GLASS INSULATORS FOR 10–1150 kV OVERHEAD LINES AND SUBSTATIONS

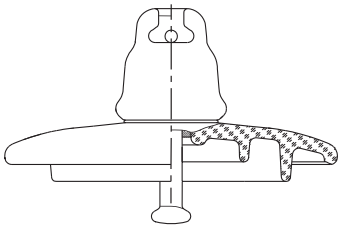
Products catalogue
2021

GLOBAL INSULATOR GROUP

Glass part profiles of toughened glass insulators

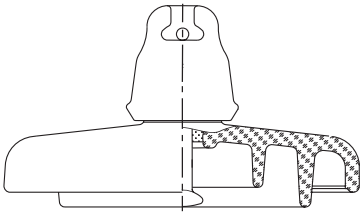
Standard profile

Design of insulating part has small ribs. Insulators of standard profile perform well in areas of mild contaminations. Creepage distance is over the mandatory requirements of international standards.



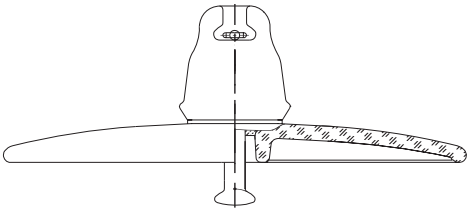
Fog type profile

Design of insulating part has strongly extended ribs which protect from flowing contaminations and dry depositions. The distance between ribs prevents from partial discharge between adjacent ribs under severe contamination. Such insulators perform well in areas with industrial pollution, heavy rainfall and coastal areas.



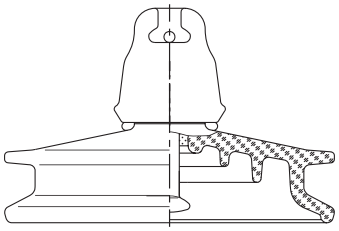
Open profile

Design of insulating part with open profile is marked by absence of under-ribs and extended diameter of disk. Open profile reduces pollutant accumulation on the surface. This design is effective in desert areas with wind and sandstorms and also can solve ice-bridging problems.

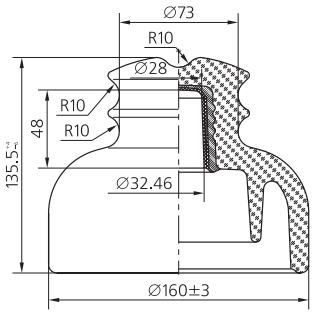


External shed profile

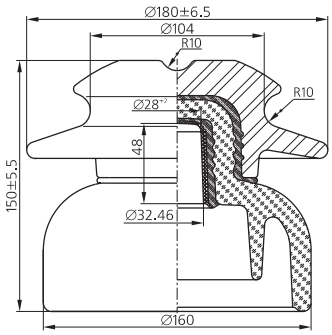
Design of insulating part has two external ribs. As a result of ribs arranged on the side face, the surface of insulator is self-cleaned by strong wind. Insulators perform well in areas with industrial pollution and salty soil.



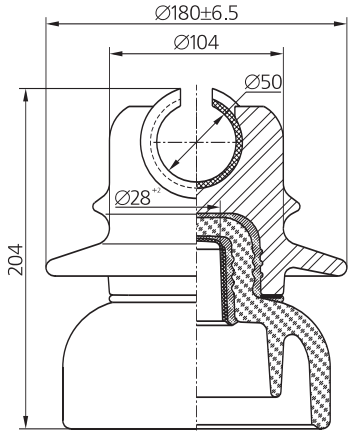
HV glass and glass-ceramic pin insulators
class of mechanical load: 12.5 kN



SHS10E



SHS10I



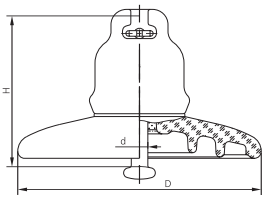
SHS10I1

Profile			Pin profile		
Reference designation	Non-standard		SHS10E	SHS10I	SHS10I1
Minimum mechanical failing load (bending)		kN	12.5	12.5	12.5
Nominal creepage distance		mm	290	350	350
Puncture voltage in insulating medium		kV	130	130	130
50 Hz withstand voltage (dry)		kV	68	68	68
50 Hz withstand voltage (wet)		kV	42	45	45
Impulse withstand voltage 1.2/50 +/−		kV	105	80	80
Weight		kg	2.0	3.6	3.9

