

INSULATORS







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INTRODUCTION

GENERAL PURPOSE

Supporting type insulators are intended for use as carrying elements for busbar rails in various kind of substations especially in cubicles. They can also be used as carrying elements for connectors, winding connections for transformers and electric motors. Because of epoxy resin characteristics, they are able to work in all exploitation conditions including tropical, especially in places where insulators must be resistant to humidity, chemical influences, impulse voltages and breaking forces. Because of those attributes they are suitable for appliance in mines, chemical industry and ships substations.

DESCRIPTION

Supporting type insulators have been made of epoxy resin as basic insulation, whose temperature class is B (maximal temperature 125°C when maximal ambient temperature does not exceed 40°C). Moulding parts have been made of brass and they are resistant to chemical influences.

According to permissible breaking force, there are three types of supporting-type insulators: class A (3.75 kN), class B (7.5 kN) and class C (12.5 kN). Detailed technical characteristics for each type of insulator have been given separately in the table beside each type of insulator.

MOUNTING

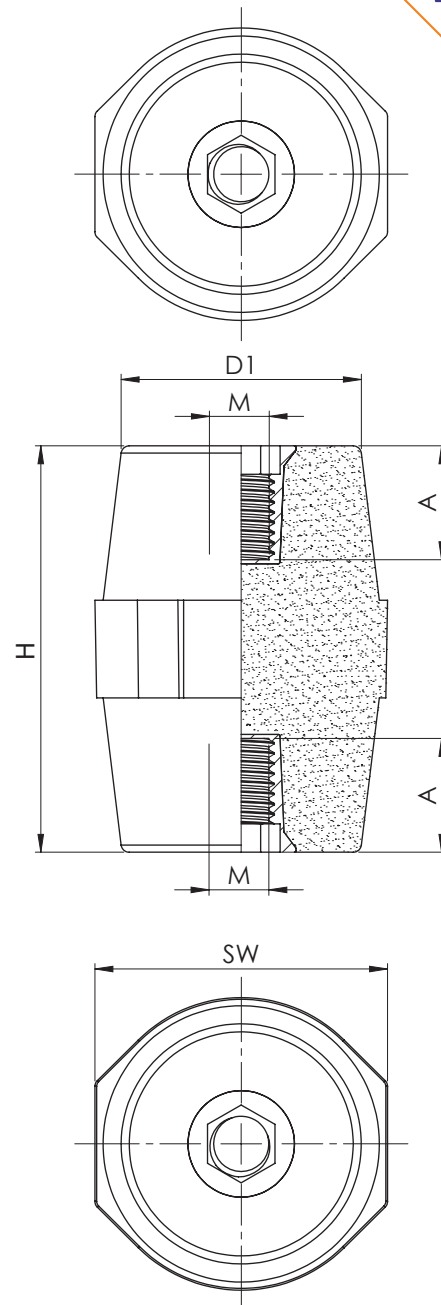
Insulators mounting is performed with moulding parts (cocoons) and fastening screws. During mounting, pay attention on the fasteners tightening, because if they have been tightened more than it is allowed fastening screw or insulator may break.

MAINTENANCE

For insulators special maintaining is not necessary during exploitation. It is enough, during regular annual maintenance, to check if all connection are clean and well tightened, to clean the insulator if it is dirty, and to tight fastening screws for mounting and connections, especially if insulator had been built-in in machines whose work have been followed by great vibrations.

OK/S*Low voltage supporting type insulators **OK/S***

Type	Dimensions (mm)							Package (pcs.)
	H	SW	D1	Um (V)	M	A	F (kN)	
OK/S 3030 – M6	30	30	26	600	M6	8	1.25	80
OK/S 3030 – M8	30	30	26	600	M8	7	1.25	80
OK/S 3235 – M6	35	32	28	1000	M6	9	2.25	64
OK/S 3235 – M8	35	32	28	1000	M8	10	2.25	64
OK/S 3235 – M10	35	32	28	1000	M10	10	2.25	64
OK/S 4135 – M6	35	41	35	1000	M6	9	4	36
OK/S 4135 – M8	35	41	35	1000	M8	9	4	36
OK/S 4135 – M10	35	41	35	1000	M10	10	4	36
OK/S 4040 – M8	40	40	30	1000	M8	11	4	100
OK/S 4040 – M10	40	40	30	1000	M10	12	4	100
OK/S 4040 – M12	40	40	30	1000	M12	10	4	100
OK/S 4145 – M6	45	41	35	1500	M6	12	4	27
OK/S 4145 – M8	45	41	35	1500	M8	12	4	27
OK/S 4145 – M10	45	41	35	1500	M10	12	4	27
OK/S 4145 – M12	45	41	35	1500	M12	12	4	27
OK/S 3650 – M8	50	36	29	2000	M8	12	2.25	36
OK/S 3650 – M10	50	36	29	2000	M10	12	2.25	36
OK/S 3650 – M12	50	36	29	2000	M12	13	2.25	36
OK/S 5560 – M8	60	55	40	2000	M8	20	3.5	25
OK/S 5560 – M10	60	55	40	2000	M10	21	3.5	25
OK/S 5560 – M12	60	55	40	2000	M12	20	3.5	25
OK/S 4165 – M8	65	41	35	3000	M8	17	3.5	22
OK/S 4165 – M10	65	41	35	3000	M10	19	3.5	22
OK/S 4165 – M12	65	41	35	3000	M12	19	3.5	22
OK/S 5070 – M8	70	50	36	5000	M8	19	4.5	12
OK/S 5070 – M10	70	50	36	5000	M10	19	4.5	12
OK/S 5070 – M12	70	50	36	5000	M12	19	4.5	12
OK/S 6575 – M12	75	65	52	5000	M12	18	7.5	8
OK/S 6575 – M16	75	65	52	5000	M16	23	7.5	8

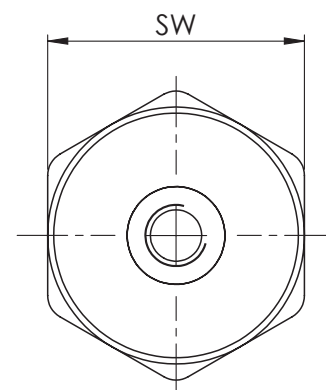
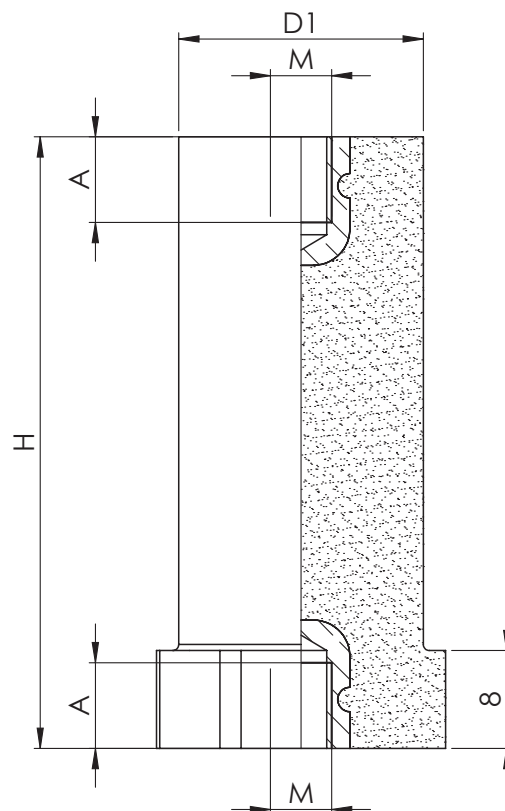


TECHNICAL DATA	OK/S*
Colour	Brown
Standard	IEC 60273:1990; IEC 60660:1999
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin

NOTE:

The insulators of type OK/S have excellent electrical and mechanical characteristics and can be used under extreme working conditions such as high room temperatures, also when in contact with corrosive substances, vibrations...

The hexagon, arranged middle layer with two facing sides, facilitates the connection and locking in place the insulator. Epoxy resin is much healthier than similar materials such as polyglass-polyester and it is safer for people.

OK/D 21*Low voltage supporting type insulators **OK/D 21***

Type	Dimensions (mm)							Package (pcs.)
	H	SW	D1	Um (V)	M	A	F (kN)	
OK/D 2116 – M4	16	21	20	220	M4	4	3	200
OK/D 2116 – M5	16	21	20	220	M5	4	3	200
OK/D 2116 – M6	16	21	20	220	M6	4	3	100
OK/D 2116 – M8	16	21	20	220	M8	4	3	150
OK/D 2120 – M5	20	21	20	400	M5	5	2.5	200
OK/D 2120 – M6	20	21	20	400	M6	5	2.5	100
OK/D 2120 – M8	20	21	20	400	M8	5	2.5	200
OK/D 2125 – M5	25	21	20	500	M5	6	2	150
OK/D 2125 – M6	25	21	20	500	M6	6	2	150
OK/D 2125 – M8	25	21	20	500	M8	6	2	150
OK/D 2130 – M5	30	21	20	600	M5	7	2	140
OK/D 2130 – M6	30	21	20	600	M6	7	2	140
OK/D 2130 – M8	30	21	20	600	M8	7	2	140
OK/D 2135 – M6	35	21	20	600	M6	7	1.5	120
OK/D 2140 – M6	40	21	20	600	M6	9	1.5	110
OK/D 2140 – M8	40	21	20	600	M8	10	1.5	110
OK/D 2145 – M6	45	21	20	750	M6	9	1	100
OK/D 2145 – M8	45	21	20	750	M8	10	1	100
OK/D 2150 – M6	50	21	20	750	M6	10	1	80
OK/D 2150 – M8	50	21	20	750	M8	10	1	80
OK/D 2160 – M6	60	21	20	750	M6	9	1	70
OK/D 2160 – M8	60	21	20	750	M8	9	1	70

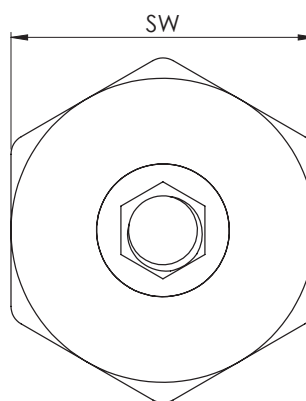
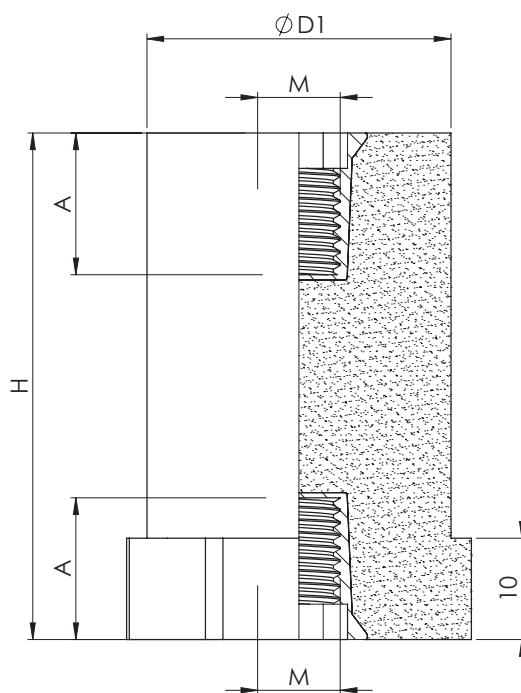
TECHNICAL DATA	OK/D 21*
Colour	Brown
Standard	IEC 60273:1990; IEC 60660:1999
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin

NOTE:

The insulators of type OK/D 21 are unbreakable and have excellent electrical and mechanical characteristics and can be used under extreme working conditions such as high room temperatures, also when in contact with corrosive substances, vibrations...

The hexagon is on one side for locking in place the insulator. Epoxy resin is much healthier than similar materials such as polyglass-polyester and it is safer for people.

OK/D 30*

Low voltage supporting type insulators **OK/D 30***

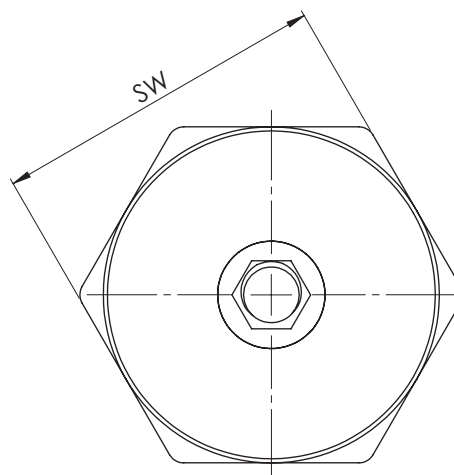
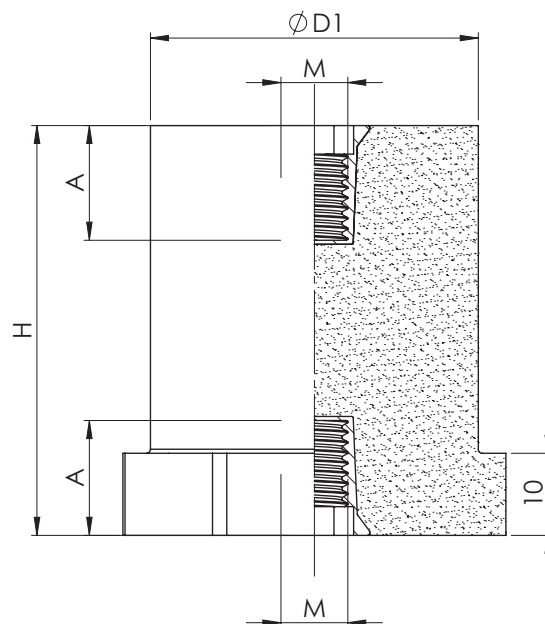
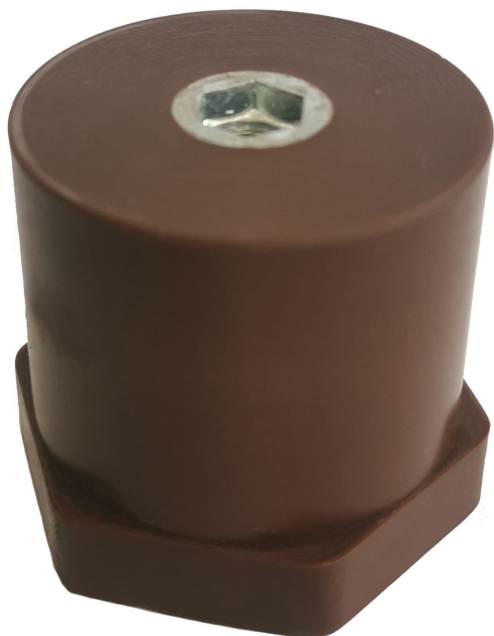
Type	Dimensions (mm)							Package (pcs.)
	H	SW	D1	Um (V)	M	A	F (kN)	
OK/D 3030 – M6	30	30	30	750	M6	9	4.5	80
OK/D 3030 – M8	30	30	30	750	M8	9	4.5	80
OK/D 3030 – M10	30	30	30	750	M10	9	4.5	80
OK/D 3035 – M6	35	30	30	1000	M6	9	4.5	64
OK/D 3035 – M8	35	30	30	1000	M8	9	4.5	64
OK/D 3035 – M10	35	30	30	1000	M10	9	4.5	64
OK/D 3040 – M6	40	30	30	1000	M6	12	3	60
OK/D 3040 – M8	40	30	30	1000	M8	12	3	60
OK/D 3040 – M10	40	30	30	1000	M10	12	3	60
OK/D 3045 – M6	45	30	30	1000	M6	12	2.5	48
OK/D 3045 – M8	45	30	30	1000	M8	12	2.5	48
OK/D 3045 – M10	45	30	30	1000	M10	13	2.5	48
OK/D 3050 – M6	50	30	30	1500	M6	12	2	48
OK/D 3050 – M8	50	30	30	1500	M8	13	2	48
OK/D 3050 – M10	50	30	30	1500	M10	12	2	48
OK/D 3055 – M6	55	30	30	1500	M6	12	1.5	40
OK/D 3055 – M8	55	30	30	1500	M8	11	1.5	40
OK/D 3060 – M6	60	30	30	1500	M6	12	1.5	40
OK/D 3060 – M8	60	30	30	1500	M8	16	1.5	40
OK/D 3060 – M10	60	30	30	1500	M10	20	1.5	40
OK/D 3065 – M8	65	30	30	1500	M8	18	1	32
OK/D 3070 – M6	70	30	30	1500	M6	14	1	32
OK/D 3070 – M8	70	30	30	1500	M8	18	1	32
OK/D 3070 – M10	70	30	30	1500	M10	18	1	32

TECHNICAL DATA	OK/D 30*
Colour	Brown
Standard	IEC 60273:1990; IEC 60660:1999
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin

NOTE:

The insulators of type OK/D 30* are unbreakable and have excellent electrical and mechanical characteristics and can be used under extreme working conditions such as high room temperatures, also when in contact with corrosive substances, vibrations...

