SEVES

sediver

Sediver toughened glass suspension insulators

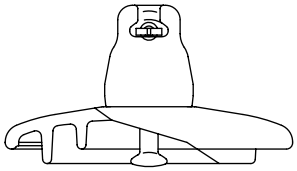
IEC / BS / ANSI

2007

Dielectric shell profiles
Sediver toughened glass insulators

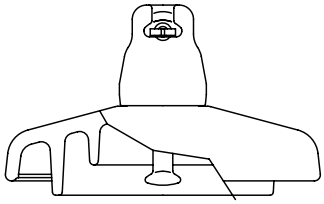
• Standard Profile:

(IEC 60305 & ANSI C29.2)
Because of shallow, well-spaced under-ribs and a leakage distance in excess of standard duty requirements.
This design performs well in areas of mild contamination.



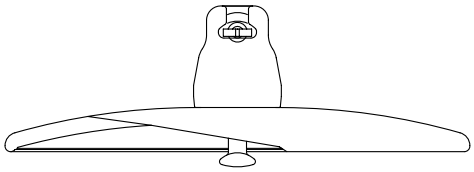
• Fog-Type Profile (Shape A):

(IEC 60305)
A design with a longer leakage distance than the standard profile obtained by two or three ribs of greater depth. The profile and wide spacing of the ribs promote an effective self-cleaning action by wind or rain. Their wider spacing also prevents arcing between adjacent ribs under severe contamination.



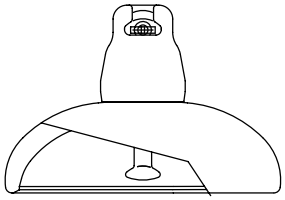
• Open Profile:

The absence of deep under-ribs on this shell type greatly reduces pollutant accumulation on the lower surface because air flow is smooth and uninterrupted. This design is particularly effective in desert areas where natural washing by rain is infrequent. It is also effective for tension (dead-end) strings in extreme industrial pollution and can solve ice-bridging problems when alternated with other profiles in a string.



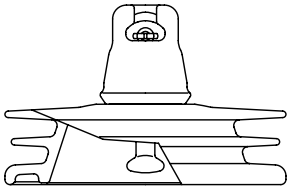
• Spherical Profile:

The spherical shape permits a leakage distance equivalent to that of standard profile types. With the spherical profile the manual cleaning is easy and efficient.



• External shed profile:

A design with a leakage distance equivalent to that of anti fog profile type.
Elimination of under-ribs reduces pollution build-up, promotes self cleaning and facilitates manual cleaning when necessary.

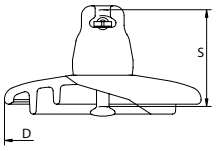


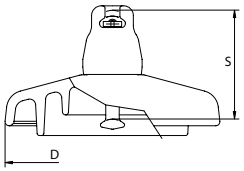
Sediver toughened glass suspension insulators

IEC

Ball & Socket type

40 kN





		Standard Profile			Fog Type Profile
CATALOG N°		**1508BF/100**	**1508BF/110**	**F40-10/110**	**F40P/110**
IEC class (1)			U40B		U40BP
MECHANICAL CHARACTERISTICS					
Minimum mechanical failling load	kN	40	40	40	40
DIMENSIONS					
Diameter (D)	mm	175	175	255	180
Spacing (S)	mm	100	110	110	110
Creepage distance	mm	195	195	320	310
Metal fitting size (2)		11	11	11	11
ELECTRICAL CHARACTERISTICS					
Power frequency withstand voltage					
- Dry one minute	kV	45	45	70	50
- Wet one minute	kV	32	32	40	32
Dry lightning impulse withstand volt.	kV	70	70	100	80
Puncture withstand voltage	kV	110	110	130	110
PACKING AND SHIPPING DATA					
Approx. net weight	kg	1.6	1.6	3.2	2.4
N° of insulators per crate		*	9	9	*
Volume per crate	m³		0.03	0.066	
Gross weight per crate	kg		24.45	41.4	
N° of insulators per pallet		270	270	135	200
Volume per pallet	m³	1.08	1.46	1.59	1.24
Gross weight per pallet	kg	570	596	546	537
Int ref:		UF040CA100 CC011NI	UF040CA110 CC011NI	UF040CJ110 CC011NI	UF040PA110 CC011NI

*Box packing

Insulators with specific protection against corrosion are also available

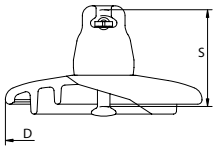
(1) in accordance with IEC publication 60305
(2) in accordance with IEC publication 60120
(3) in accordance with IEC publication 60383-1

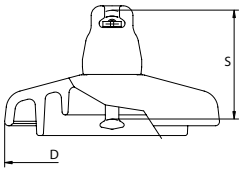
Sediver toughened glass suspension insulators

IEC

Ball & Socket type

70 kN





		Standard Profile		Fog Type Profile
CATALOG N°		**F70/127**	**F70/146**	**F70P/146**
IEC class (1)		U70BS	U70BL	
MECHANICAL CHARACTERISTICS				
Minimum mechanical failling load	kN	70	70	70
DIMENSIONS				
Diameter (D)	mm	255	255	255
Spacing (S)	mm	127	146	146
Creepage distance	mm	320	320	390
Metal fitting size (2)		16A	16A	16A
ELECTRICAL CHARACTERISTICS				
Power frequency withstand voltage				
- Dry one minute	kV	70	70	72
- Wet one minute	kV	40	40	42
Dry lightning impulse withstand volt.	kV	100	100	110
Puncture withstand voltage	kV	130	130	130
PACKING AND SHIPPING DATA				
Approx. net weight	kg	3.6	3.6	4.6
N° of insulators per crate		6	6	6
Volume per crate	m³	0.05	0.05	0.074
Gross weight per crate	kg	31.69	31.69	44.16
N° of insulators per pallet		90	90	72
Volume per pallet	m³	1.3	1.34	1.24
Gross weight per pallet	kg	447	452	524
Int ref:		UF070CJ127 CC16ANI	UF070CJ146 CC16ANI	UF070PG146 CC16ANI

Insulators with specific protection against corrosion are also available

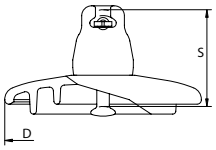
(1) in accordance with IEC publication 60305
(2) in accordance with IEC publication 60120
(3) in accordance with IEC publication 60383-1

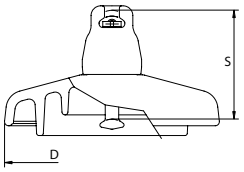
Sediver toughened glass suspension insulators