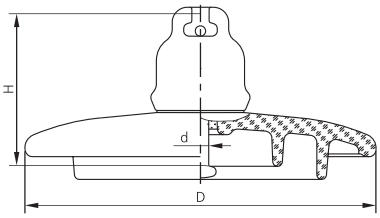
HV glass suspension insulators

class of mechanical load: 40 kN

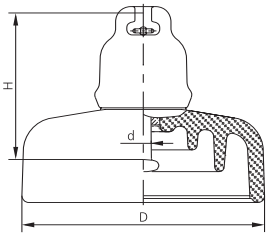
Ball and socket type



U40B



U40M



U40BP

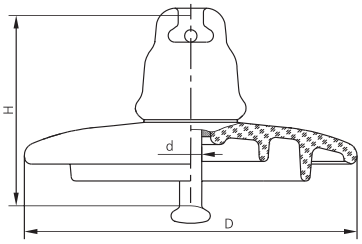
Profile			Standard profile	Fog type profile	
Reference designation	IEC 60305		U40B		U40BP
	Non-standard			U40M	
Minimum mechanical failing load		kN	40	40	40
Minimum mechanical residual strength		kN	32	32	32
Diameter of the insulating part, D		mm	175	255	175
Spacing, H		mm	100/110	100/110	110
Nominal creepage distance		mm	190	320	300
Ball and socket coupling, d (IEC 60120)		mm	11	11	11
Puncture voltage in insulating medium		kV	110	110	110
50 Hz withstand voltage (dry)		kV	55	70	60
50 Hz withstand voltage (wet)		kV	33	40	34
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	70/70	100/100	85/85
Radio interference voltage at 0.5 MHz		dB	34	60	60
		kV	10	20	20
		dB	86	86	86
		kV	25	25	25
Weight		kg	1.7	3.0	2.5

All technical requirements and testing are in accordance with IEC standards.

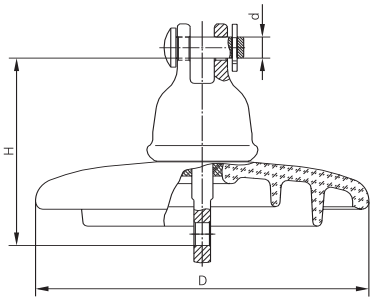
HV glass suspension insulators

class of mechanical load: 70, 80 kN

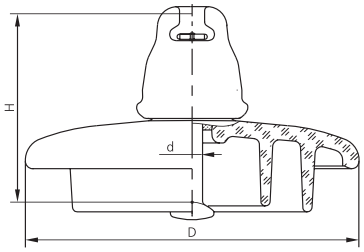
Ball and socket type
Tongue-ball type



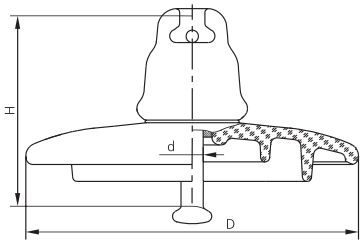
U70BS, U70BL



U70C



PS70I



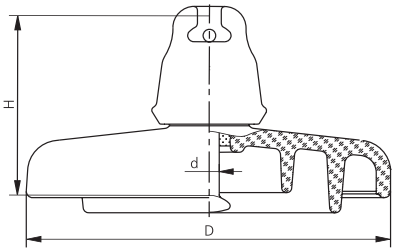
U80B

Profile			Standard profile	
Reference designation	IEC 60305		U70BS/U70BL	
	BS EN 60305			
	Non-standard			
Minimum mechanical failing load		kN	70	
Minimum mechanical residual strength		kN	56	
Diameter of the insulating part, D		mm	255	
Spacing, H		mm	127/146	
Nominal creepage distance		mm	320	
Ball and socket coupling, d (IEC 60120)		mm	16A	
Puncture voltage in insulating medium		kV	130	
50 Hz withstand voltage (dry)		kV	70	
50 Hz withstand voltage (wet)		kV	40	
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	105/105	
Radio interference voltage at 0.5 MHz		dB	60	
		kV	20	
		dB	86	
		kV	25	
Weight		kg	3.6	

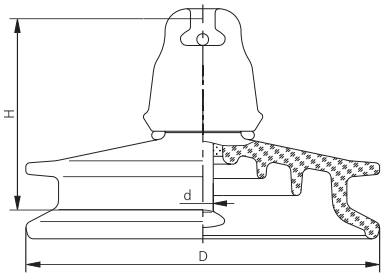
All technical requirements and testing are in accordance with IEC, BS standards.

* According to IEC 60305 insulator of PS70I type corresponds to insulator of U70BL type and can be applied instead of insulator of U70BL type.

