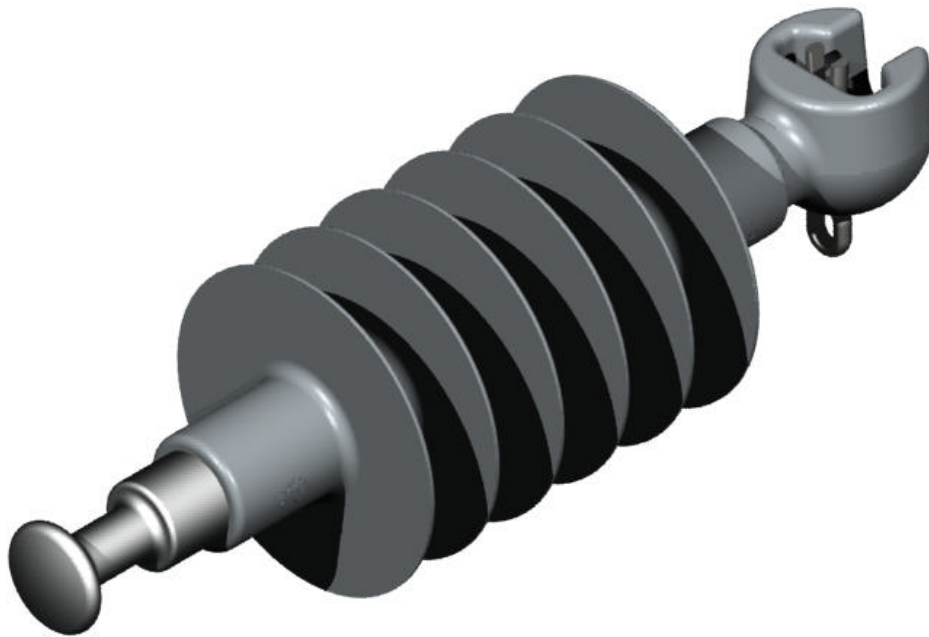


Longrods Insulators

PFISTERER
THE POWER CONNECTION



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Longrods, Post, Standoff & Guy-Strain Insulators



Longrod Insulators
Pages 2-15

Guy-Strain Insulators
Page 16

Design

Rod

PFISTERER Insulators are manufactured with electrical grade corrosion resistant epoxy rod. The materials used are of the highest quality and are routinely tested to ensure the maximum performance characteristics.

End fittings

A range of end fittings are available to provide flexible coupling methods that integrate into each line design. The fittings are machined from EN8 or cast from malleable cast iron and hot dip galvanised in accordance with ISO1461

Sheds

The sheds are manufactured using high-pressure injection moulding techniques to create a smooth surface reducing the amount of pollution trap.

Leakage distance

Wacker, Powersil 310 Silicone rubber is used for the shed manufacture. The material is highly filled with ATH to resist tracking and a silicone base polymer to provide the hydrophobicity, which is transferred to the pollution layer

Standards

All insulators are manufactured in accordance to IEC 61109 & IEC 62217. Quality processes are implemented as per ISO 9001:2000. These are regularly audited both internally and by our certification body DQS.

Mechanical Ratings

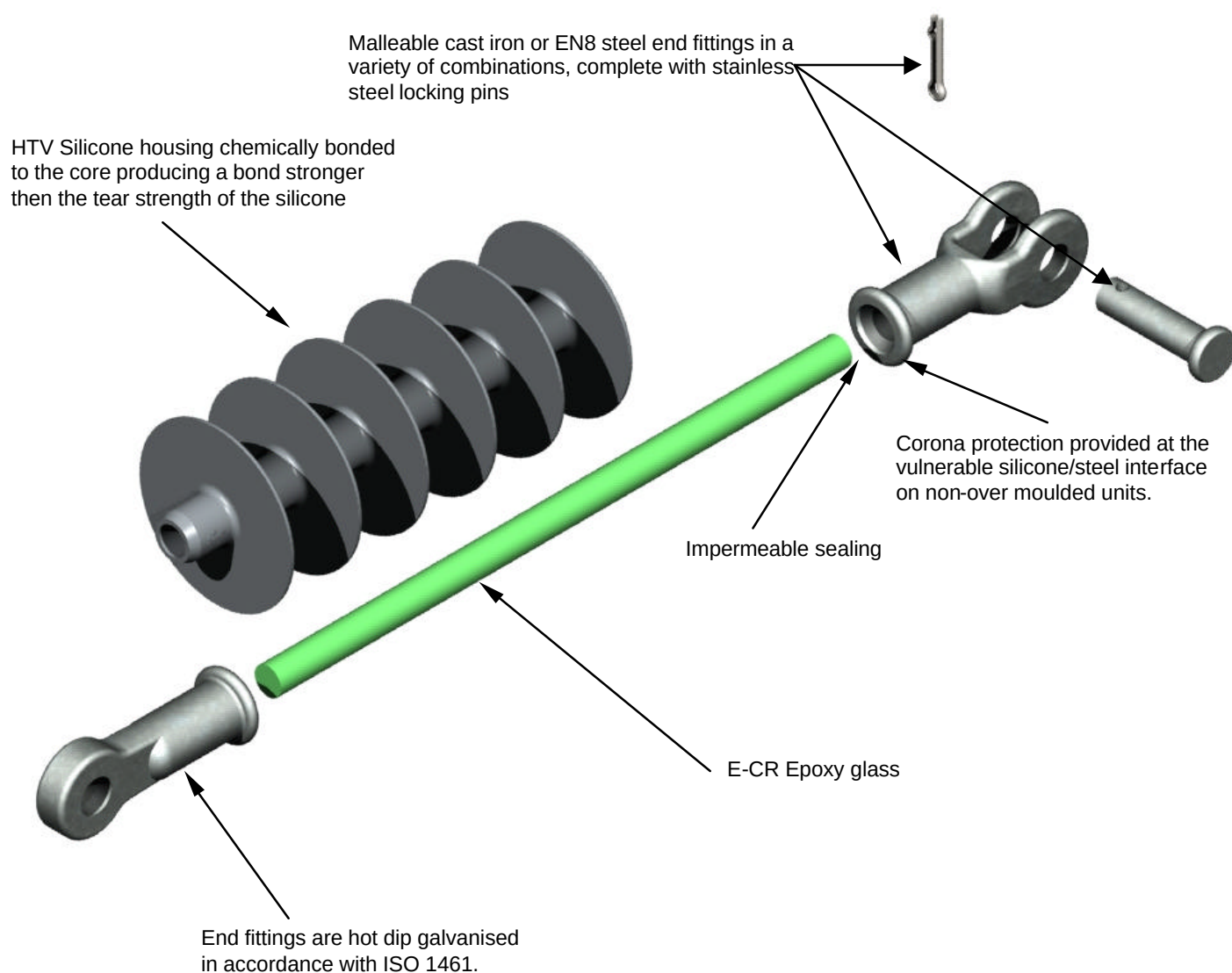
PFISTERER distribution insulators are rated at a specified mechanical load of 70kN and are routinely tested. End fittings which are rated lower are marked in the code tables with an '*'. All long-rod insulators are manufactured and tested to IEC 61109.

Design Flexibility

PFISTERER prides itself in being able to offer flexible solutions to customer requests, with more than 20 years experience in the industry.

