
Cantilever Strength, Upright, Pounds	3000	4000	950	1450	2750
Tensile Strength, Pounds	25000	31500	20000	25000	25000
Torsion Strength, Inch-Pounds	90000	88500	40000	90000	90000
Compression Strength, Pounds	75000	260000	60000	75000	90000
Electrical Values					
Impulse Flashover, Positive, kV	1010	1010	1010	1010	1010
Low Frequency Withstand, 10 Sec. Wet, kV	385	385	385	385	385
Impulse Withstand, kV	900	900	900	900	900
Radio Influence Voltage Data					
Test Voltage, Rms to Ground, kV	146	146	146	146	146
Maximum RIV, Microvolts at 1000kHz	500	500	500	500	500
Weight					
Approximate Net Weight, Pounds	305	368	219	254	341

S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
 H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
 E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting



TYPE

BIL 1050 kV

BIL	1050 kV					
Style	TAPERED			UNIFORM		
Catalog Number	1050 ST	1050 HT	1050 ET	1050 SU	1050 HU	1050 EU
ANSI Technical Reference	TR312	TR316		TR312	TR316	TR362
Non ANSI Description	1050-800	1050-1250	1050-2300	1050-800	1050-1250	1050-2300

Dimensions

Leakage Distance (in)	198	198	198	198	198	198
Height (in)	92	92	92	92	92	92
Max Shed Diameter (in)	7.4	8.3	9.3	7.4	8.4	9.3
Top BCD (in)	5	5	5	5	5	7
Diameter Dt (in)	6.2	6.3	6.3	6.2	6.3	8.7
Bottom BCD (in)	5	5	7	5	5	7
Diameter Db (in)	6.2	6.7	8.7	6.2	6.3	8.7

Mechanical Values

Cantilever Strength, Upright, Pounds	800	1250	2300	800	1250	2300
Tensile Strength, Pounds	20000	25000	25000	20000	25000	40000
Torsion Strength, Inch-Pounds	40000	90000	90000	40000	90000	90000
Compression Strength, Pounds	60000	75000	90000	60000	75000	90000

Electrical Values

Impulse Flashover, Positive, kV	1210	1210	1210	1210	1210	1210
Low Frequency Withstand, 10 Sec. Wet, kV	455	455	455	455	455	455
Impulse Withstand, kV	1050	1050	1050	1050	1050	1050

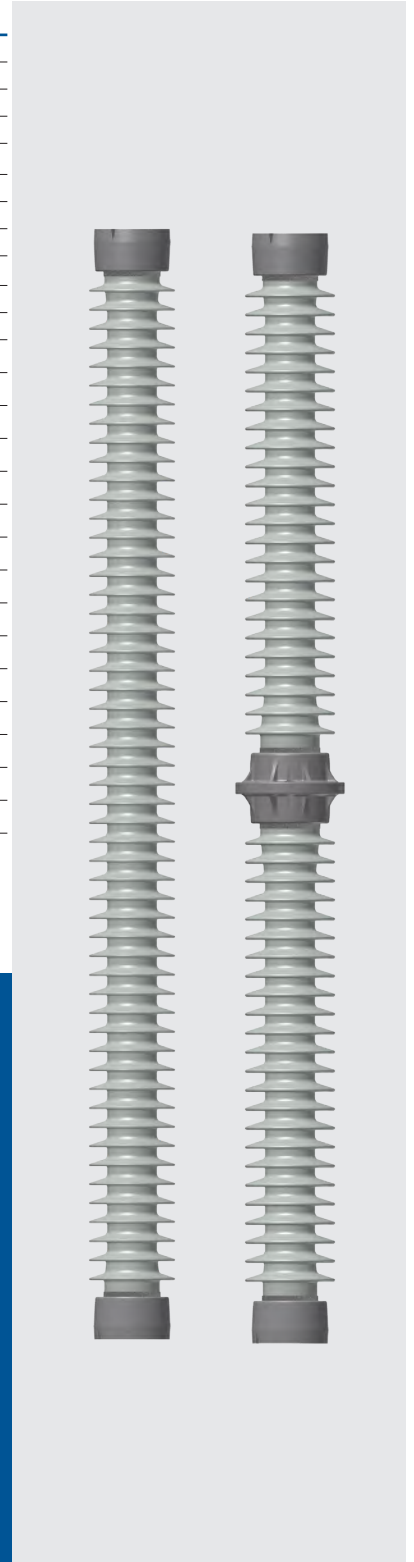
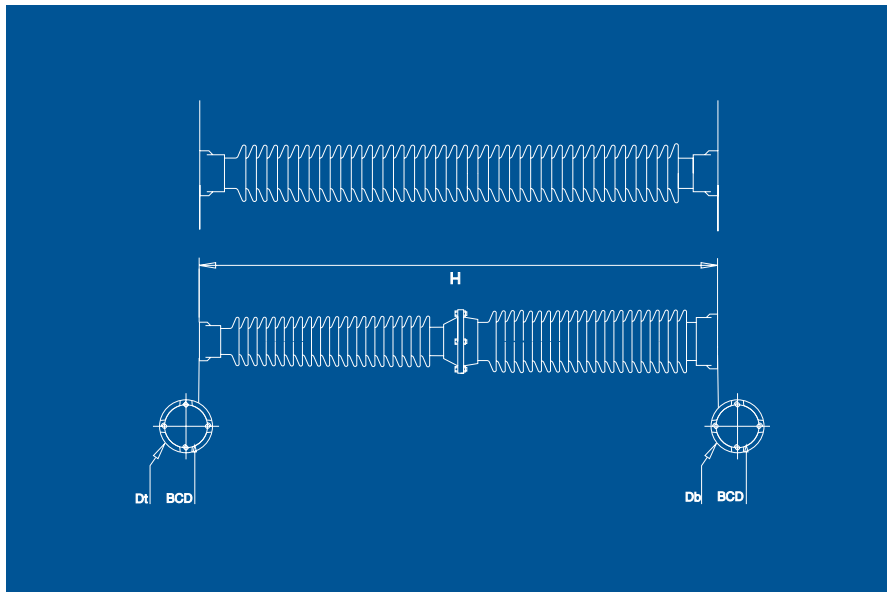
Radio Influence Voltage Data