U70BS-G, U70BL-G, U70BLP-G, PSD70E-G with RTV coating



U70BLP



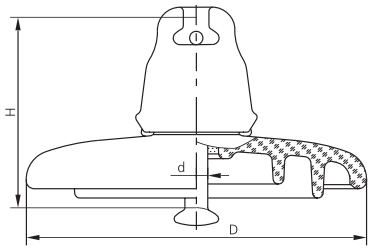
PSD70E

	Standard profile			Fog type profile	External shed profile
		U70C		U70BLP	
			U80B		
	PS70I*				PSD70E
	70	70	80	70	70
	56	56	64	56	56
	255	255	255	280	270
	146	146	140	146	127/146
	407	320	320	445	411
	16A	16C	16	16A	16A
	130	130	130	130	130
	72	70	70	82	75
	42	40	40	50	45
	110/110	105/105	105/105	125/125	110/110
	60	60	60	60	60
	20	20	20	20	20
	86	86	86	86	86
	30	25	25	30	25
	4.3	3.8	3.8	5.66	4.6

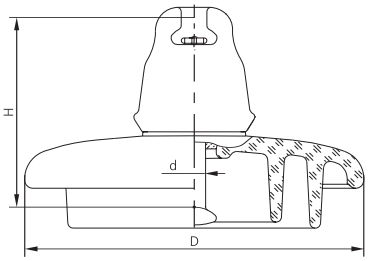
HV glass suspension insulators

class of mechanical load: 100, 120 kN

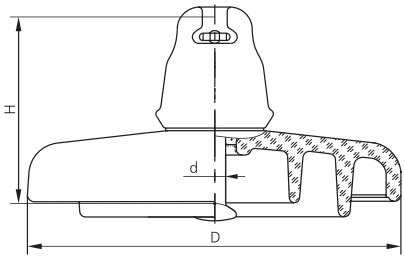
Ball and socket type



U100BS, U100BL, U120B



PS120V



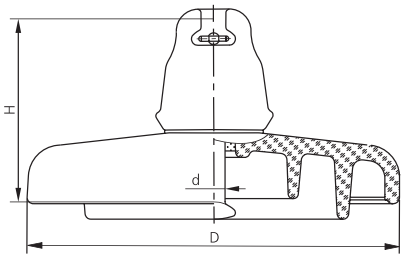
U100BLP

Profile			Standard profile		
Reference designation	IEC 60305		U100BS/U100BL	U120B	
	Non-standard				
Minimum mechanical failing load		kN	100	120	
Minimum mechanical residual strength		kN	80	96	
Diameter of the insulating part, D		mm	255	255	
Spacing, H		mm	127/146	127/146	
Nominal creepage distance		mm	320	320	
Ball and socket coupling, d (IEC 60120)		mm	16A	16A	
Puncture voltage in insulating medium		kV	130	130	
50 Hz withstand voltage (dry)		kV	70	70	
50 Hz withstand voltage (wet)		kV	40	40	
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	110/110	110/110	
Radio interference voltage at 0.5 MHz		dB	60	60	
		kV	20	20	
		dB	86	86	
		kV	30	30	
Weight		kg	3.9	3.9	

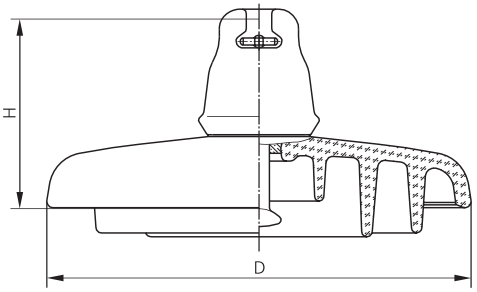
All technical requirements and testing are in accordance with IEC standards.

* According to IEC 60305 insulator of PS120V type corresponds to insulator of U120B type and can be applied instead of insulator of U120B type.

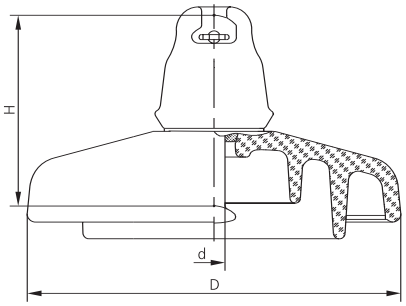
U120B-G, U120BP-G, PSV120D-G, U120AD-G with RTV coating



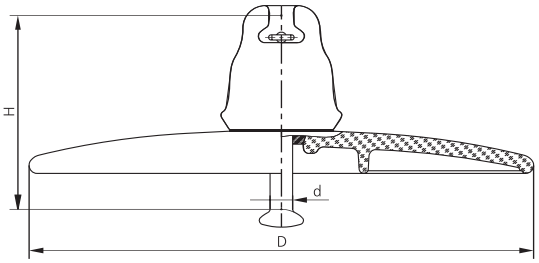
U120BP



U120BP1



PSV120D



U120AD

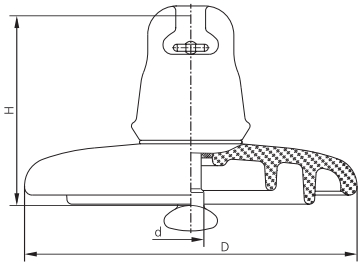
	Standard profile	Fog type profile				Open profile
		U100BLP	U120BP		U120BP1	U120AD
	PS120V*			PSV120D**		
	120	100	120	120	120	120
	96	80	96	96	96	96
	255	280	280	280	320	380
	146	146	127/146	127/146	146	127/130/146
	407	445	445	468	555	365
	16A	16A	16A	16A	16	16A
	130	130	130	130	130	130
	72	82	82	82	90	60
	42	50	50	50	55	50
	110/110	125/125	125/125	125/125	140/140	95/95
	60	34	60	60	34	34
	20	10	20	20	10	10
	86	86	86	86	86	86
	30	30	30	30	30	30
	4.6	5.66	5.56	5.75	6.65	5.2

** According to IEC 60305 insulator of PSV120D type corresponds to insulator of U120BP type and can be applied instead of insulator of U120BP type.

