

Surge arrester

MWK..K4



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
- Long creepage for harsh environmental conditions

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 $T_{amb} = 40^\circ\text{C}$	5.0 kJ/kV (U_c) = 6.25 kJ/kV (U_c)
W_{th} at $T_{amb} = 55^\circ\text{C}$	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 $t = 1$ s	1.155 U_r = 1.444 U_c
U_{TOV} at $t = 3$ s	1.130 U_r = 1.412 U_c
U_{TOV} at $t = 10$ 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 $t = 1$ s	1.101 U_r = 1.376 U_c
U_{TOV} at $t = 3$ s	1.075 U_r = 1.343 U_c
U_{TOV} at $t = 10$ 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 SSL 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

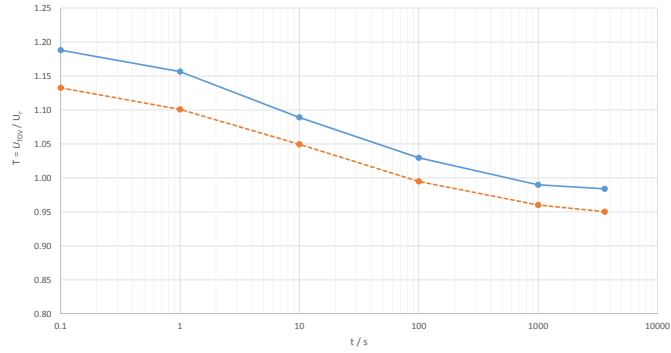
Rated voltage U_r	Continuous operating voltage U_c	Residual voltage U_{res} at specified impulse current (Maximum value)									
		Steep current impulse wave 1/... μ s		Lightning current impulse wave 8/20 μ s					Switching current impulse wave 30/60 μ s		
kV_{rms}	kV_{rms}	5 kA kV_{peak}	10 kA kV_{peak}	1 kA kV_{peak}	2.5 kA kV_{peak}	5 kA kV_{peak}	$I_n=10$ kA kV_{peak}	20 kA kV_{peak}	125 A kV_{peak}	250 A kV_{peak}	500 A kV_{peak}
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}
8	370	197	90	110	187	1.7	32	103	15	44
9	485	237	100	110	227	2.1	37	124	17	53
10	485	237	110	120	227	2.1	40	124	19	53
11	485	237	120	130	227	2.2	44	124	21	53
12	485	237	130	140	227	2.2	48	124	23	53
13	601	277	140	150	267	2.5	52	145	24	61
14	601	277	150	160	267	2.6	56	145	26	61
15	601	277	160	170	267	2.6	60	145	28	61
16	717	317	170	180	307	2.9	64	165	30	70
17	717	317	180	190	307	3.0	68	165	32	70
18	717	317	190	200	307	3.0	72	165	34	70
19	832	357	200	210	347	3.6	76	186	36	79
20	832	357	209	220	347	3.7	80	186	37	79
21	832	357	220	230	347	3.7	84	186	39	79
22	948	397	229	240	387	3.9	88	207	41	88
23	948	397	239	250	387	4.2	92	207	43	88
24	948	397	249	260	387	4.2	96	207	45	88
25	1063	437	259	270	427	4.6	100	228	47	97
26	1063	437	269	280	427	4.7	104	228	48	97
27	1063	437	279	290	427	4.7	108	228	50	97
28	1179	477	289	300	467	5.0	112	249	52	105
29	1179	477	299	310	467	5.1	116	249	54	105
30	1179	477	309	320	467	5.1	120	249	56	105
31	1295	517	319	330	507	5.5	124	269	58	114
32	1295	517	329	340	507	5.5	128	269	59	114
33	1295	517	339	350	507	5.6	132	269	61	114
34	1295	517	349	360	507	5.6	136	269	63	114
35	1295	517	359	370	507	5.7	140	269	65	114
36	1295	517	369	380	507	5.7	144	269	67	114
37	1295	517	379	390	507	5.8	148	269	69	114
38	1295	517	389	400	507	5.8	152	269	71	114
39	1295	517	398	409	507	5.9	156	269	72	114
40	1295	517	408	419	507	5.9	160	269	74	114
41	1295	517	418	429	507	6.0	164	269	76	114
42	1411	557	428	439	547	6.3	168	290	78	123
43	1411	557	438	449	547	6.4	172	290	80	123
44	1411	557	448	459	547	6.4	176	290	82	123