Silicone Long-rod Insulators

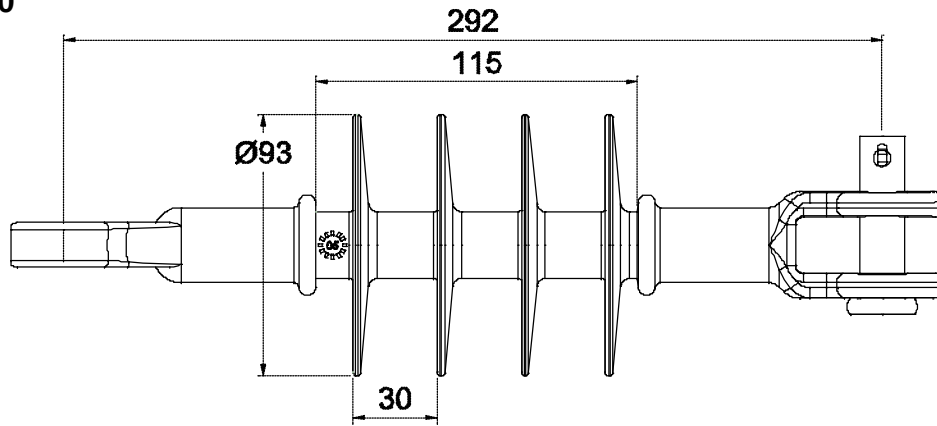
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For end fitting combinations see pages 13-15



HASDI 130/40



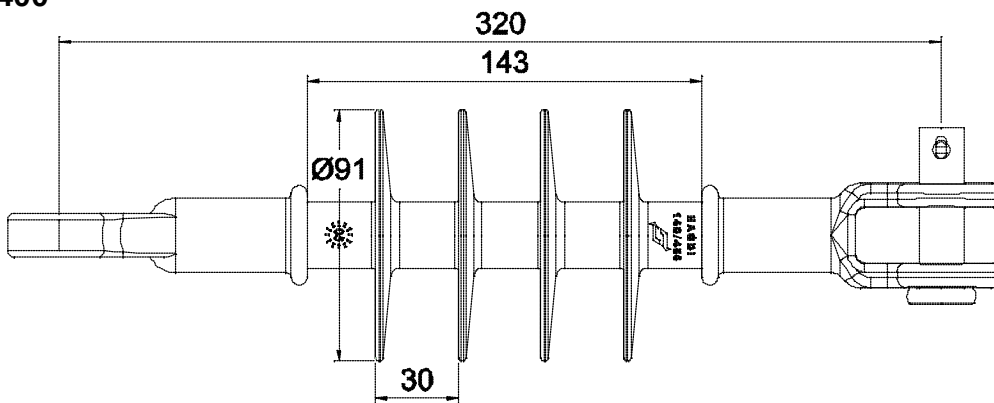
(127kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 015-001	HASDI130/40	Tongue	Clevis	Straight #	45	160	385	70	55	1.1
144 015-002		Tongue	Clevis	Twisted						
144 015-003		Tongue	Tongue	Straight						
144 015-004		Tongue	Tongue	Twisted						
144 015-005		16mm Ball	16mm Socket							
144 015-006		11mm Ball	11mm Socket*							
144 015-007		16mm Ball	16mm Ball							
144 015-008		11mm Ball	11mm Ball*							
144 015-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 140/400



(143kV BIL)

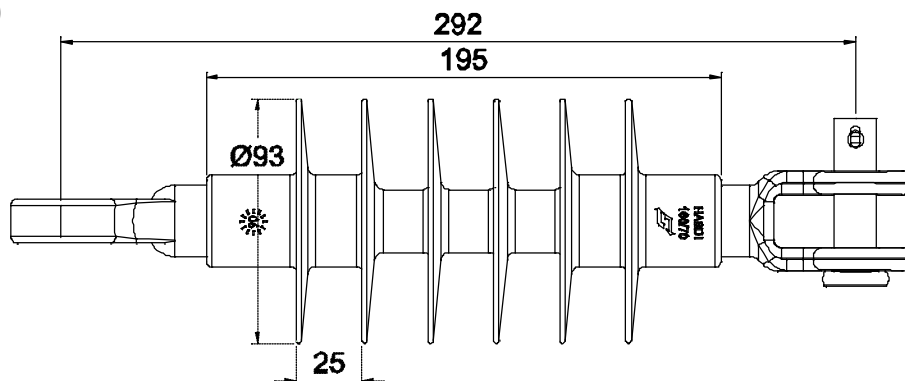
Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 020-001	HASDI40/400	Tongue	Clevis	Straight #	55	170	400	70	55	1.2
144 020-002		Tongue	Clevis	Twisted						
144 020-003		Tongue	Tongue	Straight						
144 020-004		Tongue	Tongue	Twisted						
144 020-005		16mm Ball	16mm Socket							
144 020-006		11mm Ball	11mm Socket*							
144 020-007		16mm Ball	16mm Ball							
144 020-008		11mm Ball	11mm Ball*							
144 020-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

Silicone Long-rod Insulators

HASDI 160/70



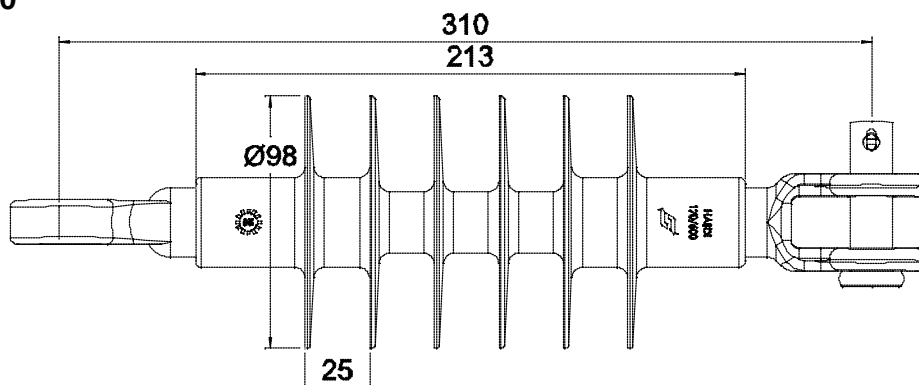
(165kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 030-001	HASDI160/70	Tongue	Clevis	Straight #	60	225	560	70	55	1.3
144 030-002		Tongue	Clevis	Twisted						
144 030-003		Tongue	Tongue	Straight						
144 030-004		Tongue	Tongue	Twisted						
144 030-005		16mm Ball	16mm Socket							
144 030-006		11mm Ball	11mm Socket*							
144 030-007		16mm Ball	16mm Ball							
144 030-008		11mm Ball	11mm Ball*							
144 030-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 170/600



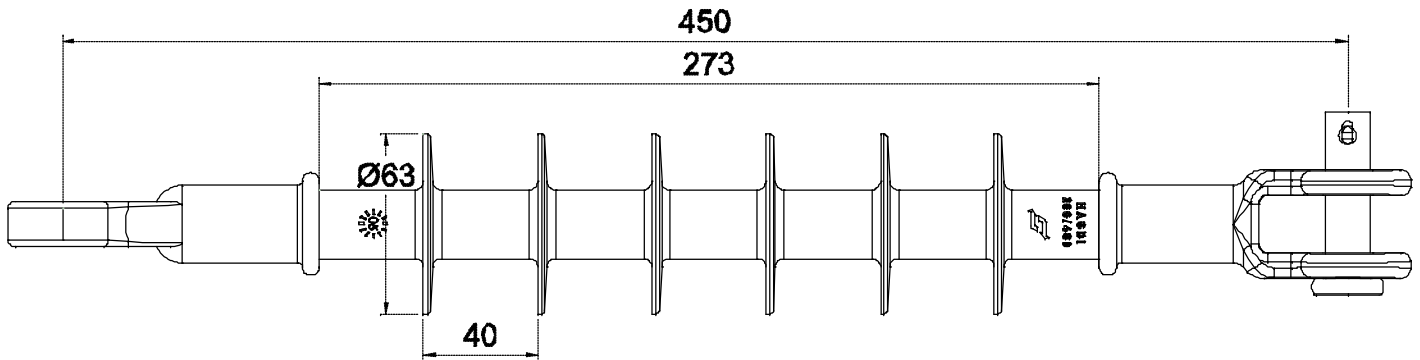
(174kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 035-001	HASDI170/600	Tongue	Clevis	Straight #	65	240	600	70	55	1.0
144 035-002		Tongue	Clevis	Twisted						
144 035-003		Tongue	Tongue	Straight						
144 035-004		Tongue	Tongue	Twisted						
144 035-005		16mm Ball	16mm Socket							
144 035-006		11mm Ball	11mm Socket*							
144 035-007		16mm Ball	16mm Ball							
144 035-008		11mm Ball	11mm Ball*							
144 035-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 200/480



