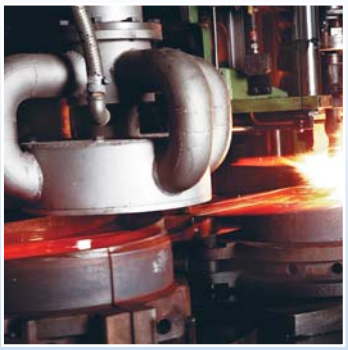
YuAIZ

GLOBAL INSULATOR GROUP

LIC



Insulators for power transmission lines and substations with voltage from 0.4 kV to 1150 kV

Product catalogue. 2012

GLOBAL INSULATOR GROUP

LLC "Global Insulator Group" (GIG) is the company that manages distribution and promotion of products of JSC "Yuzhnouralsky Insulators and Fittings Plant", Russia and "Lviv Insulator Company Ltd.", Ukraine. Mentioned producers are the reputable manufacturers of glass and porcelain insulators, line fittings for overhead transmission lines and switchgears, stations and substations with voltages from 0.4 kV to 1150 kV.

The products gained widespread acceptance in power systems, railroad facilities, oil and gas industry. More than 300 companies from Russia and other CIS countries and 48 countries in Europe, Latin America, Middle East, Asia-Pacific region, Africa are the regular customers of Global Insulator Group.

The companies' production quality is confirmed by international quality certificates.

The quality management system established in the factories is certified in accordance with the international standard ISO 9001:2008.

JSC "Yuzhnouralsky Insulators and Fittings Plant" (YuAIZ)

Yuzhnouralsky Insulators and Fittings Plant was founded in 1957 and now is an unique enterprise in the energy sector, uniting on the same area a few production facilities: glass insulator production, ceramic insulator production, forging and casting workshops.

In 1996, the quality management system was established on the factory in accordance with ISO 9001, and in 2009 its systematical development enabled the confirmation of compliance with the new version of ISO 9001:2008 requirements. YuAIZ testing center has an accreditation with the Federal Agency for Technical Regulation and Metrology, and meets requirements of the Russian State standard GOST R and the international standard ISO/IEC 17025:2006, ISO/IEC 17025:2005.

Within the investment program in 2006 the new glass furnace was constructed at the factory. In the beginning of 2008 the WALTEC production line for the manufacturing of glass insulating parts was put into operation. Today the comprehensive modernization process of the enterprise is continuing.

The production of YuAIZ is subjected to type and periodical tests in independent national and international test centres. Factory has the possibility to carry out additional tests according to the special requirements of the customers.

Lviv Insulator Company Ltd. ("LIC" Ltd.)

The Lviv plant manufacturing high-voltage insulators made of toughened and annealed glass was founded in 1965.

In 2011 the production modernization was brought into force at LIC: the new glass furnace has been constructed and a modern production line for manufacturing of glass insulators has been installed. The modernization of production has enhanced the enterprise efficiency, increased the product competitiveness in the global market. The advanced equipment WALTEC allowed the company to manufacture products according to international standards.

More than 250 mln pieces of insulators manufactured in Lviv Insulator Plant over the years of its activity, have been successfully operated on lines with voltage from 0.4 to 1150 kV in power systems of more than 40 countries around the world, that is proof positive of perfect quality and high performance reliability of Lviv insulators.

"LIC" Ltd. has the own testing laboratory certificated by Federal Agency on Technical Regulating and Metrology of Ukraine where each batch of the manufactured products is subjected to acceptance tests.

Lviv Insulator Company has a certified quality management system in production and marketing of electrical glass insulators in accordance with ISO 9001:2000.

Advantageous geopolitical location on the border with Europe, numerous road and rail routes and closeness to the sea lines allows LIC to supply products to any part of the World.

CERTIFICATE TÜVNORD

Management system as per
ISO 9001 : 2008

Otkrytoe akcionernoe obschestvo
«Yuzhnouralskij armaturno-izolyatornyj zavod»
Zavodskaya st., 1
457040, Yuzhnouralsk
Russia

Design, production (assembly) and shipment of the glass, ceramic insulators, fittings for power transmission lines and switchgears

Certificate

Standard: ISO 9001:2008

Certificate Registr. No.: 75 100 60097

TÜV Rheinland InterCert certifies:

Certificate Holder: Lviv Insulator Company LTD
Zelena str., 301
79066, Lviv
Ukraine

Scope: Production of electrotechnical glass insulators.

An audit was performed. Proof has been furnished that the requirements according to ISO 9001:2008 are fulfilled.

Validity: The certificate is valid from 2009.07.13 until 2012.07.12
First certification: 2003

TÜVRheinland®
Precisely Right.

Glass insulator production shop produces high-voltage overhead line insulators of various types withstanding mechanical failing load from 40 kN to 530 kN incompliance with the State and international standards requirements. Toughened or annealed glass is used as insulating material which has a high insulating properties, mechanical strength, thermal and chemical stability.

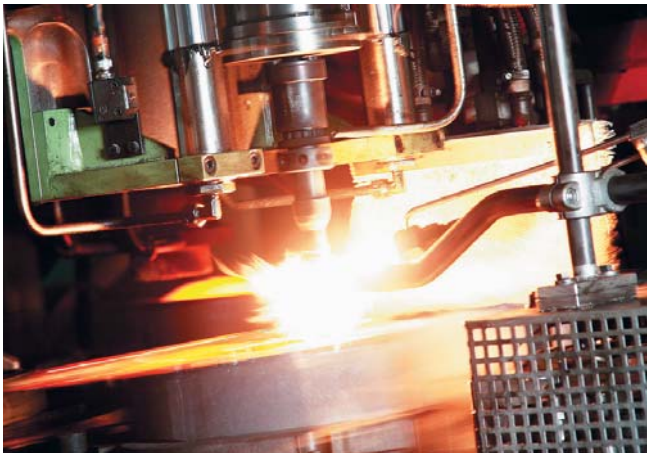
According to the customer requirements for areas with the high air pollutions, factory produces insulators using pins equipped with zinc sleeves, being the "sacrificial electrode" which prevent for a long time the corrosion caused by DC and the environment.

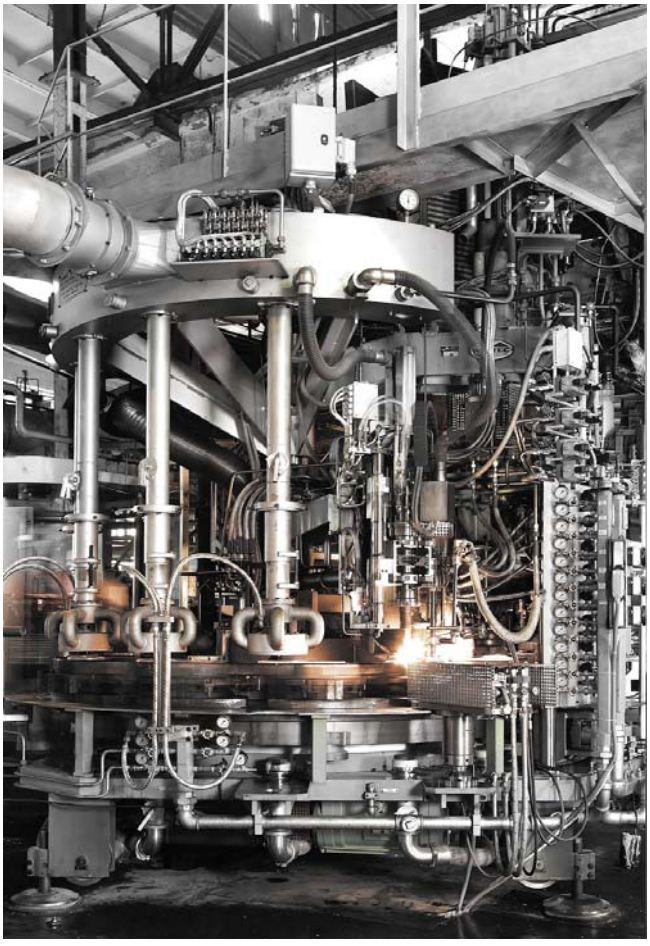
Thermal treatment of glass (hardening) provides high mechanical and electrical properties and thermal strength of the insulator. After subsequent thermal tests defective items are rejected. It guarantees the specified characteristics of insulators.

After thermal tests all glass parts are subjected to the visual inspection and verification of dimensions.

After the assembly of glass insulators routine mechanical and electrical tests are carried out.

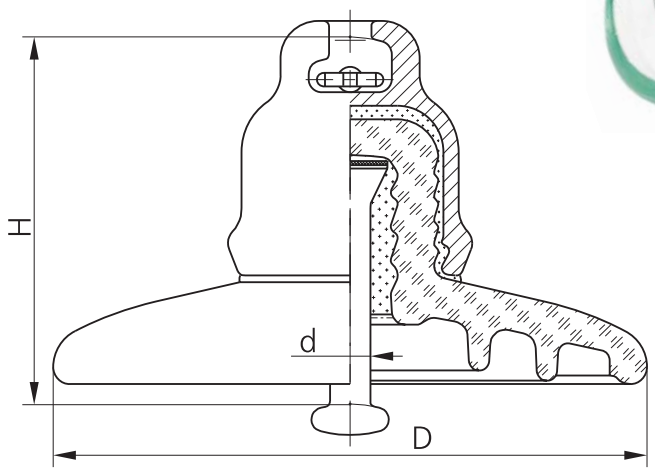
In 2007, Steep wave front (puncture in air) tests were carried out to meet the standard requirements of IEC 61211:2004.





HV glass suspension insulator of U40B type

Ball and socket type
Standard profile



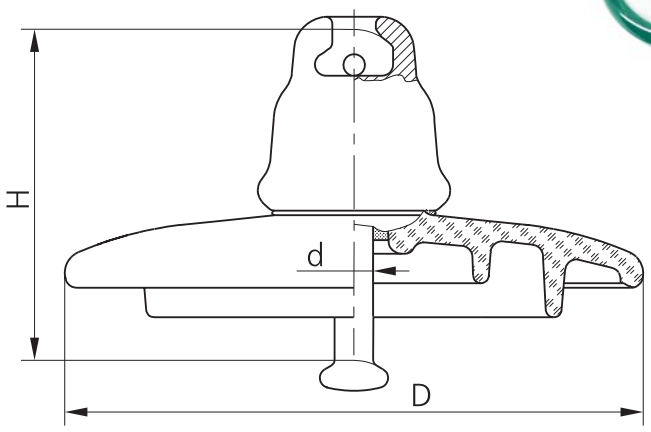
Reference designation	IEC 60305	U40B
	GOST 27661	ПС40А
Minimum mechanical failing load	kN	40
Minimum mechanical residual strength	kN	32
Diameter of the insulating part, D	mm	175
Spacing, H	mm	110
Nominal creepage distance	mm	190
Ball and socket coupling, d (IEC 60120)	mm	11
Puncture voltage in insulating medium	kV	100
50 Hz withstand voltage (dry)	kV	55
50 Hz withstand voltage (wet)	kV	33
Dry lightning impulse withstand voltage 1.2/50 +/−	kV	70/70
Impulse puncture test voltage in air	kV	200...220
Radio interference voltage at 0.5 MHz	dB	60
	kV	20
	dB	34
	kV	10
Weight	kg	1.7

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

Insulator meet GOST 6490-93, TU 34-27-102-94, DSTU 2203-93 requirements.

HV glass suspension insulators of U70BS and U70BL type

Ball and socket type
Standard profile



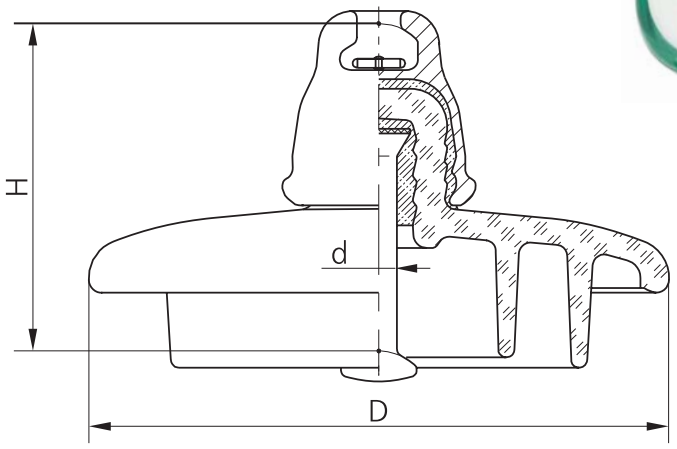
Reference designation	IEC 60305		U70BS	U70BL
	GOST 27661		ПС70Е	ПС70Е
Minimum mechanical failing load		kN	70	70
Minimum mechanical residual strength		kN	56	56
Diameter of the insulating part, D		mm	255	255
Spacing, H		mm	127	146
Nominal creepage distance		mm	320	320
Ball and socket coupling, d (IEC 60120)		mm	16	16
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	105/105	105/105
Impulse puncture test voltage in air		kV	280...310	280...310
Radio interference voltage at 0.5 MHz		dB	60	60
		kV	20	20
		dB	34	34
		kV	10	10
Weight		kg	3.6	3.6

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

Insulators meet GOST 6490-93, TU 34-27-91-93, DSTU 2203-93 requirements.