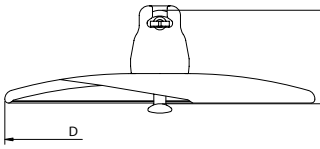
IEC

Ball & Socket type

100 kN







		Standard Profile		Fog Type Profile			Open Type Profile
CATALOG N°		F100/127	F100/146	F9P-A/146	F100P/146	F100PF/146	F100D/127
IEC class (1)		U100BS	U100BL		U100BLP		
MECHANICAL CHARACTERISTICS							
Minimum mechanical failling load	kN	100	100	100	100	100	100
DIMENSIONS							
Diameter (D)	mm	255	255	255	280	330	380
Spacing (S)	mm	127	146	146	146	146	127
Creepage distance	mm	320	320	390	445	545	365
Metal fitting size (2)		16A	16A	16A	16A	16A	16A
ELECTRICAL CHARACTERISTICS							
Power frequency withstand voltage							
- Dry one minute	kV	70	70	72	80	90	60
- Wet one minute	kV	40	40	42	50	55	50
Dry lightning impulse withstand volt.	kV	100	100	110	125	140	90
Puncture withstand voltage	kV	130	130	130	130	130	130
PACKING AND SHIPPING DATA							
Approx. net weight	kg	3.9	4	4.6	5.8	8.9	5.6
N° of insulators per crate		6	6	6	3	6	6
Volume per crate	m³	0.05	0.05	0.06	0.086	0.095	0.1
Gross weight per crate	kg	31.69	31.29	33.7	25.8	63.53	43.8
N° of insulators per pallet		90	90	96	72	54	36
Volume per pallet	m³	1.3	1.3	1.34	1.44	1.23	1.05
Gross weight per pallet	kg	447	447	557	472	553	485
Int ref:		UF100CB127 CC16ANI	UF100CB146 CC16ANI	UF100PG146 CC16ANI	UF100PB146 CC16ANI	UF100PF146 CC16ANI	UF100AB127 CC16ANI

Insulators with specific protection against corrosion are also available

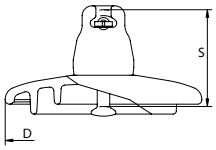
(1) in accordance with IEC publication 60305
(2) in accordance with IEC publication 60120
(3) in accordance with IEC publication 60383-1

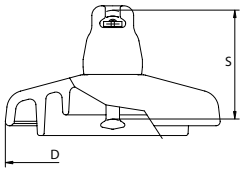
Sediver toughened glass suspension insulators

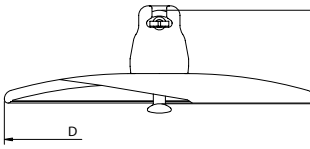
IEC

Ball & Socket type

120 kN







		Standard Profile		Fog Type Profile		Open Type Profile
CATALOG N°		F12/127	F12/146	F12P-A/146	F120P/146	F12D/127
IEC class (1)			U120B		U120BP	
MECHANICAL CHARACTERISTICS						
Minimum mechanical failling load	kN	120	120	120	120	120
DIMENSIONS						
Diameter (D)	mm	255	255	255	280	380
Spacing (S)	mm	127	146	146	146	127
Creepage distance	mm	320	320	390	445	365
Metal fitting size (2)		16A	16A	16A	16A	16A
ELECTRICAL CHARACTERISTICS						
Power frequency withstand voltage						
- Dry one minute	kV	70	70	72	80	60
- Wet one minute	kV	40	40	42	50	50
Dry lightning impulse withstand volt.	kV	100	100	110	125	90
Puncture withstand voltage	kV	130	130	130	130	130
PACKING AND SHIPPING DATA						
Approx. net weight	kg	4	4	4.6	5.8	5.6
N° of insulators per crate		6	6	6	6	6
Volume per crate	m³	0.05	0.05	0.06	0.074	0.1
Gross weight per crate	kg	31.29	33.09	33.7	45.36	43.8
N° of insulators per pallet		90	90	90	72	36
Volume per pallet	m³	1.3	1.34	1.34	1.24	1.05
Gross weight per pallet	kg	447	452	557	524	485
Int ref:		UF120CB127 CC16ANI	UF120CB146 CC16ANI	UF120PG146 CC16ANI	UF120PB146 CC16ANI	UF120AB127 CC16ANI

Insulators with specific protection against corrosion are also available

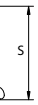
(1) in accordance with IEC publication 60305
(2) in accordance with IEC publication 60120
(3) in accordance with IEC publication 60383-1

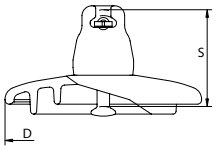
Sediver toughened glass suspension insulators

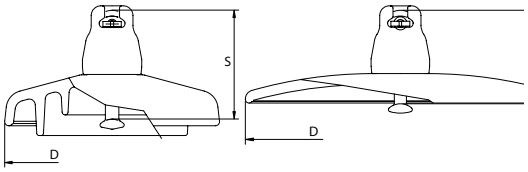
IEC

Ball & Socket type

160 kN







		Standard Profile		Fog Type Profile		Open Type Profile
CATALOG N°		F160/146	F160/170	F160P/146	F160P/170	F160D/146
IEC class (1)		U160BS	U160BL	U160BSP	U160BLP	
MECHANICAL CHARACTERISTICS						
Minimum mechanical failling load	kN	160	160	160	160	160
DIMENSIONS						
Diameter (D)	mm	280	280	330	330	420
Spacing (S)	mm	146	170	146	170	146
Creepage distance	mm	380	380	545	545	375
Metal fitting size (2)		20	20	20	20	20
ELECTRICAL CHARACTERISTICS						
Power frequency withstand voltage						
- Dry one minute	kV	75	75	90	90	60
- Wet one minute	kV	45	45	55	55	50
Dry lightning impulse withstand volt.	kV	110	110	140	140	90
Puncture withstand voltage	kV	130	130	130	130	130
PACKING AND SHIPPING DATA						
Approx. net weight	kg	6	6.5	8.8	8.9	8
N° of insulators per crate		6	6	6	6	6
Volume per crate	m³	0.07	0.07	0.09	0.1	0.154
Gross weight per crate	kg	48.66	47.6	63.5	66.25	60.45
N° of insulators per pallet		72	72	54	54	36
Volume per pallet	m³	1.4	1.35	1.22	1.46	1.35
Gross weight per pallet	kg	533	590	560	542	350
Int ref:		UF160CK146 CC020NI	UF160CK170 CC020NI	UF160PF146 CC020NI	UF160PF170 CC020NI	UF160AD146 CC020NI

Insulators with specific protection against corrosion are also available

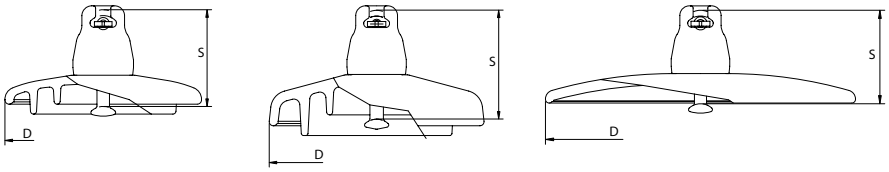
(1) in accordance with IEC publication 60305
(2) in accordance with IEC publication 60120
(3) in accordance with IEC publication 60383-1