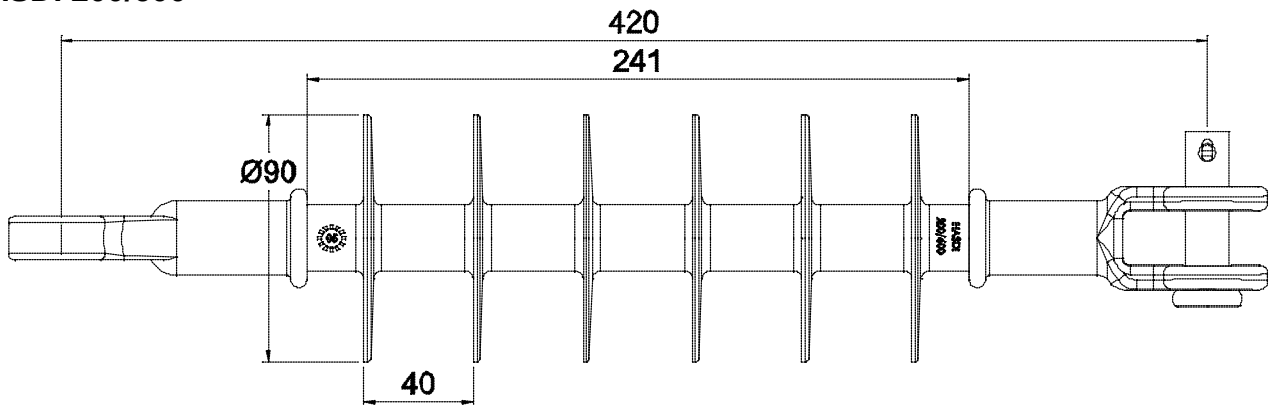
(226kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 040-001	HASDI200/480	Tongue	Clevis	Straight #	87	283	480	70	55	1.3
144 040-002		Tongue	Clevis	Twisted						
144 040-003		Tongue	Tongue	Straight						
144 040-004		Tongue	Tongue	Twisted						
144 040-005		16mm Ball	16mm Socket							
144 040-006		11mm Ball	11mm Socket*							
144 040-007		16mm Ball	16mm Ball							
144 040-008		11mm Ball	11mm Ball*							
144 040-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 200/600



(200kV BIL)

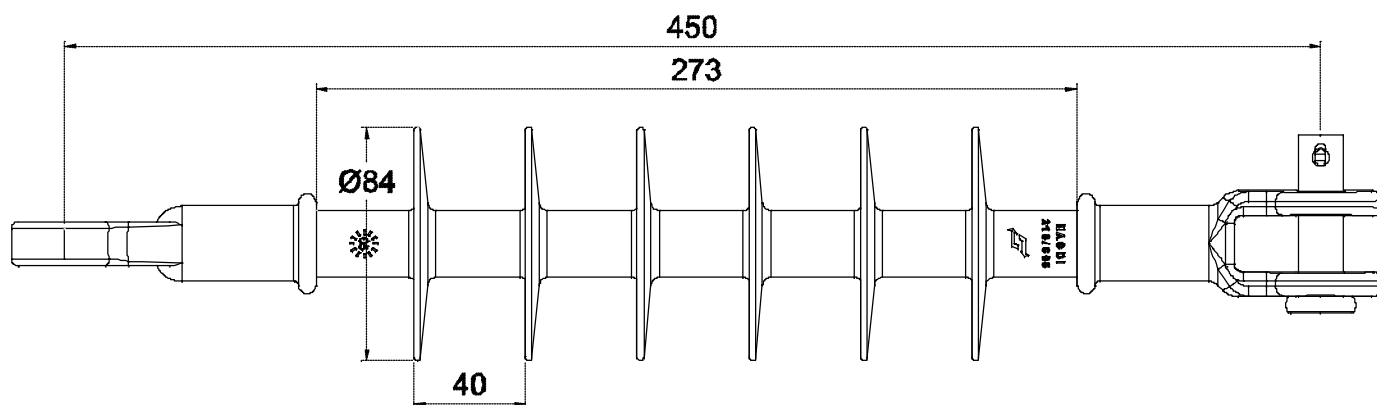
Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 045-001	HASDI200/600	Tongue	Clevis	Straight #	80	290	600	70	55	1.35
144 045-002		Tongue	Clevis	Twisted						
144 045-003		Tongue	Tongue	Straight						
144 045-004		Tongue	Tongue	Twisted						
144 045-005		16mm Ball	16mm Socket							
144 045-006		11mm Ball	11mm Socket*							
144 045-007		16mm Ball	16mm Ball							
144 045-008		11mm Ball	11mm Ball*							
144 045-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

Silicone Long-rod Insulators

HASDI 210/600



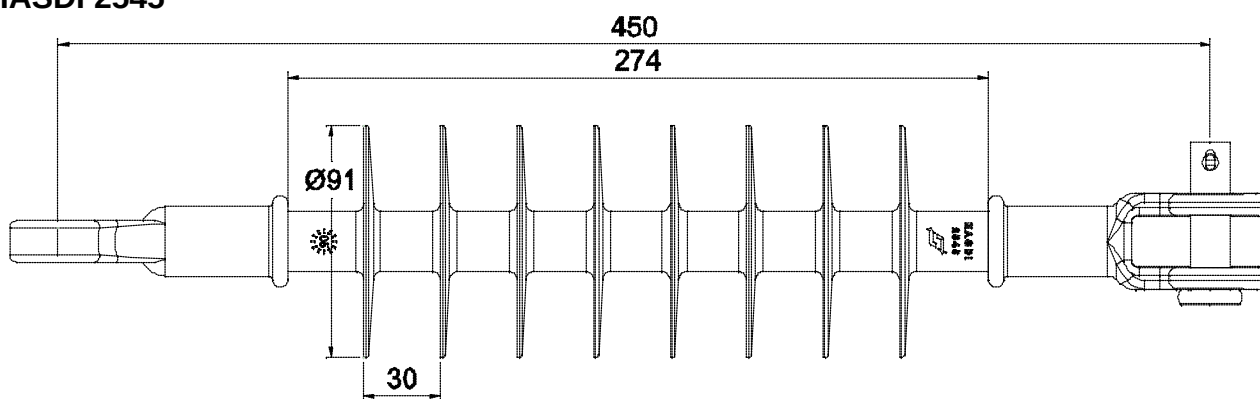
(211kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 050-001	HASDI210/600	Tongue	Clevis	Straight #	86	300	600	70	55	1.3
144 050-002		Tongue	Clevis	Twisted						
144 050-003		Tongue	Tongue	Straight						
144 050-004		Tongue	Tongue	Twisted						
144 050-005		16mm Ball	16mm Socket							
144 050-006		11mm Ball	11mm Socket*							
144 050-007		16mm Ball	16mm Ball							
144 050-008		11mm Ball	11mm Ball*							
144 050-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 2545