HV glass suspension insulator of U70BL type
with extended protrusion of the rib

Ball and socket type
Standard profile



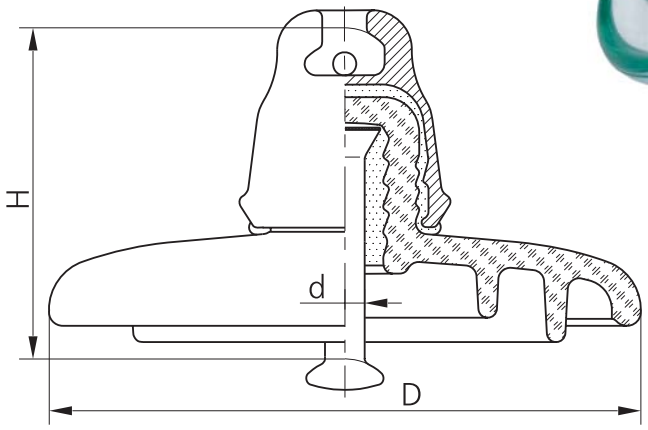
The manufacturer			JSC "YuAIZ"
Reference designation	IEC 60305		U70BL
	GOST 27661		ПС70И
Minimum mechanical failing load		kN	70
Minimum mechanical residual strength		kN	56
Diameter of the insulating part, D		mm	255
Spacing, H		mm	146
Nominal creepage distance		mm	407
Ball and socket coupling, d (IEC 60120)		mm	16
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	72
50 Hz withstand voltage (wet)		kV	42
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	110/110
Impulse puncture test voltage in air		kV	265...290
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	4.3

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

Insulator meet GOST 6490-93, TU 3493-222-76935199-2009 requirements.

HV glass suspension insulators of U100BS and U100BL type

Ball and socket type
Standard profile



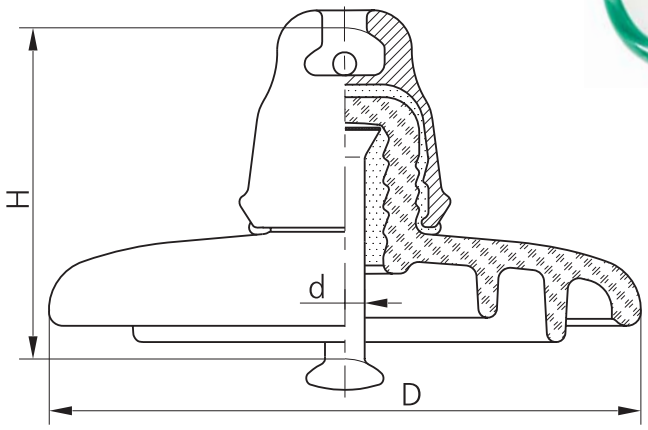
Reference designation	IEC 60305		U100BS	U100BL
Minimum mechanical failing load		kN	100	100
Minimum mechanical residual strength		kN	80	80
Diameter of the insulating part, D		mm	255	255
Spacing, H		mm	127	146
Nominal creepage distance		mm	320	320
Ball and socket coupling, d (IEC 60120)		mm	16	16
Puncture 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	100/100	100/100
Impulse puncture test voltage in air		kV	280...310	280...310
Radio interference voltage at 0.5 MHz		dB	60	60
		kV	20	20
		dB	34	34
		kV	10	10
Weight		kg	3.9	3.9

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

Insulators meet GOST 6490-93, DSTU 2203-93 requirements.

HV glass suspension insulator of U120B type

Ball and socket type
Standard profile



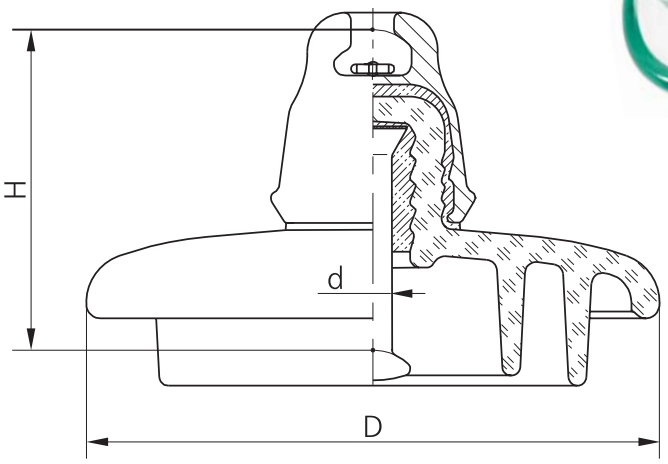
Reference designation	IEC 60305	U120B
	GOST 27661	ПС120Б
Minimum mechanical failing load	kN	120
Minimum mechanical residual strength	kN	96
Diameter of the insulating part, D	mm	255
Spacing, H	mm	146
Nominal creepage distance	mm	320
Ball and socket coupling, d (IEC 60120)	mm	16
Puncture voltage in insulating 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	100/100
Impulse puncture test voltage in air	kV	280...310
Radio interference voltage at 0.5 MHz	dB	60
	kV	20
	dB	34
	kV	10
Weight	kg	3.9

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

Insulator meet GOST 6490-93, TU 34-27-100-93, DSTU 2203-93 requirements.

HV glass suspension insulator of U120B type
with extended protrusion of the rib

Ball and socket type
Standard profile



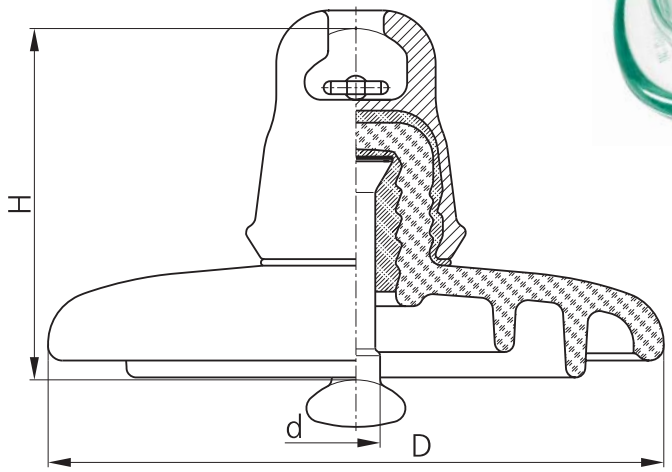
The manufacturer			JSC "YuAIZ"
Reference designation	IEC 60305		U120B
	GOST 27661		ПС120В
Minimum mechanical failing load		kN	120
Minimum mechanical residual strength		kN	96
Diameter of the insulating part, D		mm	255
Spacing, H		mm	146
Nominal creepage distance		mm	407
Ball and socket coupling, d (IEC 60120)		mm	16
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	72
50 Hz withstand voltage (wet)		kV	42
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	110/110
Impulse puncture test voltage in air		kV	265...290
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	4.6

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

Insulator meet GOST 6490-93, TU 3493-221-76935199-2009 requirements.

HV glass suspension insulator of U125B type

Ball and socket type
Standard profile



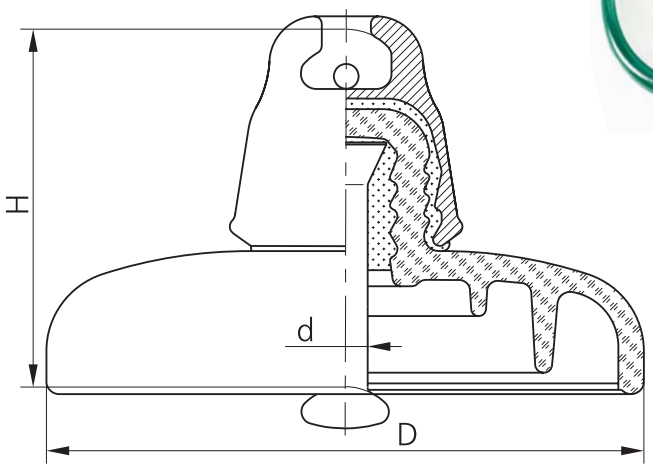
Reference designation	BS	U125B
Minimum mechanical failing load	kN	125
Minimum mechanical residual strength	kN	100
Diameter of the insulating part, D	mm	255
Spacing, H	mm	146
Nominal creepage distance	mm	320
Ball and socket coupling, d (IEC 60120)	mm	20
Puncture voltage in insulating medium	kV	130
50 Hz withstand voltage (dry)	kV	70
50 Hz withstand voltage (wet)	kV	40
Dry lightning impulse withstand voltage 1.2/50 +/−	kV	100/100
Radio interference voltage at 0.5 MHz	dB	60
	kV	20
	dB	34
	kV	10
Weight	kg	4.1

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

Insulator meet GOST 6490-93, DSTU 2203-93 requirements.

HV glass suspension insulators of U160BS and U160BL type

Ball and socket type
Standard profile



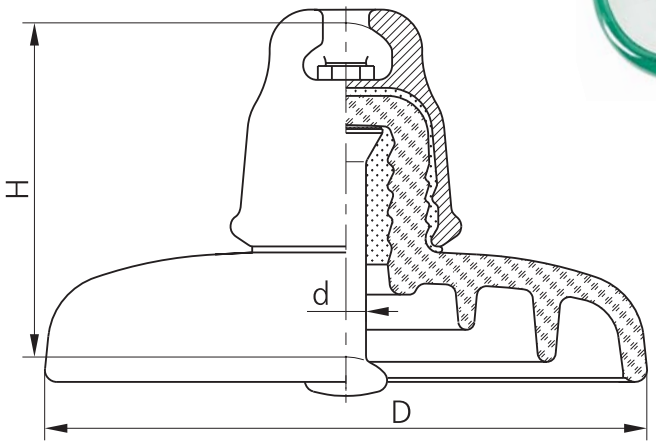
Reference designation	IEC 60305		U160BS	U160BL
	GOST 27661		ПС160Д	ПС160Д
Minimum mechanical failing load		kN	160	160
Minimum mechanical residual strength		kN	128	128
Diameter of the insulating part, D		mm	280	280
Spacing, H		mm	146	170
Nominal creepage distance		mm	385	385
Ball and socket coupling, d (IEC 60120)		mm	20	20
Puncture voltage in insulating medium		kV	130	130
50 Hz withstand voltage (dry)		kV	75	75
50 Hz withstand voltage (wet)		kV	45	45
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	110/110	110/110
Impulse puncture test voltage in air		kV	310...340	310...340
Radio interference voltage at 0.5 MHz		dB	60	60
		kV	20	20
		dB	34	34
		kV	10	10
Weight		kg	6.13	6.13

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

Insulators meet GOST 6490-93, TU 34-27-101-94, DSTU 2203-93 requirements.

HV glass suspension insulator of U210B type

Ball and socket type
Standard profile



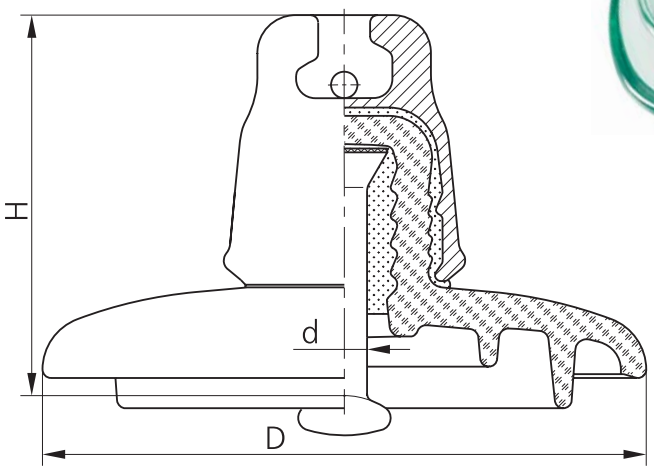
Reference designation	IEC 60305		U210B
	GOST 27661		ПС210В
Minimum mechanical failing load		kN	210
Minimum mechanical residual strength		kN	168
Diameter of the insulating part, D		mm	290
Spacing, H		mm	170
Nominal creepage distance		mm	380
Ball and socket coupling, d (IEC 60120)		mm	20
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	75
50 Hz withstand voltage (wet)		kV	45
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	110/110
Impulse puncture test voltage in air		kV	310...340
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	7.2

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

Insulator meet GOST 6490-93, TU 34-27-93-93, DSTU 2203-93 requirements.

HV glass suspension insulator of U300B type

Ball and socket type
Standard profile



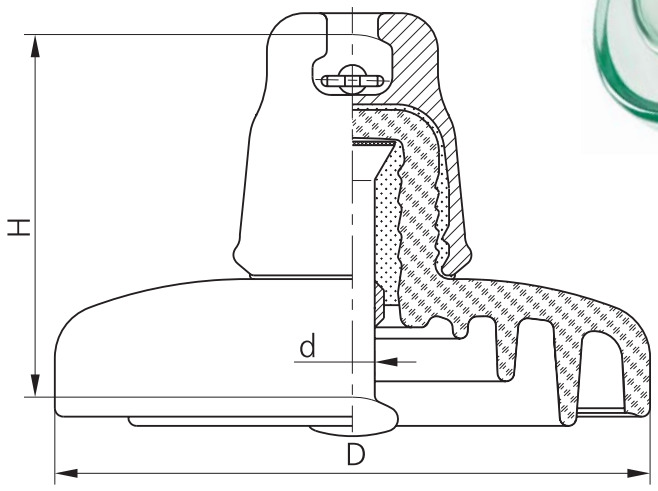
Reference designation	IEC 60305		U300B
	GOST 27661		ПС300В
Minimum mechanical failing load		kN	300
Minimum mechanical residual strength		kN	240
Diameter of the insulating part, D		mm	320
Spacing, H		mm	195
Nominal creepage distance		mm	390
Ball and socket coupling, d (IEC 60120)		mm	24
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	82
50 Hz withstand voltage (wet)		kV	50
Dry lightning impulse withstand voltage 1.2/50 +/−		kV	130/130
Impulse puncture test voltage in air		kV	365...410
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	10.0

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

Insulator meet GOST 6490-93, TU 34-27-94-93, DSTU 2203-93 requirements.

