

BOLTE



WELDING STUDS

FOR CAPACITOR DISCHARGE STUD WELDING



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1. Welding studs for capacitor discharge stud welding

1.1 Technical information

Materials

We produce our welding studs from the following materials with excellent weldability:

Material group/strength class	Norm
Steel 4.8	ISO 898-1
A2-50, A2-70 A5-50, A5-70	ISO 3506-1
Group 22.3	ISO/TR 15608
Group 32	ISO/TR 15608

The material specifications conform with DIN EN ISO 13918 and DIN EN ISO 14555. For welding studs from other materials please send us your inquiry or contact us.

On demand, the material properties can be verified by an inspection document (test report, inspection certificate) according to DIN EN 10204.

We are pleased to inform you about weldability to different base materials and welding parameters.

Dimensions

Welding studs dimensions are given in the measurement tables (all dimensions in mm). All standardised welding studs conform to DIN EN ISO 13918. Not standardised welding studs are supplied according to DIN EN ISO 13918. Special welding elements, which are not described, are delivered upon request.

Dimensions that are not listed in the measurement tables are delivered upon request.

Surface protection

Standardly our welding studs made from steel 4.8 are supplied with an electrolytic copper plating of 4-8 µm (according to DIN EN ISO 4042) as corrosion protection. Other surface treatments are possible upon request.

Threads

The threads of the studs are cold rolled (tolerance limit 6g). For surface-treated studs the tolerance limit 6h can be reached. We deliver studs with special threads upon request.

Stud flange

Welding studs for capacitor discharge stud welding have a cold formed flange. The diameter of the flange is always bigger than the external diameter of the welding element (see following drawings and measurement tables). The flange prevents the electric arc to flash over to the cylindrical part of the welding element and increases the welding area. By this, a high strength of the stud welded joint is guaranteed.

Upon request, it is possible to deliver welding studs with flange dimensions other than the ones listed and welding studs without flange. However, we can only recommend the limited use of welding studs without flange – depending on the welded joint requirements. Please contact us for this.

Welding pip

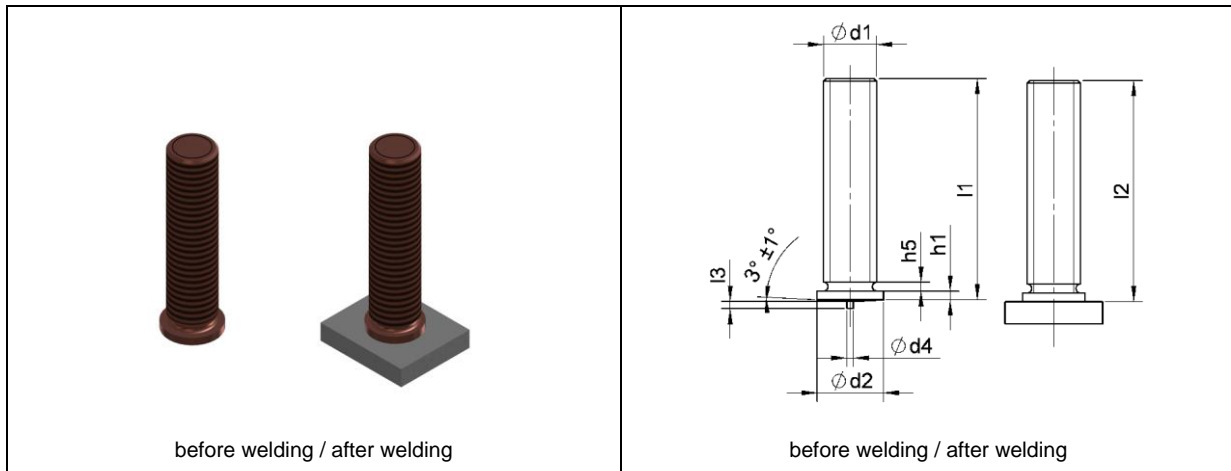
Welding studs for capacitor discharge stud welding have a cold formed calibrated welding pip with length and diameter tolerances closely controlled. At the welding pip the welding process is initiated and it determines the length of the welding time. Therefore exact dimensions of the welding pip are decisive for proper welding results.

Accessories for stud welding guns

Accessories for stud welding guns have to be adjusted to the welding element. The accessories which are to be used for the individual welding studs can be found in chapter 0.



1.2 Threaded stud (type PT acc. to DIN EN ISO 13918)



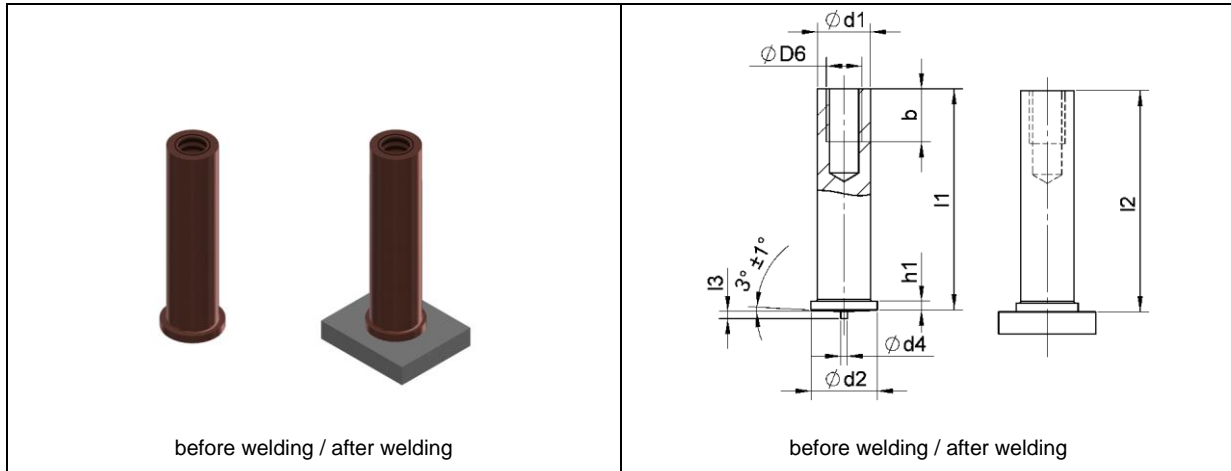
Dimensions								Material (item number)				
d_1	l_1 +0,6	d_2 $\pm 0,2$	d_4 $\pm 0,08$	l_3 $\pm 0,05$	h_5 max.	h_1	l_2	Steel 4.8 copper- plated	A2-50	A5-50	AlMg3	CuZn37
M3	6-30	4,5	0,6	0,55	0,6	0,7-1,4	$\approx l_1 - 0,3$	11-03-XXX	12-03-XXX	191-03-XXX	14-03-XXX	13-03-XXX
M4	6-40	5,5	0,65	0,55	0,6	0,7-1,4	$\approx l_1 - 0,3$	11-04-XXX	12-04-XXX	191-04-XXX	14-04-XXX	13-04-XXX
M5	6-45	6,5	0,75	0,8	1,0	0,7-1,4	$\approx l_1 - 0,3$	11-05-XXX	12-05-XXX	191-05-XXX	14-05-XXX	13-05-XXX
M6	8-60	7,5	0,75	0,8	1,0	0,7-1,4	$\approx l_1 - 0,3$	11-06-XXX	12-06-XXX	191-06-XXX	14-06-XXX	13-06-XXX
M8	10-60	9	0,75	0,85	1,5	0,8-1,4	$\approx l_1 - 0,3$	11-08-XXX	12-08-XXX	191-08-XXX	14-08-XXX	13-08-XXX
M10	12-60	10,7	0,75	0,75	3	1,2-1,6	$\approx l_1 - 0,3$	11-10-XXX	12-10-XXX	191-10-XXX	-	-

