



PEM[®] Self-clinching fasteners

Easy-to-install – superior performance

The center of excellence for high-performance fastening technology

KVT-Fastening is an expert for high-quality fastening applications and offers engineering solutions based on the wide product portfolio of the leading manufacturers in the market.



Mechanical engineering | Automotive | Electrical engineering | Energy | Precision engineering | Fluid power | Transportation | Off-shore and Marine | Medical equipment
Aviation and aerospace | Construction industry | Watch manufacturing industry

www.kvt-fastening.com



High-performance solutions from KVT-Fastening are found wherever absolutely safe and secure connections are essential. These small but extremely resilient components play key roles where it matters most – whether in the electronics and energy sector, the automotive and transportation industries, aviation and aerospace, engineering and construction, precision engineering, or medical equipment.

KVT-Fastening does not just supply standard products and individual components, but also provides close and active customer support in the search for ideal solutions, particularly when specific requirements must be fulfilled. This portfolio is complemented by a range of innovative tools and

machines as well as, if needed, the integration into automated serial production workflows.

Ever since 1927, KVT-Fastening has stood for experience, solution-driven know-how, unique expertise in development and consultancy as well as the ultimate in reliability. Since December 2012, KVT-Fastening is a member of the Bossard Group. Bossard is a leading provider of intelligent solutions for industrial fastening technology. The range includes global sales, technical consulting (engineering) and logistics of fastening technology components and bolts. Customers benefit from the extension of competencies in industrial fastening technology and from an optimally enhanced product or service portfolio.



Efficient fasteners even for very thin components

In countless areas of modern industry, very thin and very lightweight components such as metal plates, PC boards or plastic pieces are put to use. There is the need to permanently connect them together securely, all the while guaranteeing high values of torque-out and pullout. At the same time, manufacturers expect simple, low-cost assembly.

As far back as 1942, PEM® developed a self-clinching fastener that was able to meet these challenges. With increasing success and broad industry acceptance, the product line has been continually expanded, but even so the basic advantages have remained the same: PEM® self-clinching fasteners give high-performance, are easy to install and save time and expense.

PEM® self-clinching fasteners are placed into a mounting hole in the workpiece. There the self-clinching fastener displaces material in the hole area. This material flows by means of cold deforma-

tion into an undercut in the region near the fastener's shank serrations or a special head design than prevents the component from rotating – the self-clinching fastener becomes an integral part of the workpiece. In addition, PEM® self-clinching fasteners cause no damage or bulges on the rear side of the workpiece. PEM® self-clinching fasteners are put to use in areas ranging from electronics and the automobile industry, to the construction of machines and apparatus, through to aeronautics and space – and in each case they guarantee a durable, secure anchoring.

Advantages

- Extreme load capacity even in metal sheets as thin as 0.5 mm
- No special preparation of the mounting hole necessary
- No recutting of threads
- Also ideal for coated surfaces
- High positional accuracy

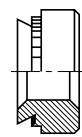


Contents

11 Self-clinching fasteners (installation, instructions, technical data)

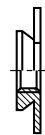
Self-clinching nuts

- | | | |
|--------|--------------------------------------|---|
| 12, 65 | S, SS, H (steel, zinc-plated) | High torque-out and pushout resistances. |
| 12, 65 | CLS, CLSS (stainless steel) | Available in various shank lengths. |
| 13, 65 | SP (hardened stainless steel) | For stainless steel and metallic materials. |



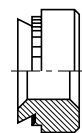
Self-clinching nuts, flush with both sides

- | | | |
|----|----------------------------|---|
| 14 | F (stainless steel) | Self-clinching nuts made of stainless steel especially for aluminum panels. After assembly, neither the top nor bottom protrudes. To be installed into round holes. Hexagonal head for torque-out resistance. |
|----|----------------------------|---|



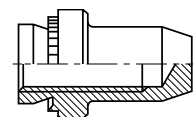
Miniature self-clinching nuts

- | | | |
|----|--|---|
| 15 | SMPS (stainless steel) | For thin sheets and installation close to edge. |
| 15 | SMPP (hardened stainless steel) | For stainless steel sheets. |



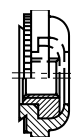
Self-clinching nuts with blind end

- | | | |
|----|-------------------------------|---|
| 16 | B (steel, zinc-plated) | Self-clinching nuts with blind end that prevent the penetration of dirt, spray etc. |
| 16 | BS (stainless steel) | |



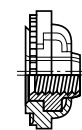
Floating self-clinching nuts

- | | | |
|----|--------------------------------|--|
| 17 | AS (steel, zinc-plated) | Inner nut compensates for mating hole misalignment with float of up to 0.8 mm. |
| 17 | AC (stainless steel) | |

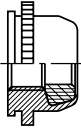
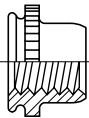
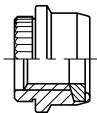
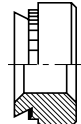
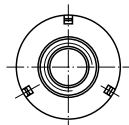
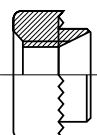
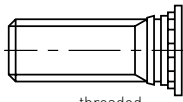
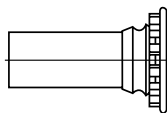
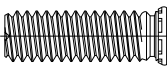


Floating self-clinching nuts with locking threads

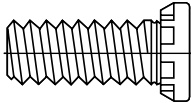
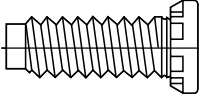
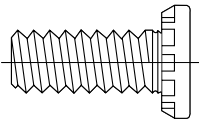
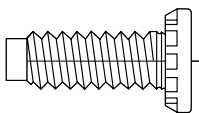
- | | | |
|----|---------------------------------|---|
| 18 | LAS (steel, zinc-plated) | Inner lock nut compensates for mating hole misalignment with float of up to 0.8 mm. |
| 18 | LAC (stainless steel) | |



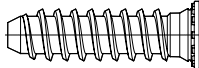
Technical performances, installation recommendations as well as unspecified tolerances regarding the dimensions of the parts have to be requested individual for each application before starting the series production. All dimensions are specified in mm.

Self-clinching nuts with locking threads			
19	PL (steel, zinc-plated)	Self-clinching nuts with embedded nylon ring as thread locking feature which remains intact after repeated disassembly.	
19	PLC (stainless steel)		
Miniature self-clinching nuts			
20	FE, FEO, FEX, FEOX (stainless steel)	Smallest design, optionally with locking feature.	
20	U, UL (stainless steel)		
Miniature self-clinching nuts with locking threads			
21	CFN (steel, zinc-plated)	Self-clinching nuts with thread locking feature. Smallest design for minimal distance to edge. Self-locking feature remains intact after repeated disassembly.	
Self-clinching nuts with locking threads			
22	SL (steel, zinc-plated)	Self-clinching nuts with notches in head area.	
Weld nuts			
23	WN (steel, copper-plated)	Round design with self-locating shank and three weld projections.	
23	WNS (stainless steel)		
Flare-in nuts			
24	RHB (steel, zinc-plated)	High-performance rivet bushes for thin panels. Insertion of screw possible from both sides.	
25	RMHB (steel, zinc-plated)	Design similar to RHB but in a miniature form for limited installation space.	
Self-clinching studs			
26, 29, 66	FH (steel, zinc-plated)	Flush head studs for thru-holes. No additional flanging or welding necessary.	
26, 29	FHS (stainless steel)		
26	FHA (aluminum)		
27	FH4 (hard. stainl. steel AISI 400)	For stainless steel and metallic materials.	
30	FHP (hard. stainl. steel A286)	Für metallic materials.	
31	TPS (stainless steel)		
31	MPP (hardened stainless steel)	Miniature self-clinching pins for metallic materials.	
Self-clinching studs for installation close to edge			
28	FHL (steel, zinc-plated)	Low-displacement head studs with reduced head diameter for use in close to edge applications (e.g. membrane keyboards).	
28	FHLS (stainless steel)		

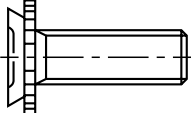
Self-clinching high-strength studs

32, 67	HFH (steel, zinc-plated)	Self-clinching threaded studs for extremely high torque-out and pullthrough resistance.	
32, 67	HFHS (stainless steel)		
33, 67	HFHD (steel, zinc-plated)	Self-clinching threaded studs similar to HFH and HFHS with a dog point lead-in option for automatic assembly. Applications e.g. in automobiles.	
33, 67	HFHDS (stainless steel)		
34, 68	HFE (steel, zinc-plated)	Design similar to HFH and HFHS types with enlarged head diameter for higher pull-through resistance.	
35, 68	HFED (steel, zinc-plated)	Design similar to HFHD and HFHDS types with enlarged head diameter for higher pull-through resistance.	

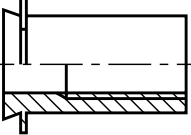
Coarse-thread self-clinching studs

36	Coarse-thread (steel, zinc-plated)	Flush head studs for thru-holes. Assembly of mating nut via press-on nuts or clips.	
----	--	---	---

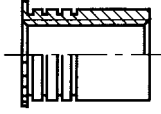
Concealed-head self-clinching studs

37	CHA, CFHA (aluminum)	For cylindrical blind milled holes. Especially for aluminum front panels when invisible assembly is requested.	
37	CHC, CFHC (stainless steel)		

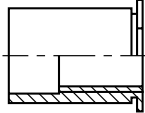
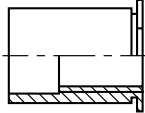
Concealed-head self-clinching standoffs

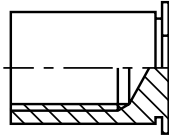
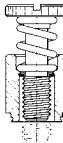
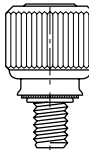
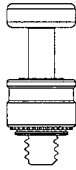
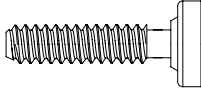
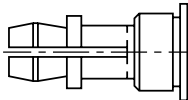
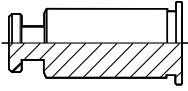
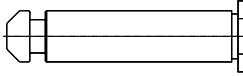
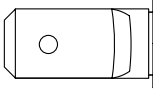

38	CSS, CSOS (stainless steel)	For cylindrical blind milled holes. Especially for aluminum front panels when invisible assembly is requested.	
----	------------------------------------	--	---

Self-clinching standoffs

39	DSOS (stainless steel)	Especially for D-sub connectors.	
----	-------------------------------	----------------------------------	---

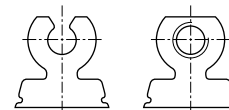
Self-clinching standoffs

40, 69	SO (steel, zinc-plated)	Threaded standoffs for installation with their heads flush with one surface of the mounting sheet. Can be squeezed into round holes, hexagonal head for torque-out resistance.	
40, 69	SOS (stainless steel)		
41	SO4 (hardened stainless steel)	For stainless steel and metallic materials.	
42	MSO4 (hardened stainless steel)	Miniature self-clinching standoffs for stainless steel and metallic materials.	

Blind self-clinching standoffs			
43, 69	BSO (steel, zinc-plated)	Blind threaded standoffs.	
43, 69	BSOS (stainless steel)		
44	BSO4 (hardened stainless steel)	For stainless steel and metallic materials.	
Self-clinching captive panel screws			
45	PFC2 (stainless steel)	Spring-loaded, captive screw.	
46	PF11 (steel, nickel-plated)	Spring-loaded, captive screw.	
47	PFHV (steel, nickel-plated)	Non spring-loaded, captive screw.	
Spinning clinch bolts			
48	SCBJ (steel, zinc-plated)	Captive one-piece self-clinching bolts.	
48	SCB (steel, zinc-plated)		
Self-clinching spacers			
49	SSA (aluminum)	Self-clinching spacers for metallic materials. For quick attachment or removal of covers, panels etc.	
49	SSC (stainless steel)		
49	SSS (steel, zinc-plated)		
50	SKC (stainless steel)	Self-clinching spacers for metallic materials. For quick attachment or removal of covers, panels, etc.	
Self-clinching conducting pins			
51	RADSOK® (steel, no finish or silver-plated)	Self-clinching conducting pins for metallic materials.	
Self-clinching flat contact pins			
52	Grounding post (steel, tin-plated)	Self-clinching grounding posts for metallic materials.	
Self-clinching cable tie mounts			
53	TD (sintered steel, zinc-plated)	Self-clinching cable tie mounts for metallic materials.	

Self-clinching right-angle fasteners

- 54 **RAA** (aluminum) Self-clinching right-angle fasteners
- 55 **RAS** (steel) for metallic materials.



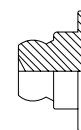
SpotFast® self-clinching fasteners

- 56 **SF** (steel, zinc-plated) For permanent flush joining of two metallic
- 56 **SFP** (hardened stainless steel) sheets.



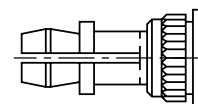
TackPin™

- 57 **TA** (aluminum) For permanent joining of two sheets.



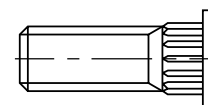
Self-clinching spacers

- 58 **KSSB** (brass) Self-clinching spacers for PC boards and other plastics.



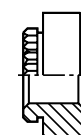
Broaching studs

- 59 **KFH** (phosphor bronze) Broaching studs made of phosphor bronze especially for PC boards and plastics. Tin-plated for good solderability.



Broaching nuts

- 60 **KF2** (steel, tin-plated) Broaching nuts for PC boards and other plastics. High torque-out resistance due to distinctive knurl.
- 60 **KFS2** (stainless steel)



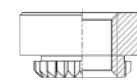
Broaching standoffs

- 61 **KFE** (steel, tin-plated) Broaching standoffs for PC boards and other plastics. Also available with thru-holes.
- 61 **KFSE** (stainless steel)



Surface mount nuts and standoffs

- 62 **KF2** (steel, tin-plated) Broaching nuts on tape and reel for PC boards assembly.
- 63 **SMTSO** (steel, tin-plated) Broaching standoffs on tape and reel for PC boards assembly.
- 64 **KFE** (steel, tin-plated)



KF2



SMTSO



KFE

65 – 69 Technical data

70 Test set-ups

71 – 72 PEMSERTER® installation machines

73 Supplier identification
Quality assurance

Self-clinching fasteners

Installation

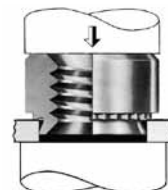
1. Create hole



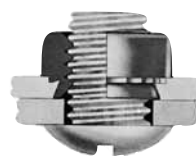
2. Insert PEM® fastener



3. Squeeze in



4. Screw on mating piece



Instructions

- Determine size of hole according to datasheets
- Do not deburr or countersink drilled or punched holes
- Fastener should be installed in purchase side of hole
- Squeeze in PEM® parts (do not use hammer blows!)
- Maintain minimum distances to edge (avoid deformation at sheet edge)
- When inserting PEM® parts made of steel or stainless steel in aluminum, squeeze in only after the surface has been anodized

Technical data

- Thread tolerance: nuts 6H, studs 6g / 4h.
Accuracy to gauge according to ISO 1502
- UNC / UNF threads upon request
- Corrosion resistance: steel parts are zinc-plated and passivated, layer thickness 5 – 6 µ, stainless steel = passivated
- Other platings upon request
- All dimensions are specified in mm

Self-clinching nuts

For metallic materials



Types S, SS, H

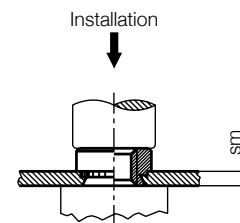
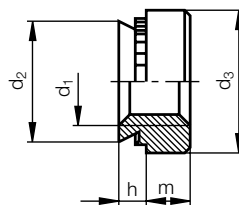
Types CLS, CLSS

Material

Types S, SS, H: Steel, hardened, zinc-plated, colorless passivated
Types CLS, CLSS: Stainless steel 18/8 (AISI 302/303)

Use

Types S, SS, H: For sheet hardness up to $HR_B 80$
Types CLS, CLSS: For sheet hardness up to $HR_B 70$
Type SP (next page) intended for use in sheets > $HR_B 80$



Performance data, see the technical data on page 65

Types for other hole dimensions upon request

3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d_1	Hole \varnothing in sheet $+0.08$ 0	d_2 max.	d_3 ± 0.25	m ± 0.25	h max.	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated								
S-M2-0	CLS-M2-0	M2	4.25	4.22	6.25	1.50	0.77	0.8	4.8
S-M2-1	CLS-M2-1						0.97	1.0	
S-M2-2	CLS-M2-2						1.38	1.4	
S-M2.5-0	CLS-M2.5-0	M2.5	4.25	4.22	6.35	1.50	0.77	0.8	4.8
S-M2.5-1	CLS-M2.5-1						0.97	1.0	
S-M2.5-2	CLS-M2.5-2						1.38	1.4	
S-M3-0	CLS-M3-0	M3	4.25	4.22	6.35	1.50	0.77	0.8	4.8
S-M3-1	CLS-M3-1						0.97	1.0	
S-M3-2	CLS-M3-2						1.38	1.4	
S-M4-0	CLS-M4-0	M4	5.40	5.38	7.87	2.00	0.77	0.8	6.9
S-M4-1	CLS-M4-1						0.97	1.0	
S-M4-2	CLS-M4-2						1.38	1.4	
SS-M5-0	CLSS-M5-0	M5	6.40	6.38	8.64	2.00	0.77	0.8	7.1
SS-M5-1	CLSS-M5-1						0.97	1.0	
SS-M5-2	CLSS-M5-2						1.38	1.4	
S-M6-0	-	M6	8.75	8.72	11.18	4.08	1.15	1.2	8.6
S-M6-1	CLS-M6-1						1.38	1.4	
S-M6-2	CLS-M6-2						2.21	2.3	
S-M8-1	CLS-M8-1	M8	10.50	10.47	12.70	5.47	1.38	1.4	9.7
S-M8-2	CLS-M8-2						2.21	2.3	
H-M10	-	M10	12.70	12.67	16.50	7.90	1.48	1.5	12.0
S-M12-1	-	M12	17.00	16.95	20.57	8.50	3.05	3.18	16.0

Self-clinching nuts

For stainless steel and metallic materials



Type SP

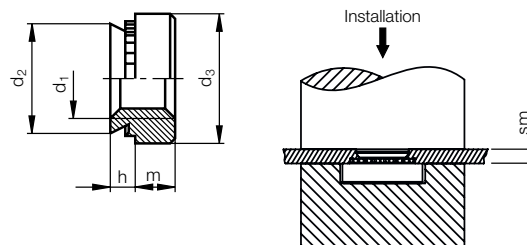
Material

Hardened stainless steel (A286)

Use

Special nuts recommended for use in materials - with sheet hardness up to HR_B 90