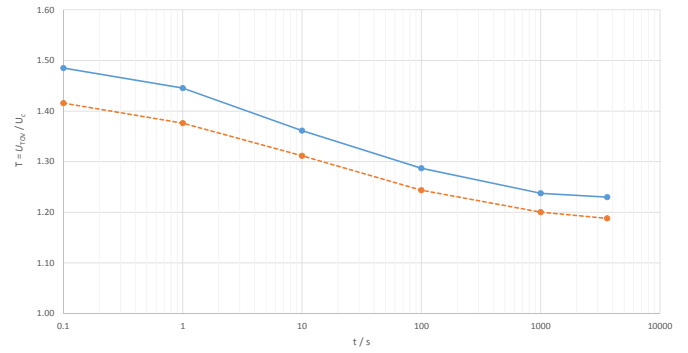
TOV Characteristics

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

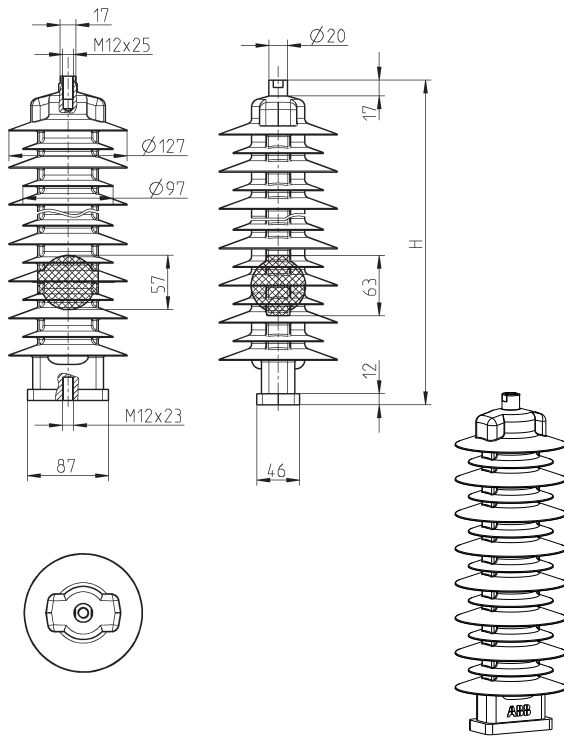
Power frequency voltage-versus time characteristics (TOV) based on U_c



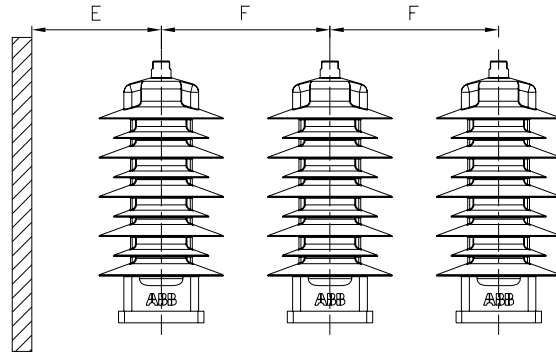
- without prior duty energy input
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Samples preheated to 60 °C

Dimensions

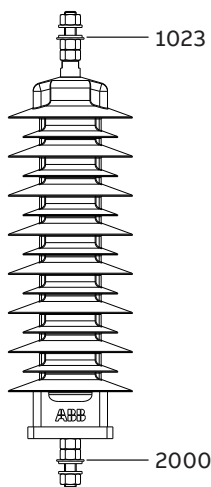
Standard dimensions without accessories



Dimensions according to outline drawing 2GHV051844 Outline drawings with accessories on request