In the item number **XXX** has to be replaced by the respective welding element length l_1 (e.g. 030 for 30 mm).

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.3 Internally threaded stud (type IT acc. to DIN EN ISO 13918)



Dimensions									Material (item number)				
d ₁ ±0,1	l ₁ +0,6	D ₆	b min. +2P ¹	d ₂ ±0,2	d ₄ ±0,08	l ₃ ±0,05	h ₁	l ₂	Steel 4.8 copper- plated	A2-50	A5-50	AlMg3	CuZn37
5	6-30	M3	5 (4 ²)	6,5	0,75	0,8	0,7-1,4	≈ l ₁ -0,3	31-35- XXX	32-35- XXX	391-35- XXX	34-35- XXX	33-35- XXX
6	8-40	M4	6	7,5	0,75	0,8	0,7-1,4	≈ l ₁ -0,3	31-46- XXX	32-46- XXX	391-46- XXX	34-46- XXX	33-46- XXX
7,1	10-40	M5	7,5	9	0,75	0,85	0,8-1,4	≈ l ₁ -0,3	31-57- XXX	32-57- XXX	391-57- XXX	34-57- XXX	33-57- XXX
8	10-40	M6	9	9	0,75	0,85	0,8-1,4	≈ l ₁ -0,3	31-68- XXX	32-68- XXX	391-68- XXX	34-68- XXX	33-68- XXX

¹P = thread pitch acc. to DIN 13-1

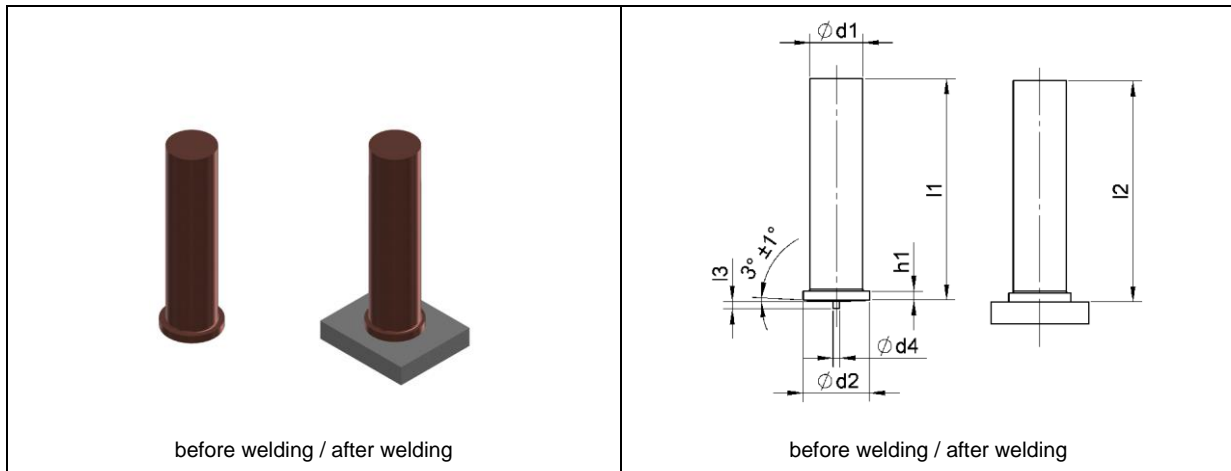
²for l₂ < 8 mm

In the item number **XXX** has to be replaced by the respective welding element length l₁ (e.g. 030 for 30 mm).

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.4 Non-threaded stud (type UT acc. to DIN EN ISO 13918)



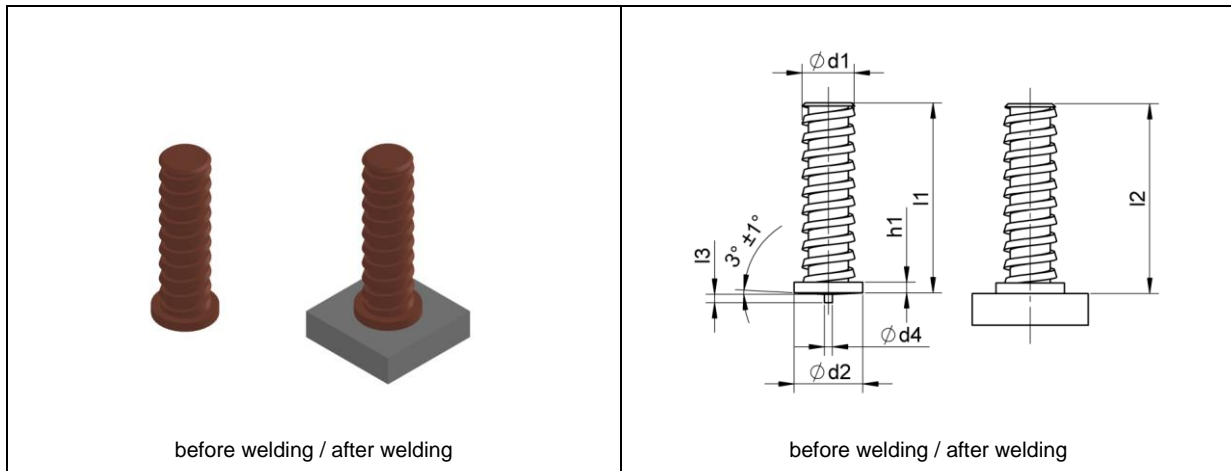
Dimensions							Material (item number)				
d_1 $\pm 0,1$	l_1 $+0,6$	d_2 $\pm 0,2$	d_4 $\pm 0,08$	l_3 $\pm 0,05$	h_1	l_2	Steel 4.8 copper- plated	A2-50	A5-50	AlMg3	CuZn37
3	6-30	4,5	0,6	0,55	0,7-1,4	$\approx l_1-0,3$	21-03-XXX	22-03-XXX	291-03-XXX	24-03-XXX	23-03-XXX
4	6-40	5,5	0,65	0,55	0,7-1,4	$\approx l_1-0,3$	21-04-XXX	22-04-XXX	291-04-XXX	24-04-XXX	23-04-XXX
5	6-45	6,5	0,75	0,8	0,7-1,4	$\approx l_1-0,3$	21-05-XXX	22-05-XXX	291-05-XXX	24-05-XXX	23-05-XXX
6	8-60	7,5	0,75	0,8	0,7-1,4	$\approx l_1-0,3$	21-06-XXX	22-06-XXX	291-06-XXX	24-06-XXX	23-06-XXX
7,1	10-60	9	0,75	0,85	0,8-1,4	$\approx l_1-0,3$	21-07-XXX	22-07-XXX	291-07-XXX	24-07-XXX	23-07-XXX
8	10-40	9	0,75	0,85	0,8-1,4	$\approx l_1-0,3$	21-08-XXX	22-08-XXX	291-08-XXX	24-08-XXX	23-08-XXX

