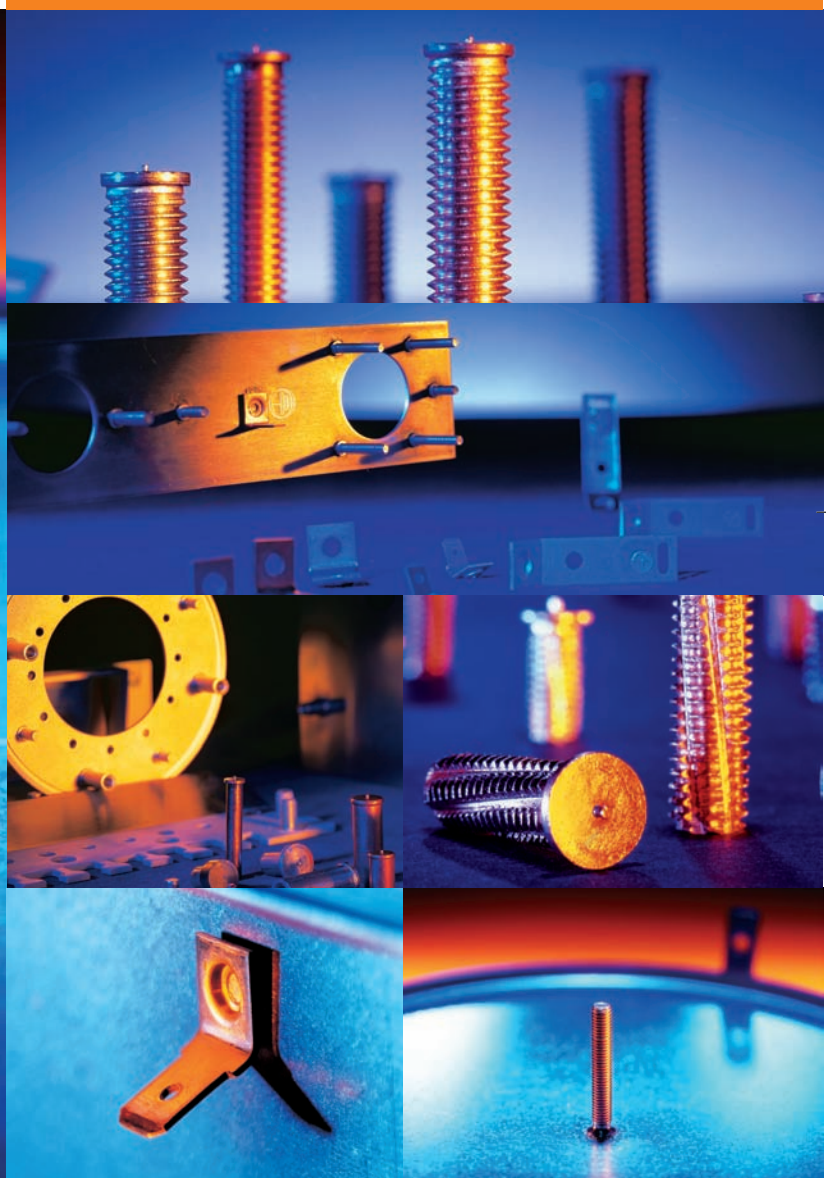


SBS

Welding stud systems

With important information on
application and technology

SBS Welding stud systems



OBO
BETTERMANN

OBO. Used by professionals.

Product range Quality



The range of welding studs is a reflection of what is required in practice. From all types of threaded bolt to the flat connector in any material and dimensions. As a brand manufacturer, we can offer you:

- ▶ Complete welding stud range containing over 2,000 articles
- ▶ Proprietary development and production facilities
- ▶ Ongoing product maintenance and further development
- ▶ Customer-specific special dimensions on request
- ▶ Special fastening elements, e.g. flat connector

Professionals demand quality. A quality offered by all OBO brand products and services connected with stud welding:

- ▶ QA certification to DIN EN ISO 9001:2000
- ▶ Tested material and manufacturing quality
- ▶ Active involvement in national and international standardisation bodies

Perfect solutions for all welding stud systems applications. User-friendly, practical welding studs, whether for series production or trade use – OBO can solve your welding problems!

Your OBO SBS team

Local



We produce the entire SBS range, containing over 2,000 articles, at our main factory in Menden. On an international level, we have the following agencies:

Agencies*

United States

Keystone Fastening Technologies +1 412 787 59 70

Italy

Carpaneto + C. +39 11 9 59 01 11

Denmark

Emhart Harttung A/S +45 44 84 11 00

Belgium

Thomas Welding Systems +32 71 37 13 70

United Kingdom

Taylor Stud Welding Ltd. +44 19 24 45 21 23

* You can find detailed address information on the Internet at www.obo-sbs.de

Help & advice



At OBO, there are knowledgeable employees available to provide you with help and assistance: for queries, individual solutions and application tips connected with the topic of welding stud systems.

Technical telephone hotline

0 23 73/89-1236

Technical fax hotline

0 23 73/89-1238

Technical e-mail hotline

hotline@obo-sbs.de

Telephone ordering

0 23 73/89-1236

Fax ordering

0 23 73/89-1238

E-mail ordering

auftragsannahme@obo-sbs.de

Internet

www.obo-sbs.de

OBO welding stud systems

Stud welding is one of the arc stud welding methods. The different methods are described in detail in DIN EN ISO 14555. The fastening elements for stud welding are described in DIN EN ISO 13918; that only applies to rotationally symmetrical components. At OBO BETTERMANN, these welding studs are created on state-of-the-art multiple die presses through cold reduction. Decades of experience and continuous development of the manufacturing process guarantee the excep-

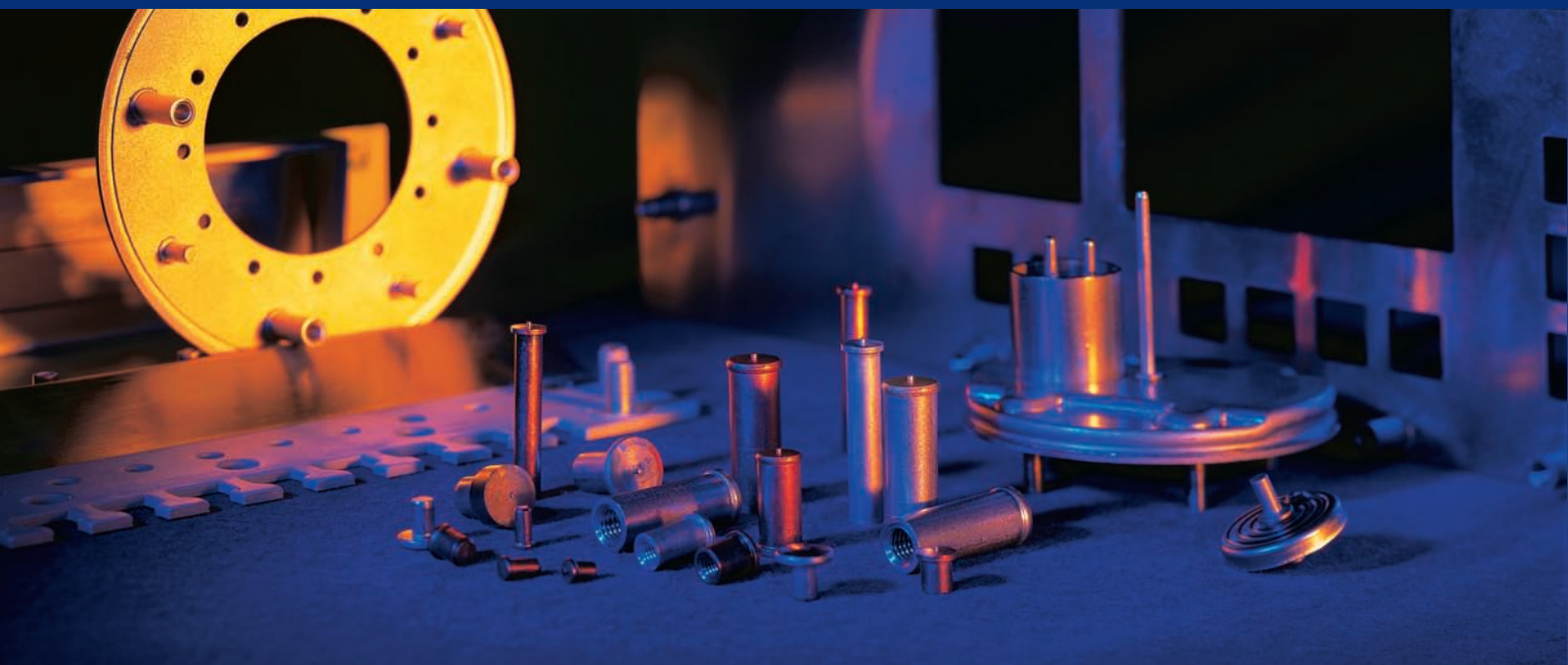
tional quality of OBO welding studs. In addition, there is a wealth of fastening elements for stud welding, which are not standardised, for example, the flat connector, also called an earthing connector. OBO BETTERMANN has been producing these punched parts at the highest level of precision for many years. Modern punching tools and presses guarantee a high standard of quality for the fastening elements, as is required for high-quality welding.

The welding methods are split into

two main groups, which prevail in practice, according to the application:

1. Capacitor discharge stud welding with tip ignition. There are two variants of this method: gap welding and contact welding.

2. Stud welding with arc ignition with the subgroup short arc ignition stud welding (short cycle).



Capacitor discharge stud welding with tip ignition (contact welding)

Short cycle (short stud welding operation with arc ignition)





The stud that can keep its promises

You can find OBO welding studs in many electrical devices and articles from renowned manufacturers, and can offer you a complete product range for any application. We fulfil the requirements of DIN EN ISO 13918 and are represented in standardisation bodies. Amongst others,

we supply our welding elements to the manufacturers of

- Electrical devices
- Household and small electrical devices
- Fire extinguishers
- Pots and pans
- Motor vehicles

OBO SBS product range



PT threaded bolt

Designation of a metric threaded bolt to DIN EN ISO 13918.

Welding method:

Capacitor discharge stud welding with tip ignition



UT pins

Designation of a threaded pin to DIN EN ISO 13918.

Welding method:

Capacitor discharge stud welding with tip ignition

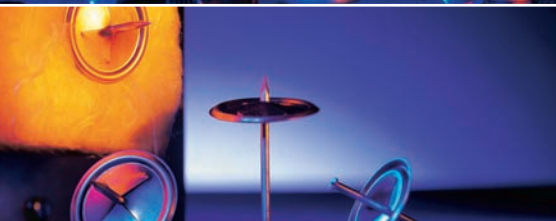


IT internal threaded bolt

Designation of an internal threaded bolt to DIN EN ISO 13918.

Welding method:

Capacitor discharge stud welding with tip ignition



ISO nail

Designation of an insulating pin. This pin is not standardised. The welding geometry is created according to DIN EN ISO 13918.

Welding method:

Capacitor discharge stud welding with tip ignition



Flat connectors

Flat connectors are also called earthing connectors. The welding geometry is created according to DIN EN ISO 13918.

Welding method:

Capacitor discharge stud welding with tip ignition



Short cycle stud

We make the so-called short cycle stud in the same way as the PT, UT and IT studs.

Welding method:

Short stud welding operation with arc ignition



Lacquer groove pin

We manufacture this pin in an identical manner to the PT stud.

Welding method:

Capacitor discharge stud welding with tip ignition

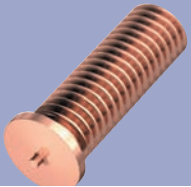
Welding stud type key

GM = Metric threaded bolt
S = Smooth pin
P = ISO nail, cut tip

IM = Internal threaded bolt
T = Coarse threaded bolt
FS = Flat connector

Contents

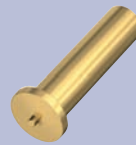
Technical data



PT threaded bolt

Thread M2.5–M10

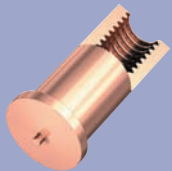
- ▶ Steel, copper-plated
- ▶ Stainless steel
- ▶ Aluminium
- ▶ Brass



UT pins

Thicknesses of 2.1 mm–6.0 mm

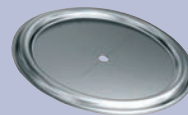
- ▶ Steel, copper-plated
- ▶ Stainless steel
- ▶ Aluminium
- ▶ Brass



IT internal threaded bolt

Thread M2.5–M6

- ▶ Steel, copper-plated
- ▶ Stainless steel
- ▶ Aluminium



ISO nails and grommets

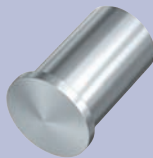
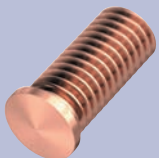
Thicknesses of 2.1 mm–3.0 mm

- ▶ Steel, copper-plated
- ▶ Stainless steel
- ▶ Aluminium



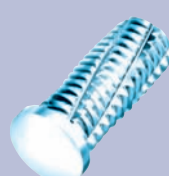
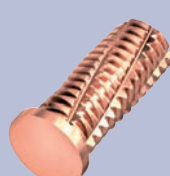
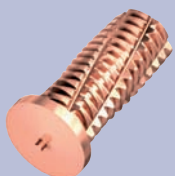
Flat connector

- ▶ Steel, copper-plated
- ▶ Stainless steel
- ▶ Brass
- ▶ Aluminium



Short cycle stud, pins and internal thread bolt

- ▶ Steel, copper-plated
- ▶ Stainless steel



Lacquer groove pin

- ▶ Steel, copper-plated

Information

- ▶ Pictograms
- ▶ Materials
- ▶ Index
- ▶ Numeric type directory

Technical data

OBO fastening elements for stud welding

All the threads and stud flanges are created to DIN EN ISO 13918. The flange is a component part of the

welding stud. Its diameter is greater than the external diameter of the stud. During welding, it prevents the

arc from affecting the cylindrical section of the bolt, simultaneously increasing the welding area.

Basic material	Stud material			
	4.8*	A2-50*	Cu Zn 37 (Ms 63)	Al Mg
Steel to 0.35% C	++	O	++	–
Steel to 0.60% C	–	O	–	–
Sheet steel, electrogalvanised max. 30 µ	O	O	++	–
CrNi steels austenitic	O	++	O	–
Cu Zn 37 (Ms 63) lead-free	O	O	O	–
AlMg3	–	–	–	++

Weldability of materials

- ++ Very suitable
- O Sufficiently suitable to Ø 5 mm
- Not suitable for welding
- * Suitable for welding

Thread Ø	A ^{sp} (mm²)	4.8	A2-50	CuZn37	AlMg3
M3	5.03	80	50	60	40
M4	8.78	180	110	130	90
M5	14.20	360	230	270	190
M6	20.10	610	380	450	310
M8	36.60	1,500	950	1,100	750

Approved tightening torques (N x cm)

According to DVS 0904, related to the offset yield stress (torque).

A^{sp} = Cross-section area of the thread

Short code	Material	Standard	Mechanical properties
PT UT IT	4.8 *1	EN 20898-1 EN 20898-1 EN 20898-1	R _m ≥ 420 R _{eh} ≥ 340 N/mm² A ₅ ≥ 14 %
	A2-50 *2	EN ISO 3506-3 EN ISO 3506-3 EN ISO 3506-3	R _m ≥ 500 R _{p0.2} ≥ 340 N/mm² A ₁ ≥ 0.6 d
	CuZn37	ISO 426-1 ISO 1638	R _m ≥ 370 N/mm²
	EN AW-AlMg3	EN 573-3	R _m > 180 N/mm²

*1 Studs made of non-alloy steels are suitable for welding if there is a small amount of hardening (C < 0.18%). Studs made of machining steels are not suitable for welding.

*2 Studs made of rustproof steels are usually suitable for welding, whilst those made of machining steels are not.

Limit tensile force to DIN 18800-1

(without deformation)

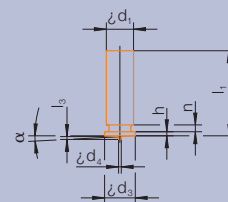
$$N_{R,d} = A_{SP} \times f_{u,b,k} / (1.25 \times y_m)$$

$$f_{u,b,k} = R_m$$

This data can only supply guide values, as the torque and minimum break load are dependent on the strength (thickness) and stability of the base material.

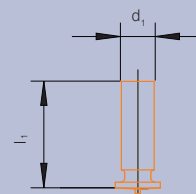
PT threaded bolt · DIN EN ISO 13918

d ₁	l ₁ + 0.6	d ₃ ± 0.2	d ₄ ± 0.08	l ₃ ± 0.05	h	n max.	a ±1°
M2.5		3.6	0.40	0.40	0.7–1.4	1.5	3°
M3		4.5	0.60	0.55			
M4		5.5	0.65				
M5		6.5	0.75	0.80		2.0	
M6		7.5		0.85		3.0	
M8		9.0					
M10		10.5		0.75			



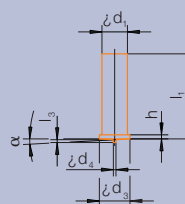
Bolt with inched thread, flange UNC/UNF

d ₁	Length l ₁ (special lengths on request)										
4–40	1/4	3/8	1/2	5/8	3/4	7/8	1				
6–32								1–1/4	1–1/2		
8–32											
10–24											
10–32											
1/4–20										1–3/4	2



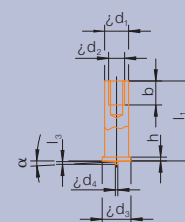
UT pins · DIN EN ISO 13918

d_1 ± 0.1	l_1 $+ 0.6$	d_3 ± 0.2	d_4 ± 0.08	l_3 ± 0.05	h	a $\pm 1^\circ$
3		4.5	0.60	0.55	0.7–1.4	3°
4		5.5	0.65			
5		6.5	0.75	0.80		
6		7.5				



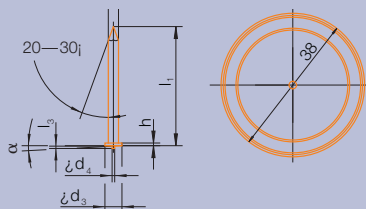
IT internal threaded bolt · DIN EN ISO 13918

d ₁ ± 0.1	d ₂	l ₁ + 0.6	b + 0.5	d ₃ ± 0.2	d ₄ ± 0.08	l ₃ ± 0.05	h	a ±1°
4	M3		5	6.5	0.75	0.80	0.8–1.4	3°
5	M4		6	7.5		0.85		
7.1	M5		7.5	9				



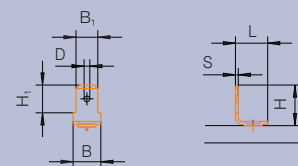
ISO nail

d_1 -0.1	l_1 + 0.6	d_3 $\pm$ 0.2	d_4 $\pm$ 0.05	l_3 + 0.05 /-0.02	h $\pm$ 0.2	a $\pm$ 1°
2.1		3.6	0.4	0.4	0.6	3°
2.6		4.5	0.5	0.5	0.7	
3		5.0	0.7	0.7		



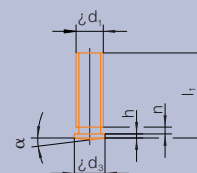
Flat connector

S ± 0.03	H ± 0.3	H_1 +0.5	EN +0.2	B ± 0.2	B_1 +0.1	L
0.8	11.5	8	1.65	8	6.3	10



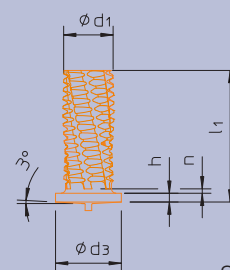
Short cycle threaded bolt

d ₁	l ₁ + 0.6	d ₃ ± 0.2	h	n max.	a ±1°
M3		4	0.7–1.4	1.5	7°
M4		5	0.8–1.4	2	
M5		6			
M6		7			
M8		9			
M10		11			