Performance data, see the technical data on page 65

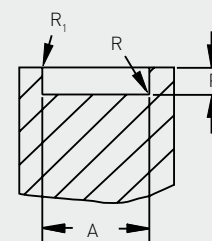


3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d_1	Hole \varnothing in sheet $+0.08$ 0	d_2 max.	d_3 ± 0.25	m ± 0.25	h max.	sm min.	Min. distance hole to edge
SP-M2.5-0	M2.5	4.25	4.20	6.35	1.50	0.77	0.8	4.8
SP-M2.5-1						0.97	1.0	
SP-M2.5-2						1.38	1.4	
SP-M3-0	M3	4.25	4.20	6.35	1.50	0.77	0.8	4.8
SP-M3-1						0.97	1.0	
SP-M3-2						1.38	1.4	
SP-M4-0	M4	5.40	5.38	7.87	2.00	0.77	0.8	6.9
SP-M4-1						0.97	1.0	
SP-M4-2						1.38	1.4	
SP-M5-0	M5	6.40	6.33	8.64	2.00	0.77	0.8	7.1
SP-M5-1						0.97	1.0	
SP-M5-2						1.38	1.4	
SP-M6-1	M6	8.75	8.73	11.18	4.08	1.38	1.4	8.6
SP-M8-1	M8	10.50	10.47	12.70	5.47	1.38	1.4	9.7

Recommended anvil dimensions

PEMSERTER® anvil order description	Thread	A ± 0.05	P -0.03	R max.	R1 $+0.13$
8012821	M3	6.48	1.63	0.25	0.13
8012823	M4	8.05	2.08	0.25	0.13
8012824	M5	8.84	2.08	0.25	0.13
8012825	M6	11.25	4.14	0.25	0.13
8015360	M8	12.83	5.41	0.25	0.13



Self-clinching nuts

Flush with both sides | for metallic materials



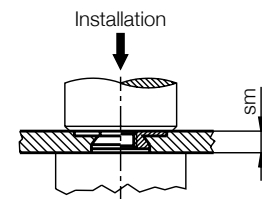
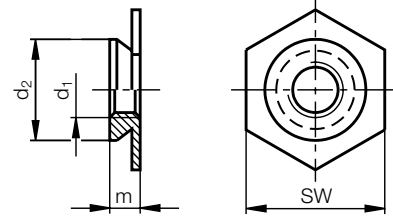
Type F

Material


Stainless steel 18/8 (AISI 300), passivated

Use

- Especially for thin aluminum sheets (up to sheet hardness $HR_B 70$)
- After installation, neither the top nor bottom protrude



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d_1	Hole \varnothing in sheet +0.08 0	d_2 max.	sw	m max.	sm min. 	Min. distance hole to edge
F-M2-1	M2	4.40	4.35	4.8	1.53	1.5	6.0
F-M2-2					2.30	2.3	
F-M2.5-1	M2.5	4.40	4.35	4.8	1.53	1.5	6.0
F-M2.5-2					2.30	2.3	
F-M3-1	M3	4.40	4.35	4.8	1.53	1.5	6.0
F-M3-2					2.30	2.3	
F-M4-1	M4	7.40	7.35	7.9	1.53	1.5	7.2
F-M4-2					2.30	2.3	
F-M5-1	M5	7.90	7.88	8.7	1.53	1.5	8.0
F-M5-2					2.30	2.3	
F-M6-3	M6	8.75	8.72	9.5	3.05	3.2	8.8
F-M6-4					3.84	4.0	
F-M6-5					4.63	4.7	

Miniatur self-clinching nuts

For metallic materials



Types SMPS, SMPP

Design

Type SMPS: For metal sheets as thin as 0.64 mm and installation close to edge

Type SMPP: For stainless steel sheets

Material

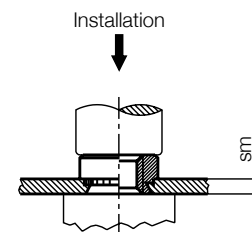
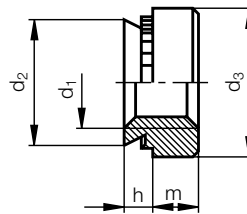
Type SMPS: Stainless steel 18 / 8 (AISI 300), passivated

Type SMPP: Hardened stainless steel (A286)

Use

Type SMPS: For sheet hardness up to HR

Type SMPP: For sheet hardness up to HR_B 90



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d ₁	Hole Ø in sheet +0.08 0	d ₂ max.	d ₃ ±0.25	m ±0.25	h max.	sm min.	Min. distance hole to edge
Stainless steel, passivated	Hardened stainless steel								
SMPS-M2.5	SMPP-M2.5	M2.5	3.80	3.79	5.6	1.4	0.61	0.64	3.7
SMPS-M3	SMPP-M3	M3	4.25	4.22	5.6	1.4	0.61	0.64	4.3

Self-clinching nuts

With blind end | for metallic materials



Types B, BS

Material

Type B: Steel, hardened, zinc-plated, colorless passivated

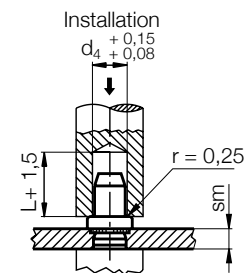
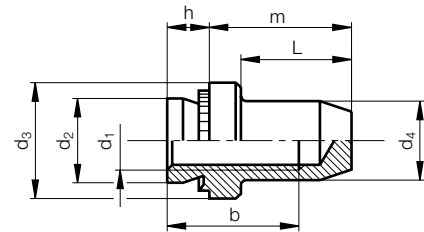
Type BS: Stainless steel 18/8 (AISI 300), passivated

Use

Blind thread end protects against foreign matter etc.

Type B: For sheet hardness up to HR_B 80

Type BS: For sheet hardness up to HR_B 70



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d_1	Hole \varnothing in sheet $+0.08$ 0	d_2 max.	d_3 ± 0.25	d_4 max.	b min.	L max.	m ± 0.25	h max.	sm min.	Min. distance hole to edge
Steel zinc-plated, colorless passivated	Stainless steel, passivated											
B-M3-1	BS-M3-1	M3	4.25	4.20	6.35	3.84	5.3	8.5	9.6	0.97	1.0	4.8
B-M3-2	BS-M3-2									1.38	1.4	
B-M4-1	BS-M4-1	M4	5.40	5.38	7.95	5.20	7.1	9.8	11.2	0.97	1.0	6.9
B-M4-2	BS-M4-2									1.38	1.4	
B-M5-1	BS-M5-1	M5	6.40	6.33	8.75	6.02	7.1	9.8	11.2	0.97	1.0	7.1
B-M5-2	BS-M5-2									1.38	1.4	
B-M6-1	BS-M6-1	M6	8.75	8.73	11.10	7.80	7.8	12.7	14.3	1.38	1.4	8.6
B-M6-2	BS-M6-2									2.21	2.3	

Floating self-clinching nuts

For metallic materials



Types AS, AC

Design

Floating inner nut compensates for installation tolerances with float up to 0.8 mm

Material

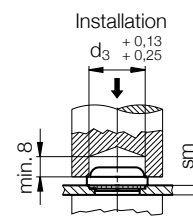
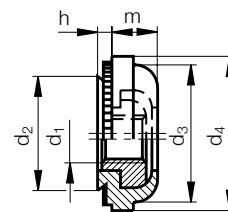
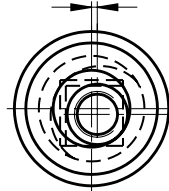
Type AS: Carbon steel, case hardened, zinc-plated, colorless passivated

Type AC: Stainless steel 18/8 (AISI 300), passivated

Use

Both types for sheet hardness up to $HR_B 70$

Float 0,4 mm / total 0,8 mm



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d_1	Hole \varnothing in sheet $+0.08$ 0	d_2 max.	d_3 max.	d_4 ± 0.4	m max.	h max.	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated									
AS-M3-1	AC-M3-1	M3	7.40	7.35	7.37	9.14	3.31	0.97	1.0	7.62
AS-M3-2	AC-M3-2							1.38	1.4	
AS-M4-1	AC-M4-1	M4	9.40	9.38	9.28	11.18	3.31	0.97	1.0	8.64
AS-M4-2	AC-M4-2							1.38	1.4	
AS-M5-1	AC-M5-1	M5	10.30	10.29	10.29	11.94	4.32	0.97	1.0	9.14
AS-M5-2	AC-M5-2							1.38	1.4	
AS-M6-2	AC-M6-2	M6	13.10	13.06	12.96	15.24	5.34	1.38	1.4	10.67

Floating self-clinching nuts

With locking threads | for metallic materials



Types LAS, LAC

Design

- Floating inner lock nut compensates for installation tolerances with float up to 0.8 mm
- Locking feature due to elliptical form of the inner nut in the upper thread area

Material

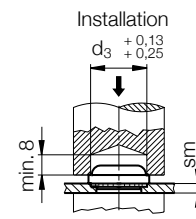
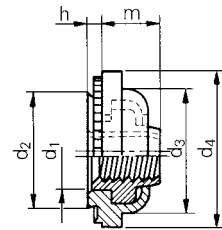
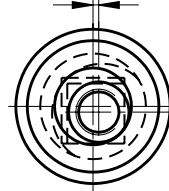
Type LAS: Housing zinc-plated steel, colorless passivated nut of stainless steel 18 / 8 (AISI 300), passivated

Type LAC: Housing and nut of stainless steel 18/8 (AISI 300), passivated

Use

Both types for sheet hardness up to $HR_B 70$

Float 0,4 mm / total 0,8 mm



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d_1	Hole \varnothing in sheet $+0.08$ 0	d_2 max.	d_3 max.	d_4 ± 0.4	m max.	h max.	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated									
LAS-M3-1	LAC-M3-1	M3	7.40	7.35	7.4	9.14	4.83	0.97	1.0	7.62
LAS-M3-2	LAC-M3-2							1.38	1.4	
LAS-M4-1	LAC-M4-1	M4	9.40	9.38	9.3	11.18	5.34	0.97	1.0	8.64
LAS-M4-2	LAC-M4-2							1.38	1.4	
LAS-M5-1	LAC-M5-1	M5	10.30	10.29	10.3	11.94	6.86	0.97	1.0	9.14
LAS-M5-2	LAC-M5-2							1.38	1.4	
LAS-M6-2	LAC-M6-2	M6	13.10	13.06	13.0	15.24	7.88	1.38	1.4	10.67

Self-clinching nuts

With locking threads | for metallic materials



Types PL, PLC

Design

Locking feature through embedded nylon ring, withstands temperatures up to + 120 °C

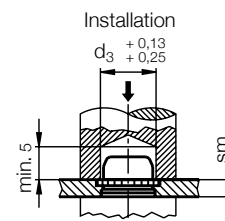
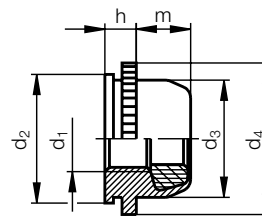
Material

Type PL: Steel, hardened, zinc-plated, colorless passivated

Type PLC: Stainless steel 18/8 (AISI 300), passivated

Use

Both types for sheet hardness up to HR_B 70



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d ₁	Hole Ø in sheet +0.08 0	d ₂ max.	d ₃ max.	d ₄ max.	m max.	h max.	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated									
PL-M3	PLC-M3	M3	6.00	5.98	5.52	7.01	3.56	1.52	1.5 – 1.8	4.32
PL-M4	PLC-M4	M4	7.50	7.48	7.01	8.54	4.20	1.52	1.5 – 1.8	5.59
PL-M5	PLC-M5	M5	8.00	7.98	7.52	9.00	4.45	1.52	1.5 – 1.8	6.35

Miniatur self-clinching nuts

For metallic materials



Types FE, FE0, FEX, FEOX, U, UL

Design

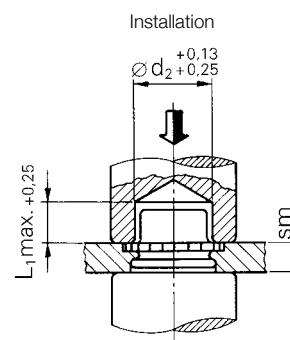
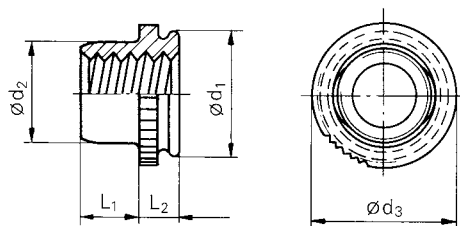
Space-saving design due to minimal outside dimensions

Material

Stainless steel 18/8 (AISI 303), passivated, dry-film lubricant

Use

For sheet hardness up to $HR_B 70$



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread	L ₂ max.	sm min.	d ₁ 0 -0.13	Hole Ø in sheet +0.08 0	d ₂ max.	d ₃ ±0.13	L ₁ +0.4 0	Min. distance hole to edge
Stainless steel, passivated ¹⁾	Stainless steel, passivated ²⁾									
U-M2-1 ³⁾	UL-M2-1	M2	0.79	0.8 – 0.9	3.60	3.60	2.50	4.07	1.65	2.8
FEOX-M3 ³⁾	FE0-M3	M3	1.02	1.0 – 1.1	4.37	4.40	3.96	4.88	1.90	3.6
FEX-M3 ³⁾	FE-M3		1.53	1.5 – 1.8						
FEOX-M4 ³⁾	FE0-M4	M4	1.02	1.0 – 1.1	7.37	7.40	5.23	8.17	2.55	5.2
FEX-M4 ³⁾	FE-M4		1.53	1.5 – 1.8						
FEOX-M5 ³⁾	FE0-M5	M5	1.02	1.0 – 1.1	7.37	7.40	6.48	8.17	3.05	5.2
FEX-M5 ³⁾	FE-M5		1.53	1.5 – 1.8						
FEX-M6 ³⁾	FE-M6	M6	1.53	1.5 – 1.8	8.72	8.75	7.72	9.74	3.30	7.1

¹⁾ Non-locking design ²⁾ Locking feature via elliptic deformation in upper thread area (MIL-N-25027)

³⁾ For reasons during production, on the threaded end a small clamping effect can arise (no locking effect)

Miniature self-clinching nuts

With locking threads | for metallic materials



Type CFN

Design

Locking feature due to embedded nylon ring

Material

Steel, zinc-plated, colorless passivated

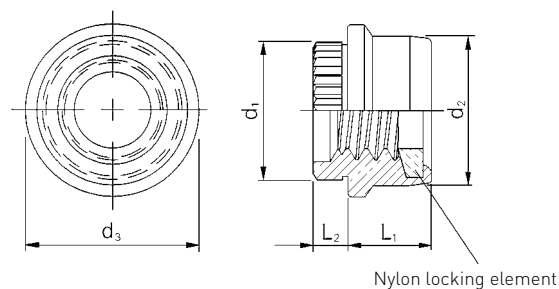
Use

For sheet hardness up to HR_B 60

Farbe des Nylonrings

For unified / imperial threads: blue

For metric threads: black

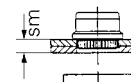


Nylon locking element

Installation



Punch



CFN

Countersink

3-D Data: <http://kvt.partcommunity.com>

unified / imperial

Order description	Size	Thread	Shank code	sm min.	Hole Ø in sheet	L ₂	d ₁	d ₂	d ₃	L ₁ max.	Min. distance hole to edge
CFN-440-1	0.112 - 40 (#4 - 40)	440	1	1.10	+0.08 0	±0.08	±0.05	±0.10	+0.03 -0.10	2.65	2.92

metric

Order description	Size	Thread	Shank code	sm min.	Hole Ø in sheet	L ₂	d ₁	d ₂	d ₃	L ₁ max.	Min. distance hole to edge
CFN-M3-1	M3x0.5	M3	1	1.10	+0.08 0	±0.08	±0.05	±0.10	+0.03 -0.10	2.65	2.92

Self-clinching nuts

With locking threads | for metallic materials



Type SL

Design

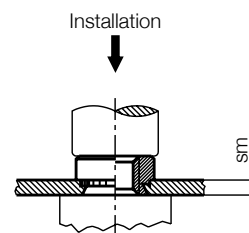
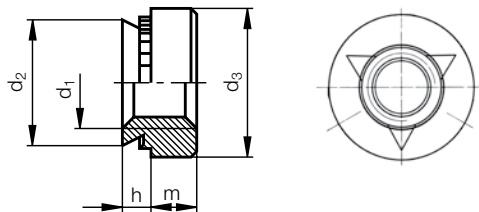
Locking feature due to triple indentations in head area

Material

Steel, zinc-plated, colorless passivated

Use

For sheet hardness up to HR_B 80



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d_1	Hole \varnothing in sheet $+0.08$ 0	d_2 max.	d_3 ± 0.25	m ± 0.25	h max.	sm min.	Min. distance hole to edge
SL-M3-1	M3	4.25	4.22	6.35	1.50	0.98	1.0	4.8
SL-M3-2						1.38	1.4	
SL-M4-1	M4	5.40	5.38	7.95	2.00	0.98	1.0	6.9
SL-M4-2						1.38	1.4	
SL-M5-1	M5	6.40	6.38	8.75	2.00	0.98	1.0	7.1
SL-M5-2						1.38	1.4	
SL-M6-1	M6	8.75	8.73	11.10	4.08	1.38	1.4	8.6
SL-M6-2						2.21	2.3	

Weld nuts

For metallic materials



Types WN, WNS

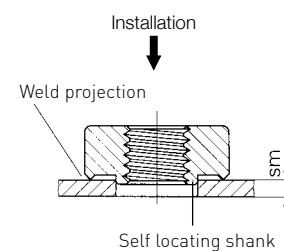
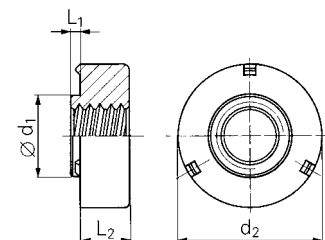
Design

- Three weld projections guarantee good electrical contact and prevent a burn-out in thin sheets
- The self-locating shank eases the insertion of the nut and protects threads from weld spatter
- Round design is especially well suited for automatic feeding

