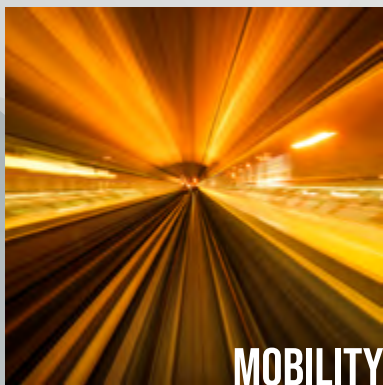


KUVAG



ENERGY



MOBILITY



INDUSTRY

LEADING IN INSULATION TECHNOLOGY

**CATALOGUE
STANDARD PRODUCTS
2022 / 2023**








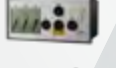







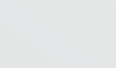
ABOUT KUVAG



KUVAG is a technology leader focusing on custom-designed electrical insulation products. KUVAG concentrates on core competence areas transmission, distribution and traffic engineering as well as industrial applications. Our products are manufactured for use in a wide range of industries and applications like switchgear, transmission and distribution networks, cable accessories, transformers, high-speed trains, railway infrastructure or medical equipment. As an independent group headquartered in Austria, four production sites in Europe and Asia and a worldwide presence KUVAG is always close to our customers. In our ongoing drive for innovative products and solutions, we rely on the expertise, creativity and commitment of our 400 staff members.

Based on more than 40 years of experience and development, we are in a position today to offer an extensive product range and technology spectrum which is unique in the industry. Our strong engineering background and the dedication of our experts have made us the preferred partner in implementing complex and challenging projects for our customers. KUVAG strongly believes in reliability, quality orientation, efficiency and solution orientation as important virtues and integral parts of our value proposition. Successful long-term and trust-based partnerships and intense cooperation with our customers create the basis for the continued strengthening of our brand in the future.

Overview of our product range

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Overview of our product range

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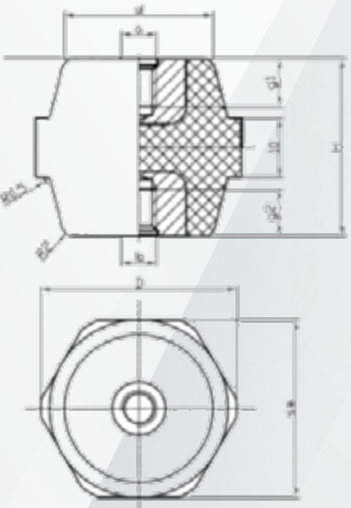


Fig. 1

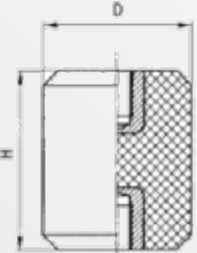


Fig. 2



Bottom

Type	Fig.	Art.No.	H	D	d1	Bending strength	Tensile strength	Weight	max. operating voltage	SW
			mm	mm		>kN	>kN	kg/100	kV	mm
NSS 30/30-M6	1	004870-00	30	33	M6x8	3	6	5,8	2	30
NSS 30/30-M8	1	004871-00	30	33	M8x8	3	6	5,8	2	30
NSS 40/40-M8	1	004872-00	40	45	M8x10	6	12,5	12,3	2	40
NSS 40/40-M10	1	004873-00	40	45	M10x12	6	12,5	12,3	2	40
NSS 40/40-M12	1	004874-00	40	45	M12x12	6	12,5	12,3	2	40
NSS 50/50-M10	1	004875-00	50	55	M10x15	9	17,5	20	3	50
NSS 50/50-M12	1	004876-00	50	55	M12x12	9	17,5	20	3	50
NSS 60/60-M12	2	000714-00	60	60	M12x18	12,5	22,5	33	3	
NSS 60/60-M16	2	000516-00	60	60	M16x18	15	25	33	3	
NSS 80/60-M12	2	004051-00	80	60	M12x18	7,5	19	42	3	
NSS 80/60-M16	2	004039-00	80	60	M16x22	9,5	20	42	3	
NSS 100/80-M16	2	004052-00	100	80	M16x22	12,5	25	95	4	

* Item on stock, depending on demand

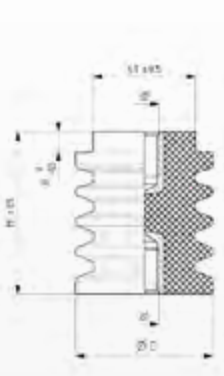


Fig. 5

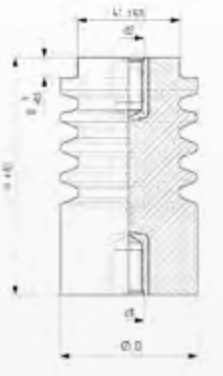


Fig. 6

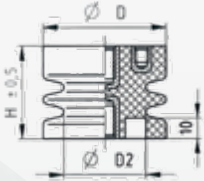
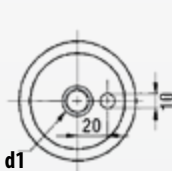
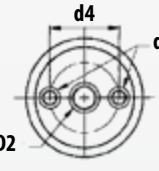


Fig. 1



Bottom



Top



Fig. 3

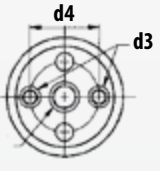
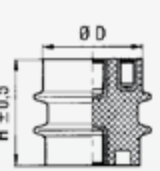
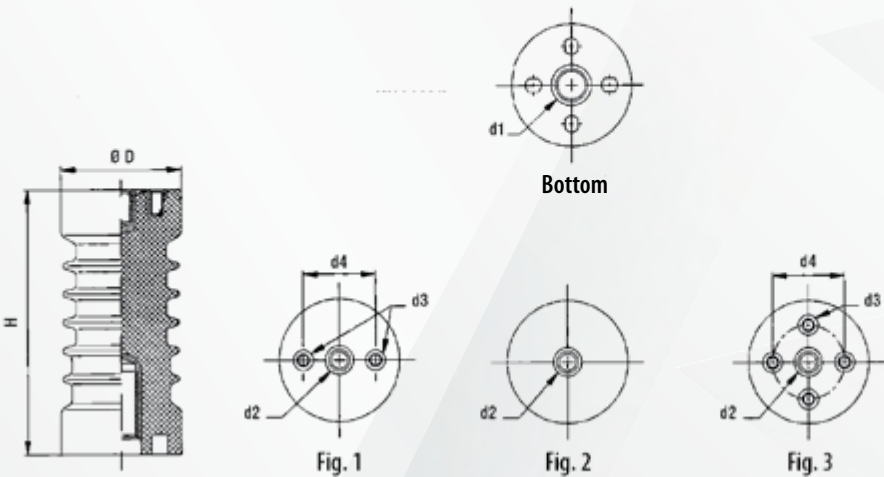


Fig. 4



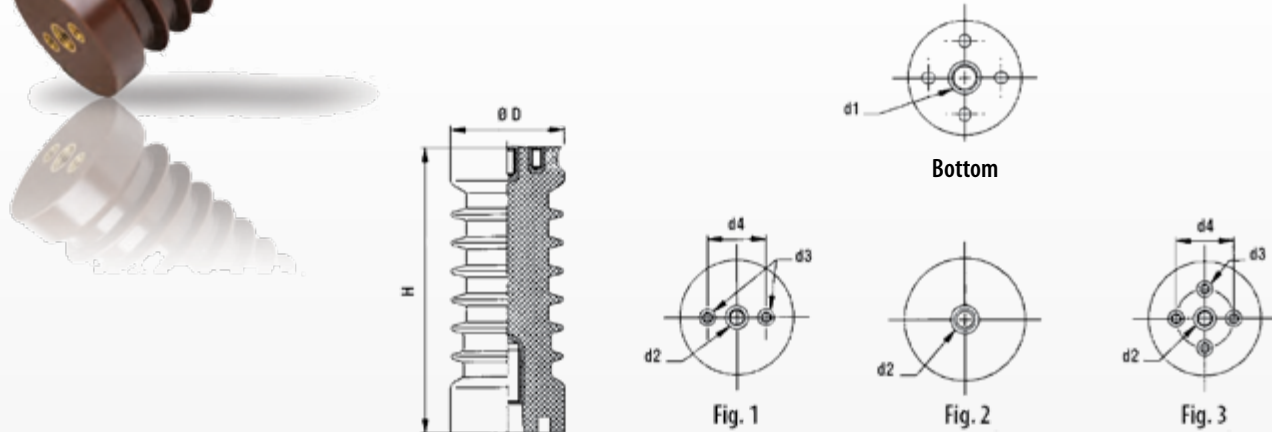
Type	Fig.	Art.No.	Drawing No.	Creepage distance	Bending strength	H	D	d1	d2	d3	d4	Weight	max. operating voltage
				mm	> kN	mm	mm	mm	mm	mm	mm	kg	kV
SGA 1/40	1	000491-00	M0130-1	67	5	40	60	M10x12	M10x12	M6x5	36	0,18	1
SGA 1/40	3	000109-00	M0130	67	5	40	60	M10x12	M10x12			0,18	1
SGA 1/45	4	000113-00	M0130	72	5	45	60	M10x16	M10x16	M6x8	36	0,22	1
SGA 1/50	3	000464-00	M0130	77	5	50	60	M12x18	M10x16			0,26	1
SGA 3/60	1	000314-00	M0130	87	5	60	60	M12x18	M12x18	M6x12	36	0,31	3
SGA 3/60	3	000311-00	M0130	87	5	60	60	M12x18	M12x18			0,31	3
SGB 1R	4	000114-00	M0131	60	7,5	45	66	M16x15	M16x15	M10x16	46	0,34	1
SGC 1R	4	000115-00	M0132	59	12,5	45	86	M16x15	M16x15	M10x16	66	0,54	1
SGB 3/65	3	000312-00	M0134	85	7,5	65	66	M16x20	M16x20			0,46	3
SGB 3/70	1	000117-00	M0134	90	7,5	70	66	M16x20	M16x20	M10x16	46	0,49	3
SGB 3/70	3	000653-00	M0134	90	7,5	70	66	M16x20	M16x20			0,49	3
SGB 3/87	1	000333-00	M1169	107	7,5	87	75	M16x20	M16x20	M10x16	46	0,57	3
SGB 3/87	3	000313-00	M0134	107	7,5	87	66	M16x20	M16x20			0,57	3
SGB 3/87	1	000540-00	M0135	107	7,5	87	66	M10x23	M10x23	M6x12	36	0,57	3
SGD 7,2N	3	000321-00	M0136	115	20	80	88	M16x20	M16x20			1,22	7,2
J08-60 So M12/M12	5	021813-00	NP 112 2498-2	105	8,2	65	55	M12x18	M12x18			0,23	6
J06-60 So H95	6	022646-00	NP 112 2497-1	135	5,3	95	55	M12x18	M12x18			0,33	7,2

* Item on stock, depending on demand



Type	Fig.	Art.No.	Drawing No.	Lightning im- pulse withstand voltage	Creepage distance	Bending strength	Weight	H	D	d1	d2	d3	d4
				kV	mm	kN	kg	mm	mm				mm
* SGA12S	1	000118-00	M0020-0	60	133	5	0,45	95	60	M16x33	M10x16	M6x12	36
* SGA12S	1	000119-00	M0020-2	60	133	5	0,45	95	60	M12x30	M10x16	M6x12	36
* SGA12S	2	000121-00	M0020-0	60	133	5	0,45	95	60	M16x33	M10x16		
SGA12S	2	004238-00	M0020-2	60	133	5	0,45	95	60	M12x25	M12x18		
SGA12S	3	000374-00	M0020-0	60	133	5	0,45	95	60	M16x33	M10x16	M6x12	36
* SGA12S	1	000645-00	M0020-1	60	133	5	0,5	95	60	M16x33	M12x18	M6x12	36
* SGA12N	1	000001-00	M0021-0	75	174	5	0,58	130	60	M16x33	M10x20	M6x12	36
* SGA12N	2	000251-00	M0021-0	75	174	5	0,58	130	60	M16x33	M10x20		
SGA12N	3	000376-00	M0021-0	75	174	5	0,58	130	60	M16x33	M10x20	M6x12	36
* SGA12N	1	000542-00	M0021-1	75	174	5	0,58	130	60	M16x33	M12x18	M6x12	36
* SGB12S	1	000668-00	M0240	60	133	10	0,55	95	72	M16x25	M16x25	M10x16	46
* SGB12N	1	020028-00	M0022-0	75	187	10	0,87	130	72	M20x34	M16x33	M10x16	46
SGB12N	2	000126-00	M0022-0	75	187	10	0,87	130	72	M20x34	M16x33		
SGB12N	3	000127-00	M0022-0	75	187	10	0,87	130	72	M20x34	M16x33	M10x16	46
* SGB12N	1	000544-00	M0022-K1	75	187	10	0,95	130	77	M20x34	M16x33	M10x16	46
SGB12F	1	000983-00	M0627	110	322	10	1,3	130	98	M20x34	M16x33	M10x16	46
* SGC12N	1	000644-00	M0023-0	75	195	16	1,32	130	90	M20x34	M16x33	M10x16	66
SGC12N	2	000131-00	M0023-0	75	195	16	1,32	130	90	M20x34	M16x33		
SGC12N	3	000132-00	M0023-0	75	195	16	1,32	130	90	M20x34	M16x33	M10x16	66
SGD12N	2	000136-00	M0024-0	75	261	25	2,85	130	130	M20x34	M16x33		
SGD12N	2	000137-00	M0024-K1	75	261	25	2,74	125	130	M20x34	M16x33		
* SGD12N	3	000545-00	M0024-0	75	261	25	2,85	130	130	M24x35	M16x33	M10x16	66
SGB12N		KT037	NP112 0690	85	181	8	0,85	124	72	M16x33		M10x16	23