Sediver toughened glass suspension insulators

IEC

Ball & Socket type

210 kN



		Standard Profile	Fog Type Profile	Open Type Profile
CATALOG N°		F21/170	F210P/170	F21D/170
IEC class (1)		U210B	U210BP	
MECHANICAL CHARACTERISTICS				
Minimum mechanical failling load	kN	210	210	210
DIMENSIONS				
Diameter (D)	mm	280	330	420
Spacing (S)	mm	170	170	170
Creepage distance	mm	380	550	375
Metal fitting size (2)		20	20	20
ELECTRICAL CHARACTERISTICS				
Power frequency withstand voltage				
- Dry one minute	kV	75	90	60
- Wet one minute	kV	45	55	50
Dry lightning impulse withstand volt.	kV	110	140	90
Puncture withstand voltage	kV	130	130	130
PACKING AND SHIPPING DATA				
Approx. net weight	kg	7.2	10.2	8.9
N° of insulators per crate		6	6	6
Volume per crate	m³	0.085	0.106	0.17
Gross weight per crate	kg	54.83	72.5	60
N° of insulators per pallet		72	54	48
Volume per pallet	m³	1.45	1.5	2.24
Gross weight per pallet	kg	593	572	495
Int ref:		UF210CZ170 CC020NI	UF210PP170 CC020NI	UF210AC170 CC020NI

Insulators with specific protection against corrosion are also available

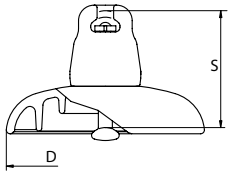
(1) in accordance with IEC publication 60305
(2) in accordance with IEC publication 60120
(3) in accordance with IEC publication 60383-1

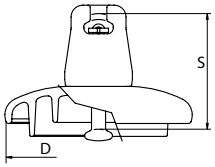
Sediver toughened glass suspension insulators

IEC

Ball & Socket type

240 kN and 300 kN





		Standard Profile		Fog Type Profile	
CATALOG N°		F24/170	F300/195	F300P/195	F30P/195
IEC class (1)			U300B	U300BP	U300BP
MECHANICAL CHARACTERISTICS					
Minimum mechanical failling load	kN	240	300	300	300
DIMENSIONS					
Diameter (D)	mm	280	320	380	320
Spacing (S)	mm	170	195	195	195
Creepage distance	mm	380	480	690	595
Metal fitting size (2)		24	24	24	24
ELECTRICAL CHARACTERISTICS					
Power frequency withstand voltage					
- Dry one minute	kV	75	85	100	90
- Wet one minute	kV	45	50	55	50
Dry lightning impulse withstand volt.	kV	110	130	150	135
Puncture withstand voltage	kV	130	130	130	130
PACKING AND SHIPPING DATA					
Approx. net weight	kg	7.5	10.9	15.3	11.1
N° of insulators per crate		6	5	2	5
Volume per crate	m³	0.08	0.1	0.06	0.1
Gross weight per crate	kg	54.83	66.77	34.73	68.76
N° of insulators per pallet		72	45	24	45
Volume per pallet	m³	1.42	1.4	1.13	1.34
Gross weight per pallet	kg	760	556	413	608
Int ref:		UF240CZ170 CC024NI	UF300CH195 CC024NI	UF300PK195 CC024NI	UF300PJ195 CC024NI

Insulators with specific protection against corrosion are also available

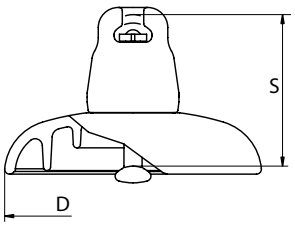
(1) in accordance with IEC publication 60305
(2) in accordance with IEC publication 60120
(3) in accordance with IEC publication 60383-1

Sediver toughened glass suspension insulators

IEC

Ball & Socket type

400 kN and 530 kN



		Standard Profile	
CATALOG N°		F400/205	F530/240
IEC class (1)		U400B	U530B
MECHANICAL CHARACTERISTICS			
Minimum mechanical failling load	kN	400	530
DIMENSIONS			
Diameter (D)	mm	360	360
Spacing (S)	mm	205	240
Creepage distance	mm	550	620
Metal fitting size (2)		28	32
ELECTRICAL CHARACTERISTICS			
Power frequency withstand voltage			
- Dry one minute	kV	90	90
- Wet one minute	kV	55	55
Dry lightning impulse withstand volt.	kV	140	140
Puncture withstand voltage	kV	130	130
PACKING AND SHIPPING DATA			
Approx. net weight	kg	14	18
N° of insulators per crate		2	2
Volume per crate	m³	0.05	0.05
Gross weight per crate	kg	31.65	41.75
N° of insulators per pallet		24	24
Volume per pallet	m³	1.08	1.2
Gross weight per pallet	kg	384	494
Int ref:		UF400CX205 CC028NI	UF530CU240 CC032NI

Insulators with specific protection against corrosion are also available

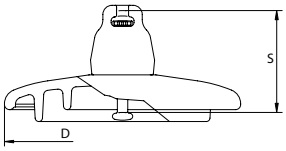
(1) in accordance with IEC publication 60305
(2) in accordance with IEC publication 60120
(3) in accordance with IEC publication 60383-1

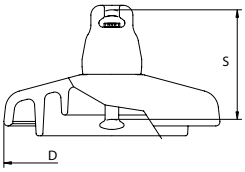
Sediver toughened glass suspension insulators

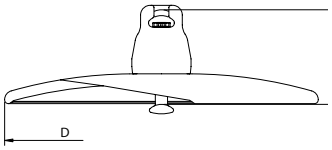
BS

Ball & Socket type

80 kN and 120 kN







		Standard Profile		Fog Type Profile		Open Type Profile
CATALOG N°		B8/140	B12/146	B8P-A/146	B80P/140	B80D/146
MECHANICAL CHARACTERISTICS						
Minimum mechanical failling load	kN	80	120	80	80	80
DIMENSIONS						
Diameter (D)	mm	255	255	255	280	380
Spacing (S)	mm	140	146	146	140	146
Creepage distance	mm	320	320	390	445	365
Metal fitting size (1)		16B	16B	16B	16B	16B
Locking device designation		W	W	W	W	W
ELECTRICAL CHARACTERISTICS						
Power frequency withstand voltage						
- Dry one minute	kV	70	70	72	80	60
- Wet one minute	kV	40	40	42	50	50
Dry lightning impulse withstand volt.	kV	100	100	110	125	90
Puncture withstand voltage	kV	130	130	130	130	130
PACKING AND SHIPPING DATA						
Approx. net weight	kg	4	4	5	5.8	5.6
N° of insulators per crate		6	6	6	3	6
Volume per crate	m³	0.05	0.05	0.06	0.37	0.1
Gross weight per crate	kg	33.09	33.09	33.7	22.3	34.83
N° of insulators per pallet		90	90	90	54	90
Volume per pallet	m³	1.34	1.34	1.34	0.95	2.42
Gross weight per pallet	kg	452	452	557	429	585
Int ref:		BW080CB140 CC16BNI	BW120CB 146 CC16BNI	BW080PG146 CC16BNI	BW080PB140 CC16BNI	BW080AB146 CC16BNI

Insulators with specific protection against corrosion are also available

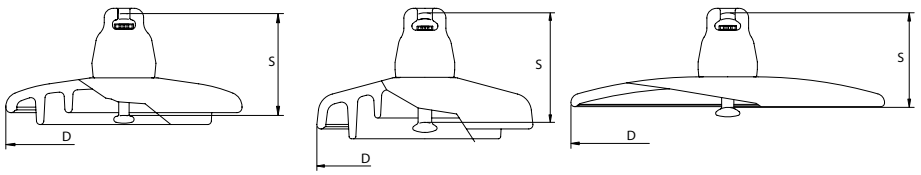
(1) in accordance with IEC 60120 & BS 3288
(2) in accordance with IEC 60383-1 & BS 60383-1
For specific markets we also supply a range of custom products which are not shown here.
Please contact our sales department for more details.