Material

Type WN: Steel, copper-plated

Type WNS: Stainless steel (AISI 302), passivated



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread	L ₁ max.	sm min.	d ₁ max.	Hole Ø in sheet +0.1 0	d ₂ 0 -0.25	L ₂ ±0.1	Min. distance hole to edge
Steel, copper-plated	Stainless steel, passivated								
WN-M3	WNS-M3	M3	0.77	0.77	4.36	4.40	7.82	1.40	3.90
WN-M4	WNS-M4	M4	0.77	0.77	5.50	5.60	9.42	2.58	4.70
WN-M5	WNS-M5	M5	0.77	0.77	6.32	6.40	11.17	3.78	5.60
WN-M6	WNS-M6	M6	1.22	1.24	8.01	8.10	13.25	4.56	6.60
WN-M8*	WNS-M8*	M8	1.27	1.30	9.45	9.50	14.60	6.60	7.90
WN-M10*	WNS-M10*	M10	1.27	1.30	11.45	11.50	16.50	8.10	8.85

* Available upon request

Flare-in nuts



Type RHB

Design

High-performance rivet bushes for thin sheets and insertion of screw from both sides

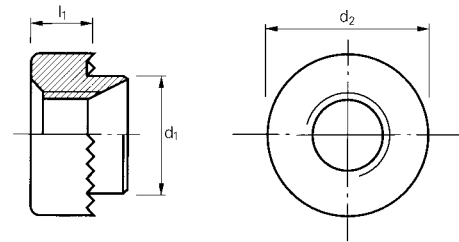
Material

Steel, zinc-plated, colorless passivated

Montage

Punch or drill hole, insert flare-in nut and rivet

- By hand
- With conventional riveting processes
- With PEMSERTER® 3000, PEMSERTER® 2000 and PEMSERTER® 4 high-performance installation systems



Further thread sizes and shank lengths upon request

3-D Daten: <http://kvt.partcommunity.com>

Order description	Thread	Sheet thickness	Hole \varnothing +0.1 0	d_2 ± 0.25	l_1 ± 0.25	d_1 0 -0.15
RHB-M3-22	M3	0.8	5.6	8.0	3.18	5.5
RHB-M3-20	M3	1.0	5.6	8.0	3.18	5.5
RHB-M3-16	M3	1.5	5.6	8.0	3.18	5.5
RHB-M4-22	M4	0.8	6.8	9.5	3.18	6.7
RHB-M4-20	M4	1.0	6.8	9.5	3.18	6.7
RHB-M4-16	M4	1.5	6.8	9.5	3.18	6.7
RHB-M5-22	M5	0.8	8.0	11.1	3.81	7.9
RHB-M5-20	M5	1.0	8.0	11.1	3.81	7.9
RHB-M5-16	M5	1.5	8.0	11.1	3.81	7.9

Flare-in nuts



Type RMHB

Design

High-performance rivet bushes for thin sheets and insertion of screw from both sides, in a miniature design where insertion space is limited

Material

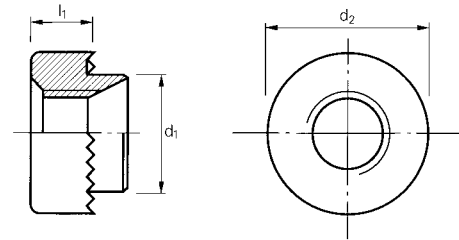
Steel, zinc-plated, colorless passivated

Montage

Punch or drill hole, insert flare-in nut and rivet

- By hand
- With conventional riveting processes
- With PEMSERTER® 3000, PEMSERTER® 2000 and PEMSERTER® 4 high-performance installation systems

Further thread sizes and shank lengths upon request



3-D Daten: <http://kvt.partcommunity.com>

Order description	Thread	Sheet thickness	Hole Ø +0.1 0	d ₂ ±0.25	l ₁ ±0.25	d ₁ 0 -0.15
RMHB-M3-22	M3	0.8	4.2	5.6	2.8	4.2
RMHB-M3-20	M3	1.0	4.2	5.6	2.8	4.2
RMHB-M3-16	M3	1.5	4.2	5.6	2.8	4.2
RMHB-M4-22	M4	0.8	5.4	7.0	3.2	5.4
RMHB-M4-20	M4	1.0	5.4	7.0	3.2	5.4
RMHB-M4-16	M4	1.5	5.4	7.0	3.2	5.4
RMHB-M5-22	M5	0.8	6.4	8.5	3.8	6.4
RMHB-M5-20	M5	1.0	6.4	8.5	3.8	6.4
RMHB-M5-16	M5	1.5	6.4	8.5	3.8	6.4

Self-clinching studs

For metallic materials



Types FH, FHS, FHA

Material

Type FH: Steel, hardened, zinc-plated, colorless passivated

Type FHS: Stainless steel 18/8 (AISI 300), passivated

Type FHA: Aluminum

Use

Type FH: For sheet hardness up to $HR_B 80$

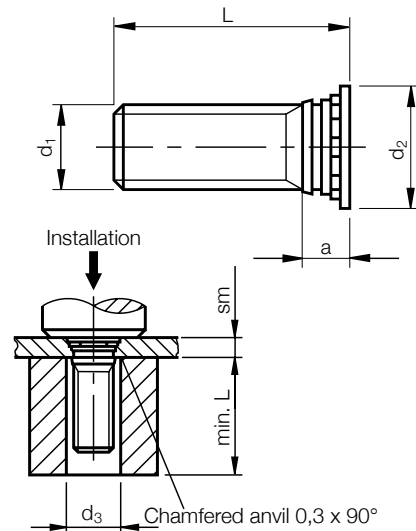
Type FHS: For sheet hardness up to $HR_B 70$

Type FHA: For sheet hardness up to $HR_B 50$

Note

For thin sheets > 0.5 mm, Types TFH (M3 to M5) available upon request

Performance data, see the technical data on page 66



3-D Data: <http://kvt.partcommunity.com>

Order description			Thread d_1	Hole \varnothing in sheet $+0.08$ 0	d_2 ± 0.4	d_3	a max.	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated	Aluminum							
FH-M2.5-L	FHS-M2.5-L	FHA-M2.5-L	M2.5	2.50	4.1	2.6	1.95	1.0	5.4
FH-M3-L	FHS-M3-L	FHA-M3-L	M3	3.00	4.6	3.1	2.10	1.0	5.6
FH-M4-L	FHS-M4-L	FHA-M4-L	M4	4.00	5.9	4.1	2.40	1.0	7.2
FH-M5-L	FHS-M5-L	FHA-M5-L	M5	5.00	6.5	5.1	2.70	1.0	7.2
FH-M6-L	FHS-M6-L	FHA-M6-L	M6	6.00	8.2	6.1	3.00	1.6	7.9
FH-M8-L	FHS-M8-L	-	M8	8.00	9.6	8.1	3.70	2.4	9.6

Order description			Length code "L" (± 0.4)												
Steel, zinc-plated, colorless passivated	Stainless steel, passivated	Aluminum													
FH-M2.5-L	FHS-M2.5-L	FHA-M2.5-L	6	8	10	12	15	18	-	-	-	-	-	-	-
FH-M3-L	FHS-M3-L	FHA-M3-L	6	8	10	12	15	18	20	22	25	28	30	-	-
FH-M4-L	FHS-M4-L	FHA-M4-L	6	8	10	12	15	18	20	22	25	28	30	35	38
FH-M5-L	FHS-M5-L	FHA-M5-L	-	8	10	12	15	18	20	22	25	28	30	35	38
FH-M6-L	FHS-M6-L	FHA-M6-L	-	-	10	12	15	18	20	22	25	28	30	35	38
FH-M8-L	FHS-M8-L	-	-	-	-	12	15	18	20	22	25	28	30	35	38

Self-clinching studs

For stainless steel and metallic materials



Types FH4, FHP

Material

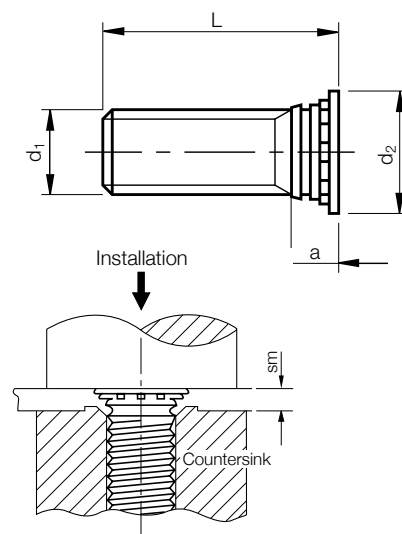
Type FH4: Hardened stainless steel AISI 400, passivated

Type FHP: Hardened stainless steel A286

Use

Type FH4: Special studs for use in materials with sheet hardness up to HR_B 92

Type FHP: Special studs for use in materials with sheet hardness up to HR_B 92



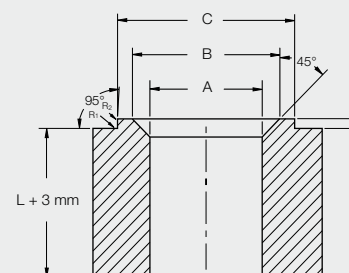
3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d ₁	Hole Ø in sheet +0.08 0	d ₂ ±0.4	a max.	sm min.	Min. distance hole to edge
Hardened stainless steel AISI 400	Hardened stainless steel A286						
FH4-M3-L	FHP-M3-L	M3	3.00	4.6	2.1	1.0	5.6
FH4-M4-L	FHP-M4-L	M4	4.00	5.9	2.4	1.0	7.2
FH4-M5-L	FHP-M5-L	M5	5.00	6.5	2.7	1.0	7.2
FH4-M6-L	FHP-M6-L	M6	6.00	8.2	3.0	1.6	7.9

Order description		Length code "L" (±0.4)										
Hardened stainless steel AISI 400	Hardened stainless steel A286											
FH4-M3-L	FHP-M3-L	6	8	10	12	15	18	20	25	-	-	-
FH4-M4-L	FHP-M4-L	6	8	10	12	15	18	20	25	30	35	-
FH4-M5-L	FHP-M5-L	-	8	10	12	15	18	20	25	30	35	-
FH4-M6-L	FHP-M6-L	-	-	-	12	15	-	20	25	-	-	-

Recommended anvil dimensions

Thread	A +0.08 0	B ±0.05	C ±0.05	P ±0.025	R ₁ max.	R ₂ max.
M3	3.05	3.81	4.57	0.25	0.08	0.13
M4	4.04	4.95	5.82	0.25	0.08	0.13
M5	5.08	6.15	7.16	0.25	0.08	0.13
M6	6.05	7.87	8.79	0.51	0.08	0.13



Self-clinching studs

For metallic materials



Types FHL, FHLS

Design

For installation close to edge

Material

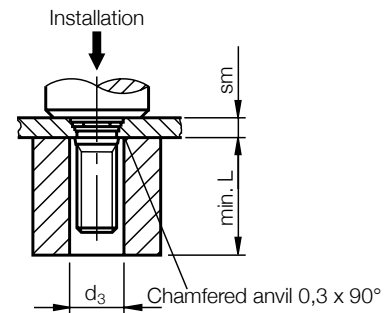
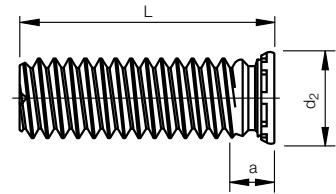
Type FHL: Steel, hardened, zinc-plated, colorless passivated

Type FHLS: Stainless steel 18/8 (AISI 300), passivated

Use

Type FHL: For sheet hardness up to HR_B 80

Type FHLS: For sheet hardness up to HR_B 70



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d_1	Hole \varnothing in sheet +0.08 0	d_2 ± 0.4	d_3	a max.	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated							
FHL-M2.5-L	FHLS-M2.5-L	M2.5	2.50	3.15	2.6	2.1	1.0	2.8
FHL-M3-L	FHLS-M3-L	M3	3.00	3.65	3.1	2.1	1.0	3.3
FHL-M4-L	FHLS-M4-L	M4	4.00	4.65	4.1	2.4	1.0	4.3
FHL-M5-L	FHLS-M5-L	M5	5.00	5.90	5.1	2.7	1.0	5.6

Order description		Length code "L" (± 0.4)									
Steel, zinc-plated, colorless passivated	Stainless steel, passivated										
FHL-M2.5-L	FHLS-M2.5-L	6	8	10	12	15	18	-	-	-	-
FHL-M3-L	FHLS-M3-L	6	8	10	12	15	18	20	25	-	-
FHL-M4-L	FHLS-M4-L	6	8	10	12	15	18	20	25	30	35
FHL-M5-L	FHLS-M5-L	-	8	10	12	15	18	20	25	30	35

Self-clinching pins

For metallic materials

Types FH, FHS

Material

Type FH: Steel, hardened, zinc-plated, colorless passivated

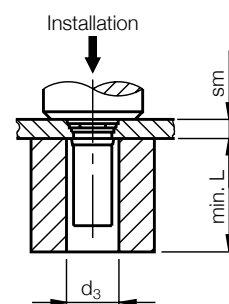
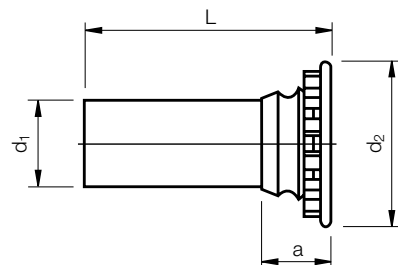
Type FHS: Stainless steel 18/8 (AISI 300), passivated

Use

Type FH: For sheet hardness up to HR_B 80

Type FHS: For sheet hardness up to HR_B 70

For sheet hardness up to HR_B 50, aluminum studs upon request



3-D Data: <http://kvt.partcommunity.com>

Order description		Stud d ₁ ±0.05	Hole Ø in sheet +0.08 0	d ₂ ±0.4	d ₃	a max.	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated							
FH-3MM-L	FHS-3MM-L	3	3.50	5.3	3.6	2.30	1.0	6.4
FH-4MM-L	FHS-4MM-L	4	4.10	6.0	4.2	2.30	1.0	7.1
FH-5MM-L	FHS-5MM-L	5	5.50	7.5	5.6	2.55	1.0	7.6
FH-6MM-L	-	6	6.50	8.6	6.6	3.40	1.6	7.9

Order description		Length code "L" [±0.4]									
Steel, zinc-plated, colorless passivated	Stainless steel, passivated										
FH-3MM-L	FHS-3MM-L	6	8	10	12	15	18	20	25	30	-
FH-4MM-L	FHS-4MM-L	-	8	10	12	15	18	20	25	30	35
FH-5MM-L	FHS-5MM-L	-	8	10	12	15	18	20	25	30	35
FH-6MM-L	-	Upon request									

Self-clinching pilot pins

For metallic materials



Type TPS

Design

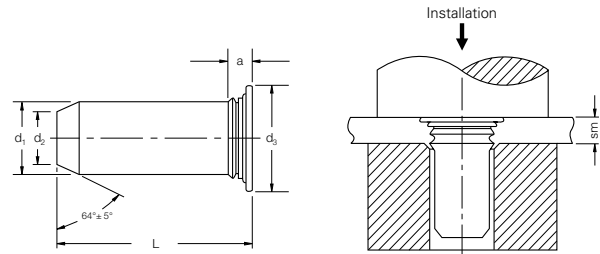
Self-clinching pilot pins with chamfered end

Material

Stainless steel 18/8 (AISI 300), passivated

Use

For sheet hardness up to HR_B 70



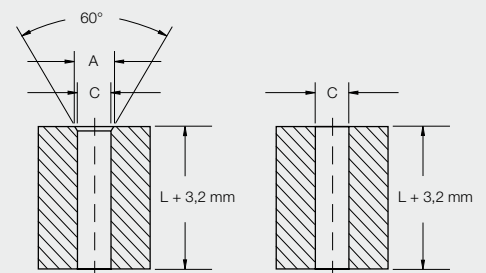
3-D Data: <http://kvt.partcommunity.com>

Order description	Stud d_1 ± 0.05	Hole \varnothing in sheet $+0.08$ 0	d_2 ± 0.15	d_3 ± 0.4	a max.	sm min.	Min. distance hole to edge
TPS-3MM-L	3	3.50	2.11	5.20	2.29	1.0	6.4
TPS-4MM-L	4	4.50	2.82	6.12	2.29	1.0	7.1
TPS-5MM-L	5	5.50	3.53	7.19	2.29	1.0	7.6
TPS-6MM-L	6	6.50	4.24	8.13	2.29	1.0	7.9

Order description	Length code "L" (± 0.4)				
	8	10	12	16	-
TPS-3MM-L	8	10	12	16	-
TPS-4MM-L	8	10	12	16	-
TPS-5MM-L	-	10	12	16	20
TPS-6MM-L	-	-	12	16	20

Recommended anvil dimensions (metric)

d_1	sm	Anvil dimensions	
		A ± 0.05	C ± 0.05
3	1 - 1.7	3.88	3.13
	>1.7	*	
4	1 - 1.7	4.88	4.13
	>1.7	*	
5	1 - 1.8	5.89	5.13
	>1.8	*	
6	1 - 1.9	6.89	6.13
	>1.9	*	



*Without countersink

Miniature self-clinching pilot pins

For metallic materials



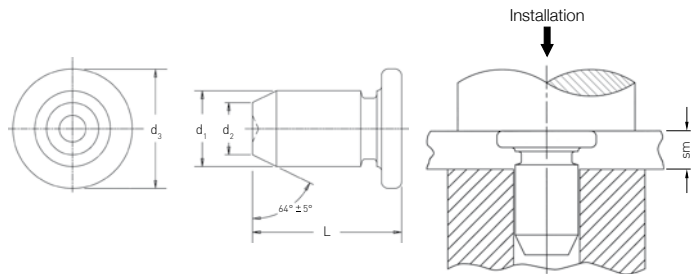
Type MPP

Material

Hardened stainless steel (A286)

Use

Special pins for use in sheet hardness up to HR_B 92



3-D Data: <http://kvt.partcommunity.com>

Order description	Stud d_1 ± 0.038	Hole \varnothing in sheet $+0.025$ 0	d_2 ± 0.1	d_3 ± 0.25	sm min.	Min. distance hole to edge
MPP-1MM-L	1	1.05	0.70	1.60	0.5	2.05
MPP-1.5MM-L	1.5	1.55	1.03	2.24	0.5	2.60
MPP-2MM-L	2	2.05	1.36	3.02	0.5	4.40

Order description	Length code "L" (± 0.15)						
MPP-1MM-L	2	3	4	5	-	-	-
MPP-1.5MM-L	-	3	4	5	6	8	-
MPP-2MM-L	-	-	4	5	6	8	10

Self-clinching high-strength studs

For metallic materials



Types HFH, HFHS

Design

Self-clinching threaded studs for extremely high torque-out and pull-through resistance

Material

Type HFH: Steel, hardened, zinc-plated, colorless passivated (other surface treatments upon request)