HV glass suspension insulator of U300B type

Ball and socket type
Standard profile

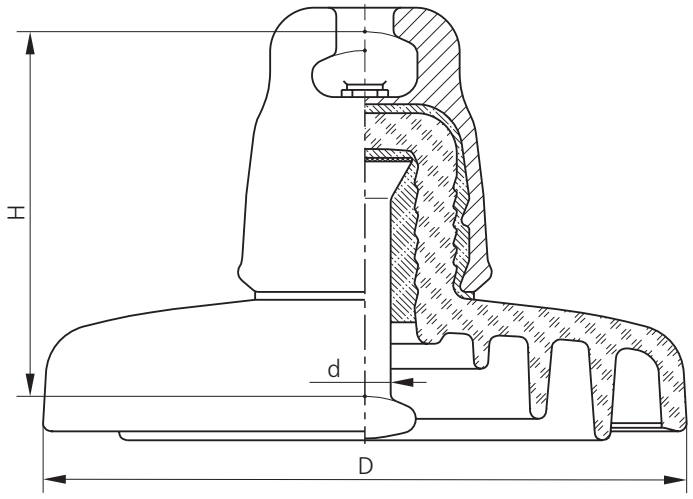


The manufacturer			JSC "YuAIZ"
Reference designation	IEC 60305		U300B
	GOST 27661		ПС300Г
Minimum mechanical failing load		kN	300
Minimum mechanical residual strength		kN	240
Diameter of the insulating part, D		mm	320
Spacing, H		mm	195
Nominal creepage distance		mm	485
Ball and socket coupling, d (IEC 60120)		mm	24
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	82
50 Hz withstand voltage (wet)		kV	50
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	130/130
Impulse puncture test voltage in air		kV	365...410
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	11.5

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

Insulator meet GOST 6490-93, TU 3493-151-00111120-98 requirements.

HV glass suspension insulator of U400B type

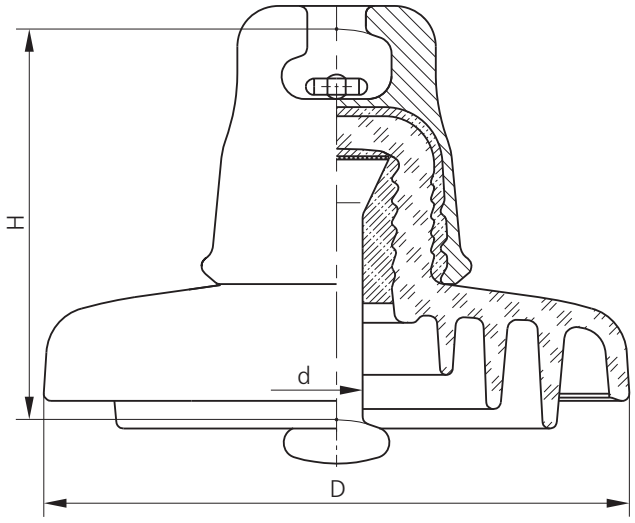


The manufacturer			JSC "YuAIZ"
Reference designation	IEC 60305		U400B
	GOST 27661		ПС400В
Minimum mechanical failing load		kN	400
Minimum mechanical residual strength		kN	320
Diameter of the insulating part, D		mm	360
Spacing, H		mm	205
Nominal creepage distance		mm	550
Ball and socket coupling, d (IEC 60120)		mm	28
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	90
50 Hz withstand voltage (wet)		kV	55
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	140/140
Impulse puncture test voltage in air		kV	330...365
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	16.2

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

Insulator meet GOST 6490-93, TU 3493-217-76935199-2009 requirements.

HV glass suspension insulator of U530B type



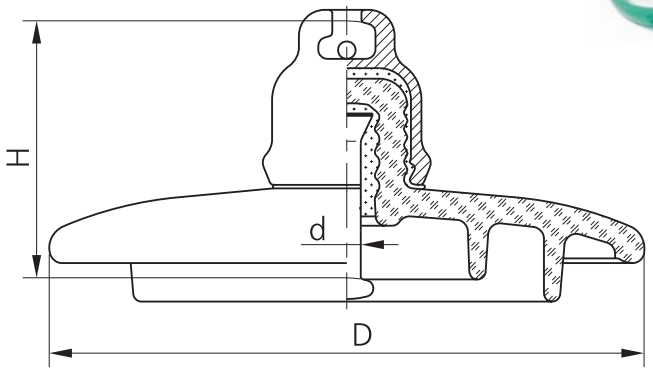
The manufacturer			JSC "YuAIZ"
Reference designation	IEC 60305		U530B
	GOST 27661		ПС530А
Minimum mechanical failing load		kN	530
Minimum mechanical residual strength		kN	424
Diameter of the insulating part, D		mm	360
Spacing, H		mm	240
Nominal creepage distance		mm	600
Ball and socket coupling, d (IEC 60120)		mm	32
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	95
50 Hz withstand voltage (wet)		kV	55
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	145/145
Impulse puncture test voltage in air		kV	340...375
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	20.5

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

Insulator meet GOST 6490-93, TU 3493-220-76935199-2009 requirements.

HV glass suspension insulator of ПСВ40В type

Ball and socket type
Fog type profile



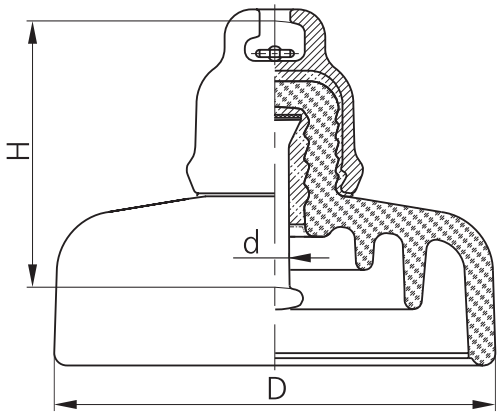
The manufacturer			JSC "YuAIZ"	
Reference designation	Non-standard		U40M	
Minimum mechanical failing load		kN	40	40
Minimum mechanical residual strength		kN	32	32
Diameter of the insulating part, D		mm	255	255
Spacing, H		mm	100	110
Nominal creepage distance		mm	320	320
Ball and socket coupling, d (IEC 60120)		mm	11	11
Puncture voltage in insulating medium		kV	100	100
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	100/100	100/100
Impulse puncture test voltage in air		kV	280...310	280...310
Radio interference voltage at 0.5 MHz		dB	60	60
		kV	20	20
		dB	34	34
		kV	10	10
Weight		kg	3.0	3.0

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

Insulator meet GOST 6490-93, TU 3493-122-00111120-96 requirements.

HV glass suspension insulator of U40BP type

Ball and socket type
Fog type profile



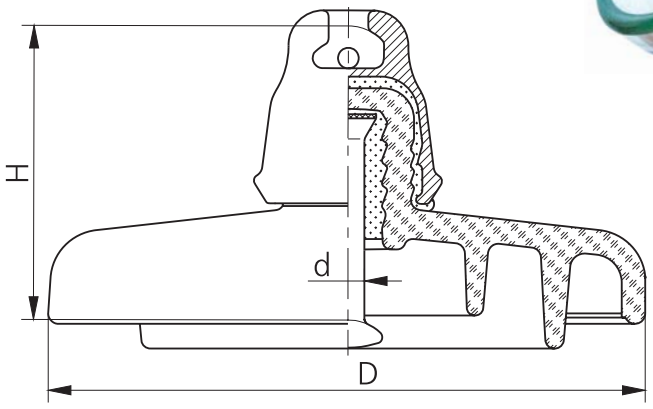
The manufacturer			JSC "YuAIZ"
Reference designation	IEC 60305		U40BP
Minimum mechanical failing load		kN	40
Minimum mechanical residual strength		kN	32
Diameter of the insulating part, D		mm	175
Spacing, H		mm	110
Nominal creepage distance		mm	300
Ball and socket coupling, d (IEC 60120)		mm	11
Puncture voltage in insulating medium		kV	100
50 Hz withstand voltage (dry)		kV	60
50 Hz withstand voltage (wet)		kV	34
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	85/85
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	2.5

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

Insulator meet GOST 6490-93 requirements.

HV glass suspension insulator of U70BLP type

Ball and socket type
Fog type profile



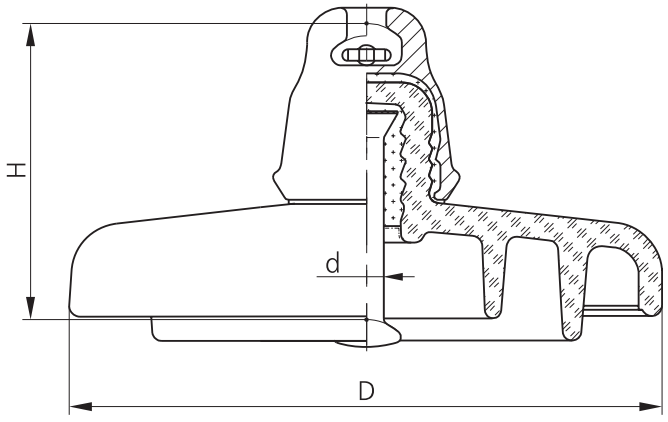
The manufacturer			JSC "YuAIZ"
Reference designation	IEC 60305		U70BLP
	GOST 27661		ПСВ70А
Minimum mechanical failing load		kN	70
Minimum mechanical residual strength		kN	56
Diameter of the insulating part, D		mm	280
Spacing, H		mm	146
Nominal creepage distance		mm	445
Ball and socket coupling, d (IEC 60120)		mm	16
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	82
50 Hz withstand voltage (wet)		kV	50
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	125/125
Impulse puncture test voltage in air		kV	350...385
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	5.66

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

Insulator meet GOST 6490-93, TU 3493-137-00111120-97 requirements.

HV glass suspension insulator of U100BLP type

Ball and socket type
Fog type profile



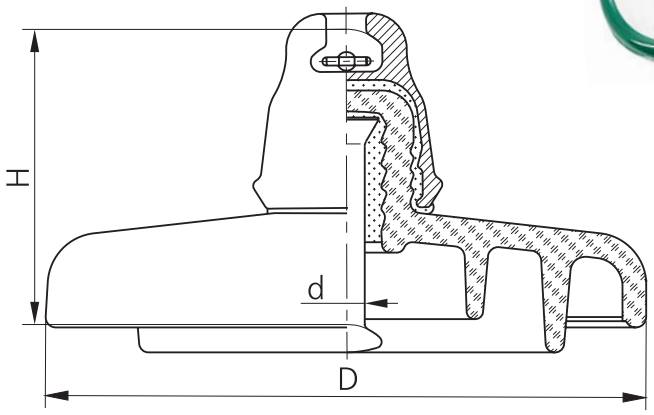
Reference designation	IEC 60305	U100BLP
Minimum mechanical failing load	kN	100
Minimum mechanical residual strength	kN	80
Diameter of the insulating part, D	mm	280
Spacing, H	mm	146
Nominal creepage distance	mm	445
Ball and socket coupling, d (IEC 60120)	mm	16
Puncture voltage in insulating medium	kV	130
50 Hz withstand voltage (dry)	kV	82
50 Hz withstand voltage (wet)	kV	50
Dry lightning impulse withstand voltage 1.2/50 +/−	kV	125/125
Impulse puncture test voltage in air	kV	350...385
Radio interference voltage at 0.5 MHz	dB	60
	kV	20
	dB	34
	kV	10
Weight	kg	5.66

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

Insulator meet GOST 6490-93, DSTU 2203-93 requirements.

HV glass suspension insulator of U120BP type

Ball and socket type
Fog type profile



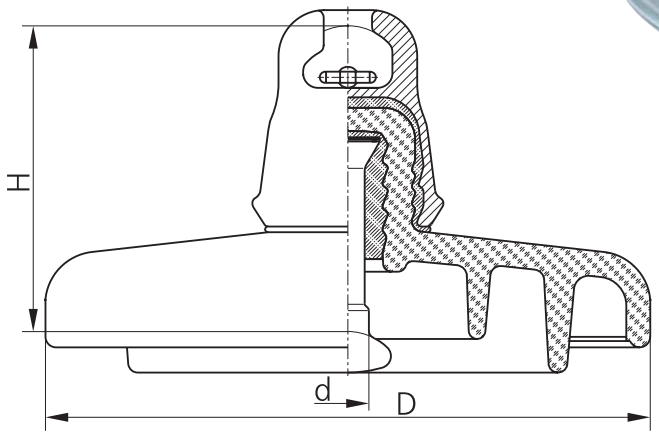
Reference designation	IEC 60305	U120BP
	GOST 27661	ПСВ120Б
Minimum mechanical failing load	kN	120
Minimum mechanical residual strength	kN	96
Diameter of the insulating part, D	mm	280
Spacing, H	mm	146
Nominal creepage distance	mm	445
Ball and socket coupling, d (IEC 60120)	mm	16
Puncture voltage in insulating medium	kV	130
50 Hz withstand voltage (dry)	kV	82
50 Hz withstand voltage (wet)	kV	50
Dry lightning impulse withstand voltage 1.2/50 +/−	kV	125/125
Impulse puncture test voltage in air	kV	350...385
Radio interference voltage at 0.5 MHz	dB	60
	kV	20
	dB	34
	kV	10
Weight	kg	5.66

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

Insulator meet GOST 6490-93, TU 34-27-89-93, DSTU 2203-93 requirements.