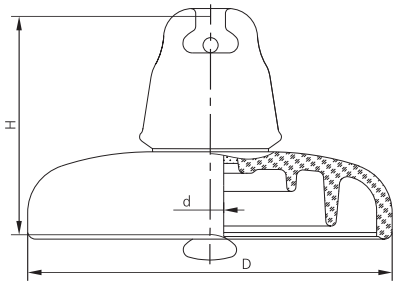
HV glass suspension insulators

class of mechanical load: 125, 160 kN

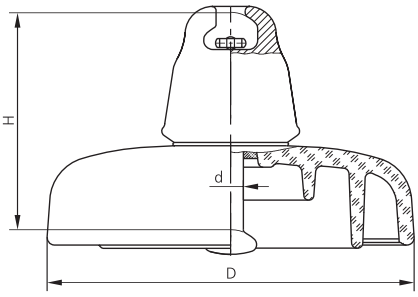
Ball and socket type



U125B



U160BS, U160BL



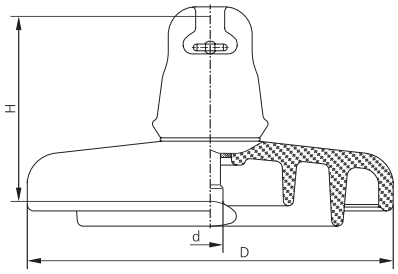
PS160K

Profile			Standard profile	
Reference designation	IEC 60305			
	BS EN 60305		U125B	
	Non-standard			
Minimum mechanical failing load		kN	125	
Minimum mechanical residual strength		kN	100	
Diameter of the insulating part, D		mm	255	
Spacing, H		mm	146	
Nominal creepage distance		mm	320	
Ball and socket coupling, d (IEC 60120)		mm	20	
Puncture voltage in insulating medium		kV	130	
50 Hz withstand voltage (dry)		kV	70	
50 Hz withstand voltage (wet)		kV	40	
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	110/110	
Radio interference voltage at 0.5 MHz		dB	34	
		kV	10	
		dB	86	
		kV	30	
Weight		kg	4.1	

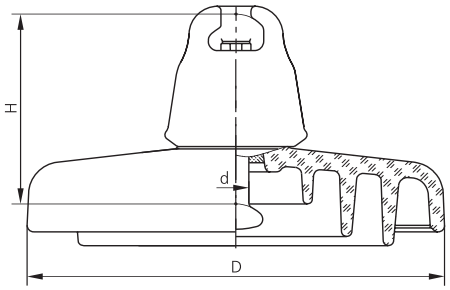
All technical requirements and testing are in accordance with IEC, BS standards.

* According to IEC 60305 insulator of PS160K type corresponds to insulator of U160BL type and can be applied instead of of insulator of U160BL type.

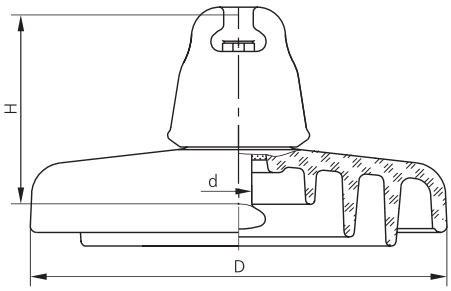
U160BS-G, U160BL-G, PS160K-G, U160BSP-G, U160BLP-G, U160AD-G with RTV coating