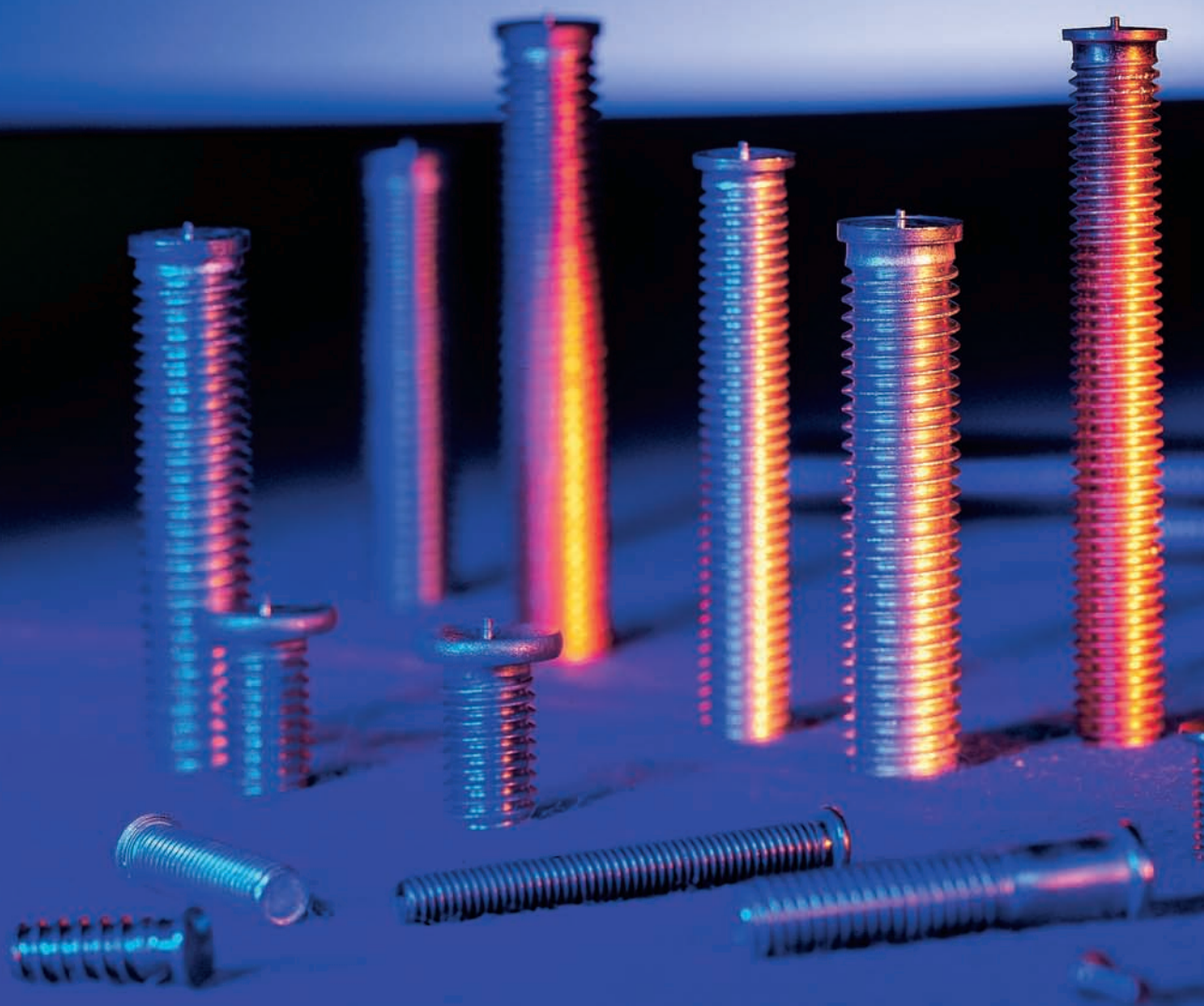


Lacquer groove pin

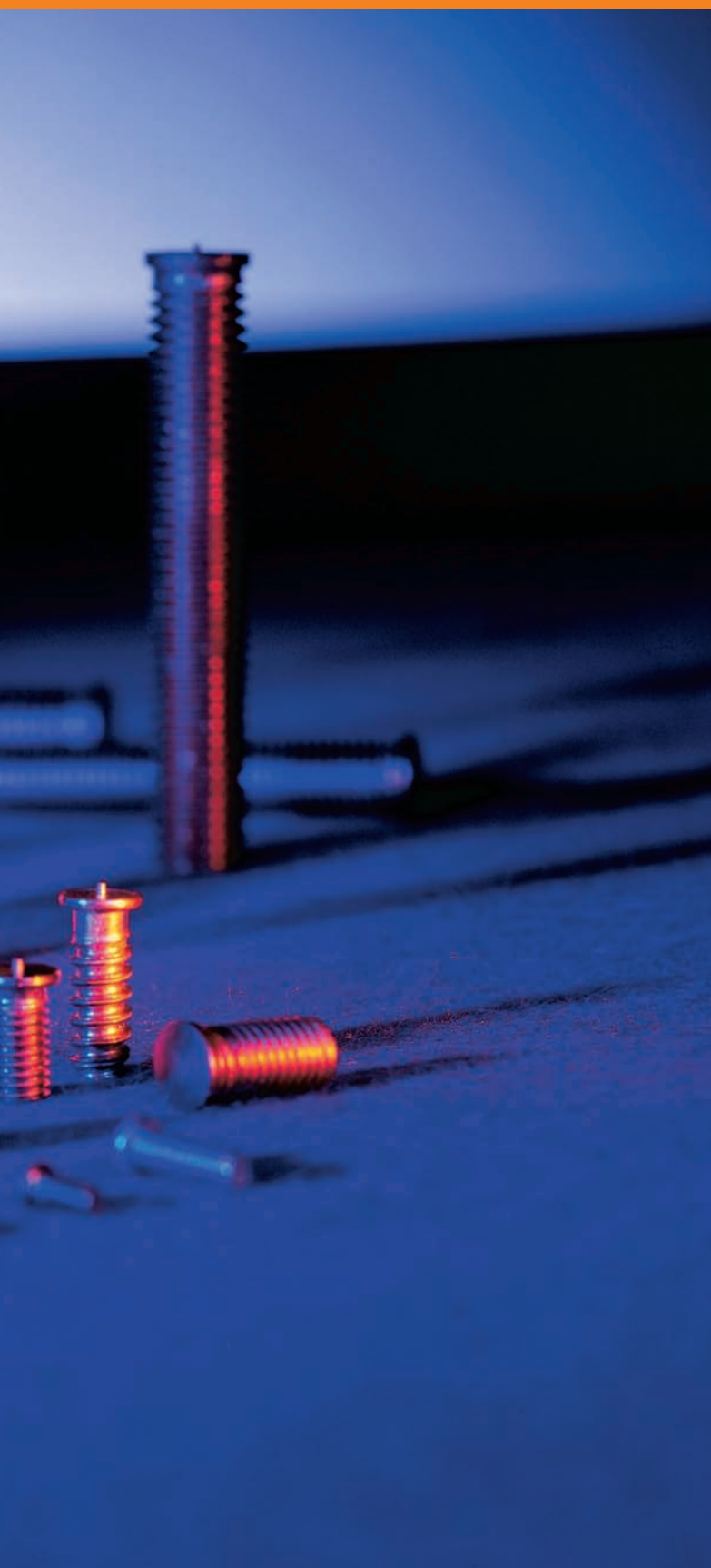
d_1	l_1 + 0.6	d_3	h	n max.	±1°
M5		6.5 ± 0.2			
M6		7.5 ± 0.2	0.8–1.4	2	3°
M8		9.0 ± 0.2			



The PT bolts, which have a metric thread, are machined to DIN EN ISO 13918 and are used for capacitor discharge stud welding with tip ignition. All the PT threaded bolts listed in this catalogue have our standard dimensions and materials. Special lengths and qualities can be made on request.



PT threaded bolt for tip ignition



Threaded bolt, metric	
Steel, copper-plated	From page 10
Stainless steel	From page 12
Aluminium	From page 14
Brass	From page 15
Coarse threaded bolt	From page 16
Bolt with inched thread with flange	
Steel, copper-plated	From page 17
Stainless steel	From page 18
Aluminium	From page 19
Bolt with inched thread without flange	
Steel, copper-plated	From page 20
Stainless steel	From page 21



Threaded bolt, metric

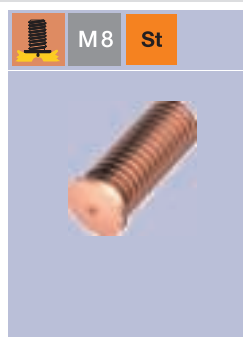
Steel, copper-plated St 37-3

 M 2,5 St	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
	1 GM 2,5 x 15	M2,5	15	St	4,8	copper-plated	15000	1000	0,045	4028 05 8	
	1 GM 2,5 x 20	M2,5	20	St	4,8	copper-plated	1000	1000	0,059	4028 06 6	
	1 GM 2,5 x 25	M2,5	25	St	4,8	copper-plated	10000	1000	0,072	4028 07 4	
 M 3 St	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
	1 GM 3 x 6	M3	6	St	4,8	copper-plated	25000	1000	0,031	4028 10 4	
	1 GM 3 x 8	M3	8	St	4,8	copper-plated	25000	1000	0,039	4028 11 2	
	1 GM 3 x 10	M3	10	St	4,8	copper-plated	20000	1000	0,047	4028 12 0	
	1 GM 3 x 12	M3	12	St	4,8	copper-plated	15000	1000	0,056	4028 13 9	
	1 GM 3 x 15	M3	15	St	4,8	copper-plated	10000	1000	0,068	4028 14 7	
	1 GM 3 x 16	M3	16	St	4,8	copper-plated	10000	1000	0,072	4028 81 3	
	1 GM 3 x 20	M3	20	St	4,8	copper-plated	10000	1000	0,089	4028 15 5	
	1 GM 3 x 25	M3	25	St	4,8	copper-plated	7000	1000	0,110	4028 16 3	
	1 GM 3 x 30	M3	30	St	4,8	copper-plated	6000	1000	0,131	4028 17 1	
 M 4 St	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
	1 GM 4 x 6	M4	6	St	4,8	copper-plated	15000	1000	0,052	4028 19 8	
	1 GM 4 x 8	M4	8	St	4,8	copper-plated	15000	1000	0,067	4028 20 1	
	1 GM 4 x 10	M4	10	St	4,8	copper-plated	15000	1000	0,082	4028 22 8	
	1 GM 4 x 12	M4	12	St	4,8	copper-plated	10000	1000	0,097	4028 23 6	
	1 GM 4 x 15	M4	15	St	4,8	copper-plated	8000	1000	0,119	4028 24 4	
	1 GM 4 x 16	M4	16	St	4,8	copper-plated	10000	1000	0,127	4028 82 1	
	1 GM 4 x 20	M4	20	St	4,8	copper-plated	5000	1000	0,156	4028 25 2	
	1 GM 4 x 25	M4	25	St	4,8	copper-plated	5000	1000	0,193	4028 26 0	
	1 GM 4 x 30	M4	30	St	4,8	copper-plated	5000	1000	0,230	4028 27 9	
	1 GM 4 x 35	M4	35	St	4,8	copper-plated	3000	1000	0,268	4028 28 7	
 M 5 St	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
	1 GM 5 x 8	M5	8	St	4,8	copper-plated	10000	1000	0,106	4028 30 9	
	1 GM 5 x 10	M5	10	St	4,8	copper-plated	10000	1000	0,130	4028 31 7	
	1 GM 5 x 12	M5	12	St	4,8	copper-plated	7000	1000	0,153	4028 32 5	
	1 GM 5 x 15	M5	15	St	4,8	copper-plated	5000	1000	0,189	4028 33 3	
	1 GM 5 x 16	M5	16	St	4,8	copper-plated	5000	1000	0,201	4028 84 8	
	1 GM 5 x 20	M5	20	St	4,8	copper-plated	5000	1000	0,248	4028 34 1	
	1 GM 5 x 25	M5	25	St	4,8	copper-plated	3000	1000	0,307	4028 36 8	
	1 GM 5 x 30	M5	30	St	4,8	copper-plated	2000	1000	0,366	4028 37 6	
	1 GM 5 x 35	M5	35	St	4,8	copper-plated	1000	1000	0,425	4028 38 4	
	1 GM 5 x 40	M5	40	St	4,8	copper-plated	1000	1000	0,484	4028 39 2	
 M 6 St	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
	1 GM 6 x 8	M6	8	St	4,8	copper-plated	8000	1000	0,153	4028 40 6	
	1 GM 6 x 10	M6	10	St	4,8	copper-plated	5000	1000	0,186	4028 41 4	
	1 GM 6 x 12	M6	12	St	4,8	copper-plated	5000	1000	0,220	4028 42 2	
	1 GM 6 x 15	M6	15	St	4,8	copper-plated	4000	1000	0,271	4028 43 0	
	1 GM 6 x 16	M6	16	St	4,8	copper-plated	4000	1000	0,287	4028 85 6	
	1 GM 6 x 20	M6	20	St	4,8	copper-plated	3000	1000	0,355	4028 44 9	
	1 GM 6 x 25	M6	25	St	4,8	copper-plated	2000	1000	0,439	4028 45 7	
	1 GM 6 x 30	M6	30	St	4,8	copper-plated	1000	1000	0,523	4028 46 5	
	1 GM 6 x 35	M6	35	St	4,8	copper-plated	1000	1000	0,608	4028 47 3	
	1 GM 6 x 40	M6	40	St	4,8	copper-plated	1000	1000	0,692	4028 48 1	
	1 GM 6 x 45	M6	45	St	4,8	copper-plated	1000	1000	0,776	4028 50 3	
	1 GM 6 x 50	M6	50	St	4,8	copper-plated	1000	1000	0,861	4028 51 1	
	1 GM 6 x 60	M6	60	St	4,8	copper-plated	1000	1000	1,029	4028 54 6	

Threaded bolt, metric

Steel, copper-plated St 37-3

Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
1 GM 8 x 10	M8	10	St	4,8	copper-plated	4000	1000	0,326	4028 60 0	
1 GM 8 x 12	M8	12	St	4,8	copper-plated	3000	1000	0,387	4028 93 7	
1 GM 8 x 15	M8	15	St	4,8	copper-plated	2000	1000	0,479	4028 61 9	
1 GM 8 x 16	M8	16	St	4,8	copper-plated	2000	1000	0,509	4028 87 2	
1 GM 8 x 20	M8	20	St	4,8	copper-plated	1000	1000	0,632	4028 62 7	
1 GM 8 x 25	M8	25	St	4,8	copper-plated	1000	1000	0,785	4028 63 5	
1 GM 8 x 30	M8	30	St	4,8	copper-plated	1000	1000	0,938	4028 64 3	
1 GM 8 x 35	M8	35	St	4,8	copper-plated	1000	1000	1,091	4028 65 1	
1 GM 8 x 40	M8	40	St	4,8	copper-plated	1000	1000	1,244	4028 67 8	
1 GM 8 x 45	M8	45	St	4,8	copper-plated	1000	1000	1,398	4028 68 6	
1 GM 8 x 50	M8	50	St	4,8	copper-plated	1000	1000	1,551	4028 69 4	



Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
1 GM 10 x 20	M10	20	St	4,8	copper-plated	500	500	0,995	4027 52 3	
1 GM 10 x 25	M10	25	St	4,8	copper-plated	500	500	1,238	4027 53 1	
1 GM 10 x 30	M10	30	St	4,8	copper-plated	500	500	1,481	4027 55 8	
1 GM 10 x 35	M10	35	St	4,8	copper-plated	500	500	1,724	4027 56 6	
1 GM 10 x 40	M10	40	St	4,8	copper-plated	500	500	1,967	4027 57 4	
1 GM 10 x 50	M10	50	St	4,8	copper-plated	500	500	2,515	4027 59 0	



Threaded bolt, metric

Stainless steel, 1.4303

 M 2,5 VA	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	2 GM 2,5 x 8	M2,5	8	V2A	1,4303	stained	25000	1000	0,025	4030 02 8		
	2 GM 2,5 x 12	M2,5	12	V2A	1,4303	stained	20000	1000	0,036	4030 04 4		
	2 GM 2,5 x 15	M2,5	15	V2A	1,4303	stained	15000	1000	0,045	4030 05 2		
	2 GM 2,5 x 25	M2,5	25	V2A	1,4303	stained	10000	1000	0,072	4030 07 9		
 M 3 VA	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	2 GM 3 x 6	M3	6	V2A	1,4303	stained	25000	1000	0,031	4030 10 9		
	2 GM 3 x 8	M3	8	V2A	1,4303	stained	25000	1000	0,039	4030 11 7		
	2 GM 3 x 10	M3	10	V2A	1,4303	stained	20000	1000	0,047	4030 12 5		
	2 GM 3 x 12	M3	12	V2A	1,4303	stained	15000	1000	0,056	4030 13 3		
	2 GM 3 x 15	M3	15	V2A	1,4303	stained	10000	1000	0,068	4030 14 1		
	2 GM 3 x 16	M3	16	V2A	1,4303	stained	10000	1000	0,072	4030 82 6		
	2 GM 3 x 20	M3	20	V2A	1,4303	stained	10000	1000	0,089	4030 16 8		
	2 GM 3 x 25	M3	25	V2A	1,4303	stained	7000	1000	0,110	4030 17 6		
	2 GM 3 x 30	M3	30	V2A	1,4303	stained	6000	1000	0,131	4030 08 7		
	2 GM 3 x 40	M3	40	V2A	1,4303	stained	5000	1000	0,165	4031 31 4		
 M 4 VA	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	2 GM 4 x 6	M4	6	V2A	1,4303	stained	15000	1000	0,052	4030 28 1		
	2 GM 4 x 8	M4	8	V2A	1,4303	stained	15000	1000	0,067	4030 20 6		
	2 GM 4 x 10	M4	10	V2A	1,4303	stained	15000	1000	0,082	4030 21 4		
	2 GM 4 x 12	M4	12	V2A	1,4303	stained	10000	1000	0,097	4030 22 2		
	2 GM 4 x 15	M4	15	V2A	1,4303	stained	8000	1000	0,119	4030 23 0		
	2 GM 4 x 16	M4	16	V2A	1,4303	stained	10000	1000	0,127	4030 83 4		
	2 GM 4 x 20	M4	20	V2A	1,4303	stained	5000	1000	0,156	4030 24 9		
	2 GM 4 x 25	M4	25	V2A	1,4303	stained	5000	1000	0,193	4030 25 7		
	2 GM 4 x 30	M4	30	V2A	1,4303	stained	5000	1000	0,230	4030 26 5		
	2 GM 4 x 35	M4	35	V2A	1,4303	stained	3000	1000	0,268	4030 27 3		
	2 GM 4 x 40	M4	40	V2A	1,4303	stained	1000	1000	0,305	4030 18 4		
 M 5 VA	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	2 GM 5 x 8	M5	8	V2A	1,4303	stained	10000	1000	0,106	4030 30 3		
	2 GM 5 x 10	M5	10	V2A	1,4303	stained	10000	1000	0,130	4030 31 1		
	2 GM 5 x 12	M5	12	V2A	1,4303	stained	7000	1000	0,153	4030 33 8		
	2 GM 5 x 15	M5	15	V2A	1,4303	stained	5000	1000	0,189	4030 34 6		
	2 GM 5 x 16	M5	16	V2A	1,4303	stained	5000	1000	0,201	4030 84 2		
	2 GM 5 x 20	M5	20	V2A	1,4303	stained	5000	1000	0,248	4030 35 4		
	2 GM 5 x 25	M5	25	V2A	1,4303	stained	3000	1000	0,307	4030 36 2		
	2 GM 5 x 30	M5	30	V2A	1,4303	stained	2000	1000	0,366	4030 37 0		
	2 GM 5 x 35	M5	35	V2A	1,4303	stained	1000	1000	0,425	4030 38 9		
	2 GM 5 x 40	M5	40	V2A	1,4303	stained	1000	1000	0,484	4030 39 7		
	2 GM 5 x 45	M5	45	V2A	1,4303	stained	1000	1000	0,543	4031 43 1		
 M 6 VA	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	2 GM 6 x 8	M6	8	V2A	1,4303	stained	8000	1000	0,153	4030 40 0		
	2 GM 6 x 10	M6	10	V2A	1,4303	stained	5000	1000	0,186	4030 41 9		
	2 GM 6 x 12	M6	12	V2A	1,4303	stained	5000	1000	0,220	4030 42 7		
	2 GM 6 x 14	M6	14	V2A	1,4303	stained	4000	1000	0,254	4030 84 8		
	2 GM 6 x 15	M6	15	V2A	1,4303	stained	4000	1000	0,271	4030 43 5		
	2 GM 6 x 16	M6	16	V2A	1,4303	stained	4000	1000	0,287	4030 85 0		
	2 GM 6 x 18	M6	18	V2A	1,4303	stained	4000	1000	0,321	4030 44 1		
	2 GM 6 x 20	M6	20	V2A	1,4303	stained	3000	1000	0,355	4030 44 3		
	2 GM 6 x 25	M6	25	V2A	1,4303	stained	2000	1000	0,439	4030 45 1		
	2 GM 6 x 30	M6	30	V2A	1,4303	stained	1000	1000	0,523	4030 47 8		
	2 GM 6 x 35	M6	35	V2A	1,4303	stained	1000	1000	0,608	4030 48 6		
	2 GM 6 x 40	M6	40	V2A	1,4303	stained	1000	1000	0,692	4030 49 4		
	2 GM 6 x 45	M6	45	V2A	1,4303	stained	1000	1000	0,776	4030 50 8		
	2 GM 6 x 50	M6	50	V2A	1,4303	stained	1000	1000	0,861	4030 51 6		

Threaded bolt, metric

Stainless steel, 1.4303

Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 GM 8 x 10	M8	10	V2A	1,4303	stained	4000	1000	0,326	4030 60 5	
2 GM 8 x 12	M8	12	V2A	1,4303	stained	3000	1000	0,387	4030 90 7	
2 GM 8 x 15	M8	15	V2A	1,4303	stained	2000	1000	0,479	4030 61 3	
2 GM 8 x 16	M8	16	V2A	1,4303	stained	2000	1000	0,509	4030 86 9	
2 GM 8 x 20	M8	20	V2A	1,4303	stained	1000	1000	0,632	4030 62 1	
2 GM 8 x 24	M8	24	V2A	1,4303	stained	1000	1000	0,754	4030 64 2	
2 GM 8 x 25	M8	25	V2A	1,4303	stained	1000	1000	0,785	4030 64 8	
2 GM 8 x 30	M8	30	V2A	1,4303	stained	1000	1000	0,938	4030 65 6	
2 GM 8 x 35	M8	35	V2A	1,4303	stained	1000	1000	1,091	4030 66 4	
2 GM 8 x 40	M8	40	V2A	1,4303	stained	1000	1000	1,244	4030 67 2	
2 GM 8 x 45	M8	45	V2A	1,4303	stained	1000	1000	1,398	4030 68 0	
2 GM 8 x 50	M8	50	V2A	1,4303	stained	1000	1000	1,551	4030 69 9	



Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 GM 10 x 12	M10	12	V2A	1,4303	stained	2000	500	0,606	4031 25 3	
2 GM 10 x 16	M10	16	V2A	1,4303	stained	1000	500	0,801	4031 26 1	
2 GM 10 x 20	M10	20	V2A	1,4303	stained	500	500	0,995	4031 28 8	
2 GM 10 x 25	M10	25	V2A	1,4303	stained	500	500	1,238	4031 29 6	
2 GM 10 x 30	M10	30	V2A	1,4303	stained	500	500	1,481	4031 32 6	
2 GM 10 x 35	M10	35	V2A	1,4303	stained	500	500	1,724	4031 33 0	
2 GM 10 x 40	M10	40	V2A	1,4303	stained	500	500	1,967	4031 33 4	
2 GM 10 x 45	M10	45	V2A	1,4303	stained	500	500	2,210	4031 33 8	
2 GM 10 x 50	M10	50	V2A	1,4303	stained	500	500	2,453	4031 94 6	



Threaded bolt, metric

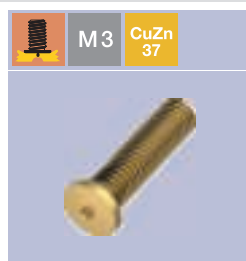
Aluminium, AlMg 3

 M3 Alu	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al	Price /‰ pc.	
	4 GM 3 x 6	M3	6	Al	AlMg 3	—	25000	1000	0,011	4034 10 4		
	4 GM 3 x 8	M3	8	Al	AlMg 3	—	25000	1000	0,013	4034 11 2		
	4 GM 3 x 10	M3	10	Al	AlMg 3	—	20000	1000	0,016	4034 12 0		
	4 GM 3 x 12	M3	12	Al	AlMg 3	—	15000	1000	0,019	4034 13 9		
	4 GM 3 x 15	M3	15	Al	AlMg 3	—	10000	1000	0,023	4034 14 7		
	4 GM 3 x 16	M3	16	Al	AlMg 3	—	10000	1000	0,025	4034 81 3		
	4 GM 3 x 20	M3	20	Al	AlMg 3	—	10000	1000	0,031	4034 15 5		
	4 GM 3 x 25	M3	25	Al	AlMg 3	—	7000	1000	0,038	4034 16 3		
	4 GM 3 x 30	M3	30	Al	AlMg 3	—	6000	1000	0,045	4034 17 1		
 M4 Alu	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al	Price /‰ pc.	
	4 GM 4 x 6	M4	6	Al	AlMg 3	—	15000	1000	0,018	4034 29 5		
	4 GM 4 x 8	M4	8	Al	AlMg 3	—	15000	1000	0,023	4034 20 1		
	4 GM 4 x 10	M4	10	Al	AlMg 3	—	15000	1000	0,028	4034 22 8		
	4 GM 4 x 12	M4	12	Al	AlMg 3	—	10000	1000	0,033	4034 23 6		
	4 GM 4 x 15	M4	15	Al	AlMg 3	—	8000	1000	0,041	4034 24 4		
	4 GM 4 x 16	M4	16	Al	AlMg 3	—	10000	1000	0,043	4034 82 1		
	4 GM 4 x 20	M4	20	Al	AlMg 3	—	5000	1000	0,053	4034 25 2		
	4 GM 4 x 25	M4	25	Al	AlMg 3	—	5000	1000	0,066	4034 26 0		
	4 GM 4 x 30	M4	30	Al	AlMg 3	—	5000	1000	0,078	4034 27 9		
	4 GM 4 x 35	M4	35	Al	AlMg 3	—	3000	1000	0,091	4034 28 7		
	4 GM 4 x 40	M4	40	Al	AlMg 3	—	1000	1000	0,105	4034 29 1		
	4 GM 4 x 50	M4	50	Al	AlMg 3	—	1000	1000	0,130	4035 40 2		
 M5 Alu	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al	Price /‰ pc.	
	4 GM 5 x 8	M5	8	Al	AlMg 3	—	10000	1000	0,036	4034 30 9		
	4 GM 5 x 10	M5	10	Al	AlMg 3	—	10000	1000	0,045	4034 31 7		
	4 GM 5 x 12	M5	12	Al	AlMg 3	—	7000	1000	0,053	4034 32 5		
	4 GM 5 x 15	M5	15	Al	AlMg 3	—	5000	1000	0,065	4034 33 3		
	4 GM 5 x 16	M5	16	Al	AlMg 3	—	5000	1000	0,069	4034 84 8		
	4 GM 5 x 20	M5	20	Al	AlMg 3	—	5000	1000	0,085	4034 34 1		
	4 GM 5 x 25	M5	25	Al	AlMg 3	—	3000	1000	0,106	4034 36 8		
	4 GM 5 x 30	M5	30	Al	AlMg 3	—	2000	1000	0,126	4034 37 6		
	4 GM 5 x 35	M5	35	Al	AlMg 3	—	1000	1000	0,142	4034 38 4		
 M6 Alu	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al	Price /‰ pc.	
	4 GM 6 x 10	M6	10	Al	AlMg 3	—	5000	1000	0,064	4034 41 4		
	4 GM 6 x 12	M6	12	Al	AlMg 3	—	5000	1000	0,075	4034 42 2		
	4 GM 6 x 15	M6	15	Al	AlMg 3	—	4000	1000	0,092	4034 43 0		
	4 GM 6 x 16	M6	16	Al	AlMg 3	—	4000	1000	0,098	4034 85 6		
	4 GM 6 x 20	M6	20	Al	AlMg 3	—	3000	1000	0,122	4034 44 9		
	4 GM 6 x 25	M6	25	Al	AlMg 3	—	2000	1000	0,150	4034 45 7		
	4 GM 6 x 30	M6	30	Al	AlMg 3	—	1000	1000	0,179	4034 46 5		
	4 GM 6 x 35	M6	35	Al	AlMg 3	—	1000	1000	0,208	4034 47 3		
	4 GM 6 x 40	M6	40	Al	AlMg 3	—	1000	1000	0,236	4034 48 1		
	4 GM 6 x 50	M6	50	Al	AlMg 3	—	1000	1000	0,294	4034 51 1		
 M8 Alu	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al	Price /‰ pc.	
	4 GM 8 x 10	M8	10	Al	AlMg 3	—	4000	1000	0,112	4034 60 0		
	4 GM 8 x 15	M8	15	Al	AlMg 3	—	2000	1000	0,165	4034 61 9		
	4 GM 8 x 16	M8	16	Al	AlMg 3	—	2000	1000	0,175	4034 86 4		
	4 GM 8 x 20	M8	20	Al	AlMg 3	—	1000	1000	0,217	4034 62 7		
	4 GM 8 x 25	M8	25	Al	AlMg 3	—	1000	1000	0,270	4034 63 5		
	4 GM 8 x 30	M8	30	Al	AlMg 3	—	1000	1000	0,323	4034 64 3		
	4 GM 8 x 50	M8	50	Al	AlMg 3	—	1000	1000	0,533	4034 69 4		

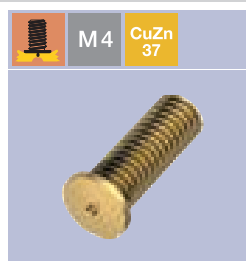
Threaded bolt, metric

Brass, CuZn37

Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. CuZn	Price /‰ pc.
6 GM 3 x 8	M3	8	CuZn	CuZn37	—	25000	1000	0,042	4038 12 6	
6 GM 3 x 10	M3	10	CuZn	CuZn37	—	20000	1000	0,051	4038 13 4	
6 GM 3 x 12	M3	12	CuZn	CuZn37	—	15000	1000	0,060	4038 14 2	
6 GM 3 x 20	M3	20	CuZn	CuZn37	—	10000	1000	0,097	4038 16 9	
6 GM 3 x 25	M3	25	CuZn	CuZn37	—	7000	1000	0,119	4038 17 7	



Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. CuZn	Price /‰ pc.
6 GM 4 x 10	M4	10	CuZn	CuZn37	—	15000	1000	0,089	4038 21 5	
6 GM 4 x 12	M4	12	CuZn	CuZn37	—	10000	1000	0,105	4038 22 3	
6 GM 4 x 16	M4	16	CuZn	CuZn37	—	10000	1000	0,137	4038 82 7	
6 GM 4 x 25	M4	25	CuZn	CuZn37	—	5000	1000	0,209	4038 26 6	
6 GM 4 x 50	M4	50	CuZn	CuZn37	—	1000	1000	0,410	4039 40 8	



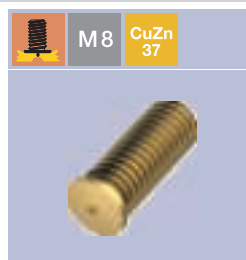
Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. CuZn	Price /‰ pc.
6 GM 5 x 8	M5	8	CuZn	CuZn37	—	10000	1000	0,115	4038 30 4	
6 GM 5 x 10	M5	10	CuZn	CuZn37	—	10000	1000	0,140	4038 31 2	
6 GM 5 x 15	M5	15	CuZn	CuZn37	—	5000	1000	0,204	4038 33 9	
6 GM 5 x 16	M5	16	CuZn	CuZn37	—	5000	1000	0,217	4038 83 5	
6 GM 5 x 20	M5	20	CuZn	CuZn37	—	5000	1000	0,268	4038 34 7	



Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. CuZn	Price /‰ pc.
6 GM 6 x 10	M6	10	CuZn	CuZn37	—	5000	1000	0,202	4038 42 8	
6 GM 6 x 15	M6	15	CuZn	CuZn37	—	4000	1000	0,292	4038 44 4	
6 GM 6 x 20	M6	20	CuZn	CuZn37	—	3000	1000	0,384	4038 45 2	
6 GM 6 x 25	M6	25	CuZn	CuZn37	—	2000	1000	0,476	4038 46 0	
6 GM 6 x 30	M6	30	CuZn	CuZn37	—	1000	1000	0,567	4038 47 9	
6 GM 6 x 40	M6	40	CuZn	CuZn37	—	1000	1000	0,749	4038 49 5	
6 GM 6 x 50	M6	50	CuZn	CuZn37	—	1000	1000	0,932	4038 51 7	



Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. CuZn	Price /‰ pc.
6 GM 8 x 14	M8	14	CuZn	CuZn37	—	2000	1000	0,485	4038 61 2	
6 GM 8 x 20	M8	20	CuZn	CuZn37	—	1000	1000	0,684	4038 62 2	



Coarse threaded bolt

1

 Ø5St 	Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.	
	1 T5 x 14,2	5	14,2	St	4,8	copper-plated	5000	1000	0,171	4029 42 9		
	1 T5 x 14,2	5	14,2	St	4,8	copper-plated	6000	1000	0,164	4029 68 2		
	1 T5 x 16,5	5	16,5	St	4,8	copper-plated	5000	1000	0,180	4029 45 3		
 Ø6St 	Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.	
	1 T6 x 30	6	30	St	4,8	copper-plated	1000	1000	0,447	4029 48 8		
 Ø5VA 	Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	2 T 5 x 25	5	25	V2A	1,4303	stained	4000	1000	0,213	4029 51 0		

Imperial threaded bolt with flange

Steel, copper-plated St 37-3

Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
4 - 40 x 5/8	4 - 40	5/8	St	4,8	copper-plated	1000	1000	0,065	4082 64 8	
4 - 40 x 3/4	4 - 40	3/4	St	4,8	copper-plated	10000	1000	0,072	4082 65 6	
4 - 40 x 7/8	4 - 40	7/8	St	4,8	copper-plated	1000	1000	0,087	4082 66 4	
4 - 40 x 1	4 - 40	1	St	4,8	copper-plated	10000	1000	0,094	4082 67 2	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
6 - 32 x 3/8	6 - 32	3/8	St	4,8	copper-plated	20000	1000	0,056	4083 00 8	
6 - 32 x 1/2	6 - 32	1/2	St	4,8	copper-plated	15000	1000	0,073	4083 01 6	



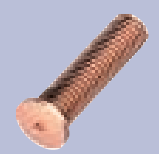
Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
8 - 32 x 1/4	8 - 32	1/4	St	4,8	copper-plated	20000	1000	0,057	4083 09 1	
8 - 32 x 1/2	8 - 32	1/2	St	4,8	copper-plated	10000	1000	0,107	4083 11 3	
8 - 32 x 5/8	8 - 32	5/8	St	4,8	copper-plated	8000	1000	0,132	4083 12 1	
8 - 32 x 1	8 - 32	1	St	4,8	copper-plated	5000	1000	0,206	4083 16 4	
8 - 32 x 1 3/4	8 - 32	1 3/4	St	4,8	copper-plated	1000	1000	0,359	4084 52 7	
8 - 32 x 2	8 - 32	2	St	4,8	copper-plated	1000	1000	0,409	4084 53 5	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
10 - 24 x 3/8	10 - 24	3/8	St	4,8	copper-plated	10000	1000	0,109	4083 20 2	
10 - 24 x 1/2	10 - 24	1/2	St	4,8	copper-plated	8000	1000	0,142	4083 21 0	
10 - 24 x 5/8	10 - 24	5/8	St	4,8	copper-plated	6000	1000	0,175	4083 22 9	
10 - 24 x 3/4	10 - 24	3/4	St	4,8	copper-plated	5000	1000	0,205	4083 24 5	
10 - 24 x 7/8	10 - 24	7/8	St	4,8	copper-plated	4000	1000	0,237	4083 23 7	
10 - 24 x 2	10 - 24	2	St	4,8	copper-plated	1000	1000	0,529	4084 58 6	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
10 - 32 x 1/4	10 - 32	1/4	St	4,8	copper-plated	15000	1000	0,082	4085 00 0	
10 - 32 x 1/2	10 - 32	1/2	St	4,8	copper-plated	8000	1000	0,151	4085 02 7	
10 - 32 x 5/8	10 - 32	5/8	St	4,8	copper-plated	6000	1000	0,187	4085 03 5	
10 - 32 x 3/4	10 - 32	3/4	St	4,8	copper-plated	5000	1000	0,221	4085 04 3	
10 - 32 x 1 1/4	10 - 32	1 1/4	St	4,8	copper-plated	1000	1000	0,381	4085 08 6	
10 - 32 x 2	10 - 32	2	St	4,8	copper-plated	1000	1000	0,590	4085 11 6	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
1/4 - 20 x 5/8	1/4 - 20	5/8	St	4,8	copper-plated	4000	1000	0,310	4083 34 2	
1/4 - 20 x 3/4	1/4 - 20	3/4	St	4,8	copper-plated	3000	1000	0,366	4083 35 0	
1/4 - 20 x 7/8	1/4 - 20	7/8	St	4,8	copper-plated	3000	1000	0,425	4083 36 9	
1/4 - 20 x 1	1/4 - 20	1	St	4,8	copper-plated	2000	1000	0,483	4083 37 7	
1/4 - 20 x 1 1/4	1/4 - 20	1 1/4	St	4,8	copper-plated	1000	1000	0,597	4083 38 5	
1/4 - 20 x 1 1/2	1/4 - 20	1 1/2	St	4,8	copper-plated	1000	1000	0,723	4083 39 3	
1/4 - 20 x 2	1/4 - 20	2	St	4,8	copper-plated	1000	1000	0,944	4083 42 3	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.
5/16 - 18 x 1	5/16 - 18	1	St	4,8	copper-plated	1000	1000	0,762	4085 26 4	



Imperial threaded bolt with flange

Stainless steel, 1.4303

	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	4 - 40 x 5/8	4 - 40	5/8	V2A	1,4303	stained	1000	1000	0,065	4082 74 5		
	4 - 40 x 7/8	4 - 40	7/8	V2A	1,4303	stained	1000	1000	0,087	4082 76 1		
	4 - 40 x 1	4 - 40	1	V2A	1,4303	stained	10000	1000	0,094	4082 78 8		

	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	6 - 32 x 7/8	6 - 32	7/8	V2A	1,4303	stained	1000	1000	0,121	4083 53 9		
	6 - 32 x 1 1/4	6 - 32	1 1/4	V2A	1,4303	stained	5000	1000	0,176	4083 56 3		
	6 - 32 x 1 1/2	6 - 32	1 1/2	V2A	1,4303	stained	5000	1000	0,210	4083 57 1		

	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	8 - 32 x 1/4	8 - 32	1/4	V2A	1,4303	stained	20000	1000	0,057	4083 59 8		
	8 - 32 x 5/8	8 - 32	5/8	V2A	1,4303	stained	8000	1000	0,132	4083 63 6		
	8 - 32 x 3/4	8 - 32	3/4	V2A	1,4303	stained	6000	1000	0,156	4083 65 2		
	8 - 32 x 7/8	8 - 32	7/8	V2A	1,4303	stained	5000	1000	0,181	4083 64 4		

	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	10 - 24 x 1/2	10 - 24	1/2	V2A	1,4303	stained	8000	1000	0,142	4083 71 7		
	10 - 24 x 5/8	10 - 24	5/8	V2A	1,4303	stained	6000	1000	0,175	4083 72 5		
	10 - 24 x 3/4	10 - 24	3/4	V2A	1,4303	stained	5000	1000	0,207	4083 74 1		
	10 - 24 x 1	10 - 24	1	V2A	1,4303	stained	4000	1000	0,272	4083 76 8		
	10 - 24 x 1 1/2	10 - 24	1 1/2	V2A	1,4303	stained	1000	1000	0,402	4083 78 4		

	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	10 - 32 x 1/4	10 - 32	1/4	V2A	1,4303	stained	15000	1000	0,082	4086 00 7		
	10 - 32 x 3/8	10 - 32	3/8	V2A	1,4303	stained	10000	1000	0,116	4086 01 5		
	10 - 32 x 1/2	10 - 32	1/2	V2A	1,4303	stained	8000	1000	0,151	4086 02 3		

	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	1/4 - 20 x 3/8	1/4 - 20	3/8	V2A	1,4303	stained	7000	1000	0,194	4083 80 6		
	1/4 - 20 x 1/2	1/4 - 20	1/2	V2A	1,4303	stained	5000	1000	0,252	4083 81 4		
	1/4 - 20 x 3/4	1/4 - 20	3/4	V2A	1,4303	stained	3000	1000	0,366	4083 83 0		
	1/4 - 20 x 7/8	1/4 - 20	7/8	V2A	1,4303	stained	3000	1000	0,425	4083 85 7		
	1/4 - 20 x 1 1/4	1/4 - 20	1 1/4	V2A	1,4303	stained	1000	1000	0,597	4083 87 3		
	1/4 - 20 x 1 3/4	1/4 - 20	1 3/4	V2A	1,4303	stained	1000	1000	0,845	4083 90 3		

	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	5/16 - 18 x 1/2	5/16 - 18	1/2	V2A	1,4303	stained	4000	1000	0,391	4086 22 8		
	5/16 - 18 x 5/8	5/16 - 18	5/8	V2A	1,4303	stained	1000	1000	0,555	4086 23 6		
	5/16 - 18 x 3/4	5/16 - 18	3/4	V2A	1,4303	stained	1000	1000	0,649	4086 24 4		
	5/16 - 18 x 1	5/16 - 18	1	V2A	1,4303	stained	1000	1000	0,762	4086 26 0		
	5/16-18 x 1 1/2	5/16 - 18	1 1/2	V2A	1,4303	stained	1000	1000	1,210	4086 28 7		

Imperial threaded bolt with flange

Aluminium, AlMg 3

Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al	Price /‰ pc.
4 - 40 x 1/4	4 - 40	1/4	Al	AlMg 3	—	20000	1000	0,010	4082 83 4	
4 - 40 x 3/8	4 - 40	3/8	Al	AlMg 3	—	20000	1000	0,013	4082 84 2	
4 - 40 x 1/2	4 - 40	1/2	Al	AlMg 3	—	15000	1000	0,017	4082 85 0	
4 - 40 x 5/8	4 - 40	5/8	Al	AlMg 3	—	1000	1000	0,024	4082 86 9	
4 - 40 x 3/4	4 - 40	3/4	Al	AlMg 3	—	10000	1000	0,025	4082 87 7	
4 - 40 x 1	4 - 40	1	Al	AlMg 3	—	10000	1000	0,032	4082 89 3	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al	Price /‰ pc.
6 - 32 x 3/8	6 - 32	3/8	Al	AlMg 3	—	20000	1000	0,019	4084 00 4	
6 - 32 x 1/2	6 - 32	1/2	Al	AlMg 3	—	15000	1000	0,025	4084 01 2	
6 - 32 x 5/8	6 - 32	5/8	Al	AlMg 3	—	10000	1000	0,031	4084 02 0	
6 - 32 x 1	6 - 32	1	Al	AlMg 3	—	6000	1000	0,048	4084 05 5	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al	Price /‰ pc.
10 - 24 x 3/4	10 - 24	3/4	Al	AlMg 3	—	5000	1000	0,070	4084 24 1	
10 - 24 x 1	10 - 24	1	Al	AlMg 3	—	4000	1000	0,093	4084 26 8	