In the item number **XXX** has to be replaced by the respective welding element length l_1 (e.g. 030 for 30 mm).

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.5 Fir tree stud

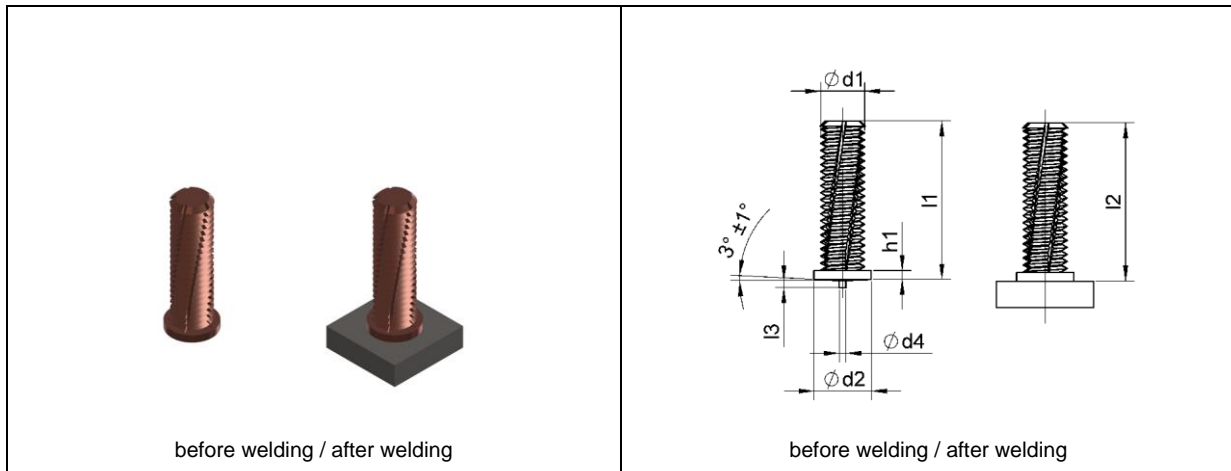


Dimensions							Material (item number)		
d ₁	l ₁ +0,6	d ₂ ±0,2	d ₄ ±0,08	l ₃ ±0,05	h ₁	l ₂	Steel 4.8 copper-plated	A2-50	AlMg3
5	9	6,5	0,75	0,8	0,7-1,4	≈ l ₁ -0,3	01-05-009	02-05-009	04-05-009
5	14,2	6,5	0,75	0,8	0,7-1,4	≈ l ₁ -0,3	01-05-014,2	02-05-014,2	04-05-014,2
5	18	6,5	0,75	0,8	0,7-1,4	≈ l ₁ -0,3	01-05-018	02-05-018	04-05-018
5	25	6,5	0,75	0,8	0,7-1,4	≈ l ₁ -0,3	01-05-025	02-05-025	04-05-025

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.6 Colour groove stud



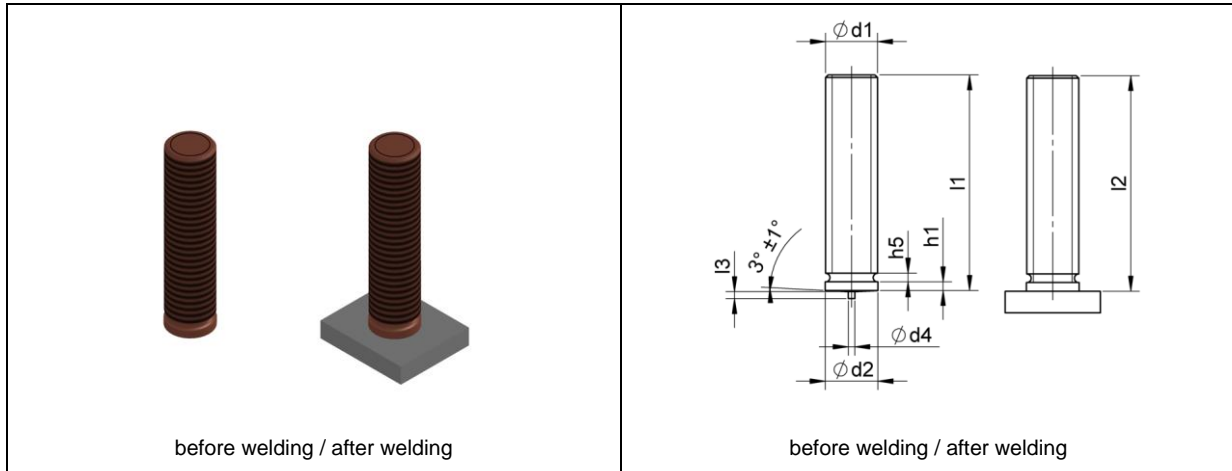
Dimensions							Material (item number)			
d ₁	l ₁ +0,6	d ₂ ±0,2	d ₄ ±0,08	l ₃ ±0,05	h ₁	l ₂	Steel 4.8 copper-plated	A2-50	AlMg3	CuZn37
M4	upon request	5,5	0,65	0,55	0,7-1,4	≈ l ₁ -0,3	11-LN-04-XXX	12-LN-04-XXX	14-LN-04-XXX	13-LN-04-XXX
M5	upon request	6,5	0,75	0,8	0,7-1,4	≈ l ₁ -0,3	11-LN-05-XXX	12-LN-05-XXX	14-LN-05-XXX	13-LN-05-XXX
M6	upon request	7,5	0,75	0,8	0,7-1,4	≈ l ₁ -0,3	11-LN-06-XXX	12-LN-06-XXX	14-LN-06-XXX	13-LN-06-XXX
M8	upon request	9	0,75	0,85	0,8-1,4	≈ l ₁ -0,3	11-LN-08-XXX	12-LN-08-XXX	14-LN-08-XXX	13-LN-08-XXX

In the item number **XXX** has to be replaced by the respective welding element length l₁ (e.g. 030 for 30 mm).

