

Low Tension Insulators



Material Properties

density	1,75 - 1,80 g/cm ³	ASTM D 792; DIN 53479
tensile strength	30 - 35 N/mm ²	ASTM D 638
bending strength	90 - 100 N/mm ²	ASTM D 790; DIN 53452
impact strength	35 - 45 kJ/m ²	ASTM D 256; DIN 53453
heat resistance under burden	> 200°C (392 Fahrenheit)	ASTM D 643
water absorption	< 0,3%	ASTM D 570; DIN 53495
dielectric constant	4 - 5	ASTM D 150
surface resistance	10 ¹² - 10 ¹³ Ω	ASTM D 257; DIN 53482
specific internal resistance	10 ¹³ - 10 ¹⁴ Ω/cm	ASTM D 257; DIN 53482
arc resistance	> 180s	ASTM D 495
creep age resistance	> 300min.	ASTM D 2303
glow resistance	V0	UL 94
dielectric resistance	> 160 kV/cm	DIN 53481

Our insulators are produced out of polyester strengthened with 18% fiberglass. Standard color is red (RAL3002). Mainly they are designed for interior use. Their temperature working range starts from -40°C up to +130°C (-40°F up to +266°F). Threaded ISO-metric bushings out of galvanic steel are pressed in on both sides. The insulators are available in heights from 10mm up to 100mm with a graduation of 5mm. A central hexagonal band provides easy fastening.

We assure that our products are manufactured according to the RoHS-directive.

Our insulators are free of the following substances:

- lead and lead compounds
- mercury and mercury compounds
- cadmium and cadmium compounds
- hexavalent chromium
- polybrominated biphenyles (PBB)
- polybrominated diphenyl ethers (PBDE)

Our insulators are **free of SILICON** and **free of HALOGEN**.



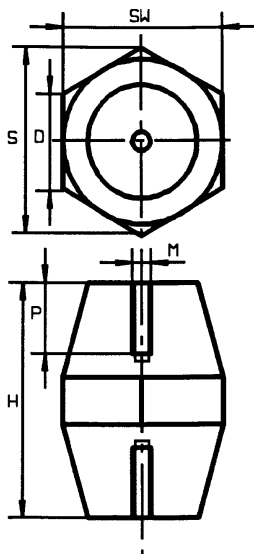
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Standard Insulators



H	=	height
SW	=	wrench opening
M	=	thread
D	=	diameter of support
S	=	max. width
P	=	thread depth

Mechanical Properties:

- **BF:** bending strength by bending stress in kN
- **ZF:** tensile strength by tensile stress in kN
(1kN \approx 100kg)
- **DM:** torque in Nm for steel DIN ISO class 8.8 (8G)

Operating voltage, acc. VDE 0110b/2,79 table 4 / insulation class D:

VeAC	=	operating alternating voltage in V (50Hz)
VeDC	=	operating direct voltage in V
VtAC	=	AC test voltage in V (50Hz)
VtPeak	=	test surge voltage, peak amplitude in V
VtDC	=	DC test voltage in V

PLEASE NOTE:

**Insulators are supplied in closed packaging units only.
minimum order quantity = 1 packaging unit**

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Standard Insulators

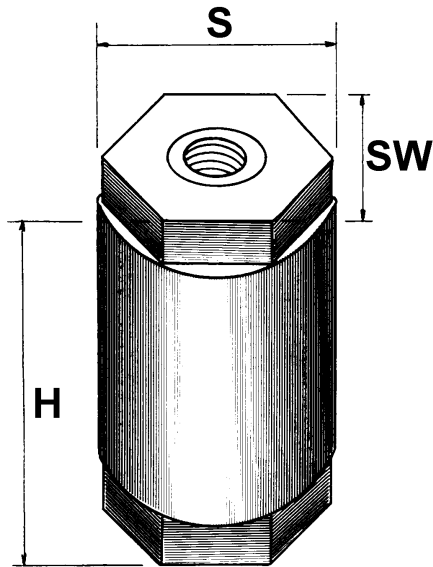
Order Code	dimensions in mm						mechanical properties				electrical properties					PU ¹⁾	weight per PU kg
	H	SW	M	D	S	P	BF	ZF	DM	VeAC	VeDC	VtAC	VtPeak	VtDC			
1209	12	10	M3	10	11	3				125	150					100	0,30
1506	16	15	M4	12	17	4	1	2	3	500	600	3000	5500	4200		100	1,00
1563	16	15	M5	12	17	4	1	2	3	500	600	3000	5500	4200		100	1,00
2009	20	19	M4	15	21	6	2	3	3	750	900	5000	9000	7000		100	1,25
2017	20	19	M5	15	21	6	2	3	6	750	900	5000	9000	7000		100	1,25
2033 *	20	19	M6	15	21	6	2	3	10	750	900	5000	9000	7000		100	1,15
2801	25	22	M4	18	24	6	2	4	3	1000	1200	6000	11000	8500		100	2,00
2819 *	25	22	M5	18	24	6	2	4	6	1000	1200	6000	11000	8500		100	2,00
2827	25	22	M6	18	24	6	2	4	10	1000	1200	6000	11000	8500		100	2,00
3049 *	30	30	M6	26	33	9	3	6	10	1200	1500	8000	14000	11000		100	6,00
3056 *	30	30	M8	26	33	9	3	6	25	1200	1500	8000	14000	11000		100	6,00
0318	31	30	M8	26	33	9	3	6	25	1200	1500	8000	14000	11000		100	6,00
3544 *	35	32	M6	29	35	10	5	9	10	1400	1600	9000	16000	12500		120	9,00
3551 *	35	32	M8	29	35	10	5	9	25	1400	1600	9000	16000	12500		120	9,00
3569	35	32	M10	29	35	10	5	9	50	1400	1600	9000	16000	12500		120	9,00
3890	35	41	M6	34	45	10	5	9	10	1400	1600	9000	16000	12500		80	7,80
3916	35	41	M8	34	45	10	5	9	25	1400	1600	9000	16000	12500		80	7,80
3924	35	41	M10	34	45	10	5	9	50	1400	1600	9000	16000	12500		80	7,80
4047 *	40	41	M6	34	45	10	9	11	10	1600	1900	10000	18000	14000		60	7,00
4054 *	40	41	M8	34	45	10	9	11	25	1600	1900	10000	18000	14000		60	7,50
4062 *	40	41	M10	34	45	10	9	11	50	1600	1900	10000	18000	14000		60	6,50
4070 *	40	41	M12	34	45	10	9	11	85	1600	1900	10000	18000	14000		60	6,00
4112	40	46	M8	40	50	10	9	11	25	1600	1900	10000	18000	14000		48	7,50
4120	40	46	M10	40	50	10	9	11	50	1600	1900	10000	18000	14000		48	7,00
4160	40	46	M12	40	50	10	9	11	85	1600	1900	10000	18000	14000		48	7,00
4617 *	45	46	M8	38	50	13	10	15	25	1800	2100	11000	20000	15500		48	7,50
4625 *	45	46	M10	38	50	13	10	15	50	1800	2100	11000	20000	15500		48	7,00
4633 *	45	46	M12	38	50	13	10	15	85	1800	2100	11000	20000	15500		48	7,25
5044	50	36	M6	30	39	13	6	10	10	2000	2400	12000	21500	17000		75	8,00
5051	50	36	M8	30	39	13	6	10	25	2000	2400	12000	21500	17000		75	8,00
5069	50	36	M10	30	39	13	6	10	50	2000	2400	12000	21500	17000		75	8,00
5531 *	50	50	M8	40	55	13	11	18	25	2000	2400	13000	23500	18000		36	6,50
5549 *	50	50	M10	40	55	13	11	18	50	2000	2400	13000	23500	18000		36	6,50
5556 *	50	50	M12	40	55	13	11	18	85	2000	2400	13000	23500	18000		36	6,50
6059 *	60	55	M8	43	60	15	10	22	25	2400	2800	15000	27000	21000		24	6,50
6067 *	60	55	M10	43	60	18	10	22	50	2400	2800	15000	27000	21000		24	6,50
6075 *	60	55	M12	43	60	18	10	22	85	2400	2800	15000	27000	21000		24	6,50
7065	70	60	M10	48	65	18	12	25	50	3000	3600	18000	32500	25000		15	5,50
7073 *	70	60	M12	48	65	18	12	25	85	3000	3600	18000	32500	25000		15	5,50
7099	70	60	M16	48	65	24	12	25	200	3000	3600	18000	32500	25000		15	6,50
8063	80	65	M10	52	70	18	16	30	50	3500	4200	22000	39500	31000		12	5,75
8071 *	80	65	M12	52	70	18	16	30	85	3500	4200	22000	39500	31000		12	5,50
8089	80	65	M16	52	70	24	16	30	200	3500	4200	22000	39500	31000		12	6,50
9962	100	65	M10	52	70	18	15	40	50	5000	6000	26000	47000	36000		9	5,50
9970	100	65	M12	52	70	18	15	40	85	5000	6000	26000	47000	36000		9	5,00
9988 *	100	65	M16	52	70	24	15	40	200	5000	6000	26000	47000	36000		9	5,50