* Item on stock, depending on demand

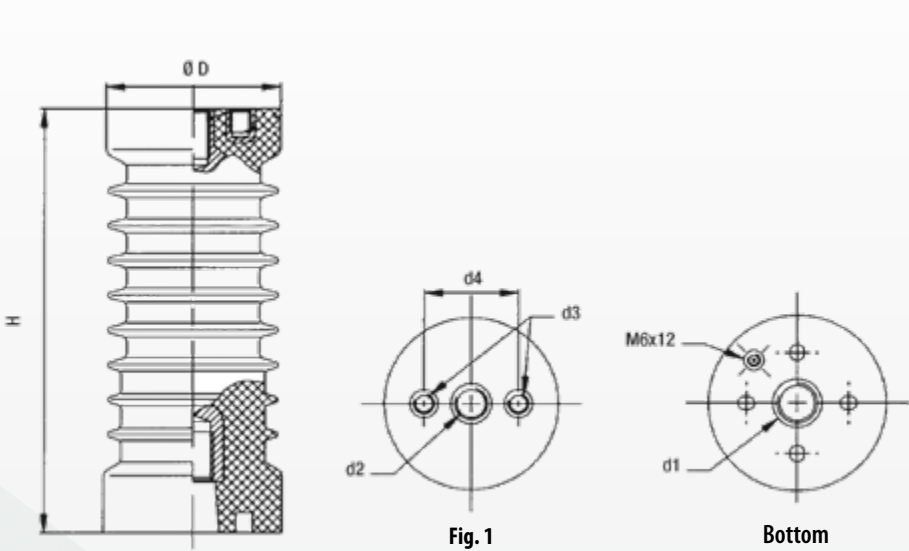
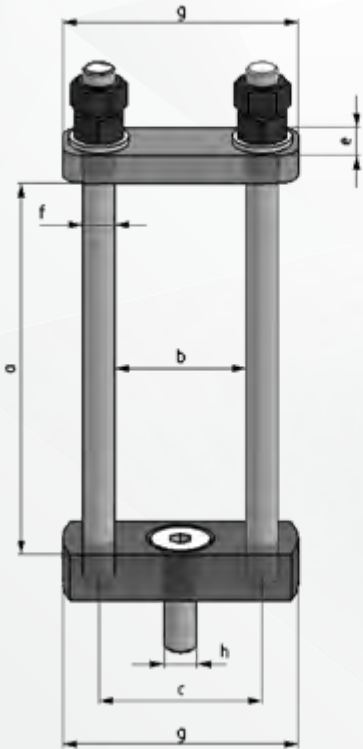


Type	Fig.	Art.No.	Drawing No.	Lightning im- pulse withstand voltage	Creepage distance	Bending strength	Weight	H	D	d1	d2	d3	d4
				kV	mm	>kN	kg	mm	mm				mm
* SGB17,5F	1	000952-00	M0838	110	328	10	1,60	160	98	M20x34	M16x33	M10x16	46
SGA24S	1	000096-00	M1910	95	258	5	1,00	175	70	M16x33	M10x16	M6x12	36
SGA24S	2	000138-00	M0025-0	95	258	5	1,00	175	70	M16x33	M10x16		
SGA24S	3	000378-00	M0025-0	95	258	5	1,00	175	70	M16x33	M10x16	M6x12	36
* SGA24S	1	000546-00	M0025-1	95	258	5	1,00	175	70	M16x33	M12x18	M6x12	36
* SGA24N	1	000095-00	M0026-0	125	296	5	1,20	210	70	M16x33	M10x16	M6x12	36
SGA24N	2	000143-00	M0026-0	125	296	5	1,20	210	70	M16x33	M10x16		
SGA24N	3	000380-00	M0026-0	125	296	5	1,20	210	70	M16x33	M10x16	M6x12	36
* SGA24N	1	000547-00	M0026-1	125	296	5	1,20	210	70	M16x33	M12x18	M6x12	36
* SGB24S	1	000228-00	M0027	95	259	10	1,35	175	80	M20x34	M16x33	M10x16	46
* SGB24N	1	000550-00	M0028-0	125	308	10	1,85	210	85	M20x34	M16x33	M10x16	46
* SGB24N	2	000221-00	M0028-0	125	308	10	1,85	210	85	M20x34	M16x33		
SGB24N	3	000220-00	M0028-0	125	308	10	1,85	210	85	M20x34	M16x33	M10x16	46
* SGB24F	1	004541-00	M0626	125	417	10	2,10	210	98	M20x34	M16x33	M10x16	46
SGB24F-LA04		022393-00	NP1102730-1	125	505	8	2,20	225	98	M20x34	M16x42		
SGB24F-LA05		022099-00	NP1102731-1	125	505	8	2,20	225	98	M20x34	M16x42	M10x16	46
SGC24N	1	000553-00	M0029-0	125	275	10	2,55	210	89	M24x35	M16x33	M10x16	66
SGD24N	1	000687-00	M2048	125	404	25	4,15	210	130	M24x35	M16x33	M10x16	66
* SGA36N	1	000231-00	M0039-0	170	434	5	2,10	300	80	M16x33	M10x16	M6x12	36
* SGA36N	2	000232-00	M0039-0	170	434	5	2,10	300	80	M16x33	M10x16		
SGA36N	3	000381-00	M0039-0	170	434	5	2,10	300	80	M16x33	M10x16	M6x12	36
SGA36N	1	000551-00	M0039-1	170	434	5	2,10	300	80	M16x33	M12x18	M6x12	36
* SGB36N	1	000233-00	M0040-0	170	434	7,5	3,20	300	95	M24x35	M16x33	M10x16	46
SGB36N	2	000235-00	M0040-0	170	434	7,5	3,20	300	95	M24x35	M16x33		
SGC36N	1	000242-00	M0041-1	170	601	16	5,87	300	130	M24x35	M16x33	M10x16	66
* SGB38,5F	1	004185-00	M0629	180	546	10	3,20	325	98	M24x35	M16x33	M10x16	46
I08-195	1	004929-00	NP1121468-2	195	535	7	4,90	350	110	M24x35	M16x33	M10x20	46

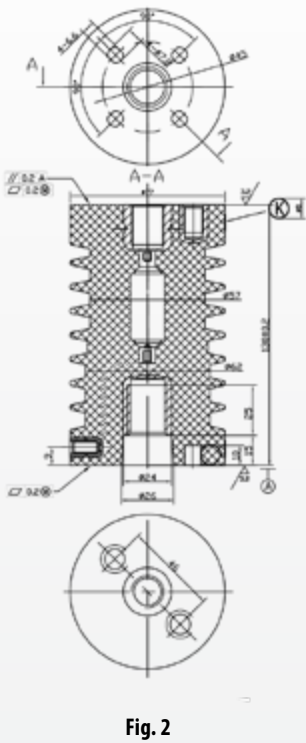
* Item on stock, depending on demand

Holders for horizontal and vertical installed busbars
ALH type
ALF type

Material
Top & bottom plate: Aluminium
Threaded bolt: Stainless steel



Capacitor for rated voltage
3 kV -> 100 pF
6 kV -> 50 pF
12 kV -> 20 pF
24 kV -> 15 pF
36 kV -> 10 pF



Busbar holders for vertical position								
Type	a	b	c	d*	e	f	g	h
Alh 10	30	28	36	80	25	M8	55	M10
Alh 11	40	28	36	90	25	M8	55	M10
Alh 13	50	37	45	100	25	M8	70	M10
Alh 14	60	37	45	110	25	M8	70	M10
Alh 16	80	40	50	135	35	M10	70	M10
Alh 20	50	40	50	105	35	M10	70	M16
Alh 21	60	40	50	115	35	M10	70	M16
Alh 22	80	40	50	135	35	M10	70	M16
Alh 23	100	40	50	155	35	M10	70	M16
Alh 25.1	80	85	95	135	35	M10	120	M16
Alh 25.2	80	85	95	135	35	M10	120	M16
Alh 26.1	100	85	95	155	35	M10	120	M16
Alh 26.2	100	85	95	155	35	M10	120	M16
Alh 27	120	40	50	175	35	M10	70	M16
Alh 28	120	50	60	175	35	M10	80	M16
Alh 29	160	85	95	215	35	M10	120	M16
Alh 30	160	40	50	215	35	M10	70	M16

* d = screw bolt lenght

Busbar holders for horizontal position								
Type	a	b	c	d	e	f	g	h
Alf 10	5	32	40	55	25	M8	70	M10
Alf 12.1	10	55	63	60	25	M8	85	M10
Alf 12.2	10	55	63	60	25	M8	85	M12
Alf 12.3	10	55	63	60	25	M8	85	M20
Alf 14	15	65	75	70	35	M10	100	M10
Alf 15	10	65	75	65	35	M10	100	M10
Alf 16	30	65	75	85	35	M10	100	M10
Alf 20.1	10	65	75	65	35	M10	100	M16
Alf 20.2	10	65	75	65	35	M10	100	M12
Alf 21	30	65	75	85	35	M10	100	M16
Alf 25	10	105	115	65	35	M10	140	M16
Alf 26	30	105	115	85	35	M10	140	M16
Alf 27	50	105	115	105	35	M10	140	M16
Alf 28	70	105	115	125	35	M10	140	M16
Alf 29	30	125	135	85	35	M10	160	M16
Alf 30	35	125	135	90	35	M10	160	M16
Alf 31	30	85	95	85	35	M10	120	M16
Alf 32	120	125	135	85	35	M10	160	M16

Type	Fig.	Art.No.	Drawing No.	Rated lightning impulse withstand voltage	Creepage distance	Bending strength	Weight	H	D	d1	d2	d3	d4
				kV	mm	> kN	kg	mm	mm				mm
* SGA12N-kap	1	000703-00	M0435	75	187	5	1,30	130	77	M16x25	M12x18	M6x12	36
SGB3N-kap	1	021470-00	NP1123114	40	187	10	1,03	130	77	M20x25	M16x18,5	M10x12	46
* SGB6N-kap	1	022030-00	NP1123537	75	187	10	1,03	130	77	M20x25	M16x18,5	M10x12	46
* SGB12N-kap	1	000383-00	M0091	75	187	10	1,25	130	77	M20x25	M16x20	M10x12	46
B10N-1000C	2	KT051	KXLB10.213	75	240	7,5	1,50	130	77	M20x25	M16x29	M10x14	46
SGC12N-kap	1	004087-00	M0092	75	177	16	1,55	130	90	M20x25	M16x20	M10x12	66
SGD12N-kap	1	000704-00	M0436	75	261	25	3,00	130	130	M20x25	M16x20	M10x12	66
SGB17,5-kap	1	021207-00	NP11230151	85	328	9,6	1,60	160	98	M20x25	M16x25	M10x16	46
* SGA24N-kap	1	000705-00	M0437	125	296	5	1,80	210	77	M16x33	M12x18	M6x12	36
* SGB24N-kap	1	000385-00	M0093	125	308	10	2,05	210	85	M20x34	M16x25	M10x12	46
SGB24L-kap	1	022082-00	NP11220381	125	339	6,8	2,10	225	86	M16x33	M12x20		
SGA36N-kap	1	000706-00	M0438	170	434	5	2,10	300	80	M16x33	M12x18	M6x12	36
SGB36N-kap	1	000482-00	M0202	170	434	7,5	3,20	300	95	M24x35	M16x25	M10x12	46
SGB38,5F-kap	1	004418-00	M1517	180	546	7,5	3,20	325	98	M24x35	M16x25	M10x16	46
IO 8-195-kap	1	022350-00	NP11213701	195	535	8	4,90	350	110	M24x35	M16x25	M10x20	46

* Item on stock, depending on demand



Voltage detecting system CPI / R plus (with relay unit)

The CPI plus device is a capacitive voltage indicator for permanent monitoring of voltage presence of all 3 phases in electrical equipment. Two basic alternatives are available: A standard device with visual indication of voltage condition as well as a version with a built-in relay to allow remote monitoring and further use of signals. The indicator contains a LRM interface to check functionality and phase sequence. The CPI+ combines proven and reliable technology at reasonable cost.