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.7 Threaded stud without flange



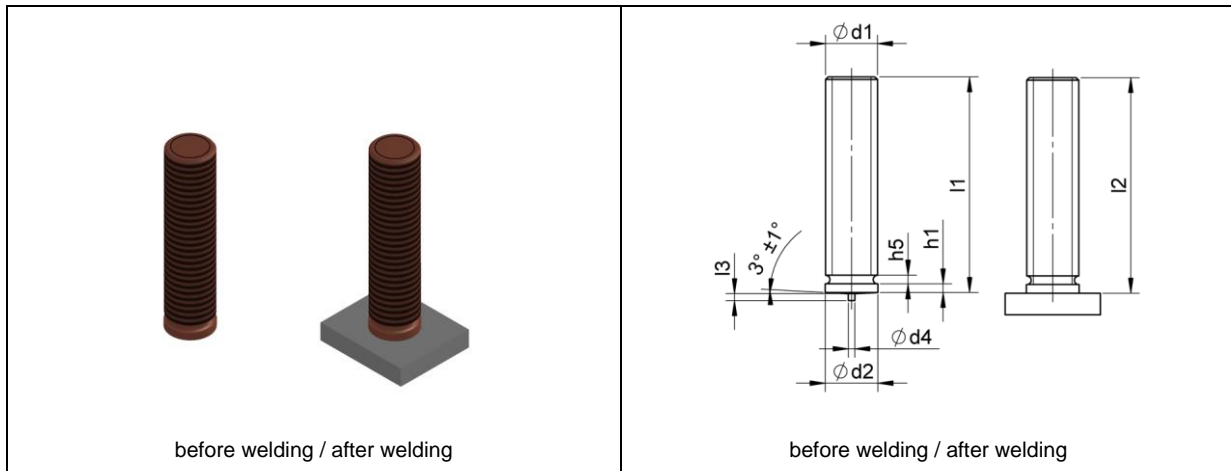
Dimensions								Material (item number)		
d_1	l_1 +0,6	d_2 +0,1	d_4 $\pm 0,08$	l_3 $\pm 0,05$	h_5 max.	h_1	l_2	Steel 4.8 copper-plated	A2-50	A5-50
M3	6-30	3	0,6	0,55	0,6	0,7-1,4	$\approx l_1 - 0,3$	11-03-XXX-OFL	12-03-XXX-OFL	191-03-XXX-OFL
M4	6-40	4	0,65	0,55	0,6	0,7-1,4	$\approx l_1 - 0,3$	11-04-XXX-OFL	12-04-XXX-OFL	191-04-XXX-OFL
M5	6-45	5	0,75	0,8	1,0	0,7-1,4	$\approx l_1 - 0,3$	11-05-XXX-OFL	12-05-XXX-OFL	191-05-XXX-OFL
M6	8-60	6	0,75	0,8	1,0	0,7-1,4	$\approx l_1 - 0,3$	11-06-XXX-OFL	12-06-XXX-OFL	191-06-XXX-OFL
M8	10-60	8	0,75	0,85	1,5	0,8-1,4	$\approx l_1 - 0,3$	11-08-XXX-OFL	12-08-XXX-OFL	191-08-XXX-OFL
M10	12-60	10	0,75	0,75	3	1,2-1,6	$\approx l_1 - 0,3$	11-10-XXX-OFL	12-10-XXX-OFL	191-10-XXX-OFL

In the item number **XXX** has to be replaced by the respective welding element length l_1 (e.g. 030 for 30 mm).

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.8 Threaded stud with reduced flange



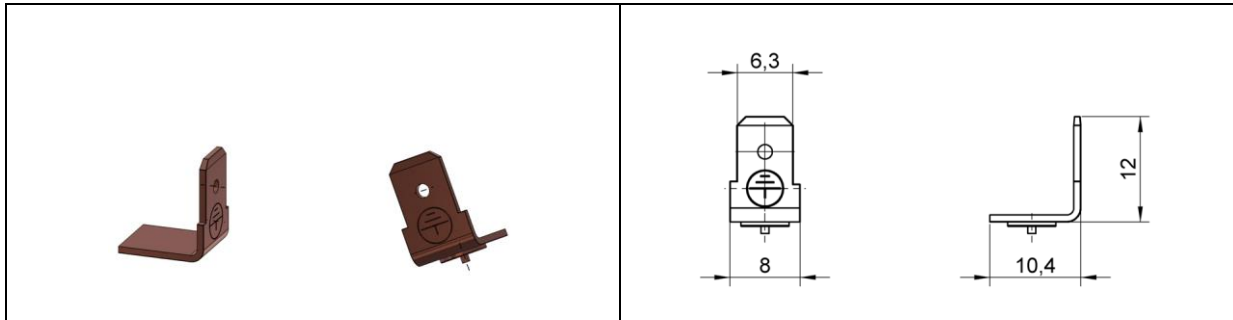
Dimensions								Material (item number)		
d_1	l_1 +0,6	d_2 +0,3	d_4 $\pm 0,08$	l_3 $\pm 0,05$	h_5 max.	h_1	l_2	Steel 4.8 copper-plated	A2-50	A5-50
M3	6-30	3,1	0,6	0,55	0,6	0,7-1,4	$\approx l_1 - 0,3$	11-03-XXX-RFL	12-03-XXX-RFL	191-03-XXX-RFL
M4	6-40	4,1	0,65	0,55	0,6	0,7-1,4	$\approx l_1 - 0,3$	11-04-XXX-RFL	12-04-XXX-RFL	191-04-XXX-RFL
M5	6-45	5,1	0,75	0,8	1,0	0,7-1,4	$\approx l_1 - 0,3$	11-05-XXX-RFL	12-05-XXX-RFL	191-05-XXX-RFL
M6	8-60	6,1	0,75	0,8	1,0	0,7-1,4	$\approx l_1 - 0,3$	11-06-XXX-RFL	12-06-XXX-RFL	191-06-XXX-RFL
M8	10-60	8,1	0,75	0,85	1,5	0,8-1,4	$\approx l_1 - 0,3$	11-08-XXX-RFL	12-08-XXX-RFL	191-08-XXX-RFL
M10	12-60	10,1	0,75	0,75	3	1,2-1,6	$\approx l_1 - 0,3$	11-10-XXX-RFL	12-10-XXX-RFL	191-10-XXX-RFL

In the item number **XXX** has to be replaced by the respective welding element length l_1 (e.g. 030 for 30 mm).