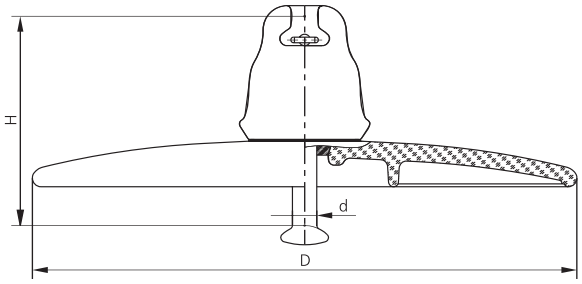
U125BP



PSV160B



U160BSP, U160BLP



U160AD

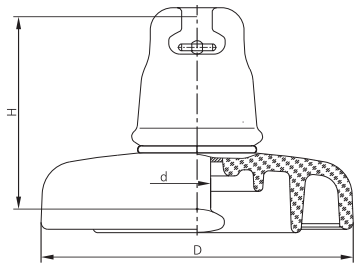
	Standard profile		Fog type profile			Open profile
	U160BS/U160BL			U160BSP/U160BLP		U160AD
			U125BP			
		PS160K*			PSV160B**	
	160	160	125	160	160	160
	128	128	100	128	128	128
	280	280	280	320	320	420
	146/170	170	146	146/170	146/170	146/170
	385	460	445	545	545	400
	20	20	20	20	20	20
	130	130	130	130	130	130
	75	75	82	90	90	60
	45	45	50	55	55	50
	110/110	115/115	125/125	140/140	140/140	95/95
	60	34	34	60	60	60
	20	10	10	20	25	20
	86	86	86	86	86	86
	35	35	25	35	40	40
	6.13	7.4	5.86	8.28	8.28	7.43

** According to IEC 60305 insulator of PSV160B type corresponds to insulator of U160BLP type and can be applied instead insulator of U160BLP type.

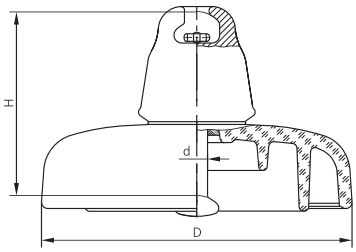
HV glass suspension insulators

class of mechanical load: 190, 210, 240 kN

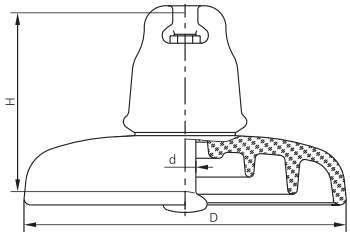
Ball and socket type



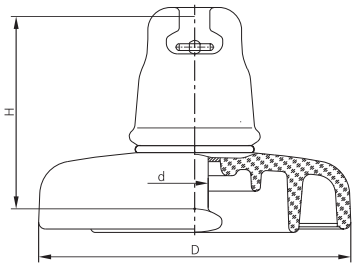
U190B



PS210D



U210B



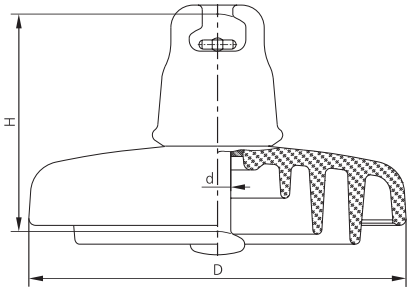
U240B

Profile			Standard profile		
Reference designation	IEC 60305			U210B	
	Non-standard		U190B		
Minimum mechanical failing load		kN	190	210	
Minimum mechanical residual strength		kN	152	168	
Diameter of the insulating part, D		mm	280	290	
Spacing, H		mm	190	170/195	
Nominal creepage distance		mm	428	380	
Ball and socket coupling, d (IEC 60120)		mm	24	20	
Puncture voltage in insulating medium		kV	130	130	
50 Hz withstand voltage (dry)		kV	70	72	
50 Hz withstand voltage (wet)		kV	45	45	
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	110/110	110/110	
Radio interference voltage at 0.5 MHz		dB	60	60	
		kV	20	20	
		dB	86	86	
		kV	40	40	
Weight		kg	7.9	7.5	

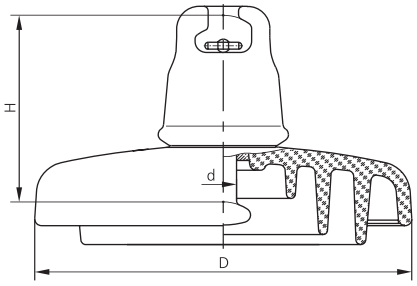
All technical requirements and testing are in accordance with IEC standards.

* According to IEC 60305 insulator of PS210D type corresponds to insulator of U210B type and can be applied instead of insulator of U210B type.

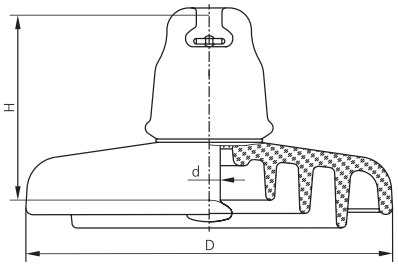
U210B-G, U210BP-G, U210AD-G with RTV coating



