

Surge arrester

MWK



Product description:

- Metal-oxide (MO) surge arrester without spark gap, designed and type tested according to IEC 60099-4, with own ABB metal-oxide resistors since more than 30 years
- Direct molded silicone housing in patented design for best environmental robustness
- 100% in-house production – fully in charge of complete process
- High quality, safe and reliable, maintenance free
- For alternating current (AC) systems
- For indoor and outdoor installations

Especially recommended for overvoltage protection of:

- MV distribution transformer
- MV cable and cable termination
- MV capacitor and capacitor bank
- Further MV distribution equipment

Additional certification:

- Fire and smoke behavior tested and classified according to EN 45545-2

Technical data

Classification according to IEC 60099-4

Arrester class	SL, Station Low
Line discharge class (LD)	2
Nominal discharge current I_n (8/20 μ s)	10 kA _{peak}
Repetitive charge transfer rating Q_{rs}	1.6 As (C)
Rated thermal energy	
W_{th} at $T_{amb} = 40\text{ }^\circ\text{C}$	5.0 kJ/kV (U_c) = 6.25 kJ/kV (U_c)
W_{th} at $T_{amb} = 55\text{ }^\circ\text{C}$	4.5 kJ/kV (U_c) = 5.625 kJ/kV (U_c)
High current impulse I_{nc} (4/10 μ s)	100 kA _{peak}
Long duration current impulse	550 A for 2000 μ s
Short circuit rating I_s	20 kA _{rms} for 0.2 s

Power frequency voltage versus time characteristics (TOV)

With no prior duty energy input

U_{TOV} at $t = 1\text{ s}$	1.155 U_r = 1.444 U_c
U_{TOV} at $t = 3\text{ s}$	1.130 U_r = 1.412 U_c
U_{TOV} at $t = 10\text{ s}$	1.089 U_r = 1.361 U_c

With prior duty energy input of 4.5 kJ/kV (U_c) = 5.625 kJ/kV (U_c)

U_{TOV} at $t = 1\text{ s}$	1.101 U_r = 1.376 U_c
U_{TOV} at $t = 3\text{ s}$	1.075 U_r = 1.343 U_c
U_{TOV} at $t = 10\text{ s}$	1.049 U_r = 1.312 U_c

Mechanical loads

Torque	50 Nm
Tensile strength axial	1200 N
Short term load SSL perpendicular to axis	153 Nm
Long term load SLL perpendicular to axis	88 Nm

Service conditions

Ambient air temperature T_{amb}	-60 to +55 $^\circ\text{C}$ (for temperatures up to 80 $^\circ\text{C}$ consider instructions of application guidelines)
Altitude of installation	up to 1800 m (for higher altitudes contact ABB)
Frequency of system voltage	15 to 62 Hz