Structure of type designation with optional accessories (Example)



MWK 24 K4 / 1023 / 2000

Type of surge arrester

U_c = Continuous operating voltage

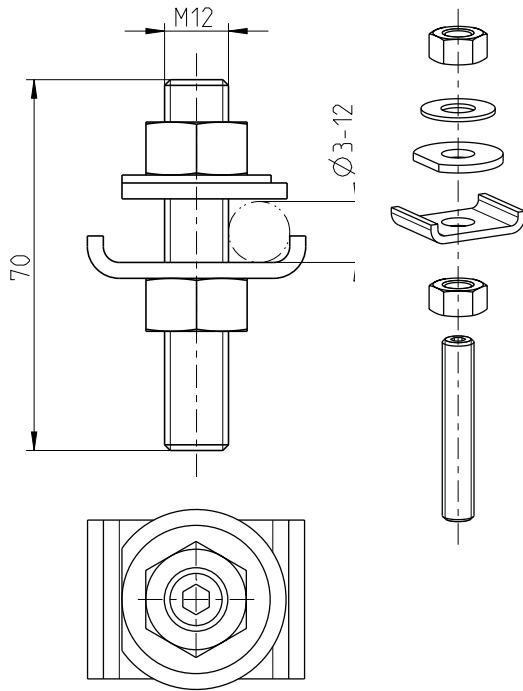
Housing

Type of top accessory (optional)

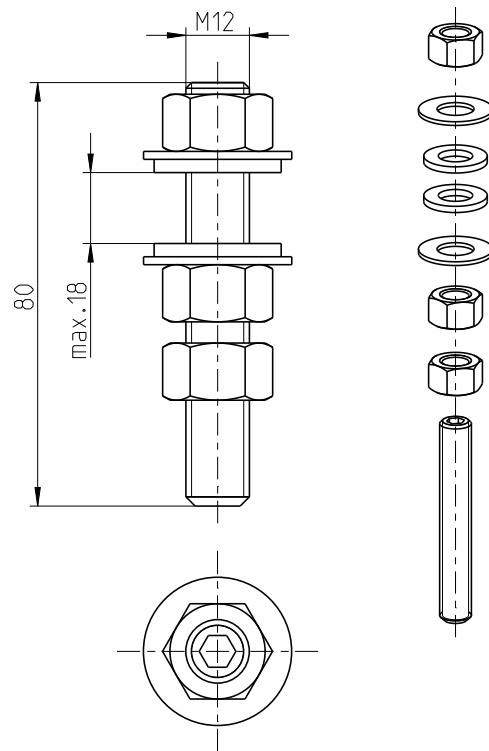
Type of bottom accessory (optional)

Common Top Accessories (optional)

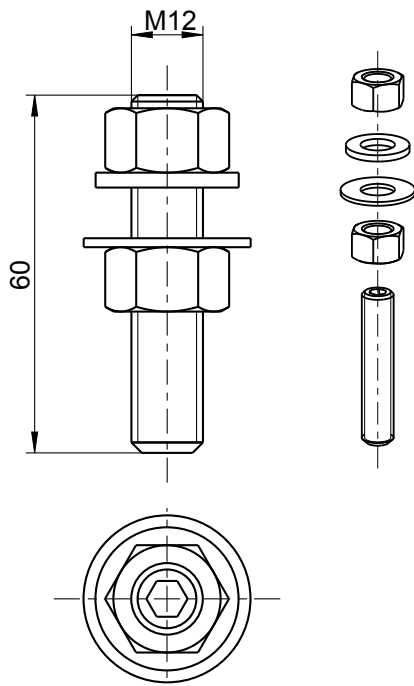
Type 1002 Clamp type connector (stainless steel)