Sediver toughened glass suspension insulators

BS

Ball & Socket type

125 kN



		Standard Profile	Fog Type Profile	Open Type Profile
CATALOG N°		B13/140	B130P/146	B13D/140
MECHANICAL CHARACTERISTICS				
Minimum mechanical failling load	kN	125	125	125
DIMENSIONS				
Diameter (D)	mm	255	280	380
Spacing (S)	mm	140	146	140
Creepage distance	mm	320	445	365
Metal fitting size (1)		20	20	20
Locking device designation		W	W	W
ELECTRICAL CHARACTERISTICS				
Power frequency withstand voltage				
- Dry one minute	kV	70	80	60
- Wet one minute	kV	40	50	50
Dry lightning impulse withstand volt.	kV	100	125	90
Puncture withstand voltage	kV	130	130	130
PACKING AND SHIPPING DATA				
Approx. net weight	kg	4.4	5.8	5.6
N° of insulators per crate		6	6	6
Volume per crate	m³	0.05	0.07	0.12
Gross weight per crate	kg	33.09	45.36	44.6
N° of insulators per pallet		90	72	90
Volume per pallet	m³	1.35	1.24	2.6
Gross weight per pallet	kg	452	545	624
Int ref:		BW125CB140 CC020NI	BW125PB146 CC020NI	BW125AB140 CC020NI

Insulators with specific protection against corrosion are also available

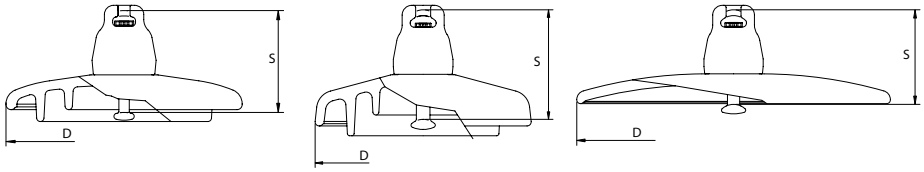
(1) in accordance with IEC 60120 & BS 3288
(2) in accordance with IEC 60383-1 & BS 60383-1
For specific markets we also supply a range of custom products which are not shown here.
Please contact our sales department for more details.

Sediver toughened glass suspension insulators

BS

Ball & Socket type

160 kN



		Standard Profile	Fog Type Profile	Open Type Profile
CATALOG N°		B160/146	B160P/170	B160D/146
MECHANICAL CHARACTERISTICS				
Minimum mechanical failling load	kN	160	160	160
DIMENSIONS				
Diameter (D)	mm	280	330	420
Spacing (S)	mm	146	170	146
Creepage distance	mm	380	545	375
Metal fitting size (1)		20	20	20
Locking device designation		W	W	W
ELECTRICAL CHARACTERISTICS				
Power frequency withstand voltage				
- Dry one minute	kV	75	90	60
- Wet one minute	kV	45	55	50
Dry lightning impulse withstand volt.	kV	110	140	90
Puncture withstand voltage	kV	130	130	130
PACKING AND SHIPPING DATA				
Approx. net weight	kg	6	8.8	8
N° of insulators per crate		6	6	6
Volume per crate	m³	0.07	0.09	0.154
Gross weight per crate	kg	47.16	63.53	60.45
N° of insulators per pallet		72	54	36
Volume per pallet	m³	1.25	1.22	1.34
Gross weight per pallet	kg	517	560	350
Int ref:		BW160CK146 CC020NI	BW160PF170 CC020NI	BW160AD146 CC020NI

Insulators with specific protection against corrosion are also available

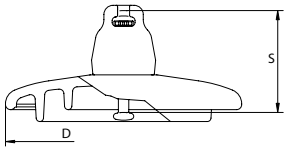
(1) in accordance with IEC 60120 & BS 3288
(2) in accordance with IEC 60383-1 & BS 60383-1
For specific markets we also supply a range of custom products which are not shown here.
Please contact our sales department for more details.

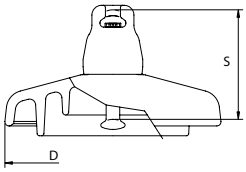
Sediver toughened glass suspension insulators

BS

Ball & Socket type

190 kN





		Standard Profile	Fog Type Profile
CATALOG N°		B190/200	B190P/170
MECHANICAL CHARACTERISTICS			
Minimum mechanical failling load	kN	190	190
DIMENSIONS			
Diameter (D)	mm	280	330
Spacing (S)	mm	200	170
Creepage distance	mm	380	550
Metal fitting size (1)		24	24
Locking device designation		W	W
ELECTRICAL CHARACTERISTICS			
Power frequency withstand voltage			
- Dry one minute	kV	75	90
- Wet one minute	kV	45	55
Dry lightning impulse withstand volt.	kV	110	140
Puncture withstand voltage	kV	130	130
PACKING AND SHIPPING DATA			
Approx. net weight	kg	7.2	10.2
N° of insulators per crate		2	6
Volume per crate	m³	0.03	0.1
Gross weight per crate	kg	24	71.65
N° of insulators per pallet		24	54
Volume per pallet	m³	0.9	0.76
Gross weight per pallet	kg	300	583
Int ref:		BW190CZ200 CC024NB	BW190PP170 CC024NB

Insulators with specific protection against corrosion are also available

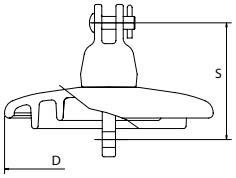
(1) in accordance with IEC 60120 & BS 3288
(2) in accordance with IEC 60383-1 & BS 60383-1
For specific markets we also supply a range of custom products which are not shown here.
Please contact our sales department for more details.

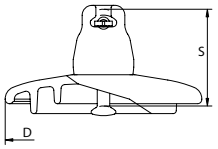
Sediver toughened glass suspension insulators

ANSI

Ball & Socket type

70 kN





		Standard Profile	
CATALOG N°		CT70/146	N70/146
ANSI class (1)		52.4	52.3
MECHANICAL CHARACTERISTICS			
Combined M&E Strength	kN	70	70
	lbs	*15000*	*15000*
Impact strength	m.N	45	45
	in-pds	*400*	*400*
Tension proof	kN	35	35
	lbs	*7500*	*7500*
DIMENSIONS			
Diameter (D)	mm	255	255
	inch	*10*	*10*
Spacing (S)	mm	146	146
	inch	*5 3/4*	*5 3/4*
Creepage distance	mm	320	320
	inch	*12 5/8*	*12 5/8*
Metal fitting size (2)		Clevis type	BS type B
ELECTRICAL CHARACTERISTICS			
Low frequency dry flashover	kV	80	80
Low frequency wet flashover	kV	50	50
Critical impulse flashover +	kV	125	125
Critical impulse flashover -	kV	130	130
Low frequency puncture voltage	kV	130	130
R.I.V Low frequency test voltage	kV	10	10
Max. RIV at 1 MHz	µV	50	50
PACKING AND SHIPPING DATA			
Approx. net weight	kg	3.6	3.6
N° of insulators per crate		6	6
Volume per crate	m³	0.05	0.05
Gross weight per crate	kg	31.29	31.29
N° of insulators per pallet		90	90
Volume per pallet	m³	1.34	1.34
Gross weight per pallet	kg	452	452
Int ref:		CT070CJ146 CC004NI	NN070CJ146 CC03BNI

Insulators with specific protection against corrosion are also available

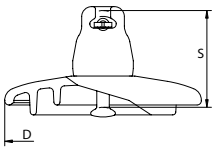
(1) in accordance with ANSI C29.2
(2) in accordance with ANSI C29.1
We also supply a range of custom products which are not shown here, for example insulators with different spacing.
Please contact our sales department for more details.