HV glass suspension insulator of U125BP type

Ball and socket type
Fog type profile



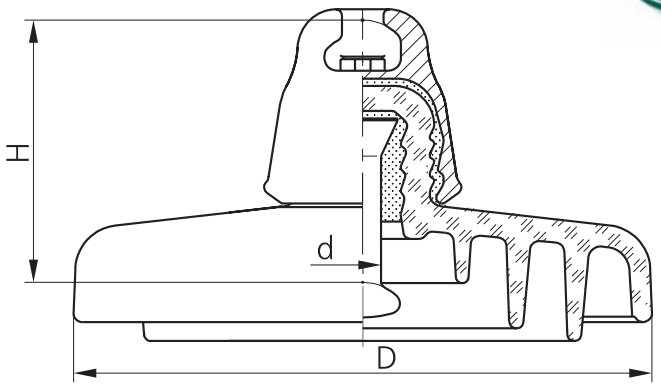
Reference designation	BS	U125BP
Minimum mechanical failing load	kN	125
Minimum mechanical residual strength	kN	100
Diameter of the insulating part, D	mm	280
Spacing, H	mm	146
Nominal creepage distance	mm	445
Ball and socket coupling, d (IEC 60120)	mm	20
Puncture voltage in insulating medium	kV	130
50 Hz withstand voltage (dry)	kV	82
50 Hz withstand voltage (wet)	kV	50
Dry lightning impulse withstand voltage 1.2/50 +/−	kV	125/125
Radio interference voltage at 0.5 MHz	dB	60
	kV	20
	dB	34
	kV	10
Weight	kg	5.86

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

Insulator meet GOST 6490-93, DSTU 2203-93 requirements.

HV glass suspension insulators of U160BSP and U160BLP type

Ball and socket type
Fog type profile



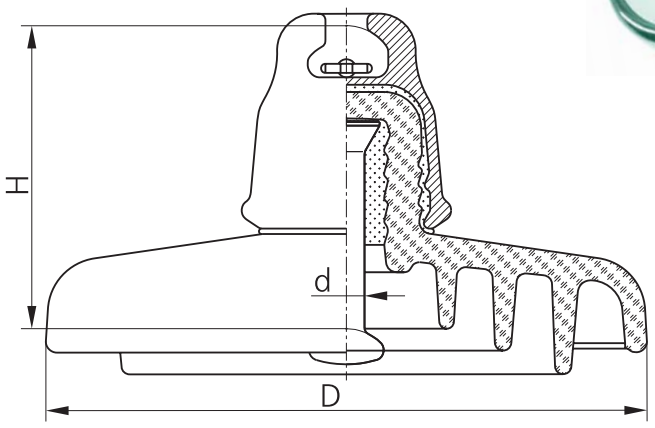
Reference designation	IEC 60305		U160BSP	U160BLP
	GOST 27661		ПСВ160А	ПСВ160А
Minimum mechanical failing load		kN	160	160
Minimum mechanical residual strength		kN	128	128
Diameter of the insulating part, D		mm	320	320
Spacing, H		mm	146	170
Nominal creepage distance		mm	545	545
Ball and socket coupling, d (IEC 60120)		mm	20	20
Puncture voltage in insulating medium		kV	130	130
50 Hz withstand voltage (dry)		kV	90	90
50 Hz withstand voltage (wet)		kV	55	55
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	140/140	140/140
Impulse puncture test voltage in air		kV	395...435	395...435
Radio interference voltage at 0.5 MHz		dB	60	60
		kV	20	20
		dB	34	34
		kV	10	10
Weight		kg	8.28	8.28

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

Insulators meet GOST 6490-93, TU 3493-123-00111120, DSTU 2203-93 requirements.

HV glass suspension insulator of U210BP type

Ball and socket type
Fog type profile



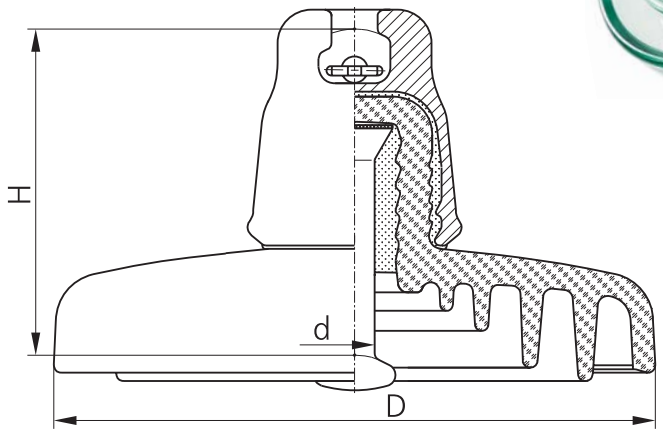
The manufacturer			JSC "YuAIZ"
Reference designation	IEC 60305		U210BP
	GOST 27661		ПСВ210А
Minimum mechanical failing load		kN	210
Minimum mechanical residual strength		kN	168
Diameter of the insulating part, D		mm	330
Spacing, H		mm	170
Nominal creepage distance		mm	555
Ball and socket coupling, d (IEC 60120)		mm	20
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	90
50 Hz withstand voltage (wet)		kV	55
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	140/140
Impulse puncture test voltage in air		kV	395...435
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	9.4

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

Insulator meet GOST 6490-93, TU 3493-124-00111120-96 requirements.

HV glass suspension insulator of U300BP type

Ball and socket type
Fog type profile



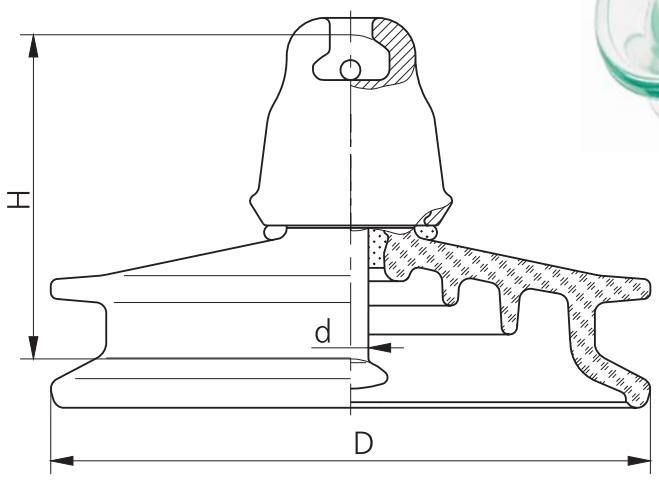
The manufacturer			JSC "YuAIZ"
Reference designation	IEC 60305		U300BP
	GOST 27661		ПСВ300А
Minimum mechanical failing load		kN	300
Minimum mechanical residual strength		kN	240
Diameter of the insulating part, D		mm	360
Spacing, H		mm	195
Nominal creepage distance		mm	617
Ball and socket coupling, d (IEC 60120)		mm	24
Puncture voltage in insulating medium		kV	130
50 Hz withstand voltage (dry)		kV	100
50 Hz withstand voltage (wet)		kV	60
Dry lightning impulse withstand voltage 1.2/50 +/–		kV	155/155
Impulse puncture test voltage in air		kV	435...480
Radio interference voltage at 0.5 MHz		dB	60
		kV	20
		dB	34
		kV	10
Weight		kg	13.3

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

Insulator meet GOST 6490-93 requirements.

Two-winged HV glass suspension insulator of ПСД70Е type

Ball and socket type
Fog type special profile

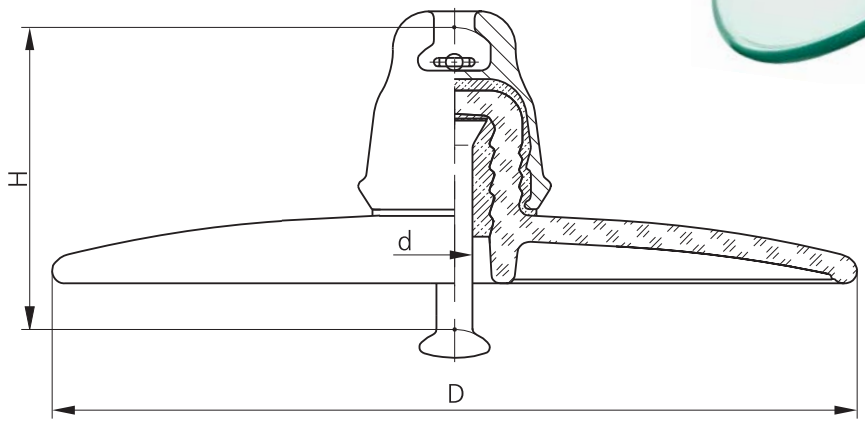


Reference designation	GOST 27661	ПСД70Е	
Minimum mechanical failing load	kN	70	70
Minimum mechanical residual strength	kN	56	56
Diameter of the insulating part, D	mm	270	270
Spacing, H	mm	127	146
Nominal creepage distance	mm	411	411
Ball and socket coupling, d (IEC 60120)	mm	16	16
Puncture voltage in insulating medium	kV	130	130
50 Hz withstand voltage (dry)	kV	75	75
50 Hz withstand voltage (wet)	kV	45	45
Dry lightning impulse withstand voltage 1.2/50 +/−	kV	110/110	110/110
Impulse puncture test voltage in air	kV	310...340	310...340
Radio interference voltage at 0.5 MHz	dB	60	60
	kV	20	20
	dB	34	34
	kV	10	10
Weight	kg	4.6	4.6

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

Insulator meet GOST 6490-93, TU 34-27-97-93, DSTU 2203-93 requirements.

HV glass suspension insulators with the insulating part of aerodynamic profile of U120AD, U160AD, U210AD type

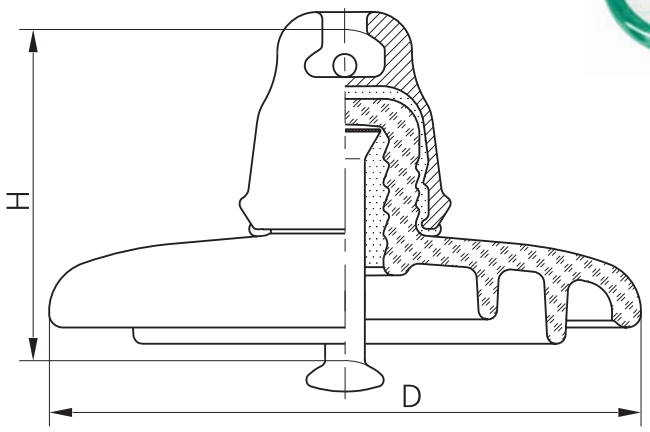


The manufacturer		JSC "YuAIZ"		
Reference designation		U120AD	U160AD	U210AD
Minimum mechanical failing load	kN	120	160	210
Minimum mechanical residual strength	kN	96	128	168
Diameter of the insulating part, D	mm	380	420	420
Spacing, H	mm	127/130/146	146	170
Nominal creepage distance	mm	365	400	400
Ball and socket coupling, d (IEC 60120)	mm	16	20	20
Puncture voltage in insulating medium	kV	130	130	130
50 Hz withstand voltage (dry)	kV	60	60	60
50 Hz withstand voltage (wet)	kV	50	50	50
Dry lightning impulse withstand voltage 1.2/50 +/−	kV	90/90	95/95	95/95
Impulse puncture test voltage in air	kV	255...280	265...290	265...290
Radio interference voltage at 0.5 MHz	dB	60	60	60
	kV	20	20	20
	dB	34	34	34
	kV	10	10	10
Weight	kg	5.2	7.43	8.3

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

Insulators meet GOST 6490-93 requirements.

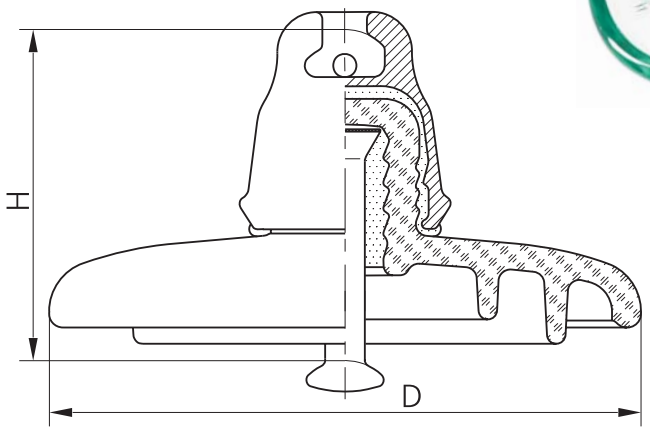
HV glass suspension insulator of 52-3 type



The manufacturer			JSC "YuAIZ"
Reference designation	ANSI C 29.2		52-3
Minimum mechanical failing load		kN	70
Minimum mechanical residual strength		kN	42
Diameter of the insulating part, D		mm	255
Spacing, H		mm	146
Nominal creepage distance		mm	320
Ball and socket coupling		mm	type B
Puncture voltage		kV	130
Flashover power frequency voltage (dry)		kV	80
Flashover power frequency voltage (wet)		kV	50
Impulse puncture test voltage in air		kV	280...310
Radio interference voltage at 0.5 MHz		kV	10
		μV	50
Weight		kg	4.0

Insulator meet ANSI C 29.1, ANSI C 29.2 requirements.