* preferred types – usually on stock!

¹⁾ PU = packaging unit

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Special Insulators



H = height
 SW = wrench opening
 M = thread
 S = max. width
 P = thread depth

Mechanical Properties:

- **BF:** bending strength by bending stress in kN
- **ZF:** tensile strength by tensile stress in kN (1kN \approx 100kg)
- **DM:** torque in Nm for steel DIN ISO class 8,8 (8G)

Operating voltage, acc. VDE 0110b/2,79 table 4 / insulation class D:

VeAC = operating alternating voltage in V (50Hz)
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VtAC = AC test voltage in V (50Hz)
VtPeak = test surge voltage, peak amplitude in V
VtDC = DC test voltage in V


PLEASE NOTE:

**Insulators are supplied in closed packaging units only.
 minimum order quantity = 1 packaging unit**

In addition to our assortment of products, we offer custom designed insulators as well.

for example:


- threaded bolts instead of internal threaded bushings (one side / both sides)
- two piece insulators
- hexagonal or cylindrical shape in various heights
- insulators for electronic use

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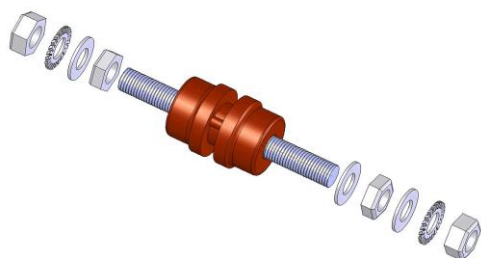
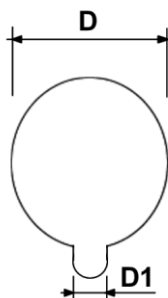
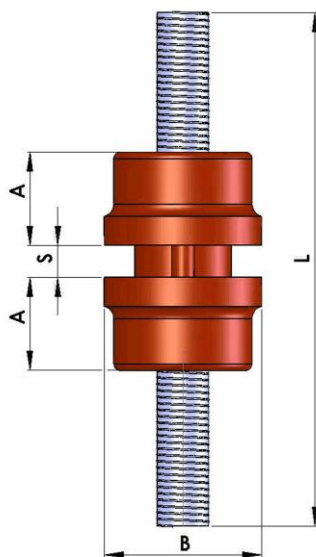
Special Insulators

