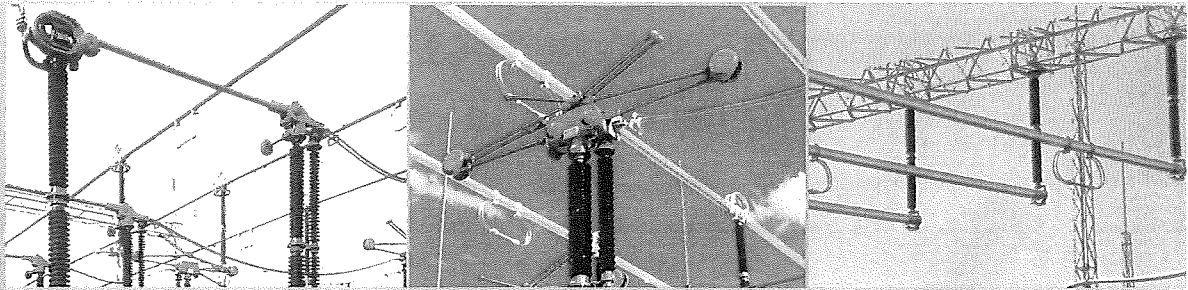


CERAM
INSULATORS



The very Best.



Solid Core Post Insulators/Operating Rods - IEC



PPC INSULATORS

Introduction

Post insulators are designed to comply with the demands of the level of electrical insulation and mechanical strength, while also taking into account the environmental situation where the insulators are intended for service. To specify the correct standard outdoor porcelain solid core post insulator, the following characteristics have to be defined:

- › Lightning impulse withstand voltage, dry
- › Switching impulse withstand voltage, wet (when a switching impulse level is required)
- › Power frequency withstand voltage, wet
- › Mechanical failing load
- › Minimum nominal creepage distance
- › Fixing arrangement of top and bottom metal fitting
- › Color of glaze

Standards

PPC Insulators manufactures outdoor porcelain solid core post insulators with external metal fittings and outdoor operating rods with external metal fittings (for High Voltage Switchgears) according to standard IEC60273. Components according to other standards or special customer requirements can be supplied upon request.

According to IEC60273, an IEC post insulator is defined by the following designation:

IEC post insulator Type C10-1050-II

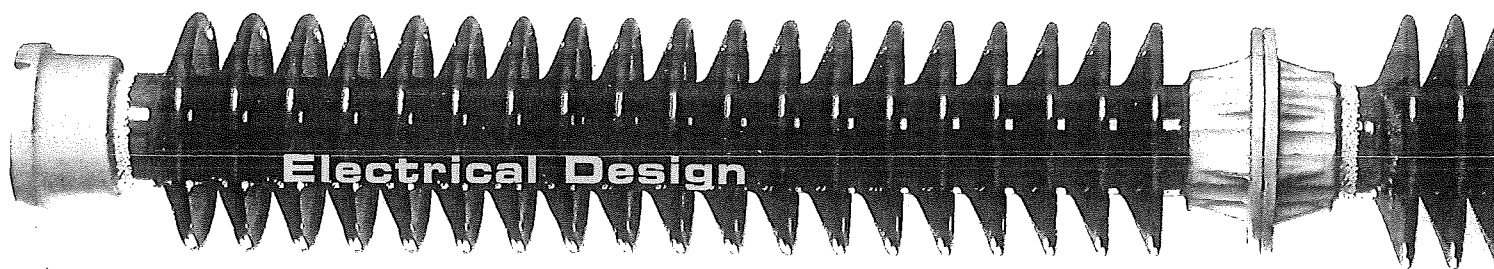
- C means outdoor post insulator with external metal fittings
- 10 means a minimum bending failing load of 10 kN
- 1050 means a lightning impulse withstand voltage, dry of 1050 kV
- II means creepage distance class II (in reference to IEC60273)

According to IEC60273, an IEC operating rod can be defined by the following designation:

IEC operating rod Type T3-1050-II

- T means outdoor operating rod with external metal fittings
- 3 means a minimum failing load torsion 3 kNm
- 1050 means a lightning impulse withstand voltage, dry of 1050 kV
- II means creepage distance class II (in reference to IEC60273)

These designations do not always fully specify the insulator type; sometimes there are alternative constructions regarding the fixing arrangement and creepage distance included in the standards.



The insulation performance of a post insulator column is a function of the height, creepage distance, arcing distance of the insulating part(s) as well as the number of insulator units for a defined height and follows the standards IEC60071 and IEC60273.

Nominal system voltage U_n	Highest system voltage U_m	One minute withstand voltage wet 50 cs	Lightning impulse withstand voltage 1,2/50 μ s
kV (r.m.s.)	kV (r.m.s.)	kV (r.m.s.)	kV (peak value)
3	3,6	10	20 40
6	7,2	20	40 60
10	12	28	60 75 95
15	17,5	38	75 95
20	24	50	95 125 145
30	36	70	145 170
45	52	95	250
66	72,5	140	325
110	123	185 230	450 550
132	145	185 230 325	450 550 650
150	170	230 275 325	550 650 750
220	245	275 325 360 395 460	650 750 850 950 1050

Nominal system voltage U_n	Highest system voltage U_m	Switching impulse withstand voltage 250/2500 μ s	Lightning impulse withstand voltage 1,2/50 μ s
kV (r.m.s.)	kV (r.m.s.)	kV (peak value)	kV (peak value)
275	300	750 850	850 950 1050
330	362	850 950	950 1050 1175
380	420	850 950 1050	1050 1175 1300 1425
480	525 (550)	850 950 1050	1175 1300 1425 1550
700	765 (800)	1300 1425 1550	1675 1800 1950 2100



Core Post Insulator Design

RIV

The weight and dimensions of the insulator will be determined by the number of units required for the application. If current creep and clearance requirements are not met by a single insulator, various combinations of units will be offered to include insulator options.