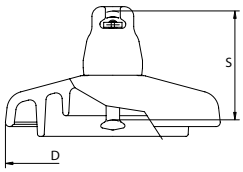
Sediver toughened glass suspension insulators

ANSI

Ball & Socket type

100 kN





		Standard Profile	Fog Type Profile
CATALOG N°		N100/146	N100P/146
ANSI class (1)			
MECHANICAL CHARACTERISTICS			
Combined M&E Strength	kN	100	100
	lbs	*22000*	*22000*
Impact strength	m.N	45	45
	in-pds	*400*	*400*
Tension proof	kN	50	50
	lbs	*11000*	*11000*
DIMENSIONS			
Diameter (D)	mm	255	280
	inch	*10*	*11*
Spacing (S)	mm	146	146
	inch	*5 3/4*	*5 3/4*
Creepage distance	mm	320	445
	inch	*12 5/8*	*17 1/2*
Metal fitting size (2)		BS type B	BS type B
ELECTRICAL CHARACTERISTICS			
Low frequency dry flashover	kV	80	100
Low frequency wet flashover	kV	50	60
Critical impulse flashover +	kV	125	140
Critical impulse flashover -	kV	130	140
Low frequency puncture voltage	kV	130	130
R.I.V Low frequency test voltage	kV	10	10
Max. RIV at 1 MHz	µV	50	50
PACKING AND SHIPPING DATA			
Approx. net weight	kg	4	5.8
N° of insulators per crate		6	3
Volume per crate	m³	0.05	0.05
Gross weight per crate	kg	31.29	21.8
N° of insulators per pallet		90	36
Volume per pallet	m³	1.34	0.86
Gross weight per pallet	kg	452	290
Int ref:		NN100CB146 CC03BNI	NN100PB146 CC03BNI

Insulators with specific protection against corrosion are also available

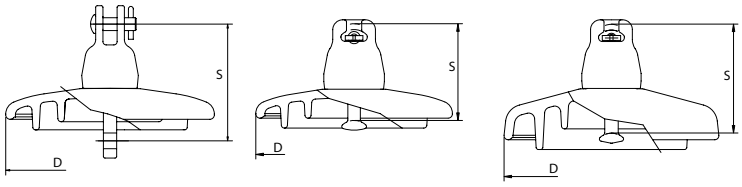
(1) in accordance with ANSI C29.2
(2) in accordance with ANSI C29.1
We also supply a range of custom products which are not shown here, for example insulators with different spacing.
Please contact our sales department for more details.

Sediver toughened glass suspension insulators

ANSI

Ball & Socket type

120 kN



		Standard Profile		Fog type Profile
CATALOG N°		CT12/146	N12/146	N120P/146
ANSI class (1)		52-6	52-5	
MECHANICAL CHARACTERISTICS				
Combined M&E Strength	kN	120	120	120
	lbs	*25000*	*25000*	*25000*
Impact strength	m.N	45	45	45
	in-pds	*400*	*400*	*400*
Tension proof	kN	60	60	60
	lbs	*12500*	*12500*	*12500*
DIMENSIONS				
Diameter (D)	mm	255	255	280
	inch	*10*	*10*	*11*
Spacing (S)	mm	146	146	146
	inch	5 3/4	5 3/4	5 3/4
Creepage distance	mm	320	320	445
	inch	12 5/8	12 5/8	17 1/2
Metal fitting size (2)		Clevis type	BS type J	BS type J
ELECTRICAL CHARACTERISTICS				
Low frequency dry flashover	kV	80	80	100
Low frequency wet flashover	kV	50	50	60
Critical impulse flashover +	kV	125	125	140
Critical impulse flashover -	kV	130	130	140
Low frequency puncture voltage	kV	130	130	130
R.I.V Low frequency test voltage	kV	10	10	10
Max. RIV at 1 MHz	µV	50	50	50
PACKING AND SHIPPING DATA				
Approx. net weight	kg	4	4	5.8
N° of insulators per crate		6	6	6
Volume per crate	m³	0.05	0.05	0.075
Gross weight per crate	kg	33.09	33.09	45.36
N° of insulators per pallet		90	90	72
Volume per pallet	m³	1.34	0.63	1.24
Gross weight per pallet	kg	452	452	524
Int ref:		CT120CB14 CC006NI	NN120CB146 CC05JNI	NN120PB146 CC05JNI

Insulators with specific protection against corrosion are also available

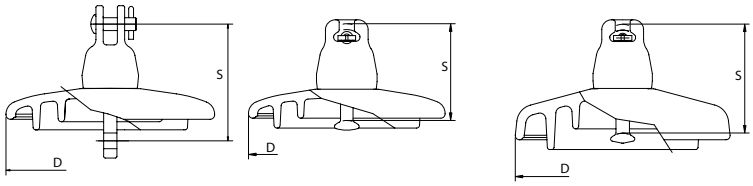
(1) in accordance with ANSI C29.2
(2) in accordance with ANSI C29.1
We also supply a range of custom products which are not shown here, for example insulators with different spacing.
Please contact our sales department for more details.

Sediver toughened glass suspension insulators

ANSI

Ball & Socket type

160 kN and 220 kN



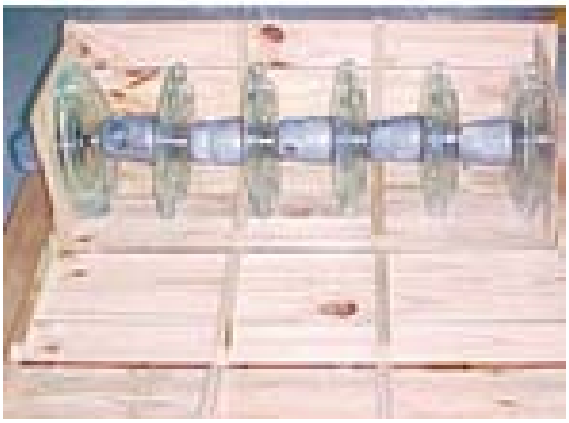
		Standard Profile			Fog type Profile	
CATALOG N°		CT160/165	N160/146	N21/156	N160P/146	N222P/171
ANSI class (1)		52-10	52-8	52-11		
MECHANICAL CHARACTERISTICS						
Combined M&E Strength	kN	160	160	222	160	210
	lbs	*36000*	*36000*	*50000*	*36000*	*50000*
Impact strength	m.N	45	45	45	45	45
	in-pds	*400*	*400*	*400*	*400*	*400*
Tension proof	kN	80	80	111	80	111
	lbs	*18000*	*18000*	*25000*	*18000*	*25000*
DIMENSIONS						
Diameter (D)	mm	280	280	280	330	330
	inch	*11*	*11*	*11*	*13*	*13*
Spacing (S)	mm	165	146	156	146	171
	inch	*6 1/2*	*5 3/4*	*6 1/8*	*5 3/4*	*6 3/4*
Creepage distance	mm	380	380	380	545	550
	inch	*15*	*15*	*15*	*21 1/2*	*21 5/8*
Metal fitting size (2)		Clevis type	BS type K	BS type K	BS type K	BS type K
ELECTRICAL CHARACTERISTICS						
Low frequency dry flashover	kV	80	80	80	105	105
Low frequency wet flashover	kV	50	50	50	65	65
Critical impulse flashover +	kV	125	125	140	170	170
Critical impulse flashover -	kV	130	130	140	160	160
Low frequency puncture voltage	kV	130	130	130	130	130
R.I.V Low frequency test voltage	kV	10	10	10	10	10
Max. RIV at 1 MHz	µV	50	50	50	50	50
PACKING AND SHIPPING DATA						
Approx. net weight	kg	6.1	6	7.2	8.8	9.7
N° of insulators per crate		6	6	6	6	2
Volume per crate	m³	0.07	0.07	0.08	0.07	0.04
Gross weight per crate	kg	47.6	47.16	52.43	47.16	25.04
N° of insulators per pallet		72	72	72	72	36
Volume per pallet	m³	1.35	1.25	1.45	1.25	1.15
Gross weight per pallet	kg	590	517	593	517	453
Int ref:		CT160CK165 CC010NI	NN160CK146 CC08KNI	NN222CZ156 C11KNI	NN160PF146 CC08KNI	NN220PP171 CC11KNI