The hexagon is on one side for locking in place the insulator. Epoxy resin is much healthier than similar materials such as polyglass-polyester and it is safer for people.

OK/D 41*Low voltage supporting type insulators **OK/D 41***

Type	Dimensions (mm)							Package (pcs.)
	H	SW	D1	Um (V)	M	A	F (kN)	
OK/D 4130 – M8	30	41	40	750	M8	8	7.5	45
OK/D 4130 – M10	30	41	40	750	M10	9	7.5	45
OK/D 4135 – M8	35	41	40	750	M8	9	7	36
OK/D 4135 – M10	35	41	40	750	M10	9	7	36
OK/D 4140 – M8	40	41	40	1000	M8	12	7	27
OK/D 4140 – M10	40	41	40	1000	M10	12	7	27
OK/D 4140 – M12	40	41	40	1000	M12	12	7	27
OK/D 4145 – M8	45	41	40	1000	M8	13	7	27
OK/D 4145 – M10	45	41	40	1000	M10	12	7	27
OK/D 4150 – M8	50	41	40	1500	M8	12	5	27
OK/D 4150 – M10	50	41	40	1500	M10	13	5	27
OK/D 4150 – M12	50	41	40	1500	M12	11	5	27
OK/D 4155 – M10	55	41	40	1500	M10	12	4	18
OK/D 4160 – M8	60	41	40	1500	M8	18	3.5	18
OK/D 4160 – M10	60	41	40	1500	M10	18	3.5	18
OK/D 4160 – M12	60	41	40	1500	M12	18	3.5	18
OK/D 4165 – M10	65	41	40	1500	M10	18	3.5	18
OK/D 4170 – M8	70	41	40	1500	M8	18	3	18
OK/D 4170 – M10	70	41	40	1500	M10	18	3	18

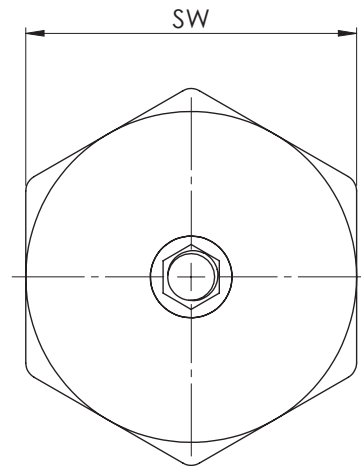
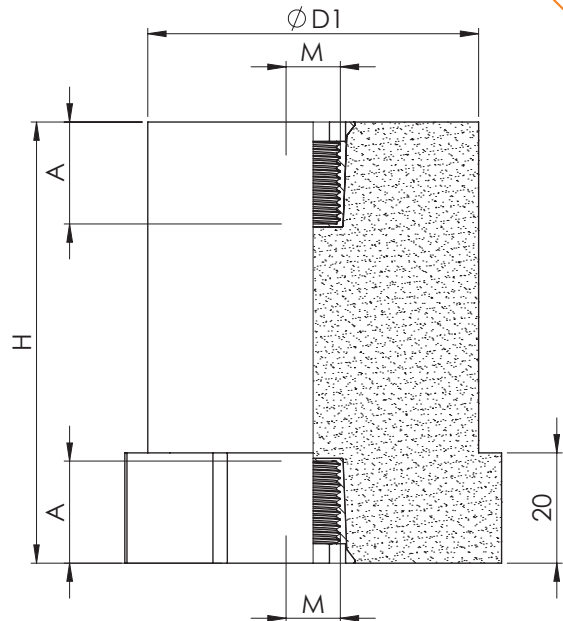
TECHNICAL DATA	OK/D 41*
Colour	Brown
Standard	IEC 60273:1990; IEC 60660:1999
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin

NOTE:

The insulators of type OK/D 41* are unbreakable and have excellent electrical and mechanical characteristics and can be used under extreme working conditions such as high room temperatures, also when in contact with corrosive substances, vibrations...

The hexagon is on one side for locking in place the insulator. Epoxy resin is much healthier than similar materials such as polyglass-polyester and it is safer for people.

OK/D 60*



Low voltage supporting type insulators OK/D 60*

Type	Dimensions (mm)					Um (V)	F (kN)	Package (pcs.)
	H	SW	D1	A	M			
OK/D 6040 – M10	40	60	60	11	M10	1500	7	12
OK/D 6040 – M12	40	60	60	11	M12	1500	7	12
OK/D 6040 – M16	40	60	60	12	M16	1500	7	12
OK/D 6060 – M10	60	60	60	18	M10	3000	5	10
OK/D 6060 – M12	60	60	60	18	M12	3000	5	10
OK/D 6060 – M16	60	60	60	19	M16	3000	5	10
OK/D 6080 – M10	80	60	60	19	M10	5000	9	8
OK/D 6080 – M12	80	60	60	19	M12	5000	9	8
OK/D 6080 – M16	80	60	60	23	M16	5000	9	8
OK/D 60100 – M10	100	60	60	19	M10	8000	15	5
OK/D 60100 – M12	100	60	60	19	M12	8000	15	5
OK/D 60100 – M16	100	60	60	23	M16	8000	15	5

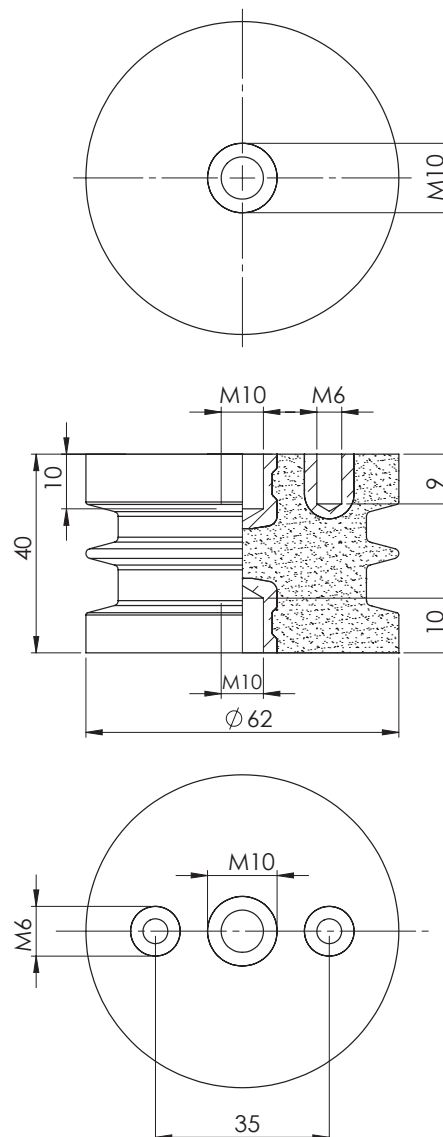
TECHNICAL DATA	OK/D 60*
Colour	Brown
Standard	IEC 60273:1990; IEC 60660:1999
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin

NOTE:

The insulators of type OK/D 60* are unbreakable and have excellent electrical and mechanical characteristics and can be used under extreme working conditions such as high room temperatures, also when in contact with corrosive substances, vibrations...

The hexagon is on one side for locking in place the insulator. Epoxy resin is much healthier than similar materials such as polyglass-polyester and it is safer for people.

IPA-1

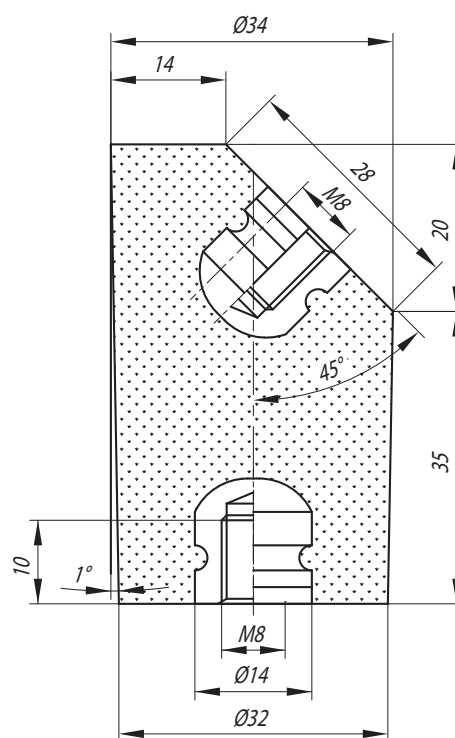
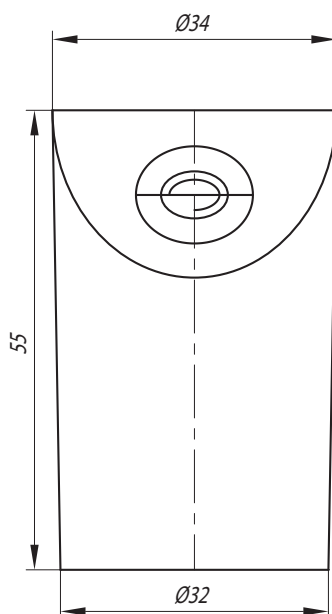
Low voltage supporting type insulators **IPA-1**

TECHNICAL DATA	IPA-1
Rated voltage (kV)	0,72
Highest voltage for equipment (eff.) (kV)	1
Breaking force (kN)	3,75
Colour	Brown
Standard	IEC 60273:1990; IEC 60660:1999
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin
Mass (kg)	0,2

NOTE:

Epoxy cast resin indoor post insulators can be used for all indoor applications, they have cylindrical shape which gives them mechanical strength with appropriate creeping distance and number of ribs.

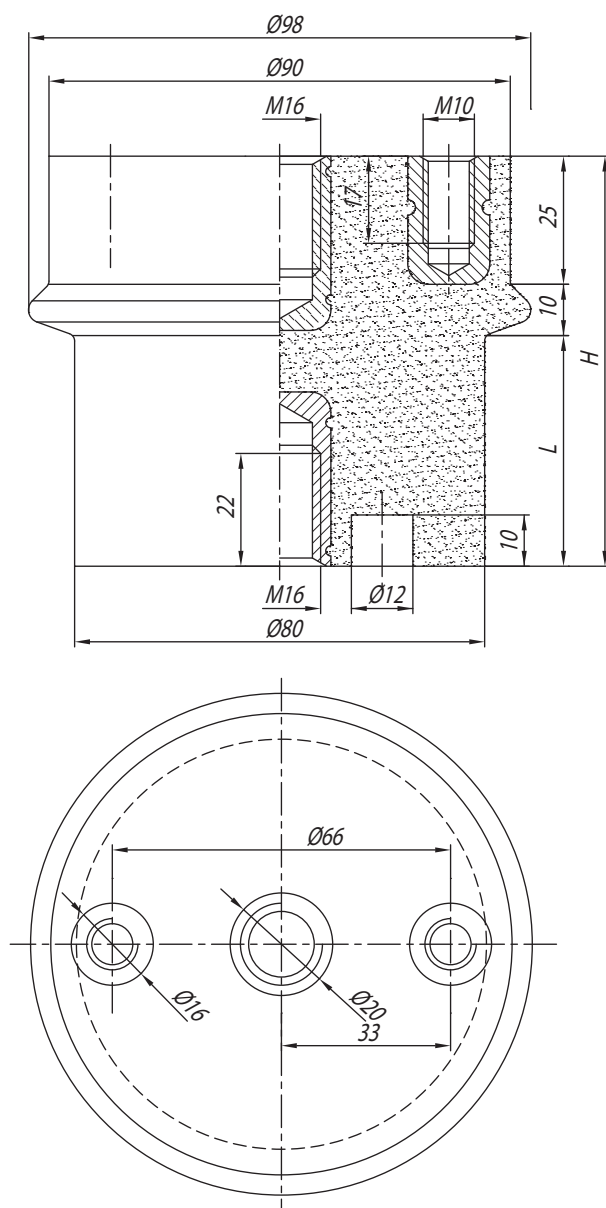
IP-1K



Supporting-type insulators for indoor mounting up to 1.2 kV **IP-1K**

TECHNICAL DATA	IP-1K
Rated network voltage (kV)	1
Maximal operating voltage (eff.) (kV)	1.2
Power-frequency withstand voltage, 1 min. (kV)	6
Mass (kg)	0,094
Valid standard	IEC 60660:1999
Breaking force (kN)	2
Mounting	Indoor
Ambient temperature	- 40°C to +125°C
Installation area	Every, including tropical
Temperature class of insulation	B
Basic insulation	Epoxy resin