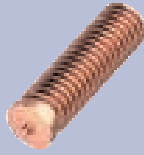


Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al	Price /‰ pc.
1/4 - 20 x 1/4	1/4 - 20	1/4	Al	AlMg 3	—	9000	1000	0,047	4084 31 4	
1/4 - 20 x 3/8	1/4 - 20	3/8	Al	AlMg 3	—	7000	1000	0,067	4084 32 2	
1/4 - 20 x 1/2	1/4 - 20	1/2	Al	AlMg 3	—	5000	1000	0,087	4084 33 0	
1/4 - 20 x 5/8	1/4 - 20	5/8	Al	AlMg 3	—	4000	1000	0,115	4084 34 9	
1/4 - 20 x 3/4	1/4 - 20	3/4	Al	AlMg 3	—	3000	1000	0,126	4084 35 7	
1/4 - 20 x 1	1/4 - 20	1	Al	AlMg 3	—	2000	1000	0,166	4084 37 3	
1/4 - 20 x 1 3/4	1/4 - 20	1 3/4	Al	AlMg 3	—	1000	1000	0,301	4084 41 1	



Imperial threaded bolt without flange

Steel, copper-plated St 37-3

 UNC  St	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.	
	6 - 32 x 3/8	6 - 32	3/8	St	4,8	copper-plated	20000	1000	0,051	4088 51 4		
	6 - 32 x 5/8	6 - 32	5/8	St	4,8	copper-plated	10000	1000	0,084	4088 53 0		
	6 - 32 x 3/4	6 - 32	3/4	St	4,8	copper-plated	10000	1000	0,100	4088 54 9		
	6 - 32 x 7/8	6 - 32	7/8	St	4,8	copper-plated	10000	1000	0,117	4088 55 7		
	6 - 32 x 1	6 - 32	1	St	4,8	copper-plated	8000	1000	0,133	4088 56 5		
	8 - 32 x 5/8	8 - 32	5/8	St	4,8	copper-plated	8000	1000	0,126	4088 64 6		
	8 - 32 x 3/4	8 - 32	3/4	St	4,8	copper-plated	1000	1000	0,150	4088 65 4		
	8 - 32 x 7/8	8 - 32	7/8	St	4,8	copper-plated	1000	1000	0,175	4088 66 2		
	8 - 32 x 1	8 - 32	1	St	4,8	copper-plated	5000	1000	0,200	4088 67 0		
	10 - 24 x 1/2	10 - 24	1/2	St	4,8	copper-plated	9000	1000	0,132	4088 72 7		
	10 - 24 x 5/8	10 - 24	5/8	St	4,8	copper-plated	10000	1000	0,164	4088 73 5		
	10 - 24 x 3/4	10 - 24	3/4	St	4,8	copper-plated	1000	1000	0,195	4088 74 3		
	10 - 24 x 7/8	10 - 24	7/8	St	4,8	copper-plated	1000	1000	0,228	4088 75 1		
 UNF  St	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.	
	10 - 32 x 3/8	10 - 32	3/8	St	4,8	copper-plated	10000	1000	0,107	4088 81 6		
 UNC  St	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.	
	1/4 - 20 x 5/8	1/4 - 20	5/8	St	4,8	copper-plated	4000	1000	0,295	4089 03 0		

Imperial threaded bolt without flange

Stainless steel, 1.4303

Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
6 - 32 x 3/8	6 - 32	3/8	V2A	1,4303	stained	20000	1000	0,052	4087 71 2	
6 - 32 x 1/2	6 - 32	1/2	V2A	1,4303	stained	15000	1000	0,069	4087 72 0	
6 - 32 x 5/8	6 - 32	5/8	V2A	1,4303	stained	10000	1000	0,086	4087 73 9	
6 - 32 x 7/8	6 - 32	7/8	V2A	1,4303	stained	10000	1000	0,117	4087 75 5	
6 - 32 x 1	6 - 32	1	V2A	1,4303	stained	8000	1000	0,137	4087 76 3	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
8 - 32 x 3/8	8 - 32	3/8	V2A	1,4303	stained	15000	1000	0,076	4087 82 8	
8 - 32 x 7/8	8 - 32	7/8	V2A	1,4303	stained	1000	1000	0,175	4087 86 0	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
10 - 24 x 1/4	10 - 24	1/4	V2A	1,4303	stained	10000	1000	0,068	4087 98 4	
10 - 24 x 1/2	10 - 24	1/2	V2A	1,4303	stained	9000	1000	0,133	4088 01 8	
10 - 24 x 5/8	10 - 24	5/8	V2A	1,4303	stained	10000	1000	0,165	4088 02 6	
10 - 24 x 3/4	10 - 24	3/4	V2A	1,4303	stained	1000	1000	0,197	4088 03 4	
10 - 24 x 7/8	10 - 24	7/8	V2A	1,4303	stained	1000	1000	0,230	4088 04 2	



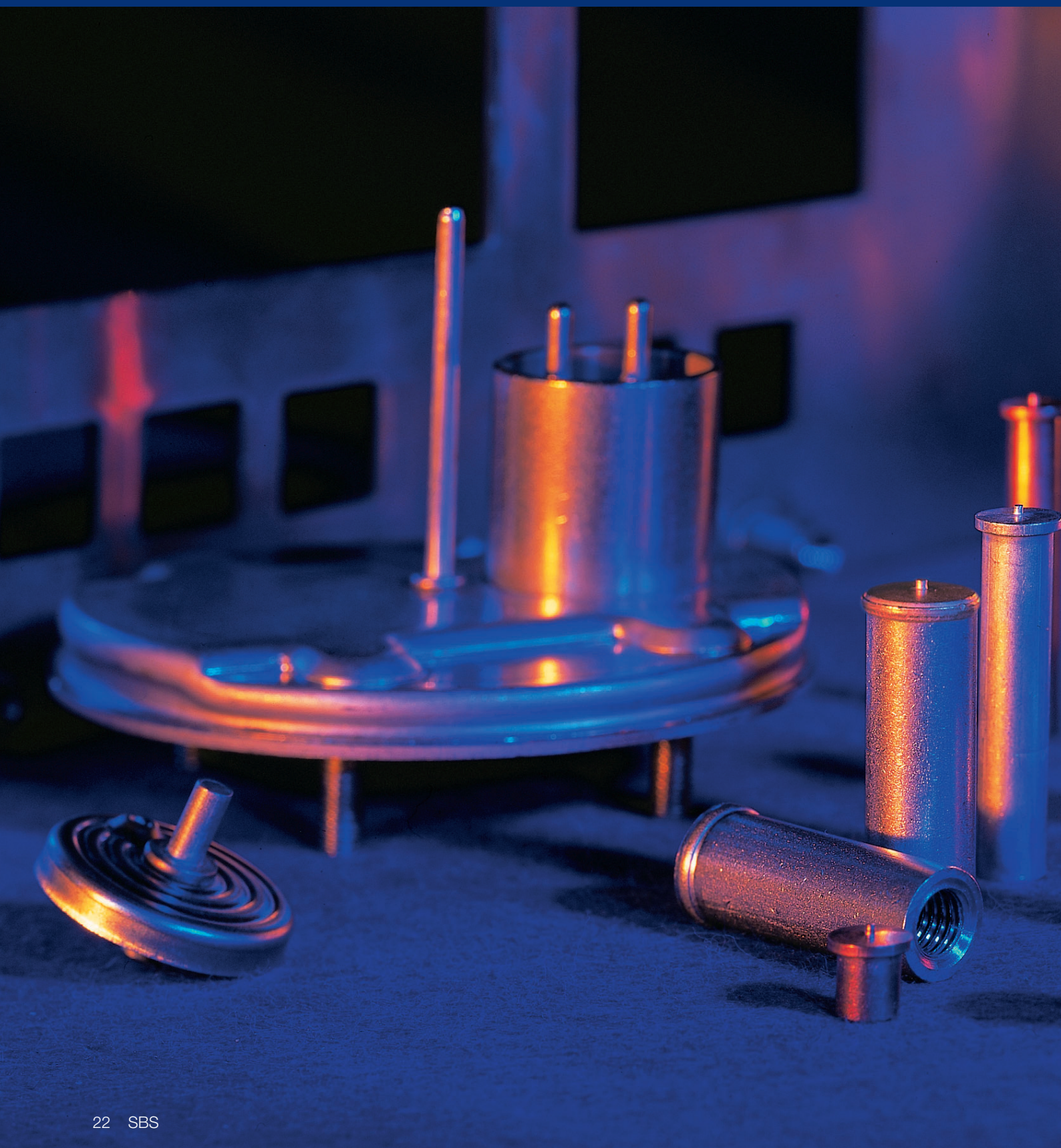
Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
10 - 32 x 3/8	10 - 32	3/8	V2A	1,4303	stained	10000	1000	0,107	4088 11 5	
10 - 32 x 7/8	10 - 32	7/8	V2A	1,4303	stained	1000	1000	0,246	4088 16 6	
10 - 32 x 1	10 - 32	1	V2A	1,4303	stained	3000	1000	0,281	4088 17 4	



Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
1/4 - 20 x 3/8	1/4 - 20	3/8	V2A	1,4303	stained	5000	1000	0,179	4088 32 8	
1/4 - 20 x 1/2	1/4 - 20	1/2	V2A	1,4303	stained	4000	1000	0,237	4088 33 6	
1/4 - 20 x 3/4	1/4 - 20	3/4	V2A	1,4303	stained	3000	1000	0,352	4088 35 2	
1/4 - 20 x 1	1/4 - 20	1	V2A	1,4303	stained	2000	1000	0,468	4088 37 9	



UT threadless pins are machined according to DIN EN ISO 13918 and are welding elements for the method with tip ignition. In addition to our standard product range, special lengths and qualities are available.



UT pins for tip ignition

Pins

Steel, copper-plated

From page 24

Stainless steel

From page 25

Aluminium

From page 26

Brass

From page 27



Pins

Steel, copper-plated St 37-3

 Ø3 St	Type	Dia- meter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
		mm	mm				pcs	pcs	kg/% pc	ST / Cu		
	1 S 3 x 6	3	6	St	4,8	copper-plated	25000	1000	0,038	4040 70 8		
	1 S 3 x 8	3	8	St	4,8	copper-plated	20000	1000	0,049	4040 71 6		
	1 S 3 x 10	3	10	St	4,8	copper-plated	20000	1000	0,060	4040 72 4		
	1 S 3 x 12	3	12	St	4,8	copper-plated	15000	1000	0,071	4040 73 2		
	1 S 3 x 20	3	20	St	4,8	copper-plated	10000	1000	0,116	4040 75 9		
	1 S 3 x 25	3	25	St	4,8	copper-plated	7000	1000	0,144	4040 76 7		

 Ø4 St	Type	Dia- meter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
		mm	mm				pcs	pcs	kg/% pc	ST / Cu		
	1 S 4 x 8	4	8	St	4,8	copper-plated	15000	1000	0,086	4040 80 5		
	1 S 4 x 10	4	10	St	4,8	copper-plated	10000	1000	0,106	4040 81 3		
	1 S 4 x 12	4	12	St	4,8	copper-plated	10000	1000	0,125	4040 82 1		
	1 S 4 x 16	4	16	St	4,8	copper-plated	1000	1000	0,165	4041 31 3		
	1 S 4 x 20	4	20	St	4,8	copper-plated	5000	1000	0,204	4040 85 6		
	1 S 4 x 30	4	30	St	4,8	copper-plated	4000	1000	0,303	4040 87 2		

 Ø5 St	Type	Dia- meter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
		mm	mm				pcs	pcs	kg/% pc	ST / Cu		
	1 S 5 x 8	5	8	St	4,8	copper-plated	10000	1000	0,134	4040 90 2		
	1 S 5 x 10	5	10	St	4,8	copper-plated	8000	1000	0,165	4040 91 0		
	1 S 5 x 12	5	12	St	4,8	copper-plated	5000	1000	0,195	4040 92 9		
	1 S 5 x 15	5	15	St	4,8	copper-plated	5000	1000	0,242	4040 93 7		
	1 S 5 x 16	5	16	St	4,8	copper-plated	5000	1000	0,257	4041 32 1		
	1 S 5 x 20	5	20	St	4,8	copper-plated	4000	1000	0,319	4040 94 5		
	1 S 5 x 25	5	25	St	4,8	copper-plated	3000	1000	0,396	4040 95 3		
	1 S 5 x 30	5	30	St	4,8	copper-plated	1000	1000	0,473	4040 96 1		
	1 S 5 x 50	5	50	St	4,8	copper-plated	1000	1000	0,781	4042 20 4		

 Ø6 St	Type	Dia- meter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
		mm	mm				pcs	pcs	kg/% pc	ST / Cu		
	1 S 6 x 8	6	8	St	4,8	copper-plated	6000	1000	0,240	4041 35 6		
	1 S 6 x 10	6	10	St	4,8	copper-plated	5000	1000	0,234	4041 00 3		
	1 S 6 x 12	6	12	St	4,8	copper-plated	4000	1000	0,279	4041 01 1		
	1 S 6 x 15	6	15	St	4,8	copper-plated	4000	1000	0,345	4041 03 8		
	1 S 6 x 16	6	16	St	4,8	copper-plated	4000	1000	0,367	4041 34 8		
	1 S 6 x 20	6	20	St	4,8	copper-plated	3000	1000	0,456	4041 04 6		
	1 S 6 x 25	6	25	St	4,8	copper-plated	1000	1000	0,567	4041 05 4		
	1 S 6 x 30	6	30	St	4,8	copper-plated	1000	1000	0,678	4041 06 2		
	1 S 6 x 35	6	35	St	4,8	copper-plated	1000	1000	0,789	4041 07 0		
	1 S 6 x 40	6	40	St	4,8	copper-plated	1000	1000	0,900	4041 08 9		
	1 S 6 x 50	6	50	St	4,8	copper-plated	1000	1000	1,122	4041 10 0		

 Ø 7,1 St	Type	Dia- meter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
		mm	mm				pcs	pcs	kg/% pc	ST / Cu		
	1 S 7,1 x 10	7,1	10	St	4,8	copper-plated	1000	1000	0,333	4042 36 0		

Pins

Stainless steel, 1.4303

Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 S 2,1 x 20	2,1	20	V2A	1,4303	stained	15000	1000	0,058	4043 44 8	



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 S 3 x 6	3	6	V2A	1,4303	stained	25000	1000	0,037	4044 46 7	
2 S 3 x 10	3	10	V2A	1,4303	stained	20000	1000	0,060	4043 72 3	
2 S 3 x 12	3	12	V2A	1,4303	stained	15000	1000	0,071	4043 73 1	
2 S 3 x 15	3	15	V2A	1,4303	stained	10000	1000	0,088	4043 75 8	
2 S 3 x 16	3	16	V2A	1,4303	stained	12000	1000	0,094	4044 30 4	
2 S 3 x 20	3	20	V2A	1,4303	stained	10000	1000	0,116	4043 76 6	
2 S 3 x 25	3	25	V2A	1,4303	stained	7000	1000	0,144	4043 77 4	



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 S 4 x 8	4	8	V2A	1,4303	stained	15000	1000	0,086	4043 80 4	
2 S 4 x 10	4	10	V2A	1,4303	stained	10000	1000	0,106	4043 81 2	
2 S 4 x 12	4	12	V2A	1,4303	stained	10000	1000	0,125	4043 82 0	
2 S 4 x 20	4	20	V2A	1,4303	stained	5000	1000	0,204	4043 84 7	
2 S 4 x 25	4	25	V2A	1,4303	stained	5000	1000	0,254	4043 85 5	
2 S 4 x 35	4	35	V2A	1,4303	stained	3000	1000	0,352	4043 87 1	



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 S 5 x 6	5	6	V2A	1,4303	stained	12000	1000	0,103	4043 89 8	
2 S 5 x 8	5	8	V2A	1,4303	stained	10000	1000	0,134	4043 90 1	
2 S 5 x 10	5	10	V2A	1,4303	stained	8000	1000	0,165	4043 92 8	
2 S 5 x 12	5	12	V2A	1,4303	stained	5000	1000	0,195	4043 93 6	
2 S 5 x 16	5	16	V2A	1,4303	stained	5000	1000	0,257	4044 32 0	
2 S 5 x 20	5	20	V2A	1,4303	stained	4000	1000	0,319	4043 95 2	
2 S 5 x 25	5	25	V2A	1,4303	stained	3000	1000	0,396	4043 96 0	
2 S 5 x 30	5	30	V2A	1,4303	stained	1000	1000	0,473	4043 97 9	



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 S 6 x 8	6	8	V2A	1,4303	stained	6000	1000	0,240	4044 12 6	
2 S 6 x 10	6	10	V2A	1,4303	stained	5000	1000	0,234	4044 00 2	
2 S 6 x 12	6	12	V2A	1,4303	stained	4000	1000	0,279	4044 01 0	
2 S 6 x 15	6	15	V2A	1,4303	stained	4000	1000	0,345	4044 02 9	
2 S 6 x 16	6	16	V2A	1,4303	stained	4000	1000	0,367	4044 33 9	
2 S 6 x 20	6	20	V2A	1,4303	stained	3000	1000	0,456	4044 03 7	
2 S 6 x 25	6	25	V2A	1,4303	stained	1000	1000	0,567	4044 04 5	
2 S 6 x 30	6	30	V2A	1,4303	stained	1000	1000	0,678	4044 05 3	
2 S 6 x 35	6	35	V2A	1,4303	stained	1000	1000	0,789	4044 06 1	
2 S 6 x 40	6	40	V2A	1,4303	stained	1000	1000	0,900	4044 08 8	
2 S 6 x 50	6	50	V2A	1,4303	stained	1000	1000	1,122	4044 11 8	



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 S 7,1 x 15	7,1	15	V2A	1,4303	stained	2000	1000	0,491	4044 46 0	



Pins

Aluminium, AlMg 3



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al
4 S 3 x 10	3	10	Al	AlMg 3	—	20000	1000	0,021	4049 72 1
4 S 3 x 12	3	12	Al	AlMg 3	—	15000	1000	0,025	4049 74 8
4 S 3 x 15	3	15	Al	AlMg 3	—	10000	1000	0,030	4049 75 6
4 S 3 x 25	3	25	Al	AlMg 3	—	7000	1000	0,049	4049 77 2

Price
/‰ pc.



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al
4 S 4 x 8	4	8	Al	AlMg 3	—	15000	1000	0,030	4049 80 2
4 S 4 x 10	4	10	Al	AlMg 3	—	10000	1000	0,036	4049 81 0
4 S 4 x 20	4	20	Al	AlMg 3	—	5000	1000	0,070	4049 84 5
4 S 4 x 25	4	25	Al	AlMg 3	—	5000	1000	0,087	4049 85 3
4 S 4 x 30	4	30	Al	AlMg 3	—	4000	1000	0,104	4049 86 1

Price
/‰ pc.



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al
4 S 5 x 8	5	8	Al	AlMg 3	—	10000	1000	0,046	4049 91 8
4 S 5 x 10	5	10	Al	AlMg 3	—	8000	1000	0,057	4049 92 6
4 S 5 x 25	5	25	Al	AlMg 3	—	3000	1000	0,136	4049 96 9
4 S 5 x 30	5	30	Al	AlMg 3	—	1000	1000	0,163	4049 97 7
4 S 5 x 35	5	35	Al	AlMg 3	—	1000	1000	0,189	4049 98 5

Price
/‰ pc.



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. Al
4 S 6 x 8	6	8	Al	AlMg 3	—	6000	1000	0,065	4050 13 4
4 S 6 x 10	6	10	Al	AlMg 3	—	5000	1000	0,081	4050 00 2
4 S 6 x 12	6	12	Al	AlMg 3	—	4000	1000	0,096	4050 01 0
4 S 6 x 15	6	15	Al	AlMg 3	—	4000	1000	0,119	4050 02 9
4 S 6 x 30	6	30	Al	AlMg 3	—	1000	1000	0,233	4050 05 3
4 S 6 x 35	6	35	Al	AlMg 3	—	1000	1000	0,271	4050 06 1
4 S 6 x 40	6	40	Al	AlMg 3	—	1000	1000	0,309	4050 08 8
4 S 6 x 45	6	45	Al	AlMg 3	—	1000	1000	0,348	4050 09 6
4 S 6 x 50	6	50	Al	AlMg 3	—	1000	1000	0,386	4050 11 8

Price
/‰ pc.