Electrical data

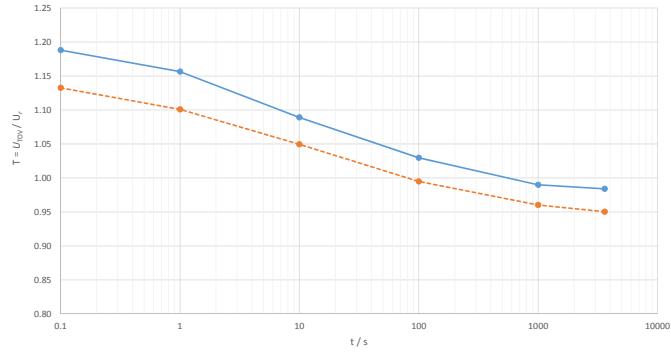
Rated voltage U_r	Continuous operating voltage U_c	Residual voltage U_{res} at specified impulse current (Maximum value)							Switching current impulse wave 30/60 μ s		
		Steep current impulse wave 1/... μ s		Lightning current impulse wave 8/20 μ s					125 A	250 A	500 A
kV_{rms}	kV_{rms}	5 kA	10 kA	1 kA	2.5 kA	5 kA	$I_n=10$ kA	20 kA	kV_{peak}	kV_{peak}	kV_{peak}
		kV_{peak}	kV_{peak}	kV_{peak}	kV_{peak}	kV_{peak}	kV_{peak}	kV_{peak}	kV_{peak}	kV_{peak}	kV_{peak}
5.0	4	12.7	13.5	10.5	11.1	11.7	12.3	14.1	9.2	9.5	9.9
6.3	5	15.9	16.8	13.1	13.9	14.6	15.4	17.6	11.4	11.9	12.4
7.5	6	19.1	20.2	15.8	16.7	17.5	18.5	21.1	13.7	14.3	14.8
8.8	7	22.2	23.5	18.3	19.4	20.3	21.5	24.6	16.0	16.6	17.2
10.0	8	25.4	26.9	21.0	22.2	23.3	24.6	28.1	18.3	19.0	19.7
11.3	9	28.6	30.2	23.6	25.0	26.2	27.7	31.6	20.5	21.4	22.2
12.5	10	31.7	33.5	26.1	27.7	29.0	30.7	35.0	22.8	23.7	24.6
13.8	11	34.9	36.9	28.8	30.5	32.0	33.8	38.6	25.1	26.1	27.1
15.0	12	38.1	40.3	31.4	33.3	34.9	36.9	42.1	27.4	28.5	29.6
16.3	13	41.2	43.6	34.0	36.0	37.8	40.0	45.6	29.6	30.8	32.0
17.5	14	44.3	46.9	36.6	38.7	40.6	43.0	49.1	31.9	33.2	34.4
18.8	15	47.5	50.3	39.2	41.5	43.6	46.1	52.6	34.2	35.5	36.9
20.0	16	50.7	53.7	41.9	44.3	46.5	49.2	56.1	36.5	37.9	39.4
21.3	17	53.8	56.9	44.4	47.0	49.3	52.2	59.6	38.7	40.2	41.8
22.5	18	57.0	60.3	47.1	49.8	52.3	55.3	63.1	41.0	42.6	44.3
23.8	19	60.2	63.7	49.7	52.6	55.2	58.4	66.6	43.3	45.0	46.8
25.0	20	63.3	67.0	52.2	55.3	58.0	61.4	70.0	45.5	47.3	49.2
26.3	21	66.5	70.4	54.9	58.1	60.9	64.5	73.6	47.8	49.7	51.6
27.5	22	69.7	73.7	57.5	60.9	63.9	67.6	77.1	50.1	52.1	54.1
28.8	23	72.9	77.1	60.1	63.7	66.8	70.7	80.6	52.4	54.5	56.6
30.0	24	76.0	80.4	62.7	66.4	69.6	73.7	84.1	54.6	56.8	59.0
31.3	25	79.2	83.8	65.3	69.2	72.5	76.8	87.6	56.9	59.2	61.5
32.5	26	82.3	87.1	68.0	72.0	75.5	79.9	91.1	59.2	61.6	64.0
33.8	27	85.4	90.4	70.5	74.7	78.3	82.9	94.6	61.4	63.9	66.4
35.0	28	88.6	93.8	73.1	77.4	81.2	86.0	98.1	63.7	66.3	68.8
36.3	29	91.8	97.2	75.8	80.2	84.2	89.1	101.6	66.0	68.7	71.3
37.5	30	94.9	100.4	78.3	82.9	87.0	92.1	105.0	68.2	71.0	73.7
38.8	31	98.1	103.8	81.0	85.7	89.9	95.2	108.6	70.5	73.4	76.2
40.0	32	101.3	107.2	83.6	88.5	92.8	98.3	112.1	72.8	75.7	78.7
41.3	33	104.5	110.6	86.2	91.3	95.8	101.4	115.6	75.1	78.1	81.2
42.5	34	107.6	113.8	88.8	94.0	98.6	104.4	119.1	77.3	80.4	83.6
43.8	35	110.8	117.2	91.4	96.8	101.5	107.5	122.6	79.6	82.8	86.0
45.0	36	114.0	120.6	94.1	99.6	104.5	110.6	126.1	81.9	85.2	88.5
46.3	37	117.1	123.9	96.6	102.3	107.3	113.6	129.6	84.1	87.5	90.9
47.5	38	120.3	127.3	99.2	105.1	110.2	116.7	133.1	86.4	89.9	93.4
48.8	39	123.4	130.6	101.9	107.9	113.1	119.8	136.6	88.7	92.3	95.9
50.0	40	126.5	133.9	104.4	110.6	116.0	122.8	140.0	90.9	94.6	98.3
51.3	41	129.7	137.3	107.1	113.4	118.9	125.9	143.6	93.2	97.0	100.8
52.5	42	132.9	140.7	109.7	116.1	121.8	129.0	147.1	95.5	99.4	103.2
53.8	43	136.1	144.0	112.3	118.9	124.8	132.1	150.6	97.8	101.8	105.7
55.0	44	139.2	147.3	114.9	121.6	127.6	135.1	154.1	100.0	104.1	108.1