Mechanical Design

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

The high strength C 130 porcelain body 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 arcing distance/creep and less assembly time. All insulators up to and including the C 20-1050 are available in a one unit design.

Pollution Levels and Creepage Distances

Level	Pollution	Specific Creepage Distance	
1	Light	16 mm/kV	0.630 inch/kV
> Areas without industry and with low housing density equipped with heating plants. > Areas with low density of industry or houses but subjected to frequent winds and/or rainfall. > Agricultural areas. > Mountainous areas.			
Level	Pollution	Specific Creepage Distance	
2	Medium	20 mm/kV	0.787 inch/kV
> Industrial areas not producing particulate polluting smoke and/or with average housing density equipped with heating plants. > Areas with high density of houses and/or industry but subjected to frequent winds and/or rainfall. > Areas exposed to wind from the sea but not too close to the coast (at least several kilometers distant).			
Level	Pollution	Specific Creepage Distance	
3	Heavy	25 mm/kV	0.984 inch/kV
> Areas with high density of industries and suburbs of large cities with high density of heating plants producing pollution. > Areas close to the sea in any case exposed to relatively strong winds from the sea.			
Level	Pollution	Specific Creepage Distance	
4	Very Heavy	31 mm/kV	1.220 inch/kV
> Areas generally of moderate extent, subjected to conductive dusts and to industrial smoke producing particularly thick conductive deposits. > Areas generally of moderate extent, very close to the coast and exposed to sea-spray or to very strong and polluting winds from the sea. > Desert areas, characterized by no rain for long periods, exposed to strong winds carrying sand and salt, and subjected to regular condensation.			

The creepage distance should be increased in relation to the average diameter, D_m .

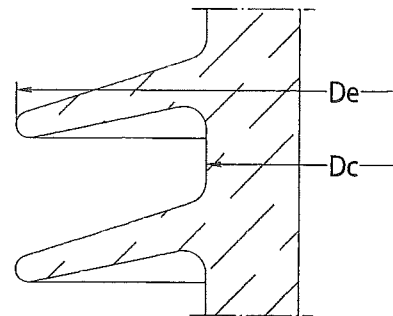
$D_m < 300 \text{ mm}$	$k_d = 1.0$
$D_m = 300-500 \text{ mm}$	$k_d = 1.1$
$D_m > 500 \text{ mm}$	$k_d = 1.2$

In standard IEC60273, creepage distances are standardized for post insulators in class I and II, which is not in accordance with the general recommendations of the guide IEC60815 "Guide for the selection of insulators in respect to environmental conditions".

In IEC60815 the basic pollution levels are defined qualitatively with examples of typical environmental situations. The corresponding minimum nominal creepage distance is given in mm/kV.

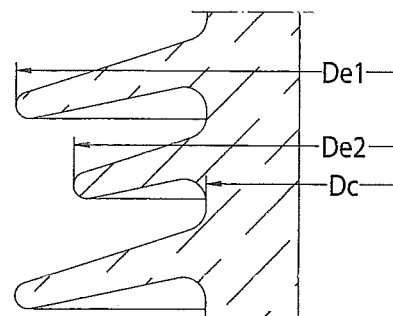
Regular sheds

$$D_m = (D_e + D_c) / 2$$



Alternating sheds

$$D_m = (D_{e1} + D_{e2} + (2 * D_c)) / 4$$



D_e Shed diameter
 D_c Core diameter
 D_{e1} Greater shed diameter
 D_{e2} Smaller shed diameter

Shed Design

The plain alternative shed design offers high specific creepage distance together with good self-cleaning properties and usually provides best performance. Using flexible shed design can optimize most insulators.

Parameters Characterizing

1. Minimum distance, c , between sheds

- › Generally $c \geq 30$ mm.
- › For small insulators ($H < 550$ mm) or overhang ($p \leq 40$ mm), c can be ≥ 20 mm.

2. Ratio s/p between spacing and overhang

- › Sheds without under ribs ≥ 0.65 .
- › Sheds with under ribs ≥ 0.8 .

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

- › $p_1 - p_2 \geq 15$ mm

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

Parameters Characterizing

1. Creepage factor C.F.

$$C.F. = \frac{l_t}{S_t} \quad \begin{array}{l} l_t \text{ total creepage distance} \\ S_t \text{ of an insulator} \\ \text{arcing distance} \end{array}$$

- › C.F. ≤ 3.5 for pollution levels 1 and 2.
- › C.F. ≤ 4 for pollution levels 3 and 4.