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.9 Earth plug

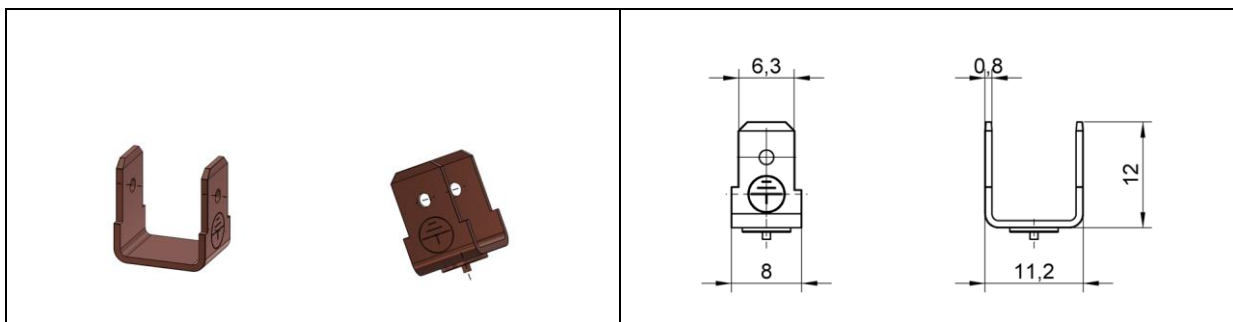


Material (item number)			
Steel copper-plated	A2-50	AlMg3	CuZn37
30-10-063-PA	30-20-063-PA	30-40-063-PA	30-30-063-PA

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.10 Double earth plug

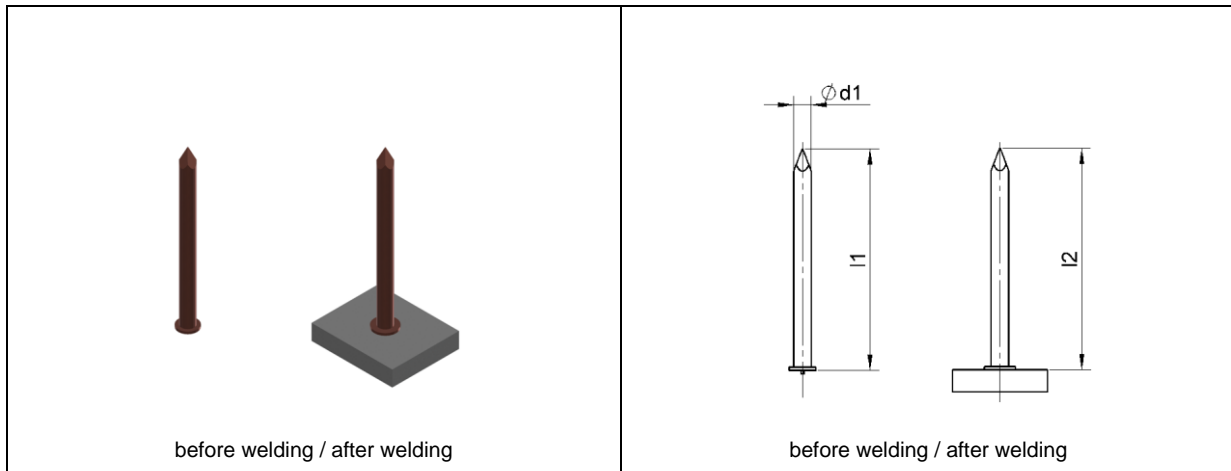


Material (item number)			
Steel copper-plated	A2-50	AlMg3	CuZn37
30-11-063-PA	30-22-063-PA	30-44-063-PA	30-33-063-PA

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.11 Insulation nail

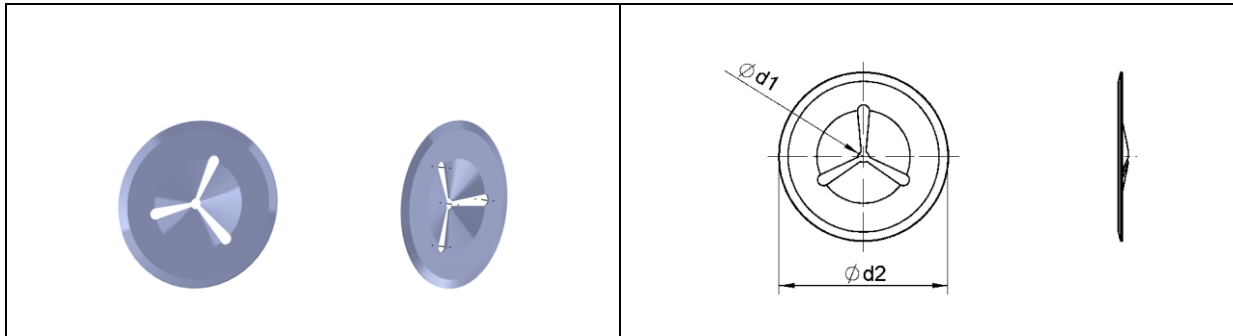


Dimensions			Material (item number)		
d_1 $\pm 0,06$	l_1 $\pm 2,00$	l_2	Steel 4.8 copper-plated	A2-50	AlMg3
2	20-150	$\approx l_1 - 0,3$	41-02-XXX	42-02-XXX	44-02-XXX
3	20-150	$\approx l_1 - 0,3$	41-03-XXX	42-03-XXX	44-03-XXX

In the item number **XXX** has to be replaced by the respective welding element length l_1 (e.g. 030 for 30 mm).
 Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

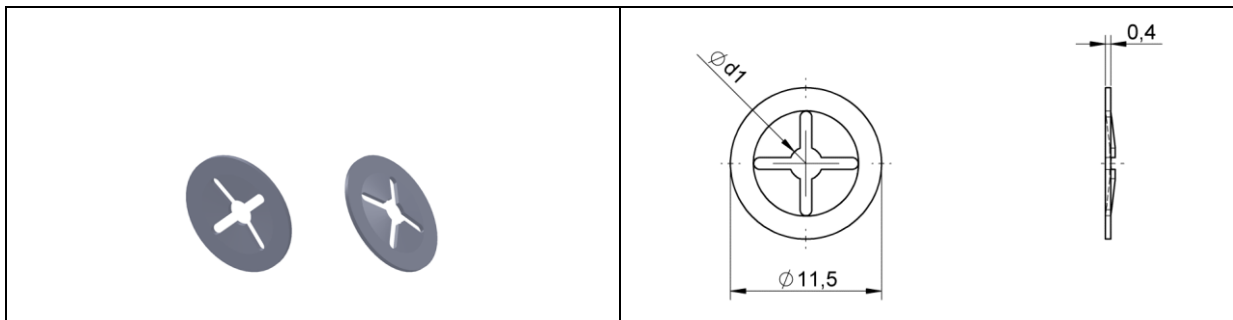
1.12 Clip for insulation nail (type R)



Dimensions		Material (item number)	
d₁	d₂	Steel zinc-plated	1.4310
2	38	49-12-002	49-22-002
3	38	49-13-003	49-23-003
3	60	49-13-003-ST2K70-D60	49-23-003-4310-D60

Not listed dimensions and materials available upon request.