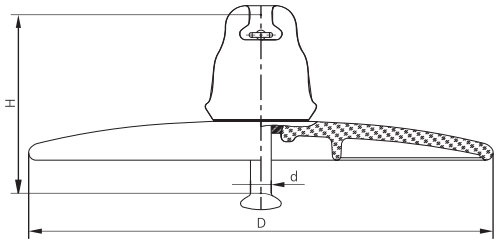
U190BP



U240BSP, U240BLP



U210BP



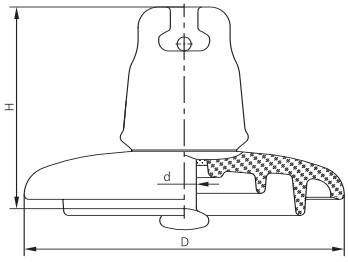
U210AD

	Standard profile		Fog type profile			Open profile
				U210BP		U210AD
	PS210D*	U240B	U190BP		U240BSP/U240BLP	
	210	240	190	210	240	210
	168	192	152	168	192	168
	280	280	340	330	340	420
	170	170/192	196	170/195	170/195	170
	460	428	617	555	617	400
	20	24	24	20	24	20
	130	130	130	130	130	130
	75	70	100	90	100	60
	45	45	60	55	60	50
	115/115	110/110	150/150	140/140	150/150	95/95
	60	60	34	60	34	60
	20	20	10	20	10	20
	86	86	52	86	86	86
	40	40	30	35	35	40
	8.0	7.9	10.6	9.45	11.0	8.28

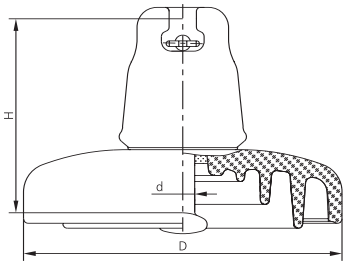
HV glass suspension insulators
class of mechanical load: 300 kN

U300BP-G with RTV coating

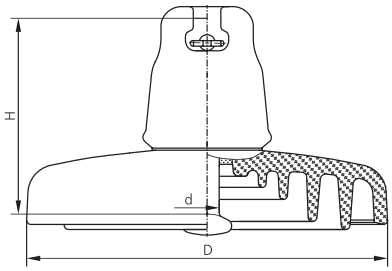
Ball and socket type



U300B



PS300G



U300BP

Profile			Standard profile		Fog type profile
Reference designation	IEC 60305		U300B	U300B	U300BP
	Non-standard			PS300G*	
Minimum mechanical failing load		kN	300	300	300
Minimum mechanical residual strength		kN	240	240	240
Diameter of the insulating part, D		mm	320	320	360
Spacing, H		mm	195	195	195/196
Nominal creepage distance		mm	390	485	617
Ball and socket coupling, d (IEC 60120)		mm	24	24	24
Puncture voltage in insulating medium		kV	130	130	130
50 Hz withstand voltage (dry)		kV	82	82	100
50 Hz withstand voltage (wet)		kV	50	50	60
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	130/130	130/130	155/155
Radio interference voltage at 0.5 MHz		dB	60	60	60
		kV	20	20	20
		dB	86	86	86
		kV	40	40	40
Weight		kg	10.0	11.5	13.3

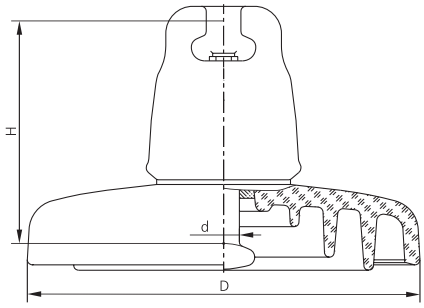
All technical requirements and testing are in accordance with IEC standards.

* According to IEC 60305 insulator of PS300G type corresponds to insulator of U300B type and can be applied instead of insulator of U300B type.

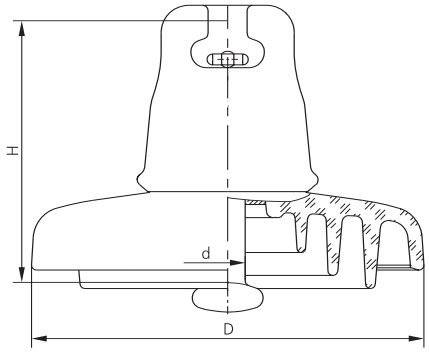
HV glass suspension insulators

class of mechanical load: 400, 530 kN

Ball and socket type



U400B



U530B

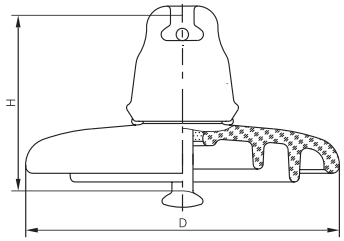
Profile			Standard profile	
Reference designation	IEC 60305		U400B	U530B
Minimum mechanical failing load		kN	400	530
Minimum mechanical residual strength		kN	320	424
Diameter of the insulating part, D		mm	360	360
Spacing, H		mm	205	240
Nominal creepage distance		mm	550	600
Ball and socket coupling, d (IEC 60120)		mm	28	32
Puncture voltage in insulating medium		kV	130	130
50 Hz withstand voltage (dry)		kV	90	100
50 Hz withstand voltage (wet)		kV	55	60
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	140/140	155/155
Radio interference voltage at 0.5 MHz		dB	60	60
		kV	20	20
		dB	86	86
		kV	40	40
Weight		kg	16.2	20.5

All technical requirements and testing are in accordance with IEC standards.