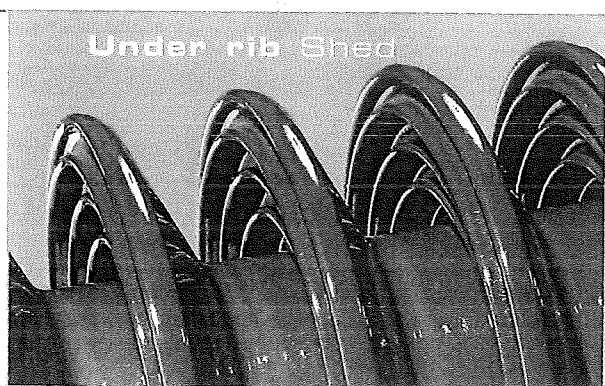
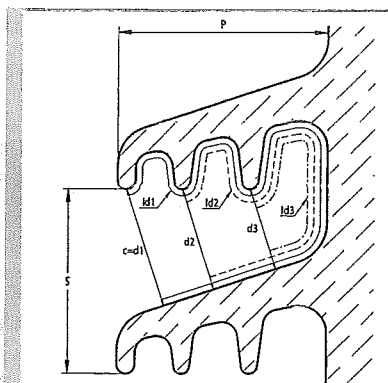
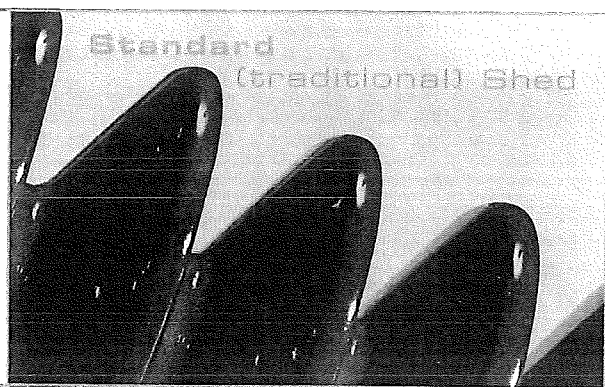
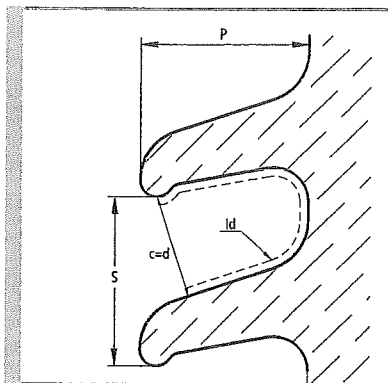
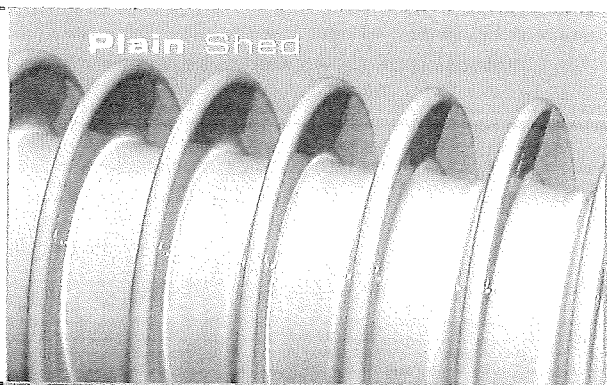
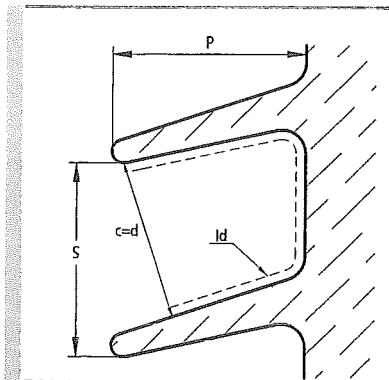
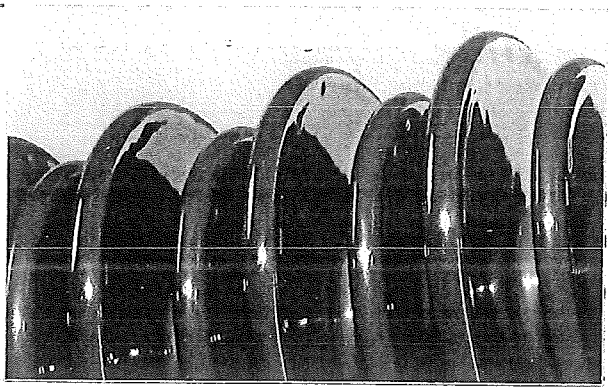
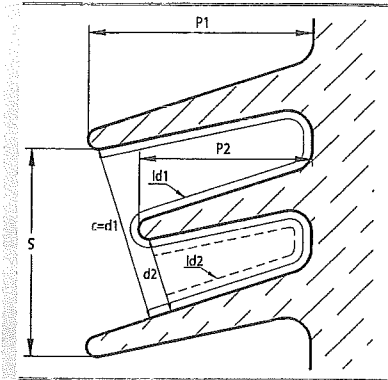
2. Profile factor P.F.

$$P.F. = \frac{2p_1 + 2p_2 + s}{l} \quad \begin{array}{l} \text{alternating} \\ \text{sheds} \end{array}$$

$$P.F. = \frac{2p + s}{l} \quad \begin{array}{l} \text{all other} \\ \text{sheds} \end{array}$$

l creepage distance of the insulated leakage path measured between the two points where definition 2.

- › P.F. > 0.8 for pollution levels 1 and 2.
- › C.F. > 0.7 for pollution levels 3 and 4.



K-Value Increased Pollution Performance Equalized Field Distribution

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 the electrical field.