! HIGHLIGHTS

- Integrated system for detecting and indication of voltage condition in MV/HV equipment
- Full accordance with requirements of IEC 61243-5 and VDE 0682-415
- Visual output of voltage condition with flashing LEDs
- System available with output relay for remote monitoring of condition and transfer of signal (e.g. locking of cubicle)
- Easy installation through use of FAST-ON cable connections; All cables available as add-on
- Possibility for simple functionality test using external tester at LRM interfaces
- Robust design and reliable indication even in harsh environment (IP 54; wide temperature range)

Technical specification

Electrical details	
Nominal frequency	50 - 60 Hz
Rated voltage of insulators	3,0 – 52 kV (other upon request)
Power input _{max}	1,0 W
Coupling capacity	KUVAG sensors: 20 - 15 - 10 pF (12 - 24 - 36 kV) 50 pF (for system voltage 6,0 – 7,2 kV) 100 pF (for system voltage 3,0 kV) Customer sensors: various ranges available upon request
Contact ratings	AC 250 V / 8 A DC 24 V / 8 A
Protection class	Standard IP 54
Testing interfaces	LRM interface
Specification of relay	
Auxiliary voltage	24 - 230 V, ±10 % (AC/DC) Polarity reversal of DC auxiliary voltage: built-in protection; permanently resistant; undisturbed function
Output logic of relay	The CPI+ 3P/R is able to switch between 2 different output modes (switch is located on the device) <ul style="list-style-type: none"> Voltage OFF (the relay contact is closed in case if all phases are free of voltage) Voltage ON (the relay contact is closed in case all three phases are under voltage)
General properties	
Dimensions of VDS ¹	96 x 48 x 95 mm (W x H x D) Cut-out: 92 x 45 mm
Weight	155 g (280 g with relay)
Operating temperature	-40°C up to +55°C (in operation)
Applicable standards	Fully compliant with IEC 61243-5

¹ Depth of device including covering ridge and terminal board



Voltage detecting system KUVIN / R (with relay unit)

The KUVIN/R device is a capacitive voltage indicator with an integrated LCD display and LRM interface for permanent monitoring of voltage presence of all 3 phases in MV electrical installation. Compared with the standard device, this version with output relay unit allows in addition to visual indication also remote monitoring and further processing of detecting signals. The indicator is maintenance free and combines proven and reliable technology at reasonable cost.

! HIGHLIGHTS

- New voltage detecting system (VDS) with LCD display and integrated LRM interface
- Full conformity with all requirements given in IEC 61243-5 and VDE 0682-415
- Completely maintenance free, operating test integrated into device (no external testing device is needed)
- Additional optical output in case of failure mode in switchgear with LEDs
- Integrated relay for remote monitoring of condition and transfer of signal
- VDS constant can be configured through built-in switching module (10 pre-defined ranges)
- Voltage detecting and operating test function without auxiliary power supply
- Phase sequence control built-in

Technical specification

Electrical details	
Nominal frequency	50 - 60 Hz
Rated voltage of insulators	3.0 - 36.0 kV
Power input _{max}	1.0 W
System rated voltage ¹	3.0 kV to 52.0 kV
VDS constant	VDS constant configured directly at device Standard range from 50 kVpF to 5400 kVpF
Contact ratings	AC 250V/5A; 400V/0,1A (ohmic load) DC 24V/5A; 110V/1A; 250V/0,3A (ohmic load)
Protection class	IP 54
Testing interface	LRM interface
Specification of relay unit	
Auxiliary voltage	24 - 230 V, ±10 % Polarity reversal of DC auxiliary voltage: built-in protection; permanently resistant; undisturbed function
Output logic	Available options for output: <ul style="list-style-type: none"> Fixed output logic (HV-ON and HV-OFF) 2 simultaneously operating modes (HV-ON and HV-OFF) - 2 independent relays Failure mode indicated by yellow LED and contacts of both relays
General properties	
Dimensions of VDS	96 x 48 x 40 mm (W x H x D)
Weight	approx. 250 g
Operating temperature	-25 °C to +60 °C (in operation) -40 °C to +70 °C (for storage)
Applicable standards	Fully compliant with IEC 61243-5

¹ If suitable coupling electrodes are available, range of rated voltage can be extended

Indoor bushing type BWS 12 kV



Fig. 1

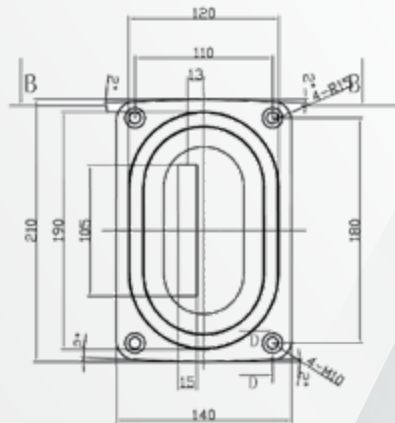


Fig. 2

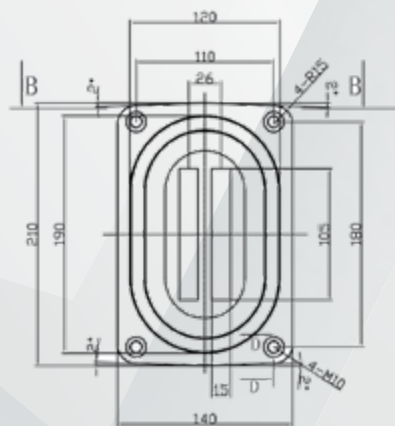


Fig. 3

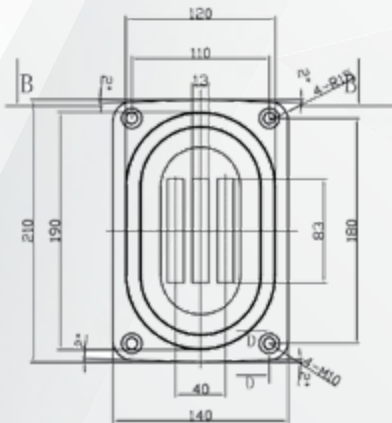
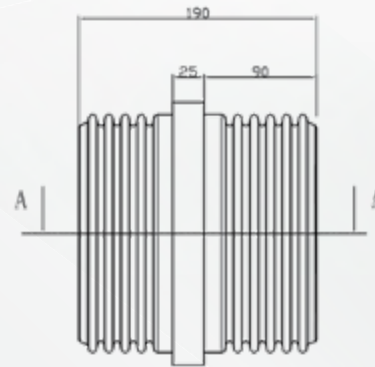
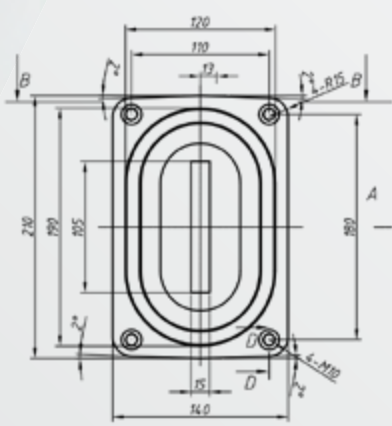
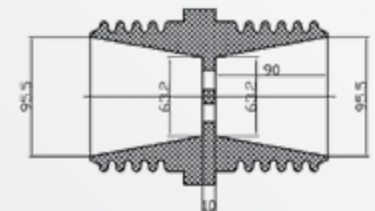


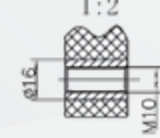
Fig. 4



A-A



D-D

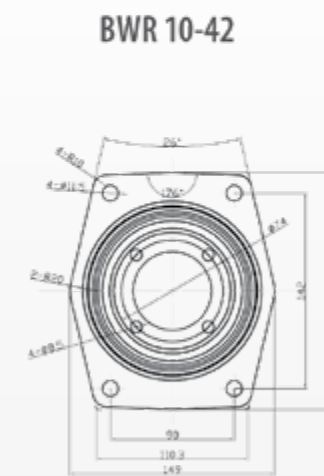
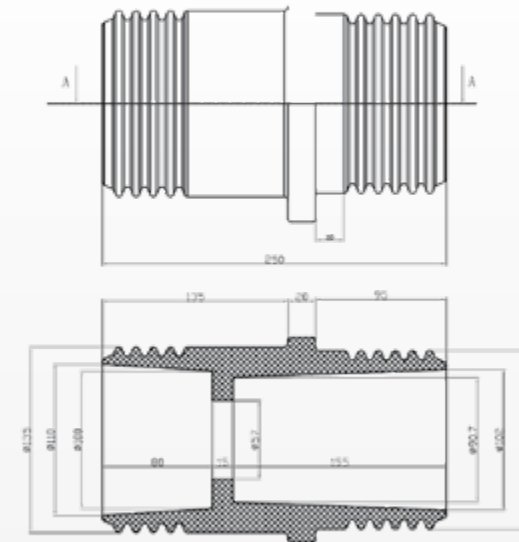


Type	Fig.	Art.No.	Rated voltage	Test voltage	Weight
			KV	KV	kg
BWS 10-42 des.1	1	KT047	12	42	3,37
BWS 10-42 des.2	2	KT046	12	42	3,36
BWS 10-42 des.3	3	KT048	12	42	3,35
BWS 10-42 des.4	4	KT073	12	42	3,38

Indoor bushing type BWR 12 kV



Fig. 1



Type	Fig.	Art.No.	Rated voltage	Test voltage	Weight
			KV	KV	kg
BWR 10-42	1	KT049	12	42	3,37