Order Code	dimensions in mm					mechanical properties			electrical properties					PU ¹⁾	weight per PU kg
	H	SW	M	S	P	BF	ZF	DM	VeAC	VeDC	VtAC	VtPeak	VtDC		
2307	30	18	M6	20	8	2,0	4,0	10	600	720	5000	6600	7000	100	3,0
2308	30	18	M8	20	8	2,0	4,0	10	600	720	5000	6600	7000	100	3,0
2356	35	18	M6	20	8	1,5	4,0	10	600	720	5000	6600	7000	100	3,0
2358	35	18	M8	20	8	1,5	4,0	10	600	720	5000	6600	7000	100	3,0
2406	40	18	M6	20	8	1,5	4,0	10	600	720	8000	6600	11000	100	3,0
2408	40	18	M8	20	8	1,5	4,0	10	600	720	8000	6600	11000	100	3,0
2456	45	18	M6	20	8	1,0	4,0	10	600	720	8000	6600	11000	100	3,2
2458	45	18	M8	20	8	1,0	4,0	10	600	720	8000	6600	11000	100	3,2
2506	50	18	M6	20	8	1,0	4,0	10	750	900	10000	8000	14000	100	3,5
2508	50	18	M8	20	8	1,0	4,0	10	750	900	10000	8000	14000	100	3,5
2606	60	18	M6	20	8	1,0	4,0	10	850	1000	10000	9500	14000	80	3,0
2608	60	18	M8	20	8	1,0	4,0	10	850	1000	10000	9500	14000	80	3,0
3306	30	27	M6	30	10	4,5	9,0	15	600	720	8000	6600	11000	100	6,5
3308	30	27	M8	30	10	4,5	9,0	15	600	720	8000	6600	11000	100	6,5
3356	35	27	M6	30	10	4,0	9,0	15	750	900	8000	8000	11000	140	9,5
3358	35	27	M8	30	10	4,0	9,0	15	750	900	8000	8000	11000	140	9,5
3406	40	27	M6	30	10	3,0	9,0	15	750	900	10000	8000	14000	140	10,0
3408	40	27	M8	30	10	3,0	9,0	15	750	900	10000	8000	14000	140	10,0
3456	45	27	M6	30	10	2,5	9,0	15	1000	1200	10000	11000	14000	120	9,5
3458	45	27	M8	30	10	2,5	9,0	15	1000	1200	10000	11000	14000	120	9,5
3506	50	27	M6	30	13	2,0	9,0	15	1500	1800	10000	16500	14000	100	9,0
3508	50	27	M8	30	13	2,0	9,0	15	1500	1800	10000	16500	14000	100	9,0
3606	60	27	M6	30	13	1,5	9,0	15	1500	1800	15000	16500	21000	80	7,5
3608	60	27	M8	30	13	1,5	9,0	15	1500	1800	15000	16500	21000	80	7,5
4408	40	36	M8	40	10	5,0	10,0	30	1000	1200	10000	11000	14000	80	9,0
4400	40	36	M10	40	10	5,0	10,0	30	1000	1200	10000	11000	14000	80	9,0
4458	45	36	M8	40	10	4,5	10,0	30	1000	1200	10000	11000	14000	60	7,0
4650	45	36	M10	40	10	4,5	10,0	30	1000	1200	10000	11000	14000	60	7,0
4508	50	36	M8	40	13	4,0	10,0	30	1500	1800	10000	16500	14000	60	7,5
4500	50	36	M10	40	15	4,0	10,0	30	1500	1800	10000	16500	14000	60	7,5
4608	60	36	M8	40	15	3,7	10,0	30	1500	1800	15000	16500	21000	50	7,5
4600	60	36	M10	40	18	3,7	10,0	30	1500	1800	15000	16500	21000	50	7,5

¹⁾ PU = packaging unit

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Two Piece Insulators



Properties:

plastic parts:

color	red
material	polyamide (PA6)
glass fiber content	30%
incandescence resistance	UL 94 V0
free of PBB and PBDE	yes
RoHS compliant	yes
UL certification	yes
max. voltage	1000V
max. operating temperature	+110°C

standard metal parts:

material	steel (galvanized)
RoHS conform	yes

Solid brass instead of standard steel is available for an additional charge.