IPC-1, IPC-1s



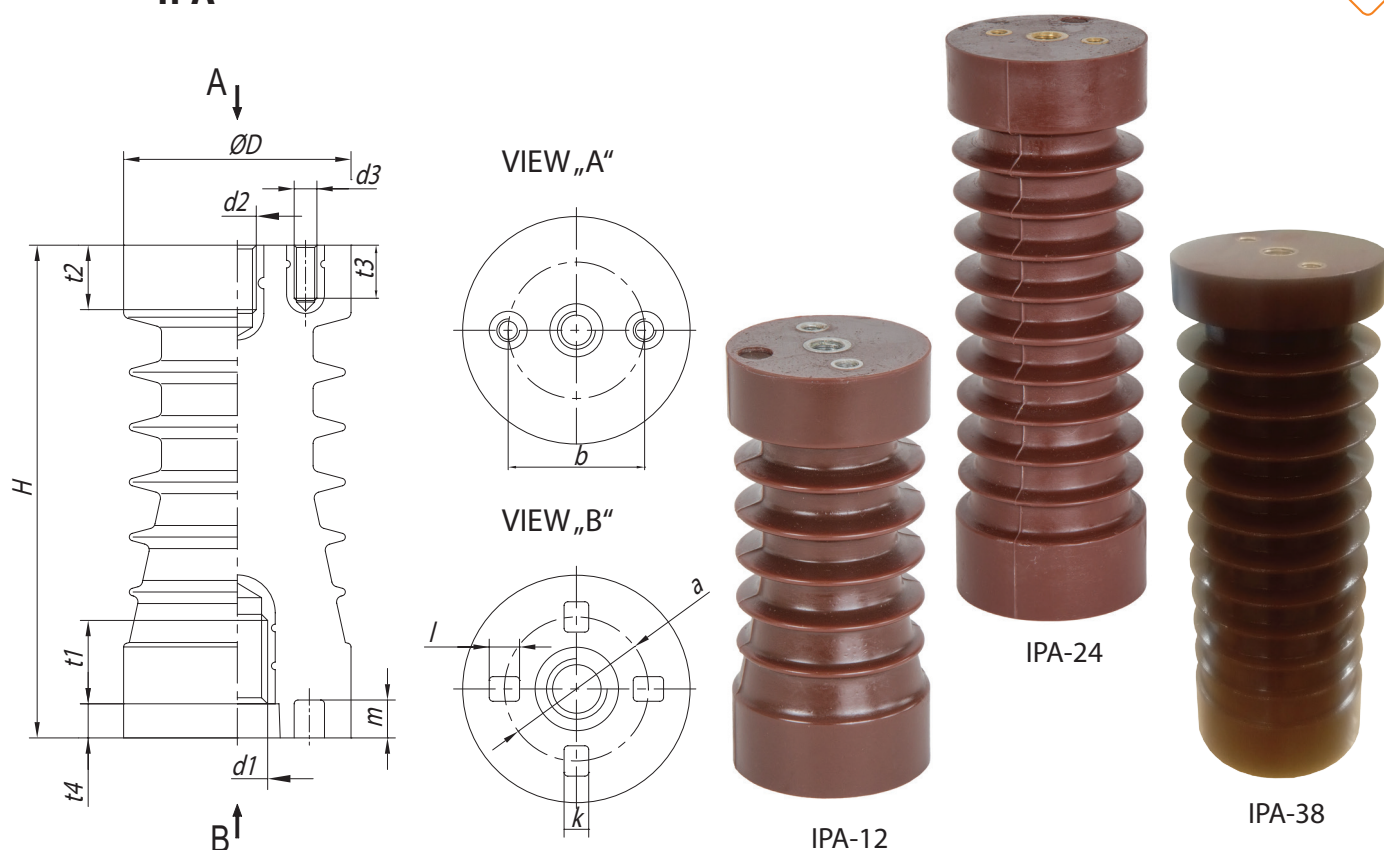
IPC-1

Low-voltage supporting-type insulators **IPC-1, IPC-1s**

TECHNICAL DATA	IPC-1s	IPC-1
Rated voltage (kV)	0,72	1
Highest voltage for equipment (eff.) (kV)	0,8	1,2
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	6	6
Mass (kg)	0,53	0,67
Breaking force (kN)	12,5	
Valid standard	IEC 60664-1	
Mounting	Indoor	
Operation temperature	- 40°C up to +125°C	
Type of basic insulation	Epoxy resin	

Insulator type	Dimensions (mm)	
	H	L
IPC-1	80	45
IPC-1s	65	30

IPA-*

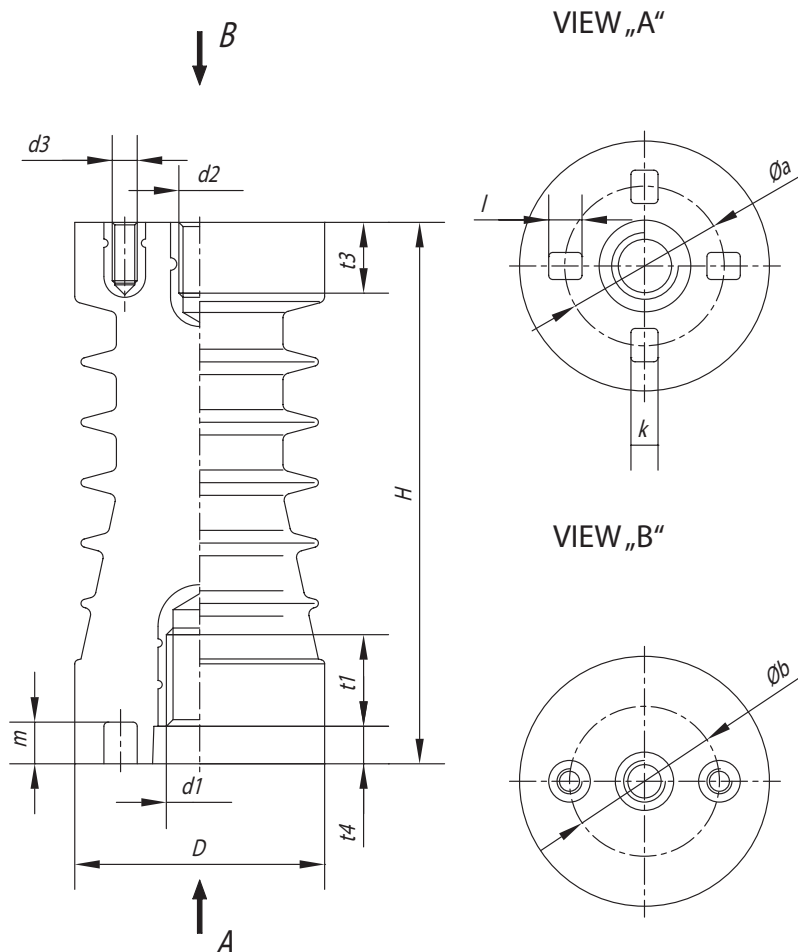


Supporting-type insulators for voltages up to 38 kV IPA-*

TECHNICAL DATA	IPA-3,6	IPA-7,2	IPA-12	IPA-24	IPA-38	IPA-38d
Rated voltage (kV)	3	6	10	20	35	35
Highest voltage for equipment (eff.) (kV)	3,6	7,2	12	24	38	38
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	10	20	28	50	70	70
Rated impulse withstand voltage 1,2/50 µs (kV)	40	60	75	95	170	170
Mass (kg)	~0,32	~0,44	~0,57	~1,16	~2,09	~2,50
Breaking force (kN)	3,75	3,75	3,75	3,75	3,75	3,75
Creeping distance (mm)	61	160	205	365	490	575
Number of ribs	2	3	5	9	10	12
Valid standard	IEC 60660, IEC 60060-1, IEC 60273					
Mounting	Indoor					
Operation temperature	- 40°C up to +125°C					
Altitude	Not limited					
Type of basic insulation	Epoxy resin					

Insulator type	Dimensions (mm)													
	H	ØD	d1	d2	d3	b	t1	t2	t3	t4	a	k	l	m
IPA-3,6	60	60	M10	M10	M6	36	12	12	9	2	35	7	8	8
IPA-3,6-1	60	60	M12	M12	M6	36	12	12	9	2	35	7	8	8
IPA-7,2	95	60	M16	M10	M6	36	22	17	6	8	42	7	8	8
IPA-12	130	56	M16	M10	M6	36	24	15	9	9	38	7	8	8
IPA-12-1	130	60	M16	M10	M6	36	24	15	9	9	38	7	8	8
IPA-12-2	130	68	M16	M10	M6	36	24	15	9	9	38	7	8	8
IPA-24	210	65	M16	M10	M6	36	24	15	9	15	45	7	8	8
IPA-24-1	210	70	M16	M10	M6	36	24	15	9	15	45	7	8	8
IPA-24-2	210	75	M16	M10	M6	36	24	15	9	20	45	7	8	8
IPA-38	300	79	M16	M10	M6	36	24	15	9	20	45	7	8	8
IPA-38-1	300	82	M16	M10	M6	36	24	15	9	20	45	7	8	8
IPA-38d	350	82	M16	M10	M6	36	24	15	9	20	45	7	8	10

IPB-*



IPB-3.6

Supporting-type insulators for voltages up to 38 kV IPB-*

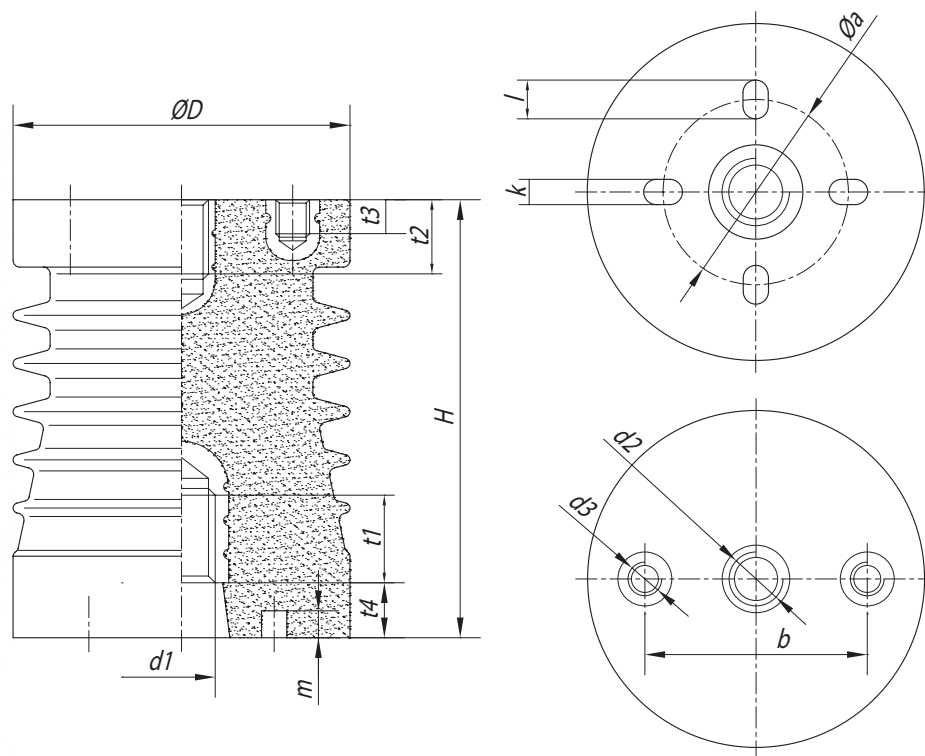
TECHNICAL DATA	IPB-3,6	IPB-12	IPB-24	IPB-24-1	IPB-38	IPB-38-1
Rated voltage (kV)	3	10	20	20	35	35
Highest voltage for equipment (eff.) (kV)	3,6	12	24	24	38	38
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	10	28	50	50	70	70
Rated impulse withstand voltage 1,2/50 µs (kV)	40	75	95	95	145	170
Mass (kg)	~0,62	~0,82	~1,97	~2,11	~2,99	~3,24
Breaking force (kN)	7,5	7,5	7,5	7,5	7,5	7,5
Number of ribs	1	5	8	5	11	8
Valid standard	IEC 60660, IEC 60060-1					
Mounting	Indoor					
Operation temperature	- 40°C up to +125°C					
Altitude	Not limited					
Type of basic insulation	Epoxy resin					

Insulator type	Dimensions (mm)													
	H	ØD	d1	d2	d3	b	t1	t2	t3	t4	a	k	l	m
IPB-3,6	65	82	M16	M16	M10	46	20	20	12	/	35	7	8	8
IPB-3,6-1	87	75	M16	M16	M10	46	24	24	12	/	35	7	8	8
IPB-3,6-2	78	82	M16	M16	M10	46	24	24	14	/	42	7	8	8
IPB-12	130	76	M20	M16	M10	46	26	24	12	15	38	7	8	8
IPB-12-1	130	82	M20	M16	M10	46	30	24	12	12	38	7	8	8
IPB-24	210	80	M20	M16	M10	46	30	24	12	18	38	7	8	8
IPB-24-1	225	100	M20	M16	M10	46	26	22	16	/	38	7	8	8
IPB-38	300	93	M24	M16	M10	46	34	24	12	20	60	8,5	10	8
IPB-38-1	325	95	M24	M16	M10	46	34	22	12	/	60	8,5	10	8

IPC-*



IPC-12

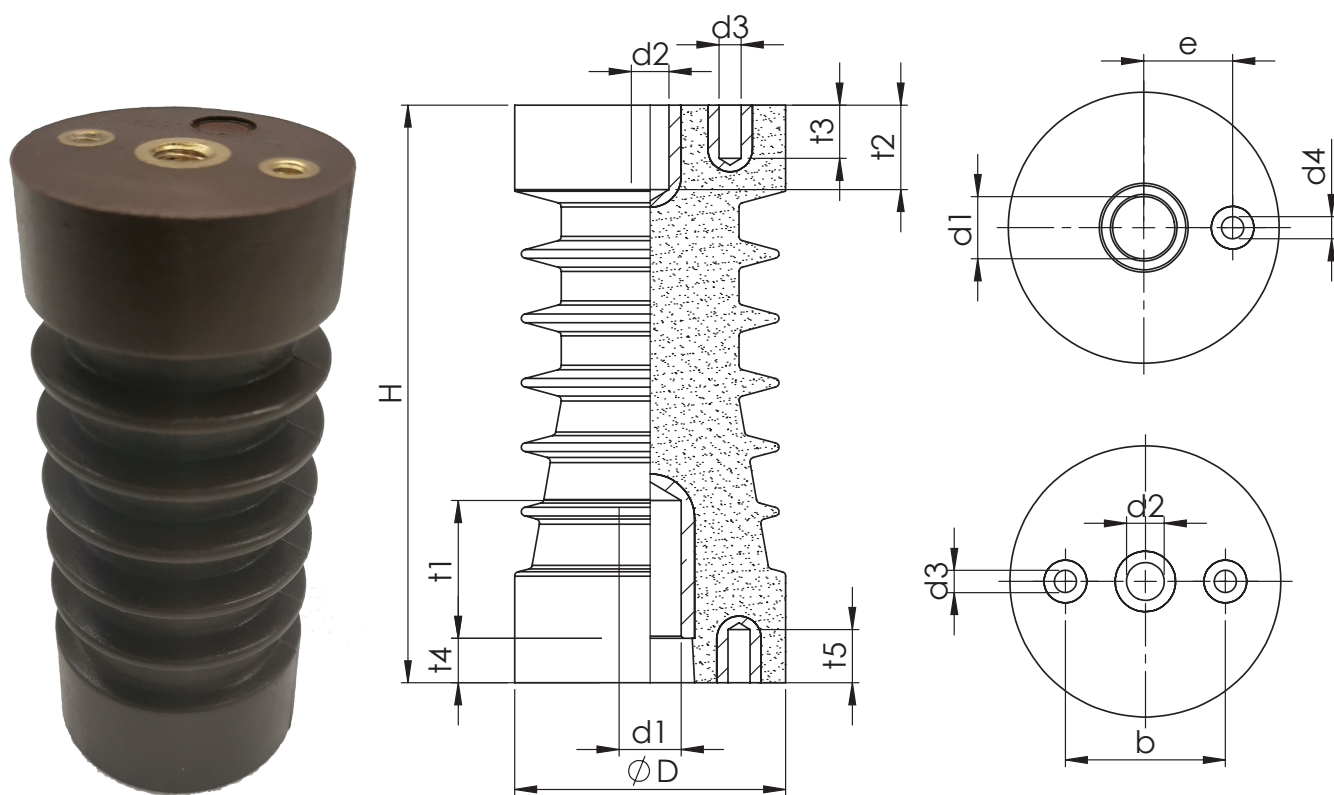


Supporting-type insulators for voltages up to 38 kV IPC-*

TECHNICAL DATA	IPC-12	IPC-24	IPC-38
Rated voltage (kV)	10	20	35
Highest voltage for equipment (eff.) (kV)	12	24	38
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	28	50	70
Rated impulse withstand voltage 1,2/50 μ s (kV)	75	125	170
Mass (kg)	~1,70	~2,40	~4,10
Breaking force (kN)	12,5	12,5	12,5
Number of ribs	5	8	11
Valid standard	IEC 60660, IEC 60060-1, IEC 60273		
Mounting	Indoor		
Operation temperature	- 40°C up to +125°C		
Type of basic insulation	Epoxy resin		