Housing

Continuous operating voltage U_c	Creepage distance	Flashover distance	Recommended clearances		Height H	Weight	Insulation withstand voltage of housing			
			E	F			1.2/50 μ s		50 Hz, 60 s, wet	
kV_{rms}	mm	mm	mm	mm	mm	kg	required values acc. to EN/IEC kV_{peak}	guaranteed kV_{peak}	required values acc. to EN/IEC kV_{rms}	guaranteed kV_{rms}
4	269	183	60	110	187	1.3	16	96	8	41
5	269	183	60	110	187	1.4	21	96	10	41
6	269	183	70	110	187	1.4	25	96	12	41
7	269	183	80	110	187	1.5	28	96	13	41
8	269	183	90	110	187	1.5	32	96	15	41
9	344	223	100	110	227	1.9	37	116	17	50
10	344	223	110	120	227	1.9	40	116	19	50
11	418	263	120	130	267	2.2	44	137	21	58
12	418	263	130	140	267	2.2	48	137	23	58
13	418	263	140	150	267	2.3	52	137	24	58
14	418	263	150	160	267	2.3	56	137	26	58
15	418	263	160	170	267	2.4	60	137	28	58
16	492	303	170	180	307	2.7	64	158	30	67
17	492	303	180	190	307	2.7	68	158	32	67
18	492	303	190	200	307	2.8	72	158	34	67
19	492	303	200	210	307	2.8	76	158	36	67
20	492	303	209	220	307	2.9	80	158	37	67
21	567	343	220	230	347	3.2	84	179	39	76
22	567	343	229	240	347	3.2	88	179	41	76
23	567	343	239	250	347	3.3	92	179	43	76
24	567	343	249	260	347	3.3	96	179	45	76
25	641	383	259	270	387	3.6	100	200	47	85
26	641	383	269	280	387	3.6	104	200	48	85
27	641	383	279	290	387	3.7	108	200	50	85
28	641	383	289	300	387	3.7	112	200	52	85
29	641	383	299	310	387	3.8	116	200	54	85
30	641	383	309	320	387	3.8	120	200	56	85
31	865	503	319	330	507	4.7	124	262	58	111
32	865	503	329	340	507	4.7	128	262	59	111
33	865	503	339	350	507	4.8	132	262	61	111
34	865	503	349	360	507	4.8	136	262	63	111
35	865	503	359	370	507	4.9	140	262	65	111
36	865	503	369	380	507	4.9	144	262	67	111
37	865	503	379	390	507	5.0	148	262	69	111
38	865	503	389	400	507	5.0	152	262	71	111
39	865	503	398	409	507	5.1	156	262	72	111
40	865	503	408	419	507	5.1	160	262	74	111
41	865	503	418	429	507	5.2	164	262	76	111
42	939	543	428	439	547	5.2	168	283	78	120
43	939	543	438	449	547	5.4	172	283	80	120
44	939	543	448	459	547	5.4	176	283	82	120