Pins

Brass, CuZn 37

Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. CuZn	Price /‰ pc.
6 S 3 x 6	3	6	CuZn	CuZn37	—	25000	1000	0,041	4055 70 5	
6 S 3 x 8	3	8	CuZn	CuZn37	—	20000	1000	0,053	4055 71 3	
6 S 3 x 10	3	10	CuZn	CuZn37	—	20000	1000	0,063	4055 72 1	
6 S 3 x 12	3	12	CuZn	CuZn37	—	15000	1000	0,077	4055 74 8	
6 S 3 x 15	3	15	CuZn	CuZn37	—	10000	1000	0,095	4055 75 6	
6 S 3 x 20	3	20	CuZn	CuZn37	—	10000	1000	0,125	4055 76 4	
6 S 3 x 25	3	25	CuZn	CuZn37	—	7000	1000	0,155	4055 77 2	



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. CuZn	Price /‰ pc.
6 S 4 x 8	4	8	CuZn	CuZn37	—	15000	1000	0,093	4055 80 2	
6 S 4 x 10	4	10	CuZn	CuZn37	—	10000	1000	0,114	4055 81 0	
6 S 4 x 12	4	12	CuZn	CuZn37	—	10000	1000	0,136	4055 82 9	
6 S 4 x 15	4	15	CuZn	CuZn37	—	1000	1000	0,168	4055 83 7	
6 S 4 x 20	4	20	CuZn	CuZn37	—	5000	1000	0,221	4055 84 5	
6 S 4 x 25	4	25	CuZn	CuZn37	—	5000	1000	0,275	4055 85 3	
6 S 4 x 30	4	30	CuZn	CuZn37	—	4000	1000	0,328	4055 86 1	
6 S 4 x 35	4	35	CuZn	CuZn37	—	3000	1000	0,381	4055 88 8	



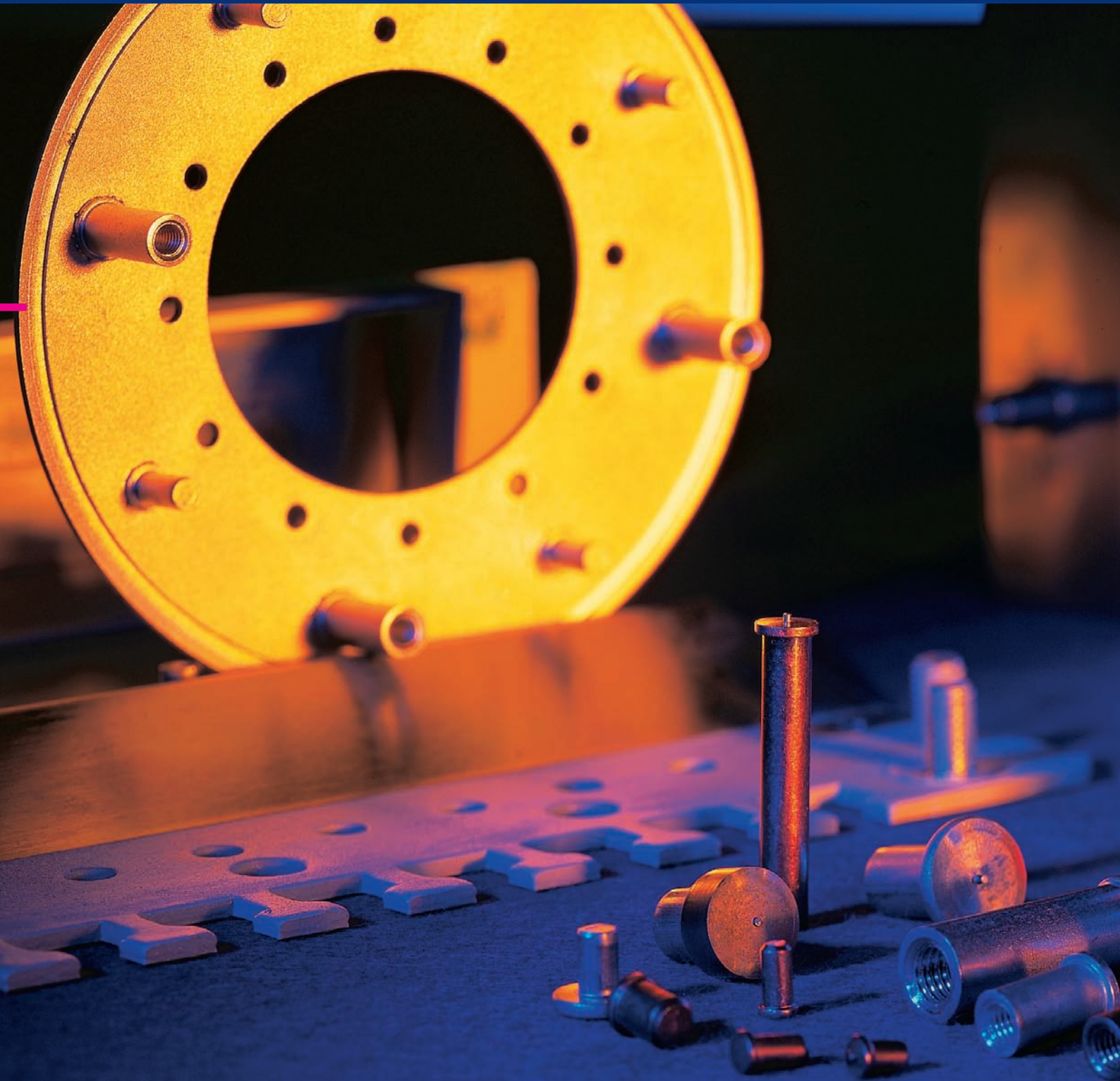
Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. CuZn	Price /‰ pc.
6 S 5 x 8	5	8	CuZn	CuZn37	—	10000	1000	0,145	4055 91 8	
6 S 5 x 12	5	12	CuZn	CuZn37	—	5000	1000	0,212	4055 93 4	
6 S 5 x 15	5	15	CuZn	CuZn37	—	5000	1000	0,262	4055 94 2	
6 S 5 x 20	5	20	CuZn	CuZn37	—	4000	1000	0,345	4055 95 0	
6 S 5 x 25	5	25	CuZn	CuZn37	—	3000	1000	0,429	4055 96 9	
6 S 5 x 30	5	30	CuZn	CuZn37	—	1000	1000	0,512	4055 97 7	
6 S 5 x 35	5	35	CuZn	CuZn37	—	1000	1000	0,595	4055 98 5	
6 S 5 x 40	5	40	CuZn	CuZn37	—	1000	1000	0,679	4055 99 3	



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. CuZn	Price /‰ pc.
6 S 6 x 10	6	10	CuZn	CuZn37	—	5000	1000	0,254	4056 00 0	
6 S 6 x 12	6	12	CuZn	CuZn37	—	4000	1000	0,302	4056 01 9	
6 S 6 x 15	6	15	CuZn	CuZn37	—	4000	1000	0,374	4056 02 7	
6 S 6 x 20	6	20	CuZn	CuZn37	—	3000	1000	0,494	4056 03 5	
6 S 6 x 25	6	25	CuZn	CuZn37	—	1000	1000	0,614	4056 04 3	
6 S 6 x 30	6	30	CuZn	CuZn37	—	1000	1000	0,734	4056 05 1	



Internal threaded bolts are machined according to DIN EN ISO 13918. They have a metric thread and are used for the welding method with tip ignition. The internal threaded bolts listed have our standard dimensions and materials, though special lengths and qualities can be made on request.



IT internal threaded bolt for tip ignition



Internal threaded bolt, metric

Steel, copper-plated

From page 30

Stainless steel

From page 31

Aluminium

From page 32

Bolt with inched inner thread

Steel, copper-plated

From page 33



Internal threaded bolt, metric

Steel, copper-plated St 37-3

M3 Ø5 St	Type	Metrical thread	Length	Dia-meter	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price
			mm	mm				pcs	pcs	kg/% pc	ST / Cu	/% pc.
	1 IM 3 x 5 x 6	M3	6	5	St	4,8	copper-plated	15000	1000	0,084	4079 88 4	
	1 IM 3 x 5 x 8	M3	8	5	St	4,8	copper-plated	10000	1000	0,107	4079 00 0	
	1 IM 3 x 5 x 10	M3	10	5	St	4,8	copper-plated	10000	1000	0,134	4079 01 9	
	1 IM 3 x 5 x 12	M3	12	5	St	4,8	copper-plated	5000	1000	0,164	4079 02 7	
	1 IM 3 x 5 x 15	M3	15	5	St	4,8	copper-plated	5000	1000	0,211	4079 03 5	
	1 IM 3 x 5 x 16	M3	16	5	St	4,8	copper-plated	5000	1000	0,226	4078 95 0	
	1 IM 3 x 5 x 19	M3	19	5	St	4,8	copper-plated	4000	1000	0,272	4080 81 5	
	1 IM 3 x 5 x 20	M3	20	5	St	4,8	copper-plated	4000	1000	0,288	4079 04 3	
	1 IM 3 x 5 x 25	M3	25	5	St	4,8	copper-plated	3000	1000	0,365	4079 05 1	
	1 IM 3 x 5 x 30	M3	30	5	St	4,8	copper-plated	2000	1000	0,442	4079 07 8	
M4 Ø6 St	Type	Metrical thread	Length	Dia-meter	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price
			mm	mm				pcs	pcs	kg/% pc	ST / Cu	/% pc.
	1 IM 4 x 6 x 8	M4	8	6	St	4,8	copper-plated	10000	1000	0,146	4079 19 1	
	1 IM 4 x 6 x 10	M4	10	6	St	4,8	copper-plated	5000	1000	0,181	4079 11 6	
	1 IM 4 x 6 x 12	M4	12	6	St	4,8	copper-plated	5000	1000	0,218	4079 12 4	
	1 IM 4 x 6 x 14	M4	14	6	St	4,8	copper-plated	4000	1000	0,246	4080 94 7	
	1 IM 4 x 6 x 15	M4	15	6	St	4,8	copper-plated	4000	1000	0,285	4079 13 2	
	1 IM 4 x 6 x 16	M4	16	6	St	4,8	copper-plated	4000	1000	0,307	4079 30 2	
	1 IM 4 x 6 x 20	M4	20	6	St	4,8	copper-plated	3000	1000	0,396	4079 14 0	
	1 IM 4 x 6 x 25	M4	25	6	St	4,8	copper-plated	2000	1000	0,507	4079 15 9	
	1 IM 4 x 6 x 30	M4	30	6	St	4,8	copper-plated	1000	1000	0,618	4079 16 7	
M5 Ø7,1 St	Type	Metrical thread	Length	Dia-meter	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price
			mm	mm				pcs	pcs	kg/% pc	ST / Cu	/% pc.
	1 IM 5 x 7 x 10	M5	10	7,1	St	4,8	copper-plated	4000	1000	0,233	4081 01 3	
	1 IM 5 x 7 x 12	M5	12	7,1	St	4,8	copper-plated	5000	1000	0,270	4081 02 1	
	1 IM 5 x 7 x 15	M5	15	7,1	St	4,8	copper-plated	3000	1000	0,355	4079 24 8	
	1 IM 5 x 7 x 16	M5	16	7,1	St	4,8	copper-plated	2000	1000	0,387	4081 04 8	
	1 IM 5 x 7 x 20	M5	20	7,1	St	4,8	copper-plated	1000	1000	0,513	4081 05 6	
	1 IM 5 x 7 x 25	M5	25	7,1	St	4,8	copper-plated	1000	1000	0,670	4081 06 4	
	1 IM 5 x 7 x 30	M5	30	7,1	St	4,8	copper-plated	1000	1000	0,828	4081 07 2	
	1 IM 5 x 7 x 35	M5	35	7,1	St	4,8	copper-plated	1000	1000	0,985	4081 08 0	
M6 Ø8 St	Type	Metrical thread	Length	Dia-meter	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price
			mm	mm				pcs	pcs	kg/% pc	ST / Cu	/% pc.
	1 IM 6 x 8 x 10	M6	10	8	St	4,8	copper-plated	5000	1000	0,265	4080 51 0	
	1 IM 6 x 8 x 12	M6	12	8	St	4,8	copper-plated	4000	1000	0,316	4080 51 3	
	1 IM 6 x 8 x 15	M6	15	8	St	4,8	copper-plated	1000	1000	0,388	4080 54 6	
	1 IM 6 x 8 x 16	M6	16	8	St	4,8	copper-plated	1000	1000	0,427	4080 54 8	
	1 IM 6 x 8 x 20	M6	20	8	St	4,8	copper-plated	1000	1000	0,585	4080 55 6	
	1 IM 6 x 8 x 25	M6	25	8	St	4,8	copper-plated	1000	1000	0,782	4080 57 2	
	1 IM 6 x 8 x 30	M6	30	8	St	4,8	copper-plated	1000	1000	0,979	4080 58 0	

Internal threaded bolt, metric

Stainless steel, 1.4303

Type	Metrical thread	Length mm	Dia- meter mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.		M3	Ø5	VA	
2 IM 3 x 5 x 6	M3	6	5	V2A	1,4303	stained	15000	1000	0,084	4081 21 0						
2 IM 3 x 5 x 8	M3	8	5	V2A	1,4303	stained	10000	1000	0,107	4081 21 8						
2 IM 3 x 5 x 10	M3	10	5	V2A	1,4303	stained	10000	1000	0,134	4081 22 6						
2 IM 3 x 5 x 12	M3	12	5	V2A	1,4303	stained	5000	1000	0,164	4081 23 4						
2 IM 3 x 5 x 16	M3	16	5	V2A	1,4303	stained	5000	1000	0,226	4081 24 2						
2 IM 3 x 5 x 20	M3	20	5	V2A	1,4303	stained	4000	1000	0,288	4081 25 0						
2 IM 3 x 5 x 25	M3	25	5	V2A	1,4303	stained	3000	1000	0,365	4081 26 9						
2 IM 3 x 5 x 30	M3	30	5	V2A	1,4303	stained	2000	1000	0,442	4081 27 7						

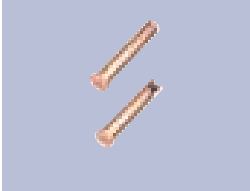
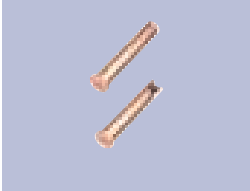
Type	Metrical thread	Length mm	Dia- meter mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.		M4	Ø6	VA	
2 IM 4 x 6 x 8	M4	8	6	V2A	1,4303	stained	10000	1000	0,146	4081 39 0						
2 IM 4 x 6 x 10	M4	10	6	V2A	1,4303	stained	5000	1000	0,181	4081 31 5						
2 IM 4 x 6 x 12	M4	12	6	V2A	1,4303	stained	5000	1000	0,218	4081 32 3						
2 IM 4 x 6 x 15	M4	15	6	V2A	1,4303	stained	4000	1000	0,285	4081 38 2						
2 IM 4 x 6 x 16	M4	16	6	V2A	1,4303	stained	4000	1000	0,307	4081 33 1						
2 IM 4 x 6 x 16	M4	16	6	V2A	1,4303	stained	1000	1000	0,410	4081 74 9						
2 IM 4 x 6 x 20	M4	20	6	V2A	1,4303	stained	3000	1000	0,396	4081 35 8						
2 IM 4 x 6 x 25	M4	25	6	V2A	1,4303	stained	2000	1000	0,507	4081 36 6						
2 IM 4 x 6 x 30	M4	30	6	V2A	1,4303	stained	1000	1000	0,618	4081 37 4						

Type	Metrical thread	Length mm	Dia- meter mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.		M5	Ø 7,1	VA	
2 IM 5 x 7 x 10	M5	10	7,1	V2A	1,4303	stained	4000	1000	0,233	4081 41 2						
2 IM 5 x 7 x 12	M5	12	7,1	V2A	1,4303	stained	5000	1000	0,270	4081 42 0						
2 IM 5 x 7 x 16	M5	16	7,1	V2A	1,4303	stained	2000	1000	0,387	4081 43 9						
2 IM 5 x 7 x 20	M5	20	7,1	V2A	1,4303	stained	1000	1000	0,513	4081 44 7						
2 IM 5 x 7 x 25	M5	25	7,1	V2A	1,4303	stained	1000	1000	0,670	4081 45 5						
2 IM 5 x 7 x 30	M5	30	7,1	V2A	1,4303	stained	1000	1000	0,828	4081 46 3						
2 IM 5 x 7 x 35	M5	35	7,1	V2A	1,4303	stained	1000	1000	0,985	4081 47 1						
2 IM 5 x 7 x 40	M5	40	7,1	V2A	1,4303	stained	1000	1000	1,143	4081 49 8						

Internal threaded bolt, metric

Aluminium, AlMg 3

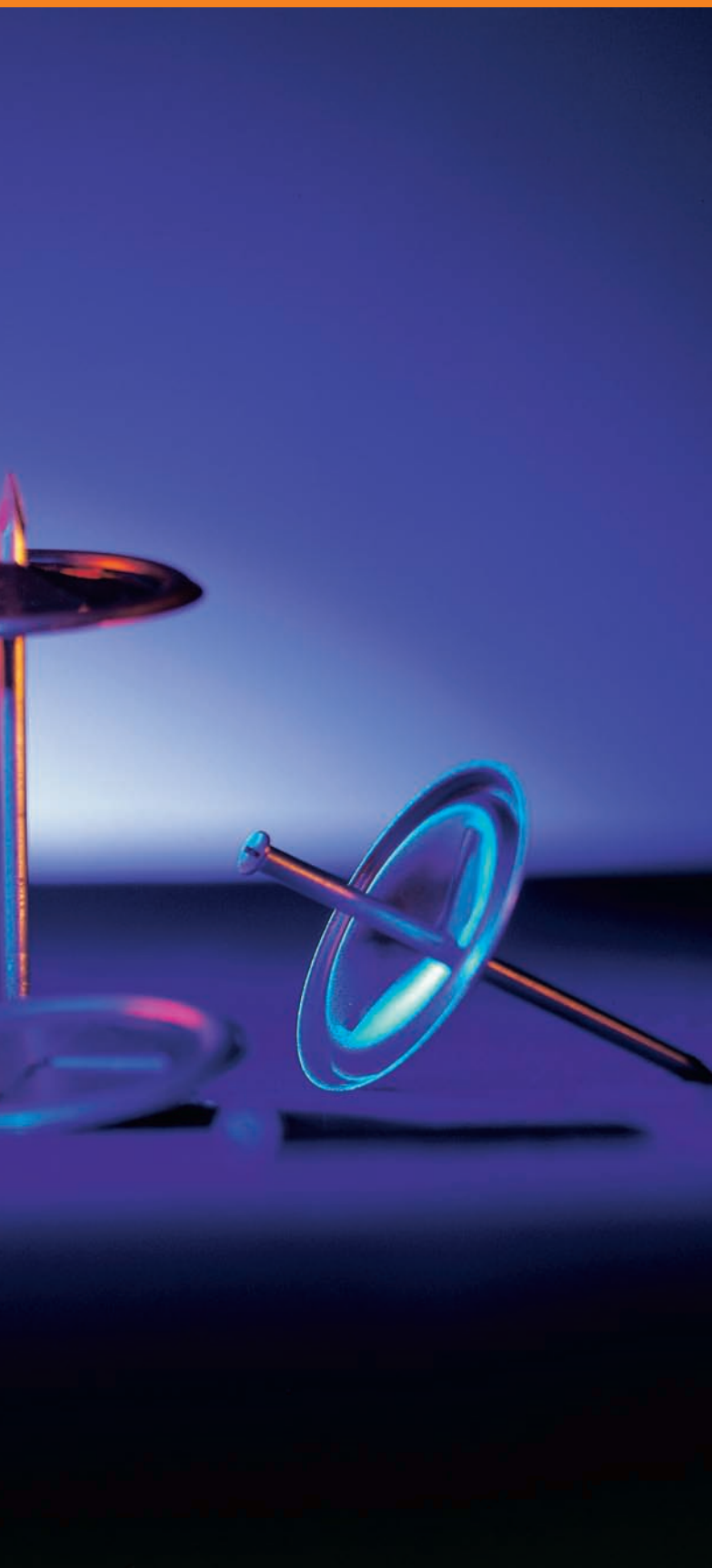
 M3 Ø5 Alu	Type	Metrical thread	Length	Dia- meter	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
			mm	mm				pcs	pcs	kg/% pc	Al		
	4 IM 3 x 5 x 6	M3	6	5	Al	AlMg 3	—	15000	1000	0,029	4081 99 4		
	4 IM 3 x 5 x 8	M3	8	5	Al	AlMg 3	—	10000	1000	0,037	4082 00 1		
	4 IM 3 x 5 x 10	M3	10	5	Al	AlMg 3	—	10000	1000	0,046	4082 02 8		
	4 IM 3 x 5 x 12	M3	12	5	Al	AlMg 3	—	5000	1000	0,057	4082 03 6		
	4 IM 3 x 5 x 16	M3	16	5	Al	AlMg 3	—	5000	1000	0,078	4082 04 4		
	4 IM 3 x 5 x 20	M3	20	5	Al	AlMg 3	—	4000	1000	0,099	4082 05 2		
	4 IM 3 x 5 x 25	M3	25	5	Al	AlMg 3	—	3000	1000	0,125	4082 06 0		
 M4 Ø6 Alu	Type	Metrical thread	Length	Dia- meter	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
			mm	mm				pcs	pcs	kg/% pc	Al		
	4 IM 4 x 6 x 8	M4	8	6	Al	AlMg 3	—	10000	1000	0,050	4079 39 6		
	4 IM 4 x 6 x 10	M4	10	6	Al	AlMg 3	—	5000	1000	0,062	4079 41 8		
	4 IM 4 x 6 x 12	M4	12	6	Al	AlMg 3	—	5000	1000	0,075	4079 43 4		
	4 IM 4 x 6 x 16	M4	16	6	Al	AlMg 3	—	4000	1000	0,106	4082 13 3		
	4 IM 4 x 6 x 20	M4	20	6	Al	AlMg 3	—	3000	1000	0,136	4082 14 1		
	4 IM 4 x 6 x 25	M4	25	6	Al	AlMg 3	—	2000	1000	0,174	4082 16 8		
	4 IM 4 x 6 x 30	M4	30	6	Al	AlMg 3	—	1000	1000	0,212	4082 17 6		
 M5 Ø7,1 Alu	Type	Metrical thread	Length	Dia- meter	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
			mm	mm				pcs	pcs	kg/% pc	Al		
	4 IM 5 x 7 x 10	M5	10	7,1	Al	AlMg 3	—	4000	1000	0,080	4082 22 2		
	4 IM 5 x 7 x 12	M5	12	7,1	Al	AlMg 3	—	5000	1000	0,093	4082 23 0		
	4 IM 5 x 7 x 16	M5	16	7,1	Al	AlMg 3	—	2000	1000	0,133	4082 24 9		
	4 IM 5 x 7 x 20	M5	20	7,1	Al	AlMg 3	—	1000	1000	0,176	4082 25 7		
	4 IM 5 x 7 x 25	M5	25	7,1	Al	AlMg 3	—	1000	1000	0,230	4082 26 5		
	4 IM 5 x 7 x 30	M5	30	7,1	Al	AlMg 3	—	1000	1000	0,285	4082 27 3		
	4 IM 5 x 7 x 35	M5	35	7,1	Al	AlMg 3	—	1000	1000	0,339	4082 28 1		
	4 IM 5 x 7 x 40	M5	40	7,1	Al	AlMg 3	—	1000	1000	0,393	4082 30 3		

Bolt with inched inner thread											
Steel, copper-plated St 37-3											
	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /% pc.
	6 - 32 x 1 1/4	6 - 32	1 1/4	St	4,8	copper-plated	2000	1000	0,478	4089 36 7	
											UNC St 
	Type	Thread Diameter	Length in	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /% pc.
	1/4 - 20 x 5/8	1/4 - 20	5/8	St	4,8	copper-plated	1000	1000	0,823	4089 38 3	
											UNC St 

ISO nails are not standardised insulating pins and are machined according to DIN EN ISO 13918. These nails are processed using capacitor discharge stud welding with tip ignition. The grommets to be used here are available in galvanised or plastic versions.