Insulator type	Dimensions (mm)													
	H	ØD	d1	d2	d3	b	t1	t2	t3	t4	a	k	l	m
IPC-12	130	100	M20	M16	M10	66	30	24	12	18	55	7	8	8
IPC-24	210	105	M24	M16	M10	66	34	24	12	24	50	7	8	8
IPC-38	300	105	M30	M16	M10	66	40	24	12	20	70	8,5	10	8

IPA-12C, IPA-24C, IPA-38C



IPA-12C

Supporting type insulators for indoor mounting with voltage indication **IPA-12C, IPA-24C, IPA-38C**

TECHNICAL DATA	IPA-12C	IPA-24C	IPA-38C
Rated voltage (kV)	6 ; 10	15 ; 20	35
Highest voltage for equipment (eff.) (kV)	7,2 ; 12	17,5 ; 24	38
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	20 ; 28	50	70
Mass (kg)	~0,4	~1,0	~2,0
Breaking force (kN)	3,75	3,75	3,75
Valid standard	IEC 60660, IEC 61243-5, IEC 60273		
Mounting	Indoor		
Operation temperature	- 40°C up to +125°C		
Type of basic insulation	Epoxy resin		

NOTE:

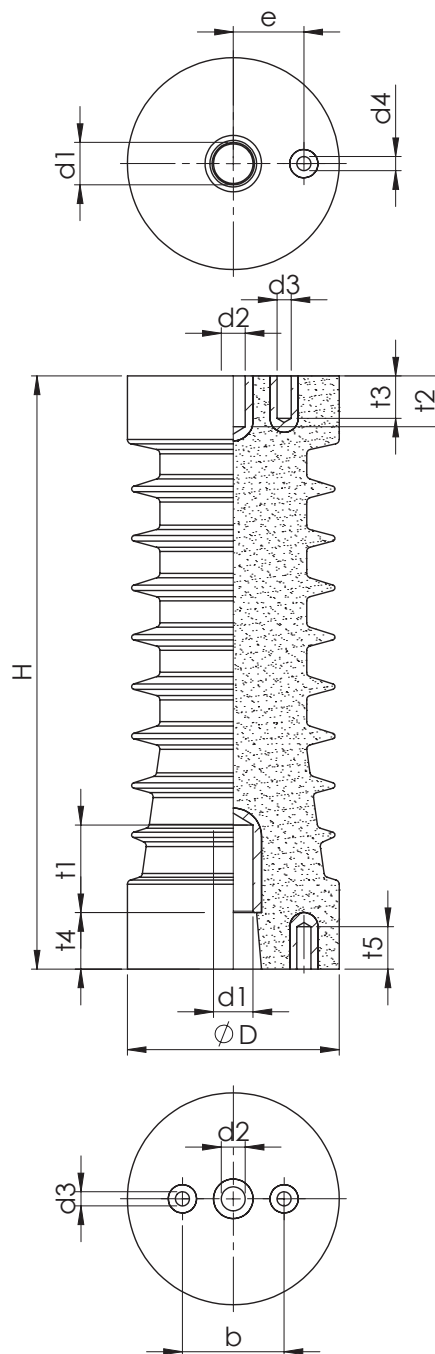
Indoor voltage divider insulators are used for the detection of the presence of voltage on phase lines. The basic operation principle is capacitive dividing of phase voltage. The voltage divider insulators are used with capacitance coupled voltage indicating system. For ordering following information must be provided: Voltage detecting system (HR or LRM system); Rated (operating) voltage; Capacitance of the indicator.

Insulator type	Dimensions (mm)												
	H	ØD	d1	d2	d3	d4	e	b	t1	t2	t3	t4	t5
IPA-12C	130	56	M16	M10	M6	M6	20	36	24	15	9	10	10
IPA-12-1C	130	60	M16	M10	M6	M6	20	36	24	15	9	10	10
IPA-12-2C	130	68	M16	M10	M6	M6	20	36	24	15	9	10	10
IPA-24C	210	65	M16	M10	M6	M6	25	36	24	15	9	15	9
IPA-24-1C	210	70	M16	M10	M6	M6	25	36	24	15	9	15	9
IPA-24-2C	210	75	M16	M10	M6	M6	25	36	24	15	9	20	9
IPA-38C	300	79	M16	M10	M6	M6	25	36	24	15	9	20	9
IPA-38-1C	300	82	M16	M10	M6	M6	25	36	24	15	9	20	9

IPB-12C, IPB-24C, IPB-38C



IPB-24C



Supporting type insulators for indoor mounting with voltage indication **IPB-12C, IPB-24C, IPB-38C**

TECHNICAL DATA	IPB-12C	IPB-24C	IPB-38C
Rated voltage (kV)	6 ; 10	15 ; 20	35
Highest voltage for equipment (eff.) (kV)	7,2 ; 12	17,5 ; 24	38
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	20 ; 28	50	70
Mass (kg)	~0,8	~1,0	~2,0
Breaking force (kN)	7,5	7,5	7,5
Valid standard	IEC 60660, IEC 61243-5, IEC 60273		
Mounting	Indoor		
Operation temperature	- 40°C up to +125°C		
Type of basic insulation	Epoxy resin		

NOTE:

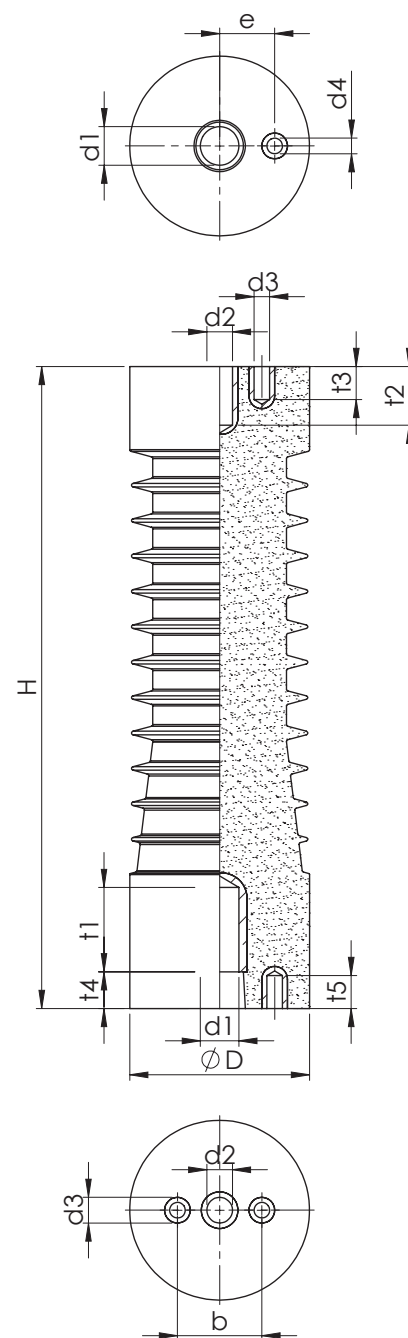
Indoor voltage divider insulators are used for the detection of the presence of voltage on phase lines. The basic operation principle is capacitive dividing of phase voltage. The voltage divider insulators are used with capacitance coupled voltage indicating system. For ordering following information must be provided: Voltage detecting system (HR or LRM system); Rated (operating) voltage; Capacitance of the indicator.

Insulator type	Dimensions (mm)												
	H	ØD	d1	d2	d3	d4	e	b	t1	t2	t3	t4	t5
IPB-12C	130	76	M20	M16	M10	M6	20	46	26	24	12	15	15
IPB-12-1C	130	82	M20	M16	M10	M6	20	46	30	24	12	12	12
IPB-24C	210	80	M20	M16	M10	M6	25	46	30	24	12	18	12
IPB-38C	300	93	M24	M16	M10	M6	25	46	34	24	12	20	12

IPC-12C, IPC-24C, IPC-38C



IPC-38C



Supporting type insulators for indoor mounting with voltage indication **IPC-12C, IPC-24C, IPC-38C**

TECHNICAL DATA	IPC-12C	IPC-24C	IPC-38C
Rated voltage (kV)	6 ; 10	15 ; 20	35
Highest voltage for equipment (eff.) (kV)	7,2 ; 12	17,5 ; 24	38
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	20 ; 28	50	70
Mass (kg)	~0,9	~2,4	~4,1
Breaking force (kN)	12,5	12,5	12,5
Valid standard	IEC 60660, IEC 61243-5, IEC 60273		
Mounting	Indoor		
Operation temperature	- 40°C up to +125°C		
Type of basic insulation	Epoxy resin		

NOTE:

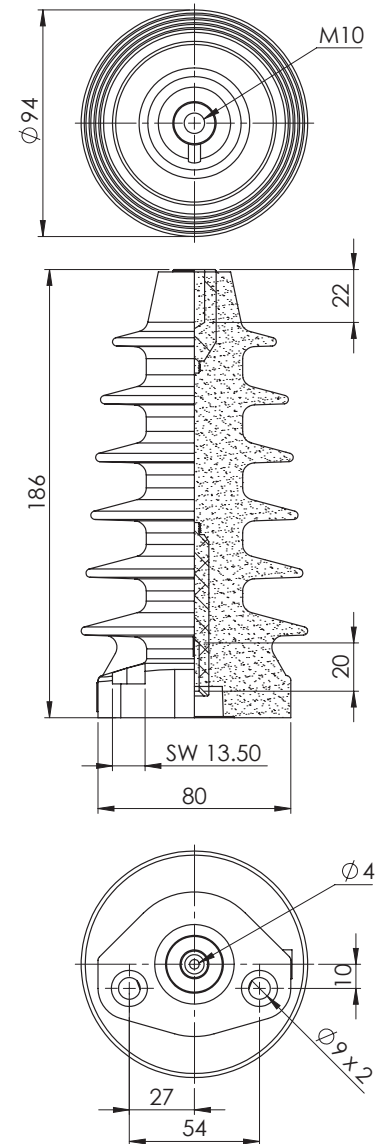
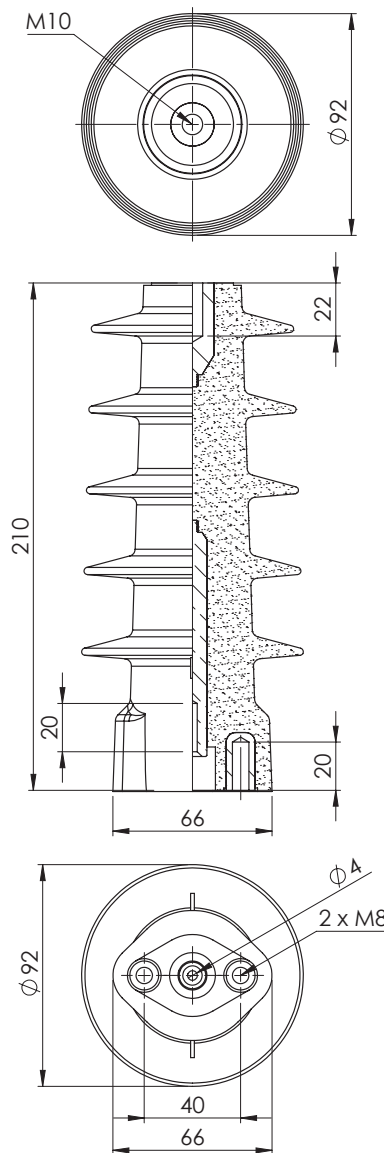
Indoor voltage divider insulators are used for the detection of the presence of voltage on phase lines. The basic operation principle is capacitive dividing of phase voltage. The voltage divider insulators are used with capacitance coupled voltage indicating system. For ordering following information must be provided: Voltage detecting system (HR or LRM system); Rated (operating) voltage; Capacitance of the indicator.