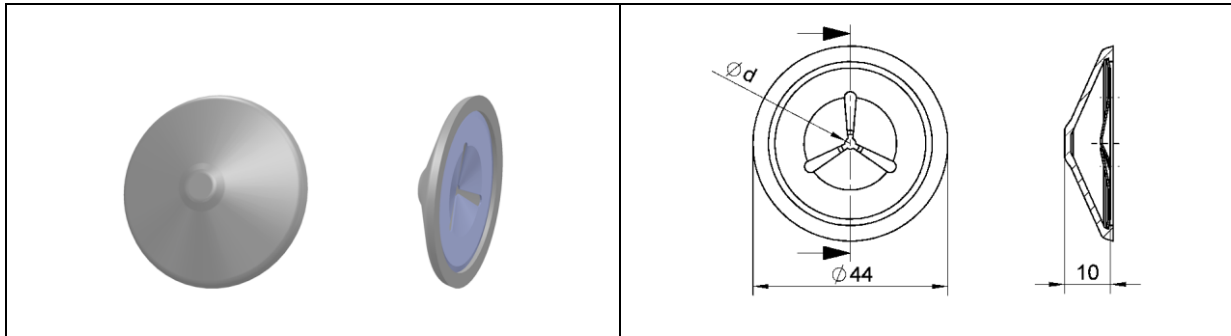
1.13 Clip (type R, outside dia. 11,5 mm)



Dimensions	Material (item number)
d₁	Steel zinc-plated
3	49-03-003
4	49-04-004
5	49-05-005

Not listed dimensions and materials available upon request.

1.14 Clip with plastic cap for insulation nail (type W)

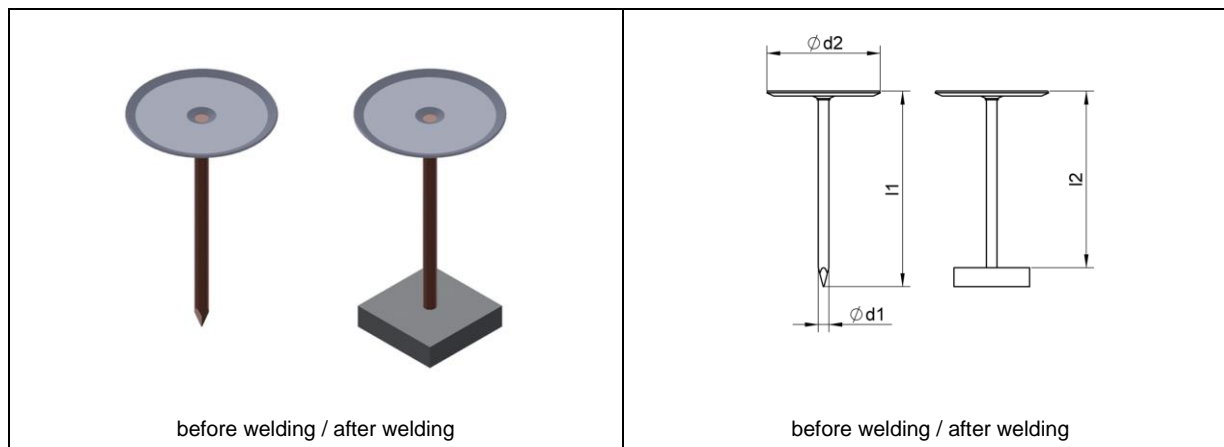


Dimensions	Material (item number)			
	Steel zinc-plated with plastic cap (white)	Steel zinc-plated with plastic cap (black)	1.4310 with plastic cap (white)	1.4310 with plastic cap (black)
d	49-52-002	49-52-002-SCHWARZ	49-62-002	49-62-002-SCHWARZ
3	49-53-003	49-53-003-SCHWARZ	49-63-003	49-63-003-SCHWARZ

Plastic cap: halogen free, self-extinguishing

Not listed dimensions and materials available upon request.