Insulators with specific protection against corrosion are also available

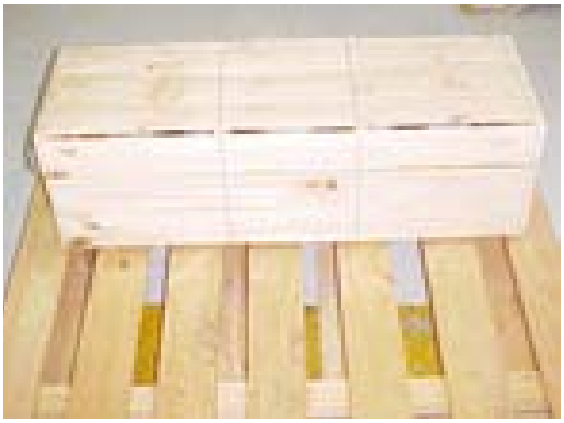
(1) in accordance with ANSI C29.2
(2) in accordance with ANSI C29.1
We also supply a range of custom products which are not shown here, for example insulators with different spacing.
Please contact our sales department for more details.

Packing and palletization

The packing and palletizing methods employed by Sediver are the result of experience gained from having shipped hundreds of millions of its toughened glass Insulators to user warehouses and construction sites in 120 countries worldwide, and from extensive tests performed by packing research organizations. The packing methods described and illustrated below have been developed expressly to minimize any possible damage during shipment and storage.
The wood used for packing is either standard or treated against insects according to country regulations or/and customer specification.



- Factory-assembled strings of Sediver Insulators are packed in wooden crates, which are reinforced and held closed by external wire bindings. A crate is shown here in the open position, and is internally braced to permit stacking.



- External wire bindings are designed to keep crates firmly closed, and to allow easy and rapid opening at time of installation with no need for special tools.

- Crates are evenly stacked on a sturdy four-way wooden pallet. This assembly is held tightly in place with either steel or plastic bands, and is protected against moisture by a complete covering of polyethylene film.

IEC/BS

Strings electrical rating

Standard profile

Standard profile suspension insulator string withstand voltages based on the test procedure of International Standard I.E.C 60383-93 and British Standard B.S. 60383

	Diameter / Spacing Ø 255/127			Diameter / Spacing Ø 255/146 - Ø 280/146		
Catalog N°	**F70/127 - F100/127 - F12/127**			**F70/146 - F100/146 - F12/146 - F160/146**		
Number of units	Power frequency withstand voltage (kV)		Lightning impulse withstand voltage (kV)	Power frequency withstand voltage (kV)		Lightning impulse withstand voltage (kV)
	DRY	WET		DRY	WET	
2	113	65	175	130	75	195
3	157	100	245	180	115	275
4	204	135	320	235	155	360
5	244	170	395	280	195	430
6	283	200	460	325	230	505
7	326	231	525	375	265	580
8	365	261	585	420	300	660
9	404	283	660	465	325	730
10	444	326	720	510	375	800
11	478	357	785	550	410	880
12	518	383	850	595	440	955
13	552	413	920	635	475	1025
14	587	444	985	675	510	1095
15	622	470	1050	715	540	1160
16	657	496	1115	755	570	1230
17	696	522	1180	800	600	1300
18	744	552	1240	855	635	1370
19	761	578	1310	875	665	1440
20	796	609	1365	915	700	1510
21	826	635	1425	950	730	1575
22	861	661	1490	990	760	1640
23	896	687	1550	1030	790	1710
24	926	713	1610	1065	820	1775
25	957	744	1670	1100	855	1850
26	992	765	1735	1140	880	1920
27	1022	792	1800	1175	910	1990
28	1057	813	1860	1215	935	2060
29	1092	839	1920	1255	965	2130
30	1122	861	1980	1290	990	2200

These electrical ratings are applicable to Sediver suspension insulator strings not equipped with arcing devices or grading rings.

IEC/BS

Strings electrical rating

Standard profile

Standard profile suspension insulator string withstand voltages based on the test procedure of International Standard I.E.C 60383-93 and British Standard B.S. 60383

	Diameter / Spacing Ø 280/170			Diameter / Spacing Ø 320/195 - Ø 360/205		
Catalog N°	**F160/170 - F21/170 - F24/170**			**F300/195**		
Number of units	Power frequency withstand voltage (kV)		Lightning impulse withstand voltage (kV)	Power frequency withstand voltage (kV)		Lightning impulse withstand voltage (kV)
	DRY	WET		DRY	WET	
2	140	80	215	155	90	230
3	200	120	305	220	140	340
4	250	160	385	290	180	430
5	300	200	470	350	220	530
6	350	240	560	405	260	620
7	400	280	640	465	300	700
8	450	320	720	515	350	790
9	500	350	810	570	390	880
10	545	380	900	620	440	970
11	590	420	980	675	490	1060
12	635	455	1070	725	540	1150
13	675	490	1140	775	580	1240
14	720	520	1220	825	620	1330
15	760	550	1300	870	660	1425
16	810	585	1380	920	700	1520
17	850	615	1460	970	740	1610
18	895	650	1550	1020	780	1700
19	930	680	1620	1070	820	1790
20	970	710	1690	1110	860	1880
21	1000	740	1770	1160	900	1970
22	1050	775	1840	1210	940	2050
23	1090	805	1920	1260	980	2140
24	1130	835	2000	1310	1015	2230
25	1170	870	2080	1360	1050	2320
26	1210	900	2160	1410	1085	2410
27	1250	930	2240	1460	1120	2500
28	1290	960	2320	1510	1155	2600
29	1330	990	2400	1550	1190	2700
30	1370	1030	2480	1600	1225	2800

These electrical ratings are applicable to Sediver suspension insulator strings not equipped with arcing devices or grading rings.