ISO nails for tip ignition



ISO nail

Steel, copper-plated

From page 36

Stainless steel

From page 37

Aluminium

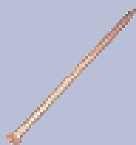
From page 38

Grommets for ISO nails

From page 39

ISO nail

Steel, copper-plated St 37-3

 Ø 2,1 St	Type	Nail diameter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
		mm	mm				pcs	pcs	kg/‰ pc	ST / Cu		
	1 P 2,1 x 20	2,1	20	St	4,8	copper-plated	15000	1000	0,058	4066 01 4		
	1 P 2,1 x 40	2,1	40	St	4,8	copper-plated	6000	1000	0,112	4066 04 9		
	1 P 2,1 x 50	2,1	50	St	4,8	copper-plated	4000	1000	0,134	4066 05 7		

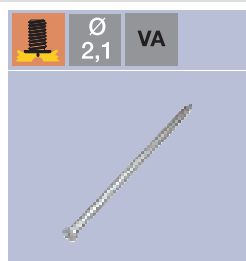
 Ø 2,6 St	Type	Nail diameter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
		mm	mm				pcs	pcs	kg/‰ pc	ST / Cu		
	1 P 2,6 x 15	2,6	15	St	4,8	copper-plated	1000	1000	0,059	4066 20 0		
	1 P 2,6 x 20	2,6	20	St	4,8	copper-plated	12000	1000	0,079	4066 21 9		
	1 P 2,6 x 30	2,6	30	St	4,8	copper-plated	7000	1000	0,121	4066 23 5		
	1 P 2,6 x 50	2,6	50	St	4,8	copper-plated	6000	1000	0,204	4066 25 1		
	1 P 2,6 x 60	2,6	60	St	4,8	copper-plated	1000	1000	0,246	4066 27 8		

 Ø3 St	Type	Nail diameter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /‰ pc.	
		mm	mm				pcs	pcs	kg/‰ pc	ST / Cu		
	1 P 3 x 20	3	20	St	4,8	copper-plated	10000	1000	0,108	4066 41 3		
	1 P 3 x 25	3	25	St	4,8	copper-plated	7000	1000	0,131	4066 42 1		
	1 P 3 x 30	3	30	St	4,8	copper-plated	5000	1000	0,157	4066 44 8		
	1 P 3 x 35	3	35	St	4,8	copper-plated	5000	1000	0,191	4066 39 1		
	1 P 3 x 40	3	40	St	4,8	copper-plated	4000	1000	0,219	4066 45 6		
	1 P 3 x 50	3	50	St	4,8	copper-plated	3000	1000	0,275	4066 46 4		
	1 P 3 x 60	3	60	St	4,8	copper-plated	1000	1000	0,326	4066 47 2		
	1 P 3 x 80	3	80	St	4,8	copper-plated	1000	1000	0,436	4066 49 9		
	1 P 3 x 90	3	90	St	4,8	copper-plated	1000	1000	0,492	4066 50 2		
	1 P 3 x 100	3	100	St	4,8	copper-plated	1000	1000	0,547	4066 51 0		

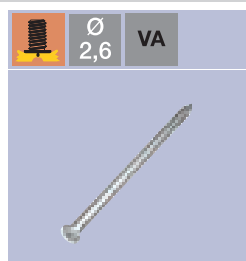
ISO nail

Stainless steel, 1.4303

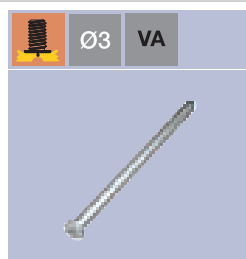
Type	Nail diameter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 P 2,1 x 30	2,1	30	V2A	1,4303	stained	10000	1000	0,079	4068 03 3	
2 P 2,1 x 40	2,1	40	V2A	1,4303	stained	6000	1000	0,112	4068 04 1	
2 P 2,1 x 50	2,1	50	V2A	1,4303	stained	4000	1000	0,134	4068 06 8	
2 P 2,1 x 60	2,1	60	V2A	1,4303	stained	1000	1000	0,160	4068 07 6	
2 P 2,1 x 90	2,1	90	V2A	1,4303	stained	1000	1000	0,242	4068 10 6	



Type	Nail diameter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 P 2,6 x 20	2,6	20	V2A	1,4303	stained	12000	1000	0,079	4068 21 1	
2 P 2,6 x 25	2,6	25	V2A	1,4303	stained	10000	1000	0,100	4068 23 8	
2 P 2,6 x 30	2,6	30	V2A	1,4303	stained	7000	1000	0,121	4068 24 6	
2 P 2,6 x 40	2,6	40	V2A	1,4303	stained	5000	1000	0,163	4068 25 4	
2 P 2,6 x 50	2,6	50	V2A	1,4303	stained	6000	1000	0,204	4068 26 2	
2 P 2,6 x 60	2,6	60	V2A	1,4303	stained	1000	1000	0,246	4068 27 0	
2 P 2,6 x 80	2,6	80	V2A	1,4303	stained	1000	1000	0,332	4068 29 7	



Type	Nail diameter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.
2 P 3 x 15	3	15	V2A	1,4303	stained	10000	1000	0,081	4068 40 8	
2 P 3 x 20	3	20	V2A	1,4303	stained	10000	1000	0,108	4068 41 6	
2 P 3 x 25	3	25	V2A	1,4303	stained	7000	1000	0,132	4068 42 4	
2 P 3 x 30	3	30	V2A	1,4303	stained	5000	1000	0,157	4068 43 2	
2 P 3 x 40	3	40	V2A	1,4303	stained	4000	1000	0,219	4068 44 0	
2 P 3 x 50	3	50	V2A	1,4303	stained	3000	1000	0,275	4068 45 9	
2 P 3 x 60	3	60	V2A	1,4303	stained	1000	1000	0,328	4068 46 7	



ISO nail

Aluminium, AlMg 3



Type	Nail diameter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.
	mm	mm				pcs	pcs	kg/% pc	Al
4 P 3 x 25	3	25	Al	AlMg 3	—	7000	1000	0,045	4070 42 9
4 P 3 x 30	3	30	Al	AlMg 3	—	5000	1000	0,054	4070 43 7
4 P 3 x 40	3	40	Al	AlMg 3	—	4000	1000	0,075	4070 44 5
4 P 3 x 50	3	50	Al	AlMg 3	—	3000	1000	0,094	4070 45 3
4 P 3 x 60	3	60	Al	AlMg 3	—	1000	1000	0,112	4070 46 1
4 P 3 x 70	3	70	Al	AlMg 3	—	1000	1000	0,131	4070 48 8
4 P 3 x 80	3	80	Al	AlMg 3	—	1000	1000	0,150	4070 49 6

Price
/‰ pc.

Grommet for ISO nail

1

Type	Material	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST	Price /% pc.
IC-2.6	Steel	4,8	copper-plated	1000	1000	0,333	4071 98 0	
IC-2.6	Steel	4,8	galvanised	1000	1000	0,440	4071 99 9	



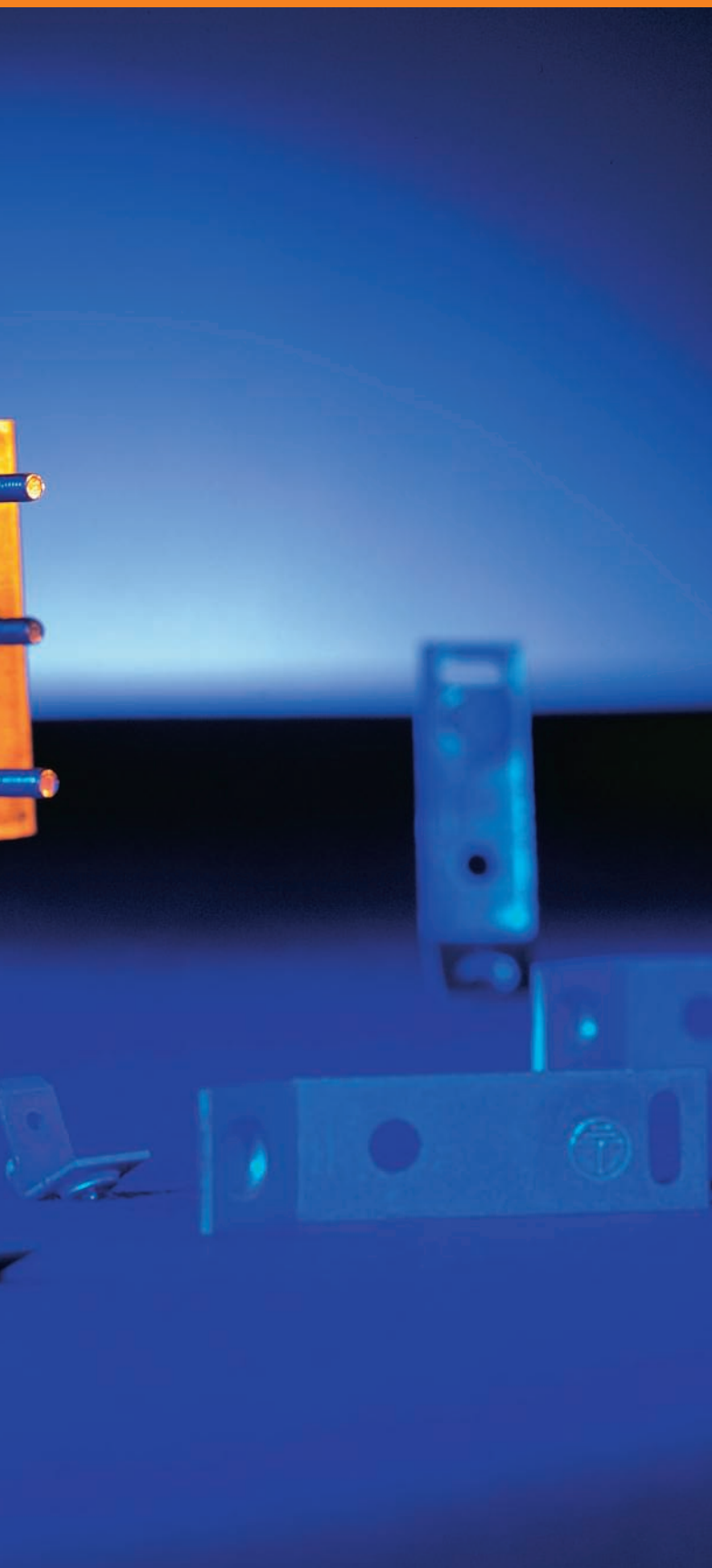
Type	Material	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. PP	Price /% pc.
ISC-K	Polypropylene	PP	—	1000	1000	0,235	4080 10 6	



These flat connectors are also called earthing connectors and are used in many electrical devices. The welding geometry is created according to DIN EN ISO 13918. The matching cable lugs are DIN parts.



Flat connector for tip ignition



Flat connector in earthing area

Steel, copper-plated

From page 42

Stainless steel

From page 42

Aluminium

From page 42

Brass

From page 42



Flat connector in earthing area

1



Type	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.
				pcs	pcs	kg/% pc	ST / Cu
TS-FS 63-1	St	DC 03	copper-plated	6000	1000	0,100	4072 17 0

135 degrees with 6.3 mm connection, strip steel, 0.8 mm section

Price
/‰ pc.



Type	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.
				pcs	pcs	kg/% pc	ST / Cu
TS-FS 63-1	St	DC 03	copper-plated	6000	1000	0,150	4072 20 0

90 degrees with 6.3 mm connection, strip steel, 0.8 mm section

Price
/‰ pc.



Type	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.
				pcs	pcs	kg/% pc	V2A
TS-FS 63-2	V2A	1,4301	stained	6000	1000	0,110	4072 06 5

90 degrees with 6.3 mm connection, stainless steel strip, 0.8 mm section

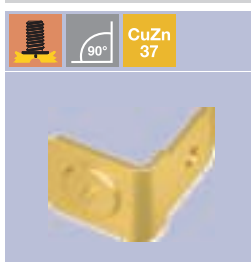
Price
/‰ pc.



Type	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.
				pcs	pcs	kg/% pc	Al
TS-FS 63-4	Al	AlMg 3	—	6000	1000	0,050	4072 03 0

90 degrees with 6.3 mm connection, strip aluminium, 0.8 mm section

Price
/‰ pc.



Type	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.
				pcs	pcs	kg/% pc	CuZn
TS-FS 63-6	CuZn	CuZn37	—	6000	1000	0,098	4072 01 4

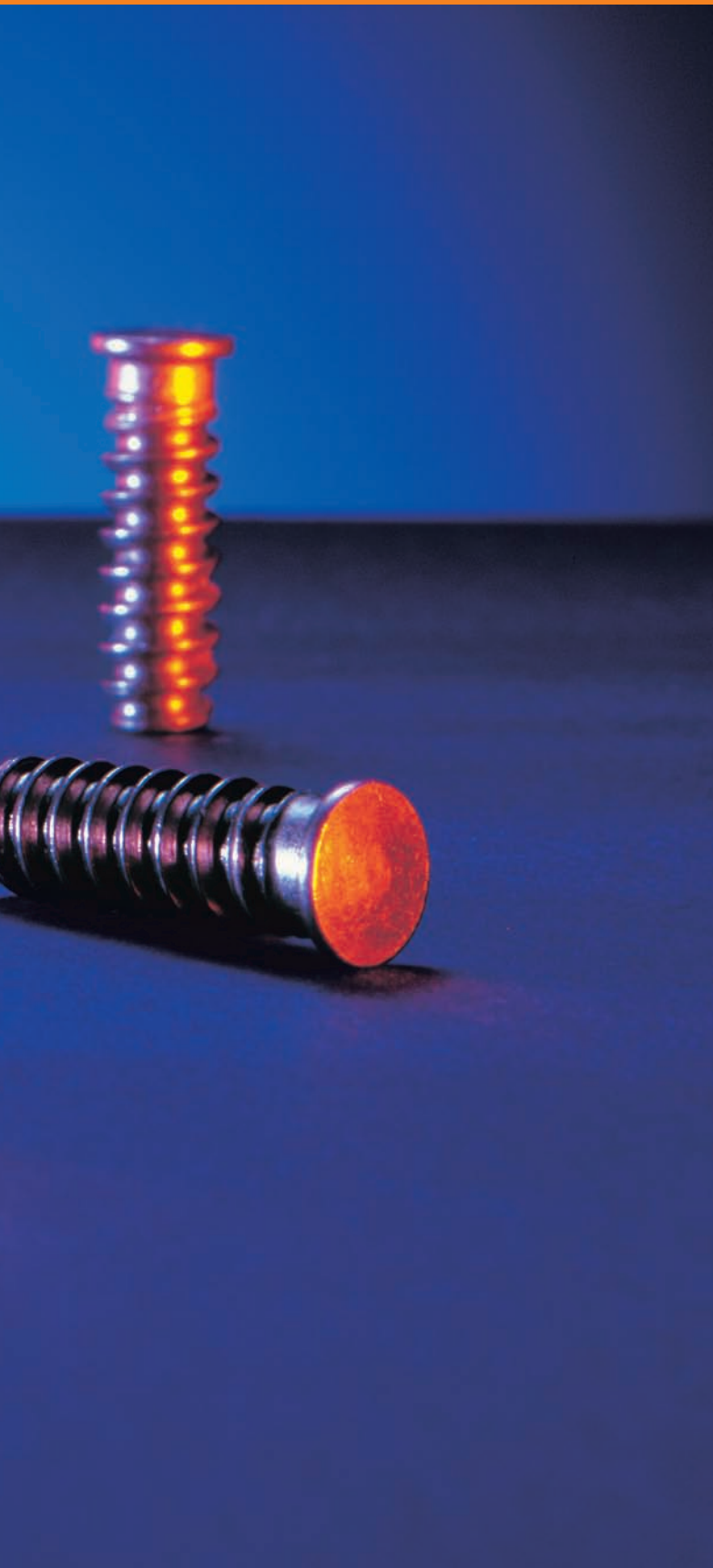
90 degrees with 6.3 mm connection, brass strip, 0.8 mm section

Price
/‰ pc.

The short cycle method is a welding method, which is also called short stud welding with arc ignition. These fastening elements are machined according to DIN EN ISO 13918. The term "Short cycle" is not given in DIN.



Welding elements for short cycle



Short cycle studs are available in various dimensions and materials.

You can find a small selection on the following pages. Please address your queries specifically to us.

Threaded bolt, metric	
Steel, copper-plated	From page 46
Stainless steel	From page 46

Coarse threaded bolt	
Steel, copper-plated	From page 47

Pins	
Steel, copper-plated	From page 48

Internal threaded bolt, metric	
Steel, copper-plated	From page 49
Stainless steel	From page 49



Threaded bolt, metric

1

 M6 St	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.	
	1 GM 6 x 16 SC	M6	16	St	4,8	copper-plated	4000	1000	0,283	4029 94 1		
	1 GM 6 x 20 SC	M6	20	St	4,8	copper-plated	3000	1000	0,350	4029 94 9		
	1 GM 6 x 25 SC	M6	25	St	4,8	copper-plated	2000	1000	0,435	4029 95 2		

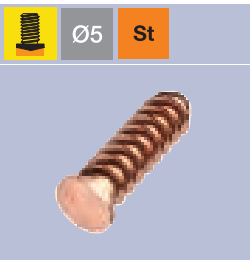
 M8 St	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.	
	1 GM 8 x 15 SC	M8	15	St	4,8	copper-plated	5000	5000	0,526	4029 92 5		
	1 GM 8 x 16 SC	M8	16	St	4,8	copper-plated	2000	1000	0,509	4029 21 6		
	1 GM 8 x 18 SC	M8	18	St	4,8	copper-plated	1000	1000	0,571	4029 21 8		
	1 GM 8 x 20 SC	M8	20	St	4,8	copper-plated	1000	1000	0,632	4029 17 8		
	1 GM 8 x 25 SC	M8	25	St	4,8	copper-plated	1000	1000	0,785	4029 22 6		
	1 GM 8 x 35 SC	M8	35	St	4,8	copper-plated	1000	1000	1,091	4029 18 5		

 M6 VA	Type	Metrical thread	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	
	2 GM 6 x 14 SC	M6	14	V2A	1,4303	stained	4000	1000	0,249	4030 43 0		

Coarse threaded bolt

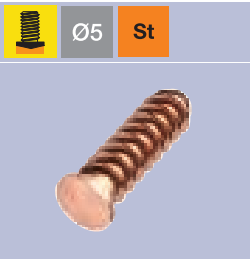
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Type	Dia- meter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price
	mm	mm				pcs	pcs	kg/% pc	ST / GC	€/pc.
1 T5 x 14,2	5	14,2	St	4,8	electrogalvanised, yellow-chromalised	5000	5000	0,164	4029 43 3	



1

Type	Dia- meter	Length	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price
	mm	mm				pcs	pcs	kg/% pc	ST / Cu	€/pc.
1 T5 x 14,2 SC	—	14,2	St	4,8	copper-plated	6000	1000	0,164	4029 68 5	
1 T5 x 16,5 SC	—	16,5	St	4,8	copper-plated	5000	5000	0,189	4029 88 7	



Pins

Steel, copper-plated St 37-3



Type	Dia- meter mm	Length mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu
1 S 4 x 20 SC	4	20	St	4,8	copper-plated	6000	1000	0,204	4042 80 0