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

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

l is the creepage distance

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

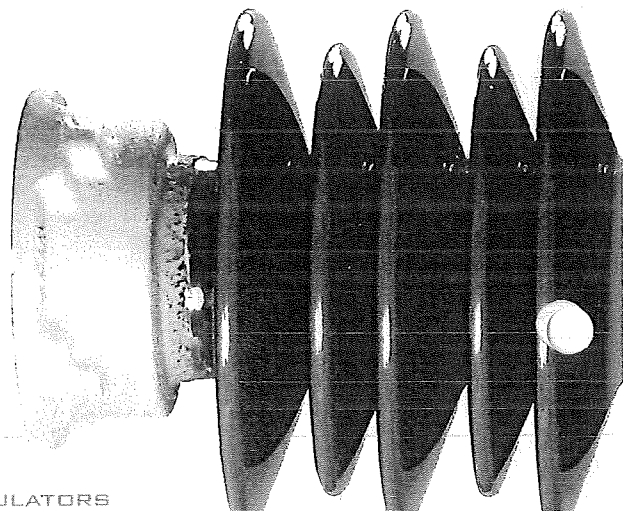
Form factor used as a design method is referred to as K-value and can be used for different types of improvements.

Creepage distance considers a leakage current as traveling along the insulator, in a strict line, 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 optimum design of pollution performance. The traditional calculation of creepage distance is sometimes sufficient, but to achieve best performance in relation to material and space used, K-value design is necessary.

PPC Insulators offers complete computer design of K-value, integrated with electrical, mechanical, dimension and material calculations.



Insulating Material



The insulator body of the unit is made from high quality aluminium oxide porcelain, C 130 or C 120, which conforms to standard IEC60672. Glazing provides a dirt repellent surface. Glazing is normally brown in colour, though Munsell grey can also be provided upon request. Semi-conductive surface glazing can be provided for special polluted environments.

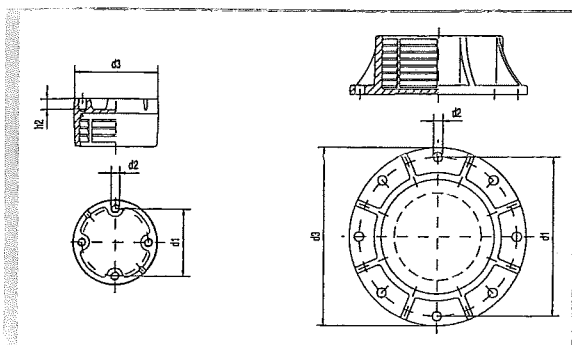
Fittings

Fittings are made in malleable cast iron according to standard EN1562 or spheroidal graphite cast iron according to standard EN1563.

All fittings are hot dip galvanized according to standard EN ISO 1461 with a zinc weight of min. 600 g/m² (min. 85 µm) as average value.

The following table shows the standard dimensions for fittings according to IEC60273.

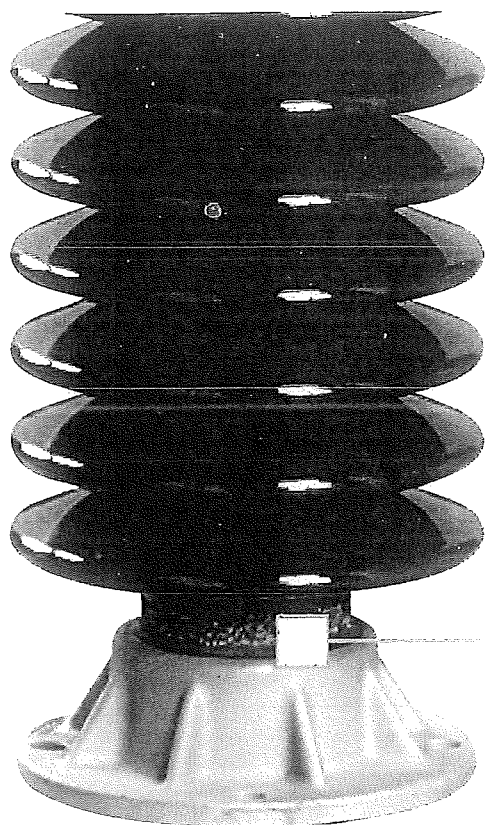
Pitch circle diameter p.c.d. d_1	Depth of the tapped blind holes h_2	Number of holes n	Bolt holes tapped d_2	Bolt holes plain $\varnothing d_2$	Nominal maximum diameter of mounting face d_3
mm	mm	-	-	mm	mm
76	12	4	M12	-	115
127	18 (22)	4	M16	-	165
178		4	-	18	225
200		4	-	18	245
225		4	-	18	270
254		8	-	18	300
275		8	-	18	320
300		8	-	18	345
325		8	-	18	370
356		8	-	18	400
375		8	-	18	420



Fittings with other dimensions (e.g., for operation rod columns) can be supplied on request.

Threads are generally tapped after hot dip galvanizing; for shipment and storage, the threads will be protected by a protective layer and/or special plastic plugs.

NOTE: Multiple unit insulator columns will be delivered with hardware (bolts, nuts and spring washers) for the interconnection of the insulator units.