Insulator type	Dimensions (mm)												
	H	ϕD	d1	d2	d3	d4	e	b	t1	t2	t3	t4	t5
IPB-12C	130	100	M20	M16	M10	M6	20	66	30	24	12	18	18
IPB-24C	210	105	M24	M16	M10	M6	25	66	34	24	12	24	12
IPB-38C	300	105	M30	M16	M10	M6	25	66	40	24	12	20	12

CSI 24-I, CSI 24-II



CSI 24-I



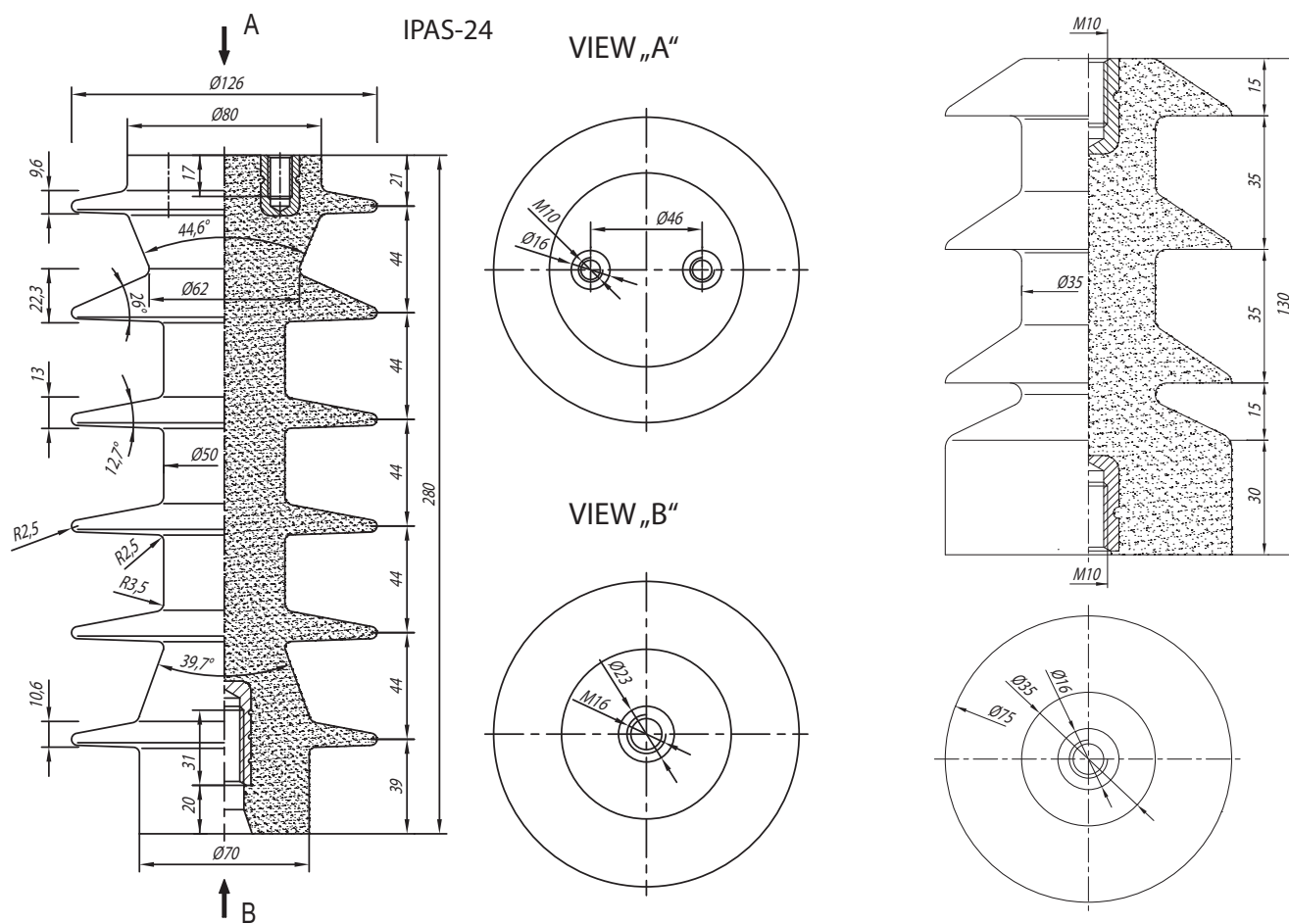
Supporting type insulators for indoor mounting with voltage indication 24 kV **CSI-24***

TECHNICAL DATA	CSI 24-I	CSI 24-II
Rated voltage (kV)	15; 20	
Highest voltage for equipment (eff.) (kV)	17,5; 24	
Breaking force (kN)	1,5	
Colour	Brown	
Standard	IEC 60273:1990; IEC 60660:1999; IEC 61243-5	
Mounting	Indoor	
Operation temperature (°C)	-40°C up to +125°C	
Type of basic insulation	Epoxy resin	
Mass (kg)	1,1	0,9

NOTE:

Indoor voltage divider insulators are used for the detection of the presence of voltage on phase lines. The basic operation principle is capacitive dividing of phase voltage. The voltage divider insulators are used with capacitance coupled voltage indicating system. For ordering following information must be provided: Voltage detecting system (HR or LRM system); Rated (operating) voltage; Capacitance of the indicator.

IPAS-7.2, IPAS-24



IPAS-7,2

Supporting type insulators for outdoor mounting **IPAS-7,2, IPAS-24**

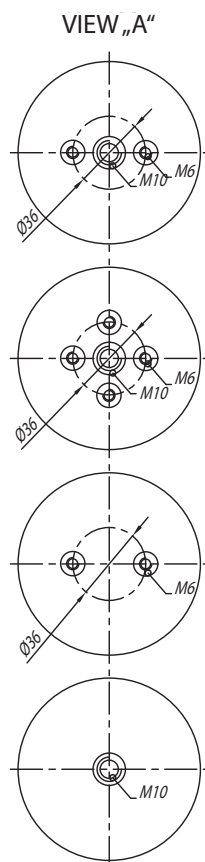
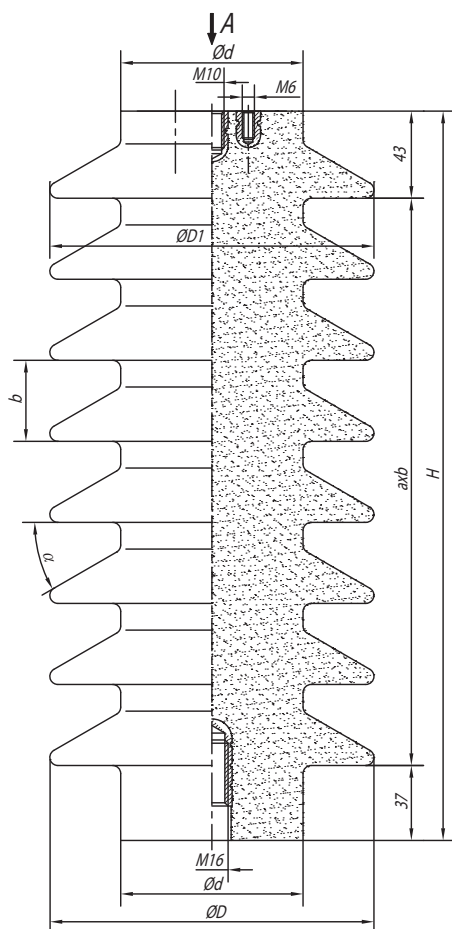
TECHNICAL DATA	IPAS-7,2	IPAS-24
Rated voltage (kV)	6	15 ; 20
Highest voltage for equipment (eff.) (kV)	7,2	17,5 ; 24
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	20	38 ; 50
Rated impulse withstand voltage 1,2/50 μ s (kV)	60	95 ; 125
Mass (kg)	0,55	2,0
Breaking force (kN)	3,75	12,5
Number of ribs	3	6
Creeping distance (mm)	230	617
Valid standard	IEC 60660, IEC 60060-1	
Mounting	Outdoor	
Operation temperature	- 40°C up to +125°C	
Type of basic insulation	Epoxy resin	

NOTE:

These supporting type insulators can be used for every weather conditions. They have been made of epoxy resin for outdoor mounting, they have cylindrical shape which gives them mechanical strenght and they have appropriate number of ribs and creeping distance.



IPBS-12, IPBS-24, IPBS-38

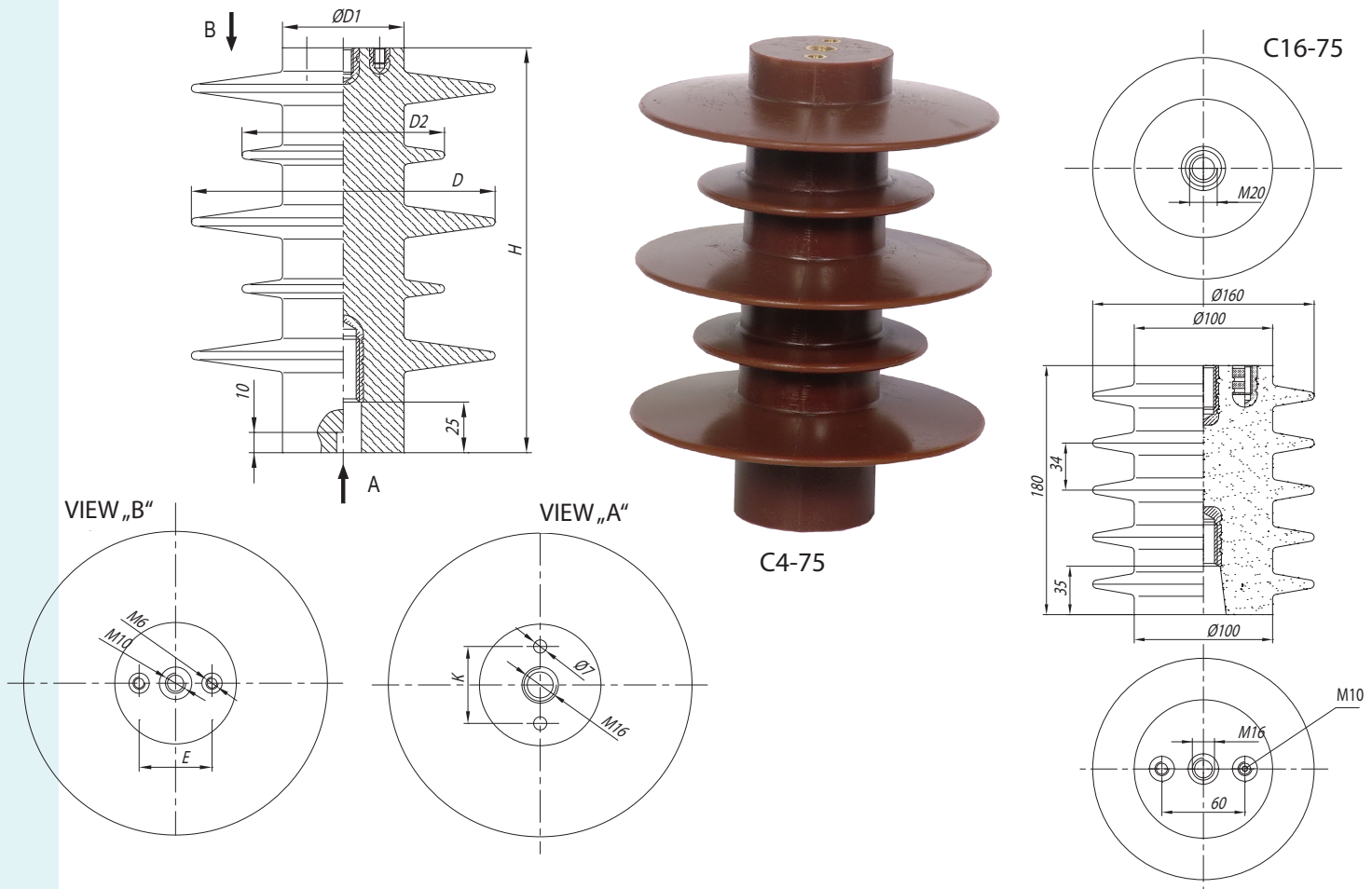


IPBS-24

Supporting type insulators for outdoor mounting **IPBS-12, IPBS-24, IPBS-38**

TECHNICAL DATA	IPBS-12	IPBS-24	IPBS-38
Rated voltage (kV)	10	20	35
Highest voltage for equipment (eff.) (kV)	12	24	38
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	28	50	70
Rated impulse withstand voltage 1,2/50 μ s (kV)	75	125	170
Mass (kg)	3,20	4,83	5,70
Breaking force (kN)	7,5	7,5	7,5
Creeping distance (mm)	350	645	778
Number of ribs	4	6	8
Valid standard	IEC 60660, IEC 60060-1		
Mounting	Outdoor		
Operation temperature	- 40°C up to +125°C		
Type of basic insulation	Epoxy resin		

Insulator type	Dimensions (mm)						
	H	Δd	ΔD	$\Delta D1$	b	a	α°
IPBS-12	210	70	120	115	43	3	30°
IPBS-24	280	80	160	160	40	5	26°
IPBS-36	360	90	160	160	40	7	26°

**C4-75, C4-125, C4-170 | C16-75**Supporting type insulators for outdoor mounting **C4-75, C4-125, C4-170, C16-75**

TECHNICAL DATA	C4-75	C4-125	C4-170	C16-75
Rated voltage (kV)	10	20	35	10
Highest voltage for equipment (eff.) (kV)	12	24	38	12
Rated power-frequency withstand voltage, 1 min (r.m.s.) (kV)	28	50	70	28
Rated impulse withstand voltage 1,2/50 μ s (kV)	75	125	170	75
Mass (kg)	1,78	2,82	5,17	3,60
Breaking force (kN)	4	4	4	12,5
Creeping distance (mm)	485	670	890	415
Number of ribs	5	7	10	5
Valid standard	IEC 60660, IEC 60060-1			
Mounting	Outdoor			
Operation temperature	- 40°C up to +125°C			
Altitude	Not limited			
Type of basic insulation	Epoxy resin			

Insulator type	Dimensions (mm)					
	H	ØD	ØD1	ØD2	E	K
C4-75	200	150	60	100	36	38
C4-125	300	160	70	110	50	42
C4-170	400	170	80	120	46	46
C16-75	180	160	100	/	60	/

**C4-125**



INTRODUCTION

GENERAL PURPOSE

Bushing-type insulators have been used in various kind of substations, whenever is necessary to bring the conductor from one room to another or from the room to outer space.

Because of epoxy resin characteristics, they are able to work in all exploitation conditions including tropical, especially in places where insulators must be resistant to humidity, chemical influences, impulse voltages and breaking forces. Because of those attributes they are suitable for appliance in mines, chemical industry and ships substations.

DESCRIPTION

Bushing-type insulators have been made of epoxy resin as basic insulation, whose temperature class is B (maximal temperature 125°C). Moulding parts have been made of brass and they are resistant to chemical influences.

Detailed technical characteristics for each type of insulator have been given separately beside each type of insulator.

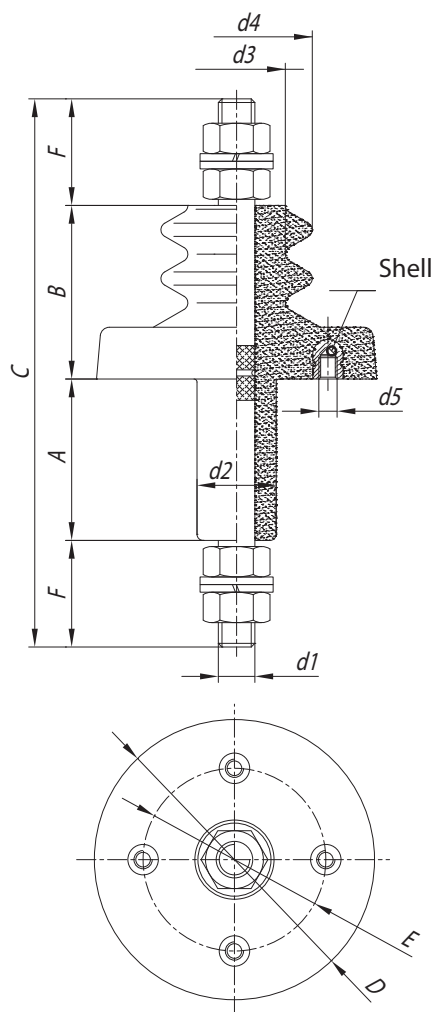
MOUNTING

Mounting of the insulator has been performed with moulding parts and fastening screws. During mounting, pay attention on the fasteners tightening, because if they have been tightened more than allowed fastening screw or insulator may break.

MAINTENANCE

For insulators special maintaining is not necessary during exploitation. It is enough, during regular annual maintenance, to check if all connection are clean and well tightened, to clean the insulator if it is dirty, and to tight fastening screws for mounting and connections, especially if insulator had been built-in in machines whose work is followed by great vibrations.