Test Voltage, Rms to Ground, kV	146	146	146	146	146	146
Maximum RIV, Microvolts at 1000kHz	500	500	500	500	500	500

Weight

Approximate Net Weight, Pounds	223	311	366	238	335	428
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S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
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 E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting



TYPE

BIL 1050 kV

BIL	1050 kV				
Style	TAPERED				
	HIGH STRENGTH		HIGH LEAKAGE		
Catalog Number	1050 YT	1050 ZT	1050 STP	1050 HTP	1050 ETP
ANSI Technical Reference					
Non ANSI Description	1050-3500	1050-5000	1050-800	1050-1250	1050-2300

Dimensions

	1050 YT	1050 ZT	1050 STP	1050 HTP	1050 ETP
Leakage Distance (in)	198	198	268	271	270
Height (in)	92	92	92	92	92
Max Shed Diameter (in)	10.4	10.9	8.7	9.5	10.4
Top BCD (in)	7	7	5	5	5
Diameter Dt (in)	8.7	8.7	6.2	6.3	6.3
Bottom BCD (in)	12	12	5	5	7
Diameter Db (in)	13.2	13.4	6.2	6.3	8.7

Mechanical Values

	1050 YT	1050 ZT	1050 STP	1050 HTP	1050 ETP
Cantilever Strength, Upright, Pounds	3500	5000	800	1250	2300
Tensile Strength, Pounds	40000	40000	20000	25000	25000
Torsion Strength, Inch-Pounds	133000	115000	40000	90000	90000
Compression Strength, Pounds	150000	120000	60000	90000	90000

Electrical Values

	1050 YT	1050 ZT	1050 STP	1050 HTP	1050 ETP
Impulse Flashover, Positive, kV	1210	1210	1210	1210	1210
Low Frequency Withstand, 10 Sec. Wet, kV	455	455	455	455	455
Impulse Withstand, kV	1050	1050	1050	1050	1050