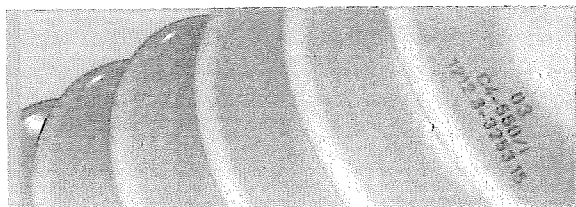


Production

Cementing

The fittings are assembled to the porcelain body with a Portland base r as standard. An alternative assembly with sulfur cement can be offered (for max. service temperature to 80 °C). 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.

Marking



Each insulator carries the trademark of the PPC Insulators, the trademark of the manufacturing factory, type designation (reference number), date of manufacture and a serial number.

Inspection and Testing

Inspections and tests after firing are made according to standard IEC60168.

Tested Items	Type Test	Sample Test	Routine Test
Dry lightning impulse withstand voltage test	✓		
Wet switching impulse withstand voltage test	✓ ¹		
Wet power frequency withstand voltage test	✓		
Mechanical failing load test Bending strength	✓	✓	
Verification of dimensions		✓	
Temperature cycles test		✓	
Porosity test		✓	
Galvanising test		✓	
Visual inspection			✓
Mechanical test (Bending)			✓ ²

¹ Applicable only to post insulators for use on systems with highest voltage for equipment above 245 kV

² Insulators with height >770 mm

Tolerances of Dimensions, Form and Position

The tolerances are in accordance with the standards IEC60168 and IEC60273.

> Dimensions for which no special tolerance is specified

$$\pm (0,04d + 1,5) \text{ mm} \quad \text{when } d \leq 300$$

$$\pm (0,025d + 5) \text{ mm} \quad \text{when } d > 300$$

d is the checked dimension in millimetres

> Creepage distance tolerance

$$\pm (0,04d + 1,5) \text{ mm}$$

d is the nominal creepage distance in millimetres

> Parallelism "p" of the endfaces

$$h \leq 1\text{m}: p \leq 0,5 \text{ mm}$$

$$h > 1\text{m}: p \leq 0,5 \cdot h \text{ mm}$$

h is the height of the insulator unit in metres

p is related to a diameter of 250mm

> Eccentricity "e"

$$e = 2 \cdot (1 + h)$$

h is the height of the insulator unit in metres

The centre line of the two fitting

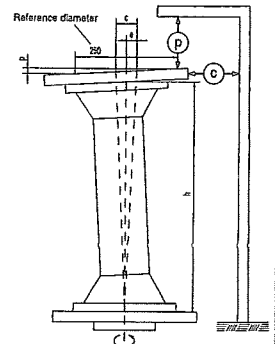
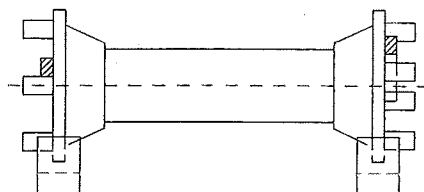
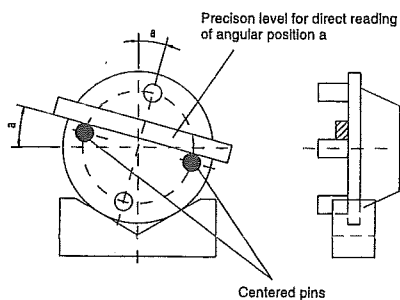
pitch circle diameters should fit into

a cylinder with diameter c .

$$c \leq 2 \cdot e$$

> Angular deviation of fixing holes α

$$\alpha \leq 1^\circ \text{ standard}$$



Advantages

of porcelain solid core post insulators with external fittings

> 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.

> insulator body made of aluminium oxide porcelain

- > high mechanical strength
- > free of internal stresses
- > no measurable aging
- > resistant to salt pollution
- > high resistance to temperature variations
- > high resistance to vandalism

> electrically and mechanically stressed zones are separated

> low surface leakage current resulting in reduced transmission losses

- > the creepage distance is made from sheds and core parts which have
 - > good self-cleaning properties with respect to the climatic conditions
 - > better insulation performance under pollution conditions

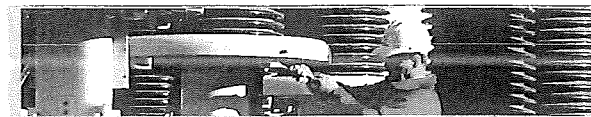
> routine test load = 70 % of the minimum failing load

> can be checked ultrasonically for mechanical soundness

> lowest maintenance costs

> minimum total life cycle costs by high reliability

> packaging in crates offers the maximum protection during shipping and storage



Production and Product Tables

PPC Insulators production facilities

for IEC station post insulators manufacture in full accordance to IEC60273. Operating rod columns for disconnectors are manufactured corresponding to the relevant post insulators.

Insulation requirements are available in ratings from BIL 60kV to 2550kV.