Spout type B12

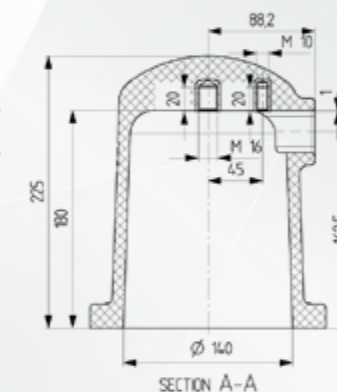
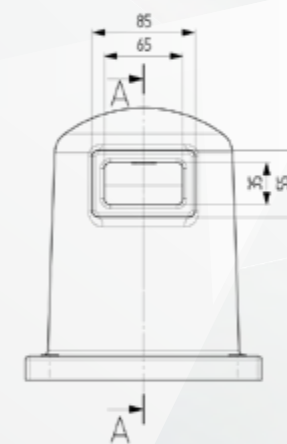
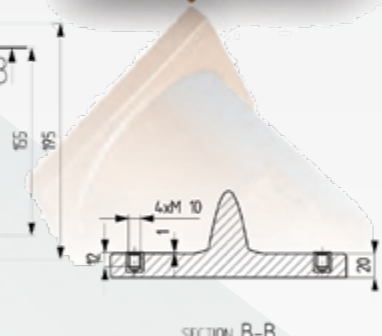
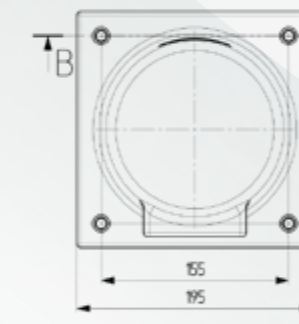
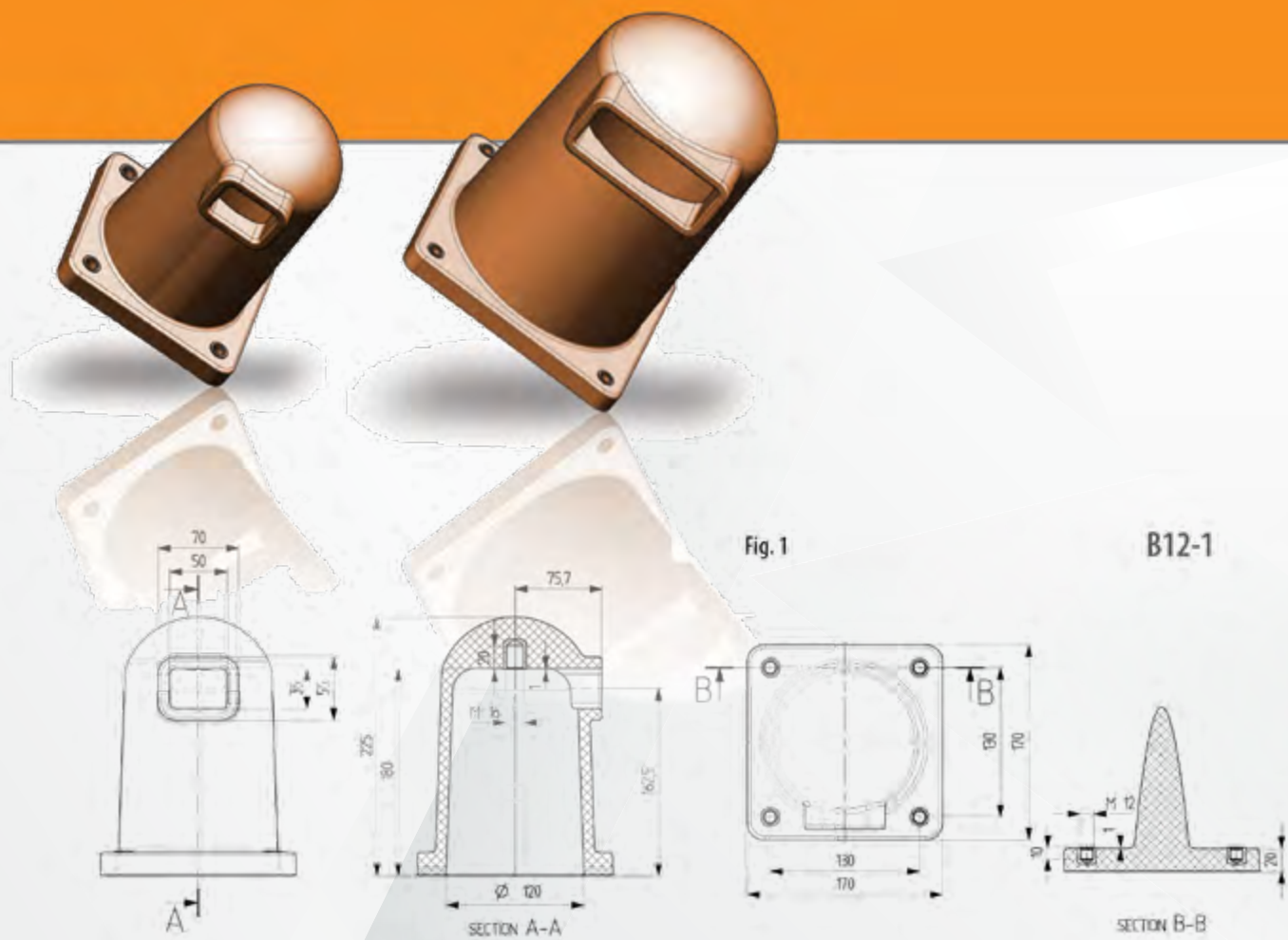


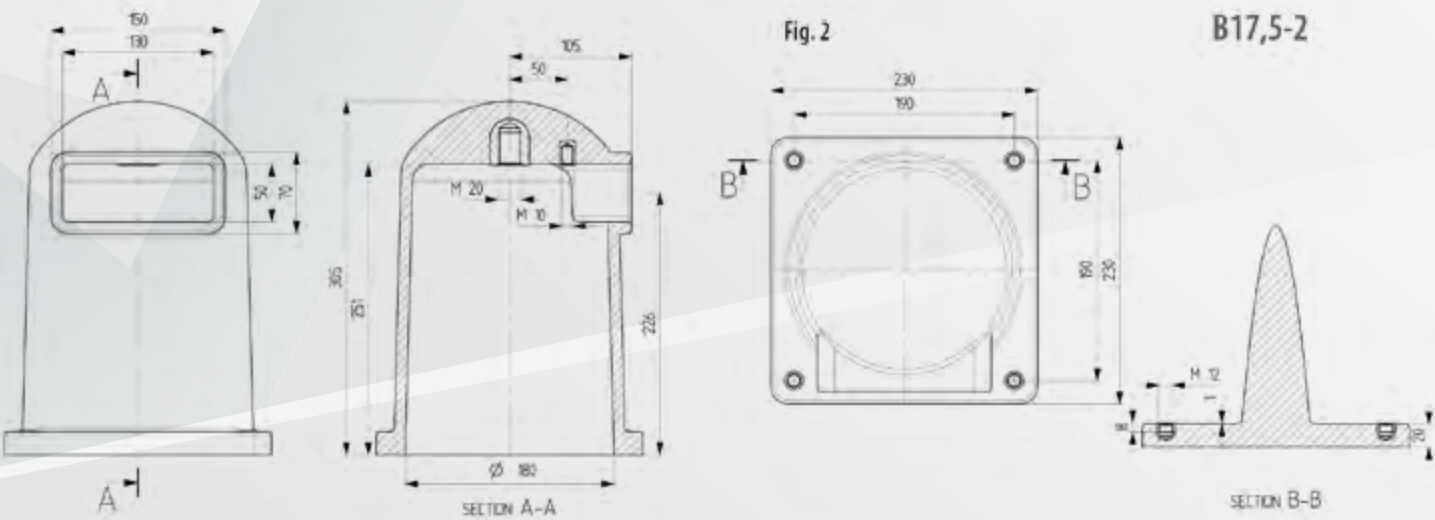
Fig. 2



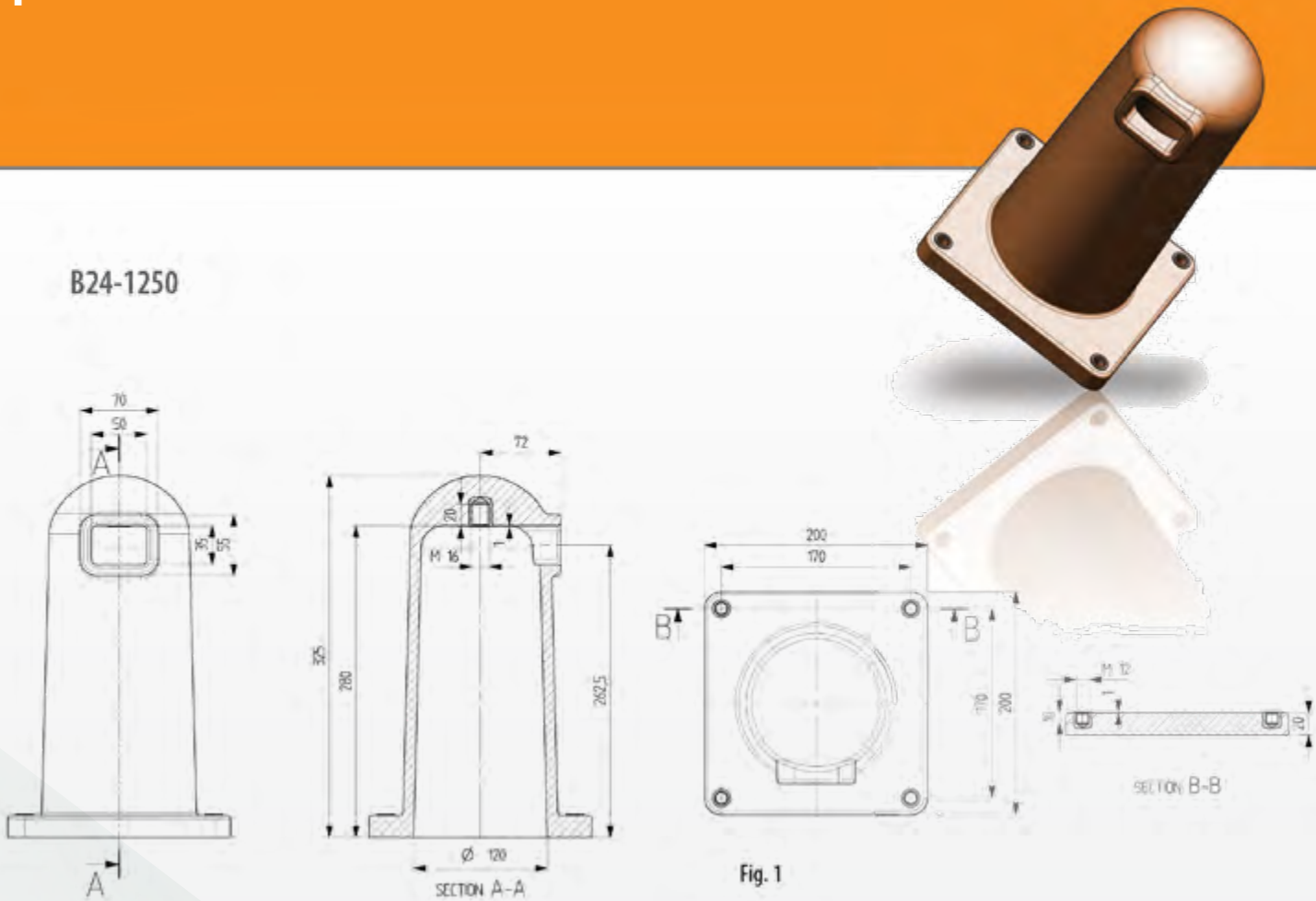
Type	Fig.	Art.No.	Rated voltage	Test voltage	Weight
			KV	KV	kg
Spout B12-2	2	CZ 7225	12	42	3,2



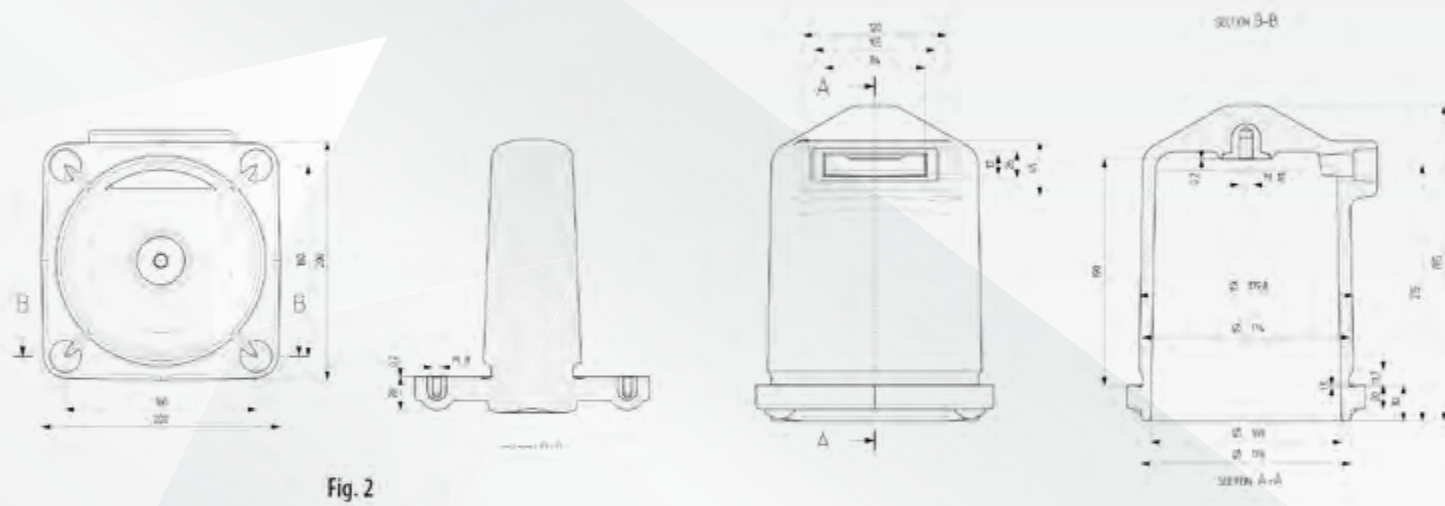
Type	Fig.	Art.No.	Rated voltage	Test voltage	Weight
			KV	KV	kg
Spout B12-1	1	000590-00	12	42	2,58



Type	Fig.	Art.No.	Rated voltage	Test voltage	Weight
			KV	KV	kg
Spout B17,5-2	2	000768-00	15	55	5,43x