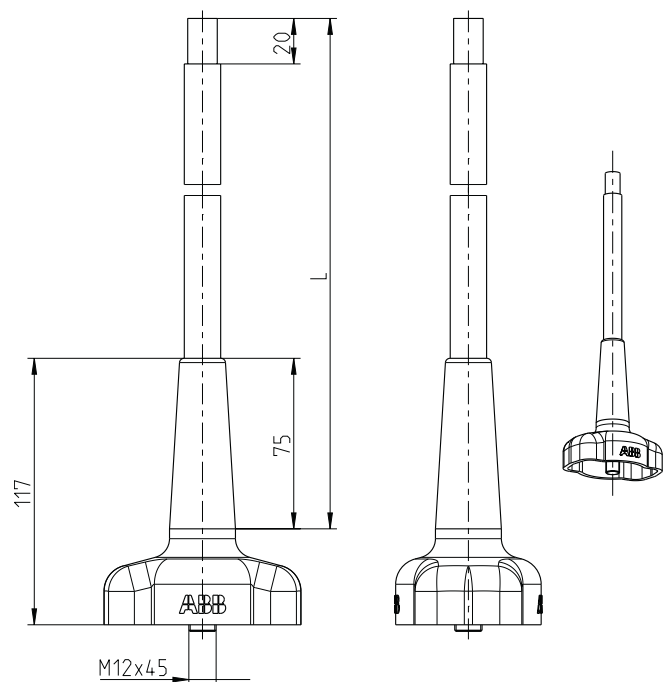
Type 1023 Threaded stud with nuts M12x80 (stainless steel)



Type 1028 Threaded stud with nuts M12x60 (stainless steel)