This catalogue includes standard IEC solid core station post insulators with external metal fittings. Insulator creepage distances are in accordance with IEC60273 and IEC60815. Special requirements, such as other creepage distances, special shed forms, other top bending moments or pitch circle diameters, can also be offered upon request

Conversion Table

Dimensions	1	mm	0.03937	inch
	25.4	mm	1	inch
Force	1	N	0.22481	pound
	4.448	N	1	pound
Moment of Force	1	Nm	8.8508	inch-pound
	0.113	Nm	1	inch-pound

Type BIL 60-95 kV

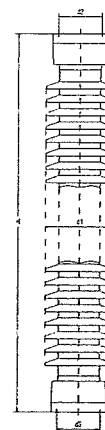
Insulator: C 180 (or C 190) according to IEC60473-2

Glaze: Brown or Murwell grey glazed

Reference: according to IEC60153

Fittings: malleable cast iron according to EN1562 or spheroidal graphite cast iron according to EN1563, hot dip galvanized according to EN15040

Grouting: Portland (or sulfur) cement



IEC POST INSULATOR DESIGNATION	C4-60	C6-60	C8-60	C10-60
Dimensions				
Height H [mm]	190 ± 1	190 ± 1	190 ± 1	190 ± 1
Max. nom. diameter of insulating part d1 [mm]	170	170	180	180
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Mechanical Values				
Minimum failing load - Bending [kN]	4	6	8	10
Minimum failing load - Bending moment underhung [kNm]	0.38	0.57	0.76	0.95
Minimum failing load - Bending moment upright [kNm]	0.76	1.14	1.52	1.9
Minimum failing load - Torsion [kNm]	0.6	0.6	0.8	1
Electrical Values				
Lightning impulse withstand voltage, dry [kV peak value]	60	60	60	60
Power frequency withstand voltage, wet [kV r.m.s.]	20	20	20	20

IEC POST INSULATOR DESIGNATION	C4-75	C6-75	C8-75	C10-75
Dimensions				
Height H [mm]	215 ± 1	215 ± 1	215 ± 1	215 ± 1
Max. nom. diameter of insulating part d1 [mm]	150	150	165	165
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Mechanical Values				
Minimum failing load - Bending [kN]	4	6	8	10
Minimum failing load - Bending moment underhung [kNm]	0.43	0.65	0.86	1.08
Minimum failing load - Bending moment upright [kNm]	0.86	1.29	1.72	2.15
Minimum failing load - Torsion [kNm]	0.6	0.6	0.8	1
Electrical Values				
Lightning impulse withstand voltage, dry [kV peak value]	75	75	75	75
Power frequency withstand voltage, wet [kV r.m.s.]	28	28	28	28

IEC POST INSULATOR DESIGNATION	C4-95	C6-95	C8-95	C10-95	C12.5-95
Dimensions					
Height H [mm]	255 ± 1	255 ± 1	255 ± 1	255 ± 1	255 ± 1
Max. nom. diameter of insulating part d1 [mm]	150	155	165	170	180
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Mechanical Values					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	0.51	0.77	1.02	1.28	1.6
Minimum failing load - Bending moment upright [kNm]	1.02	1.53	2.04	2.55	3.19
Minimum failing load - Torsion [kNm]	0.8	0.8	1.2	1.2	1.8
Electrical Values					
Lightning impulse withstand voltage, dry [kV peak value]	95	95	95	95	95
Power frequency withstand voltage, wet [kV r.m.s.]	38	38	38	38	38

Type BIL 125-170 kV

Product code: 125-170 kV, 125-170 kV, 125-170 kV

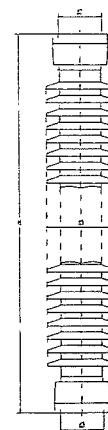
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Product code: 125-170 kV, 125-170 kV, 125-170 kV

Design: 125-170 kV, 125-170 kV, 125-170 kV

125-170 kV, 125-170 kV, 125-170 kV

125-170 kV, 125-170 kV, 125-170 kV



IEC POST INSULATOR DESIGNATION	C4-125	C6-125	C8-125	C10-125	C12.5-125
Dimensions					
Height H [mm]	305 ± 1	305 ± 1	305 ± 1	305 ± 1	305 ± 1
Max. nom. diameter of insulating part d1 [mm]	170	180	190	190	200
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Mechanical Values					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	0.61	0.92	1.22	1.53	1.91
Minimum failing load - Bending moment upright [kNm]	1.22	1.83	2.44	3.05	3.82
Minimum failing load - Torsion [kNm]	0.8	0.8	1.2	1.2	2
Electrical Values					
Lightning impulse withstand voltage, dry [kV peak value]	125	125	125	125	125
Power frequency withstand voltage, wet [kV r.m.s.]	50	50	50	50	50
IEC POST INSULATOR DESIGNATION	C4-150	C6-150	C8-150	C10-150	C12.5-150
Dimensions					
Height H [mm]	355 ± 1	355 ± 1	355 ± 1	355 ± 1	355 ± 1
Max. nom. diameter of insulating part d1 [mm]	175	190	190	195	205
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	76/4x M12
Mechanical Values					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	0.71	1.07	1.42	1.78	2.22
Minimum failing load - Bending moment upright [kNm]	1.42	2.13	2.84	3.55	4.44
Minimum failing load - Torsion [kNm]	1	1.2	1.5	1.8	2.5
Electrical Values					
Lightning impulse withstand voltage, dry [kV peak value]	150	150	150	150	150
Power frequency withstand voltage, wet [kV r.m.s.]	50	50	50	50	50
IEC POST INSULATOR DESIGNATION	C4-170	C6-170	C8-170	C10-170	C12.5-170
Dimensions					
Height H [mm]	445 ± 1	445 ± 1	445 ± 1	445 ± 1	445 ± 1
Max. nom. diameter of insulating part d1 [mm]	180	190	195	205	210
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	127/4x M16
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	127/4x M16
Mechanical Values					
Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	0.89	1.34	1.78	2.23	2.79
Minimum failing load - Bending moment upright [kNm]	1.78	2.67	3.56	4.45	5.57
Minimum failing load - Torsion [kNm]	1.2	1.5	2	2.5	3
Electrical Values					
Lightning impulse withstand voltage, dry [kV peak value]	170	170	70	170	170
Power frequency withstand voltage, wet [kV r.m.s.]	70	70	70	70	70