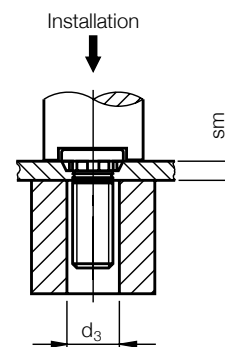
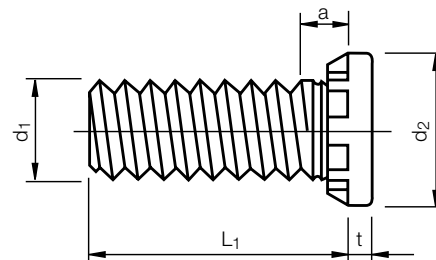
Type HFHS: Stainless steel 18/8 (AISI 300), passivated

Use

Type HFH: For sheet hardness up to $HR_B 85$

Type HFHS: For sheet hardness up to $HR_B 70$

Performance data, see the technical data on page 67



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d_1	Hole \varnothing in sheet $+0.13$ 0	d_2 ± 0.25	d_3 max.	a max.	t max.	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated								
HFH-M5-L	HFHS-M5-L	M5	5.00	7.8	5.1	2.7	1.14	1.3	10.7
HFH-M6-L	HFHS-M6-L	M6	6.00	9.4	6.1	2.8	1.27	1.5	11.5
HFH-M8-L	HFHS-M8-L	M8	8.00	12.5	8.1	3.5	1.78	2.0	12.7
HFH-M10-L	HFHS-M10-L	M10	10.00	15.7	10.1	4.1	2.29	2.3	13.7

Order description		Length code "L," $\{\pm 0.4\}$							
Steel, zinc-plated, colorless passivated	Stainless steel, passivated								
HFH-M5-L ₁	HFHS-M5-L ₁	15	20	25	30	35	40	50	
HFH-M6-L ₁	HFHS-M6-L ₁	15	20	25	30	35	40	50	
HFH-M8-L ₁	HFHS-M8-L ₁	15	20	25	30	35	40	50	
HFH-M10-L ₁	HFHS-M10-L ₁	15	20	25	30	35	40	50	

Self-clinching high-strength studs

For metallic materials



Types HFHD, HFHDS

Design

Self-clinching threaded studs similar to HFH and HFHS with a dog point lead-in option for automatic installation

Material

Type HFHD: Steel, hardened, zinc-plated, colorless passivated, (other surface treatments upon request)

Type HFHDS: Stainless steel 18/8 (AISI 300), passivated

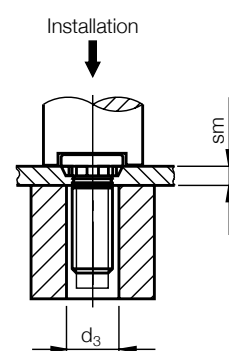
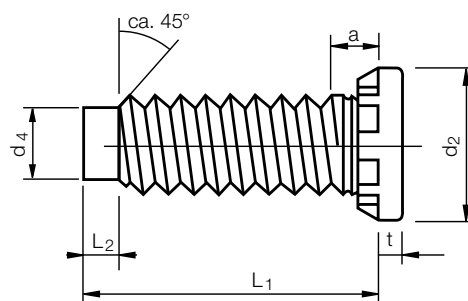
Use

Type HFHD: For sheet hardness up to HR_B 85

Type HFHDS: For sheet hardness up to HR_B 70

Note

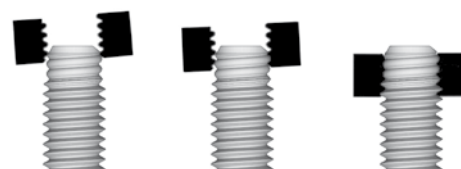
L₁: For the overall length, take into account the length of the standard designs for HFH and HFHS. This is also valid for the dimensions d₂, sm, a and t on page 32.



Performance data, see the technical data on page 67

Alternate dog point – MAThread® upon request

HFHD studs can also be manufactured with a MAThread® dog point upon request. Anti cross-threading design allows the threads to self-align and the use of shorter lengths. The thread of the assembly nut already grips when it comes into contact with the MAThread®. Saves weight.



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d ₁	d ₄ ±0.13	d ₃	L ₂ ±0.25
Steel, zinc-plated, colorless passivated	Stainless steel, passivated				
HFHD-M5-L	HFHDS-M5-L	M5	3.66	5.1	1.78
HFHD-M6-L	HFHDS-M6-L	M6	4.37	6.1	2.03
HFHD-M8-L	HFHDS-M8-L	M8	6.05	8.1	2.67
HFHD-M10-L	HFHDS-M10-L	M10	7.72	10.1	3.43

Self-clinching high-strength studs

For metallic materials



Type HFE

Design

Self-clinching threaded studs for thin sheets such as type HFH with a larger head diameter for higher pull-through resistance.

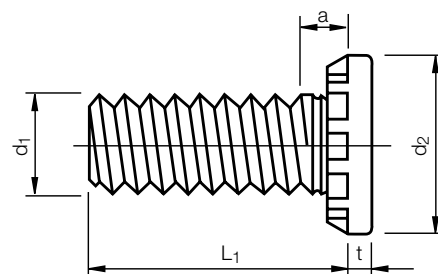
Material

Steel, hardened, zinc-plated, colorless passivated (other surface treatments upon request)

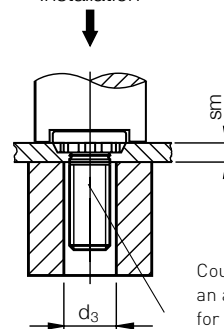
Use

For sheet hardness up to HR_B 85

Performance data, see the technical data on page 68



Installation



Countersink with an anvil of 0.3 x 90° for sheet thickness < 1.5 mm

3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d_1	Hole \varnothing in sheet $+0.13$ 0	d_2 ± 0.25	d_3	a max.	t max.	sm min.	Min. distance hole to edge
HFE-M5-L	M5	5.00	9.60	5.1	2.6	1.35	1.0	10.0
HFE-M6-L	M6	6.00	11.35	6.1	2.8	1.52	1.0	11.5
HFE-M8-L	M8	8.00	15.30	8.1	3.3	2.13	1.5	14.5

Order description	Length code " L_1 " (± 0.4)						
HFE-M5- L_1	15	20	25	30	35	40	50
HFE-M6- L_1	15	20	25	30	35	40	50
HFE-M8- L_1	15	20	25	30	35	40	50

Self-clinching high-strength studs

For metallic materials



Type HFED

Design

Self-clinching studs for thin sheets such as type HFED with but a larger head diameter for higher pull-through resistance.

Material

Steel, hardened, zinc-plated, colorless passivated (other surface treatments upon request)

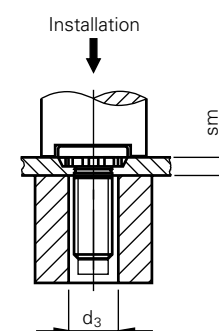
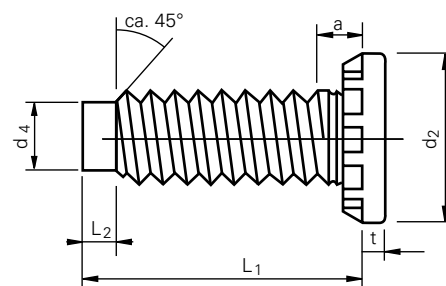
Use

For sheet hardness up to HR_B 85

Note

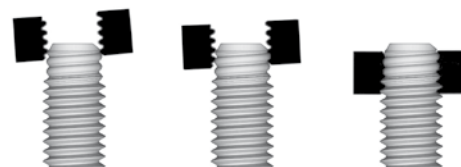
L₁: For the overall length, take into account the length of the standard design for HFE. This is also valid for the dimensions d₂, sm, a and t on page 34.

Performance data, see the technical data on page 68



Alternate dog point – MATHread® upon request

HFED studs can also be manufactured with a MATHread® dog point upon request. Anti cross-threading design allows the threads to self-align and the use of shorter lengths. The thread of the assembly nut already grips when it comes into contact with the MATHread®. Saves weight.



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d ₁	d ₄ ±0.13 0	d ₃	L ₂ ±0.25
HFED-M5-L	M5	3.66	5.1	1.78
HFED-M6-L	M6	4.37	6.1	2.03
HFED-M8-L	M8	6.05	8.1	2.67

Coarse-thread self-clinching studs

For metallic materials



Type coarse-thread

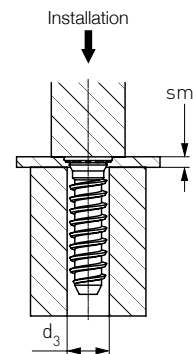
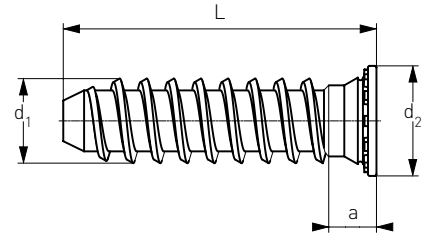
Material

steel, zinc-plated, colorless passivated


Use

For sheet hardness up to HR_B 80

Other lengths upon request

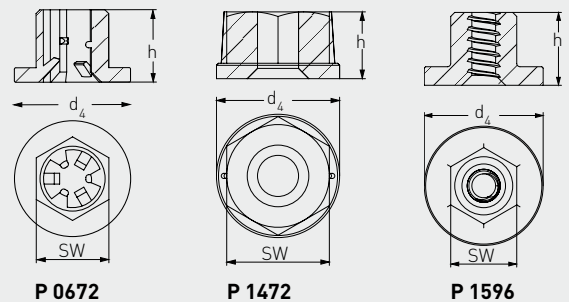


3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d_1	Hole \varnothing in sheet $+0.08$ 0	d_2 ± 0.4	d_3	a max.	sm min. 	L ± 0.4	Min. distance hole to edge
YQE-12958	5 x 1.6	5.20	6.50	5.2	4.0	1.0	17.5	7.2
YQE-15201	5 x 1.6	5.20	6.50	5.2	4.0	1.0	15.2	7.2

Selection of plastic nuts for fastening

Order description	Material	SW	d_4	h
P 0672	POM	10	16	10.0
P 1472	PA 6 30% GF	10	12	6.5
P 1596	PA 66 30% GF	10	18	11.0



Concealed-head self-clinching studs

For metallic materials



Types CHA, CHC, CFHA, CFHC

Design

For invisible installation, especially for rating plates, front panels and membrane keyboards

Material

Types CHA, CFHA: Aluminum

Types CHC, CFHC: Stainless steel 18/8 (AISI 300), passivated

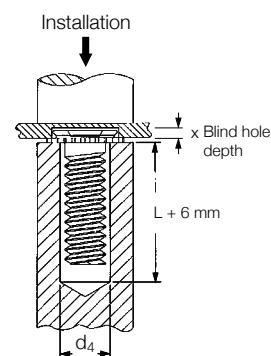
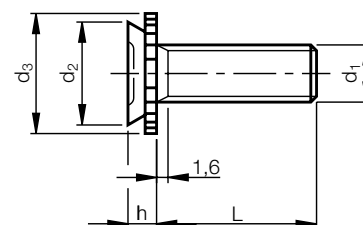
Use

Types CHA, CFHA: For sheet hardness up to HR_B 50

Types CHC, CFHC: For sheet hardness up to HR_B 70

Note

- Hole of mating panel to be max. $d_1 + 0.5$ mm
- Order a double-ended, two-flute HSS centercutting end mill for the corresponding diameter



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d_1	Blind hole \varnothing in sheet $+0.08$ 0	Blind hole depth x min.	d_2 max.	d_3 ± 0.25	d_4	h max.	sm min.	Min. distance hole to edge
Aluminum	Stainless steel, passivated									
CHA-M3-L	CHC-M3-L	M3	4.40	1.10	4.35	5.21	3.4	1.04	1.6	4.0
CFHA-M3-L	CFHC-M3-L			1.91				1.80	2.4	
CHA-M4-L	CHC-M4-L	M4	7.40	1.10	7.35	8.33	4.4	1.04	1.6	5.6
CFHA-M4-L	CFHC-M4-L			1.91				1.80	2.4	
CFHA-M5-L	CFHC-M5-L	M5	7.95	1.91	7.90	8.89	5.4	1.80	2.4	6.4
CFHA-M6-L	CFHC-M6-L	M6*	8.75	1.91	8.72	9.80	6.4	1.80	2.4	7.5

Order description				Length code "L" (± 0.4)						
Aluminum		Stainless steel, passivated								
CHA-M3-L	CFHA-M3-L	CHC-M3-L	CFHC-M3-L	6	8	10	12	16	20	-
CHA-M4-L	CFHA-M4-L	CHC-M4-L	CFHC-M4-L	6	8	10	12	16	20	25
-	CFHA-M5-L	-	CFHC-M5-L	-	-	10	12	16	20	25
-	CFHA-M6-L	-	CFHC-M6-L	-	-	-	-	16	20	25

* Available upon request

Concealed-head self-clinching standoffs

For metallic materials



Types CSS, CSOS

Design

For invisible installation, especially for rating plates, front panels and membrane keyboards

Material

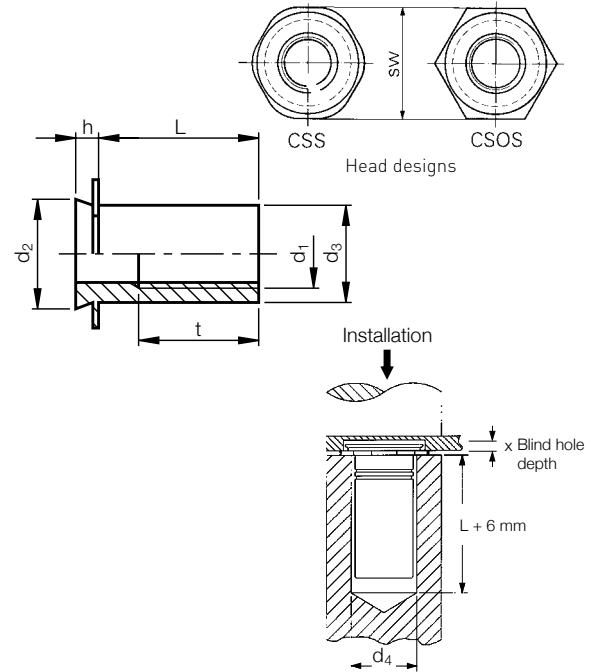
Stainless steel 18/8 (AISI 300), passivated

Use

For sheet hardness up to HR_B 70

Note

- Standoffs with length > 10 mm do have blind end
- Order a double-ended, two-flute HSS center-cutting end mill for the corresponding diameter



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d ₁	Blind hole Ø in sheet +0.08 0	Blind hole depth x min.	d ₂ max.	d ₃ max.	d ₄	sw ±0.13	t min.	h max.	sm min.	Min. distance hole to edge
CSS-M3-L	M3	5.40	1.10	5.39	4.20	4.33	6.35	5.0	1.04	1.6	4.8
CSOS-M3-L			1.91						1.83	2.4	
CSS-M4-L	M4	7.95	1.10	7.90	6.23	6.36	8.74	6.5	1.04	1.6	6.4
CSOS-M4-L			1.91						1.83	2.4	
CSOS-M5-L	M5	8.75	1.91	8.72	7.37	7.50	9.53	9.6	1.83	2.4	7.2
CSOS-M6-L	M6	9.90	1.91	9.89	9.00	9.13	11.11	9.6	1.83	2.4	9.5

Order description	Length code "L" (+0.05 -0.13)									
CSS-M3-L	4	6	8	10	12	-	-	-	-	-
CSOS-M3-L	4	6	8	10	12	-	-	-	-	-
CSS-M4-L	4	6	8	10	12	16	20	-	-	-
CSOS-M4-L	4	6	8	10	12	16	20	-	-	-
CSOS-M5-L	Upon request									
CSOS-M6-L	Upon request									

Self-clinching standoffs

For metallic materials



Type DSOS

Design

Especially for connector systems (plug and socket connectors)

Material

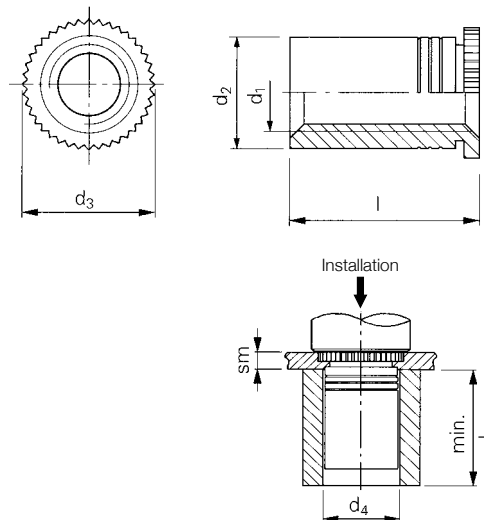
Stainless steel (AISI 300), passivated

Use

For sheet hardness up to HR_B 70

Note

Screws with UNC 4-40 threads upon request



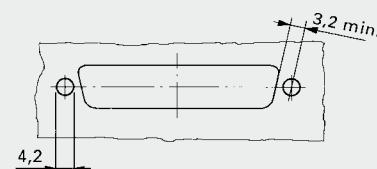
3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d ₁	Hole Ø in sheet +0.08 0	d ₂ max.	d ₃	d ₄ +0.2 0	L +0.05 -0.13	sm min.	Min. distance hole to edge
DSOS-M3-6.35	M3	4.20	4.19	4.92	4.3	6.35	1.0	3.2
DSOS-M3-7						7.00		
DSOS-440-250	UNC 4-40	4.20	4.19	4.92	4.3	6.35	1.0	3.2
DSOS-440-275						7.00		

Technical data

Tightening torque for mating screw Nm	1 mm Aluminum		
	Installation N	Pushout N	Torque-out Nm
max. 0.44	~4500	~223	~1.1

Tightening torque for mating screw Nm	1 mm Steel		
	Installation N	Pushout N	Torque-out Nm
max. 0.44	~5800	~334	~1.1