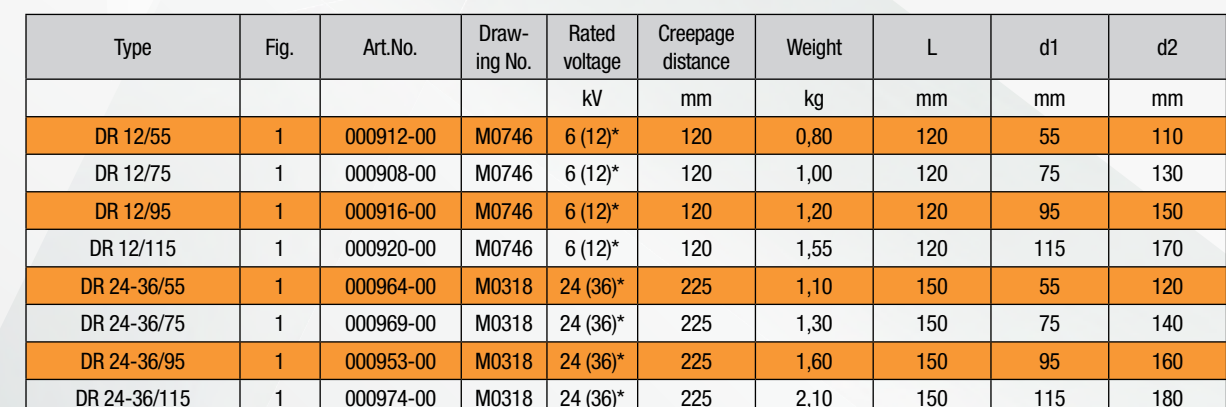
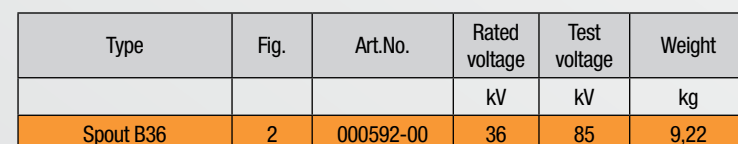


Type	Fig.	Art.No.	Rated voltage	Test voltage	Weight
			KV	KV	kg
Spout B24-1250	1	000591-00	24	65	3,66



Type	Fig.	Art.No.	Rated voltage	Test voltage	Weight
			KV	KV	kg
Spout B24	2	CZ 7139	24	65	3,95

Spout A12, indoor bushing type DR up to 36kV



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Screwable bushing type GD up to 36 kV

Indoor bushing type DGFI 12 kV - 36 kV

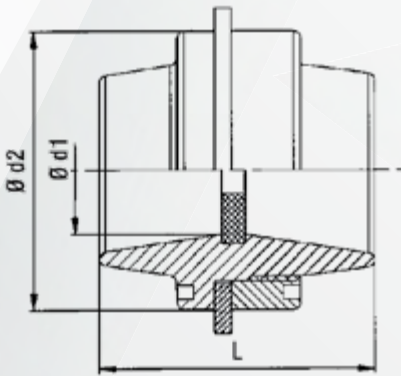
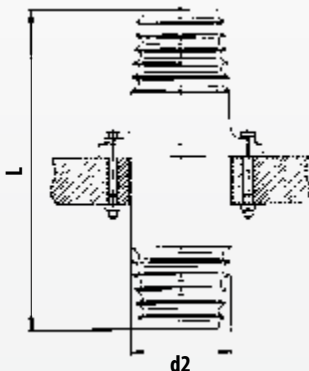
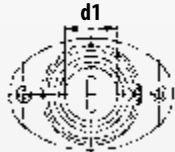


Fig. 1



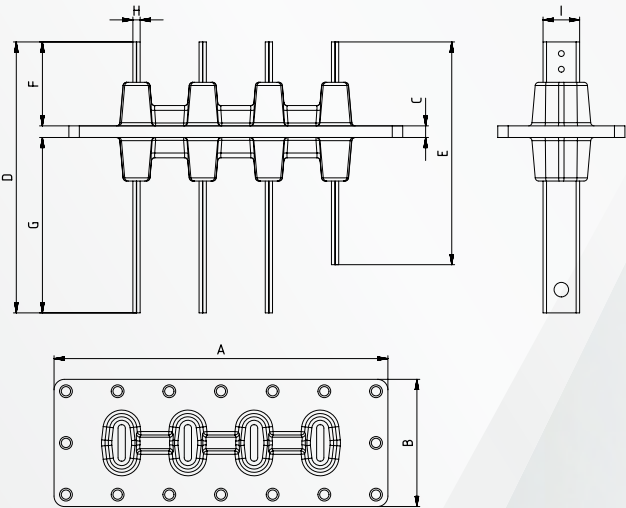
d2

Type	Fig.	Art.No.	Drawing No.	Rated voltage	Creepage distance	Weight	L	d1	d2
				kV	mm	kg	mm	mm	mm
GD 1,2/55	1	000248-00	M0063	1,2	55	0,45	46-52	55	101,5
* GD 12/55	1	000740-00	M0204	6 (12)**	120	1,10	120	55	120
* GD 12/75	1	000707-00	M0204	6 (12)**	120	1,30	120	75	140
* GD 12/95	1	000708-00	M0204	6 (12)**	120	1,60	120	95	160
GD 12/115	1	004054-00	M0204	6 (12)**	120	1,85	120	115	180
GD 12/145	1	004055-00	M0204	6 (12)**	120	2,20	120	145	210
* GD 24-36/55	1	000741-00	M0065	24 (36)**	230	1,65	150	55	140
* GD 24-36/75	1	000742-00	M0065	24 (36)**	230	1,96	150	75	160
GD 24-36/95	1	000709-00	M0065	24 (36)**	230	2,30	150	95	180
* GD 24-36/115	1	004056-00	M0065	24 (36)**	230	2,60	150	115	200
* GD 24-36/145	1	004057-00	M0065	24 (36)**	230	3,00	150	145	230

* Item on stock, depending on demand

**Installation with an insulating plate

Type	Fig.	Art.No.	Drawing no.	Rated voltage	Creepage distance	Weight	L	d1	d2
				kV	mm	kg	mm	mm	mm
DGFI 12/75	1	000324-00	M0066	12	140	3,30	285	75	120
DGFI 12/95	1	000325-00	M0066	12	140	3,90	285	95	140
DGFI 12/145	1	000326-00	M0066	12	140	4,20	285	145	190
DGFI 24/55	1	000327-00	M0067	24	250	6,50	440	55	120
DGFI 24/75	1	000328-00	M0067	24	250	7,20	440	75	140
DGFI 24/95	1	000329-00	M0067	24	250	7,80	440	95	160
DGFI 36/55	1	000330-00	M0068	36	350	9,40	570	55	134
DGFI 36/75	1	000331-00	M0068	36	350	10,20	570	75	154
DGFI 36/115	1	000720-00	M0068	36	350	15,30	570	115	194



Art. No.	Drawing No.	Rated current	A	B	C	D	E	F	G	H	I
		A	mm	mm	mm	mm	mm	mm	mm	mm	mm
000902-00	M0710	800	575	219	20	375	375	158	197	12,5	63
020088-00	M2467	800	575	219	20	380	380	158	202	12,5	63
000901-00	M0711	1.400	575	219	20	490	375	158	312	12,5	63
004126-00	M1078	1.400	575	219	20	375	375	158	197	12,5	63
004127-00	M1085	1.400	575	219	20	490	490	158	312	12,5	63
004371-00	M1470	1.400	575	219	20	490	490	158	312	12,5	63
004743-00	M2232	1.400	575	219	20	375	375	197	158	12,5	63
004824-00	M2410	1.400	575	219	20	500	500	158	322	12,5	63
000950-00	M0857	1.400	575	219	20	466,5	144,5	145	302	12,5	63
000949-00	M0859	1.444	575	219	20	385	385	164	201	12,5	63
004109-00	M0164	1.444	575	219	20	427	427	263	144	12,5	63
004161-00	M1160	1.450	575	219	20	490	490	158	312	12,5	63
004282-00	M1236	2.500	575	219	20	490	490	153	317	20	63
000903-00	M0712	2.100	575	219	20	620	505	153	447	20	63
004090-00	M1050	2.500	575	219	20	540	540	339,5	180,5	20	63
004207-00	M1205	2.500	575	219	20	490	375	153	317	20	63
004281-00	M1304	2.500	575	219	20	532,5	417,5	195,5	317	20	63
004372-00	M1469	2.500	575	219	20	605	605	153	432	20	63
004819-00	M2387	2.500	575	219	20	529	529	319	190	20	63
004820-00	M2385	2.500	575	219	20	615	615	160	435	20	63
004125-00	M1083	2.600	575	219	20	605	605	153	432	20	63
000951-00	M0858	3.150	575	219	20	415	415	195,5	199,5	20	63
004280-00	M1303	3.150	575	219	20	647,5	317	195,5	452	20	63



Fig. 1

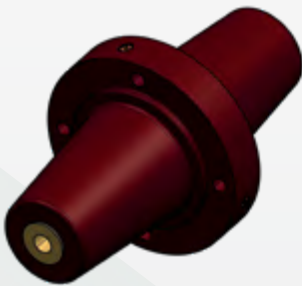
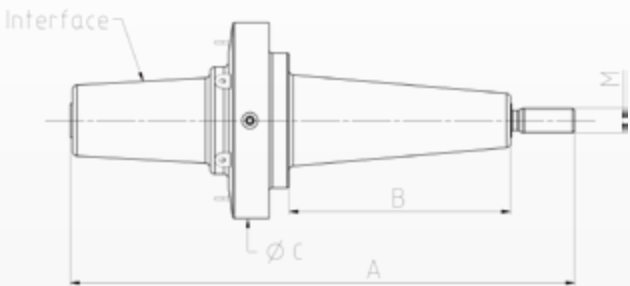
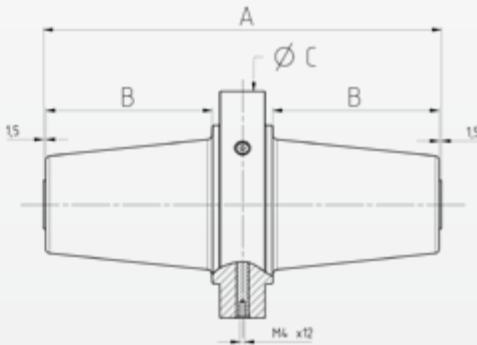


Fig. 2



Type	Fig.	Drawing No.	Art.No.	Interface	Rated voltage	Rated current	Thread	A	B	C	Weight
					kV	A		mm	mm	mm	kg
TB 24-250-R	1	M3188	021353-00	A	24	250	M10	189,5	73	110	1,06
TB 24-250-N	1	M3187	021352-00	A	24	250	M10	224,5	108	110	1,20
TB 24-250-L	1	M3186	021351-00	A	24	250	M10	284,5	168	110	1,43
TB 36-630	1	M3185	021350-00	C	36	630	M16	330	150	128	2,50
TB 72,5-630	1	KXET. MV02.007	022647-00	F	72,5	630	M16	384	175	150	4,90
TB 72,5-1250	1	KXET. MV02.008	022648-00	F	72,5	1250	M16	384	175	150	5,75
DB 36-630	2	M2206	020246-00	C	36	630	M16	255	90	125	2,27
DB 36-1250	2	M2585	020238-00	C	36	1250	M16	255	90	125	2,45
DB 72,5-630	2	KXET. MV02.009	022649-00	F	72,5	630	M16	264	110	150	3,81
DB 72,5-1250	2	KXET. MV02.010	022650-00	F	72,5	1250	M16	264	110	150	4,43