Order Code	M	max. load	L mm	A mm	B mm	S mm	D mm	D1 mm	PU ¹⁾
PAS8R	M8	80A	80	13,5	25	2..5	15,5	3,5	250
PAS10R	M10	120A	95	15	30	2..5	17,5	4,5	250
PAS12R	M12	200A	105	17	35	2..5	20,5	5,0	250

¹⁾ PU = packaging unit

Scope of delivery:

- 1 two piece insulator
- 1 threaded bolt
- 4 nuts
- 3 washer
- 2 lock washers

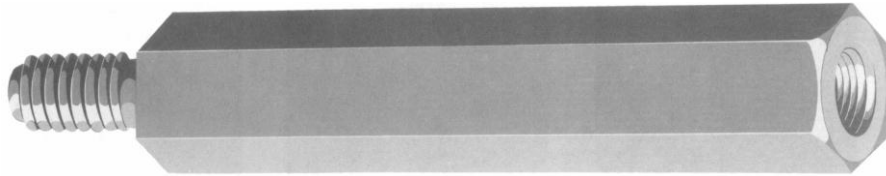
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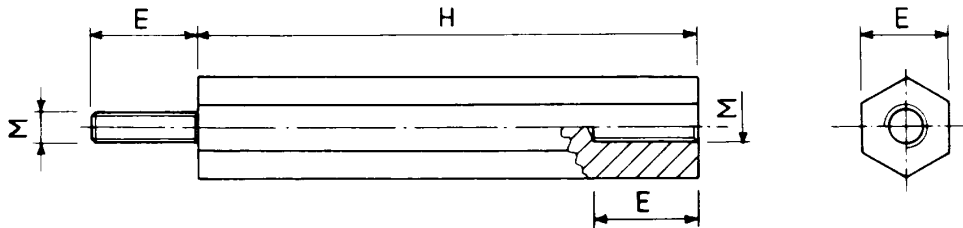
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Distance Bolts



Our distance bolts are made of galvanic steel, DIN ISO class 8.8 (8G). They have a threaded blind hole on the one side and a screw bolt on the other side.

For different types and dimensions refer to table below, please:




Order Code	dimensions in mm			PU ¹⁾ pieces
	E	H	M	
3650	6	10	M3	100
3668	6	12	M3	100
3718	6	15	M3	100
3726	6	20	M3	100
3734	6	25	M3	100
3742	6	30	M3	100
3759	6	35	M3	100
3767	6	40	M3	100
3775	6	45	M3	100
3783	6	50	M3	100
3791	6	60	M3	100
4690	7	10	M4	100
4708	7	15	M4	100
4716	7	20	M4	100
4724	7	25	M4	100
4732	7	30	M4	100
4740	7	35	M4	100
4757	7	40	M4	100
4765	7	45	M4	100
4773	7	50	M4	100
4781	7	60	M4	100
4799	7	70	M4	100
5804	8	15	M5	100
5812	8	20	M5	100
5820	8	25	M5	100
5838	8	30	M5	100
5846	8	35	M5	100
5853	8	40	M5	100
5861	8	45	M5	100
5879	8	50	M5	100
5887	8	60	M5	100
5895	8	70	M5	100
5903	8	80	M5	100

Order Code	dimensions in mm			PU ¹⁾ pieces
	E	H	M	
6810	10	15	M6	100
6828	10	20	M6	100
6836	10	25	M6	100
6885	10	30	M6	100
6893	10	35	M6	100
6901	10	40	M6	100
6919	10	45	M6	100
6927	10	50	M6	100
6935	10	60	M6	100
6943	10	70	M6	100
6950	10	80	M6	100
6968	10	90	M6	100
6976	10	100	M6	100
8709	12	15	M8	100
8717	12	20	M8	100
8808	12	25	M8	100
8816	12	30	M8	100
8899	12	35	M8	100
8907	12	40	M8	100
8915	12	45	M8	100
8923	12	50	M8	100
8931	12	60	M8	100
8949	12	70	M8	100
8956	12	80	M8	100
8964	12	90	M8	100
8972	12	100	M8	100
8980	12	120	M8	100

¹⁾ PU = packaging unit

PLEASE NOTE: Distance bolts are supplied in closed packaging units only.

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