Adapt the size of the cut-out and hole spacing to the plug-in connector

Self-clinching standoffs

For metallic materials



Types S0, SOS

Material

Type S0: Steel, hardened, zinc-plated, colorless passivated

Type SOS: Stainless steel 18/8 (AISI 303), passivated
Aluminum upon request

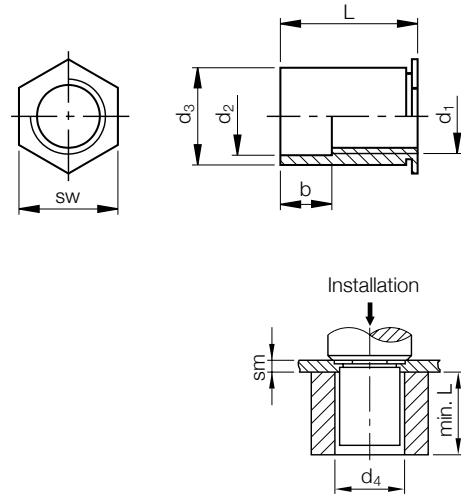
Use

Type S0: For sheet hardness up to HR_B 80

Type SOS: For sheet hardness up to HR_B 70

Type S04 for use in sheets > HR_B 80

Performance data, see the technical data on page 69



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d ₁	Hole Ø in sheet +0.08 0	d ₂ ±0.13	d ₃ 0 -0.13	d ₄	sw	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated								
S0-M2-L	-	M2	4.20	2.50	4.20	4.4	4.8	1.0	6.0
S0-M2.5-L	SOS-M2.5-L	M2.5	4.20	3.20	4.20	4.4	4.8	1.0	6.0
S0-M3-L	SOS-M3-L	M3	4.20	3.20	4.20	4.4	4.8	1.0	6.0
S0-3.5 M3-L	SOS-3.5 M3-L		5.40		5.39	5.6	6.4		
S0-M4-L	SOS-M4-L	M4	7.20	4.80	7.12	7.3	7.9	1.3	8.0
S0-M5-L	SOS-M5-L	M5	7.20	5.35	7.12	7.3	7.9	1.3	8.0

Order description		Length code "L" (+0.05 -0.13)													
Steel, zinc-plated, colorless passivated	Stainless steel, passivated														
S0-M2-L	-	-	4	-	6	-	8	10	12	-	-	-	-	-	-
S0-M2.5-L	SOS-M2.5-L	-	4	-	6	-	8	10	12	-	-	-	-	-	-
S0-M3-L	SOS-M3-L	3	4	5	6	7	8	10	12	14	16	18	-	-	-
S0-3.5 M3-L	SOS-3.5 M3-L	3	4	5	6	7	8	10	12	14	16	18	-	-	-
S0-M4-L	SOS-M4-L	3	4	-	6	-	8	10	12	14	16	18	20	22	25
S0-M5-L	SOS-M5-L	-	4	-	6	-	8	10	12	14	16	18	20	22	25
Threadless length b±0.25		-	-	-	-	-	-	4	4	4	8	8	8	11	11

Self-clinching standoffs

For stainless steel and metallic materials



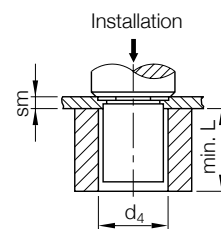
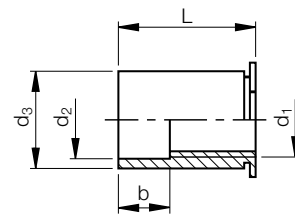
Type S04

Material

Hardened stainless steel (AISI 400), passivated

Use

For sheet hardness up to HR_B 88



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d ₁	Hole Ø in sheet +0.08 0	d ₂ ±0.13	d ₃ 0 -0.13	d ₄	sw	sm min.	Min. distance hole to edge
S04-M3-L	M3	4.20	3.25	4.20	4.4	4.8	1.0	6.0
S04-3.5-M3-L		5.40		5.39	5.6	6.4		
S04-M4-L	M4	7.20	4.80	7.12	7.3	7.9	1.3	8.0
S04-M5-L	M5	7.20	5.35	7.12	7.3	7.9	1.3	8.0

Order description	Length code "L" (+0.05 -0.13)											
	3	4	6	8	10	12	14	16	18	-	-	-
S04-M3-L	3	4	6	8	10	12	14	16	18	-	-	-
S04-3.5-M3-L	3	4	6	8	10	12	14	16	18	-	-	-
S04-M4-L	-	4	6	8	10	12	14	16	18	20	22	25
S04-M5-L	-	4	6	8	10	12	14	16	18	20	22	25
Threadless length b±0.25	0	0	0	0	4	4	4	8	8	8	11	11

Miniature self-clinching standoffs

For stainless steel and metallic materials



Type MS04

Material

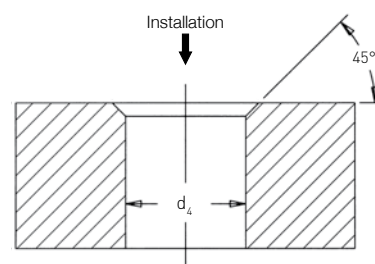
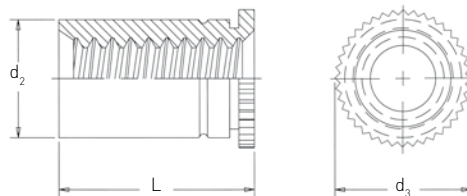
Hardened stainless steel (AISI 400), passivated

Use

For sheet hardness up to HR_B 88

Note

- Thread tolerance M1 to M1.4 according to ISO 1501, 4H6
- Thread tolerance M1.6 and M2 according to ASME B1.13M, 6H



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d_1	Hole \varnothing in sheet +0.08 0	d_2 max.	d_3 nom.	d_4	sm min. 	Min. distance hole to edge
MS04-M1-L	M1	2.41	2.39	3.18	2.46 – 2.51	0.4	2.3
MS04-M1.2-L	M1.2	2.41	2.39	3.18	2.46 – 2.51	0.4	2.3
MS04-M1.4-L	M1.4	2.41	2.39	3.18	2.46 – 2.51	0.4	2.3
MS04-M1.6-L	M1.6	2.41	2.39	3.18	2.46 – 2.51	0.4	2.3
MS04-M2-L	M2	3.18	3.16	3.96	3.22 – 3.27	0.4	3.0

Order description	Length code "L" (+0.05 -0.08)	
MS04-M1-L	2	3
MS04-M1.2-L	2	3
MS04-M1.4-L	2	3
MS04-M1.6-L	2	3
MS04-M2-L	2	3

Blind self-clinching standoffs

For metallic materials



Types BS0, BSOS

Material

Type BS0: Steel, hardened, zinc-plated, colorless passivated

Type BSOS: Stainless steel 18/8 (AISI 303), passivated

Aluminum upon request

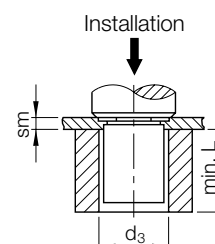
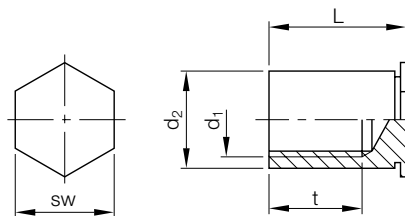
Use

Type BS0: For sheet hardness up to HR_B 80

Type BSOS: For sheet hardness up to HR_B 70

Type BS04 intended for use in sheets > HR_B 80

Performance data, see the technical data on page 69



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d ₁	Hole Ø in sheet +0.08 0	d ₂ 0 -0.13	d ₃	sw	sm min.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Stainless steel, passivated							
BS0-M3-L	BSOS-M3-L	M3	4.20	4.20	4.4	4.8	1.0	6.0
BS0-3.5 M3-L	BSOS-3.5 M3-L		5.40	5.39	5.6	6.4		6.8
BS0-M4-L	BSOS-M4-L	M4	7.20	7.12	7.3	7.9	1.3	8.0
BS0-M5-L	BSOS-M5-L	M5	7.20	7.12	7.3	7.9	1.3	8.0

Order description		Length code "L" (+0.05 -0.13)									
Steel, zinc-plated, colorless passivated	Stainless steel, passivated										
BS0-M3-L	BSOS-M3-L	6	8	10	12	14	16	18	20	22	25
BS0-3.5 M3-L	BSOS-3.5 M3-L	6	8	10	12	14	16	18	20	22	25
BS0-M4-L	BSOS-M4-L	6*	8	10	12	14	16	18	20	22	25
BS0-M5-L	BSOS-M5-L	-	8	10	12	14	16	18	20	22	25
Thread depth t _{min.}		3.2	4	4	5	6.5	6.5	9.5	9.5	9.5	9.5

* Available upon request

Blind self-clinching standoffs

For stainless steel and metallic materials



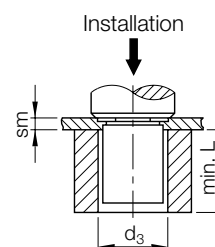
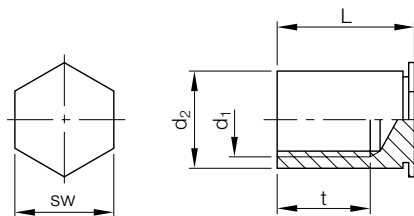
Type BS04

Material


Hardened stainless steel (AISI 400), passivated

Use

For sheet hardness up to HR_B 88



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d_1	Hole \varnothing in sheet +0.08 0	d_2 0 -0.13	d_3	sw	sm min. 	Min. distance hole to edge
BS04-M3-L	M3	4.20	4.20	4.4	4.8	1.0	6.0
BS04-3.5-M3-L		5.40	5.39	5.6	6.4		6.8
BS04-M4-L	M4	7.20	7.12	7.3	7.9	1.3	8.0
BS04-M5-L	M5	7.20	7.12	7.3	7.9	1.3	8.0

Order description	Length code "L" [+0.05 -0.08]									
	6	8	10	12	14	16	18	20	22	25
BS04-M3-L	6	8	10	12	14	16	18	20	22	25
BS04-3.5-M3-L	6	8	10	12	14	16	18	20	22	25
BS04-M4-L	6	8	10	12	14	16	18	20	22	25
BS04-M5-L	6	8	10	12	14	16	18	20	22	25
Thread depth $t_{min.}$	3.2	4	4	5	6.5	6.5	9.5	9.5	9.5	9.5

Self-clinching captive panel screws

For metallic materials



Type PFC2

Design

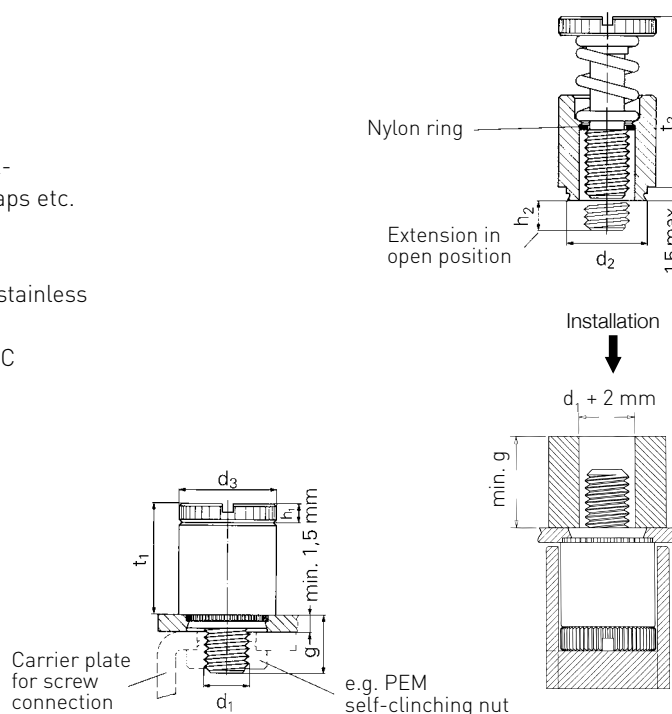
- One-piece panel fastener, spring-loaded
- Well suited as captive screw for the quick-installation and disassembly of covers, flaps etc.

Material

Screw, self-clinching standoff and spring of stainless steel 18/8 (AISI 300), passivated
Retaining Ring: Nylon, temperature limit 93°C

Use

For sheet hardness up to HR_B 70



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d ₁	Hole Ø in sheet +0.08 0	g ±0.4	h ₂ ±0.64	d ₂ max.	d ₃ ±0.25	h ₁ ±0.13	t ₁ max.	t ₂ nom.	Min. distance hole to edge
PFC2-M3-40	M3	6.75	6.4	0.0	6.71	7.92	1.83	9.14	13.72	6.35
PFC2-M3-62			9.5	3.2						
PFC2-M4-50	M4	7.95	7.9	0.0	7.90	9.53	2.08	11.43	17.53	7.87
PFC2-M4-72			11.1	3.2						
PFC2-M4-94			14.3	6.4						
PFC2-M5-50	M5	8.75	7.9	0.0	8.72	10.31	2.08	11.47	17.53	8.63
PFC2-M5-72			11.1	3.2						
PFC2-M5-94			14.3	6.4						
PFC2-M6-60	M6	10.50	9.5	0.0	10.47	11.89	2.46	14.73	22.35	9.65
PFC2-M6-82			12.7	3.2						
PFC2-M6-04			15.9	6.4						

Self-clinching captive panel screws

For metallic materials



Type PF11

Design

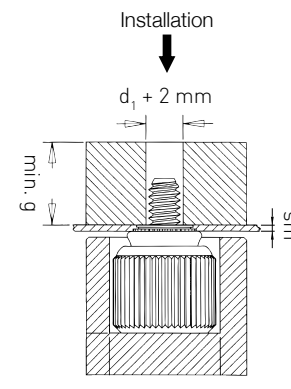
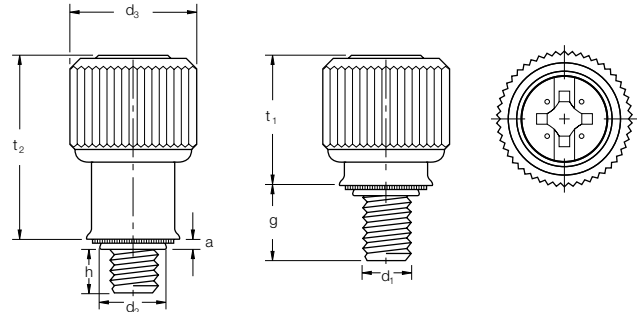
- One-piece panel fastener, spring-loaded, with Phillips slot drive
- Well suited as captive screw for the quick installation and disassembly of covers, flaps etc.

Material


Knurled knob: Aluminum
 Self-clinching standoff: Steel, zinc-plated
 Spring: Stainless steel, passivated
 Screw: Hardened stainless steel (AISI 400)

Use

For sheet hardness up to HR_B 80



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d ₁	Hole Ø in sheet +0.08 0	d ₂ max.	d ₃ ±0.25	a max.	sm min. 	g ±0.64	h ±0.64	t ₁ nom.	t ₂ nom.	Min. distance hole to edge
PF11-M3-0							4.32	0.00			
PF11-M3-1	M3	5.56	5.54	10.59	0.92	0.92	5.84	1.52	7.87	11.43	7.11
PF11-M3-2							7.37	3.05			
PF11-M4-0							5.84	0.00			
PF11-M4-1	M4	7.92	7.90	13.06	0.92	0.92	7.37	1.52	11.43	16.26	8.38
PF11-M4-2							8.89	3.05			
PF11-M5-0							5.84	0.00			
PF11-M5-1	M5	7.92	7.90	13.06	0.92	0.92	7.37	1.52	11.43	16.26	8.38
PF11-M5-2							8.89	3.05			
PF11-M6-0							7.37	0.00			
PF11-M6-1	M6	9.53	9.50	14.61	0.92	0.92	8.89	1.52	13.46	20.07	11.68
PF11-M6-2							10.41	3.05			

Self-clinching captive panel screws

For metallic materials



Type PFHV

Design

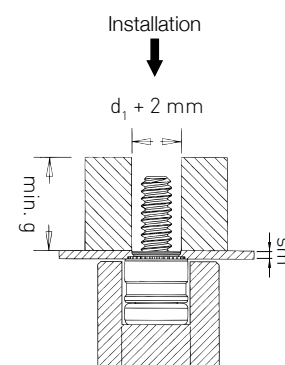
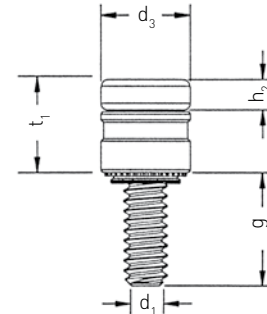
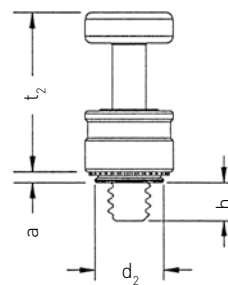
- One-piece panel fastener, spring-loaded, with Phillips slot drive
- Well suited as captive screw for the quick installation and disassembly of covers, flaps etc.

Material


Screw and self-clinching standoff in steel, nickel-plated

Use

For sheet hardness up to HR_B 60



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d ₁	Hole Ø in sheet +0.08 0	a max.	d ₂ max.	d ₃ ±0.25	sm min. 	g ±0.64	h _t ±0.65	h ₂ ±0.13	t ₁ nom.	t ₂ nom.	Min. distance hole to edge
PFHV-M3-0	M3	5.50	0.92	5.49	6.95	0.92	5.55	0.0	2.03	6.69	11.25	5.8
PFHV-M3-1							7.56	1.9				
PFHV-M4-0	M4	6.40	0.92	6.38	7.85	0.92	6.59	0.0	2.79	8.50	14.10	6.7
PFHV-M4-1							9.39	2.7				

Spinning clinch bolts

For metallic materials



Types SCBJ, SCB

Design

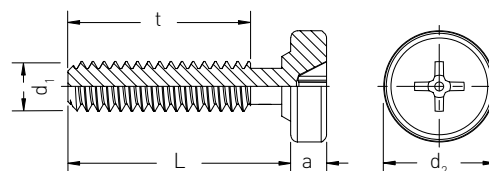
Captive bolt, no additional components required

Material

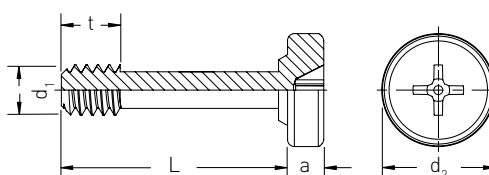
Steel, hardened, zinc-plated, colorless passivated

Use

For sheet hardness up to HR_B 80, sheet thickness at least 1.0 mm



SCBJ



SCB

3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d_1	Hole \varnothing in sheet $+0.08$ 0	d_2 ± 0.25	a nom.	Min. distance hole to edge
SCBJ	SCB					
SCBJ-M3-L	SCB-M3-L	M3	3.0	6.60	2.03	3.30
SCBJ-M4-L	SCB-M4-L	M4	4.0	8.28	2.03	5.00

SCBJ

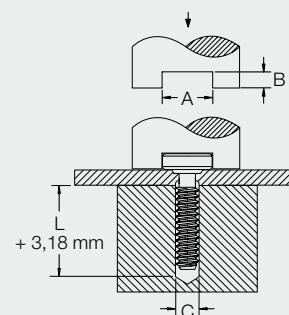
Order description SCBJ	Length code "L" (± 0.4)		
SCBJ-M3-L	6.0	10.0	12.0
SCBJ-M4-L	6.0	10.0	12.0
Thread length t	3.7	7.7	9.7

SCB

Order description SCB	Length code "L" (± 0.4)		
SCB-M3-L	-	-	12.0
SCB-M4-L	-	-	12.0
Thread length t	-	-	3.3

Punch and anvil dimensions

Thread	A	B	C
M3	6.86 - 7.11	1.85 - 1.88	3.03 - 3.11
M4	8.53 - 8.79	1.85 - 1.88	4.03 - 4.11



Self-clinching spacers

For metallic materials



Types SSA, SSC, SSS

Design

Spacers are used for the quick attachment and removal of PC boards, covers etc.