Bushing acc. to EN 50180 & IEC 60137

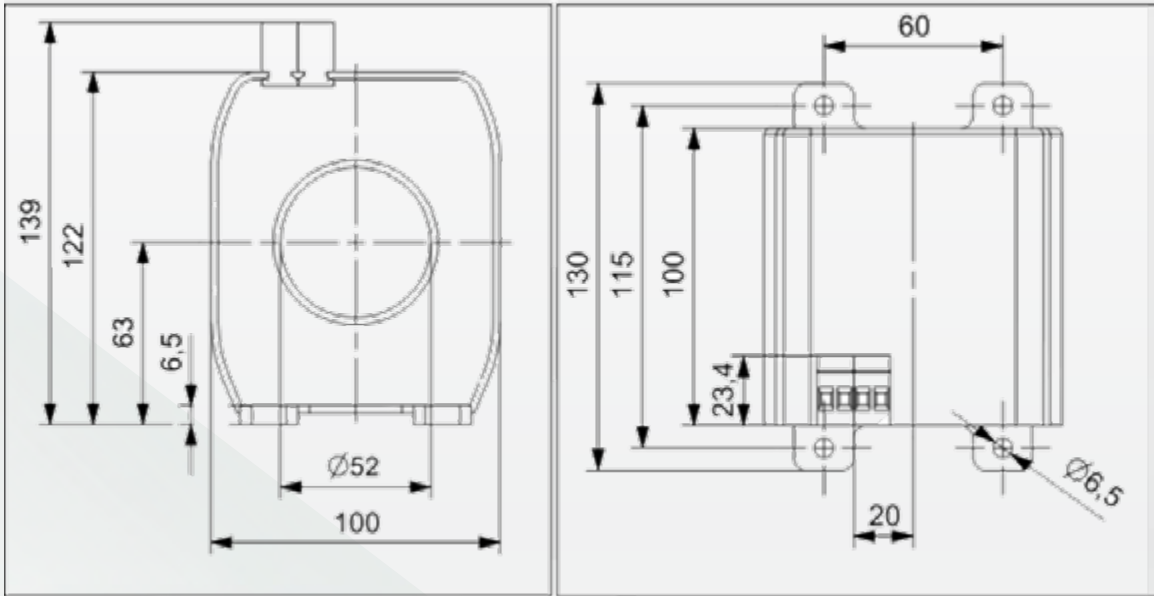
Bushing acc. to DIN EN 50673



Type	Drawing no.	Art. No.	Size	Rated current	Max. operating voltage	Power frequency test	Rated lightning impulse withstand voltage	Capacitance voltage tap	Weight
				A	Um (kV)	kV/1 min	kV	pF	kg
Bushing S2	M3015	021431-00	2	800	42	57	200	-	1,86
Bushing S2 with voltage tap	M3120	021432-00	2	800	42	57	200	6,7 ± 1,5	1,88
Bushing S3	M3123	021433-00	3	1250	52	95	200	-	4,45
Bushing S3 with voltage tap	M3268	021252-00	3	1250	52	95	200	8,3 ± 1,5	4,65
Bushing S3 with voltage tap	M3268-1	021845-00	3	1250	52	95	200	12 ± 1,5	4,65
Bushing S3 with voltage tap	M4053	022456-00	3	1250	52	95	200	14,5 ± 1,5	4,65
ecoline - design									
Bushing S3	M3870	022475-00	3	1250	52	95	200	-	4,00
Bushing S3 with voltage tap	M3745	022173-00	3	1250	52	95	200	8,3 ± 1,5	4,20



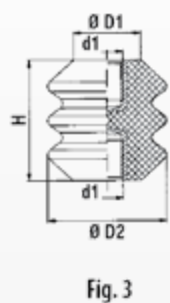
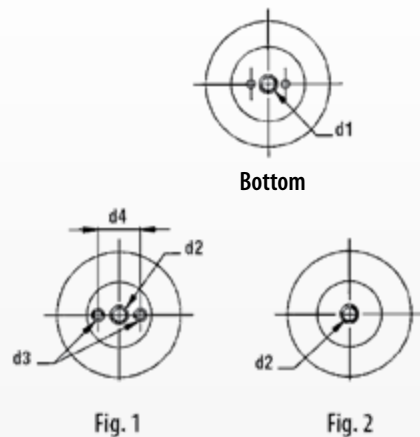
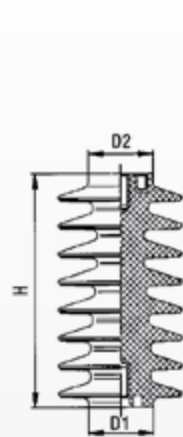
The current transformers W025X series are designed for indoor applications mainly for medium voltage switchgear. The transformers are compact, easily mounted with simple connection by screw terminal. The transformer is built-in plastic box and casted by epoxy resin. W025X current transformers are designed for use with Woodward WIC1 over current relay but it can also serve with other protection systems.



Type	W0252	W0253	W0254	W0255	W0256
Primary winding	7,2A	16A	32A	64A	128A
Secondary winding	0,075A	0,075A	0,075A	0,075A	0,075A
Accuracy	5P80	10P80	5P80	5P80	5P80
Burden	0,1VA	0,1VA	0,1VA	0,1VA	0,1VA
Test winding	25//1A	50//1A	100//1A	200//1A	400//1A
IP20; 0,72/3kV; Ith=20kA; Idyn 50kA; IEC 61869-2					



Type	Fig.	Art.No.	Drawing No.	Rated voltage	Rated lightning impulse withstand voltage	Creepage distance	Bending strength	Weight	H	D1	D2	d1	d2	d3
					kV	mm	> kN	kg	mm	mm	mm			
PI 170-12	1	000387-00	M0056	36	193	849	12	4,90	280	90	170	M16x35	M16x33	M10x16
PI 200-8	1	000336-00	M0057	36	230	1108	8	6,00	360	90	170	M20x40	M16x33	M10x16
PI 200-8	1	004323-00	M1363	36	230	1108	8	6,00	360	90	170	M16x33	M16x33	4xM10x16
PI 200-8	1	004224-00	M1924	36	230	1108	6	6,00	360	90	170	2x M12x25		2x M12x25
PI 250-4	1	004421-00	M1595	36	250	1547	4	8,95	500	90	170	M20x34	M16x33	M10x16
PI 250-4	1	004661-00	M2061	36	250	1547	4	8,95	500	90	170	M20x34	M16x33	M10x16
LPI 110-13	2	000390-00	M0052	24	125	582	13	3,40	231,5	90	170	M16x35		
LPI 150-13	2	000391-00	M0053	24	160	769	10	4,20	283,5	90	170	M16x35		
LPI 170-8	2	000388-00	M0054	36	170	943	8	5,10	335,5	90	170	M16x35		
LPI 200-8	2	000389-00	M0055	36	203	1104	8	6,00	387,5	90	170	M20x40		



Type	Fig.	Art.No.	Drawing no.	Rated voltage	Rated lightning impulse withstand voltage	Creepage distance	Bending strength	Weight	H	D1	D2	d1	d2	d3	d4
					kV	mm	> kN	kg	mm	mm	mm				mm
FSH 5-125	1	000395-00	M0084	24	125	514	5	2,92	210	80	70	M16x33	M16x33	M6x12	36
FSH 5-125	2	000396-00	M0084	24	125	514	5	2,92	210	80	70	M16x33	M16x33		
FSH 8-125	1	000397-00	M0084	24	125	514	8	2,92	210	80	70	M20x34	M20x34	M10x16	46
FSH 8-125	2	000398-00	M0084	24	125	514	8	2,92	210	80	70	M20x34	M20x34		
FSG 4-125/1	1	000276-00	M0085	24	125	734	4	3,35	250	70	70	M16x33	M10x20	M6x12	36
FSG 4-125/1	2	000277-00	M0085	24	125	734	4	3,35	250	70	70	M16x33	M16x33		
FSG 8-125/1	1	000282-00	M0085	24	125	724	8	3,50	250	70	90	M20x34	M16x33	M10x16	66
FSG 8-125/1	2	000283-00	M0085	24	125	724	8	3,50	250	70	90	M20x34	M16x33		
FSG 4-125/2	1	000399-00	M0101	24	125	824	4	3,75	280	70	70	M16x33	M10x20	M6x12	36
FSG 4-125/2	2	000278-00	M0101	24	125	824	5	3,75	280	70	70	M16x33	M10x20		
FSG 7-125/2	1	000400-00	M0101	24	125	814	7	3,90	280	70	90	M20x34	M16x33	M10x16	66
FSH 4-170	1	000402-00	M0086	36	170	784	4	4,05	300	80	70	M16x33	M16x33	M6x12	36
FSH 4-170	2	000403-00	M0086	36	170	784	4	4,05	300	80	70	M16x33	M16x33		
FSH 8-170	1	000404-00	M0086	36	170	784	8	4,05	300	80	70	M24x35	M24x35	M10x16	46
FSH 8-170	2	000405-00	M0086	36	170	784	8	4,05	300	80	70	M24x35	M24x35		
FSG 4-170	1	000408-00	M0110	36	170	784	4	4,05	300	80	70	M16x33	M10x20	M6x12	36
FSG 4-170	2	000409-00	M0110	36	170	784	4	4,05	300	80	70	M16x33	M10x20		
FSG 8-170	1	000410-00	M0110	36	170	784	8	4,05	300	80	70	M24x35	M16x33	M10x16	46
FSG 8-170	2	000411-00	M0110	36	170	784	8	4,05	300	80	70	M24x35	M16x33		
FSG 5-170/1	1	000107-00	M0087	36	170	980	5	4,85	360	80	70	M16x33	M10x20	M6x12	36
FSG 5-170/1	2	000108-00	M0087	36	170	980	5	4,85	360	80	70	M16x33	M16x33		
FSG 6-170/1	1	000288-00	M0087	36	170	973	6	4,95	360	80	90	M24x35	M16x33	M10x16	66
* FSG - M10	3	000315-00	M0129	6	60	85	6	0,25	60	35	60	M10x16			
* FSG - M12	3	000316-00	M0129	6	60	85	7,5	0,26	60	35	60	M12x18			
* FSG - M16	3	000317-00	M0129	6	60	85	10	0,27	60	35	60	M16x20			

* item on stock, depending on demand



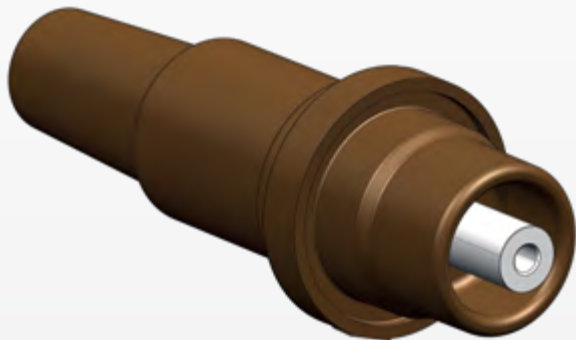
Fig. 1



Fig. 2



Fig. 3

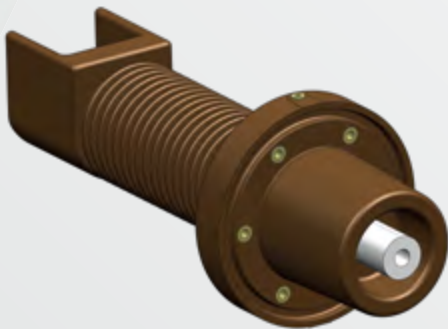


Type	Fig.	Art.No.	Drawing No.	Rated lightning impulse withstand voltage	Rated voltage	Rated current	L	Creepage distance	Weight
				kV	kV	A	mm	mm	kg
GFD 12/250	1	004180-00	M0725	75	12	250	540	542	6,20
GFD 12/400	1	004181-00	M0725	75	12	400	540	542	6,60
GFD 12/630	1	004182-00	M0725	75	12	630	540	542	6,80
GFD 12/1000	1	004183-00	M0725	75	12	1000	540	542	9,50
GFD 24/200	2	021380-00	M3214	125	24	200	650	748	7,70
GFD 24/250	1	000294-00	M0069	125	24	250	735	815	8,20
GFD 24/400	1	000292-00	M0069	125	24	400	735	815	8,80
GFD 24/630	1	000293-00	M0069	125	24	630	735	815	9,30
GFD 24/1000	1	000412-00	M0069	125	24	1000	735	815	11,20
GFD 36/400	1	000295-00	M0071	170	36	400	852	1310	13,50
GFD 36/630	1	000296-00	M0071	170	36	630	852	1310	14,30
GFD 36/1000	1	000475-00	M0071	170	36	1000	900	1310	16,40
Type C Cone	3	020810-00	M2933	170	36	630	555		7,20

Art.No.	Drawing No.	Rated voltage	Rated current	Length
		kV	A	mm
KT195	KET-MV02-012	12	630	285
KT195-1	KET-MV02-013	12	1250	285
KT195-2	KET-MV02-014	12	630	285
KT195-3	KET-MV02-015	24	630	285



Art.No.	Drawing No.	Rated voltage	Rated current	Length
		kV	A	mm
KT148	182-25-C-M16	12/24	630	181
KT149	196.8-30-C-M16	24	1250	202
KT150-4	202-25-C-M16	24	630	202
KT151	202-30-C-M16	12	1250	202
KT151-2	202-32-C-M16	12	1250	202