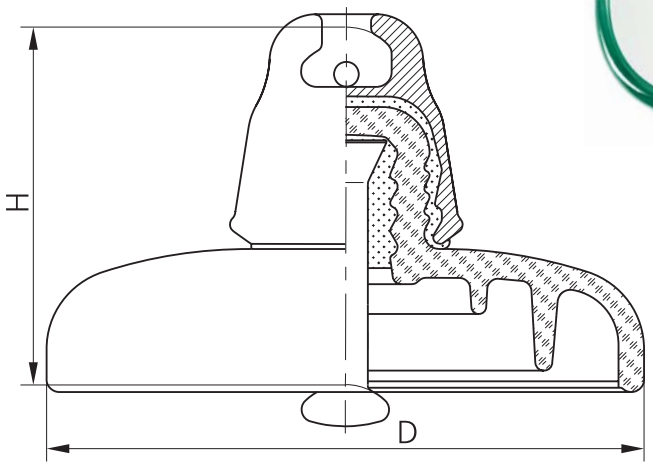
HV glass suspension insulator of 52-5 type



The manufacturer			JSC "YuAIZ"
Reference designation	ANSI C 29.2		52-5
Minimum mechanical failing load		kN	120
Minimum mechanical residual strength		kN	72
Diameter of the insulating part, D		mm	255
Spacing, H		mm	146
Nominal creepage distance		mm	320
Ball and socket coupling		mm	type J
Puncture voltage		kV	130
Flashover power frequency voltage (dry)		kV	80
Flashover power frequency voltage (wet)		kV	50
Impulse puncture test voltage in air		kV	280...310
Radio interference voltage at 0.5 MHz		kV	10
		μV	50
Weight		kg	4.0

Insulator meet ANSI C 29.1, ANSI C 29.2 requirements.

HV glass suspension insulator of 52-8 type



The manufacturer		JSC "YuAIZ"
Reference designation	ANSI C 29.2	52-8
Minimum mechanical failing load	kN	160
Minimum mechanical residual strength	kN	96
Diameter of the insulating part, D	mm	280
Spacing, H	mm	146
Nominal creepage distance	mm	385
Ball and socket coupling	mm	type K
Puncture voltage	kV	130
Flashover power frequency voltage (dry)	kV	80
Flashover power frequency voltage (wet)	kV	50
Impulse puncture test voltage in air	kV	310...340
Radio interference voltage at 0.5 MHz	kV	10
	μV	50
Weight	kg	6.18

Insulator meet ANSI C 29.1, ANSI C 29.2 requirements.

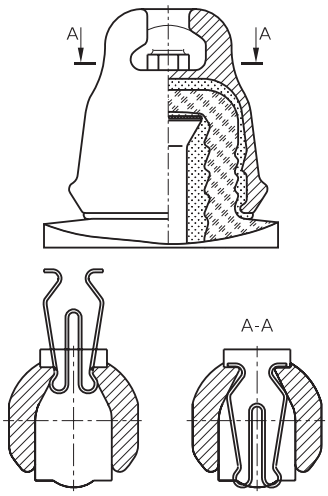
Locking devices for ball and socket couplings of suspension insulators

The plant manufactures insulators with W-clips and split-pins, which corresponds to the Russian and international standards.

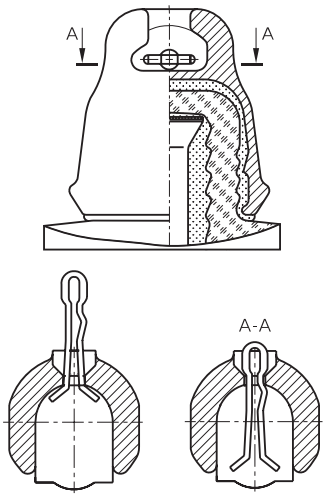
Split-pin provides more reliable coupling in a string, as the cross-section area of the split-pin is 2 times more than the cross-section area of the W-clip. The insertion of split-pins and bending of the legs are made at the plant.

It is necessary to note, that with such a universal coupling it is possible to make a string of insulator units with different types of locking devices.

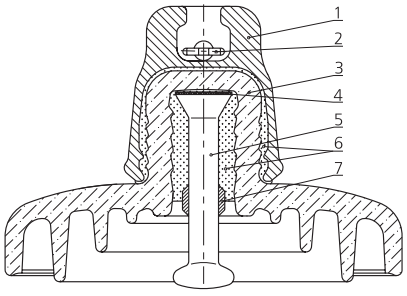
Insulator with W-clip



Insulator with split-pin



Suspension glass insulator with zinc sleeve



The characteristics of insulators with a zinc sleeve fully correspond to those of insulators without it. The zinc sleeve, being "a sacrificial electrode", prevents for a long time from corrosion of a pin caused by d.c. and environmental conditions (a tropical climate).

1. Cap.
2. Locking device (split-pin).
3. Glass part.
4. Gasket.
5. Pin.
6. Binding material.
7. Zinc sleeve.

When the insulators are stored in a dry atmosphere, especially at high temperature, the cement bond loses its moisture. It resulted in a slight shrinkage, in this case increases the clearance between the glass and cement bond. In some cases the increased clearance can lead to a rotation of the pin relative to the glass by a few degrees. This rotation arises from the manual effort with characteristic clicking noise. This phenomenon disappears once you move the insulator into the atmosphere with normal conditions or being under load when assembling on the line. This phenomenon does not affect an insulator performance.

HV glass suspension insulators of ПС70Е (U70BS and U70BL) type
HV glass suspension insulators of U100BS and U100BL type
HV glass suspension insulator of ПС120Б (U120B) type

Withstand voltages of suspension insulator string with insulators of standard profile are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 255 mm Spacing 127 mm			Diameter 255 mm Spacing 146 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV	Power frequency withstand voltage, kV		Standard 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

HV glass suspension insulator of ПС70И (U70BL)
HV glass suspension insulator of ПС120В (U120B)

Withstand voltages of suspension insulator string with insulators of standard profile are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 255 mm Spacing 146 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet	
2	135	85	200
3	185	115	285
4	230	150	365
5	280	180	450
6	320	210	510
7	350	240	580
8	410	270	655
9	440	300	735
10	490	330	810
11	530	360	890
12	565	390	960
13	600	410	1045
14	640	430	1123
15	680	460	1200
16	720	490	1277
17	750	510	1365
18	790	530	1452
19	820	550	1529
20	850	570	1602
21	880	590	1674
22	910	610	1752
23	950	630	1824
24	980	650	1887
25	1010	670	1960
26	1040	690	2032
27	1060	710	2110
28	1100	730	2187
29	1130	750	2265
30	1150	770	2342

HV glass suspension insulators of ПСД160Д (U160BS and U160BL) type
HV glass suspension insulator of ПС210В (U210B) type

Withstand voltages of suspension insulator string with insulators of standard profile are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	U160BS			U160BL/U210B		
	Diameter 280 mm			Diameter 280/290 mm		
	Spacing 146 mm			Spacing 170 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet		dry	wet	
2	130	75	195	140	80	215
3	180	115	275	200	120	305
4	235	155	360	250	160	385
5	280	195	430	300	200	470
6	325	230	505	350	240	560
7	375	265	580	400	280	640
8	420	300	660	450	320	720
9	465	325	730	500	350	810
10	510	375	800	545	380	900
11	550	410	880	590	420	980
12	595	440	955	635	455	1070
13	635	475	1025	675	490	1140
14	675	510	1095	720	520	1220
15	715	540	1160	760	550	1300
16	755	570	1230	810	585	1380
17	800	600	1300	850	615	1460
18	855	635	1370	895	650	1550
19	875	665	1440	930	680	1620
20	915	700	1510	970	710	1690
21	950	730	1575	1000	740	1770
22	990	760	1640	1050	775	1840
23	1030	790	1710	1090	805	1920
24	1065	820	1775	1130	835	2000
25	1100	855	1850	1170	870	2080
26	1140	880	1920	1210	900	2160
27	1175	910	1990	1250	930	2240
28	1215	935	2060	1290	960	2320
29	1255	965	2130	1330	990	2400
30	1290	990	2200	1370	1030	2480

HV glass suspension insulators of ПС300В and ПС300Г (У300В) type

Withstand voltages of suspension insulator string with insulators of standard profile are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	ПС300В			ПС300Г		
	Diameter 320 mm			Diameter 320 mm		
	Spacing 195 mm			Spacing 195 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet		dry	wet	
2	155	90	230	155	90	230
3	220	140	340	220	140	340
4	290	180	430	290	180	430
5	350	220	530	350	220	530
6	405	260	620	405	260	620
7	465	300	700	465	300	700
8	515	350	790	515	350	790
9	570	390	880	570	390	880
10	620	440	970	620	440	970
11	675	490	1060	675	490	1060
12	725	540	1150	725	540	1150
13	775	580	1240	775	580	1240
14	825	620	1330	825	620	1330
15	870	660	1425	870	660	1425
16	920	700	1520	920	700	1520
17	970	740	1610	970	740	1610
18	1020	780	1700	1020	780	1700
19	1070	820	1790	1070	820	1790
20	1110	860	1880	1110	860	1880
21	1160	900	1970	1160	900	1970
22	1210	940	2050	1210	940	2050
23	1260	980	2140	1260	980	2140
24	1310	1015	2230	1310	1015	2230
25	1360	1050	2320	1360	1050	2320
26	1410	1085	2410	1410	1085	2410
27	1460	1120	2500	1460	1120	2500
28	1510	1155	2600	1510	1155	2600
29	1550	1190	2700	1550	1190	2700
30	1600	1225	2800	1600	1225	2800

HV glass suspension insulator of ПС400В (U400B) type

Withstand voltages of suspension insulator string with insulators of standard profile are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 360 mm Spacing 205 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet	
2	155	100	230
3	220	160	340
4	290	200	430
5	350	240	530
6	405	280	620
7	465	320	700
8	515	380	790
9	570	430	880
10	620	500	970
11	675	560	1060
12	725	625	1150
13	775	670	1240
14	825	720	1330
15	870	770	1425
16	920	815	1520
17	970	865	1610
18	1020	910	1700
19	1070	960	1790
20	1110	1010	1880
21	1160	1060	1970
22	1210	1105	2050
23	1260	1155	2140
24	1310	1195	2230
25	1360	1230	2320
26	1410	1270	2410
27	1460	1310	2500
28	1510	1350	2600
29	1550	1390	2700
30	1600	1420	2800

HV glass suspension insulator of ПС530А (US30B) type

Withstand voltages of suspension insulator string with insulators of standard profile are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 360 mm Spacing 240 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet	
2	160	100	240
3	230	160	340
4	300	200	440
5	360	240	540
6	420	280	640
7	480	320	740
8	530	380	835
9	590	430	935
10	640	500	1030
11	700	560	1130
12	750	625	1230
13	800	670	1330
14	850	720	1430
15	900	770	1530
16	950	815	1635
17	1000	865	1735
18	1050	910	1835
19	1100	960	1935
20	1150	1010	2040
21	1200	1060	2135
22	1250	1105	2235
23	1300	1155	2330
24	1350	1195	2430
25	1410	1230	2525
26	1460	1270	2625
27	1510	1310	2720
28	1570	1350	2815
29	1600	1390	2915
30	1650	1420	3010

HV glass suspension insulator of ПСВ70А (U70BLP) type
HV glass suspension insulator of U100BLP type
HV glass suspension insulator of ПСВ120Б (U120BP) type

Withstand voltages of suspension insulator string with insulators of FOG profile (insulating part with elongated rib, FOG profile) are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 280 mm Spacing 127 mm			Diameter 280 mm Spacing 146 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet		dry	wet	
2	123	75	190	140	85	210
3	172	100	265	195	115	295
4	210	130	340	240	150	380
5	255	155	430	290	180	465
6	300	180	485	335	210	530
7	330	205	545	380	240	600
8	370	230	605	425	270	680
9	405	325	690	465	300	760
10	445	355	760	510	330	840
11	480	380	825	550	360	920
12	520	405	895	585	390	1000
13	555	430	975	630	410	1080
14	590	455	1050	670	430	1160
15	625	475	1130	710	460	1240
16	660	500	1205	750	490	1320
17	700	520	1290	785	510	1410
18	745	545	1370	825	530	1500
19	765	565	1450	860	550	1580
20	800	585	1510	895	570	1655
21	830	600	1580	925	590	1730
22	865	615	1660	960	610	1810
23	900	630	1725	995	630	1885
24	930	645	1785	1025	650	1950
25	960	660	1845	1060	670	2025
26	995	675	1915	1090	690	2100
27	1025	690	1990	1120	710	2180
28	1060	705	2060	1155	730	2260
29	1095	720	2130	1185	750	2340
30	1125	740	2200	1215	770	2420

HV glass suspension insulators of ПСВ160А (U160BSP and U160BLP) type

Withstand voltages of suspension insulator string with insulators of FOG profile (insulating part with elongated rib, FOG profile) are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	U160BSP			U160BLP		
	Diameter 320 mm			Diameter 320 mm		
	Spacing 146 mm			Spacing 170 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV	Power frequency withstand voltage, kV		Standard 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	1090	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

HV glass suspension insulator of ПСВ210А (U210BP) type

Withstand voltages of suspension insulator string with insulators of FOG profile (insulating part with elongated rib, FOG profile) are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 330 mm Spacing 170 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet	
2	150	105	235
3	210	150	335
4	265	190	435
5	320	230	535
6	370	270	625
7	420	300	710
8	470	335	800
9	515	365	890
10	570	395	980
11	610	430	1070
12	660	460	1170
13	700	490	1260
14	745	520	1355
15	785	550	1450
16	830	575	1540
17	870	605	1640
18	910	630	1730
19	950	655	1810
20	990	680	1900
21	1030	700	1990
22	1060	720	2080
23	1090	740	2160
24	1130	755	2245
25	1170	780	2325
26	1200	800	2410
27	1250	825	2490
28	1290	850	2575
29	1330	885	2650
30	1360	910	2720