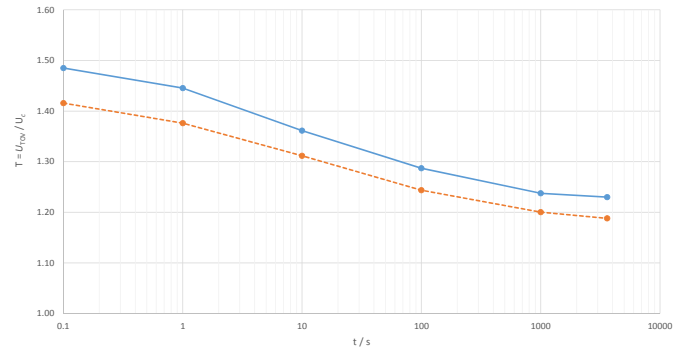
TOV Characteristics

Power frequency voltage-versus time characteristics (TOV) based on U_r



- without prior duty energy input
- with prior duty 4.5 kJ/kV (U_r) = 5.625 kJ/kV (U_c) energy input
Samples preheated to 60 °C

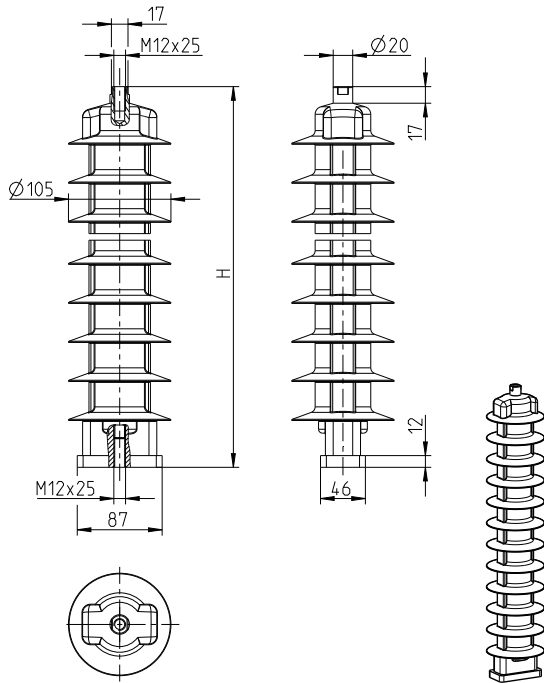
Power frequency voltage-versus time characteristics (TOV) based on U_c



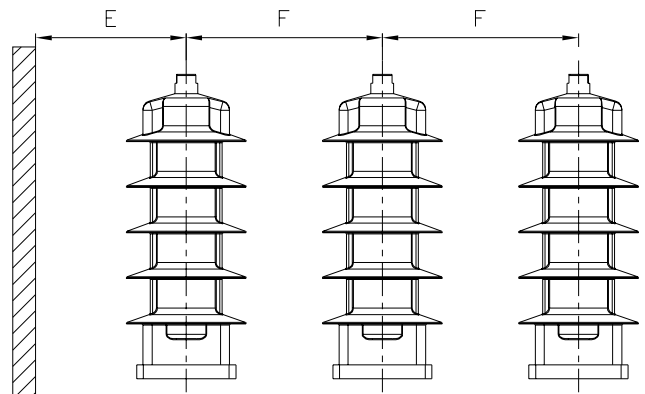
- without prior duty energy input
- with prior duty 4.5 kJ/kV (U_r) = 5.625 kJ/kV (U_c) energy input
Samples preheated to 60 °C

Dimensions

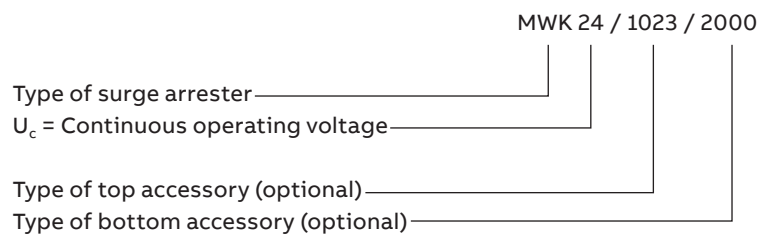
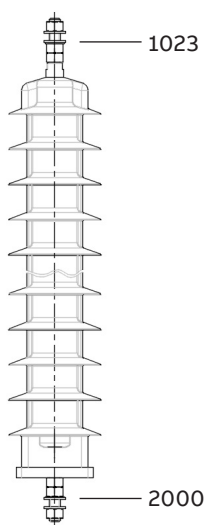
Standard dimensions without accessories