Type BIL 200-325 kV

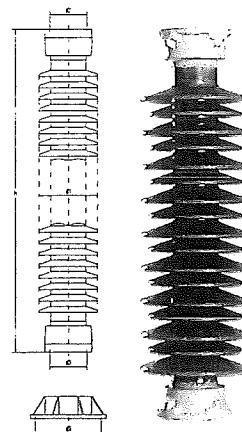
Porcelain C 120 (or C 120) according to IEC60872-2

Brown or Munsell grey glazed

Tolerance according to IEC60168

Fittings malleable cast iron according to EN1562 or spheroidal graphite cast iron according to EN1563, hot dip galvanized according to EN130146

Cementing Portland (or sulfur) cement



IEC POST INSULATOR DESIGNATION	C4-200	C6-200	C8-200	C10-200	C12.5-200
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Dimensions

Height H [mm]	475 ± 1	475 ± 1	475 ± 1	475 ± 1	475 ± 1
Max. nom. diameter of insulating part d1 [mm]	180	190	200	205	215
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	127/4x M16
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12	76/4x M12	76/4x M12	76/4x M12	127/4x M16

Mechanical Values

Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	0.95	1.43	1.9	2.38	2.97
Minimum failing load - Bending moment upright [kNm]	1.9	2.85	3.8	4.75	5.94
Minimum failing load - Torsion [kNm]	1.2	1.8	2	2.5	3

Electrical Values

Lightning impulse withstand voltage, dry [kV peak value]	200	200	200	200	200
Power frequency withstand voltage, wet [kV r.m.s.]	70	70	70	70	70

IEC POST INSULATOR DESIGNATION	C4-250	C6-250	C8-250	C10-250	C12.5-250
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Dimensions

Height H [mm]	560 ± 1	560 ± 1	560 ± 1	560 ± 1	560 ± 1
Max. nom. diameter of insulating part d1 [mm]	175	185	200	200	200
Top fitting p.c.d. d2 [mm] / hole pattern	76/4x M12 127/4x M16	76/4x M12 127/4x M16	127/4x M16	127/4x M16	127/4x M16
Bottom fitting p.c.d. d3 [mm] / hole pattern	76/4x M12 127/4x M16	76/4x M12 127/4x M16	127/4x M16	127/4x M16	127/4x M16

Mechanical Values

Minimum failing load - Bending [kN]	4	6	8	10	12.5
Minimum failing load - Bending moment underhung [kNm]	1.12	1.68	2.24	2.8	3.5
Minimum failing load - Bending moment upright [kNm]	2.24	3.36	4.48	5.6	7
Minimum failing load - Torsion [kNm]	1.8	2	2.5	3	4

Electrical Values

Lightning impulse withstand voltage, dry [kV peak value]	250	250	250	250	250
Power frequency withstand voltage, wet [kV r.m.s.]	95	95	95	95	95

IEC POST INSULATOR DESIGNATION	C2-325	C4-325	C6-325	C8-325	C10-325	C12.5-325	C16-325	C20-325
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Dimensions

Height H [mm]	770 ± 1	770 ± 1	770 ± 1	770 ± 1	770 ± 1	770 ± 1	770 ± 1	770 ± 1
Max. nom. diameter of insulating part d1 [mm]	165	185	195	205	210	220	230	240
Top fitting p.c.d. d2 [mm] / hole pattern	127/4x M16	127/4x M16	127/4x M16	127/4x M16	127/4x M16	127/4x M16	127/4x M16	127/4x M16
Bottom fitting p.c.d. d3 [mm] / hole pattern	127/4x M16	127/4x M16	127/4x M16	127/4x M16	127/4x M16	127/4x M16	225/4x18	254/8x18

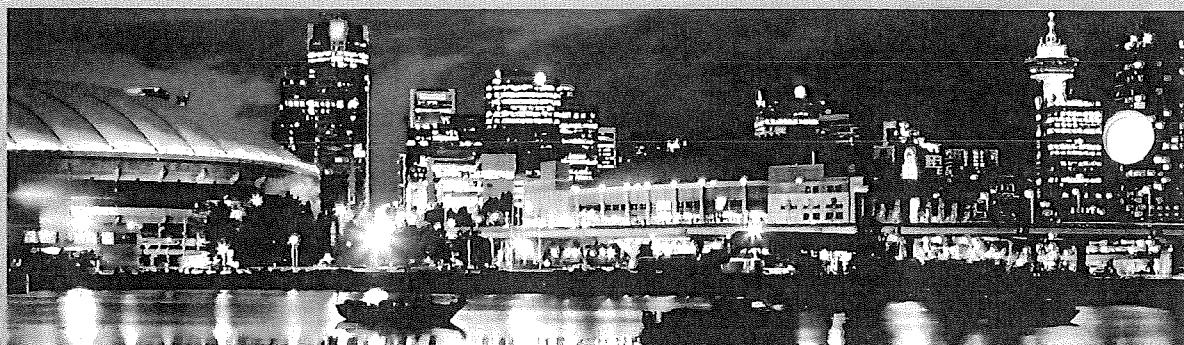
Mechanical Values

Min. failing load - Bending [kN]	2	4	6	8	10	12.5	16	20
Min. failing load - Bending moment underhung [kNm]	0.77	1.54	2.31	3.08	3.85	4.82	6.16	7.7
Min. failing load - Bending moment upright [kNm]	1.54	3.08	4.62	6.16	7.7	9.63	12.32	15.4
Min. failing load - Torsion [kNm]	1.2	2	2.5	3	4	4	5	6