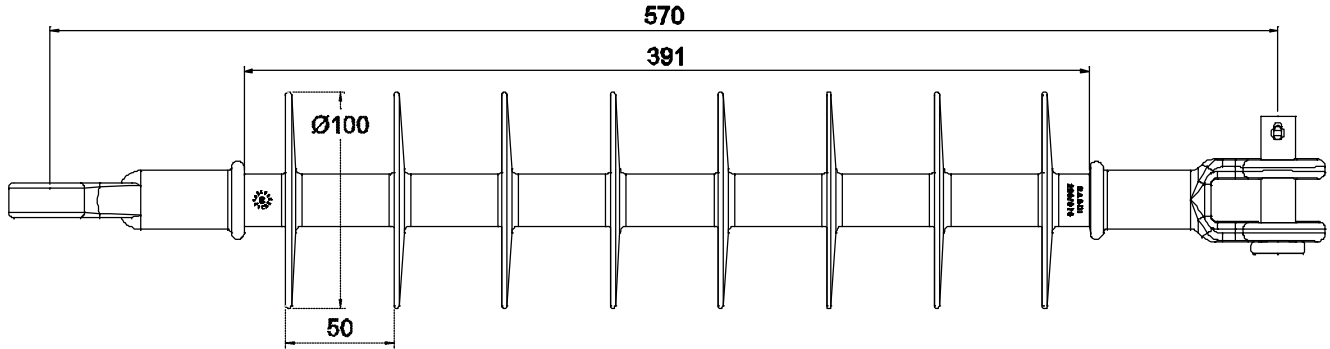
(240kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 060-001	HASDI2545	Tongue	Clevis	Straight #	110	310	765	70	55	1.3
144 060-002		Tongue	Clevis	Twisted						
144 060-003		Tongue	Tongue	Straight						
144 060-004		Tongue	Tongue	Twisted						
144 060-005		16mm Ball	16mm Socket							
144 060-006		11mm Ball	11mm Socket*							
144 060-007		16mm Ball	16mm Ball							
144 060-008		11mm Ball	11mm Ball*							
144 060-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 280/970



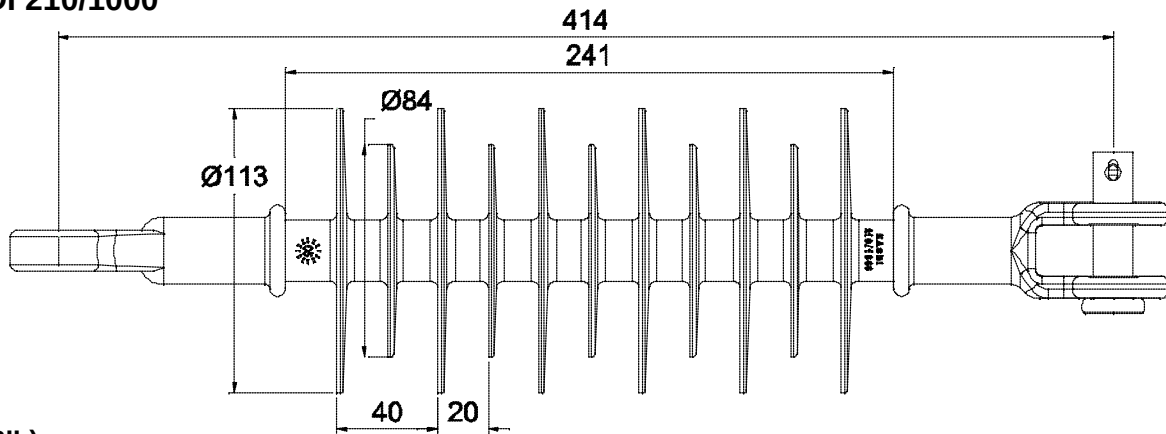
(280kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 065-001	HASDI280/970	Tongue	Clevis	Straight #	135	440	970	70	55	1.7
144 065-002		Tongue	Clevis	Twisted						
144 065-003		Tongue	Tongue	Straight						
144 065-004		Tongue	Tongue	Twisted						
144 065-005		16mm Ball	16mm Socket							
144 065-006		11mm Ball	11mm Socket*							
144 065-007		16mm Ball	16mm Ball							
144 065-008		11mm Ball	11mm Ball*							
144 065-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 210/1000



(211kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 070-001	HASDI210/1000	Tongue	Clevis	Straight #	93	290	1000	70	55	1.5
144 070-002		Tongue	Clevis	Twisted						
144 070-003		Tongue	Tongue	Straight						
144 070-004		Tongue	Tongue	Twisted						
144 070-005		16mm Ball	16mm Socket							
144 070-006		11mm Ball	11mm Socket*							
144 070-007		16mm Ball	16mm Ball							
144 070-008		11mm Ball	11mm Ball*							
144 070-009		16mm Ball	Tongue							