Dimensions according to outline drawing HAWA 480785 Outline drawings with accessories on request

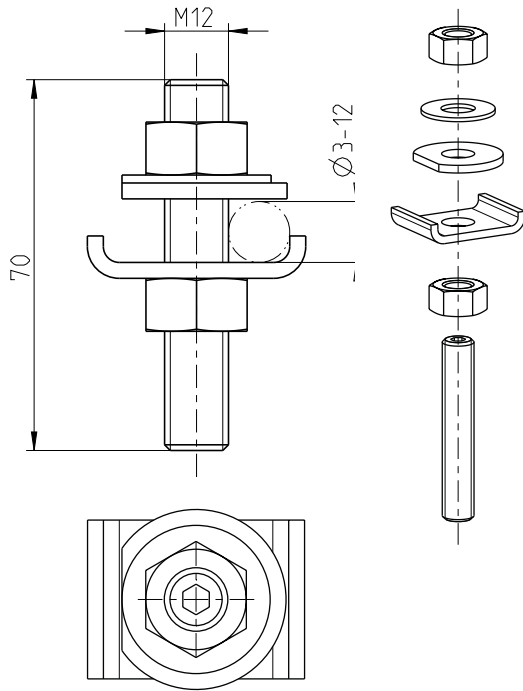


Structure of type designation with optional accessories (Example)

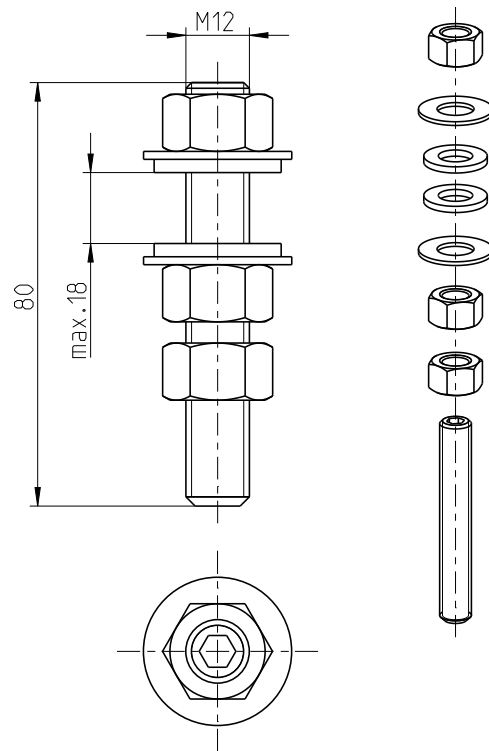


Common Top Accessories (optional)

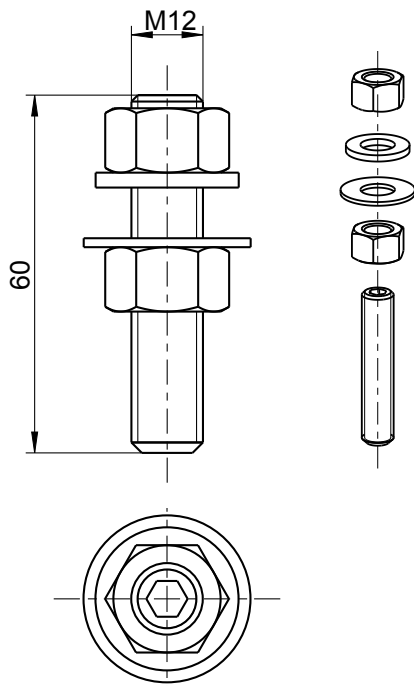
Type 1002 Clamp type connector (stainless steel)