HV glass suspension insulator of ПСВ300А (U300BP) type

Withstand voltages of suspension insulator string with insulators of FOG profile (insulating part with elongated rib, FOG profile) are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 360 mm Spacing 195 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet	
2	170	120	235
3	240	170	335
4	300	210	435
5	370	265	535
6	420	310	625
7	480	345	710
8	540	380	800
9	590	415	890
10	650	450	1070
11	700	490	1170
12	755	520	1260
13	800	550	1355
14	850	580	1450
15	900	610	1540
16	950	650	1640
17	1000	680	1730
18	1040	700	1810
19	1090	730	1900
20	1130	750	1990
21	1180	780	2080
22	1210	800	2160
23	1250	830	2245
24	1300	850	2325
25	1340	880	2410
26	1370	900	2490
27	1430	930	2575
28	1480	950	2650
29	1520	1000	2720
30	1550	1030	2800

Two-winged HV glass suspension insulator of ПСД70Е type

Withstand voltages of suspension insulator string with insulators of extreme profile (two wings insulating part) are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 270 mm Spacing 127 mm			Diameter 270 mm Spacing 146 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV	Power frequency withstand voltage, kV		Standard 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

HV glass suspension insulator of U120AD type

Withstand voltages of suspension insulator string with insulators of OPEN type profile (insulating part of OPEN profile) are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 380 mm Spacing 127 mm			Diameter 380 mm Spacing 130 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet		dry	wet	
2	95	75	160	95	75	160
3	135	110	225	135	110	225
4	175	145	290	175	145	290
5	215	180	355	215	180	355
6	255	210	420	255	210	420
7	290	245	490	290	245	490
8	330	280	555	330	280	555
9	370	310	620	370	310	620
10	410	345	685	410	345	685
11	450	380	750	450	380	750
12	490	410	815	490	410	815
13	530	445	885	530	445	885
14	570	480	950	570	480	950
15	610	515	1015	610	515	1015
16	650	545	1080	650	545	1080
17	690	580	1145	690	580	1145
18	730	615	1210	730	615	1210
19	770	645	1280	770	645	1280
20	810	680	1345	810	680	1345
21	850	715	1410	850	715	1410
22	890	750	1475	890	750	1475
23	930	780	1540	930	780	1540
24	970	815	1605	970	815	1605
25	1010	850	1675	1010	850	1675
26	1050	880	1740	1050	880	1740
27	1090	915	1805	1090	915	1805
28	1130	950	1870	1130	950	1870
29	1170	980	1935	1170	980	1935
30	1210	1015	2000	1215	1020	2010

HV glass suspension insulator of U120AD type

Withstand voltages of suspension insulator string with insulators of OPEN type profile (insulating part of OPEN profile) are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 380 mm Spacing 146 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet	
2	110	85	165
3	160	125	235
4	205	165	310
5	255	205	380
6	305	240	450
7	355	280	525
8	405	320	595
9	455	360	670
10	505	395	740
11	555	435	810
12	605	470	885
13	655	510	955
14	705	550	1030
15	755	590	1100
16	800	625	1175
17	850	665	1245
18	900	705	1315
19	950	745	1390
20	1000	780	1460
21	1050	820	1535
22	1100	860	1605
23	1150	895	1675
24	1200	935	1750
25	1250	975	1825
26	1290	1010	1895
27	1350	1050	1965
28	1400	1090	2035
29	1450	1125	2110
30	1495	1165	2180

HV glass suspension insulator of U160AD type

Withstand voltages of suspension insulator string with insulators of OPEN type profile (insulating part of OPEN profile) are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 420 mm Spacing 146 mm			Diameter 420 mm Spacing 170 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet		dry	wet	
2	110	85	165	125	85	180
3	160	125	235	180	125	260
4	205	165	310	230	165	340
5	255	205	380	295	205	420
6	305	240	450	350	240	490
7	355	280	525	400	280	580
8	405	320	595	450	320	650
9	455	360	670	510	360	740
10	505	395	740	560	395	810
11	555	435	810	620	435	890
12	605	470	885	680	470	970
13	655	510	955	730	510	1050
14	705	550	1030	800	550	1130
15	755	590	1100	850	590	1210
16	800	625	1175	900	625	1300
17	850	665	1245	960	665	1370
18	900	705	1315	1020	705	1450
19	950	745	1390	1070	745	1530
20	1000	780	1460	1140	780	1610
21	1050	820	1535	1200	820	1690
22	1100	860	1605	1250	860	1770
23	1150	895	1675	1310	895	1850
24	1200	935	1750	1360	935	1930
25	1250	975	1825	1420	975	2010
26	1290	1010	1895	1470	1010	2090
27	1350	1050	1965	1540	1050	2170
28	1400	1090	2035	1600	1090	2250
29	1450	1125	2110	1650	1125	2330
30	1495	1165	2180	1710	1165	2410

HV glass suspension insulator of U210AD type

Withstand voltages of suspension insulator string with insulators of OPEN type profile (insulating part of OPEN profile) are based on the tests according to GOST 6490-93 and IEC 60383.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 420 mm Spacing 170 mm		
	Power frequency withstand voltage, kV		Standard lightning impulse withstand voltage, kV
	dry	wet	
2	125	85	180
3	180	125	260
4	230	165	340
5	295	205	420
6	350	240	490
7	400	280	580
8	450	320	650
9	510	360	740
10	560	395	810
11	620	435	890
12	680	470	970
13	730	510	1050
14	800	550	1130
15	850	590	1210
16	900	625	1300
17	960	665	1370
18	1020	705	1450
19	1070	745	1530
20	1140	780	1610
21	1200	820	1690
22	1250	860	1770
23	1310	895	1850
24	1360	935	1930
25	1420	975	2010
26	1470	1010	2090
27	1540	1050	2170
28	1600	1090	2250
29	1650	1125	2330
30	1710	1165	2410

HV glass suspension insulator of 52-3 type

Flashover voltages of suspension insulator string with insulators of standard profile are based on the tests according to ANSI C 29.1.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 255 mm Spacing 146 mm			
	Power frequency flashover voltage, kV		Critical impulse flashover voltage, kV	
	dry	wet	Positive polarity (+)	Negative polarity (−)
2	145	90	220	225
3	205	130	315	320
4	270	170	410	420
5	325	215	500	510
6	380	255	595	605
7	435	295	670	695
8	485	335	760	780
9	540	375	845	860
10	590	415	930	945
11	640	455	1015	1025
12	690	490	1105	1105
13	735	525	1185	1190
14	785	565	1265	1275
15	830	600	1345	1360
16	875	635	1425	1440
17	920	670	1505	1530
18	965	705	1585	1615
19	1010	740	1665	1700
20	1050	775	1745	1785
21	1100	810	1825	1870
22	1135	845	1905	1955
23	1180	880	1985	2040
24	1220	915	2065	2125
25	1260	950	2145	2210
26	1300	985	2220	2295
27	1340	1015	2300	2380
28	1380	1045	2375	2465
29	1425	1080	2455	2550
30	1460	1110	2530	2635

Acc. to ANSI C 29.1 there are possible the tolerances in values:

- dry power frequency flashover voltage ±5% (average flashover value at testing on three strings will be equal or higher than 95% from the value shown in the table),
- wet power frequency flashover voltage ±10% (average flashover value at testing on three strings will be equal or higher than 90% from the value shown in the table),
- critical impulse flashover voltage ±8% (average flashover value at testing on three strings will be equal or higher than 92% from the value shown in the table).

HV glass suspension insulator of 52-5 type

Flashover voltages of suspension insulator string with insulators of standard profile are based on the tests according to ANSI C 29.1.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 255 mm Spacing 146 mm			
	Power frequency flashover voltage, kV		Critical impulse flashover voltage, kV	
	dry	wet	Positive polarity (+)	Negative polarity (−)
2	145	90	220	225
3	205	130	315	320
4	270	170	410	420
5	325	215	500	510
6	380	255	595	605
7	435	295	670	695
8	485	335	760	780
9	540	375	845	860
10	590	415	930	945
11	640	455	1015	1025
12	690	490	1105	1105
13	735	525	1185	1190
14	785	565	1265	1275
15	830	600	1345	1360
16	875	635	1425	1440
17	920	670	1505	1530
18	965	705	1585	1615
19	1010	740	1665	1700
20	1050	775	1745	1785
21	1100	810	1825	1870
22	1135	845	1905	1955
23	1180	880	1985	2040
24	1220	915	2065	2125
25	1260	950	2145	2210
26	1300	985	2220	2295
27	1340	1015	2300	2380
28	1380	1045	2375	2465
29	1425	1080	2455	2550
30	1460	1110	2530	2635

Acc. to ANSI C 29.1 there are possible the tolerances in values:

- dry power frequency flashover voltage ±5% (average flashover value at testing on three strings will be equal or higher than 95% from the value shown in the table),
- wet power frequency flashover voltage ±10% (average flashover value at testing on three strings will be equal or higher than 90% from the value shown in the table),
- critical impulse flashover voltage ±8% (average flashover value at testing on three strings will be equal or higher than 92% from the value shown in the table).

HV glass suspension insulator of 52-8 type

Flashover voltages of suspension insulator string with insulators of standard profile are based on the tests according to ANSI C 29.1.

Characteristics are given for the strings without screens and arcing horns (at application of the specified protective fittings the characteristics are defined according to the arcing distance specified in the documentation for the string).

Number of insulators in string, pcs.	Diameter 280 mm Spacing 146 mm			
	Power frequency flashover voltage, kV		Critical impulse flashover voltage, kV	
	dry	wet	Positive polarity (+)	Negative polarity (−)
2	145	90	220	225
3	205	130	315	320
4	270	170	410	420
5	325	215	500	510
6	380	255	595	605
7	435	295	670	695
8	485	335	760	780
9	540	375	845	860
10	590	415	930	945
11	640	455	1015	1025
12	690	490	1105	1105
13	735	525	1185	1190
14	785	565	1265	1275
15	830	600	1345	1360
16	875	635	1425	1440
17	920	670	1505	1530
18	965	705	1585	1615
19	1010	740	1665	1700
20	1050	775	1745	1785
21	1100	810	1825	1870
22	1135	845	1905	1955
23	1180	880	1985	2040
24	1220	915	2065	2125
25	1260	950	2145	2210
26	1300	985	2220	2295
27	1340	1015	2300	2380
28	1380	1045	2375	2465
29	1425	1080	2455	2550
30	1460	1110	2530	2635

Acc. to ANSI C 29.1 there are possible the tolerances in values:

- dry power frequency flashover voltage ±5% (average flashover value at testing on three strings will be equal or higher than 95% from the value shown in the table),
- wet power frequency flashover voltage ±10% (average flashover value at testing on three strings will be equal or higher than 90% from the value shown in the table),
- critical impulse flashover voltage ±8% (average flashover value at testing on three strings will be equal or higher than 92% from the value shown in the table).

HV glass suspension insulator of U40B type

SGS Fimko Ltd. (Finland)

Certificate of type tests No. 18434
27.02.2002–19.04.2002
The product has been tested according to standards
IEC 60383-1:1993 and IEC 61211:1994

SGS Fimko Ltd

Our ref. 223801-3

CERTIFICATE OF TYPE TESTS 18434

Product	Glass suspension insulator (cap and pin type)
Type	U40B
Trade mark	YuAIZ
Certificate Holder/ Manufacturer	Yuzhno-Uralsk Insulators and Fitting Plant (YuAIZ) Zavodskaya St., Yuzhno-Uralsk Chelyabinsk Region, 457040 RUSSIA
Tested for	Jeramat Oy, Helsinki, FINLAND
The product has been tested according to standard(s)	IEC 60383-1:1993 and IEC 61211:1994
Date of tests	27.2. – 19.4.2002
Test results	This certificate is based on testing carried out by HUTVTT. The results are shown in Test Report No.2002hv10 consisting of 9 Pages + 14 Appendixes.

The product, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with the complete type test requirements of IEC 383-1:1993 and IEC 61211:1994.

The results are shown in the record of proving tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above standards and to justify the ratings assigned by the manufacturer listed on sheet 2 of Test Report.

This Certificate and Record of Proving Tests applies only to the specific piece of product tested from the particular place of manufacture. The responsibility for conformity of any product having the same designation with that tested rests with the manufacturer at the place of manufacture of that product.

Date of issue	27 May 2002
	SGS Fimko Ltd
Signature	Osmo Väyrynen Laboratory Manager

12 5 02

Helsinki University of Technology (Finland)

Test report No. 2002hv10 1 (9)
27.02.2002–19.04.2002
Standards: IEC 60383-1 (1993) and IEC 61211 (1994)

HELSINKI UNIVERSITY OF TECHNOLOGY
High Voltage Institute

TEST REPORT No. 2002hv10 1 (9)

Object:	Glass suspension insulators (cap and pin type)
Designation:	U40B
Manufacturer:	Yuzhno-Uralsk Insulators and Fitting Plant (YuAIZ) Zavodskaya St., Yuzhno-Uralsk Chelyabinsk Region, 457040 Russia
Tested for:	JERAMAT OY, Helsinki, Finland
Tests:	Type, sample and routine tests.
Standards:	IEC 60383-1 (1993) and IEC 61211 (1994)
Testing dates:	27.2. – 19.4. 2002

SUMMARY

Glass suspension insulator units U40B were subjected to type, sample and routine tests according to the test program on the page 2.
All the tests as required by the test specification have been carried out with the satisfactory results.
All assessments criteria have been fulfilled.
More details of the tests performed are given in the enclosed tables and graphs.

Espoo 26.4.2002
HELSINKI UNIVERSITY OF TECHNOLOGY
High Voltage Institute

Marja-Leena Pykälä, Researcher
Arja Hokkanen, Operations Engineer

Appendices 1 to 14, 16 pages

This report shall not be reproduced, except in full, without the written approval of the laboratory, Helsinki University of Technology (HUT).