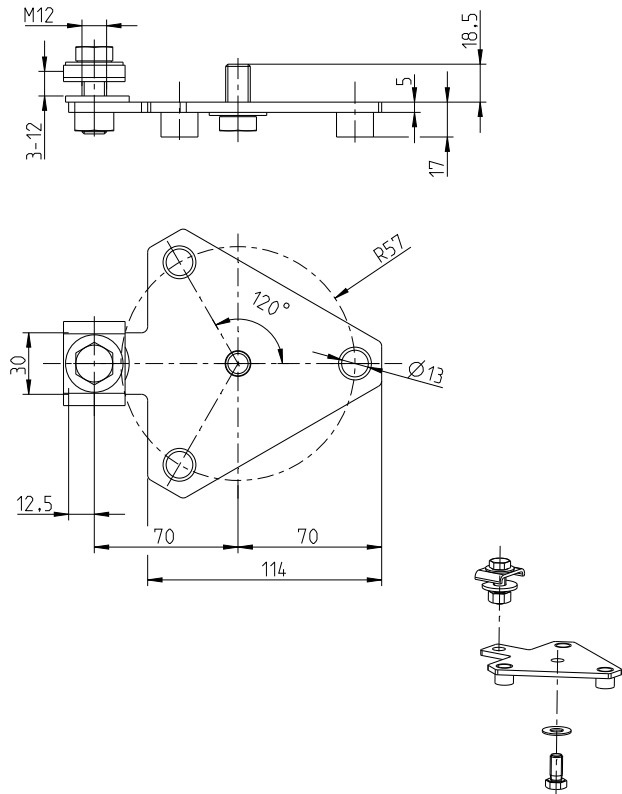


Type 1061 Cap with cable L = 250 mm
Type 1062 Cap with cable L = 500 mm

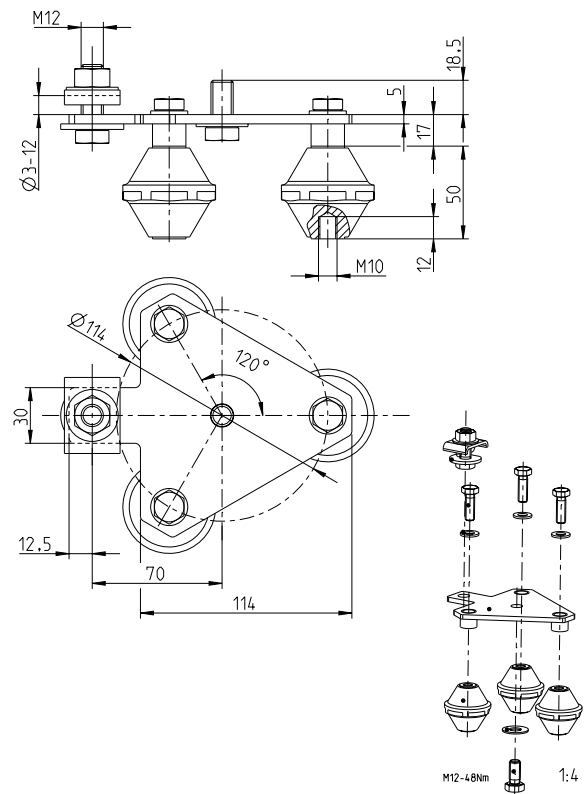


Common Bottom Accessories (optional)

Type 2150 3-point base plate

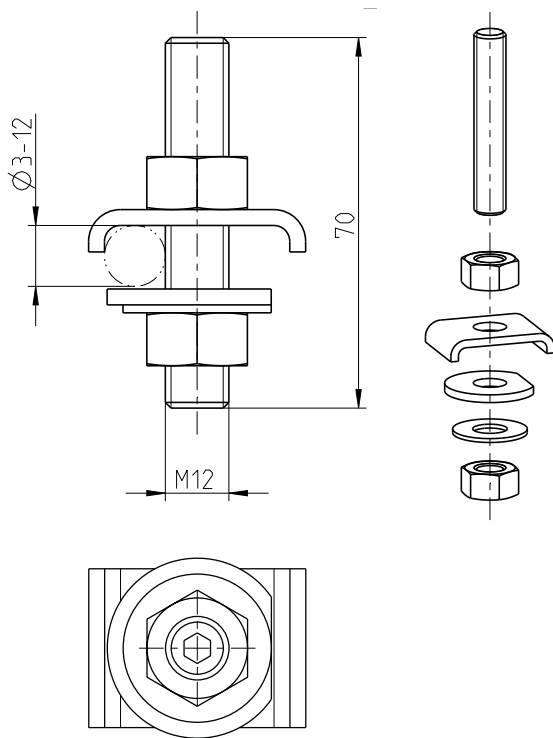


Type 2151 3-point base plate insulated

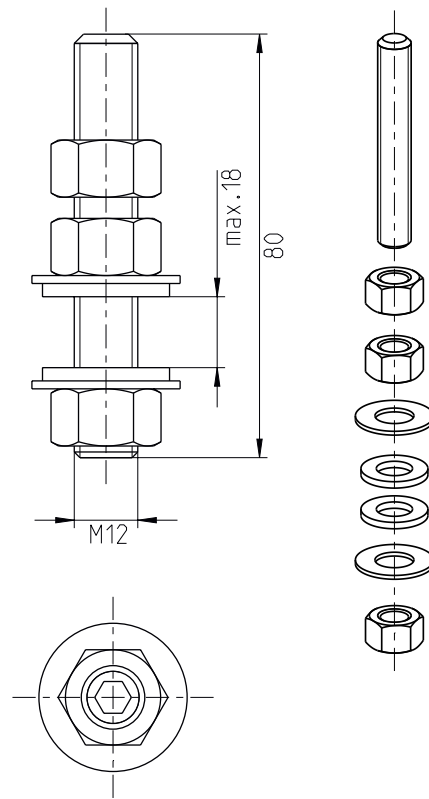


Common Bottom Accessories (optional)

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

For pdf or print version please send E-mail to:
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