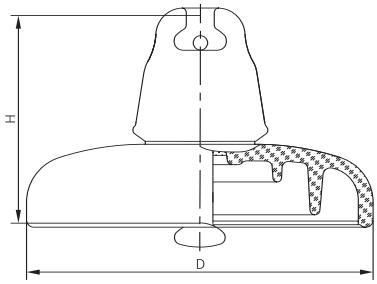
HV glass suspension insulators

ANSI Standard

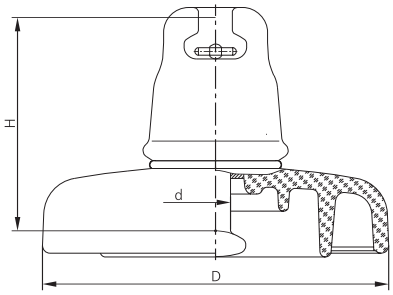
Ball and socket type



52-3, 52-5



52-8



52-11

Profile			Standard profile			
Reference designation	ANSI C 29.2		52-3	52-5	52-8	52-11
Minimum mechanical failing load		lbs (kN)	20.000 (100)	30.000 (136)	40.000 (180)	50.000 (222)
Minimum mechanical residual strength		lbs (kN)	13.400 (60)	18.000 (81.6)	24.000 (108)	30.000 (133)
Impact strength		in•lbs (N•m)	400 (45)	400 (45)	400 (45)	400 (45)
Diameter of the insulating part, D		in (mm)	10 (255)	10 (255)	11 (280)	11 (280)
Spacing, H		in (mm)	$5^{3/4}$ (146)	$5^{3/4}$ (146)	$5^{3/4}$ (146)	$6^{1/8}$ (156)
Nominal creepage distance		in (mm)	$12^{5/8}$ (320)	$12^{5/8}$ (320)	$15^{1/6}$ (385)	$16^{3/4}$ (428)
Ball and socket coupling		–	type B	type J	type K	type K
Puncture voltage		kV	130	130	130	130
Flashover power frequency voltage (dry)		kV	80	80	80	80
Flashover power frequency voltage (wet)		kV	50	50	50	50
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	125/130	125/130	125/130	140/140
Radio interference voltage at 1 MHz		dB	34	34	34	34
		kV	10	10	10	10
Weight		lb (kg)	8.8 (4.0)	9.2 (4.2)	13.6 (6.18)	17.4 (7.9)

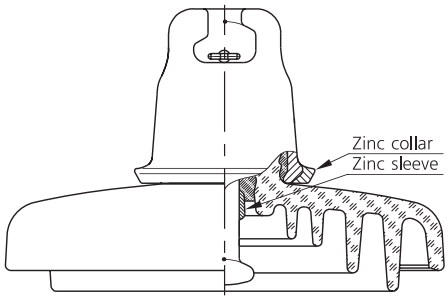
Insulators meet ANSI C 29.1, ANSI C 29.2 requirements.

Glass insulators for DC lines

An unidirectional flow of direct electric current result in specific electric stresses which require special insulating materials and design of insulators to resist corrosion of metal parts, pollution accumulation on insulator surface and other cases related to application of insulator on OHV DC lines.

Corrosion caused by direct current requires protecting metal end fittings. To prevent this, a sleeve made of pure zinc is cast directly on to the pin. Thus, zinc sleeve acting as a sacrificial electrode protects the pin against galvanic action. Adapted design of glass part has low ion conductivity due to special glass chemistry.

GIG offers insulators for DC application with mechanical load 160, 210, 300 kN.



Reduced radio interference insulators

The reduced radio interference insulators are modified standard insulators designed to preserve both the geometry and design, as well as their technical characteristics, however, unlike the standard ones, the former feature the level of radio interference reduced by 8 to 10% and the reduced corona discharge losses.

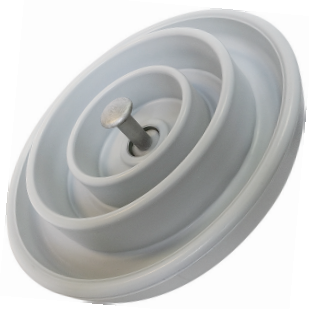
The use of the reduced radio interference insulators on power lines will reduce the corona power loss. The decreased corona discharge losses, in turn, result in the decreased air ionization around the insulators and the overhead line accessories and, consequently, in the decreased likelihood of the insulator string flashover. The use of these types of insulators at power grid facilities will improve the reliability of overhead line operation.