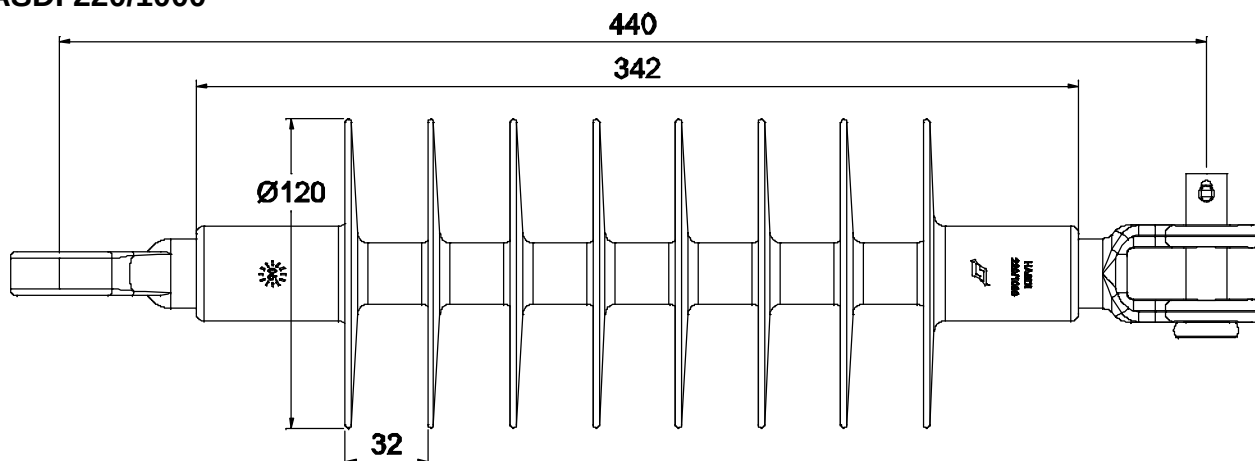
As illustrated

* Rated to 40kN SML only

Silicone Long-rod Insulators

PFISTERER
THE POWER CONNECTION

HASDI 220/1000



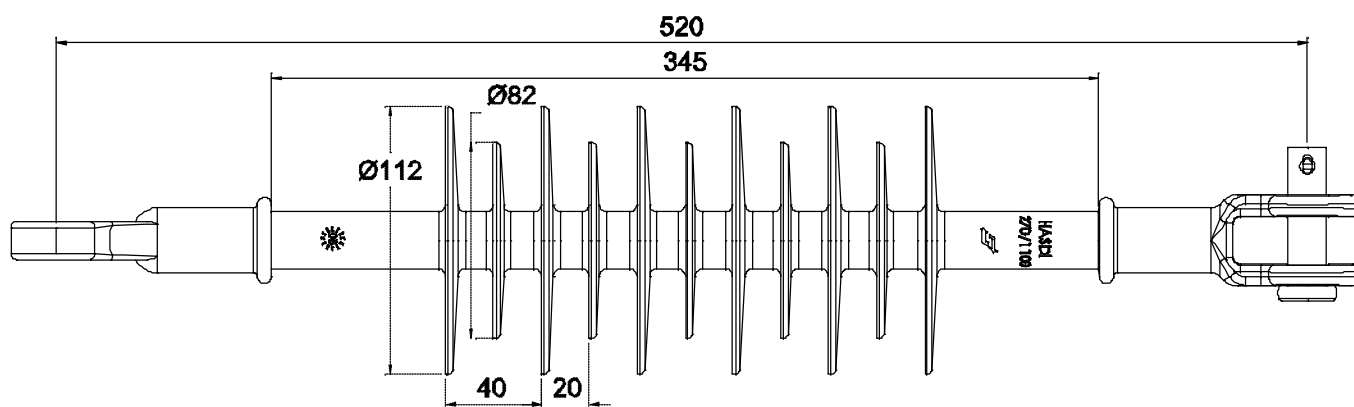
(220kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 075-001	HASDI220/1000	Tongue	Clevis	Straight #	105	380	1000	70	55	1.2
144 075-002		Tongue	Clevis	Twisted						
144 075-003		Tongue	Tongue	Straight						
144 075-004		Tongue	Tongue	Twisted						
144 075-005		16mm Ball	16mm Socket							
144 075-006		11mm Ball	11mm Socket*							
144 075-007		16mm Ball	16mm Ball							
144 075-008		11mm Ball	11mm Ball*							
144 075-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 270/1100



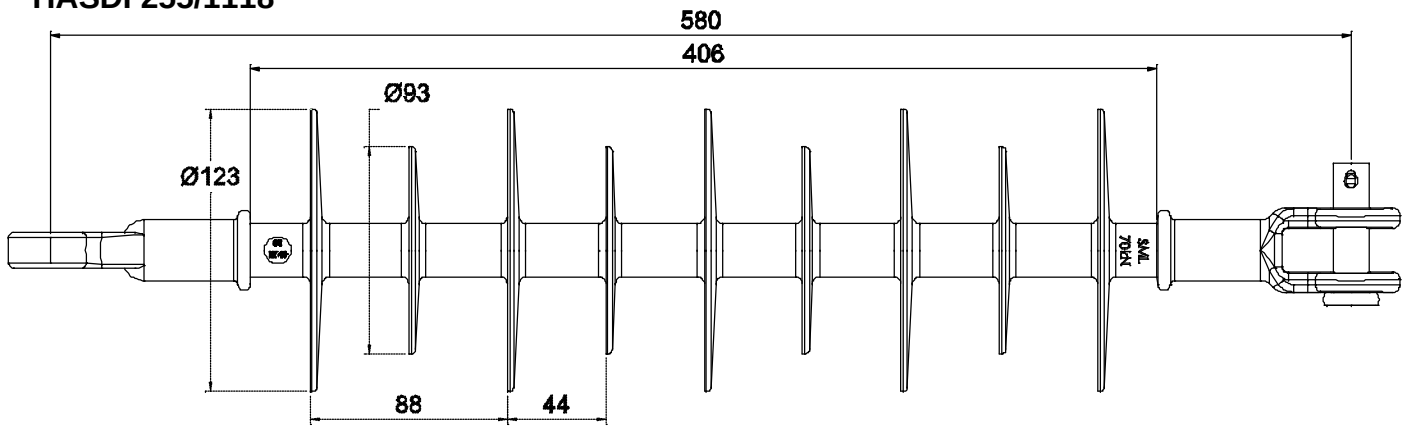
(252kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 080-001	HASDI270/1100	Tongue	Clevis	Straight #	107	365	1100	70	55	1.5
144 080-002		Tongue	Clevis	Twisted						
144 080-003		Tongue	Tongue	Straight						
144 080-004		Tongue	Tongue	Twisted						
144 080-005		16mm Ball	16mm Socket							
144 080-006		11mm Ball	11mm Socket*							
144 080-007		16mm Ball	16mm Ball							
144 080-008		11mm Ball	11mm Ball*							
144 080-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 255/1118



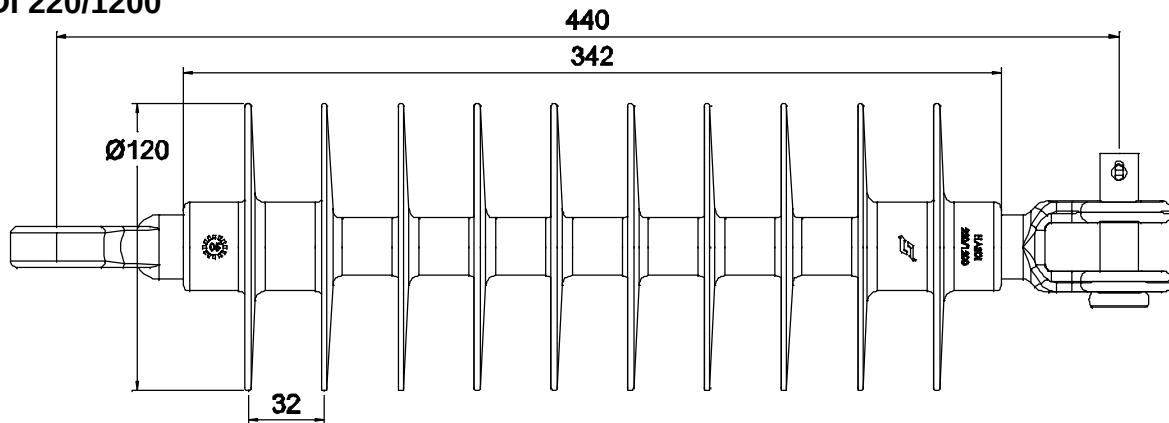
(255kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 100-001	HASDI255/1118	Tongue	Clevis	Straight #	120	465	1118	70	55	1.7
144 100-002		Tongue	Clevis	Twisted						
144 100-003		Tongue	Tongue	Straight						
144 100-004		Tongue	Tongue	Twisted						
144 100-005		16mm Ball	16mm Socket							
144 100-006		11mm Ball	11mm Socket*							
144 100-007		16mm Ball	16mm Ball							
144 100-008		11mm Ball	11mm Ball*							
144 100-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

HASDI 220/1200



(220kV BIL)

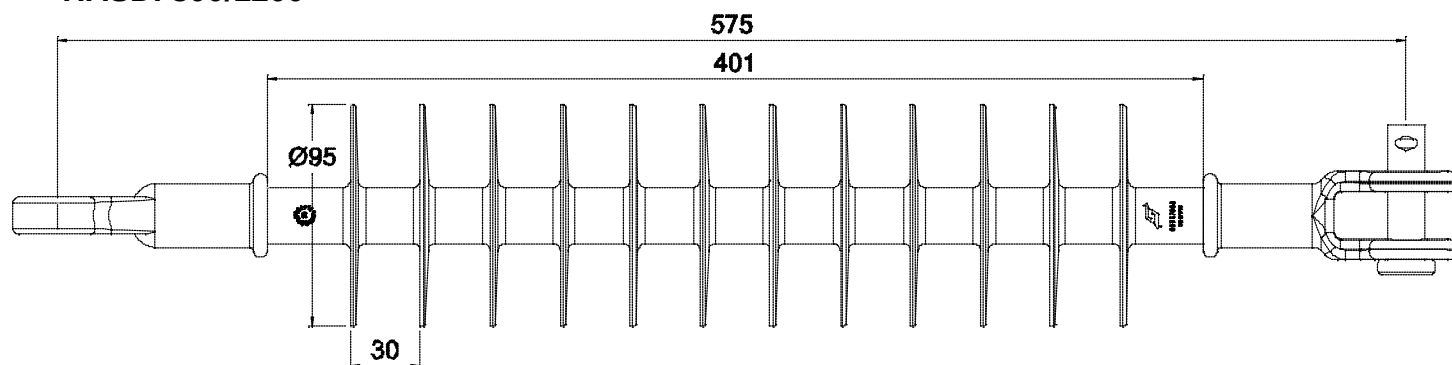
Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 085-001	HASDI220/1200	Tongue	Clevis	Straight #	121	380	1200	70	55	1.7
144 085-002		Tongue	Clevis	Twisted						
144 085-003		Tongue	Tongue	Straight						
144 085-004		Tongue	Tongue	Twisted						
144 085-005		16mm Ball	16mm Socket							
144 085-006		11mm Ball	11mm Socket*							
144 085-007		16mm Ball	16mm Ball							
144 085-008		11mm Ball	11mm Ball*							
144 085-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