HV glass suspension insulators of U70BS and U70BL type

SGS Fimko Ltd. (Finland)

Certificate of type tests No. 18435
27.02.2002–19.04.2002
The product has been tested according to standards
IEC 60383-1:1993 and IEC 61211:1994

SGS Fimko Ltd

Our ref. 223801-4

CERTIFICATE OF TYPE TESTS 18435

Product	Glass suspension insulator (cap and pin type)
Type	U70B
Trade mark	YuAIZ
Certificate Holder/ Manufacturer	Yuzhno-Uralsk Insulators and Fitting Plant (YuAIZ) Zavodskaya St., Yuzhno-Uralsk Chelyabinsk Region, 457040 RUSSIA
Tested for	Jeramat Oy, Helsinki, FINLAND
The product has been tested according to standard(s)	IEC 60383-1:1993 and IEC 61211:1994
Date of tests	27.2. – 19.4.2002
Test results	This certificate is based on testing carried out by HUTVTT. The results are shown in Test Report No.2002hv11consisting of 9 Pages + 14 Appendixes.

The product, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with the complete type test requirements of IEC 383-1:1993 and IEC 61211:1994.

The results are shown in the record of proving tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above standards and to justify the ratings assigned by the manufacturer listed on sheet 2 of Test Report.

This Certificate and Record of Proving Tests applies only to the specific piece of product tested from the particular place of manufacture. The responsibility for conformity of any product having the same designation with that tested rests with the manufacturer at the place of manufacture of that product.

Date of issue	27 May 2002
	SGS Fimko Ltd
Signature	Osmo Väyrynen Laboratory Manager

12 5 02

High-Voltage Laboratory of KEMA (the Netherlands)

Type test certificate of complete type test No. 03-1237
03.11.2003–14.11.2003
The object has been subjected to the series of proving tests in accordance with IEC 60383-1

KEMA

03-1237

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

OBJECT	toughened glass suspension insulator (cap and pin type)
DESIGNATION	U70BL
MANUFACTURER	J.S.C. "YUZHNOURALSKI INSULATORS AND FITTINGS PLANT" 457040 - Yuzhnouralsk - Chelyabinsk region - Russia
TESTED FOR	J.S.C. "YUZHNOURALSKI INSULATORS AND FITTINGS PLANT" 457040 - Yuzhnouralsk - Chelyabinsk region - Russia
DATE OF TESTS	3 until 14 November 2003
TESTED BY	KEMA HIGH-VOLTAGE LABORATORY Utrechtseweg 310 - 6812 AR Arnhem - the Netherlands

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

IEC 60383-1

This Type Test Certification has been issued by KEMA following exclusively the STL guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 1.

The Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the manufacturer.

This Certificate comprises 40 sheets in total.

Only integral reproduction of this Certificate, or reproductions of this page accompanied by any page(s) on which are stated the endorsed ratings of the object tested, are permitted without written permission from KEMA.
Electronic copies in e.g. PDF-format or scanned version of this Certificate may be available and have the status "for information only". The sealed and bound version of the Certificate is the only valid version.

KEMA Nederland B.V.

S.A.M. Verhoeven

Arnhem, 14 January 2004

HV glass suspension insulator of U120B type

High-Voltage Laboratory of KEMA (the Netherlands)

Type test certificate of complete type test No. 03-1238. 03.11.2003—14.11.2003
The object has been subjected to the series of proving tests in accordance with IEC 60383-1

KEMA
03-1238

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

IEC 60383-1

SGS Fimko Ltd. (Finland)

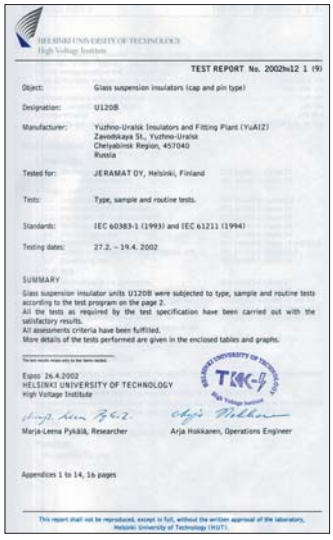
Certificate of type tests No. 18433
27.02.2002—19.04.2002
The product has been tested according to standards IEC 60383-1:1993 and IEC 61211:1994

SGS Fimko Ltd

CERTIFICATE OF TYPE TESTS 18433

Helsinki University of Technology (Finland)

Test report No. 2002hv12 1 (9)
27.02.2002—19.04.2002
Standards: IEC 60383-1 (1993) and IEC 61211 (1994)



TEST REPORT No. 2002hv12 1 (9)

SUMMARY

HV glass suspension insulator of U160BL type

High-Voltage Laboratory of KEMA (the Netherlands)

Type test certificate of complete type test No. 03-1239
03.11.2003—14.11.2003
The object has been subjected to the series of proving tests in accordance with IEC 60383-1

KEMA
03-1239

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

IEC 60383-1

High-Voltage Laboratory of KEMA (the Netherlands)

Test report No. 70670213-HVL 06-1326
16.11.2006—17.11.2006
The object has been subjected to the series of proving tests in accordance with IEC 61211 (2004)

KEMA

TEST REPORT

HV glass suspension insulator of U210B type

SGS Fimko Ltd. (Finland)

Certificate of type tests No. 18432
27.02.2002–19.04.2002
The product has been tested according to standards
IEC 60383-1:1993 and IEC 61211:1994

SGS Fimko Ltd

Our ref. 223801-1

CERTIFICATE OF TYPE TESTS 18432

Product	Glass suspension insulator (cap and pin type)
Type	U210B
Trade mark	YuAIZ
Certificate Holder/ Manufacturer	Yuzhno-Uralsk Insulators and Fitting Plant (YuAIZ) Zavodskaya St., Yuzhno-Uralsk Chelyabinsk Region, 457040 RUSSIA
Tested for	Jeramat Oy, Helsinki, FINLAND
The product has been tested according to standard(s)	IEC 60383-1:1993 and IEC 61211:1994
Date of tests	27.2. – 19.4.2002
Test results	This certificate is based on testing carried out by HUT/VTT. The results are shown in Test Report No.2002hv13 consisting of 9 Pages + 14 Appendixes.

The product, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with the complete type test requirements of IEC 383-1:1993 and IEC 61211:1994.

The results are shown in the record of proving tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above standards and to justify the ratings assigned by the manufacturer listed on sheet 2 of Test Report.

This Certificate and Record of Proving Tests applies only to the specific piece of product tested from the particular place of manufacture. The responsibility for conformity of any product having the same designation with that tested rests with the manufacturer at the place of manufacture of that product.

Date of issue: 27 May 2002

SGS Fimko Ltd

Signature: Osmo Vikyrkänä, Laboratory Manager

22 5 02

Helsinki University of Technology (Finland)

Test report No. 2002hv13 1 (9)
27.02.2002–19.04.2002
Standards: IEC 60383-1 (1993) and IEC 61211 (1994)

HELSINKI UNIVERSITY OF TECHNOLOGY
High Voltage Institute

TEST REPORT No. 2002hv13 1 (9)

Object:	Glass suspension insulators (cap and pin type)
Designation:	U210B
Manufacturer:	Yuzhno-Uralsk Insulators and Fitting Plant (YuAIZ) Zavodskaya St., Yuzhno-Uralsk Chelyabinsk Region, 457040 Russia
Tested for:	JERAMAT OY, Helsinki, Finland
Tests:	Type, sample and routine tests.
Standards:	IEC 60383-1 (1993) and IEC 61211 (1994)
Testing dates:	27.2. – 19.4. 2002

SUMMARY

Glass suspension insulator units U210B were subjected to type, sample and routine tests according to the test program on the page 2.
All the tests as required by the test specification have been carried out with the satisfactory results.
All assessments criteria have been fulfilled.
More details of the tests performed are given in the enclosed tables and graphs.

The test results relate only to the items tested.

Espoo 26.4.2002
HELSINKI UNIVERSITY OF TECHNOLOGY
High Voltage Institute

Marja-Leena Pykälä, Researcher — Arja Hokkanen, Operations Engineer

Appendices 1 to 14, 16 pages

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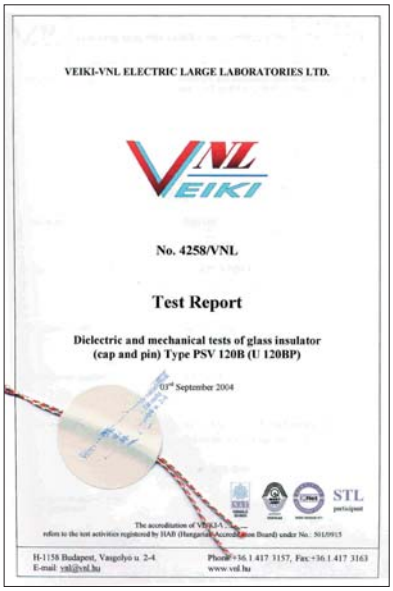
HV glass suspension insulator of U120BP type

VEIKI-VNL Electric Large Laboratories Ltd. (Hungary)

Test report No. 4258/VNL
21.06.2004–02.07.2004
Dielectric and mechanical tests



VEIKI-VNL ELECTRIC LARGE LABORATORIES LTD.

VNL VEIKI

No. 4258/VNL

Test Report

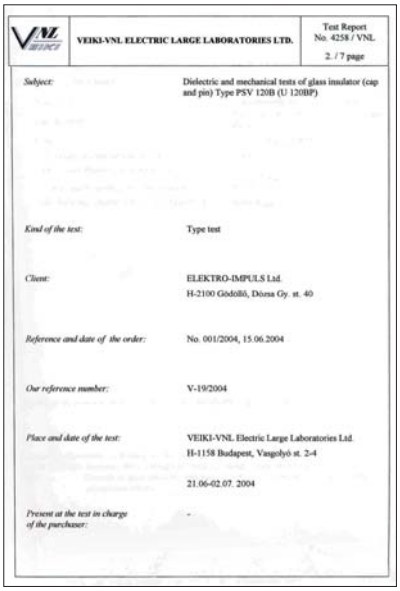
Dielectric and mechanical tests of glass insulator (cap and pin) Type PSV 120B (U 120BP)

01st September 2004

STL participant

The accreditation of VNL Ltd. refers to the test activities registered by HAB (Hungarian Accreditation Board) under No.: NM0915

H-1158 Budapest, Vasgolyó u. 2-4
E-mail: vnl@vnl.hu
Phone: +36 1 417 3157, Fax: +36 1 417 3163
www.vnl.hu



VNL VEIKI-VNL ELECTRIC LARGE LABORATORIES LTD. Test Report No. 4258 / VNL 2. / 7 page

Subject:	Dielectric and mechanical tests of glass insulator (cap and pin) Type PSV 120B (U 120BP)
Kind of the test:	Type test
Client:	ELEKTRO-IMPULS Ltd. H-2100 Gödöllő, Dózsa Gy. st. 40
Reference and date of the order:	No. 001/2004, 15.06.2004
Our reference number:	V-19/2004
Place and date of the test:	VEIKI-VNL Electric Large Laboratories Ltd. H-1158 Budapest, Vasgolyó st. 2-4 21.06-02.07. 2004
Present at the test in charge of the purchaser:	-

HV glass suspension insulator of U160BLP type

High-Voltage Laboratory of KEMA (the Netherlands)

Test report No. 70370158.000-HVL 03-1240
11.11.2003
The requirements as specified in the standard IEC 60383-1 (1993)

KEMA

TEST REPORT

Report no. 70370158.000-HVL 03-1240
Client J.S.C. "Yuzhnouralski insulators and fittings plant" 457040, Yuzhnouralsk, Chelyabinsk region, Russia
Reference Contract KEMA 70370158-TDT-HVL 03-35689A dated 1 September 2003
Concerning tests
Date 11 November 2003
Place KEMA High-Voltage Laboratory, Arnhem, the Netherlands
Object toughened glass suspension insulator (cap and pin type)
Type U160BLP (anti-fog type)
Manufacturer same as client

REQUIREMENTS
The requirements as specified in the standard IEC 61383-1(1993).

TEST PROGRAMME
The programme was specified by the client and was as follows:
1 Type tests according to IEC 60383-1 (1993)
1.1 Dry lightning impulse withstand voltage test on a standard short string of 5 insulators in accordance with clause 13 of the above mentioned standard
1.2 Wet power-frequency withstand voltage tests on a standard short string of 5 insulators and on a single insulator in accordance with clause 14 of the above mentioned standard
2 Special tests (electrical) according to client's specifications based on IEC 61383-2 (1993)
2.1 Wet switching impulse withstand voltage test in accordance with clause 11 of the above mentioned standard

SUMMARY AND CONCLUSION
The results obtained relate only to the work ordered and to the material tested.
The tests were passed.

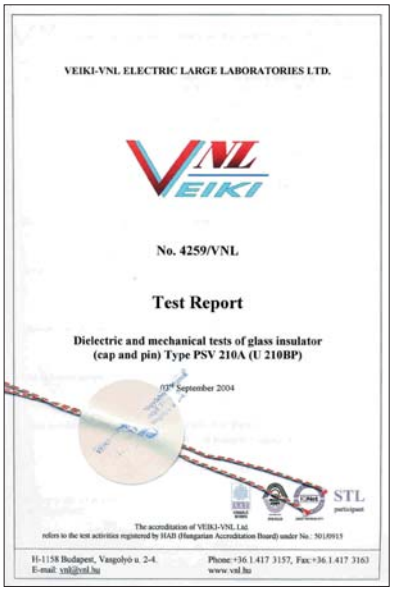
Author P.H.W. Kuijpers
KEMA Nederland B.V.
S.A.M. Vorhoeven
KEMA High-Voltage Laboratory
Arnhem, 14 January 2004

This B-report consists of:
13 pages
1 appendix

HV glass suspension insulator of U210BP type

VEIKI-VNL Electric Large Laboratories Ltd. (Hungary)

Test report No. 4259/VNL
21.06.2004–02.07.2004
Dielectric and mechanical tests



VEIKI-VNL ELECTRIC LARGE LABORATORIES LTD.