Insulators with silicone coating

Nowadays GIG set up manufacturing all glass insulators with silicone coating that allows dealing with challenges in areas with high level of pollution by improving reliability of transmission line operation. Silicone coating gives polymeric properties to glass insulators while maintaining the advantages of toughed glass.

As a result coated insulators have the following advantages:

- Silicone coating has high hydrophobic properties thus contaminations are greatly reduced on the glass surface. Discharge characteristics are increased by 1.5 and more times under severe contamination conditions.
- Costs for line operation are reduced as there is no need to wash insulators.
- Radio interference level is reduced.
- Insulators resist to vandalism (shooting).



Packet with crates

Each packet with crates includes several wooden crates placed on the pallet.

For packing manufacture the "screw-ringed" nails, which have ring grooves on the stem that create the additional friction force and the nails keep the nailed timber more fixedly.

The pallet packer wraps round the packet with insulators by strechtape in a few layers to strengthen it for transport to the consumer.

Lath packet

Sea package (SP)

Universal package (UP)

Wooden crate

The pallet packer wraps round the packet with insulators by strechtape in a few layers to strengthen it for transport to the consumer.

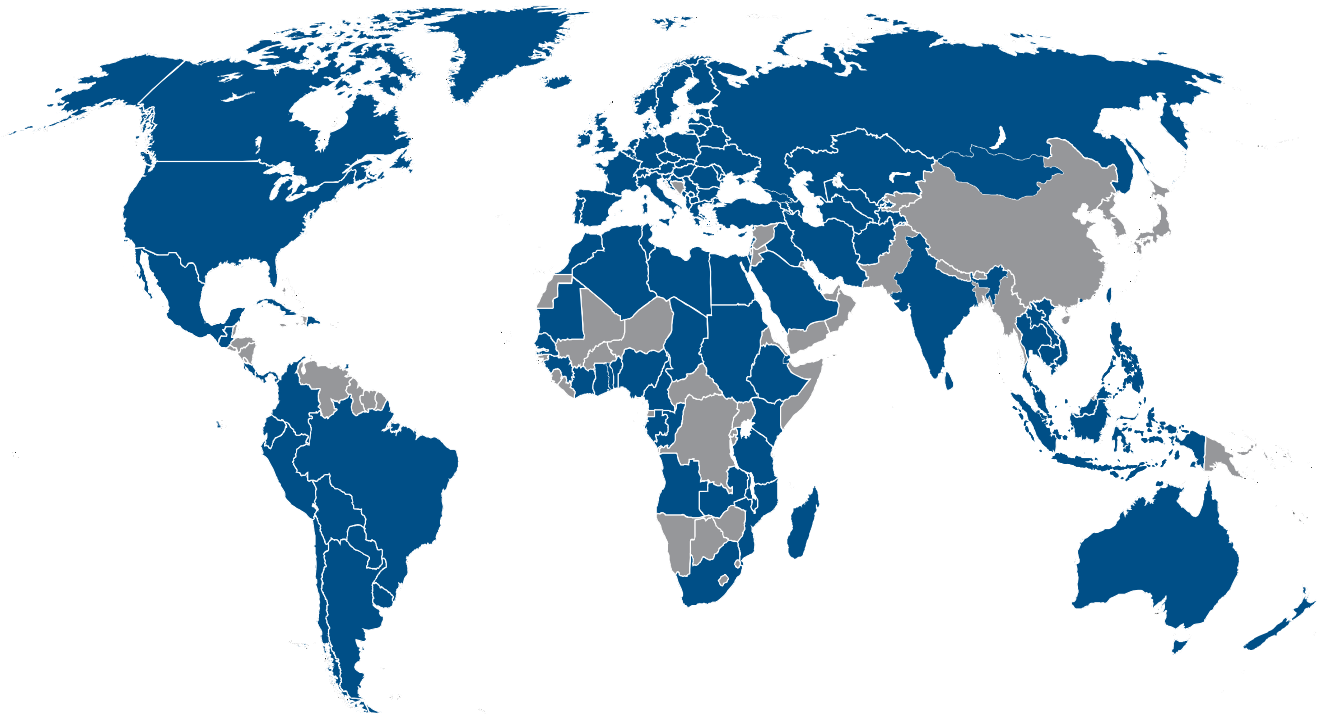
Package with boxes (PB)

Slatted crates

Easy to disassemble (box does not require special tools for opening; simply untwist the wires and the box opens). The design is such that during the transportation empty boxes can be laid flatwise taking up minimum space in the truck.

Wooden cylindrical crate (WCC)

The packing of insulators supplied by GIG is made of wood treated in accordance with the international standard ISPM-15. When the insulators are stored at the open storage ground, the wood may darken due to ultraviolet emission exposure or dust. The impact of these factors on the packaging material does not reduce its mechanical strength.



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