Material

Type SSA: Aluminum

Type SSC: Stainless steel (AISI 400), passivated

Type SSS: Steel, zinc-plated, colorless passivated

Use

Type SSA: For sheet hardness up to HR_B 50

Type SSC: For sheet hardness up to HR_B 70

Type SSS: For sheet hardness up to HR_B 60

Forces

- First on force of removable panel for

Type SSA = max. 58 N

Type SSC = max. 89 N

Type SSS = max. 89 N

- First off force for

Type SSA = min. 13 N

Type SSC = min. 27 N

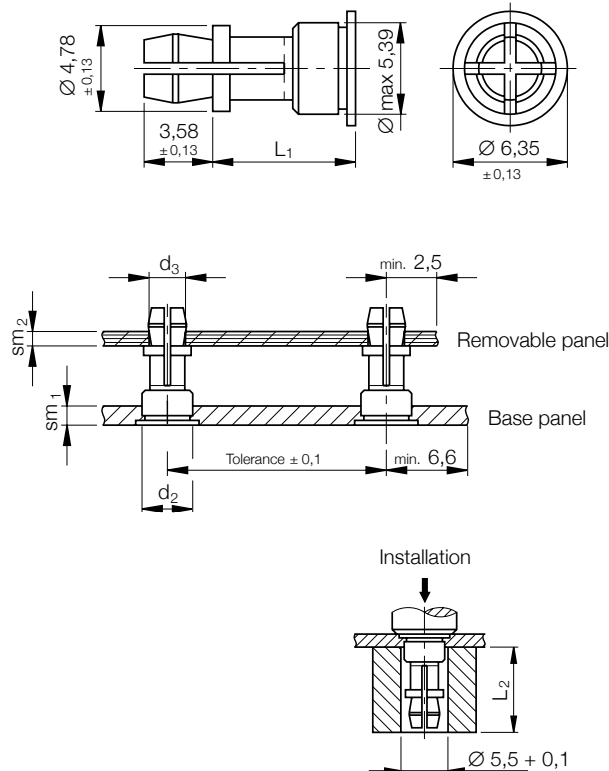
Type SSS = min. 27 N

- 15th off force for

Type SSA = min. 4 N

Type SSC = min. 9 N

Type SSS = min. 9 N



3-D Data: <http://kvt.partcommunity.com>

Order description			Nominal Ø	Base panel	Removable panel	L ₁ +0.13 0	L ₂	sm ₁ min.	sm ₂
Aluminum	Stainless steel, passivated	Steel, zinc-plated, colorless passivated		Ø Hole d ₂ +0.08 0	Ø Hole d ₃ +0.08 0				
SSA-4MM-8	SSC-4MM-8	SSS-4MM-8	4	5.40	4.0	8	13	1.0	1.0 - 1.8
SSA-4MM-10	SSC-4MM-10	SSS-4MM-10				10	15		
SSA-4MM-12	SSC-4MM-12	SSS-4MM-12				12	17		
SSA-4MM-14	SSC-4MM-14	SSS-4MM-14				14	19		
SSA-4MM-16	SSC-4MM-16	SSS-4MM-16				16	21		
SSA-4MM-18	SSC-4MM-18	SSS-4MM-18				18	23		
SSA-4MM-20	SSC-4MM-20	SSS-4MM-20				20	25		
SSA-4MM-22	SSC-4MM-22	SSS-4MM-22				22	27		
SSA-4MM-25	SSC-4MM-25	SSS-4MM-25				25	30		

Self-clinching spacers

For metallic materials



Type SKC

Design

Spacers are used for the quick attachment and removal of PC boards, covers etc.

Material

Stainless steel 18/8 (AISI 300), passivated

Use

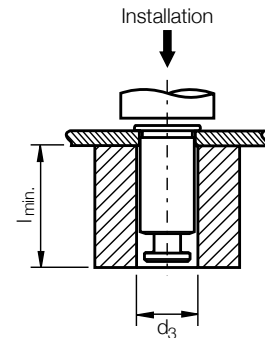
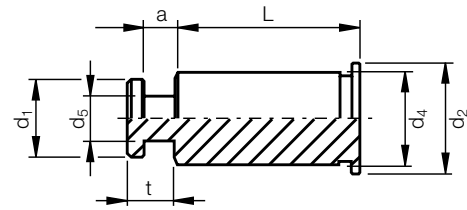
For sheet hardness up to HR_B 70

Ordering example

Housing thickness: 2 mm

Distance: 18 mm

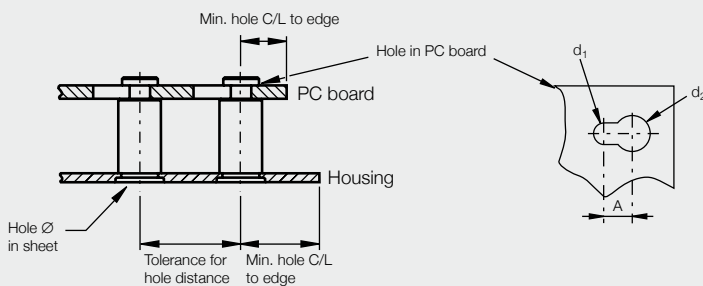
Order reference: **SKC-61,5-20**



3-D Data: <http://kvt.partcommunity.com>

Order description	d ₁ ±0.08	d ₂	d ₃ +0.08 0	d ₄ max.	d ₅ ±0.08	a ±0.08	t max.
SKC-61.5-L	4.5	6.35	5.5	5.39	2.51	1.73	2.75

Order description	Length code "L"									
	[0 -0.13]									
SKC-61.5-L	6	8	10	12	14	16	18	20	22	25



Typ	Housing				PC board				
	Hole Ø in sheet +0.08 0	sm min. 	Mind. distance hole to edge	Tolerance for distance to hole ±0.13	Hole in PC board			Min. distance hole to edge	Strength of PC board
					d ₁ ±0.08	d ₂ ±0.08	A min.		
SKC-61.5	5.40	1.0	6.6	±0.13	3	5	3.75	4.1	1.45 - 1.62

RADSOK® self-clinching conducting pins

For metallic materials



Type RADSOK®

Design

Self-clinching conducting pins designed especially for the **Radsok® high-current interconnect system**

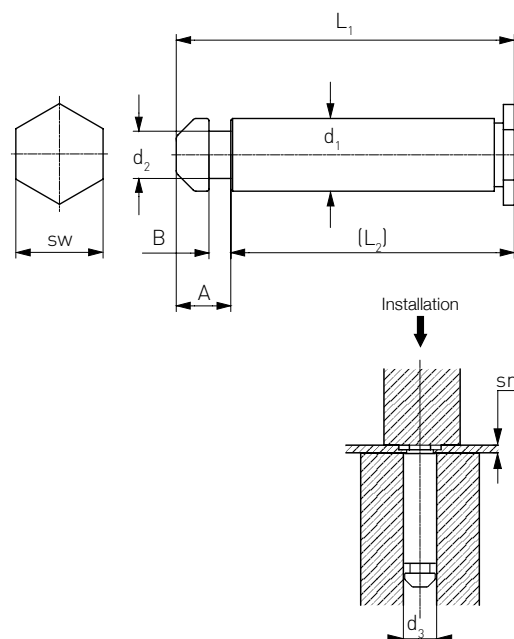
Material

Steel, silver-plated

Use

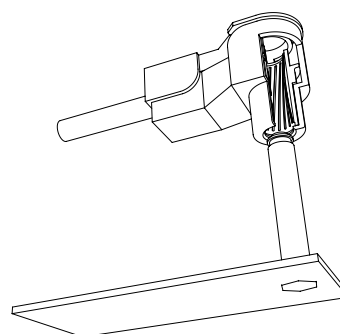
For sheet hardness up to HR_B 80

Additional sizes upon request




RADSOK® high-current interconnect system

Validated and approved according to AK test guidelines for automotive plug-in connectors. Further information and technical details can be viewed at the website of the German licensee, **Amphenol-Tuchel Electronics GmbH**, at www.amphenol.info



Application example

3-D Data: <http://kvt.partcommunity.com>

Order description	d ₁ 0 -0.04	Hole Ø in sheet +0.08 0	d ₂ 0 -0.05	d ₃	sw	sm min. 	L ₁ ±0.25	(L ₂)	A ±0.1	B ±0.05	Min. distance hole to edge
YQE-14928 29P	3.6	3.6	2.6	3.7	4.8	1.0	17.8	15.6	2.2	1.25	3.7
YQE-15324 29P	6.0	6.0	5.0	6.1	7.1	1.5	36.0	33.0	3.0	1.50	6.1
YQE-16180 29P	8.0	8.0	7.0	8.1	9.5	2.0	37.0	34.0	3.0	1.50	8.1

Self-clinching flat contact pins

For metallic materials



Type grounding post

Material

Type KVT: Steel, tin-plated

Type KVT-S: Stainless steel

Use

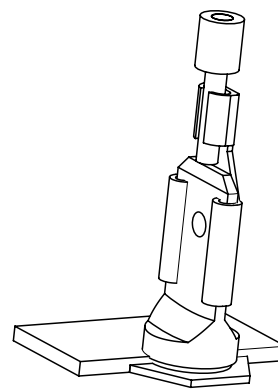
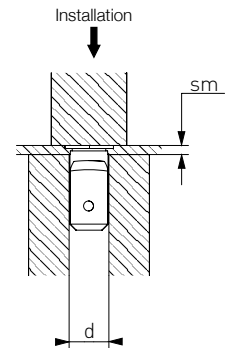
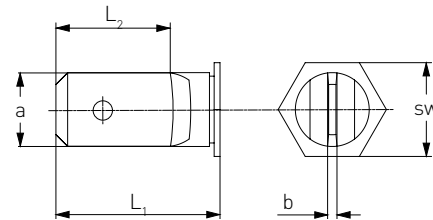
Type KVT: For sheet hardness up to HR_B 80

Type KVT-S: For sheet hardness up to HR_B 88

Note

Pin dimensions according to DIN 46342.

Take advantage of the benefits of self-clinching technology for conventional grounding connections, too.



Application example

3-D Data: <http://kvt.partcommunity.com>

Order description		Plate a x b	Hole Ø in sheet +0.08 0	d	L ₁	L ₂ ±0.5	sw	sm min.	Min. distance hole to edge
Steel, tin-plated	Stainless steel, passivated								
KVT-6.3-14	KVT-S-6.3-14	6.3 x 0.8	6.4	6.4	14.0	10.0	8.0	0.8	7.2

Self-clinching cable tie mounts

For metallic materials



Type TD

Design

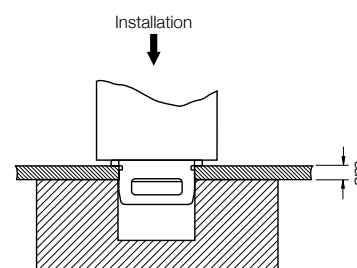
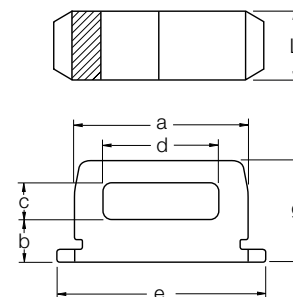
- Ring for mounting cable ties or similar items
- Enables flush, closed press-in assembly. This enables closed magnetic shielding in the housing (especially for high frequencies)

Material

Sintered steel (4600 A), zinc-plated, colorless passivated

Use

For sheet hardness up to HR_B 60

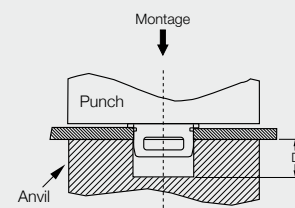
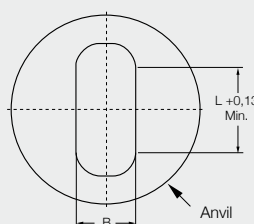


3-D Data: <http://kvt.partcommunity.com>

Order description	Hole Ø in sheet +0.05 -0.03	a ±0.08	b ±0.15	c ±0.15	d ±0.15	e ±0.15	g ±0.15	L ±0.08	sm min.
TD-40-4	6.35 x 3.18	6.25	1.40	1.65	4.06	7.82	3.81	3.07	1.0 - 1.3
TD-60-6	7.93 x 4.75	7.82	1.91	1.65	5.21	9.40	4.57	4.67	1.0 - 1.8
TD-175-12	12.70 x 9.53	12.60	3.30	2.40	9.14	14.28	7.24	9.42	1.0 - 3.2

Recommended anvil dimensions

PEMSERTER® anvil Order description	D min.	B ±0.03
8006136	4.45	6.36
8006137	5.08	7.95
8006138	7.62	12.73



Self-clinching right-angle fasteners

For metallic materials



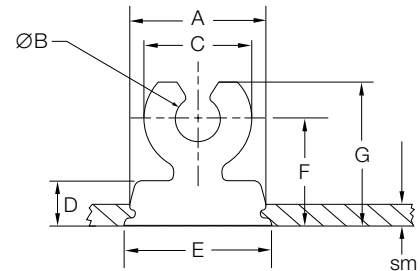
Type RAA

Material

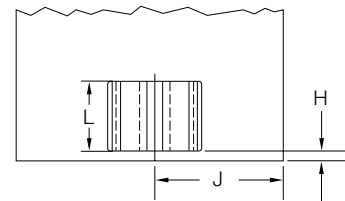
Aluminum (6061-T6)

Use

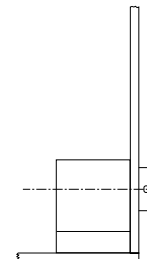
For sheet hardness up to HR_B 45



Top view, RAA squeezed into sheet



Side view, with side panel screwed on, with thread-forming screws

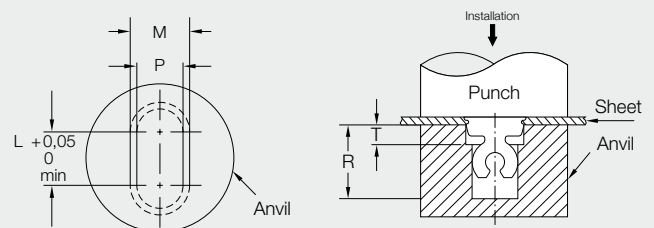


3-D Data: <http://kvt.partcommunity.com>

Order description	For screw threads	A ±0.08	ØB ±0.1	C nom.	D nom.	E ±0.15	F ±0.15	G nom.	Min. distance to edge H	Min. distance to edge J	sm min.	L ±0.08	Hole in sheet +0.05 -0.03
RAA M3 - 7 - 4	M3 x 0.5	7.89	2.77	6.35	3.18	9.42	7	9.27	1.02	9.1	1.0	3.89	8 x 4
RAA M3 - 7 - 6										10.7		5.89	8 x 6
RAA M4 - 9 - 7	M4 x 0.7	9.89	3.68	8.89	3.18	11.43	9	12.19	1.02	14.7	1.0	6.89	10 x 7
RAA M4 - 9 - 9										16.3		8.89	10 x 9

Recommended anvil dimensions

PEMSERTER® anvil order description	Screw	Anvil dimensions			
		P ±0.03	M ±0.03	T ±0.1	R min.
8002713	M3	6.53	8.02	2.54	10.8
8002714	M4	9.07	10.03	2.54	12.7



Self-clinching right-angle fasteners

For metallic materials



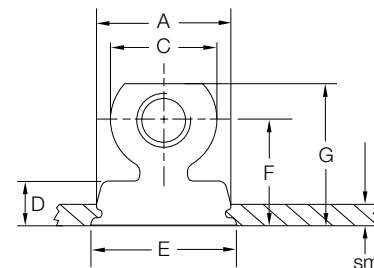
Type RAS

Material

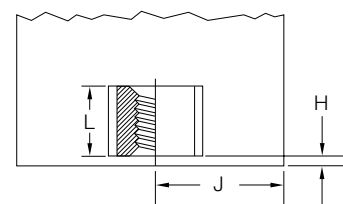
Steel, zinc-plated, colorless passivated

Use

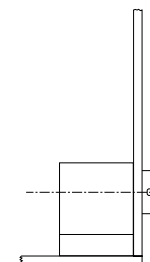
For sheet hardness up to HR_B 60



Top view, RAS squeezed into sheet



Side view, with side panel screwed on

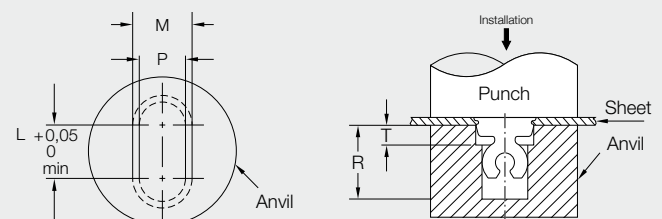


3-D Data: <http://kvt.partcommunity.com>

Order description	For screw threads	A ±0.08	C nom.	D nom.	E ±0.15	F ±0.15	G nom.	Min. distance to edge H	Min. distance to edge J	sm min.	L ±0.08	Hole in sheet +0.05 -0.03
RAS M3 - 7 - 3	M3 x 0.5	7.89	6.35	3.18	9.47	7	9.78	1.02	7.6	1.0	2.89	8 x 3
RAS M3 - 7 - 4									9.1		3.89	8 x 4
RAS M3 - 7 - 6									10.7		5.89	8 x 6
RAS M4 - 9 - 4	M4 x 0.7	9.89	8.89	3.18	11.48	9	13.21	1.02	10.0	1.0	3.89	10 x 4
RAS M4 - 9 - 7									14.7		6.89	10 x 7
RAS M4 - 9 - 9									16.3		8.89	10 x 9