Art.No.	Drawing No.	Rated voltage	Rated current	Length
		kV	A	mm
KT194	KT194-01	12/24	630	345

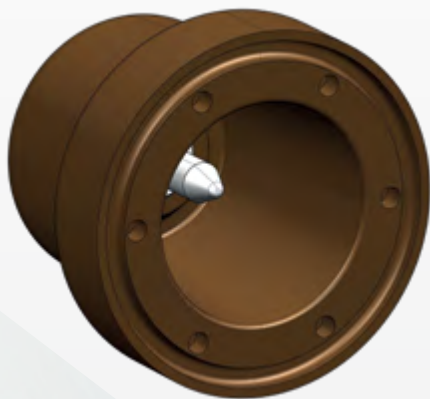


Fig. 1

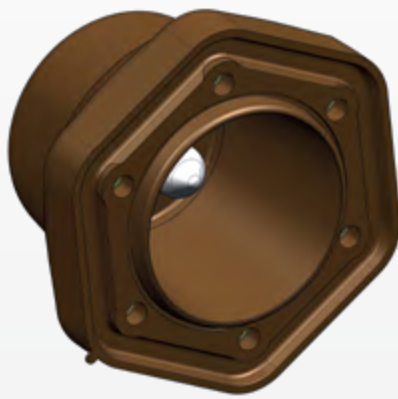


Fig. 2



Fig. 3

Type	Fig.	Art.No.	Drawing No.	Rated voltage
E-bushing	1	KT139	KET-MV-005	12kV
E-bushing	2	KT056	5100704F002	24kV
E-bushing	3	KT246	KXET.MV.009	24kV

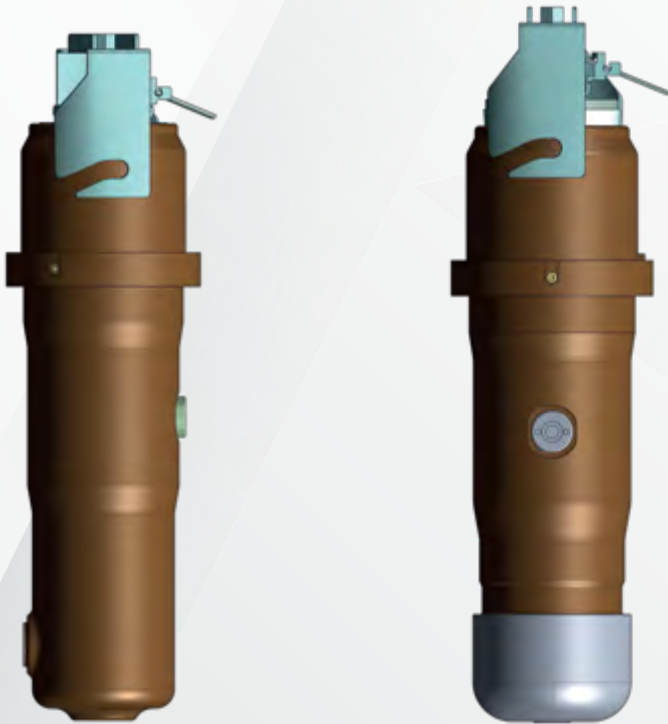


Fig. 1

Fig. 2

Type	Fig.	Art.No.	Rated Voltage	Drawing No.
12 kV fuse tube	1	KT159	12kV	KXET.MV05.001
12 kV fuse tube (with AL cap)	2	KT160	12kV	KXET.MV02.012



Fig. 1



Fig. 2



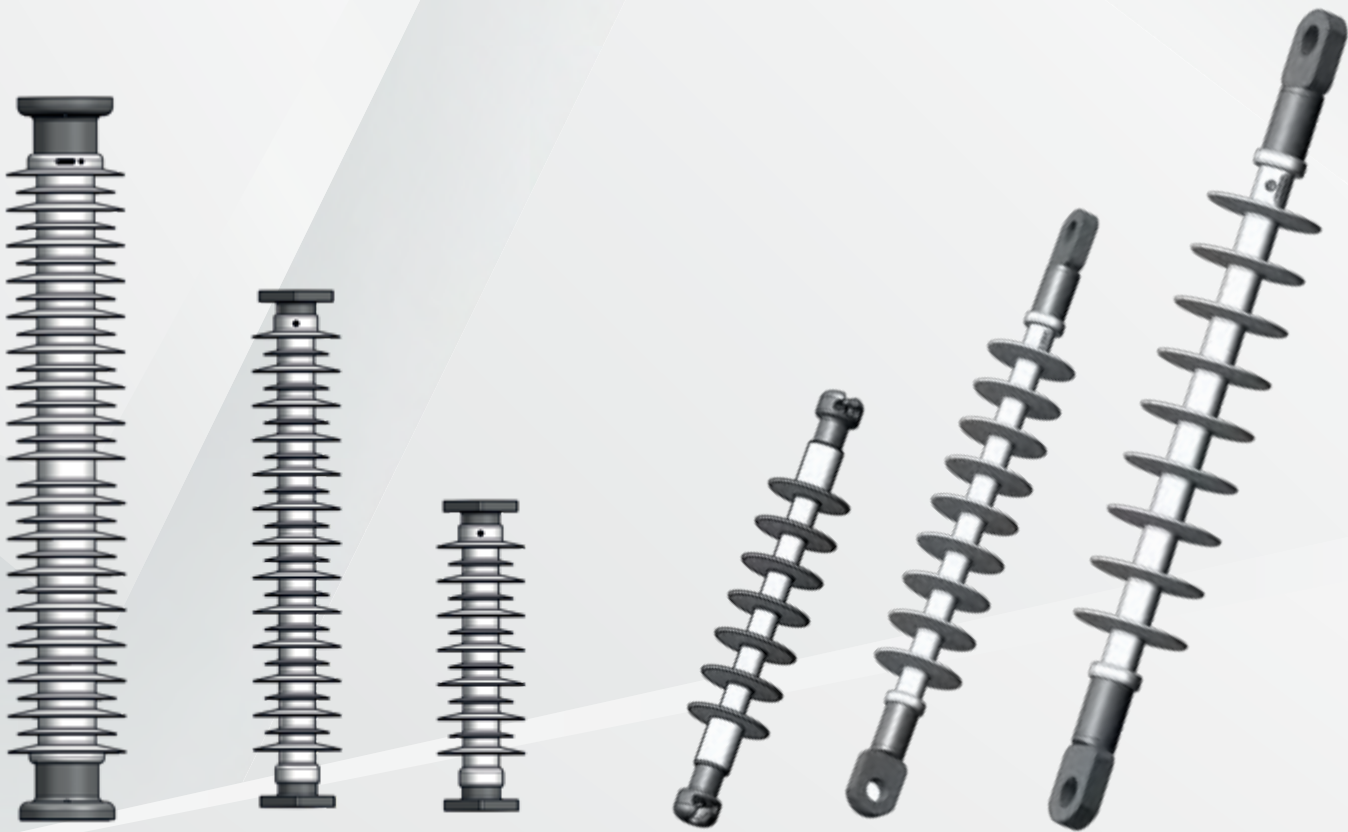
Fig. 3



Fig. 4

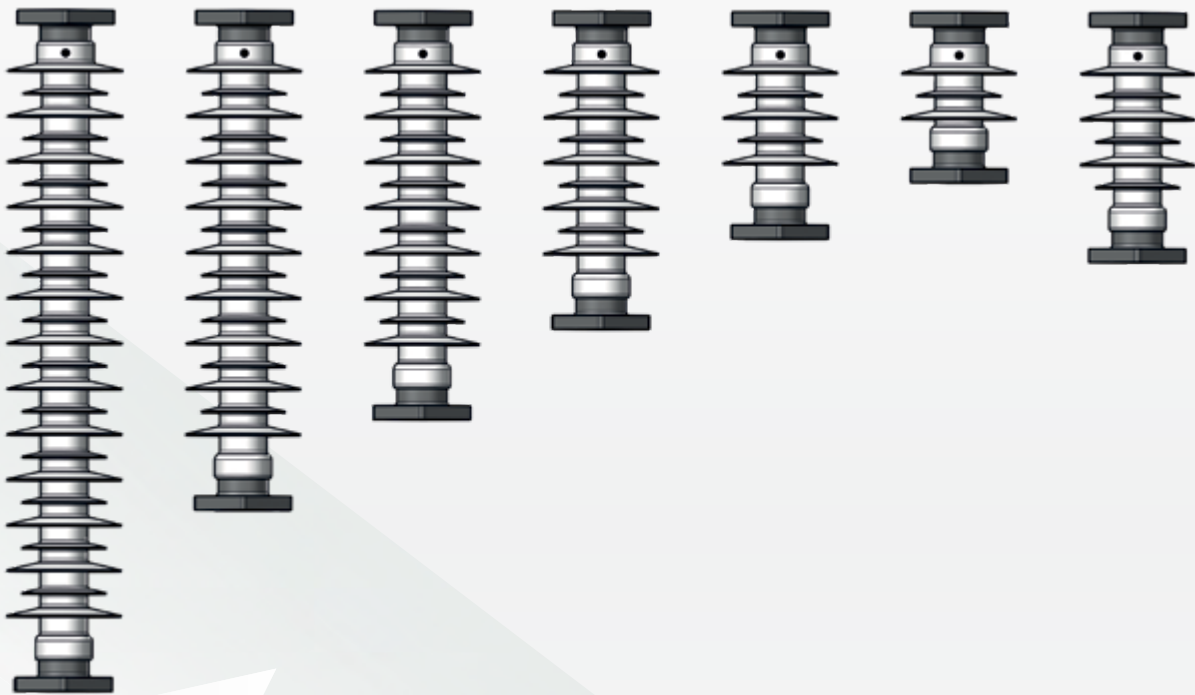
	Embedded pole Type, Specifications, Technical Data									
	Type	EP 12/ 1250-31.5-01	EP 12/ 630-25-01	EP 12/ 1250-25	EP 12/ 1250-31.5-02	EP 12/ 2000-31.5	EP 12/ 2500-40	EP 24/ 1250-2"	EP 24/ 2500-31.5	EP 24/ 3150-31.5
No		Fig.1	Fig.2	Fig.1	Fig.1	Fig.1	Fig.3	Fig.4	Fig.4	Fig.4
1	Rated voltage (kV)	12	12	12	12	12	12	24	24	24
2	Rated current (A)	1250	630	1250	1250	2000	2500	1250	2500	3150
3	Rated frequency (Hz)									
4	Rated short-circuit breaking current (kA)	31,5	25	25	31,5	31,5	40	25	31,5	31,5
5	Rated short-circuit breaking current breaking times	30	30	30	30	30	30	30	20	20
6	Rated short-circuit making current (kA)	80	63	63	80	100	100	63	80	80
7	Rated peak withstand current (kA)	80	63	63	80	100	100	63	80	80
8	Rated short-time withstand current (4 second)	831,5	25	25	31,5	40	40	25	31,5	31,5
9	Rated single capacitor bank breaking times (A)	630								
10	Rated breaking current of the capacitor bank (A)	400								
11	Rated power-frequency withstand voltage (kV)	42						65		
12	Rated lightning impulse withstand voltage (kV)	75						125	125	125
13	Circuit resistance at rated contact pressure (μΩ)	≤40				≤25	≤20	≤25	≤25	≤20
14	Mechanical endurance (times)							10000		
15	Closing force due to bellows and atmosphere (N)	120±50	80±50	120±50	120±50	120±50	250±60	100±30	250±30	250±30
16	Force required to hold contacts open at full stroke (N)	180±50	120±50	180±50	180±50	180±50	360±60	200±30	360±30	360±30
17	Contact erosion limit (mm)	3								
18	Service life (year)	20								
19	Partial discharge (pC)	≤10								
20	Rated operation sequence	0-0.3s-00-180s-00								
	MECHANICAL DATA OF SWITCH RECOMMENDATIONS WITH THE INTERRUPTERS									
1	Rated contact stroke (mm)	9±1						12±1		
2	Contact connection stroke (mm)									
3	Average opening speed (m/s)	1.1±0.2						1.3±0.2		
4	Average closing speed (m/s)							1.0±0.2	0.6±0.2	0.6±0.2
5	Added force on closed contacts (N)	3100±200	2000±200	2000±200	3100±200	4300±200	5000±300	2400±200	3100±200	3100±200
6	Max. bouncing duration (ms)					≤2				
7	Out of simultaneity of contact closing and opening (ms)					≤1				
8	Max. rebound distance (ms)					≤2				