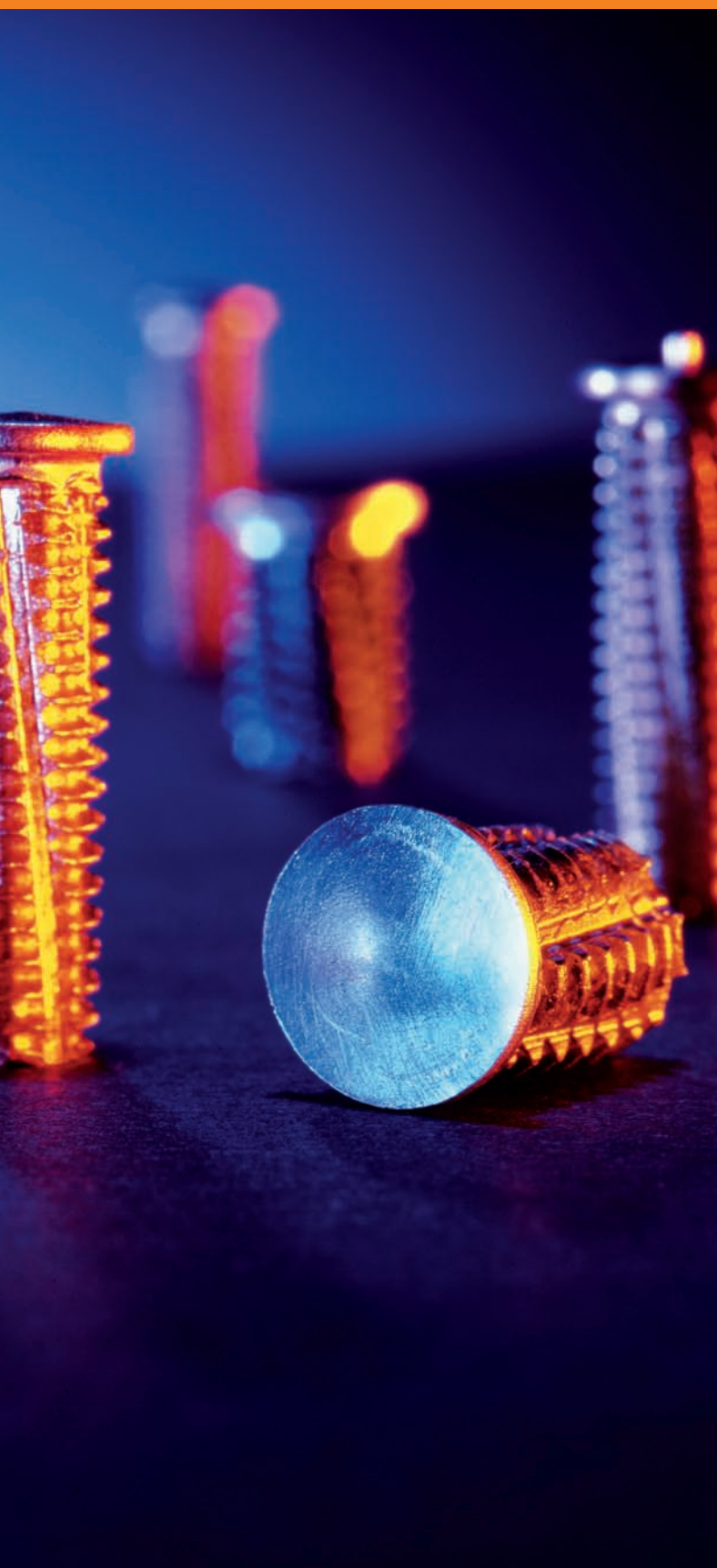
Price
/‰ pc.

Internal threaded bolt, metric													1
	Type	Metrical thread	Length mm	Dia- meter mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.	 M5 Ø 7,1 St
	1 IM 5x7x15 SC	M5	15	7,1	St	4,8	copper-plated	3000	1000	0,317	4079 25 6		
	Type	Metrical thread	Length mm	Dia- meter mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price /‰ pc.	 M6 Ø8 St
	1IM6x8x20 SC	M6	20	8	St	4,8	copper-plated	1000	1000	0,585	4080 68 8		
	Type	Metrical thread	Length mm	Dia- meter mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. V2A	Price /‰ pc.	 M5 Ø8 VA
	2 IM 5x7x12 SC 2IM5x7x20 SC	M5 M5	12 20	7,1 7,1	V2A V2A	1,4303 1,4303	stained stained	4000 1000	1000 1000	0,270 0,645	4081 50 1 4081 69 2		

Lacquer groove pins are machined to DIN EN ISO 13918. In addition to our standard product range, special solutions and qualities are available.



Lacquer groove pin for tip ignition



Lacquer groove pin

Steel, copper-plated

From page 52

Lacquer groove pin for short cycle

Steel, copper-plated

From page 53



Lacquer groove pin

Steel, copper-plated St 37-3

M6		St	Type	Metrical thread	Length	Dia-meter	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /% pc.	
					mm	mm				pcs	pcs	kg/% pc	ST / Cu		
			1 LN 6 x 12	M6	12	—	St	4,8	copper-plated	5000	1000	0,197	4029 85 8		
			1 LN 6 x 15	M6	15	—	St	4,8	copper-plated	4000	1000	0,241	4029 86 2		
			1 LN 6 x 16	M6	16	—	St	4,8	copper-plated	4000	1000	0,257	4029 86 4		
			1 LN 6 x 20	M6	20	—	St	4,8	copper-plated	3000	1000	0,316	4029 86 5		

M8		St	Type	Metrical thread	Length	Dia-meter	Material symbol	Grade	Surface finish	Box	Pack.	Weight	Item No.	Price /% pc.	
					mm	mm				pcs	pcs	kg/% pc	ST / Cu		
			1 LN 8 x 12	M8	12	—	St	4,8	copper-plated	3000	1000	0,342	4029 86 7		
			1 LN 8 x 20	M8	20	—	St	4,8	copper-plated	1000	1000	0,554	4029 86 8		

Lacquer groove pin for short cycle											
Steel, copper-plated St 37-3											
Type	Metrical thread	Length mm	Dia- meter mm	Material symbol	Grade	Surface finish	Box pcs	Pack. pcs	Weight kg/% pc	Item No. ST / Cu	Price / % pc.
1 LN 6 x 15 SC	M6	15	—	St	4,8	copper-plated	5000	5000	0,231	4029 86 0	

M6



St





Pictograms	From page 56
Materials	From page 56
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Numerical type listing	From page 58

Pictogram explanation

Welding method



Tip ignition



Short cycle

Materials



Aluminium



Stainless steel, material no. 1.4303



Brass



Steel

Thread metric



Metric thread, 2.5 mm



Metric thread, 3 mm



Metric thread, 4 mm



Metric thread, 5 mm



Metric thread, 6 mm



Metric thread, 8 mm



Metric thread, 10 mm

Diameter



Diameter 2.1 mm



Diameter 2.6 mm



Diameter 3 mm



Diameter 4 mm



Diameter 5 mm



Diameter 6 mm



Diameter 7.1 mm

Thread types



UNC thread



UNF thread

Materials



Flat connector with 90° angle



Flat connector with 135° angle

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Numerical list by order number

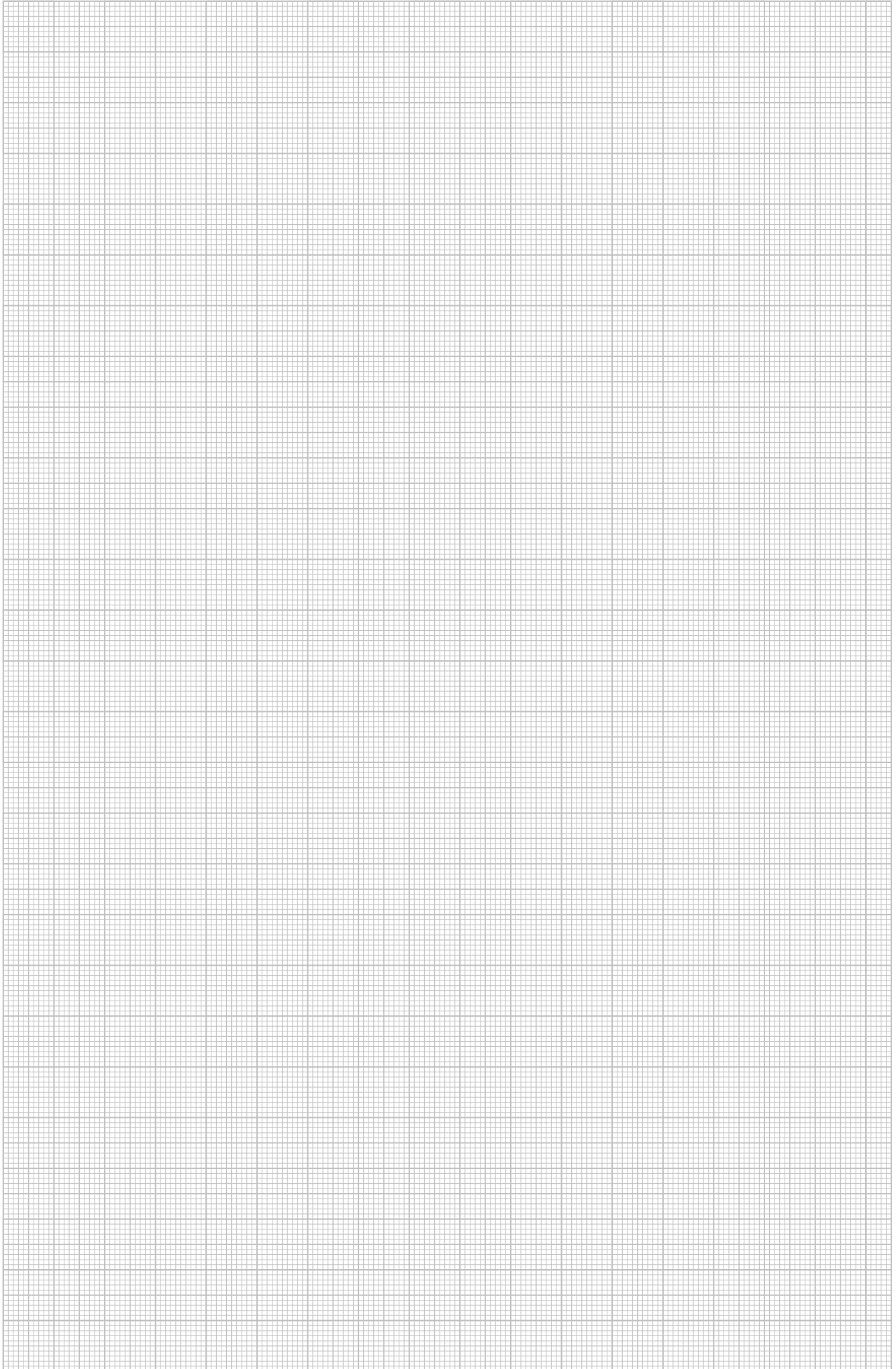
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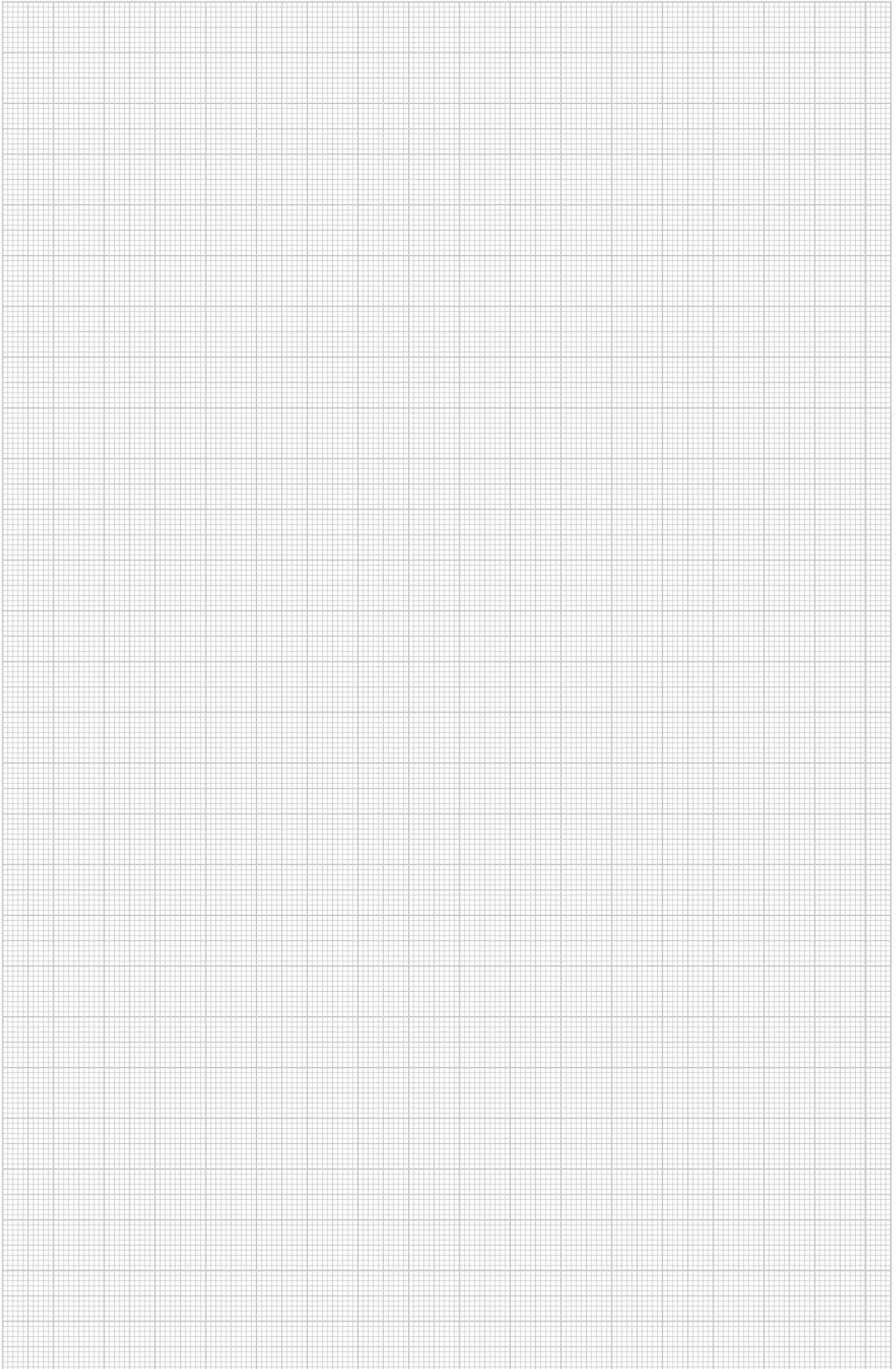
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5706151	4027 59 0		11	5623533	4029 88 7		47					5341956	4040 73 2		24
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5323594	4028 37 6		10	5326595	4030 30 3		12	5333197	4034 42 2		14	5888314	4041 35 6		24
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5323891	4028 42 2		10	5326892	4030 36 2		12	5333494	4034 47 3		14				
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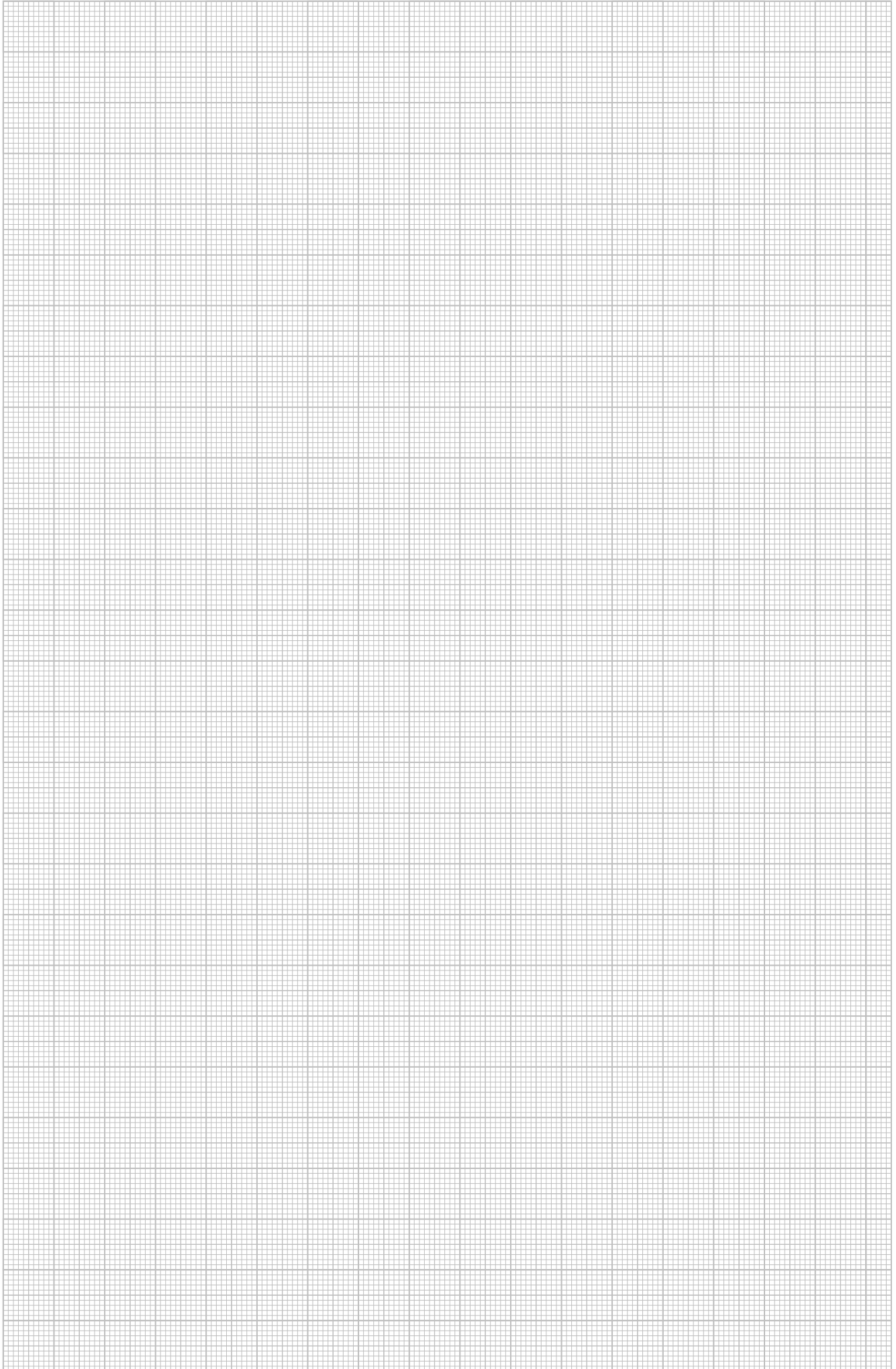
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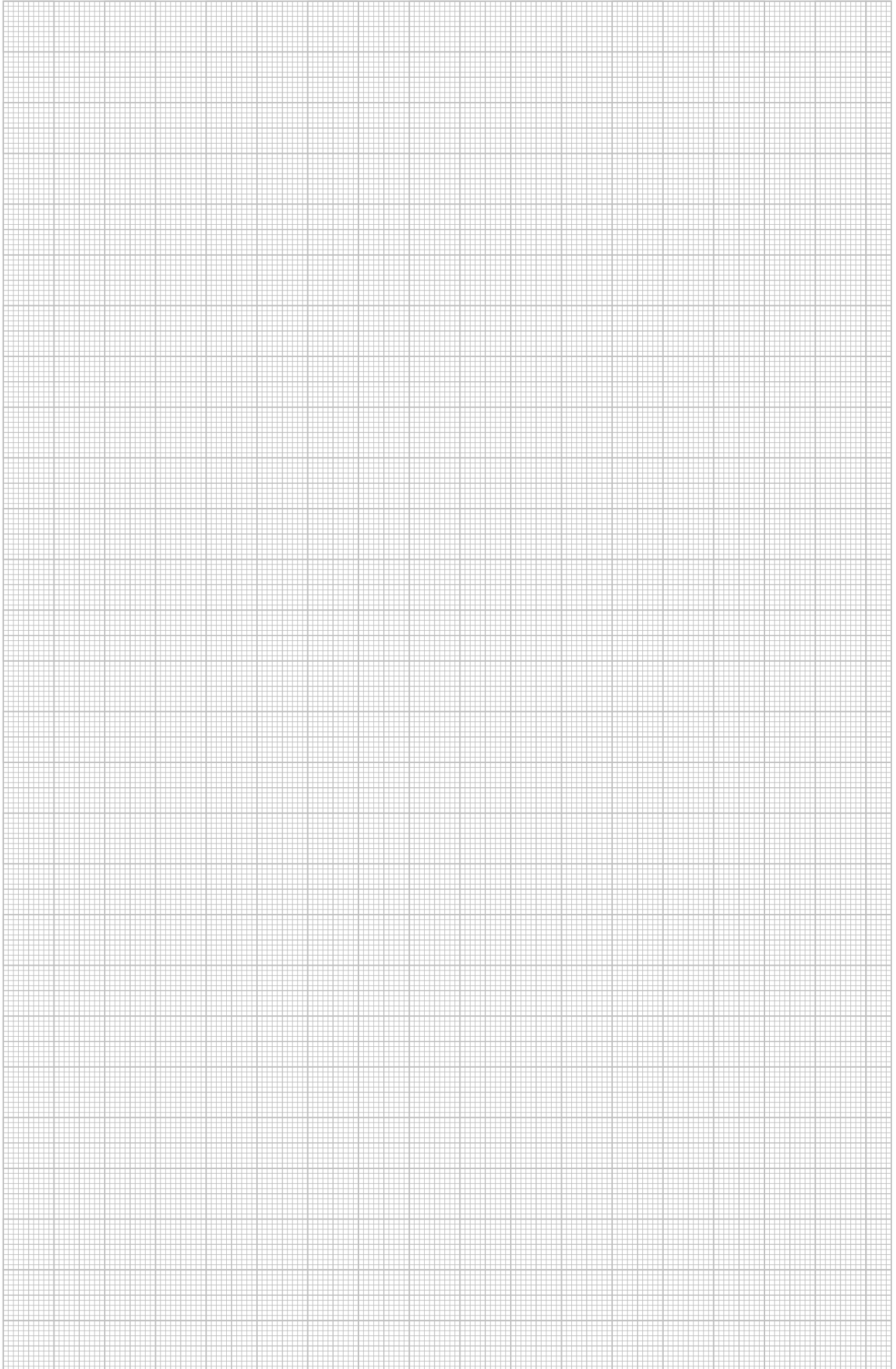
Discount groups