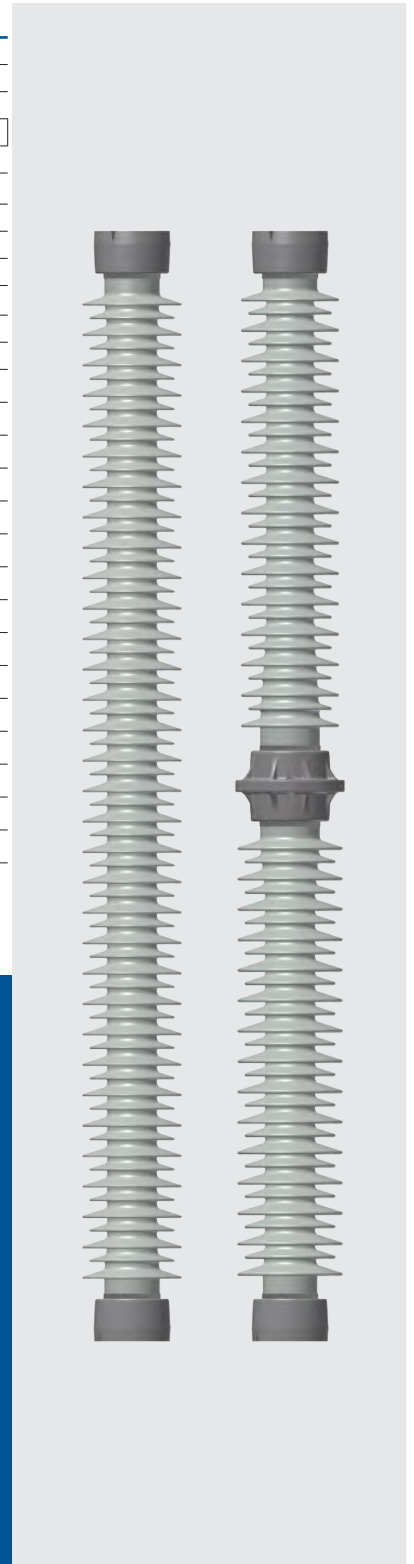
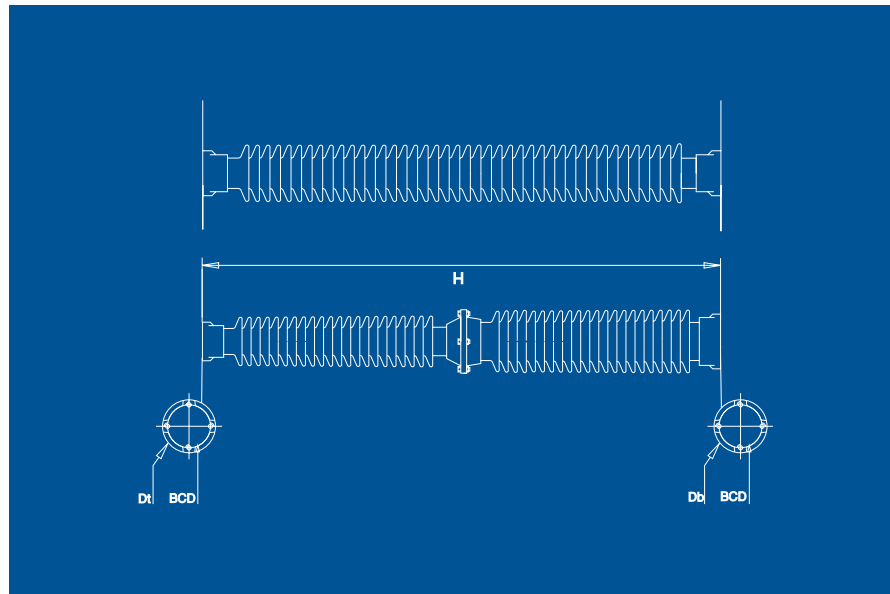
Radio Influence Voltage Data

	1050 YT	1050 ZT	1050 STP	1050 HTP	1050 ETP
Test Voltage, Rms to Ground, kV	146	146	146	146	146
Maximum RIV, Microvolts at 1000kHz	500	500	500	500	500

Weight

	1050 YT	1050 ZT	1050 STP	1050 HTP	1050 ETP
Approximate Net Weight, Pounds	492	512	258	357	404

- S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
- H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
- E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting

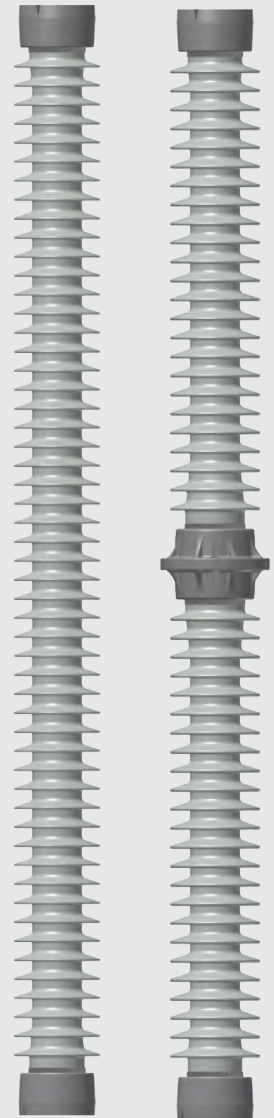
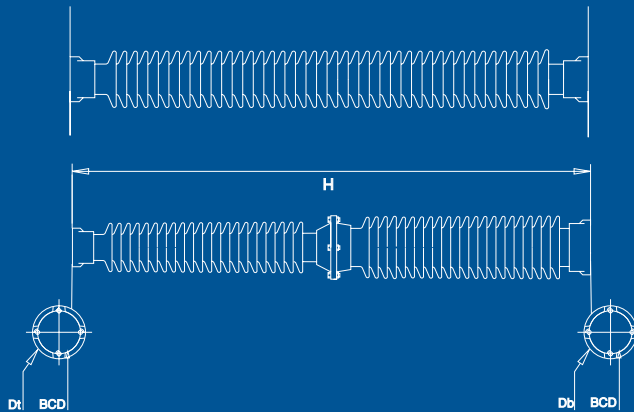