IPSU-1/300, IPSU-1/400, IPSU-1/500, IPSU-1/600



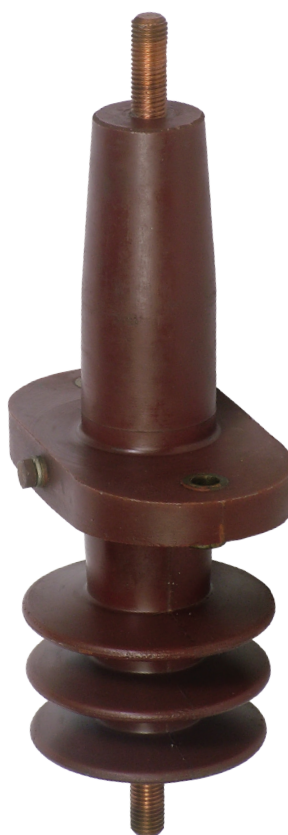
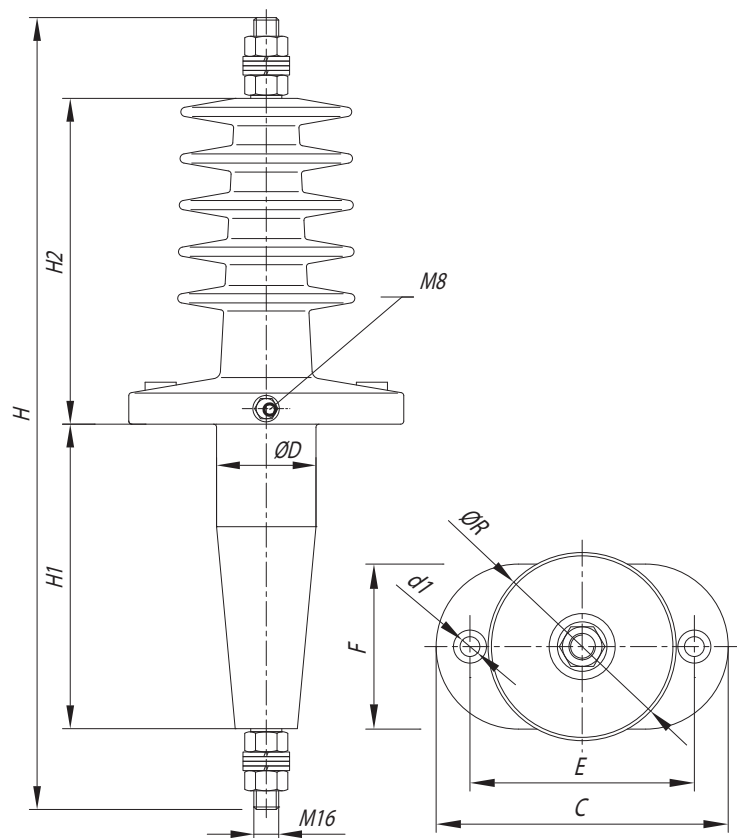
IPSU-1/300

Bushing type insulators up to 1 kV IPSU-1/300, IPSU-1/400, IPSU-1/500, IPSU-1/600

TECHNICAL DATA	IPSU-1/300	IPSU-1/400	IPSU-1/500	IPSU-1/600
Rated voltage (kV)	0,8	0,8	0,8	0,8
Highest voltage for equipment (eff.) (kV)	1	1	1	1
Rated power-frequency withstand voltage, 1 min. (kV)	3	3	3	3
Rated current (A)	300	400	500	600
Mass (kg)	0,64	0,83	1,07	1,71
Creeping distance (mm)	105/70	107/70	110/70	110/70
Valid standard	IEC 60664-1			
Breaking force (kN)	3,75			
Mounting	Outdoor/Indoor			
Operation temperature	- 40°C up to +125°C			
Type of basic insulation	Epoxy resin			

Insulator type	Dimensions (mm)										
	A	B	C	D	E	F	d1	d2	d3	d4	d5
IPSU-1/300	53	57	180	Ø92	60	33	M12	Ø26	32	48	M6
IPSU-1/400	53	57	190	Ø94	62	38	M14	Ø30	36	54	M6
IPSU-1/500	55	57	200	Ø98	64	42	M16	Ø36	42	62	M8
IPSU-1/600	55	57	210	Ø98	64	47	M20	Ø36	42	62	M8

IPSU-12S/630, IPSU-12/630, IPSU-24/630, IPSU-38/630



IPSU-12S/630



IPSU-12/630

Medium voltage bolt bushing insulators up to 38 kV IPSU-*

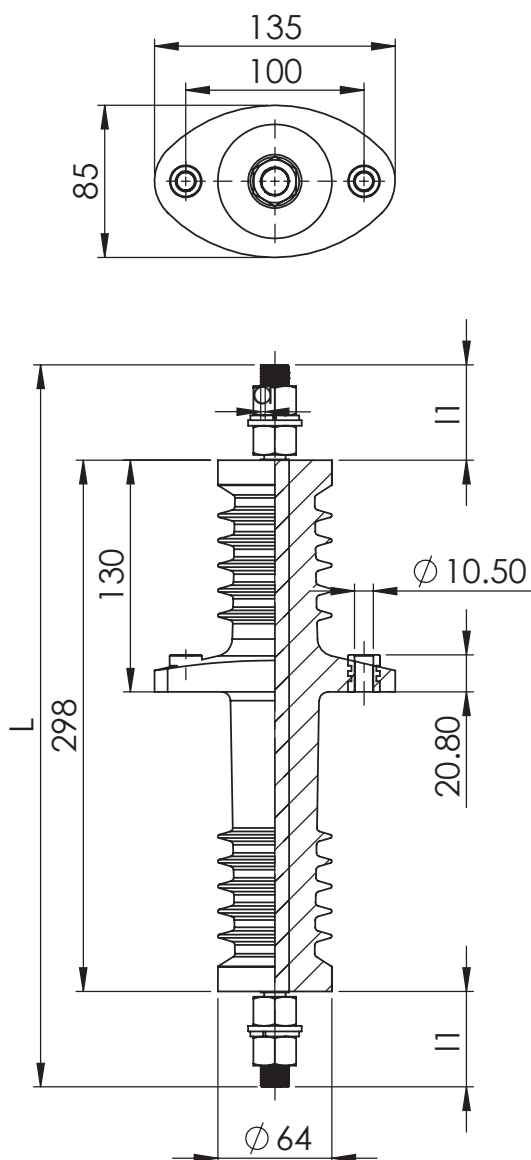
TECHNICAL DATA	IPSU-12S/630	IPSU-12/630(1250)	IPSU-24/630(1250)	IPSU-38/630
Rated voltage (kV)	6	10	20	35
Highest voltage for equipment (eff.) (kV)	7,2	12	24	38
Rated power-frequency withstand voltage, 1 min. (kV)	20	28	50	70
Rated impulse withstand voltage 1.2/50 µs (kV)	60	75	125	170
Number of ribs	3	5	6	6+5
Mass (kg)	3,50	3,90	5,80	8,80
Creeping distance (mm)	355	455(430)	590(605)	830
Valid standard	IEC 60137			
Rated current (A)	630			
Breaking force (kN)	7,5			
Mounting	Outdoor/Indoor			
Operation temperature	- 40°C up to +125°C			
Type of basic insulation	Epoxy resin			

NOTE:

For currents greater than 630A (800A, 1250A, 2000A) we recommend flags which give better connection between contacts and they are adjusted to the busbar connections in the substations.

Insulator type	Dimensions (mm)										M (630A)	M (1250A)	M (2000A)
	H	H1	H2	C	D	d1	E	F	R				
IPSU-12S/630 (1250)	380	145	155	178	Ø60	Ø13	136	100	Ø115		M16	-	-
IPSU-12/630 (1250, 2000)	500	195	210	178 (198)	Ø60 (Ø80)	Ø13	136 (156)	100 (120)	Ø115 (Ø134)		M16	M32	M42
IPSU-24/630 (1250, 2000)	680	288	294 (296)	196 (216)	Ø80 (Ø90)	Ø13	156 (176)	120 (140)	Ø136 (Ø160)		M16	M32	M42
IPSU-38/630 (800, 1250, 2000)	907 (932)	371 (372)	442	230 (250)	Ø90 (Ø110)	Ø13	165 (190)	140 (160)	Ø145 (Ø165)		M16	M32	M42

PI 12/23, PI 12/23-1, PI 12/23-2, PI 12/23-3



PI 12/23-3

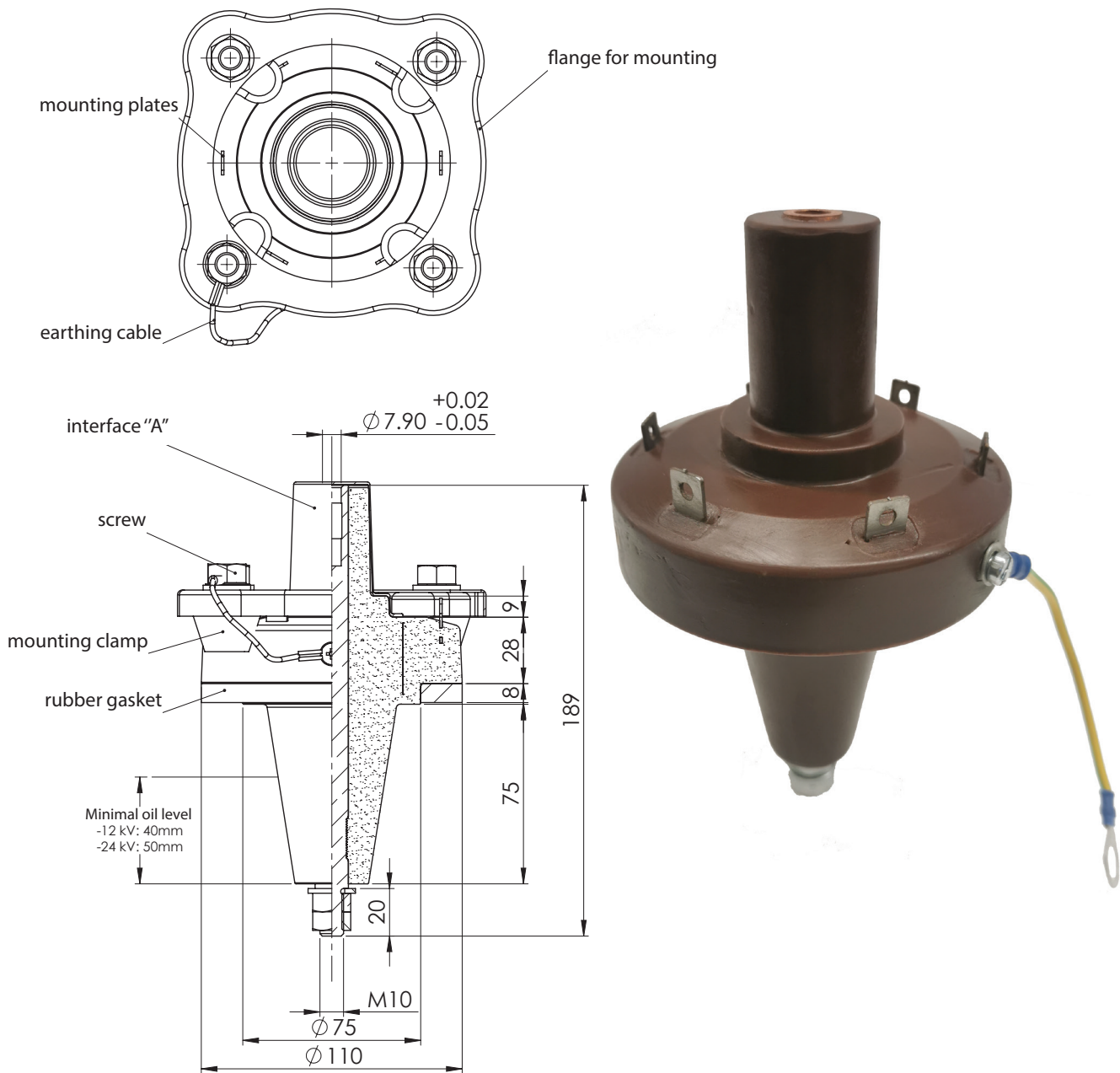
Medium voltage bolt bushing insulator 10 kV

Type	Dimensions (mm)				Mass (kg)
	Rated current (A)	d	L	L1	
PI 12/23	200	M10	385	30	2.2
PI 12/23-1	315	M12	395	35	2.4
PI 12/23-2	400	M16	405	40	2.8
PI 12/23-3	630	M20	425	50	3.2

TECHNICAL DATA	PI 12/23
Rated voltage (kV)	10
Highest voltage for equipment (eff.) (kV)	12
Breaking force (kN)	3,75
Colour	Brown
Standard	IEC 60173:2017
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin

NOTE:

Primary conductors have been made of brass as standard. At the customer's request, the primary conductors can also be made of copper or aluminium.

BI 12/24-250AMedium voltage bolt bushing insulator **BI 12/24-250A**

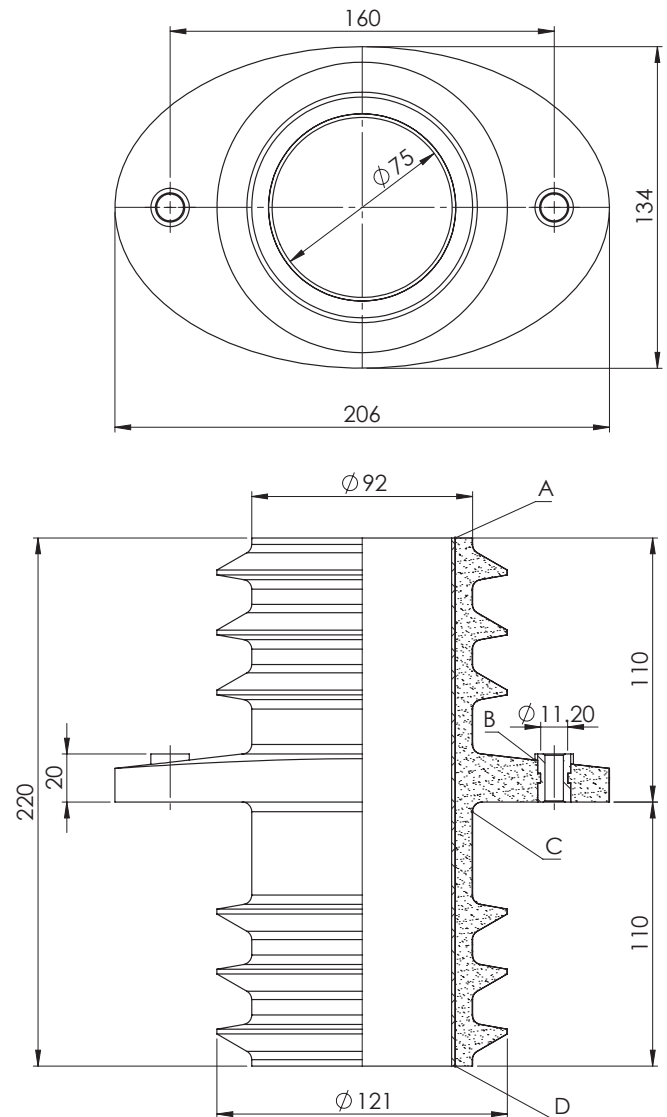
TECHNICAL DATA	BI 12/24-250A
Rated voltage (kV)	10/11/15/20/22
Highest voltage for equipment (eff.) (kV)	12/17.5/24
Rated current (A)	250
Colour	Brown
Standard	IEC 60137:2017
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin
Mass (kg)	1,9

NOTE:

For use in equipment insulated with oil fluid, typically for transformers, switchgears, capacitors...