Electrical Values

Lightn. impulse withst. voltage, dry [kV peak value]	325	325	325	325	325	325	325	325
Power frequency withst. voltage, wet [kV r.m.s.]	140	140	140	140	140	140	140	140

The very Best.

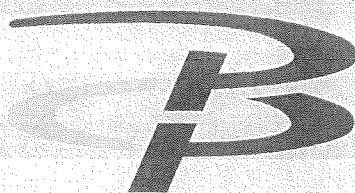


It's here where we deliver.

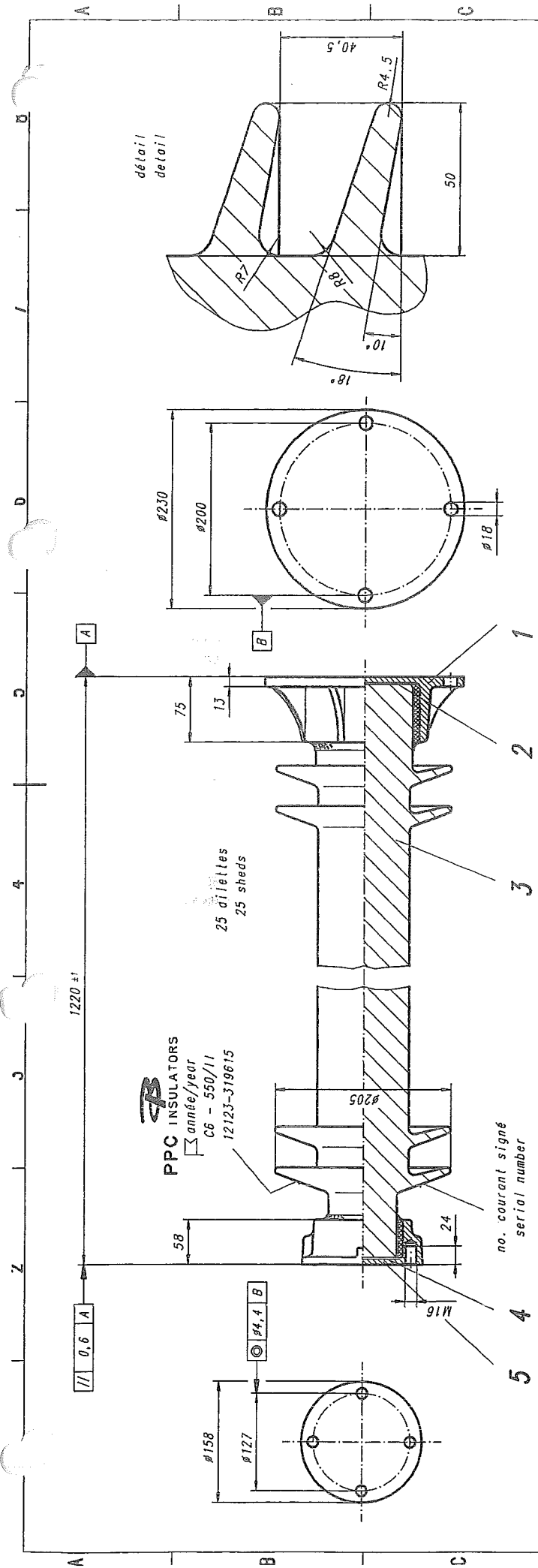
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norme		essais conformément à		standard		testing acc. to		1,2	
IEC 60273		IEC 60168		highest system voltage		disque #80x0,8		5	
123 kV		550 kV		lightning impulse withstand voltage		matière plastique		4	
230 kV		230 kV		power frequency withstand voltage, wet		C 130		3	
75 kV		200 µV		RIV test voltage		matière plastique		2	
200 µV		1 "		max. RIV voltage at 1000 kHz		fonte malleable		1	
1 "		3280 mm		max. angular deviation of fixing holes		malleable cast iron		1	
3280 mm		3198 mm		nom. creepage distance		matière		no.	
3198 mm		6 kN		min. creepage distance		(material)		no.	
6 kN		4 kNm		min. failing load, bending, upright		(tolerance)		numéro de dessin	
4 kNm				min. failing load, torsion		date		drawing - no.	
						06.12.02		scale: %	
						Metzler		weight: = 57 kg	
						Fräger		dosname	
								ARM. STÜTZER	
								12124-3200F0	
								(ident no.)	
								12124-3200F0	
								(designation)	
								Support isolant C6 - 550/11	
								Post insulator	
								(drawing no.)	
								12124-3200F0	
								(sheet)	
								ELEKTROKRAMMIK	
								SONNEBERG GmbH	
								rev. modification no.	
								date	
								name	
								origin	