TYPE

BIL 1300 kV

BIL	1300 kV					
Style	TAPERED			UNIFORM		
Catalog Number	1300 ST	1300 HT	1300 ET	1300 SU	1300 HU	1300 EU
ANSI Technical Reference	TR324	TR367	TR369	TR324		TR368
Non ANSI Description	1300-1000	1300-1450	1300-2050	1300-1000	1300-1450	1300-2050
Dimensions						
Leakage Distance (in)	231	231	231	231	231	231
Height (in)	106	106	106	106	106	106
Max Shed Diameter (in)	8	8.3	9.2	8	8.6	9.3
Top BCD (in)	5	5	5	5	7	7
Diameter Dt (in)	6.3	6.2	6.3	6.3	8.7	8.7
Bottom BCD (in)	5	7	7	5	7.1	7
Diameter Db (in)	6.3	8.7	8.7	6.3	8.7	8.7
Mechanical Values						
Cantilever Strength, Upright, Pounds	1000	1450	2050	1000	20.12	2050
Tensile Strength, Pounds	25000	20000	20000	25000	20000	40000
Torsion Strength, Inch-Pounds	90000	40000	40000	90000	40000	120000
Compression Strength, Pounds	75000	60000	60000	75000	60000	120000
Electrical Values						
Impulse Flashover, Positive, kV	1410	1410	1410	1410	1410	1410
Low Frequency Withstand, 10 Sec. Wet, kV	525	525	525	525	525	525
Impulse Withstand, kV	1300	1300	1300	1300	1300	1300
Radio Influence Voltage Data						
Test Voltage, Rms to Ground, kV	220	220	220	220	220	220
Maximum RIV, Microvolts at 1000kHz	1000	1000	1000	1000	1000	1000
Weight						
Approximate Net Weight, Pounds	324	320	457	326	406	512

S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
 H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
 E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting



TYPE

BIL 1300 kV

BIL	1300 kV				
Style	TAPERED				
	HIGH STRENGTH		HIGH LEAKAGE		
Catalog Number	1300 YT	1300 ZT	1300 STP	1300 HTP	1300 ETP
ANSI Technical Reference					
Non ANSI Description	1300-3000	1300-4000	1300-1000	1300-1450	1300-2050

Dimensions

Leakage Distance (in)	231	231	326	322	315
Height (in)	106	106	106	106	106
Max Shed Diameter (in)	10	10.5	9.1	9.7	10.5
Top BCD (in)	5	5	5	5	5
Diameter Dt (in)	6.3	6.3	6.3	6.2	6.3
Bottom BCD (in)	12	12	5	7	7
Diameter Db (in)	13.2	13.4	6.3	8.7	8.7

Mechanical Values

Cantilever Strength, Upright, Pounds	3000	4000	1000	1450	2050
Tensile Strength, Pounds	40000	40000	25000	20000	20000
Torsion Strength, Inch-Pounds	133000	133000	90000	40000	40000
Compression Strength, Pounds	150000	150000	75000	60000	60000

Electrical Values

Impulse Flashover, Positive, kV	1410	1410	1410	1410	1410
Low Frequency Withstand, 10 Sec. Wet, kV	525	525	525	525	525
Impulse Withstand, kV	1300	1300	1300	1300	1300