Silicone Long-rod Insulators

HASDI 300/1200



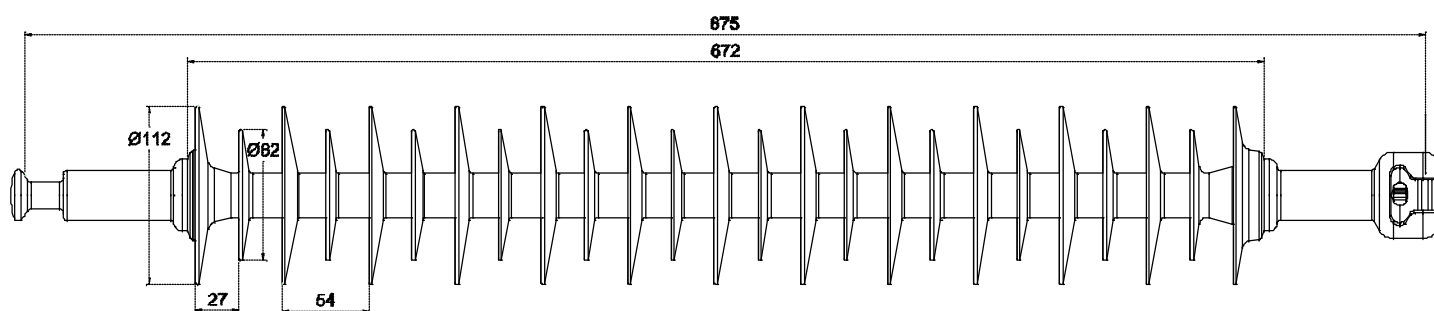
(285kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 090-001	HASDI300/1200	Tongue	Clevis	Straight #	146	430	1200	70	55	1.7
144 090-002		Tongue	Clevis	Twisted						
144 090-003		Tongue	Tongue	Straight						
144 090-004		Tongue	Tongue	Twisted						
144 090-005		16mm Ball	16mm Socket							
144 090-006		11mm Ball	11mm Socket*							
144 090-007		16mm Ball	16mm Ball							
144 090-008		11mm Ball	11mm Ball*							
144 090-009		16mm Ball	Tongue							

As illustrated

* Rated to 40kN SML only

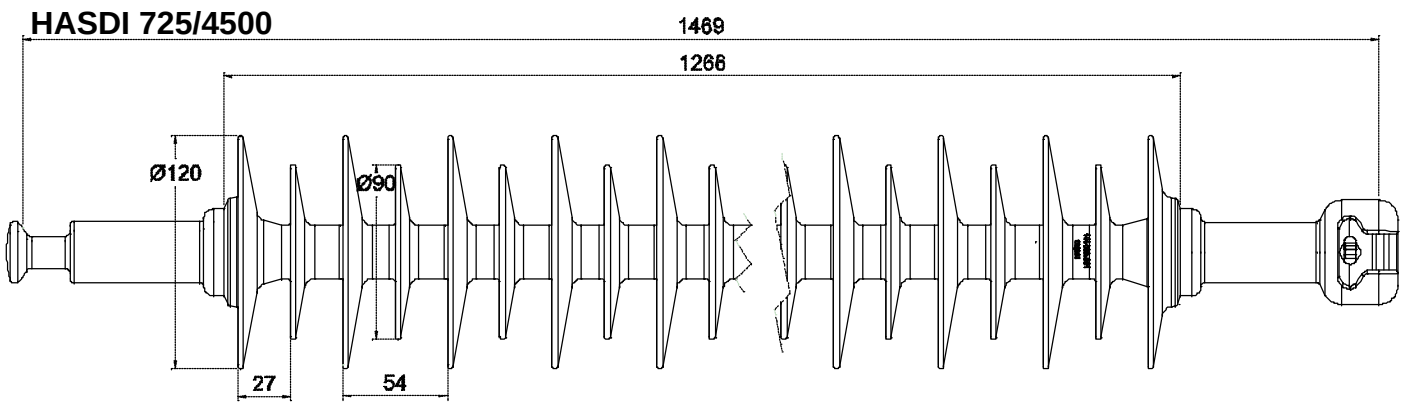
HASDI 460/2250



(460kV BIL)

Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 021-006	HASDI460/2250	Ball	Socket	N/A	290	721	2250	120	60	3.1

Alternative end fittings available on request.



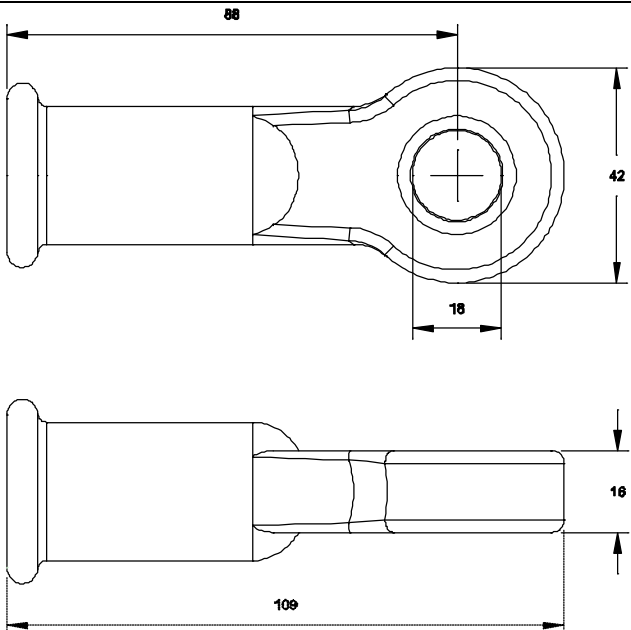
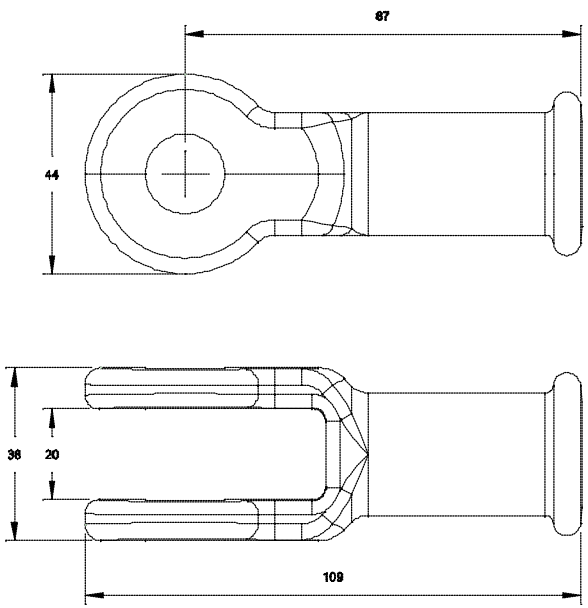
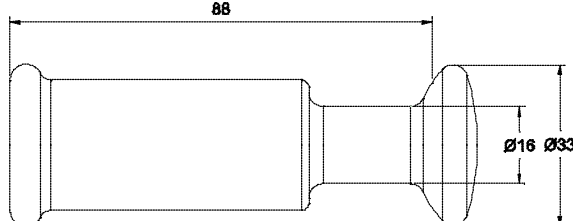
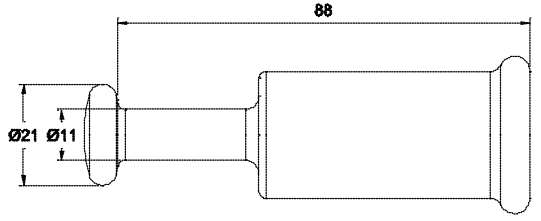
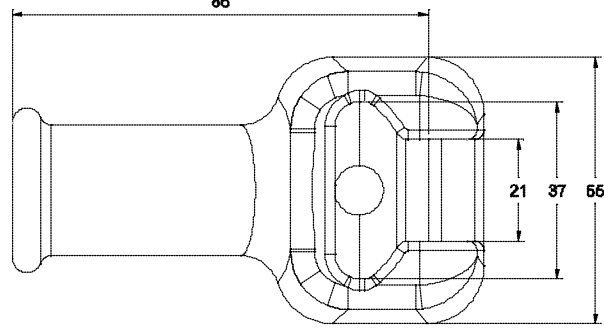
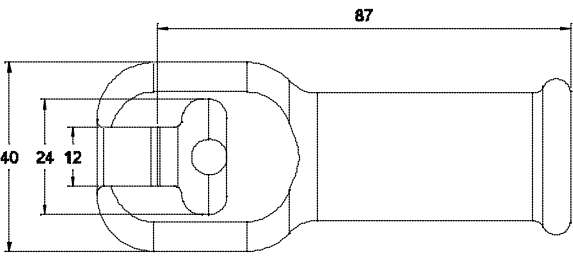
(725kV BIL)