1.15 Cupped head pin

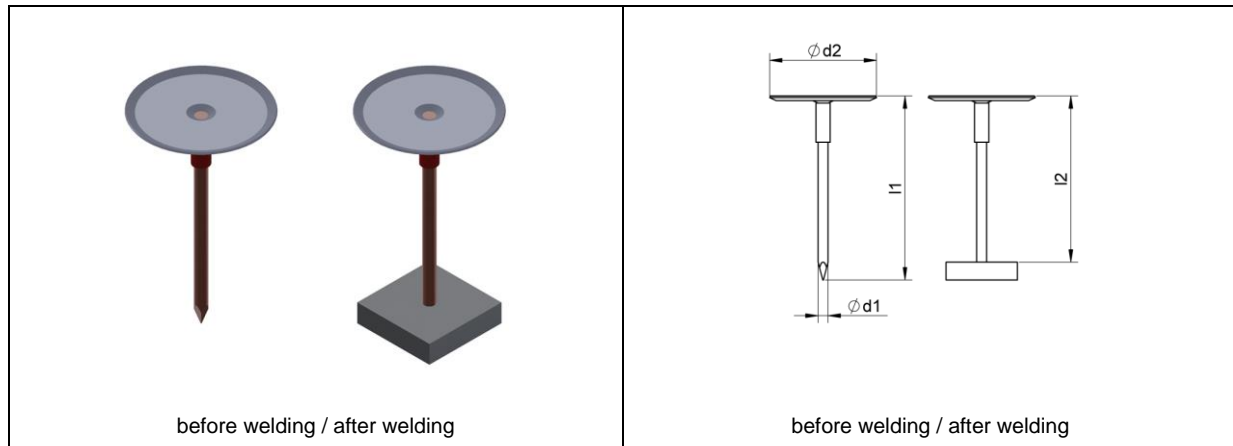


Dimensions			for insulation (thickness in mm)	Material (item number)	
d ₁	l ₁	d ₂		Shaft: steel 4.8 copper-plated head: steel zinc-plated	Shaft: 1.4301 head: steel zinc-plated
2,7	14,5	30	15	41-02,7-014,5	42-02,7-014,5
2,7	19	30	20	41-02,7-019	42-02,7-019
2,7	22,2	30	20 (hard)	41-02,7-022,2	42-02,7-022,2
2,7	25,4	30	25	41-02,7-025,4	42-02,7-025,4
2,7	28,5	30	30	41-02,7-028,5	42-02,7-028,5
2,7	30,5	30	30	41-02,7-030,5	42-02,7-030,5
2,7	31,7	30	30 (hard)	41-02,7-031,7	42-02,7-031,7
2,7	35	30	35	41-02,7-035	42-02,7-035
2,7	38	30	40	41-02,7-038	42-02,7-038
2,7	41	30	40 (hard)	41-02,7-041	42-02,7-041
2,7	47,6	30	50	41-02,7-047,6	42-02,7-047,6
2,7	50	30	50 (hard)	41-02,7-050	42-02,7-050
2,7	54	30	60 (soft)	41-02,7-054	42-02,7-054
2,7	58	30	60 (middle)	41-02,7-058	42-02,7-058
2,7	60,5	30	60 (middle)	41-02,7-060,5	42-02,7-060,5
2,7	62	30	60 (hard)	41-02,7-062	42-02,7-062
2,7	64	30	70 (soft)	41-02,7-064	42-02,7-064
2,7	68	30	70 (middle)	41-02,7-068	42-02,7-068
2,7	72	30	70 (hard)	41-02,7-072	42-02,7-072
2,7	76	30	80	41-02,7-076	42-02,7-076
2,7	78	30	80	41-02,7-078	42-02,7-078
2,7	89	30	100	41-02,7-089	42-02,7-089
2,7	98,5	30	100	41-02,7-098,5	42-02,7-098,5
2,7	101,6	30	100 (middle)	41-02,7-101,6	42-02,7-101,6
2,7	105	30	100 (hard)	41-02,7-105	42-02,7-105
2,7	114,3	30	120	41-02,7-114,3	42-02,7-114,3
2,7	139,7	30	140	41-02,7-139,7	42-02,7-139,7
2,7	152,4	30	150	41-02,7-152,4	42-02,7-152,4

Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.16 Cupped head pin insulated



The shaft of the cupped head pin is insulated. Insulated cupped head pins are used for fixing insulating mats with aluminum lamination resp. wire gauze. In connection with the downholder of the stud welding gun the insulation prevents that a short circuit with the aluminum lamination resp. the wire gauze occurs during welding.

Dimensions			for insulation (thickness in mm)	Material (item number)	
d ₁	l ₁	d ₂		Shaft: steel 4.8 copper-plated head: steel zinc-plated	Shaft: 1.4301 head: steel zinc-plated
2,7	14,5	30	15	41-02,7-014,5-S	42-02,7-014,5-S
2,7	19	30	20	41-02,7-019-S	42-02,7-019-S
2,7	22,2	30	20 (hard)	41-02,7-022,2-S	42-02,7-022,2-S
2,7	25,4	30	25	41-02,7-025,4-S	42-02,7-025,4-S
2,7	28,5	30	30	41-02,7-028,5-S	42-02,7-028,5-S
2,7	30,5	30	30	41-02,7-030,5-S	42-02,7-030,5-S
2,7	31,7	30	30 (hard)	41-02,7-031,7-S	42-02,7-031,7-S
2,7	35	30	35	41-02,7-035-S	42-02,7-035-S
2,7	38	30	40	41-02,7-038-S	42-02,7-038-S
2,7	41	30	40 (hard)	41-02,7-041-S	42-02,7-041-S
2,7	47,6	30	50	41-02,7-047,6-S	42-02,7-047,6-S
2,7	50	30	50 (hard)	41-02,7-050-S	42-02,7-050-S
2,7	54	30	60 (soft)	41-02,7-054-S	42-02,7-054-S
2,7	58	30	60 (middle)	41-02,7-058-S	42-02,7-058-S
2,7	60,5	30	60 (middle)	41-02,7-060,5-S	42-02,7-060,5-S
2,7	62	30	60 (hard)	41-02,7-062-S	42-02,7-062-S
2,7	64	30	70 (soft)	41-02,7-064-S	42-02,7-064-S
2,7	68	30	70 (middle)	41-02,7-068-S	42-02,7-068-S
2,7	72	30	70 (hard)	41-02,7-072-S	42-02,7-072-S
2,7	76	30	80	41-02,7-076-S	42-02,7-076-S
2,7	78	30	80	41-02,7-078-S	42-02,7-078-S
2,7	89	30	100	41-02,7-089-S	42-02,7-089-S
2,7	98,5	30	100	41-02,7-098,5-S	42-02,7-098,5-S
2,7	101,6	30	100 (middle)	41-02,7-101,6-S	42-02,7-101,6-S
2,7	105	30	100 (hard)	41-02,7-105-S	42-02,7-105-S
2,7	114,3	30	120	41-02,7-114,3-S	42-02,7-114,3-S
2,7	139,7	30	140	41-02,7-139,7-S	42-02,7-139,7-S
2,7	152,4	30	150	41-02,7-152,4-S	42-02,7-152,4-S

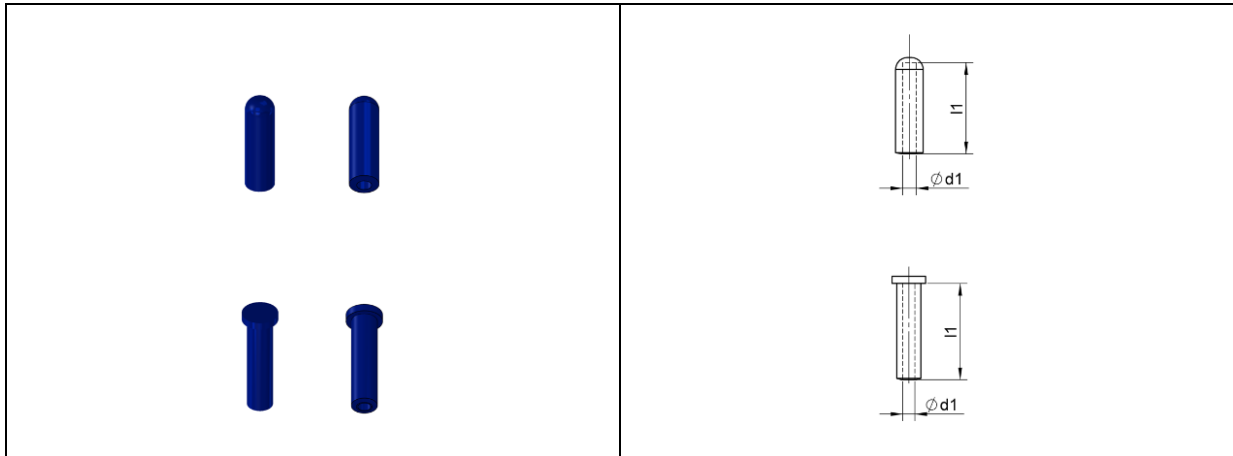
Explanations to the used materials can be found in chapter 1.1.