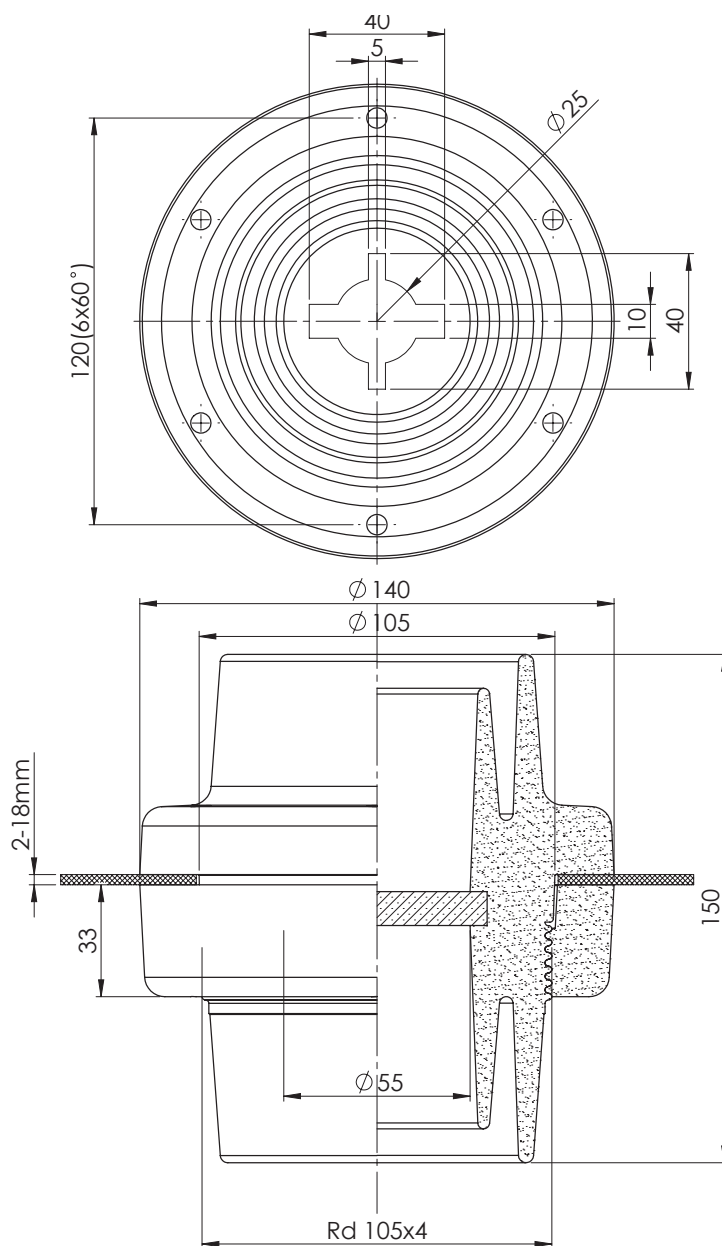
PI 12/75



Passing-type insulator **PI 12/75**

TECHNICAL DATA	PI 12/75
Rated voltage (kV)	10
Highest voltage for equipment (eff.) (kV)	12
Breaking force (kN)	10
Colour	Brown
Standard	IEC 60173:2017
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin
Mass (kg)	1,9
Creeping distance A-B (mm)	148
Creeping distance C-D (mm)	161

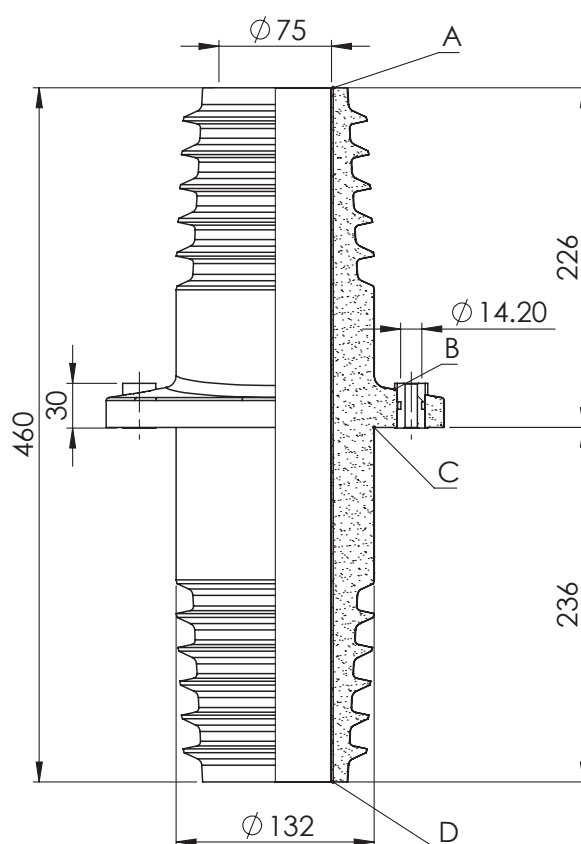
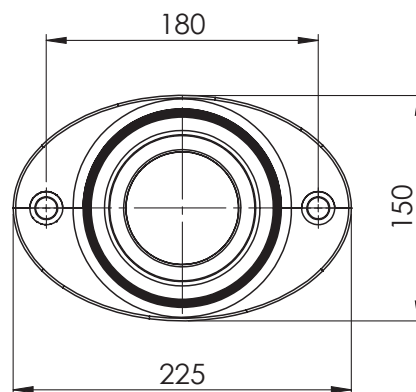
BI 20/55

Passing-type insulator **BI 20/55**

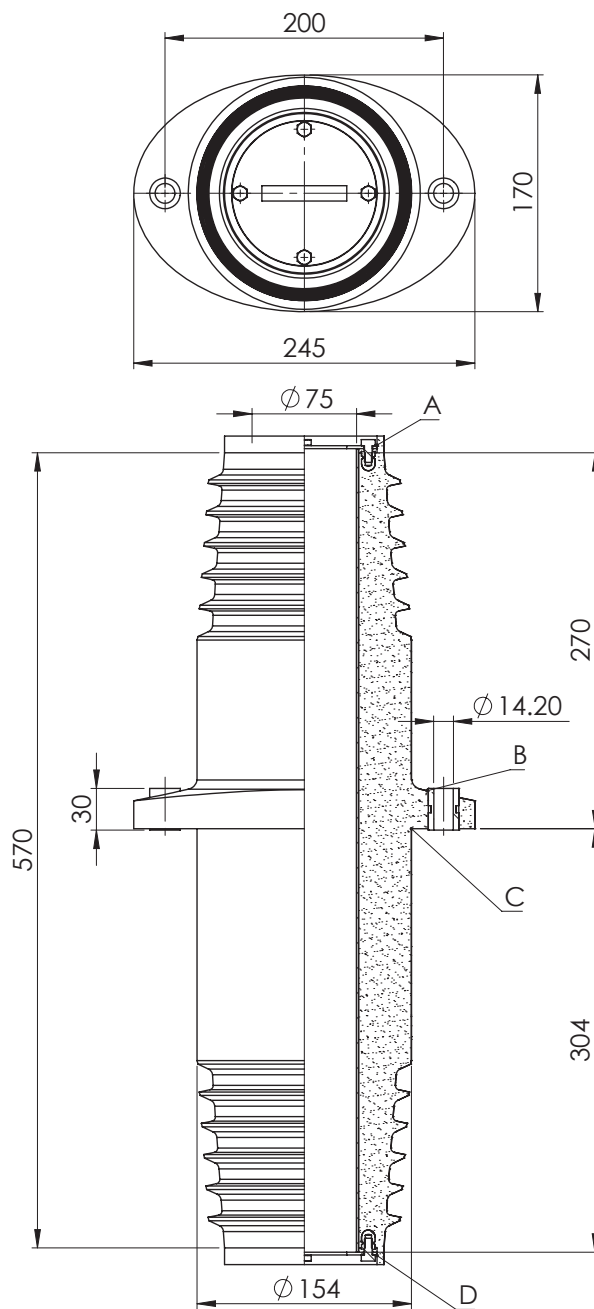
TECHNICAL DATA	BI 20/55
Rated voltage (kV)	20
Highest voltage for equipment (eff.) (kV)	24
Dimezije šine (mm)	40x10; 40x5; $\phi 25$
Colour	Brown
Standard	IEC 60173:2017
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin
Mass (kg)	1,5



PI 24/75

Passing-type insulator **PI 24/75**

TECHNICAL DATA	PI 24/75
Rated voltage (kV)	20
Highest voltage for equipment (eff.) (kV)	24
Breaking force (kN)	10
Colour	Brown
Standard	IEC 60173:2017
Mounting	Indoor
Operation temperature (°C)	-40°C up to +125°C
Type of basic insulation	Epoxy resin
Mass (kg)	6,5
Creeping distance A-B (mm)	283
Creeping distance C-D (mm)	288

PI 38/75Passing-type insulator **PI 38/75**

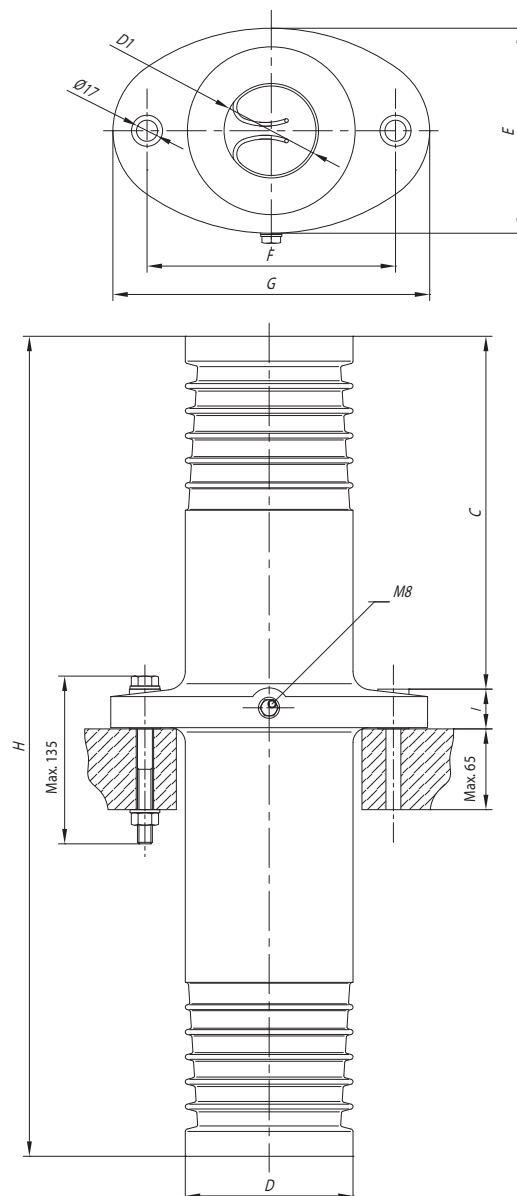
TECHNICAL DATA	PI 35/75
Rated voltage (kV)	35
Highest voltage for equipment (eff.) (kV)	38
Breaking force (kN)	10
Colour	Brown
Standard	IEC 60173:2017
Mounting	Indoor
Operation temperature (°C)	-40°C up to +130°C
Type of basic insulation	Epoxy resin
Mass (kg)	13,5
Creeping distance A-B (mm)	338
Creeping distance C-D (mm)	342



IPU-12, IPU-24, IPU 38



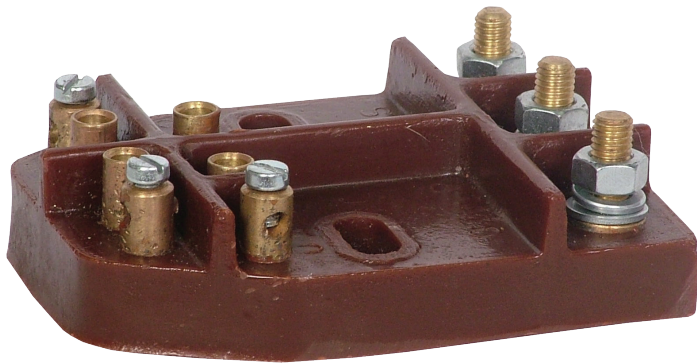
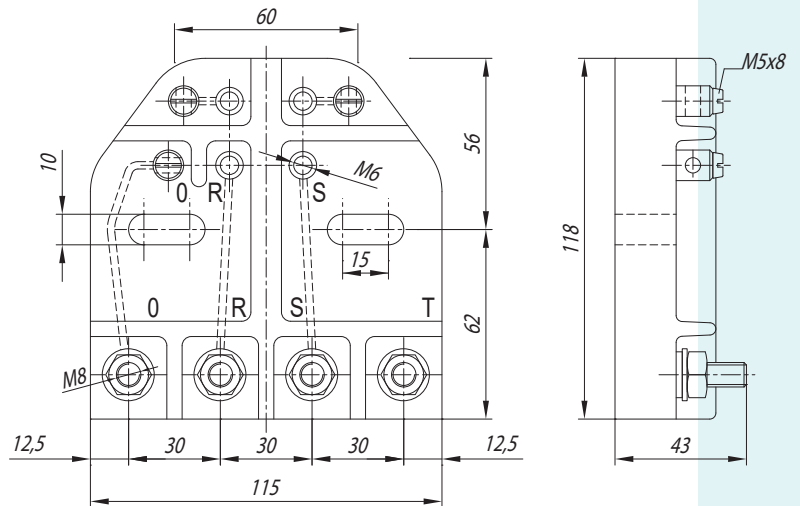
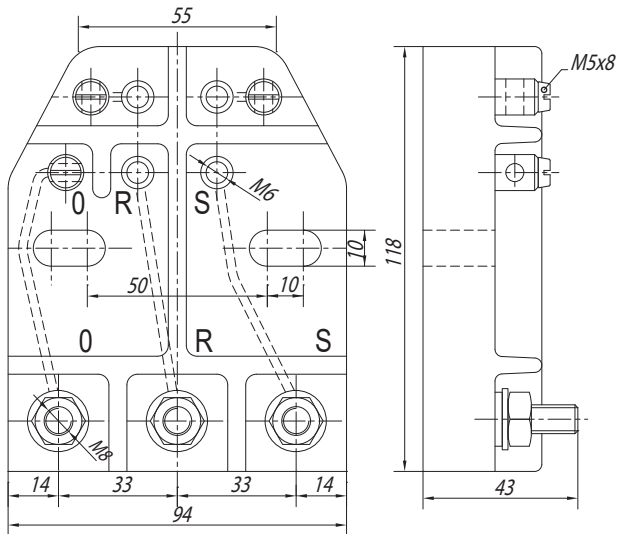
IPU-38