IEC/BS

Strings electrical rating

Fog type profile

Fog type profile suspension insulator string withstand voltages based on the test procedure of International Standard I.E.C 60383-93 and British Standard B.S. 60383

Catalog N°	Diameter / Spacing Ø 280/146 - Ø 330/146 F100P/146 - F120P/146- F160P/146 - 100PF/146			Diameter / Spacing Ø 330/170 F160P/170 - F210P/170		
Number of units	Power frequency withstand voltage (kV)		Lightning impulse withstand voltage (kV)	Power frequency withstand voltage (kV)		Lightning impulse withstand voltage (kV)
	DRY	WET		DRY	WET	
2	140	85	210	150	105	235
3	195	115	295	210	150	335
4	240	150	380	265	190	435
5	290	180	465	320	230	535
6	335	210	530	370	270	625
7	380	240	600	420	300	710
8	425	270	680	470	335	800
9	465	300	760	515	365	890
10	510	330	840	570	395	980
11	550	360	920	610	430	1070
12	585	390	1000	660	460	1170
13	630	410	1080	700	490	1260
14	670	430	1160	745	520	1355
15	710	460	1240	785	550	1450
16	750	490	1320	830	575	1540
17	785	510	1410	870	605	1640
18	825	530	1500	910	630	1730
19	860	550	1580	950	655	1810
20	895	570	1655	990	680	1900
21	925	590	1730	1030	700	1990
22	960	610	1810	1060	720	2080
23	995	630	1885	1090	740	2160
24	1025	650	1950	1130	755	2245
25	1060	670	2025	1170	780	2325
26	109	690	2100	1200	800	2410
27	1120	710	2180	1250	825	2490
28	1155	730	2260	1290	850	2575
29	1185	750	2340	1330	885	2650
30	1215	770	2420	1360	910	2720

These electrical ratings are applicable to Sediver suspension insulator strings not equipped with arcing devices or grading rings.

IEC/BS

Strings electrical rating

Open type profile

Open type profile suspension insulator string withstand voltages based on the test procedure of International Standard I.E.C 60383-93 and British Standard B.S. 60383

	Diameter / Spacing Ø 380/127			Diameter / Spacing Ø 380/146 - Ø 420/146		
Catalog N°	**F12D/127**			**F12D/146 - F160D/146 - B160D/146**		
Number of units	Power frequency withstand voltage (kV)		Lightning impulse withstand voltage (kV)	Power frequency withstand voltage (kV)		Lightning impulse withstand voltage (kV)
	DRY	WET		DRY	WET	
2	95	75	160	110	85	165
3	135	110	225	160	125	235
4	175	145	290	205	165	310
5	215	180	355	255	205	380
6	255	210	420	305	240	450
7	290	245	490	355	280	525
8	330	280	555	405	320	595
9	370	310	620	455	360	670
10	410	345	685	505	395	740
11	450	380	750	555	435	810
12	490	410	815	605	470	885
13	530	445	885	655	510	955
14	570	480	950	705	550	1030
15	610	515	1015	755	590	1100
16	650	545	1080	800	625	1175
17	690	580	1145	850	665	1245
18	730	615	1210	900	705	1315
19	770	645	1280	950	745	1390
20	810	680	1345	1000	780	1460
21	850	715	1410	1050	820	1535
22	890	750	1475	1100	860	1605
23	930	780	1540	1150	895	1675
24	970	815	1605	1200	935	1750
25	1010	850	1675	1250	975	1825
26	1050	880	1740	1290	1010	1895
27	1090	915	1805	1350	1050	1965
28	1130	950	1870	1400	1090	2035
29	1170	980	1935	1450	1125	2110
30	1210	1015	2000	1495	1165	2180

These electrical ratings are applicable to Sediver suspension insulator strings not equipped with arcing devices or grading rings.

ANSI

Strings electrical rating

Standard profile

Standard profile suspension insulator string withstand voltages based on the test procedure of International Standard I.E.C 60383-93 and British Standard B.S. 60383

Catalog N°	Diameter / Spacing Ø 255/146 - Ø 280/146				Diameter / Spacing Ø 280/156			
	N70/146 - N100/146 - N12/146 - N160/146 CT70/146 - CT12/146				N21/156			
Number of units	Power frequency withstand voltage (kV)		Critical impulse flashovervoltage (kV)		Power frequency withstand voltage (kV)		Critical impulse flashovervoltage (kV)	
	DRY	WET	+	-	DRY	WET	+	-
2	145	90	220	225	145	90	230	230
3	205	130	315	320	210	130	325	330
4	270	170	410	420	275	170	425	440
5	325	215	500	510	330	215	515	540
6	380	255	595	605	385	255	610	630
7	435	295	670	695	435	295	700	720
8	485	335	760	780	490	335	790	810
9	540	375	845	860	540	375	880	900
10	590	415	930	945	595	415	970	990
11	640	455	1015	1025	645	455	1060	1075
12	690	490	1105	1105	695	490	1150	1160
13	735	525	1185	1190	745	525	1240	1245
14	785	565	1265	1275	790	565	1330	1330
15	830	600	1345	1360	840	600	1415	1420
16	875	635	1425	1440	890	635	1500	1510
17	920	670	1505	1530	935	670	1585	1605
18	965	705	1585	1615	980	705	1670	1700
19	1010	740	1665	1700	1025	740	1755	1795
20	1050	775	1745	1785	1070	775	1840	1890
21	1100	810	1825	1870	1115	810	1925	1985
22	1135	845	1905	1955	1160	845	2010	2080
23	1180	880	1985	2040	1205	880	2095	2175
24	1220	915	2065	2125	1250	915	2180	2270
25	1260	950	2145	2210	1290	950	2260	2365
26	1300	985	2220	2295	1330	958	2390	2465
27	1340	1015	2300	2380	1370	1015	2470	2555
28	1380	1045	2375	2465	1410	1045	2570	2650
29	1425	1080	2455	2550	1455	1080	2650	2740
30	1460	1110	2530	2635	1490	1110	2740	2830

These electrical ratings are applicable to Sediver suspension insulator strings not equipped with arcing devices or grading rings.
According to American Standard the average value of three tested strings shall equal or exceed
95% of the guaranteed values as given in the data sheet, for low frequency dry flashover,
90% of the guaranteed values as given in the data sheet, for low frequency wet flashover,
92% of the guaranteed values as given in the data sheet, for critical impulse flashover.