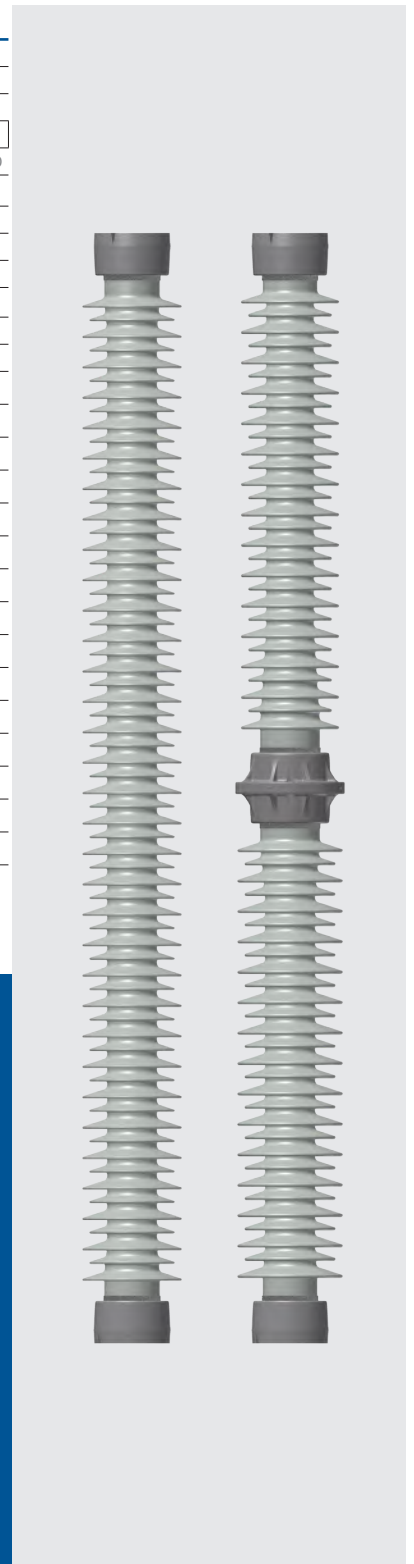
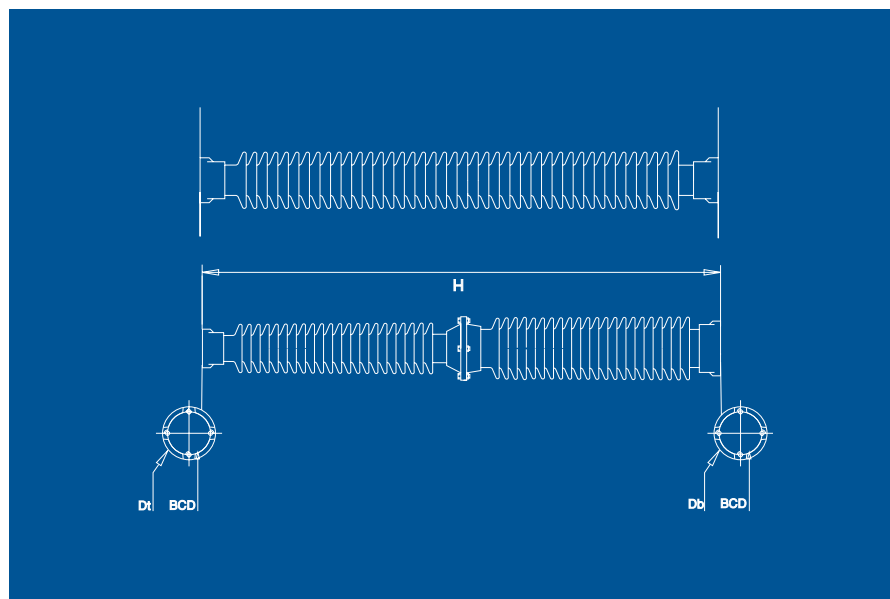
Radio Influence Voltage Data

Test Voltage, Rms to Ground, kV	220	220	220	220	220
Maximum RIV, Microvolts at 1000kHz	1000	1000	1000	1000	1000

Weight

Approximate Net Weight, Pounds	507	544	357	381	481
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S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
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TYPE

BIL 1470 kV

BIL	1470 kV					
Style	TAPERED				UNIFORM	
			HIGH LEAKAGE			
Catalog Number	1470 HT	1470 ET	1470 HTP	1470 ETP	1470 SU	1470 EU
ANSI Technical Reference	TR371	TR373			TR330	TR372
Non ANSI Description	1470-1170	1470-1750	1470-1000	1470-1750	1470-900	1470-1750

Dimensions

Leakage Distance (in)	264	264	264	264	264	264
Height (in)	122	122	122	122	122	122
Max Shed Diameter (in)	8.2	8.9	9.1	10.1	8	9
Top BCD (in)	5	5	5	5	5	7
Diameter Dt (in)	6.2	6.2	6.3	6.3	6.3	8.7
Bottom BCD (in)	7	7	5	7	5	7
Diameter Db (in)	8.7	8.7	6.3	8.7	6.3	8.7

Mechanical Values

Cantilever Strength, Upright, Pounds	1170	1750	1000	1750	900	1750
Tensile Strength, Pounds	20000	20000	25000	25000	25000	40000
Torsion Strength, Inch-Pounds	40000	40000	90000	90000	90000	120000
Compression Strength, Pounds	60000	60000	90000	90000	75000	100000

Electrical Values

Impulse Flashover, Positive, kV	1610	1610	1610	1610	1610	1610
Low Frequency Withstand, 10 Sec. Wet, kV	590	590	590	590	590	590
Impulse Withstand, kV	1470	1470	1470	1470	1470	1470