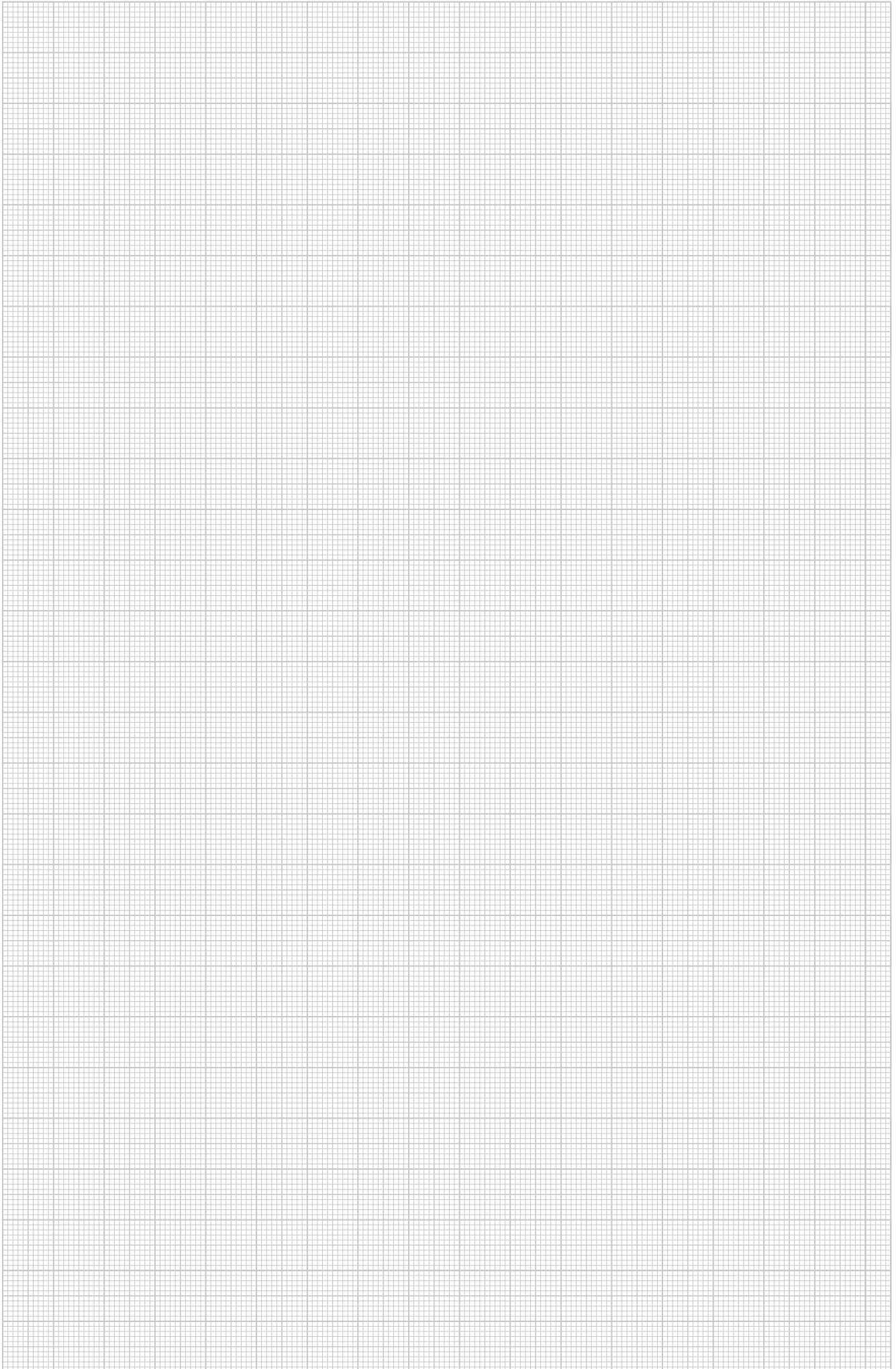
A	EGS device systems	N	Steel, impu, Siko needles
B	Lightning protection components	Q	Quick® clips
C	Switch range, wet room range UP, hospital systems	R	RKS Rational cable tray system
D	Electronic devices, radio systems, Deskboxes	T	Support clamp systems
E	Connection and fastening systems	U	Underfloor systems
F	Fire protection systems	V	Threaded joints + insulating accessories
G	Surge protection, devices, chemical articles	W	Threaded joints + brass accessories
H	Screws	X	BKK Cable tray systems
I	Plastic line routing trunking, wiring trunking	Z	Shipbuilding systems
J	Skirting board ducts, floor duct	Ö	OBO BUS system
K	Cable tray, cable ladders, AZ small ducts	Ö01	Cast aluminium range
L	Wall trunking bases, metal cable routing trunking, service poles		
M	Concealed and cavity wall systems		











Terms and conditions of sale and delivery of the companies OBO BETTERMANN GmbH & Co. KG and OBO BETTERMANN Projekt und Systemtechnik GmbH, Menden

our additional terms and conditions for cable tray business transactions. Any terms and conditions of business and purchasing of the customer shall be valid only if we have acknowledged them in writing. Our quotations are without engagement; they are mere invitations to submit contract offers. Any and all transactions and agreements, including those entered into by our employees and agents shall only be binding upon our written confirmation or invoicing. The foregoing provision shall also apply to any modifications of the agreed formal requirements.

2. The documents and data pertaining to the quotation, such as illustrations, brochures, drawings, dimensions, loading capacity values and weight details are approximate only, unless they are expressly stipulated to be binding. Samples are non-binding samples for inspection. Any purchase according to sample will be subject to customary deviations and deviations resulting from normal production processes. The properties of the sample shall be no guaranteed quality of the purchase object unless expressly stated otherwise in the confirmation of order. Samples must be returned to us at the latest within four weeks in perfect condition. If they are not returned within this period in proper condition, we shall be entitled to charge the purchase price for the sample in accordance with our current price list. All information on our products, in particular the illustrations, drawings, weight, dimension and performance data included in our quotations and printed matter shall be regarded as approximate average values and shall not represent any quality guarantee.

With regard to products made according to customer drawings, samples and other instructions of the customer, we will not provide any warranty nor assume any liability for the due and proper functioning of the product or for any other defects if and to the extent they are based upon the customer's specifications. The customer shall indemnify us from any third party claims, including claims for product liability as may be asserted against us for damages resulting from the products unless we have caused such damages by intent or gross negligence. The customer shall warrant that the manufacture and supply of products made in accordance with his instructions will not infringe any proprietary rights of third parties. Should any proprietary rights be asserted against us, we shall be entitled, without any legal review of the third party claims, to withdraw from the contract after hearing the customer, unless the third party withdraws the claims asserted against us under its proprietary rights within eight days by written declaration. The customer shall compensate us for any damage sustained as a result of the assertion of proprietary rights. In case of withdrawal, the work we have carried out so far shall be remunerated. Further rights under the statutory provisions shall not be affected thereby.

Any moulds, tools and design data produced by us for the execution of the order shall be our exclusive property.

Unless expressly agreed otherwise, the customer shall not have any claims thereto, even if he has contributed to the costs of producing any such moulds, tools and design data.

3. The packing, shipping route and means of transportation shall be left to our discretion in the absence of any other agreements. They shall be charged at their cost price. We will take back undamaged cases, when being returned carriage paid, at 2/3 of the amount invoiced. The one-way or pool pallets used for transport shall be either exchanged upon taking delivery or returned. The smallest packing units stocked and listed may not be broken up for rationalisation reasons. In case of orders for different quantities, the nearest packing unit will be supplied.

We reserve the right to deviate from the agreed delivery quantity, in particular in the case of custom-made products, to a customary extent or in conformity with national or international standards. In case of a demand for adhering to a precise quantity, an express reference is necessary and subject to confirmation.

Master and call orders shall oblige the customer to accept the total quantity on which the master/call order is based. Where no particular call orders are specified in the contract, the total quantity of the master call order must be called within twelve months. If the customer fails to adhere to call deadlines, we shall be entitled to deliver and charge the total quantity in full after four weeks from written notice with reference to the consequences of any failure to call. Our rights arising from any default of the customer shall not be affected thereby.

4. Unless otherwise agreed, our prices are quoted ex works and do not include packing and insurance. The value added tax at the rate applicable on the date of dispatch will be added to our prices. The purchaser shall ensure the correctness of his VAT identification number, which he must notify to us immediately without being asked. He shall undertake to inform both us and the competent domestic tax authority without delay of any change in his name, address and VAT identification number.

Delivery shall be franco domicile within Germany, i.e. carriage and packing prepaid, if the net order value is in excess of € 1,200. For small orders below € 100 (net excluding value added tax), we shall invoice a lower quantity surcharge of € 10 (net) per order. Upon transfer of our supplies and services to a carrier or forwarding agent, at the latest upon their leaving our warehouse or supply plant, the risk shall pass to the recipient, even in case of deliveries free place of destination.

5. Delivery periods and delivery deadlines shall be approximate only unless we have expressly stated in writing that they are binding. Delivery periods shall commence upon receipt of our confirmation of order, but not before clarification of all execution details, ex place of delivery. The customer shall only be entitled to withdraw from the contract after having granted a reasonable extension of time. We reserve the right to make partial deliveries. Claims for damages and reimbursement of expenses - for any reason whatsoever - shall be subject to the provisions set out in article 10.

In the event of any circumstances that are beyond our control within the scope of normal operating risks and obstruct or make impracticable any delivery, we shall be entitled to suspend delivery by the duration of such obstruction plus a reasonable start-up period or to withdraw from the contract for the part not yet fulfilled. The purchaser can demand a statement from us as to whether we wish to deliver within a reasonable period or withdraw. If we fail to make such a statement, the purchaser may withdraw. Our notice to the purchaser shall be deemed to be sufficient evidence that we have been prevented from delivering.

Delivery time is extended in case of such events as labour disputes, strikes and lockouts, orders from the authorities, difficulties with the procurement of materials, spoiled work or post-processing, shutdowns and staff shortage as well as shortage of means of transport, and general occurrence of unforeseen events beyond our scope of influence, by the length of duration of these events.

6. Payments shall be made upon receipt of invoice less a 3% cash discount for payment within 10 days or net after 30 days from date of invoice. Erection work and all paid labour work must be paid within 10 days without deduction of any cash discount. In case of non-cash payments, the date of the credit note will be deemed to be the date of receipt of payment. Payments received shall always be credited first against costs, then against interest and then against the earliest liability. Cheques and bills of exchange shall only be accepted as means of payment. Any payment by bill of exchange shall be subject to a prior separate and written agreement, whereby all bill costs shall be borne by the customer and no discount can be granted. The customer shall have no right to refuse performance and no right of retention - for any legal reason whatsoever - unless we have acknowledged his claim beforehand in writing or his claim has the force of law.

The customer shall only be entitled to set off claims which have the force of law, are undisputed or acknowledged by us in writing.

7. We shall retain title to the goods supplied by us until all our claims arising from our business transactions with the customer have been satisfied - current account clause - and all bills of exchange or cheques submitted for payment by the customer have been honoured.

Any treatment or processing of goods subject to our retention of title (reserved goods) shall be carried out for us as the manufacturer in accordance with § 950 BGB (German Civil Code) without any obligation on our part. If our reserved goods are to be regarded as the main item or the main item is owned by the customer, full title to the new item shall pass to us when it is created. In other cases, we shall acquire a co-ownership interest in the new item in the proportion of the sales value of our reserved goods to the other goods used for the new item at the time of processing, intermingling, joining or mixing. The customer shall take custody of our ownership or co-ownership interest free of charge; it shall be treated as reserved goods.

Before transfer of title, our goods shall be neither pledged nor assigned as collateral without our prior consent. In addition, any third party rights or pledges shall be notified to us immediately and we shall be given all details and provided all documents necessary for intervention; otherwise the customer must bear our loss. In the latter case, our total claims against the customer shall also be immediately payable.

The customer shall be entitled to sell or to use our reserved goods in the ordinary course of business subject to the condition that the relevant claims are transferred in accordance with article 8 below. This right shall lapse upon the customer's failure to promptly meet his payment obligations towards us or in the event of any cheque or bill protests or his suspension of payments. In such cases, we shall be entitled to take back the goods provisionally at the customer's expense and to sell them at our duly exercised discretion after a corresponding reminder has been

8. If our goods are sold before payment of our claim, the customer shall be obliged to retain our title against his purchaser until the goods have been paid for in full by the purchaser. The claim arising against the purchaser from such resale as well as any other ancillary rights or security interests of the customer resulting from the sale and any claims for compensation in case of damage to or destruction of our reserved property, including the relevant insurance sum shall hereby be assigned to us. We hereby accept this assignment. Where our co-ownership interest is sold, the relevant claims shall be assigned in the amount corresponding to the value of our interest.

The customer shall, at our request, inform us of his purchasers, notify them of the assignment made and provide us with any and all documents required to assert our rights.

As long as the customer meets his contractual obligations without delay, he shall be authorised to collect the claims assigned. He shall keep the amounts collected on our behalf separately and remit them to us immediately as soon and as far as our claims become due. The authorisation shall lapse in case of any cheque or bill protest of the customer or his definite suspension of payments. The customer shall bear the costs incurred for any action taken against third parties and shall advance them upon request.

If the security provided to us by the retention of title and the anticipatory assignment should exceed the claims to be secured by more than 20%, we shall, at the customer's request, release paid supplies of our choice. Upon payment of all our claims by the customer, assigned claims shall pass to the customer.

9. Any complaints for obvious defects regarding the quantity or quality of our supplies and services that are identifiable upon careful inspection shall without delay, but at the latest within the period of limitation of eight days from arrival of the goods at the address of the customer or the person appointed by him, be notified in writing to us, not to our representatives. Slight deviations in dimensions and designs within the scope of defined technical tolerances shall not give rise to any right of complaint. Any rejected goods may only be returned to us with our prior written authorisation.

In case of justified complaints within the prescribed period, we shall, at our option, take remedial action by way of subsequent performance, by rectifying the defect, supplying non-defective goods or providing a credit note for the lower value calculated.

We shall be entitled to refuse subsequent performance in accordance with the statutory provisions. If we refuse subsequent performance, if any subsequent performance remains unsuccessful or if the customer cannot be reasonably expected to accept any subsequent performance, the latter shall be entitled to withdraw from the contract in compliance with the provisions of the following sentences. The customer shall only be entitled to withdraw from the contract - where a withdrawal is not excluded by law - upon the unsuccessful expiry of a reasonable period for subsequent performance set by him, unless this period was not required under the statutory provisions (§§ 281 para. 2, 323 para. 2, 440, 441 para. 1 BGB (German Civil Code)).

In case of his withdrawal, the customer shall be liable for any deterioration, destruction or loss of use resulting from any negligence or intent on his part. Any claims for damages or reimbursement of expenses of the customer shall be subject to the provisions set out in article 10.

In the case of any fraudulent concealment of a defect or in the case of any provision of a quality guarantee for the goods sold at the time of the passing of risk within the meaning of § 444 BGB (German Civil Code) (seller's declaration that the object sold has a specific property at the time of the passing of risk and that the seller, regardless of any fault on his part, intends to be answerable for any and all consequences resulting from its absence), the customer's rights shall be exclusively governed by the statutory provisions.

We shall - in addition to the statutory grounds for refusal - also be entitled to refuse subsequent performance if and as long as the customer fails to send us, at our request, the rejected goods or a sample thereof; the customer shall have no right of withdrawal for any such refusal. We may further refuse any subsequent performance if the goods concerned have been altered or modified without our consent unless the customer can prove that the defect was not caused by such alteration or modification.

The limitation period for any claims arising from defects shall be one year; in the case of goods which have been used in accordance with their intended purpose for a building and have caused its defectiveness, the limitation period shall be two years. The provisions of §§ 478, 479 BGB (German Civil Code) on recourse in the chain of suppliers shall not be affected thereby.

10. In the case of a pre-contractual, contractual or non-contractual breach of duty, including unsatisfactory delivery, tortious conduct and producer's liability, we shall only be liable for compensatory damages and reimbursement of expenses - subject to further contractual or statutory liability requirements - in the case of intent, gross negligence or slightly negligent breach of a material contractual duty (contractual duty the infringement of which jeopardises the fulfilment of the object of the contract). However - except in the case of intent - our liability shall be limited to the typical contractual damage that was foreseeable at the time the contract was entered into.

The purchaser shall not be permitted to make a claim for expenses incurred in vain.

Except for any breach of material duties, our liability for slight negligence shall be excluded, but in any case be limited to the amount of the purchase price.

Any claim asserted by the customer or a third party for payment of a contractual penalty shall be excluded.

With regard to damages caused by delay, we shall only be liable for slight negligence up to the amount of 5% of the purchase price agreed with us.

The exclusions and limitations of liability set forth above shall not apply in the event that a guarantee is given with respect to the quality of the object sold within the meaning of § 444 BGB (German Civil Code) if a defect is fraudulently concealed or in the event of injury to life, physical injury or injury to health, or strict liability under the German Product Liability Act.

Any and all claims for damages against us, for any legal reason whatsoever, shall become statute-barred at the latest after one year from delivery of the goods to the customer, in the case of tortious liability from the time of knowledge, or grossly negligent ignorance, of the circumstances giving rise to the claim and the person liable to pay damages. This provision shall not apply in the case of liability for intent and in the event that a guarantee is given for the quality of the object sold, in the case of fraudulent concealment of a defect or in the event of injury to life, physical injury or injury to health, or strict liability under the German Product Liability Act. Any shorter limitation periods shall take precedence.

11. We shall be entitled to process and store any customer data obtained with regard to or in connection with the business relationship in accordance with the German Federal Data Protection Act, irrespective of whether such data is provided by the purchaser himself or by any third parties.

12. Place of performance for delivery and payment is Menden/Sauerland. The court of competent jurisdiction for any and all disputes, including disputes with regard to bills of exchange and cheques, is the Local Court (Amtsgericht) of Menden or, at our option, the District Court (Landgericht) of Arnsberg, irrespective of the value of the object in dispute. We shall, however, also be entitled to take legal proceedings against the customer at the place of his registered office.

German law shall be exclusively applicable. The application of international purchase laws is hereby excluded.

Should, for any reason whatsoever, individual provisions of our terms and conditions of sale and delivery be invalid, the validity and binding nature of the other provisions shall not be affected thereby. The customer agrees, that the invalid provision shall be replaced by a valid provision that comes as close as possible to the economic meaning of the invalid provision.

13. The prices of products made of brass and copper are subject to certain fluctuations that are based on the relevant DEL listings. The prices of our brass articles are based on a DEL listing of € 150 for Ms 58, those of our copper products on a DEL value for electrolyte copper of € 200.

In case of any increase or reduction in these prices by more than € 15, a five per cent surcharge or deduction shall be made for each 15 points. The calculation of any such surcharges or deductions shall be based on the DEL listing of the date of our receipt of the order.

Valid from August 2004



Igniting ideas. Welding stud systems from OBO.

PT threaded bolt for tip ignition

Thread M2.5–M10

Coarse threaded bolt

Steel, copper-plated

Imperial threaded bolt with flange

Steel, copper-plated
Stainless steel
Aluminium

Imperial threaded bolt without flange

Steel, copper-plated
Stainless steel

Bolt with inched inner thread

Steel, copper-plated

UT pins for tip ignition

Thicknesses of 2.1 mm–6.0 mm

Pins

Steel, copper-plated
Stainless steel
Aluminium
Brass

IT internal threaded bolt for tip ignition

Thread M2.5–M6

Internal threaded bolt, metric

Steel, copper-plated
Stainless steel
Aluminium

ISO nails and grommets for tip ignition

Thicknesses of 2.1 mm–3.0 mm

ISO nails

Steel, copper-plated
Stainless steel
Aluminium

Grommet for ISO nails

Flat connector for tip ignition

Flat connector in earthing area

Steel, copper-plated
Stainless steel
Aluminium
Brass

Welding element for short cycle

Threaded bolt, metric

Steel, copper-plated
Stainless steel

Coarse threaded bolt

Steel, copper-plated

Pins

Steel, copper-plated

Internal threaded bolt, metric

Steel, copper-plated
Stainless steel

Lacquer groove pin

Steel, copper-plated
Lacquer groove pin for short cycle
Steel, copper-plated

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