ANSI

Strings electrical rating

Fog type profile

Fog type profile suspension insulator string withstand voltages based on the test procedure of International Standard I.E.C 60383-93 and British Standard B.S. 60383

	Diameter / Spacing Ø 280/146 Ø 330/146				Diameter / Spacing Ø 330/171			
Catalog N°	**N100P/146 - N120P/146 - N160P/146**				**N160P/171 - N222P/171**			
Number of units	Low frequency flashovervoltage (kV)		Critical impulse flashovervoltage (kV)		Power frequency withstand voltage (kV)		Critical impulse flashovervoltage (kV)	
	DRY	WET	+	-	DRY	WET	+	-
2	155	95	270	260	160	110	315	300
3	215	13	380	355	230	145	440	410
4	270	165	475	435	290	155	550	505
5	325	200	570	520	350	225	660	605
6	380	240	665	605	405	265	775	705
7	435	275	750	690	460	310	870	800
8	485	315	835	775	515	355	970	900
9	540	350	920	860	570	390	1070	1000
10	590	375	1005	950	625	430	1170	1105
11	640	410	1090	1040	680	460	1270	1210
12	690	440	1175	1130	735	495	1370	1315
13	735	470	1260	1220	790	530	1465	1420
14	785	500	1345	1310	840	565	1565	1525
15	830	525	1430	1400	885	595	1665	1630
16	875	555	1515	1490	935	630	1765	1735
17	920	580	1600	1595	980	660	1860	1845
18	965	615	1685	1670	1030	690	1960	1945
19	1010	640	1770	1755	1075	725	2060	2040
20	1055	670	1850	1840	1120	755	2155	2140
21	1100	695	1930	1925	1165	785	2245	2240
22	1145	725	2010	2010	1210	820	2340	2340
23	1190	750	2090	2095	1255	850	2430	2440
24	1235	780	2170	2180	1300	885	2525	2540
25	1280	810	2250	2265	1345	910	2620	2635
26	1325	835	2330	2350	1385	945	2710	2735
27	1370	860	2410	2435	1430	975	2805	2835
28	1410	890	2490	2520	1470	1005	2900	2935
29	1455	915	2560	2600	1515	1035	2980	3025
30	1495	940	2630	2680	1555	1065	3060	3120

These electrical ratings are applicable to Sediver suspension insulator strings not equipped with arcing devices or grading rings.

Design and performance characteristics of toughened glass suspension insulators

Suspension insulators perform two basic functions on overhead power lines: to provide mechanical support for the conductors, and to prevent passage of current to ground. Both functions must be performed continuously for the entire operating life of the line, often as long as forty years. Throughout this extended period of time, the insulator's fundamental ability to perform these functions must be unaffected by the wide variety of additional mechanical and electrical stresses caused by fluctuating environmental and electrical load conditions.

In addition to conductor and hardware weight, a suspension insulator must support the greatest loads of ice and wind that will come to bear on the conductor, as well as other loads and impacts due to conductor galloping, aeolian vibration and rough handling during shipment and construction.

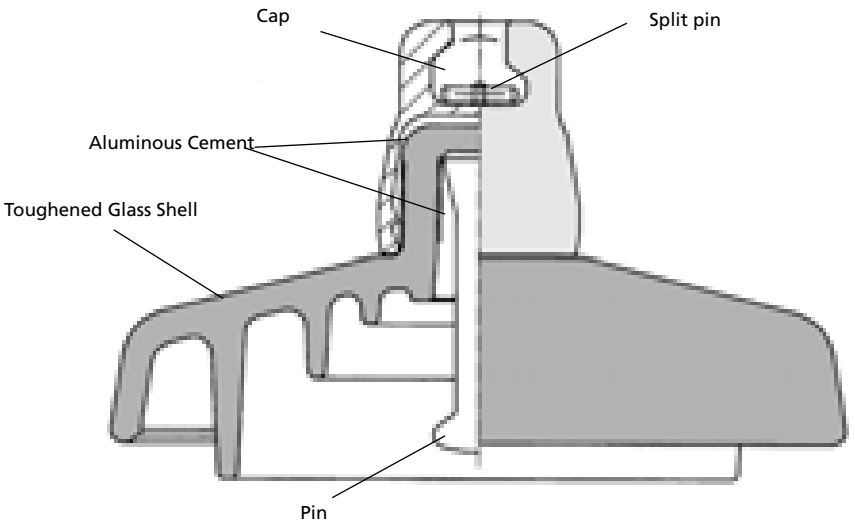
From the electrical viewpoint, operating requirements for an insulator are equally complex. The insulator must not only isolate the conductor from ground, but must also withstand voltage impulses due to lightning and switching surges.

To achieve the high level of reliability expected of modern overhead power lines, insulator failure by puncture due to these extreme electrical conditions must not occur. Similarly, when a flashover occurs as a result of a voltage impulse, a conductive path must not form across the insulator.

Finally, under all conditions of moisture and contamination, a suspension insulator string must withstand the applied voltage - whether as the result of normal operations or of system overloads.

All of these externally imposed conditions influence the performance - and therefore the design - of a suspension insulator and all of its components.

The purpose of this section of the catalog, therefore, is to describe how the potentially destructive effects of the stresses imposed by service loads and environmental conditions are overcome or prevented by the design characteristics of Sediver toughened glass insulators.



Performance reliability of toughened glass suspension insulators

No hidden defects

With Sediver Suspension Insulators, accurate detection of damage is only a matter of direct visual inspection. If the Toughened Glass dielectric shell is intact, there is no possibility of internal hidden damage. No measuring instruments are needed for inspection, nor any other form of special device.

A «stub» is easily seen - and detectable beyond doubt -at long distance either from the ground or from the air **(fig C).** Replacement can be scheduled for a convenient time due to the high residual strength of the «stub».

This leads to simpler line patrol procedures, significant reduction of maintenance costs and increased safety during hot line work.

Fig. C : Control of a transmission line by an helicopter

Live-line maintenance and worker safety

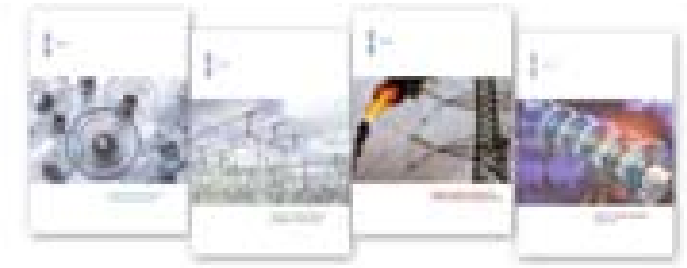
Sediver Toughened Glass insulators help reduce the number and duration of line outages required to replace defective line components.

While more and more utilities are faced with the technical and economical challenge of keeping their lines energized “whatever happens”, live-line work is often a necessity. Live-line maintenance requires specialist crews and equipment and rigorous procedures – at a higher cost than traditional dead-line maintenance operations. However the financial impact of live-line maintenance compared to shutting down a line is negligible. Sediver helps keep live line costs in check in two ways:

- Sediver Toughened Glass insulator is a reliable product, it lasts longer and fails less often. This contributes to reducing the number of live-line maintenance operations necessary to keep the line in top condition.

- Before working on a live line, maintenance crews have to assess the condition of insulator strings to avoid risks of flashover or mechanical failure while they are working on them. This is very difficult to do in a safe manner with porcelain, and almost impossible with non-ceramic insulators without highly sophisticated and specialized thermal imaging, corona inspection or e-field measurement equipment. Thanks to the unique properties of toughened glass, which cannot be punctured, nor be internally cracked, nor become conductive due to tracking, maintenance crews can do live-line work in full confidence since there are no hidden risks due to internally damaged insulators. A simple glance at the string gives a complete and reliable assessment of the electrical condition of the insulator. Even with a missing shell, the remaining stub still has its full rated mechanical strength and is non-conducting.

Catalogs



- Sediver toughened glass suspension insulators
-Sediver toughened glass multiglass station post
-Sedivertoughened glass for contaminated area applications
- Sediver toughened glass: endurance

ISO certifications

All our manufacturing facilities worldwide are certified ISO 9001-2000

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