Recommended anvil dimensions

PEMSERTER® anvil order description	Screw	Anvil dimensions			
		P ±0.03	M ±0.03	T ±0.1	R min.
8002713	M3	6.53	8.02	2.54	10.8
8002714	M4	9.07	10.03	2.54	12.7



SpotFast®

self-clinching fasteners

For stainless steel and metallic materials



Types SF, SFP

Design

For flush permanent joining of two sheets

Material

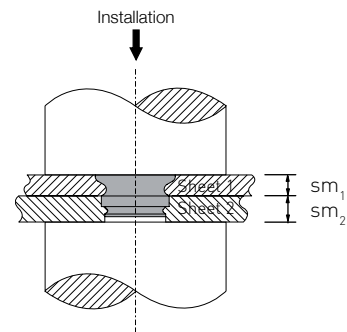
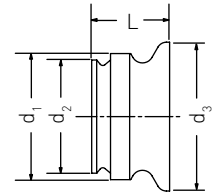
Type SF: Steel, zinc-plated, colorless passivated

Type SFP: Hardened stainless steel,
precipitation-hardened (martensitic)

Use

Type SF: For sheet hardness up to $HR_B 80$

Type SFP: For sheet hardness up to $HR_B 88$



3-D Data: <http://kvt.partcommunity.com>

Order description		Sheet 1		Sheet 2		d ₁ max.	d ₂ max.	d ₃ max.	L max.	Min. distance hole to edge
Steel, zinc-plated, colorless passivated	Hardened stainless steel	sm ₁ ±0.08	∅ Hole +0.08 0	sm ₂ min.	∅ Hole +0.08 0					
SF-3-0.8	-	0.8	3.0	0.8	2.5	2.98	2.48	3.53	1.50	2.54
SF-3-1.0	SFP-3-1.0	1.0	3.0	1.0	2.5	2.98	2.48	3.76	1.90	2.54
SF-3-1.2	SFP-3-1.2	1.2	3.0	1.2	2.5	2.98	2.48	3.76	2.31	2.54
SF-3-1.6	SFP-3-1.6	1.6	3.0	1.6	2.5	2.98	2.48	3.76	3.12	2.54
SF-5-0.8	-	0.8	5.0	0.8	4.0	4.98	3.97	5.56	1.50	3.56
SF-5-1.0	-	1.0	5.0	1.0	4.0	4.98	3.97	5.56	1.90	3.56
-	SFP-5-1.0	1.0	5.0	1.0	4.5	4.98	4.47	5.56	1.90	3.56
SF-5-1.2	-	1.2	5.0	1.2	4.0	4.98	3.97	5.56	2.31	3.56
-	SFP-5-1.2	1.2	5.0	1.2	4.5	4.98	4.47	5.56	2.31	3.56
SF-5-1.6	-	1.6	5.0	1.6	4.0	4.98	3.97	5.56	3.12	3.56
-	SFP-5-1.6	1.6	5.0	1.6	4.5	4.98	4.47	5.56	3.12	3.56

TackPin™ self-clinching fasteners

For metallic materials



Type TA

Design

For permanent joining of two sheets

Material

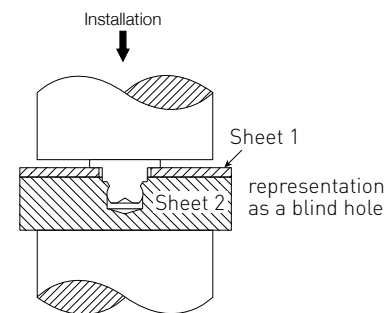
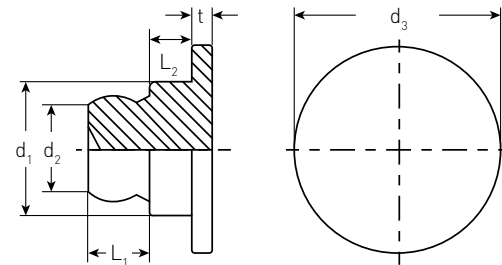
Aluminum

Use

For sheet hardness up to HR_B 45

Note

Minimum sheet thickness of sheet 2 (sm₂) blind hole 0,89 mm – thru-hole 0,5 mm



Order description	Sheet 1		Sheet 2		L ₁ ±0.075	L ₂ ±0.025	d ₁ ±0.05	d ₂ max.	d ₃ ±0.1	t ±0.1	Min. distance hole to edge
	sm ₁	∅ Hole ±0.05	sm ₂ min.	∅ Hole - 0.05							
TA-10-025	0.20 - 0.28	1.47	0.89	1.02	0.61	0.406	1.30	0.89	2	0.20	1
TA-10-050	0.48 - 0.56	1.47	0.89	1.02	0.61	0.686	1.30	0.89	2	0.20	1
TA-10-075	0.71 - 0.79	1.47	0.89	1.02	0.61	0.914	1.30	0.89	2	0.20	1

Self-clinching spacers

For plastics



Type KSSB

Design

Spacers are used for the quick attachment and removal of PC boards, components etc.

Material

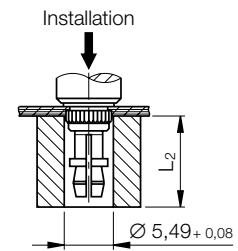
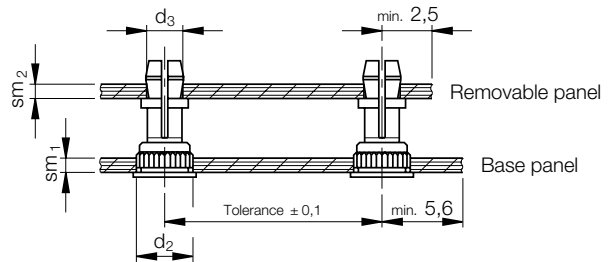
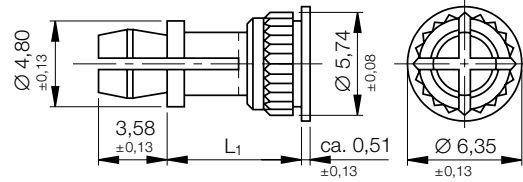
- Non-plated brass (CDA 353)
- Brass with surface treatment upon request

Use

For PC boards or plastics up to HR_B 65 (base panel)

Forces

- Max. first on force of removable panel = 57.7 N
- Min. first off force = 13.3 N
- Min. 15th off force = 4.4 N



3-D Data: <http://kvt.partcommunity.com>

Order description	Nominal Ø	Base panel	Removable panel	L ₁ ±0.13	L ₂ min.	sm ₁ min.	sm ₂
		Ø Hole d ₂ +0.08 0	Ø Hole d ₃ +0.08 0				
KSSB-4MM-8	4	5.40	4.00	8	13	1.25	1.0 - 1.8
KSSB-4MM-10				10	15		
KSSB-4MM-12				12	17		
KSSB-4MM-14				14	19		
KSSB-4MM-16				16	21		
KSSB-4MM-18				18	23		
KSSB-4MM-20				20	25		
KSSB-4MM-22				22	27		
KSSB-4MM-25				25	30		

Broaching studs

For plastics



Type KFH

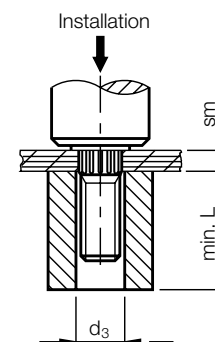
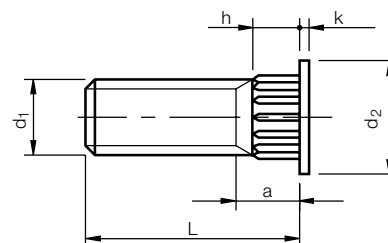
Material

Phosphor bronze, tin-plated for good solderability

Use

- For PC boards and other plastics to HR_B 55 (also for cast aluminum and magnesium)
- When used in PC boards with plated thru-holes, increase the hole dimension before thru-hole plating process by 0.13 mm (- 0.03 mm)

Additional lengths upon request



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d ₁	Hole Ø in plastic +0.08 0	d ₂ ±0.25	d ₃ +0.1 0	k ±0.13	a max.	h max.	sm min.	Min. distance hole to edge
KFH-M2.5-L	M2.5	2.6	3.85	2.6	0.51	2.6	1.65	1.53	2.8
KFH-M3-L	M3	3.0	4.58	3.1	0.51	2.3	1.65	1.53	3.8
KFH-M4-L	M4	4.2	5.74	4.1	0.51	2.3	1.65	1.53	5.1
KFH-M5-L	M5	5.0	6.60	5.1	0.51	2.3	1.65	1.53	5.3

Order description	Length code "L" [±0.25]					
KFH-M2.5-L	6	8	10	12	15	-
KFH-M3-L	6	8	10	12	15	18
KFH-M4-L	6	8	10	12	15	18
KFH-M5-L	6	8	10	12	15	18

Broaching nuts

For plastics



Types KF2, KFS2

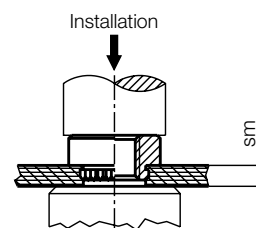
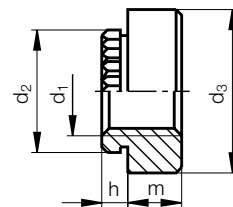
Material

Type KF2: Steel, tin-plated

Type KFS2: Stainless steel 18 / 8 (AISI 300),
passivated

Use

- PC boards, fiberglass, phenol resins, nylon, epoxy, acrylic glass etc. (also for cast aluminum and magnesium)
- Type KF2 up to HR_B 60
- Type KFS2 up to HR_B 70
- When used in PC boards with plated thru-holes, increase the hole dimension before thru-hole plating process by 0.13 mm (- 0.03 mm)



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread d_1	Hole \varnothing in plastic $+0.08$ 0	d_2 ± 0.08	d_3 ± 0.13	m ± 0.13	h max.	sm min.	Min. distance hole to edge
Steel, tin-plated	Stainless steel, passivated								
KF2-M2	KFS2-M2	M2	3.70	4.19	5.56	1.5	1.53	4.2	
KF2-M2.5	KFS2-M2.5	M2.5	4.20	4.68	5.56	1.5	1.53	4.4	
KF2-M3	KFS2-M3	M3	4.20	4.68	5.56	1.5	1.53	4.4	
KF2-M4	KFS2-M4	M4	6.40	6.81	8.74	2.0	1.53	6.4	
KF2-M5	KFS2-M5	M5	6.90	7.37	9.53	3.0	1.53	7.1	

Broaching standoffs

For plastics



Types KFE, KFSE

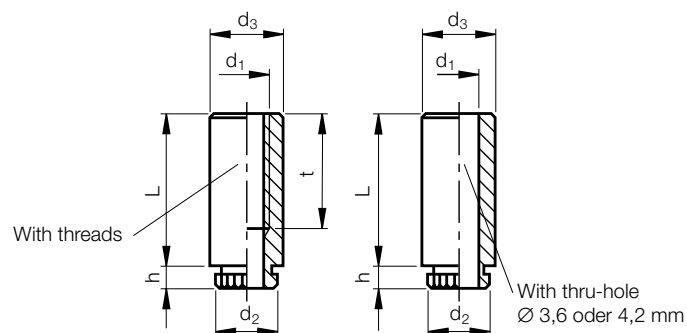
Material

Type KFE: Steel, tin-plated

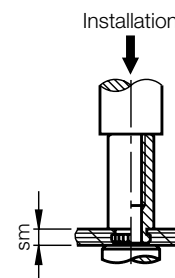
Type KFSE: Stainless steel 18/8 (AISI 300), passivated

Use

- For PC boards and other plastics (also for cast aluminum and magnesium)
- Type KFE up to HR_B 60
- Type KFSE up to HR_B 70
- When used in PC boards with plated thru-holes, increase the hole dimension before thru-hole plating process by 0.13 mm



Additional lengths upon request



3-D Data: <http://kvt.partcommunity.com>

Order description		Thread or thru-hole d ₁	Hole Ø in plastic +0.08 0	d ₂ ±0.08	d ₃ ±0.13	h max.	sm min.	Min. distance, hole to edge
Steel, tin-plated	Stainless steel, passivated							
KFE-M3-L	KFSE-M3-L	M3	4.20	4.68	5.56	1.53	1.53	4.4
KFE-3.6-L	KFSE-3.6-L	Ø 3.6 ^{+0.1} _{-0.08}	5.40	5.87	7.14	1.53	1.53	5.5
KFE-4.2-L	KFSE-4.2-L	Ø 4.2 ^{+0.1} _{-0.08}	6.40	6.86	8.74	1.53	1.53	7.1

Order description		Length code "L" (±0.13)					
Steel, tin-plated	Stainless steel, passivated						
KFE-M3-L	KFSE-M3-L	3	4	6	8	10	
KFE-3.6-L	KFSE-3.6-L	3	4	6	8	10	
KFE-4.2-L	KFSE-4.2-L	3	4	6	8	10	
Thread depth t _{min.}		3	4	6	8	10	

Surface mount nuts

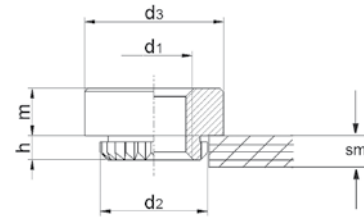
On tape and reel for PC boards



Type KF2 for SMT assembly

Advantages of SMT assembly

- Fasteners can be fed automatically
- No external work step needed to add fastening points (e.g. press-in process)
- No danger of damaging PC boards (danger during press-in)
- Reduced handling
- Time-saving
- Process safety

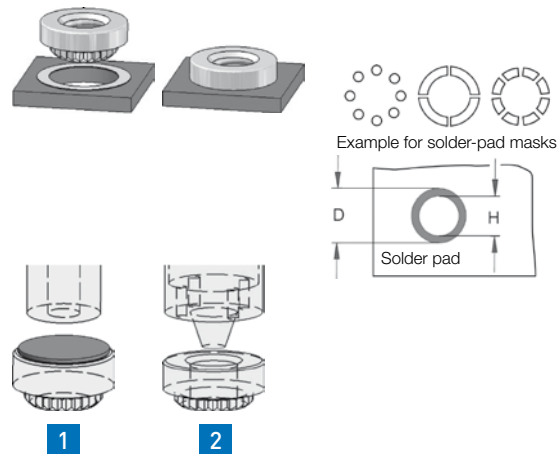


Material

Steel, tin-plated

Use

PC boards with and **without** plated thru-holes



■ Processing

1. PEM® component with adhesive patch by means of standard vacuum pipette
2. PEM® component without adhesive patch by means of special vacuum pipette

3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d_1	$\varnothing H$ in PC board +0.08 0	d_2 ± 0.08	d_3 ± 0.13	m ± 0.13	h max.	sm min.* 	$\varnothing D$ min.
KF2-M2 on tape	M2	4.3	4.19	5.56	1.5	1.53	1.53	6.2
KF2-M2.5 on tape	M2.5	4.8	4.68	5.56	1.5	1.53	1.53	6.2
KF2-M3 on tape	M3	4.8	4.68	5.56	1.5	1.53	1.53	6.2
KF2-M4 on tape	M4	7.0	6.86	8.74	2.0	1.53	1.53	9.4
KF2-M5 on tape	M5	7.5	7.37	9.53	3.0	1.53	1.53	10.3

* sm min. refers to "without extension below"

Surface mount spacers

On tape and reel for PC boards



Type SMTSO for SMT assembly

Advantages of SMT assembly

- Fasteners can be fed automatically
- No external work step needed to add fastening points (e.g. press-in process)
- No danger of damaging PC boards (danger during press-in)
- Reduced handling
- Time-saving
- Process safety

Material

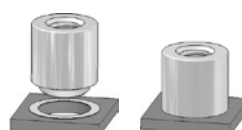
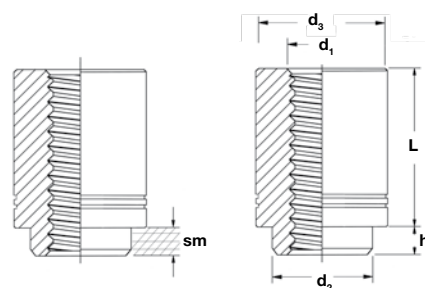
Steel, tin-plated

Use

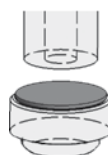
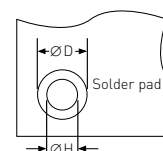
PC boards with and **without** plated thru-holes

Processing

PEM® component with adhesive patch by means of standard vacuum pipette



Example for solder-pad masks



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d ₁	Ø H in PC board +0.08 0	d ₂ max.	d ₃ ±0.13	h max.	sm min.	Ø D min.
SMTSO-M2-L on tape	M2	3.73	3.60	5.56	1.53	1.53	6.20
SMTSO-M2.5-L on tape	M2.5	4.22	4.09	5.56	1.53	1.53	6.20
SMTSO-M3-L on tape	M3	4.22	4.09	5.56	1.53	1.53	6.20
SMTSO-M4-L on tape	M4	6.35	6.22	8.74	1.53	1.53	9.37
SMTSO-3.6-L on tape	Ø 3.6 ^{+0.1} _{-0.08}	5.41	5.28	7.14	1.53	1.53	7.77
SMTSO-4.2-L on tape	Ø 4.2 ^{+0.1} _{-0.08}	6.35	6.22	8.74	1.53	1.53	9.37

Order description	Length code "L" (±0.13)					
SMTSO-M2-L on tape	2	3	4	6	8	10
SMTSO-M2.5-L on tape	2	3	4	6	8	10
SMTSO-M3-L on tape	2	3	4	6	8	10
SMTSO-M4-L on tape	2	3	4	6	8	10
SMTSO-3.6-L on tape	2	3	4	6	8	10
SMTSO-4.2-L on tape	2	3	4	6	8	10

Surface mount spacers

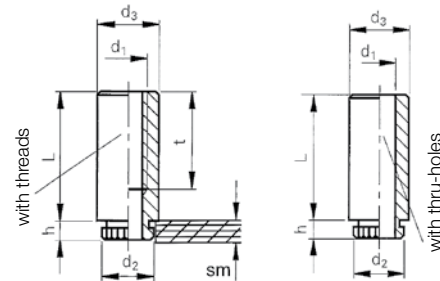
On tape and reel for PC boards



Type KFE for SMT assembly

Advantages of SMT assembly

- Fasteners can be fed automatically
- No external work step needed to add fastening points (e.g. press-in process)
- No danger of damaging PC boards (danger during press-in)
- Reduced handling
- Time-saving
- Process safety