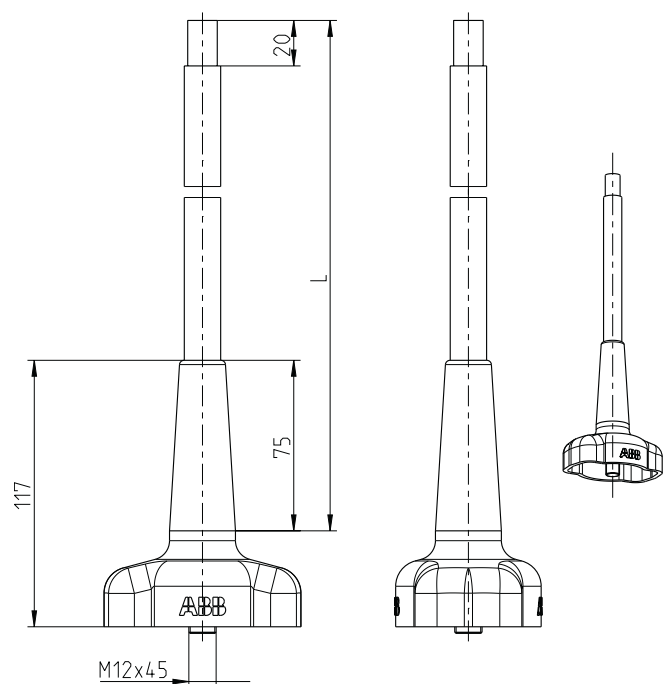
Type 1023 Threaded stud with nuts M12x80 (stainless steel)



Type 1028 Threaded stud with nuts M12x60 (stainless steel)