COMPOSITE INSULATORS

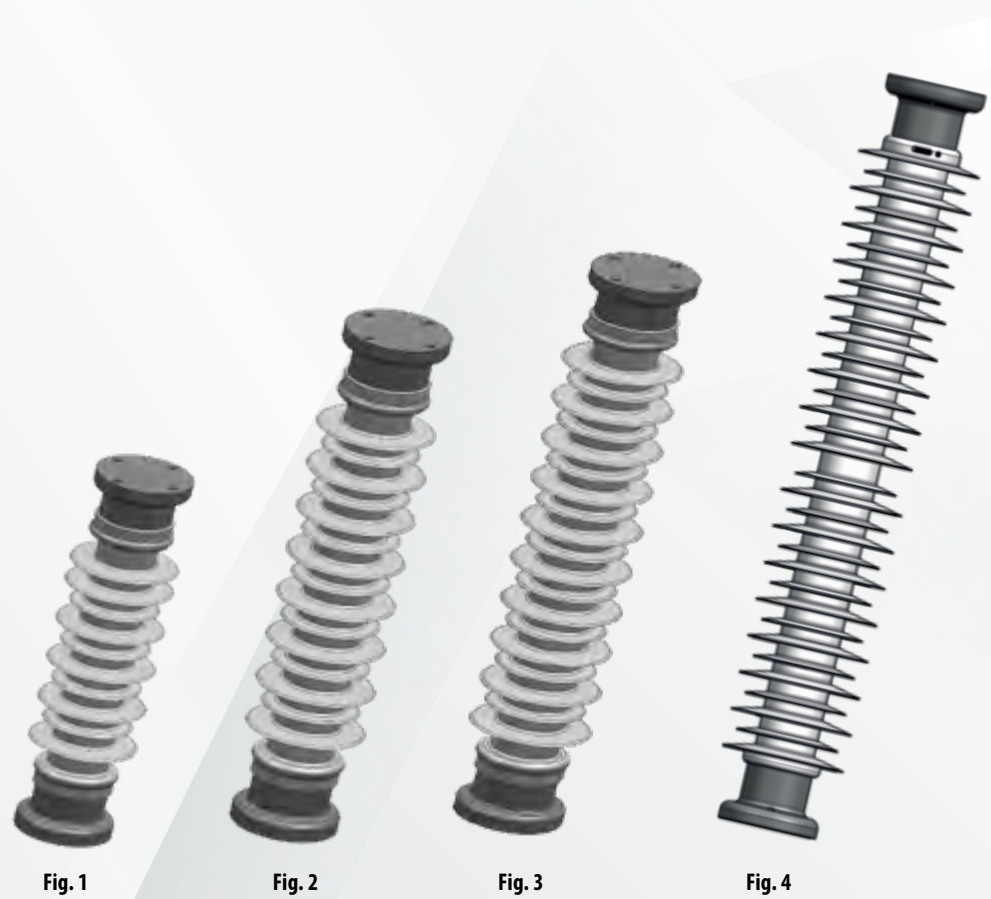


TR Station Post Insulators

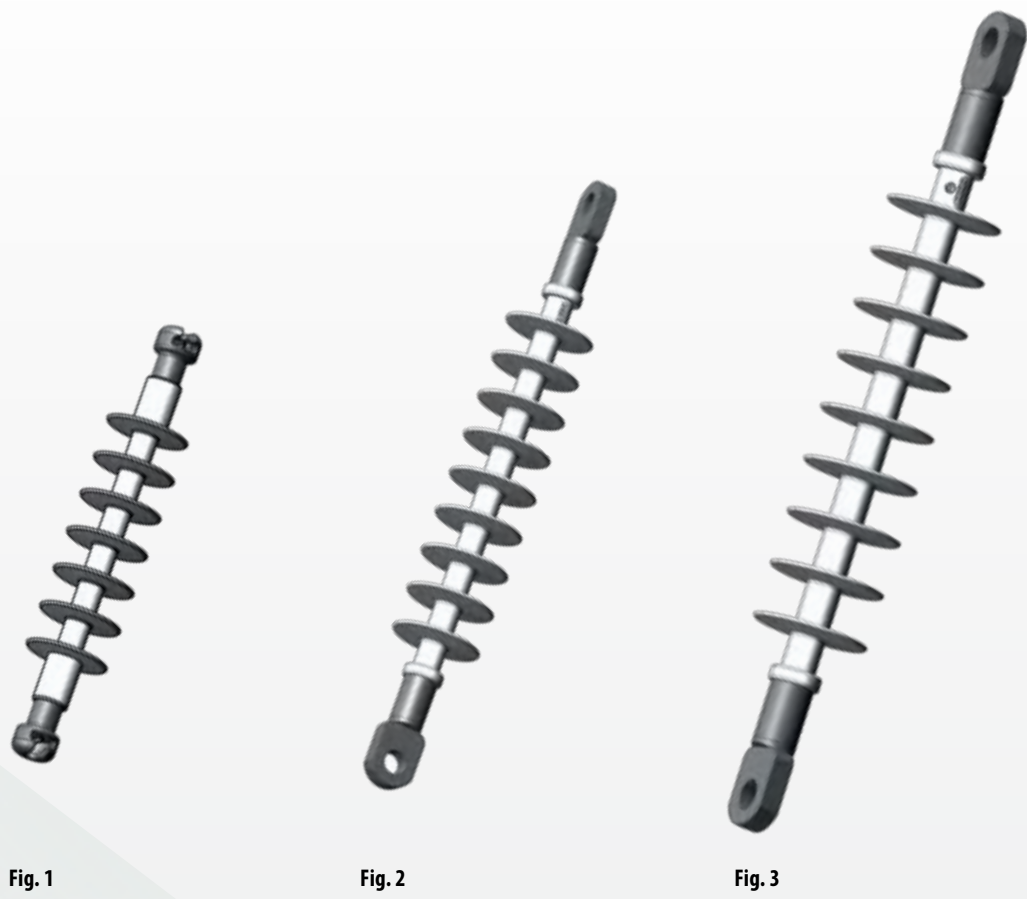
Our SIMOTEC composite station post insulators combine the highest levels of electrical insulation and mechanical strength in a compact and lightweight design. Mainly used for bus bar supports in substations, for disconnecter switches and for HVDC converters, composite insulators show superior advantages compared to porcelain insulators in terms of weight, design strength, pollution resistance and seismic performance resulting in lower total cost of ownership (TCO) for our customers and end users. Our insulators are designed and tested according to the specifications outlined in IEC 62217, IEC 61952, IEC 61109, IEC 62231 and ANSI C29.19.



TR Reference	KUVAG Equivalent	Article No.:	BIL (kV)	Cantilever strength (lb)	Leakage distance (in)
TR 202	SIMOTEC CI-P-TR202	022662-00	95	2000	11.4
TR 205	SIMOTEC CI-P-TR205	022663-00	110	2000	18
TR 205-S	SIMOTEC CI-P-TR205-S	022679-00	110	2000	20.5
TR 208	SIMOTEC CI-P-TR208	022664-00	150	2000	30.3
TR210	SIMOTEC CI-P-TR210	022665-00	200	2000	42.9
TR214	SIMOTEC CI-P-TR214	022666-00	250	2000	55.1
TR216	SIMOTEC CI-P-TR216	022667-00	350	1500	80
TR278	SIMOTEC CI-P-TR278	022668-00	350	10000	73.4
TR 278-S	SIMOTEC CI-P-TR278-S	022680-00	370	7000	87.8
TR 287	SIMOTEC CI-P-TR287	022670-00	550	2600	133.8
TR 289	SIMOTEC CI-P-TR289	022672-00	650	2250	141



Type	Drawing No.	Art.No.	Length	Creepage distance	Max. operating voltage	Power frequency test	Rated lightning impulse withstand voltage	SCL	Weight
			mm	mm	Um (kV)	kV/1mm	kV	kN	kg
CI-P-52-724-10	M3574	021965-00	724	1150	52	95	250	50	29
CI-P-72,5-920-15	M3761	022476-00	920	1640	72,5	140	325	25	31,6
CI-P-123-1080-19	M3395	021603-00	1080	1970	123	210	550	20	37
CI-P-110-550-3600-20	M3884	022587-00	1220	3600	110	230	550	20	35



Type	Fig.	Drawing No.	Art.No.	Length	Creepage distance	SML	Lightning impulse withstand voltage
				mm	mm	kN	kV
CI-LR 36-7-442	1	M3561	021941-00	442	700	70	170
CI-LR 36-9-442	1	M3736	022186-00	442	675	45	170
CI-LR 36-6-675	1	M3736	022183-00	460	460	45	155
CI-LR 25-9-625_B3	2	M3310	021503-00	577	880	50	200
CI-LR 25-9-625_B4	2	M3311	021504-00	577	880	50	200
CI-LR 123-16-1160	3	M3789	022275-00	1160	2310	180	550
CI-LR 123-16-1500	3	M3790	022276-00	1500	2400	140	550

TECHNOLOGIES

AUTOMATIC PRESSURE GELATION PROCESS

The cost-effective automatic pressure gelation process is ideal for manufacturing medium to large amounts of insulators in series production. KUVAG has been continuously developing this process for over 40 years. The use of superior molding concepts, optimized epoxy resin systems and advanced process control enable products to be manufactured for critical mechanical and electrical requirements.

This process involves components like epoxy resin, hardener, fillers and special additives being homogeneously mixed and degassed under vacuum. KUVAG uses more than 80 customized epoxy resin formulations, which have been optimized in terms of their hydrophobicity, high-temperature resistance, flame retardancy and special mechanical or other properties. These reactive resin formulations are injected into heated multi-cavity molds, usually equipped with pre-treated and pre-tempered casting inserts, in a semi-automated process. After demolding the transfer to special curing ovens for full polymerization is the last process step.



VACUUM CASTING TECHNOLOGY

Our vacuum casting technology is the method of choice, especially for insulators in the high-voltage range or insulators requiring high volumes of casting resin. KUVAG has been perfecting and further developing this technology for many years. We focus particularly on superior mold concepts that enable the highest process control and excellent product quality even for very complex and large-volume products.

The technology involves the casting of degassed resin formulation under vacuum into pre-tempered molds which are usually preloaded with pre-treated and pre-tempered casting inserts. KUVAG uses an innovative proprietary direct-heated mold concept with controlled heating zones enabling a targeted polymerization reaction. The gelling reaction of the reactive epoxy mixture is controlled by the use of special heating stations before the product is demolded and transferred to curing ovens for complete polymerization.



SILICONE ENCAPSULATION TECHNOLOGY

The wide range of applications where silicone insulators and components are used extends from transmission and distribution networks to railway infrastructure. LSR (liquid silicone rubber) or solid HTV (high-temperature vulcanization) silicones are applied depending on the desired product properties. KUVAG produces a wide range of products for insulation applications, where silicone is applied to structures made of fiberglass-reinforced rods, epoxy resin, or even ceramic surfaces.

Liquid silicones are additive-curing silicone rubbers consisting of two components mixed in a dispensing unit and crosslinked at high temperatures with short cycle time. Solid silicones are supplied as a one-component system in blocks or bales, which are crosslinked in the respective mold at temperatures of up to 220°C. Encapsulated structures like rods, cast-epoxy products, etc. are usually pre-assembled and pre-treated to ensure perfect bonding between substrate and surface. KUVAG uses largely self-developed tools to ensure the highest precision, efficiency and processing quality.



FILAMENT WINDING TECHNOLOGY

Filament winding is a wet winding method for producing high-quality composite tubes. The winding of composite fiber materials is mainly used to manufacture cylindrical components that have to withstand high mechanical stresses with low component mass. The excellent electrical insulation properties of fiber-reinforced composites enable them to be used especially for components subject to high mechanical stresses in high-voltage engineering. KUVAG experts assist our customers in selecting their material and tube design, thus covering a wide range of application areas.

This technology involves glass fibers being impregnated with a pre-formulated epoxy matrix coating and then wound in layers onto a rotationally symmetrical mandrel. KUVAG has a large selection of winding mandrels ranging from an internal diameter of 20 mm to 2500 mm. The epoxy resin system used and the layer structure at different winding angles define the properties of the tube (for instance pressure tubes, flexible tubes). These tubes are then cured under defined temperature conditions and subsequently removed from the winding mandrel. Further mechanical processing of the product or consecutive operations such as encapsulation with silicone or the application of coatings is common for our tubes.





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