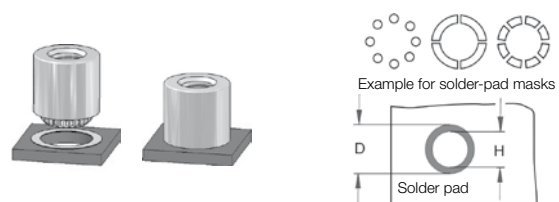


Material

Steel, tin-plated

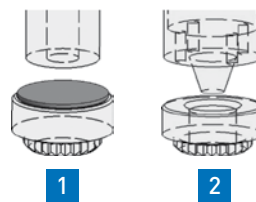
Use

PC boards with and **without** plated thru-holes




Processing

1. PEM® component with adhesive patch by means of standard vacuum pipette
2. PEM® component without adhesive patch by means of special vacuum pipette



3-D Data: <http://kvt.partcommunity.com>

Order description	Thread d_1	$\varnothing H$ in PC board $+0.08$ 0	d_2 ± 0.08	d_3 ± 0.13	h max.	sm min.* 	$\varnothing D$ min.
KFE-M3-L on tape	M3	4.8	4.68	5.56	1.53	1.53	6.2
KFE-3.6-L on tape	$\varnothing 3.6$ $+0.1$ -0.08	6.0	5.87	7.14	1.53	1.53	7.8
KFE-4.2-L on tape	$\varnothing 4.2$ $+0.1$ -0.08	7.0	6.86	8.74	1.53	1.53	9.4

Order description	Length code "L" $[\pm 0.13]$					
KFE-M3-L	3	4	6	8	10	
KFE-3.6-L	3	4	6	8	10	
KFE-4.2-L	3	4	6	8	10	
Thread depth $t_{min.}$	3	4	6	8	10	

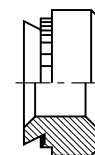
* sm min. refers to "without extension below"

Technical data – self-clinching nuts

For metallic materials

Types S, SS, SP, CLS, CLSS, H

Specifications subject to change without notice



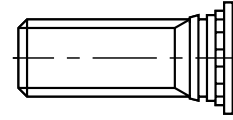
Thread	Type	Shank length	Sheet material	Installation (kN)	Pushout (N)	Torque-out (Nm)		
M2 M2.5 M3	S CLS	0	Aluminum	6.7 – 8.9	280	0.90		
		1			400	1.13		
		2			750	1.47		
		0	Steel		470	1.47		
		1			550	1.70		
		2			1010	2.03		
M3	SP	0	Stainless steel	35.6 – 44.5	575	1.58		
		1			725	1.92		
		2			1290	2.03		
M4	S CLS	0	Aluminum	11.2 – 13.4	300	2.37		
		1			470	2.60		
		2			970	4.00		
		0	Steel		490	2.95		
		1			645	4.00		
		2			1250	5.10		
M4	SP	0	Stainless steel	40 – 49	645	3.38		
		1			800	4.18		
		2			1600	5.08		
M5	SS CLSS	0	Aluminum	11.2 – 15.6	300	3.00		
		1			480	3.60		
		2			845	5.70		
		0	Steel		530	3.60		
		1			800	4.50		
		2			1112	6.80		
M5	SP	0	Stainless steel	42.3 – 51.2	800	3.95		
		1			1025	5.08		
		2			1775	6.77		
M6	S CLS	0	Aluminum	18 – 32	970	7.90		
		1			1580	10.20		
		2			1580	14.10		
		0	Steel		1380	13.00		
		1			1760	17.00		
		2			1760	17.00		
M6	SP	1	Stainless steel	60	2000	17.00		
M8	S CLS	1	Aluminum	18 – 32	1570	13.60		
		2				18.10		
		1	Steel			27 – 36	1870	18.70
		2						20.30
M10	H		Aluminum	22	1760			21.50
			Steel	33	2020			27.10

Technical data – self-clinching studs

For metallic materials

Type FH

Specifications subject to change without notice



Thread	Max. nut tightening torque (Nm)	Sheet thickness and material	Sheet hardness (H _{Rc})	Installation (kN)	Pushout (N)	Torque-out (Nm)	Pull-through (N)	Diameter test bushing
M2.5	0.41	1.6 mm Aluminum	29	8.9	465	1.0	2600	3.1
		1.5 mm Steel	59	11.1	740		2800	
M3	0.74	1.6 mm Aluminum	29	12.9	600	1.7	3150	3.6
		1.5 mm Steel	59	14.7	820		3840	
M4	1.70	1.6 mm Aluminum	29	20.0	975	2.9	4448	4.6
		1.5 mm Steel	59	28.9	1780		5650	
M5	3.50	1.6 mm Aluminum	29	24.5	1070	3.5	5170	5.6
		1.5 mm Steel	59	33.4	2000		6270	
M6	5.90	2.4 mm Aluminum	28	28.9	1660	7.3	10200	6.6
		2.2 mm Steel	46	44.5	2560		11300	
M8	14.20	2.4 mm Aluminum	28	29.8	1910	11.3	10500	8.6
		2.4 mm Steel	46	44.5	2890		15450	

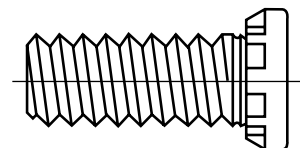
Technical data – self-clinching studs

For metallic materials

Types HFH, HFHD, HFHS, HFHDS

High-strength studs

- Specifications subject to change without notice
- Values also valid for studs with dog point lead-in option



Thread	Type	Max. nut tightening torque (Nm)	Sheet thickness and material	Sheet hardness (Hr _B)	Installation (kN)	Pushout (N)	Torque-out (Nm)	Tensile strength (kN)	Diameter test bushing
M5	HFH	4.4	1.50 mm Aluminum	15	13.0	800	5.4	12.8	6.35
	HFH		1.50 mm Steel	65	26.0	1500	7.6		
	HFHS		1.62 mm Aluminum	35	12.4	800	5.4	7.3	
	HFHS		1.47 mm Steel	54	21.7	1500	6.4		
M6	HFH	10.0	1.50 mm Aluminum	43	29.0	1270	14.0	18.1	7.49
	HFH		1.50 mm Steel	59	33.0	1750			
	HFHS		1.62 mm Aluminum	35	15.4	1270	11.0	10.3	
	HFHS		1.60 mm Steel	45	24.6	1750			
M8	HFH	21.7	2.30 mm Aluminum	39	35.6	1700	30.0	32.9	9.53
	HFH		2.30 mm Steel	58	44.5	2200			
	HFHS		2.23 mm Aluminum	44	24.4	1700	20.0	18.8	
	HFHS		2.48 mm Steel	43	37.8	2100			
M10	HFH	36.6	2.30 mm Aluminum	39	40.0	2445	36.0	52.2	11.56
	HFH		2.30 mm Steel	58	54.0	3470			
	HFHS		2.30 mm Aluminum	44	33.3	2445	36.0	29.9	
	HFHS		2.30 mm Steel		46.7	3470			

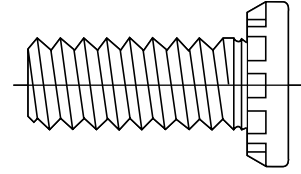
Technical data – self-clinching studs

For metallic materials

Types HFE and HFED

High pull-through resistance studs

- Specifications subject to change without notice
- Values also valid for studs with dog point lead-in option



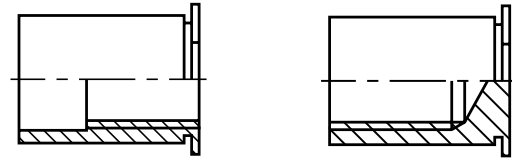
Thread	Type	Max. nut tightening torqu (Nm)	Sheet thickness and material	Sheet hardness [Hr _B]	Installation [kN]	Pushout [N]	Torque-out [Nm]	Tensile strength [kN]	Diameter test bushing
M5	HFE	4.40	1.00 mm Aluminum	27	37.7	690	8.1	9.7	7.40
			1.00 mm Steel	67	51.1	1350		10.6	
M6	HFE	10.00	1.00 mm Aluminum	27	39.0	750	11.8	14.2	8.20
			1.00 mm Steel	67	60.0	1400	14.4	15.5	
M8	HFE	21.70	1.50 mm Aluminum	22	42.0	1230	23.5	25.0	10.30
			1.50 mm Steel	65	71.1	2400	33.9	27.5	

Technical data – self-clinching standoffs

For metallic materials

Types SO, BSO, SOS, BSOS

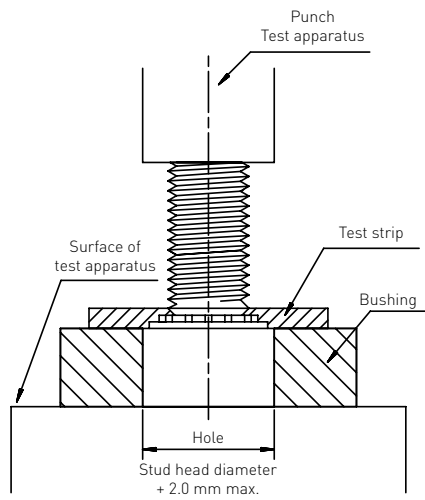
Specifications subject to change without notice



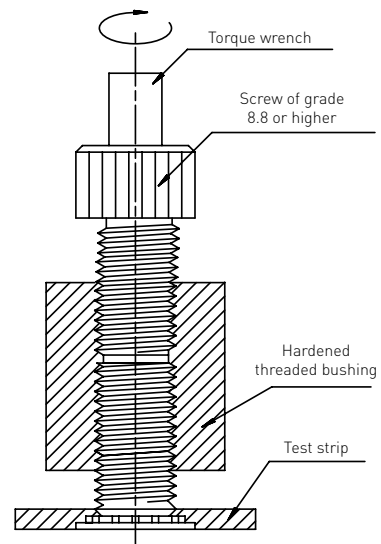
Thread	Type	Max. recom. tightening torque for mating screw (Nm)	Sheet material							
			1.5 mm Aluminum				1.5 mm Steel			
			Installation (kN)	Pushout (N)	Torque-out (Nm)	Pull-through (N)	Installation (kN)	Pushout (N)	Torque-out (Nm)	Pull-through (N)
M3	SO	0.55	4.9	710	1.24	1245	9.8	1000	2.15	1465
	BSO									
	SOS	0.44				996				1172
	BSOS									
3.5M3	SO	0.55	7.6	1330	2.82	1245	14.7	1860	3.95	1465
	BSO									
	SOS	0.44				996				1172
	BSOS									
M4	SO	2.0	10.7	1780	5.08	2575	17.8	2490	8.47	3110
	BSO									
	SOS	1.6				2060				2488
	BSOS									
M5	SO	3.60	10.7	1780	5.08	2575	17.8	2490	8.47	3110
	BSO									
	SOS	2.88				2060				2488
	BSOS									

Test set-ups

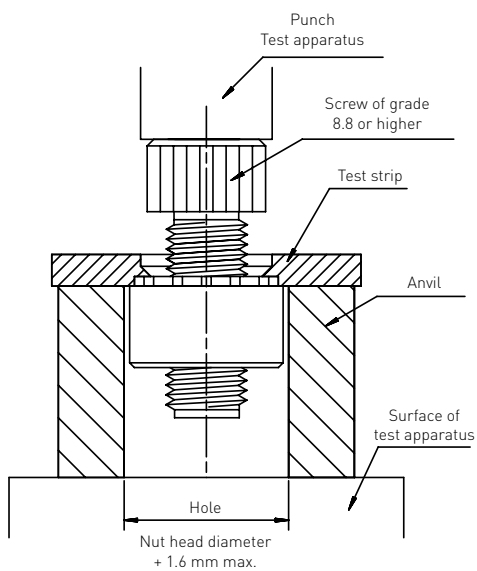
Stud pushout test set-up



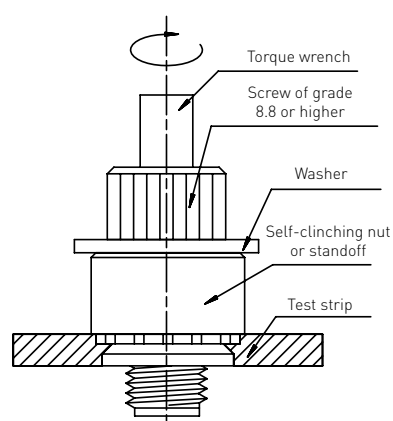
Stud torque-out test set-up



Nut and standoff pushout test set-up



Nut and standoff torque-out test set-up



PEMSERTER® installation machines

PEMSERTER®3000/2000/4 AF/4

Flexible, powerful and safe – for reliable processing

No matter what requirements are placed on fabrication, PEMSERTER® machines guarantee an optimal installation of all PEM® self-clinching fasteners.

From the manual entry-level model, to semi-automated versions with feeding options, through high-tech machines with the ability to feed four

different fastener types and even robotic interfaces, PEM® offers a series of machines tailored to every requirement. It's also possible to feed fasteners directly into the user's press.

Would you like more details? Please request our special catalog.

PEMSERTER® 3000



PEMSERTER® 3000MB™



PEMSERTER® 2000



PEMSERTER® 4 AF



PEMSERTER® 4



PEMSERTER® IN-DIE



PEMSERTER® technical overview

PEMSERTER®3000/2000/4 AF/4

	PEMSERTER® 3000	PEMSERTER® 2000	PEMSERTER®4 AF	PEMSERTER® 4
Seconds per stroke	1	1.5	3	3
Ram force	71.2 kN	71.2 kN	53,4 kN	53.4 kN
Throat depth	610 mm	610 mm	457 mm	457 mm
Stainless steel technology	•	–	–	–
Automatic registration of ram force	•	–	–	–
Monitoring of ram force	•	•	–	–
Photo-optic self-monitoring safety system	•	•	–	–
Tool changer – QX (4x)	◦	◦	–	–
QX drive	◦	◦	–	–
Second bowl feeder	◦	◦	–	–
Touchscreen control	Ind. PC Windows XP	PLC	PLC	–
FLM – fastener length monitoring	◦	◦	–	–
Vacuum monitoring	•	•	•	–
Operating software	•	•	•	–
Storage of digital images	•	–	–	–
Failure-analysis software	•	•	•	–
Robot interface ability	•	◦	–	–
Delay time/timer	•	•	•	•
Tool protection	•	•	•	•
Fastener counter	•	•	•	•
Laser spot	•	•	•	•
Batch counter	•	•	•	–
Bowl sizes	up to M10	up to M10	up to M6	–
Type of drive	Servo motor	hydropneumatic	pneumatic	Air
Electric connection	400V/50Hz/32 Amp.	230V/50Hz/16 Amp.	230V/50Hz/16 Amp.	–
Air connection	5 – 6 bar	6 – 8 bar	max. 6 bar	max. 6 bar
Height	2.080 mm	1.930 mm	1.676 mm	1.676 mm
Width	920 mm	920 mm	690 mm	690 mm
Depth	1.260 mm	1.260 mm	940 mm	940 mm
Weight	approx. 1.235 kg	approx. 1.135 kg	ca. 390 kg	approx. 308 kg
Training and commissioning	•	•	•	•
Guarantee/years	1	1	1	1

• Standard | ◦ optional | – unavailable

Supplier identification – quality assurance

Trademarks

It is possible to identify our PEM® self-clinching fasteners with their embossed supplier identification.

Nuts and standoffs – annular grooves



Studs and quick-locking panel fasteners – dimple with round embossing



Nuts and Hybrid® (metalloplastic)



Quality Assurance

Quality assurance has the highest priority at KVT-Koenig GmbH. We fulfill the continually increasing quality requirements in industry through an efficient and integrated quality management program.



KVT-Fastening – Fastening technology



Blind rivet nuts



Blind rivet technology



Thread inserts



Self-clinching fasteners



Stud welding systems¹⁾



Lock nuts



Bonding fasteners



Access solutions



Quick fastening elements and clips



Quick release pins and spring plungers



Adhesives and sealants¹⁾



Construction fasteners²⁾



Special processes²⁾



Plugs



Pressure intensifiers³⁾



Installation technology



Quick connectors⁴⁾

Fastening, sealing and flow control solutions for complex applications

The extensive KVT-Fastening portfolio offers optimal solutions for your most challenging applications. The products included in this catalog represent only a selection from our entire product portfolio. Upon request, we will be pleased to provide additional information or an individual consultation to you.

Intelligent logistic systems

Bossard SmartBin and SmartLabel are intelligent logistics systems which monitor stock with total reliability and ensure stock replenishment automatically. An online system transmits the data to the Bossard server, and this – if necessary – triggers an order. These systems ensure quick and easy availability of C-parts while production is running.



Logistic systems

Competent analysis for efficient solutions

KVT-Fastening's highly qualified experts analyze the given task at hand. Based on this sound understanding of the project, they then develop ideal solutions that are economical, efficient, and safe.



Solutioneering

For more information about our range of products and order at our E-shop, please visit www.kvt-fastening.com

¹⁾ Not available in Germany. ²⁾ Only available in Switzerland. ³⁾ Not available in Switzerland. ⁴⁾ Not available in Austria.

KVT-Fastening
Branch of Bossard Ltd
Dietikon/Zürich | Switzerland
Tel: +41 44 743 33 33
info-CH@kvt-fastening.com
www.kvt-fastening.ch

KVT-Fastening GmbH
Illerrieden | Germany
Tel: +49 7306 782-0
info-DE@kvt-fastening.com
www.kvt-fastening.de

KVT-Fastening GmbH
Linz/Pichling | Austria
Tel: +43 732 25 77 00
info-AT@kvt-fastening.com
www.kvt-fastening.at

KVT-Fastening Sp. z o.o.
Radom | Poland
Tel: +48 58 762 17 80
info-PL@kvt-fastening.com
www.kvt-fastening.pl

KVT-Fastening S.R.L.
București | Romania
Tel: +40 37 1381155
info-RO@kvt-fastening.com
www.kvt-fastening.ro

KVT-Fastening spol. s.r.o.
Bratislava | Slovakia
Tel: +421 9 11102510
info-SK@kvt-fastening.com
www.kvt-fastening.sk

KVT-Tehnika pritrjevanja d.o.o.
Ljubljana | Slovenia
Tel: +386 1 2808019
info-SI@kvt-fastening.com
www.kvt-fastening.si

KVT-Fastening s.r.o.
Brno | Czech Republic
Tel: +420 547 125200201
info-CZ@kvt-fastening.com
www.kvt-fastening.cz

KVT-Fastening Kft.
Budapest | Hungary
Tel: +36 1 769 0925
info-HU@kvt-fastening.com
www.kvt-fastening.hu



www.kvt-fastening.com