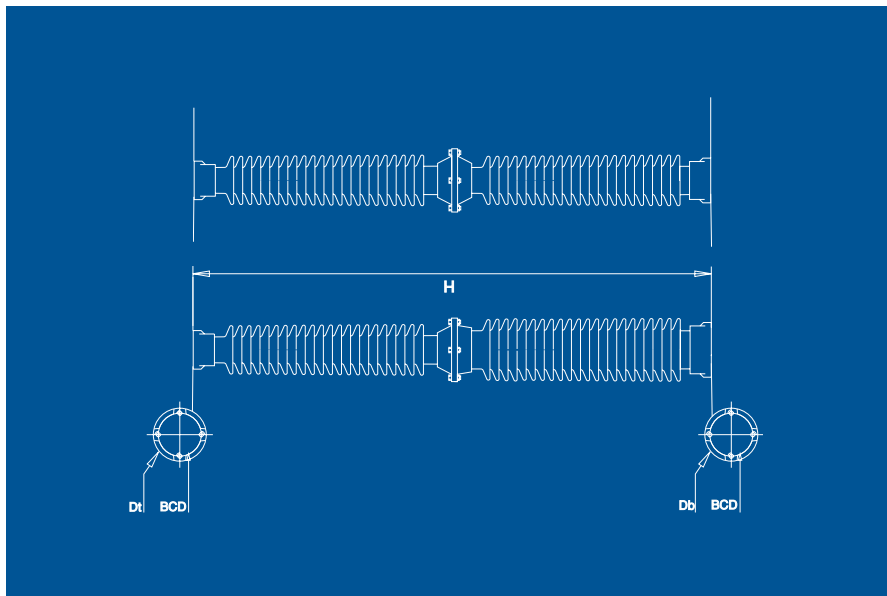
Radio Influence Voltage Data

Test Voltage, Rms to Ground, kV	220	220	220	220	220	220
Maximum RIV, Microvolts at 1000kHz	1000	1000	1000	1000	1000	1000

Weight

Approximate Net Weight, Pounds	368	421	426	505	410	532
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S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
 H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
 E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting

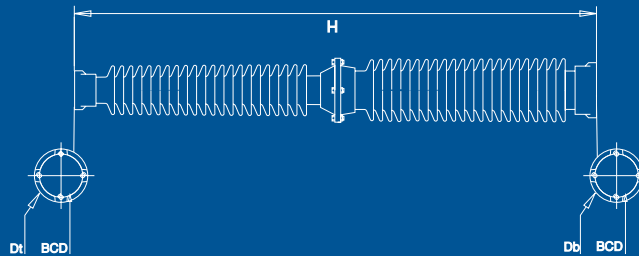


TYPE

BIL 1550 kV

BIL	1550 kV			
Style	TAPERED			
				HIGH LEAKAGE
Catalog Number	1550 ST	1550 HT	1550 ET	1550 HTP
ANSI Technical Reference		TR379		
Non ANSI Description	1550-1000	1550-1700	1550-2500	1550-1700
Dimensions				
Leakage Distance (in)	334	280	315	373
Height (in)	128	128	128	128
Max Shed Diameter (in)	8.7	8.9	10.4	9.9
Top BCD (in)	5	5	5	5
Diameter Dt (in)	6.2	6.2	6.2	6.3
Bottom BCD (in)	7	7	14	7
Diameter Db (in)	8.7	8.7	15.7	8.7
Mechanical Values				
Cantilever Strength, Upright, Pounds	1000	1700	2500	1700
Tensile Strength, Pounds	20000	20000	25000	25000
Torsion Strength, Inch-Pounds	60000	40000	60000	90000
Compression Strength, Pounds	60000	60000	60000	90000
Electrical Values				
Impulse Flashover, Positive, kV	1710	1710	1710	1710
Low Frequency Withstand, 10 Sec. Wet, kV	620	620	620	620
Impulse Withstand, kV	1550	1550	1550	1550
Radio Influence Voltage Data				
Test Voltage, Rms to Ground, kV	318	318	318	318
Maximum RIV, Microvolts at 1000kHz	2000	2000	2000	2000
Weight				
Approximate Net Weight, Pounds	413	441	617	516

S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
 H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
 E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting

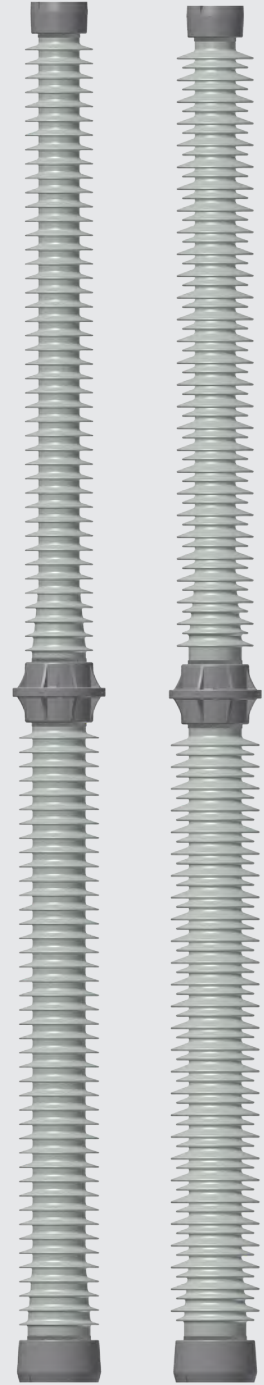
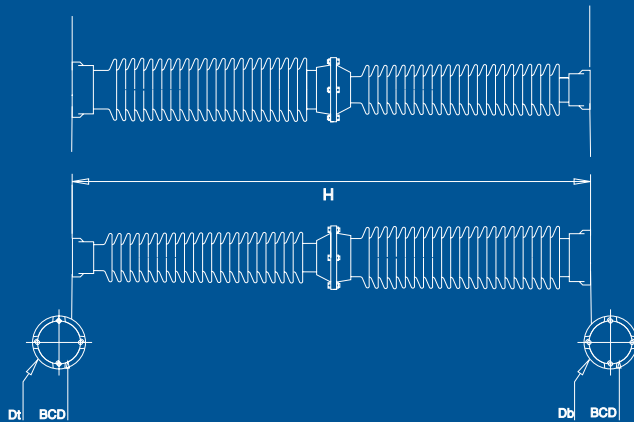


TYPE

BIL 1800 kV

BIL	1800 kV				
Style	TAPERED				
			HIGH STRENGTH	HIGH LEAKAGE	
Catalog Number	1800 ST	1800 HT	1800 YT	1800 STP	1800 ETP
ANSI Technical Reference	TR391				
Non ANSI Description	1800-1400	1800-1750	1800-3500	1800-1400	1800-2500
Dimensions					
Leakage Distance (in)	340	346	337	450	371
Height (in)	152	152	152	152	152
Max Shed Diameter (in)	8.8	10.1	11	9.8	10.5
Top BCD (in)	5	5	5	5	5
Diameter Dt (in)	6.2	6.2	6.3	6.2	6.3
Bottom BCD (in)	7	14	14	7	14
Diameter Db (in)	8.7	15.7	15.4	8.7	15.7
Mechanical Values					
Cantilever Strength, Upright, Pounds	1400	1750	3500	1400	2500
Tensile Strength, Pounds	20000	20000	35000	20000	25000
Torsion Strength, Inch-Pounds	40000	60000	133000	60000	90000
Compression Strength, Pounds	60000	60000	150000	60000	90000
Electrical Values					
Impulse Flashover, Positive, kV	2000	2000	2000	2000	2000
Low Frequency Withstand, 10 Sec. Wet, kV	710	710	710	710	710
Impulse Withstand, kV	1800	1800	1800	1800	1800
Radio Influence Voltage Data					
Test Voltage, Rms to Ground, kV	318	318	318	318	318
Maximum RIV, Microvolts at 1000kHz	2000	2000	2000	2000	2000
Weight					
Approximate Net Weight, Pounds	510	651	911	585	741