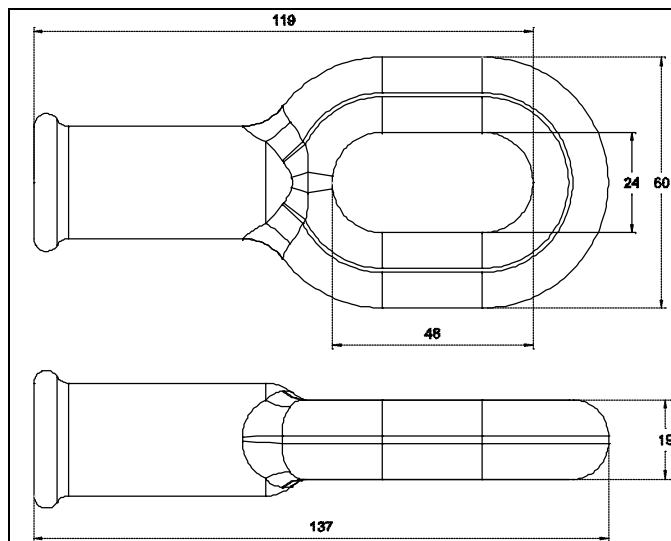
Part #	Bushing	Live End	Earth End	Orientation	1 min Power frequency withstand (wet) (kV)	Arcing Distance (mm)	Minimum Creepage Distance (mm)	Specified mechanical load (SML) (kN)	Routine test load (RTL) (kN)	Approx Weight (kg)
144 032-001	HASDI725/4500	Ball	Socket	N/A	355	1321	4520	120	60	5.4

Alternative end fittings available on request.

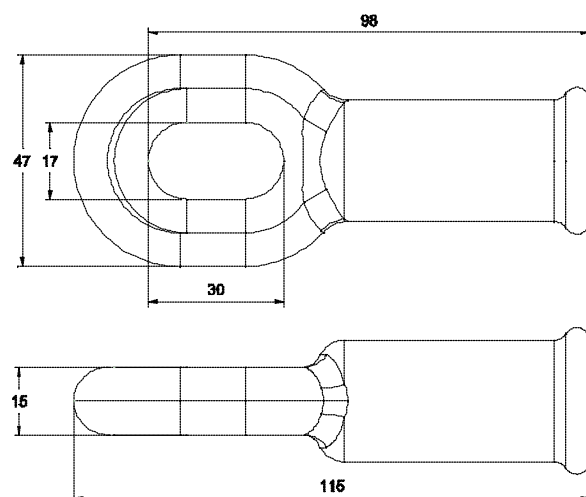
Standard End Fittings

PFISTERER's HASDI range of distribution insulators are available in a number of end fitting combinations, selected from the schematics shown below. Reference dimensions are provided for approximations of the coupling lengths of the insulators. Alternative end fittings are offered on request.

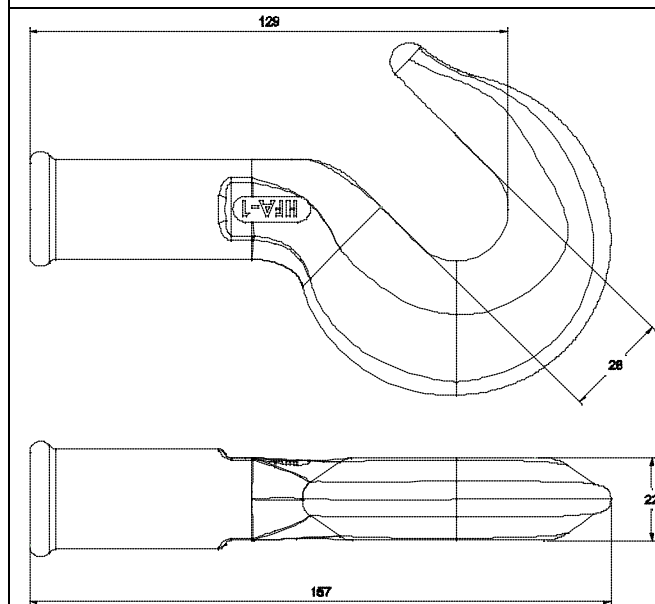
	
Tongue manufactured in acc. With IEC 60471 (16L) 70kN	Clevis manufactured in acc. With IEC 60471 (16L) 70kN
	
Ball manufactured in acc. With IEC 60120 (16) 70kN	Ball manufactured in acc. With IEC 60120 (11) 40kN
	
Socket manufactured in acc. With IEC 60120 (16A & B) 70kN	Socket manufactured in acc. With IEC 60120 (11) 40kN



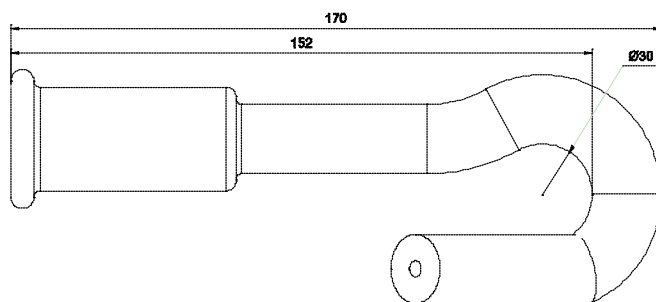
24mm Eye manufactured in acc. With IEC 61466 (24)
70kN