VNL VEIKI

No. 4259/VNL

Test Report

Dielectric and mechanical tests of glass insulator (cap and pin) Type PSV 210A (U 210BP)

03rd September 2004

STL participant

The accreditation of VEIKI-VNL Ltd. refers to the test activities registered by HAB (Hungarian Accreditation Board) under No.: NO-0915

H-1158 Budapest, Vasgolyó u. 2-4.
E-mail: vnl@vnl.hu
Phone:+36 1 417 3157, Fax:+36 1 417 3163
www.vnl.hu

VEIKI-VNL ELECTRIC LARGE LABORATORIES LTD.

Test Report No. 4259 / VNL
2. / 7 page

Subject:	Dielectric and mechanical tests of glass insulator (cap and pin) Type PSV 210A (U 210BP)
Kind of the test:	Type test
Client:	ELEKTRO-IMPULS Ltd. H-2100 Gödöllő, Dózsa Gy. st. 40
Reference and date of the order:	No. 001/2004, 15.06.2004
Our reference number:	V-19/2004
Place and date of the test:	VEIKI-VNL Electric Large Laboratories Ltd. H-1158 Budapest, Vasgolyó st. 2-4 21.06-02.07. 2004
Present at the test in charge of the purchaser:	-

HV glass suspension insulator of 52-3 type

High-Voltage Laboratory of KEMA (the Netherlands)

Type test certificate of complete type test No. 07-1048
23.07.2007–14.09.2007
The object has been subjected to the series of proving tests in accordance with ANSI C 29.2

KEMA 07-1048

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

OBJECT Toughened glass suspension insulator

TYPE ANSI Class 52-3

MANUFACTURER JSC Yzhnouralsky Insulators and Fittings Plant, Yuzhnouralsk, Russia

CLIENT Global Insulator Group Ekaterinburg, Russia

TESTED BY KEMA HIGH-VOLTAGE LABORATORY Arnhem, the Netherlands

DATES OF TESTS 23 July 2007 till 14 September 2007

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

ANSI C29.2

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 3.

The Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 20 sheets in total.

KEMA Nederland B.V.

KEMA T&D Testing Services
Managing Director

Arnhem, 4 December 2007

HV glass suspension insulator of 52-5 type

High-Voltage Laboratory of KEMA (the Netherlands)

Type test certificate of complete type test No. 08-1029
10.04.2008–24.04.2008
The object has been subjected to the series of proving tests in accordance with ANSI C 29.2

KEMA 08-1029

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

OBJECT Toughened glass suspension insulator

TYPE ANSI Class 52-5

MANUFACTURER JSC Yzhnouralsky Insulators and Fittings Plant, Yuzhnouralsky, Russia

CLIENT Global Insulator Group Ekaterinburg, Russia

TESTED BY KEMA HIGH-VOLTAGE LABORATORY Arnhem, the Netherlands

DATE OF TESTS 10 April 2008 until 24 April 2008

The object, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

ANSI C29.2

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 3.

The Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 21 pages in total.

KEMA Nederland B.V.

KEMA T&D Testing Services
Managing Director

Arnhem, 27 June 2008

HV glass suspension insulator of 52-8 type

High-Voltage Laboratory of KEMA (the Netherlands)

Type test certificate of complete type test No. 07-1035
23.07.2007–14.09.2007
The object has been subjected to the series of proving tests in accordance with ANSI C 29.2

KEMA 07-1035

TYPE TEST CERTIFICATE OF COMPLETE TYPE TEST

OBJECT Toughened glass suspension insulator

TYPE ANSI Class 52-8

MANUFACTURER JSC Yzhnouralsky Insulators and Fittings Plant, Yuzhnouralsk, Russia

CLIENT Global Insulator Group Ekaterinburg, Russia

TESTED BY KEMA HIGH-VOLTAGE LABORATORY Arnhem, the Netherlands

DATES OF TESTS 23 July 2007 till 14 September 2007

The apparatus, constructed in accordance with the description, drawings and photographs incorporated in this Certificate, has been subjected to the series of proving tests in accordance with

ANSI C29.2

This Type Test Certificate has been issued by KEMA following exclusively the STL Guides.

The results are shown in the record of Proving Tests and the oscillograms attached hereto. The values obtained and the general performance are considered to comply with the above Standard and to justify the ratings assigned by the manufacturer as listed on page 3.

The Certificate applies only to the object tested. The responsibility for conformity of any object having the same designations with that tested rests with the Manufacturer.

This Certificate consists of 20 sheets in total.

KEMA Nederland B.V.

KEMA T&D Testing Services
Managing Director

Arnhem, 27 September 2007

HV glass suspension insulator of U40B type

Helsinki University of Technology (Finland)

Test report No. 2003hv05 1 (5)
06.03.2003–28.03.2003
Standards: IEC 60383-1 (1993) and IEC 61211 (1994)

HELSINKI UNIVERSITY OF TECHNOLOGY
High Voltage Institute

TEST REPORT No. 2003hv05 1 (5)

Requested by: ENSTO Utility Networks
P.O. Box 51
FIN-06101 PORVOO
Finland

Object: Glass suspension insulators (cap and pin type)

Designation: U40B

Manufacturer: Lviv Insulator Plant
301, Zelena str, Lviv, 79066 Ukraine

Tests: Type tests

Standards: IEC 60383-1 (1993) and IEC 61211 (1994)

Testing dates: 3. - 6.3, 14.3. and 28.3.2003

SUMMARY

Glass suspension insulator units U40B were subjected to type tests according to the test program on the page 2.
All the tests as required by the test specification have been carried out with the satisfactory results.
More details of the tests performed are given in the enclosed tables and graphs.

Espoo 03.04.2003
HELSINKI UNIVERSITY OF TECHNOLOGY
High Voltage Institute

Marja-Leena Pykäläi, Researcher — Arja Hokkanen, Operations Engineer

Appendices 1 to 7, 9 pages

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HV glass suspension insulator of U70BL type

Helsinki University of Technology (Finland)

Test report No. 2002hv21 1 (7)
24.04.2002–17.05.2002
Standards: IEC 60383-1 (1993) and IEC 61211 (1994)

HELSINKI UNIVERSITY OF TECHNOLOGY
High Voltage Institute

TEST REPORT No. 2002hv21 1 (7)

Requested by: ENSTO SEKKO OY
PL 51
FIN-06101 PORVOO
Finland

Object: Glass suspension insulators (cap and pin type)

Designation: U70BL

Manufacturer: Lviv Insulator Plant
301, Zelena str, Lviv, 79066 Ukraine

Tests: Type tests

Standards: IEC 60383-1 (1993) and IEC 61211 (1994)

Testing dates: 24.4. – 17.5. 2002

SUMMARY

Glass suspension insulator units U70BL were subjected to type tests according to the test program on the page 2.
All the tests as required by the test specification have been carried out with the satisfactory results.
More details of the tests performed are given in the enclosed tables and graphs.

Espoo 20.5.2002
HELSINKI UNIVERSITY OF TECHNOLOGY
High Voltage Institute

Marja-Leena Pykäläi, Researcher — Arja Hokkanen, Operations Engineer

Appendices 1 to 8, 10 pages

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HV glass suspension insulator of U120B type

High-Voltage Laboratory of KEMA (the Netherlands)

Test report No. 70570059-HVL 05-1328
04.11.2005
The requirements as specified in the standard IEC 61211 (2004)

KEMA

TEST REPORT

Report no. 70570059-HVL 05-1328
Client Lviv Insulator Company (LIC) Ltd.
Lviv, Ukraine

Reference

Concerning test
Date 4 July until 13 August 2005
Place KEMA High-Voltage Laboratory, Arnhem, the Netherlands
Object 120 kN toughened glass suspension insulator (ball and socket type)
Type U 120B
Manufacturer Lviv Insulator Company (LIC) Ltd., Lviv, Ukraine

REQUIREMENTS
The requirements as specified in the standard IEC 61211 (2004) and as per client's specification.

TEST PROGRAMME
The programme was specified by the client and was as follows:
1 Power arc test and followed by mechanical failing load test (client's instructions)
2 Steep front of wave test (IEC 61211 (2004))

SUMMARY AND CONCLUSION
The results obtained relate only to the work ordered and to the material tested.
The tests were passed.

Author P.J. Holtenberg

KEMA Nederland B.V.
P.G.A. Bos
KEMA T&D Testing Services
Managing Director

This report consists of:
16 pages
2 appendices

Arnhem, 4 November 2005

Packet with crates

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

For packing manufacture the "screw-ringed" nails are used. They 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 strech-tape in a few layers to strengthen it for transport to the consumer.

Lath packet

Sea package (SP)

Universal package (UP)

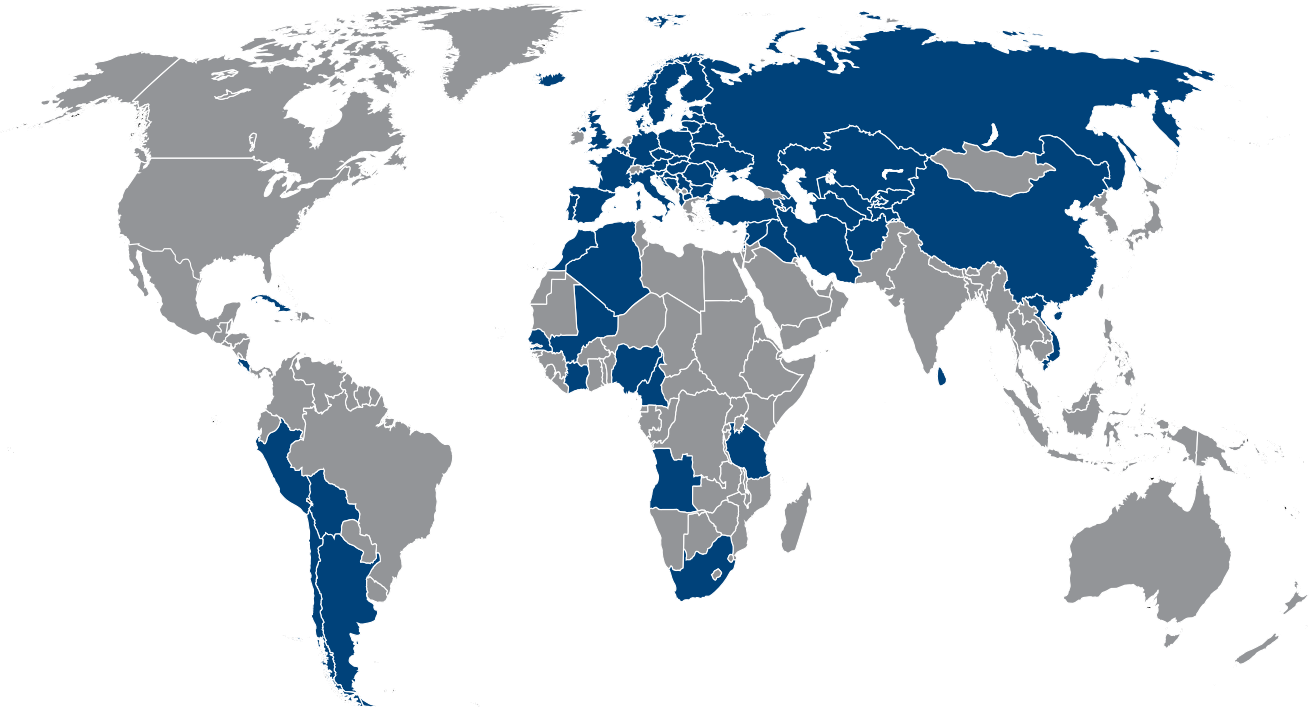
Wooden crate

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

Package with boxes (PB)

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 under ultraviolet exploration or dust. The impact of these factors on the packaging material does not reduce its mechanical strength.



Afghanistan
Albania
Algeria
Angola
Argentina
Austria
Belgium
Bolivia
Bosnia and Herzegovina
Bulgaria
Cameroon
Chile
China
CIS Countries
- Armenia
- Azerbaijan
- Belarus
- Kazakhstan
- Kyrgyzstan
- Moldova
- Tajikistan
- Turkmenistan
- Ukraine
- Uzbekistan

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Croatia
Cuba
Czechia
Denmark
Estonia
Finland
France
Germany
Great Britain
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Latvia
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Lithuania
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Global Insulator Group (Sales Department)
13/10, Novokonstantinovskaya, Kiev, 04080, Ukraine
phone/fax +38-044-206-56-51, +38-044-206-56-53
e-mail: ved@gig-group.com, puchkov@gig-group.com, www.gig-group.com

EU GIG OÜ
6-210, Katusepapi, Tallinn, 11412, Estonia
phone +372-622-8118, fax+372-622-8119
e-mail: info@eugig.eu, alex@eugig.eu

JSC "Yuzhnouralsky Insulators and Fittings Plant"
1, Zavodskaya, Yuzhnouralsk, Chelyabinsk region, 457040, Russia
phone +7-35134-9-85-64, fax +7-35134-4-27-92
e-mail: aiz@aiz.ru, www.aiz.ru

Lviv Insulator Company Ltd.
301, Zelena, Lviv, 79066, Ukraine
phone/fax +38-032-240-42-50, +38-032-241-99-47
e-mail: info@energyglass.com.ua, www.energyglass.com.ua