Bushing insulators from 10 up to 38 kV **IPU-12, IPU-24, IPU-38**

TECHNICAL DATA	IPU-12	IPU-24	IPU-38
Rated voltage (kV)	10	20	35
Highest voltage for equipment (eff.) (kV)	12	24	38
Rated power-frequency withstand voltage, 1 min. (kV)	28	50	70
Rated impulse withstand voltage 1.2/50 μ s (kV)	75	125	170
Mass (kg)	3,1	7,30	12,9
Hole for busbars (mm)	Max. 2x(60x10)		
Valid standard	IEC 60137		
Breaking force (kN)	3,75		
Mounting	Indoor		
Operation temperature	- 40°C up to +125°C		
Type of basic insulation	Epoxy resin		

Insulator type	Dimensions (mm)							
	H	ØD	ØD1	C	E	F	G	I
IPU-12	293	110	70	125	130	150	190	20
IPU-24	525	120	70	212	150	180	225	32
IPU-38	660	135	70	284	165	200	255	32

PPR-3, PPR-4



PPR-3



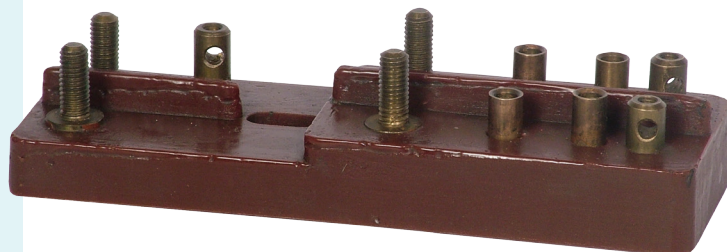
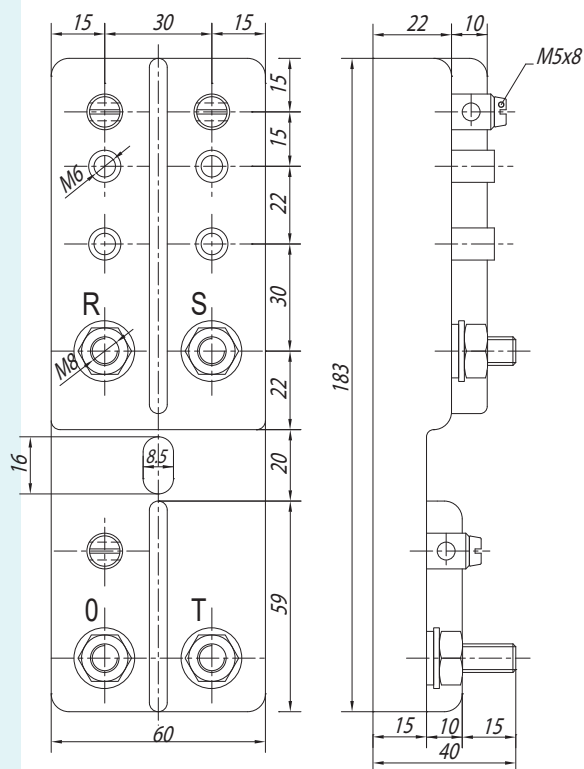
PPR-4

Connecting panels for public lighting type **PPR-3, PPR-4**

TECHNICAL DATA	PPR-3	PPR-4
Rated voltage (kV)	0,72	0,72
Highest voltage for equipment (eff.) (kV)	0,8	0,8
Rated power-frequency withstand voltage, 1 min. (kV)	3	3
Mass (kg)	0,60	0,76
Number of terminals	3 (2 phases + neutral)	4 (3 phases + neutral)
Valid Standard	IEC 60664-1	
Rated fuse current (A)	Max.16	
Number of fuses per bulb	2	
Mounting	In the public lighting poles	
Frequency (Hz)	50/60	
Operation temperature	- 40°C up to +125°C	
Type of basic insulation	Epoxy resin	



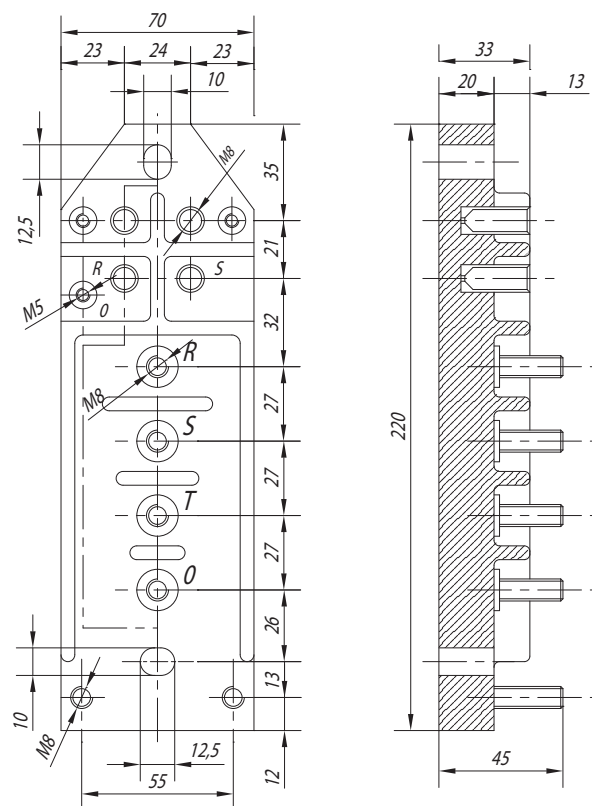
PPR-4A, PPR-4B



PPR-4A

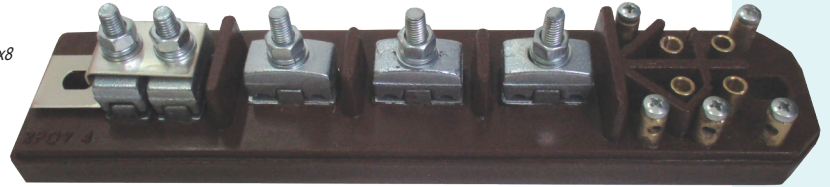
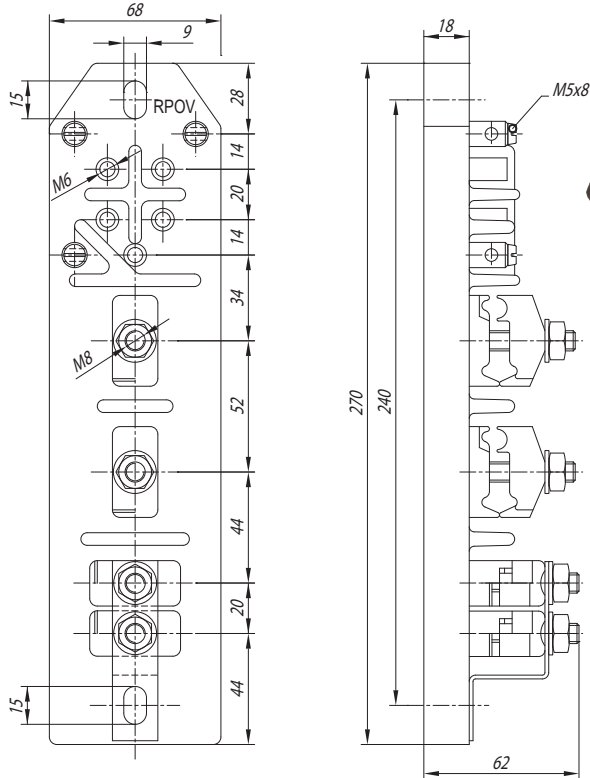


PPR-4B

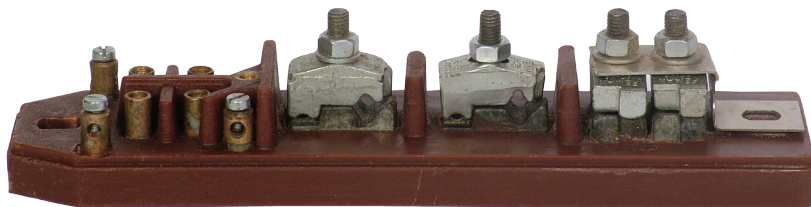
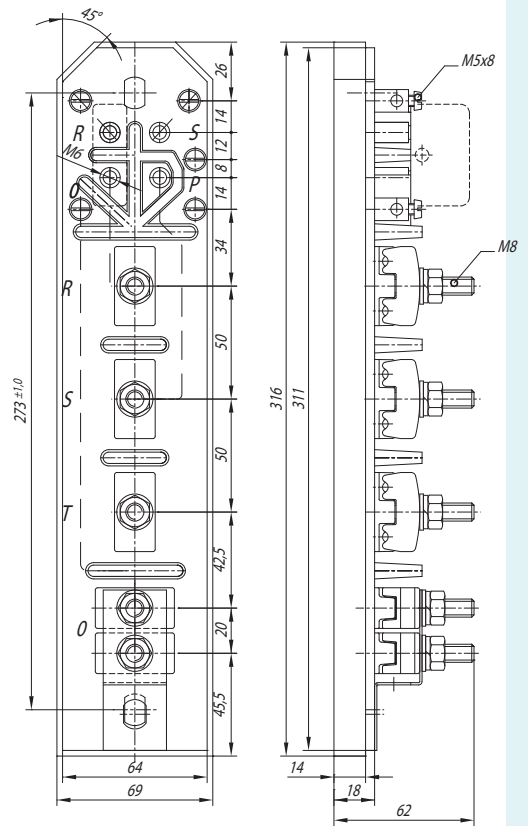
Connecting panels for public lighting type **PPR-4A, PPR-4B**

TECHNICAL DATA	PPR-4A	PPR-4B
Rated voltage (kV)	0,72	0,72
Highest voltage for equipment (eff.) (kV)	0,8	0,8
Rated power-frequency withstand voltage, 1 min. (kV)	3	3
Mass (kg)	0,69	0,79
Number of terminals	4 (3 phases + neutral)	
Valid Standard	IEC 60664-1	
Rated fuse current (A)	Max.16	
Number of fuses per bulb	2	
Mounting	In the public lighting poles	
Frequency (Hz)	50/60	
Operation temperature	- 40°C up to +125°C	
Type of basic insulation	Epoxy resin	

RPOV-3, RPOV-4



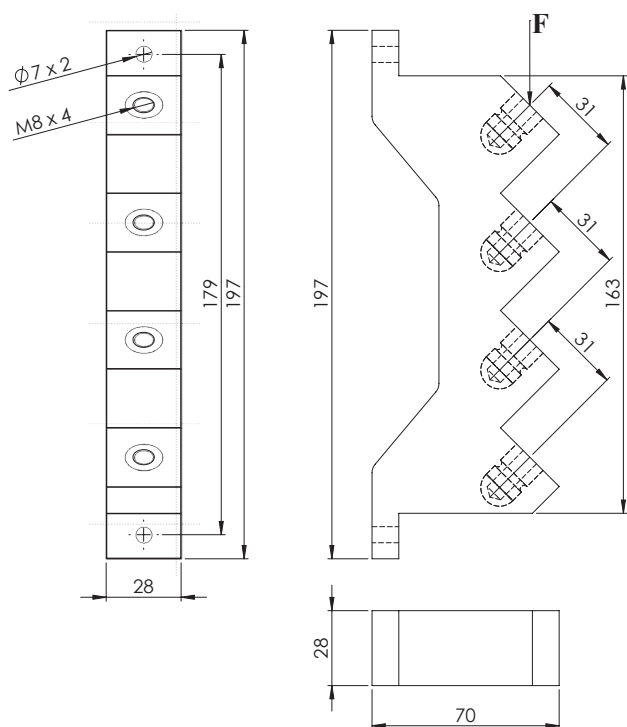
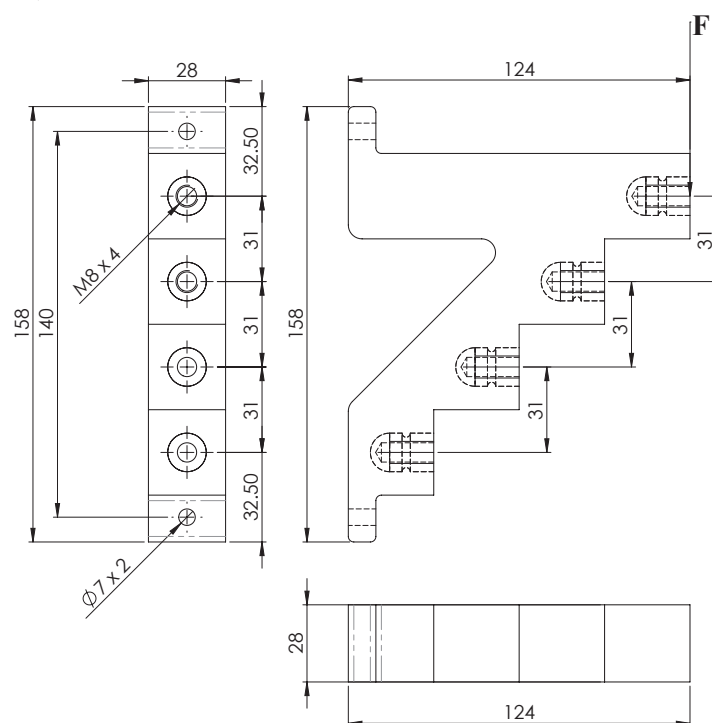
RPOV-4



RPOV-3

Connecting panels for public lighting type **RPOV-3, RPOV-4**

TECHNICAL DATA	RPOV-3	RPOV-4
Rated voltage (kV)	0,72	0,72
Highest voltage for equipment (eff.) (kV)	0,8	0,8
Rated power-frequency withstand voltage, 1 min. (kV)	3	3
Mass (kg)	1,2	1,5
Number of terminals	3 (2 phases + neutral)	4 (3 phases + neutral)
Valid Standard	IEC 60664-1	
Rated fuse current (A)	Max.16	
Number of fuses per bulb	2	
Mounting	In the public lighting poles	
Frequency (Hz)	50/60	
Operation temperature	- 40°C up to +125°C	
Type of basic insulation	Epoxy resin	

BH-1 45, BH-2 90**BH-1 45****BH-2 90****Busses holders BH-1 45, BH-2 90**

TECHNICAL DATA	BH-1 45	BH-2 90
Rated network voltage (kV)	0.72	0.72
Highest voltage for equipment (eff.) (kV)	0.8	0.8
Rated power-frequency withstand voltage 1 min. (kV)	3	3
Mass (kg)	0.42	0.67
Breaking force (kN)	3	3
Valid standard	IEC 60660:1999	
Mounting	Indoor	
Ambient temperature	- 40°C to +125°C	
Colour	Brown	
Basic insulation	Epoxy resin	

NOTES

NOTES

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