17mm Eye manufactured in acc. With IEC 61466 (17)
70kN

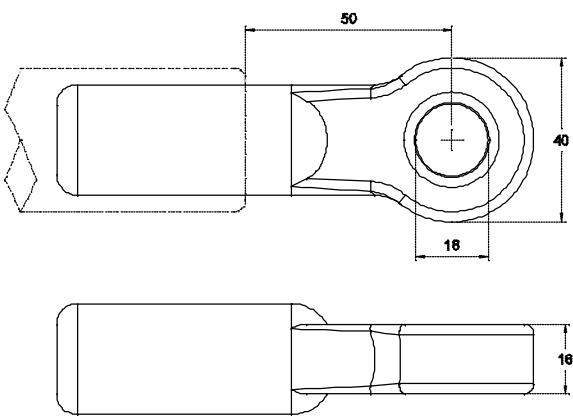
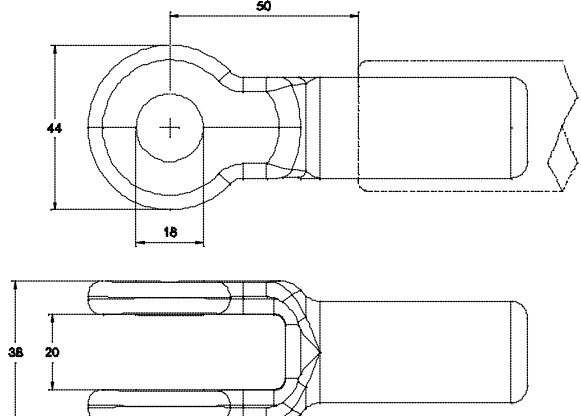
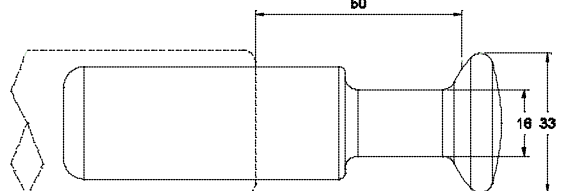
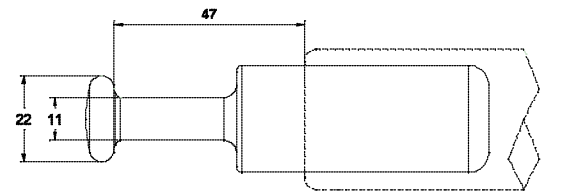
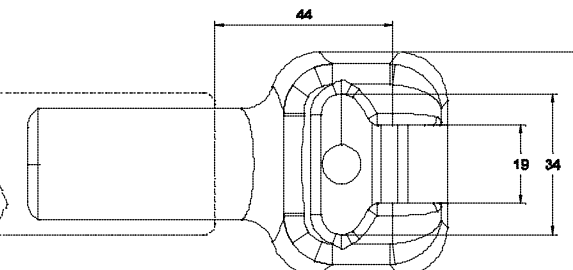
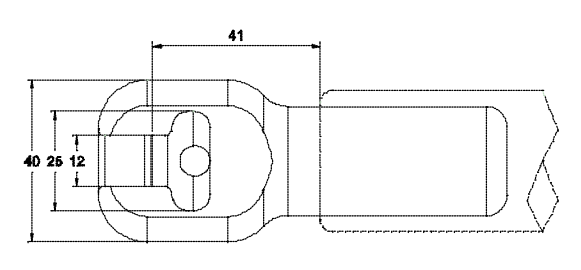


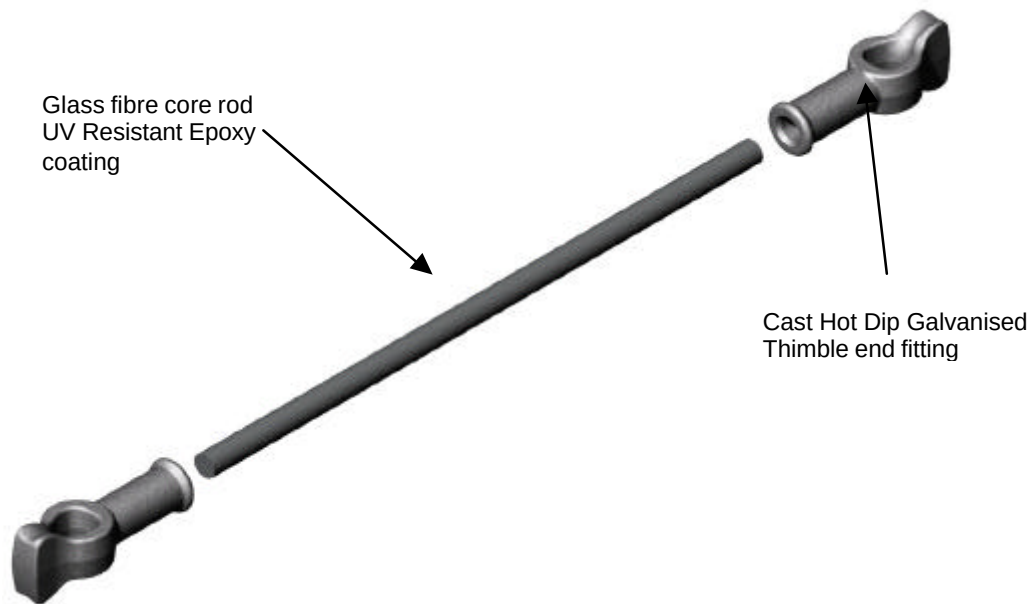
70kN Heavy Hook



20kN Pigtail Hook

Over-Mould End Fittings

	
Over mould Tongue manufactured in acc. With IEC 60471 (16L) 70kN	Over mould Clevis manufactured in acc. With IEC 60471 (16L) 70kN
	
Over mould Ball manufactured in acc. With IEC 6060120 (16) 70kN	Over mould Ball manufactured in acc. With IEC 6060120 (11) 40kN
	
Over mould Socket manufactured in acc. With IEC 6060120 (16A & B) 70kN	Over mould Socket manufactured in acc. With IEC 6060120 (11) 40kN



Rod

PFISTERER Guy-strain Insulators are manufactured with electrical grade corrosion resistant epoxy rod. The Rod is coated with a UV resistant protective layer to ensure maximum working life of the insulator.

End fittings

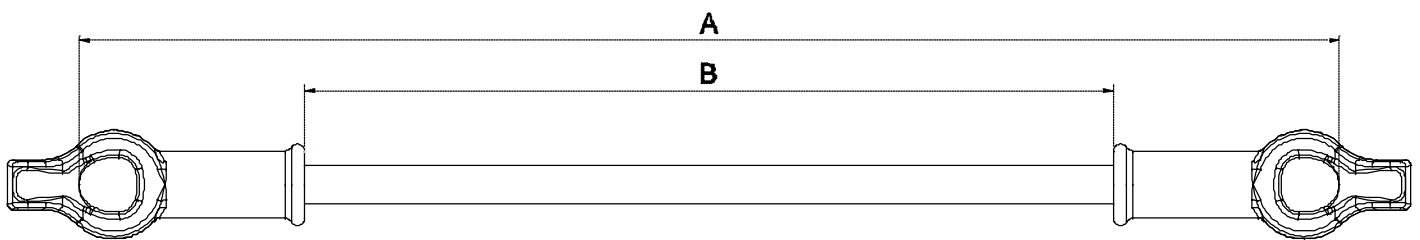
The fittings are manufactured from malleable cast iron and hot dip galvanised in accordance with ISO 1461.

Standards

All insulators are manufactured in accordance to IEC 61109. Quality processes are implemented as per ISO 9001:2000. These are regularly audited both internally and by our certification body DQS.

Mechanical Ratings

PFISTERER distribution insulators are rated at a specified mechanical load of 97kN and routinely tested to this load.



Part #	Lightning Impulse Withstand voltage (kV)	1 min Power frequency withstand (wet) (kV)	Specified mechanical load (SML) kN	Routine test load (RTL) kN	Material of end fittings	Approx Weight (kg)	Dimensions (mm)	
							A	B
144 095-001	165	31	97	97	Steel Hot Dip galvanised	1.04	411	240
144 095-002	187	36				1.06	443	272
144 095-003	225	43				1.08	499	328
144 095-004	270	52				1.12	564	393
144 095-005	300	57				1.15	608	437
144 095-006	316	61				1.16	631	460