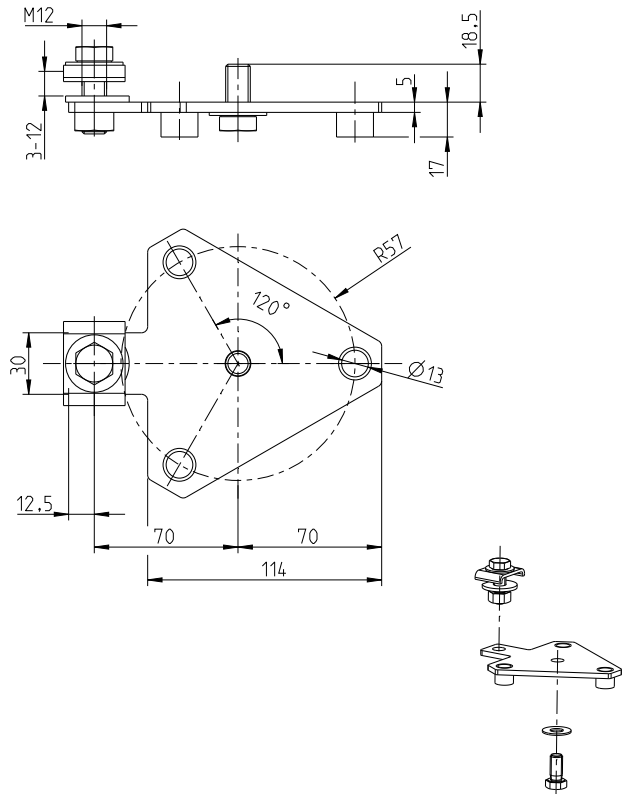


Type 1061 Cap with cable L = 250 mm
Type 1062 Cap with cable L = 500 mm

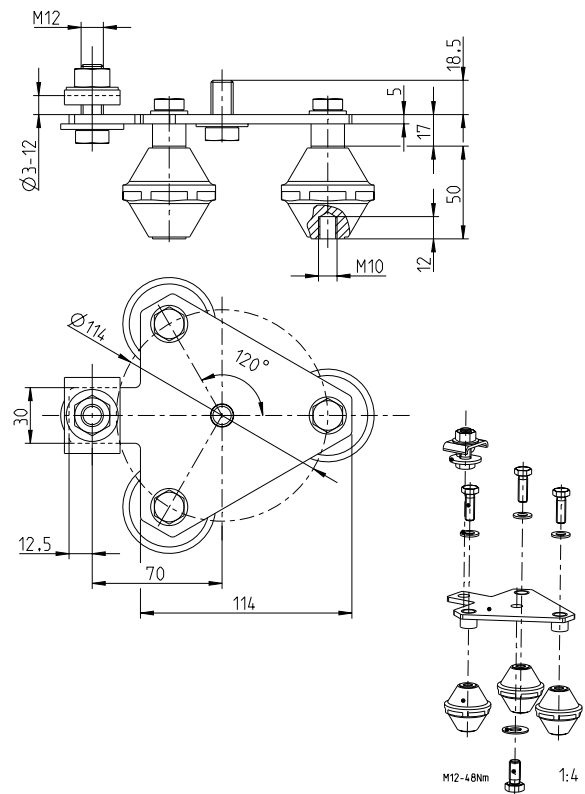


Common Bottom Accessories (optional)

Type 2150 3-point base plate

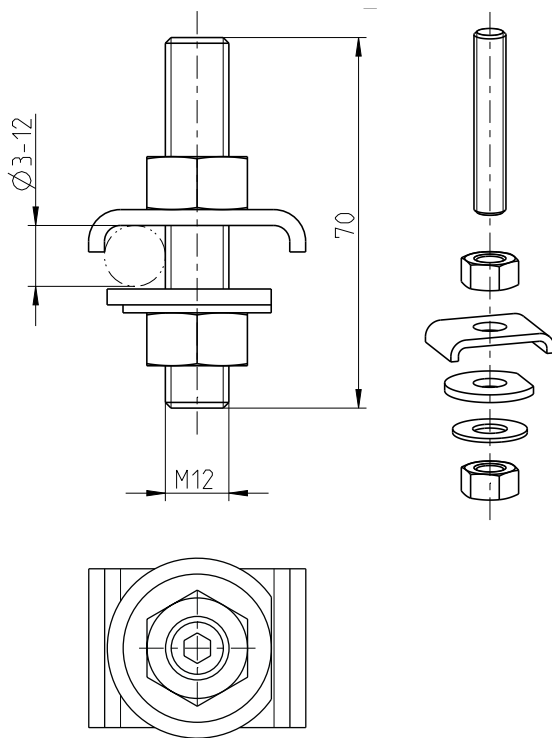


Type 2151 3-point base plate insulated

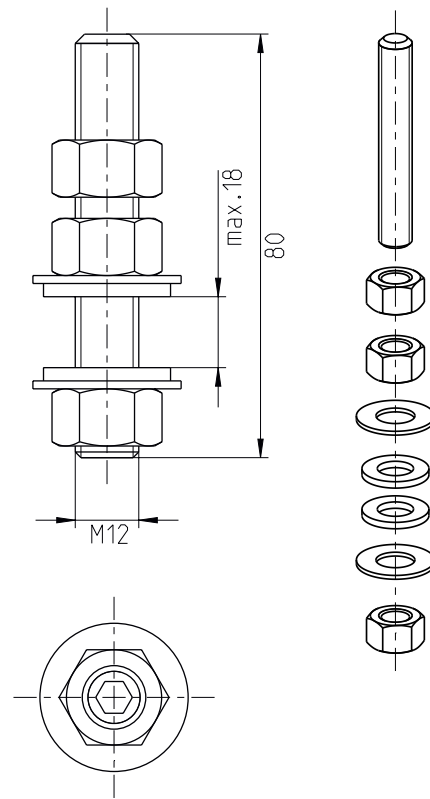


Common Bottom Accessories (optional)

Type 2020 Clamp type connector (stainless steel)



Type 2000 Threaded stud with nuts M12x80 (stainless steel)



For more information please contact:

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For detailed information for dimensioning of our products see following ABB documents:

- Application guidelines
Overvoltage protection
Metal oxide surge arresters in medium voltage systems
- Application guidelines
Overvoltage protection
Metal oxide surge arresters in railway facilities

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