S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting

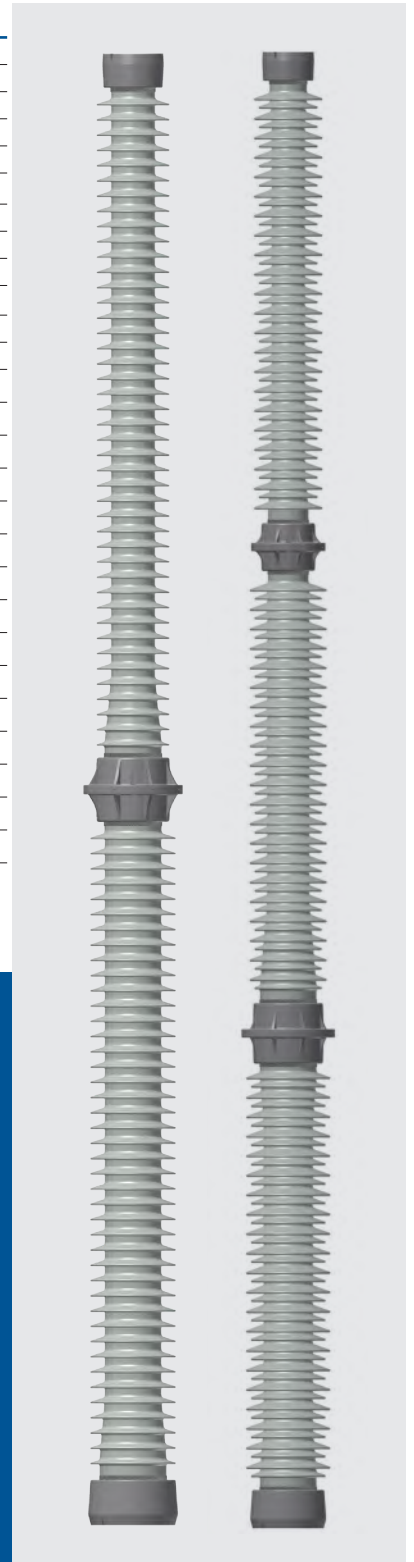
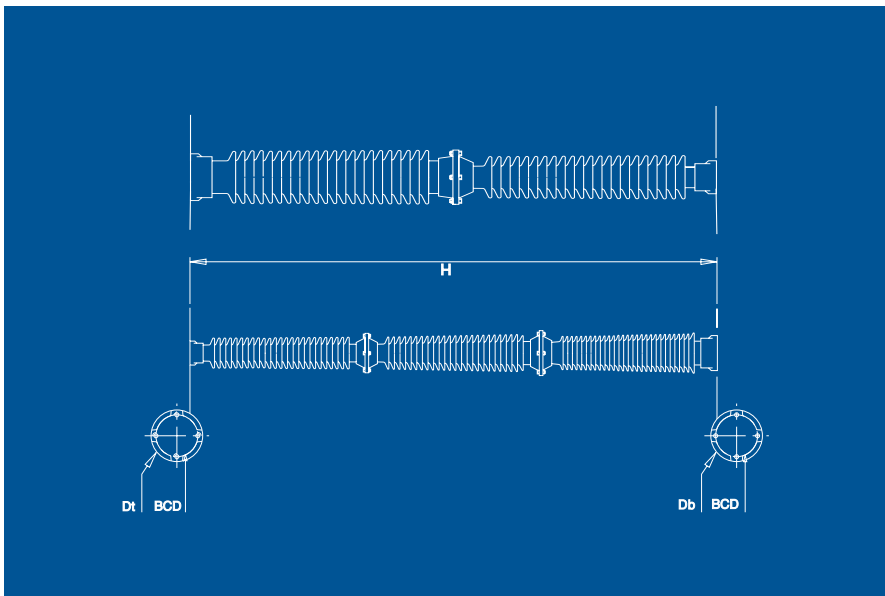



TYPE

BIL 2050 kV

BIL	2050 kV			
Style	TAPERED			
				HIGH LEAKAGE
Catalog Number	2050 ST	2050 HT	2050 ET	2050 STP
ANSI Technical Reference				
Non ANSI Description	2050-1200	2050-2000	2050-3000	2050-1200
Dimensions				
Leakage Distance (in)	416	452	414	557
Height (in)	182	185	182	182
Max Shed Diameter (in)	9.3	10.7	11.3	10.3
Top BCD (in)	5	7	5	5
Diameter Dt (in)	6.2	8.7	6.2	6.2
Bottom BCD (in)	7	14	14	7
Diameter Db (in)	8.7	15.7	15.4	8.7
Mechanical Values				
Cantilever Strength, Upright, Pounds	1200	2000	3000	1200
Tensile Strength, Pounds	20000	20000	25000	20000
Torsion Strength, Inch-Pounds	60000	60000	75000	60000
Compression Strength, Pounds	60000	60000	60000	60000
Electrical Values				
Impulse Flashover, Positive, kV	2250	2250	2250	2250
Low Frequency Withstand, 10 Sec. Wet, kV	830	830	830	830
Impulse Withstand, kV	2050	2050	2050	2050
Radio Influence Voltage Data				
Test Voltage, Rms to Ground, kV	350	350	350	350
Maximum RIV, Microvolts at 1000kHz	2000	2000	2000	2000
Weight				
Approximate Net Weight, Pounds	653	929	1083	728

S = Standard Strength U = Uniform, Upright and Underhung P = Pollution/High Leakage BCD = Bolt Circle Diameter
 H = High Strength T = Tapered, Upright Only Y = Higher Cantilever Option Dt = Diameter Top Fitting
 E = Extra High Strength V = Inverted Z = Higher Cantilever Option Db = Diameter Bottom Fitting





PPC Insulators has been a leading manufacturer of porcelain and hybrid insulators for over 130 years. Our extensive knowledge, expertise, and production technology enables us to produce the best insulator designs catering up to 1200 kV AC and 1100 kV DC system voltages. We supply over 40,000 standard insulators from our stock to meet the demands of our valued customers.

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