Not listed dimensions and materials available upon request.

1.17 Silicone cover caps

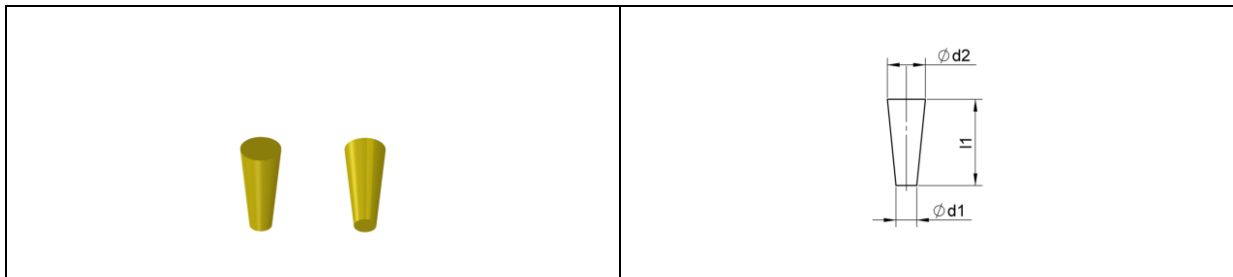
Silicone cover caps protect the mechanical important areas of the welding elements during painting and powder coating as well as during the burning-in process (permanent temperature $\leq 210^{\circ}\text{C}$, short temperature $\leq 300^{\circ}\text{C}$).

1.17.1 Silicone cover caps for threaded studs and non-threaded studs



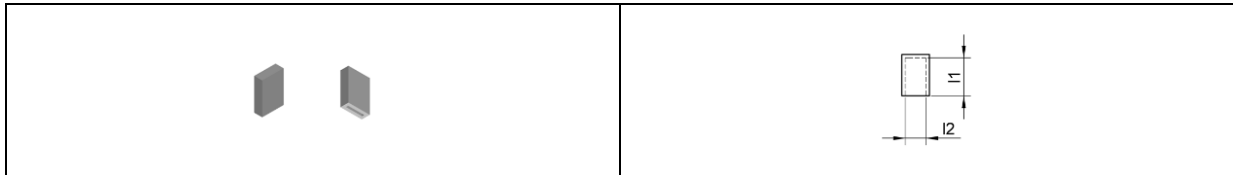
Available dimensions upon request.

1.17.2 Silicone cover caps for internally threaded studs

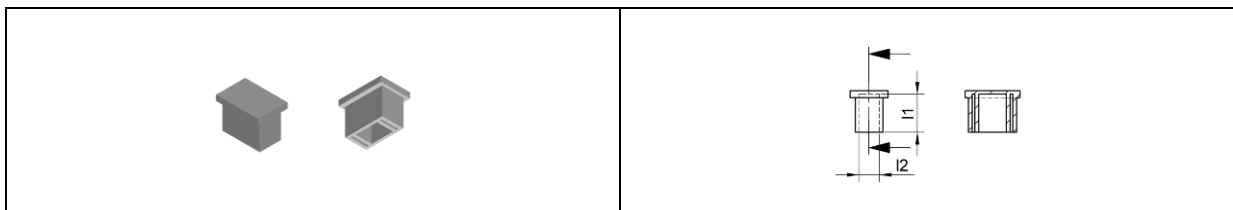


Available dimensions upon request.

1.17.3 Silicone cover caps for earth plugs



1.17.4 Silicone cover caps for double earth plugs



Annex: Accessories and wear parts for stud welding guns

2. Accessories and wear parts for stud welding guns

2.1 Threaded stud (type PT), internally threaded stud (type IT), non-threaded stud (type UT), fir tree stud, colour groove stud, threaded stud without flange, threaded stud with reduced flange diameter

For stud welding guns PKM-1B, PHM-1A:

Stud dimensions		Gun accessories	
d ₁	l ₂	Chuck (item number)	Intermediate ring (item number)
M3 / 3	l ₂ ≤ 40 40 < l ₂ ≤ 55 55 < l ₂ ≤ 70	82-50-003	- B-80-40-1128 B-80-40-1128 (2 pieces)
M4 / 4	l ₂ ≤ 40 40 < l ₂ ≤ 55 55 < l ₂ ≤ 70	82-50-004	- B-80-40-1128 B-80-40-1128 (2 pieces)
M5 / 5	l ₂ ≤ 40 40 < l ₂ ≤ 55 55 < l ₂ ≤ 70	82-50-005	- B-80-40-1128 B-80-40-1128 (2 pieces)
M6 / 6	l ₂ ≤ 40 40 < l ₂ ≤ 55 55 < l ₂ ≤ 70	82-50-006	- B-80-40-1128 B-80-40-1128 (2 pieces)
7,1	l ₂ ≤ 40 40 < l ₂ ≤ 55 55 < l ₂ ≤ 70	82-50-071	- B-80-40-1128 B-80-40-1128 (2 pieces)
M8 / 8	l ₂ ≤ 40 40 < l ₂ ≤ 55 55 < l ₂ ≤ 70	82-50-008	- B-80-40-1128 B-80-40-1128 (2 pieces)
M10	l ₂ ≤ 25 25 < l ₂ ≤ 40 40 < l ₂ ≤ 55 55 < l ₂ ≤ 70	82-50-010	B-80-40-1128 B-80-40-1128 (2 pieces) B-80-40-1128 (3 pieces) B-80-40-1128 (4 pieces)

2.2 Earth plug, double earth plug

For stud welding guns PKM-1B, PHM-1A:

Type	Gun accessories
	Chuck (item number)
Earth plug	82-50-050
Double earth plug	82-50-050

2.3 Insulation nail

For stud welding guns PKM-1B, PHM-1A:

Stud dimensions		Gun accessories
d ₁	l ₂	Chuck (item number)
2	l ₂ ≤ 145	82-50-020
3	l ₂ ≤ 145	82-50-030

For insulation nails with a length of up to 200 mm we offer the stud welding gun PKM-1B ISO-200 (item number B-90-10-2122).



2.4 Cupped head pin, cupped head pin insulated

For stud welding gun PIM-1B:

Stud dimensions			Gun accessories
d ₁	d ₂	l ₁	Chuck (item number)
2,7	30	l ₂ ≥ 9,5	82-50-0311

For stud welding gun PIM-1K:

Stud dimensions			Gun accessories
d ₁	d ₂	l ₁	Chuck (item number)
2,7	30	l ₂ ≥ 9,5	B-80-35-1368



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