



SHEET METAL
FASTENERS
Catalogue

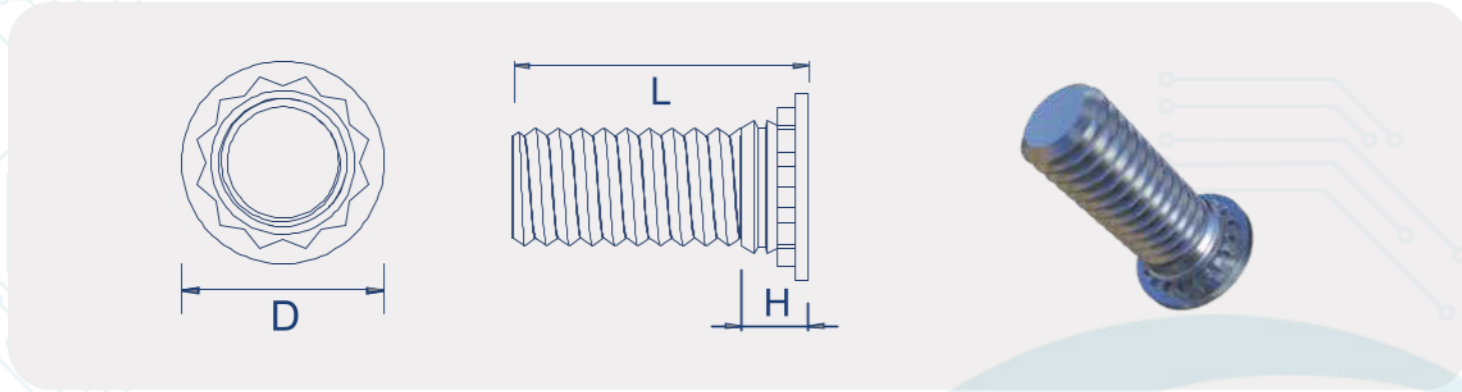
S&G Paneltech & Fastening Systems is a trusted manufacturer & distributor specializing in high-quality electrical panel cabinets, panel accessories, and fastening solutions.

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Flush Head Studs

KB-FH/KB-FHS/KB-FH4/KB-FHA



Metric Dimensions

Thread	M2	M2.5	M3	M3.5	M4	M5	M6	M8
D ±0.4	3.5	4.1	4.6	5.3	5.9	6.5	8.2	9.6
H maximum	1.95	1.95	2.1	2.2	2.4	2.7	3.0	3.7
Minimum sheet thickness	1.0	1.0	1.0	1.0	1.0	1.0	1.6	2.4
Recommended hole size +0.08	2.0	2.5	3.0	3.5	4.0	5.0	6.0	8.0
Minimum distance to edge of sheet	5.2	5.4	5.6	6.4	7.2	7.2	7.9	9.6

Preferred Range

Thread	M2	M2.5	M3	M3.5	M4	M5	M6	M8
5			•		•			
6	•	•	•		•	•		
8	•	•	•	•	•	•	•	•
10	•	•	•	•	•	•	•	•
12	•	•	•	•	•	•	•	•
15	•	•	•	•	•	•	•	•
16	•		•	•	•	•	•	•
18	•	•	•		•	•	•	•
20	•	•	•	•	•	•	•	•
22			•		•	•	•	•
25			•	•	•	•	•	•
28					•	•	•	•
30			•		•	•	•	•
35			•		•	•	•	•
38					•	•	•	•
40					•	•	•	•
45					•	•	•	•
50					•	•	•	•

(L) Length ±0.4

Metric Performance Data: KB-FH4

Thread	M2.5	M3	M4	M5	M6	M8
Test sheet material	Stainless Steel-400					
Sheet thickness	1.4	1.5	1.5	1.5	1.5	2.5
Installation (kN)	40.0	41.0	51.0	54.0	71.0	73.5
Pushout (N)	2000	2230	3300	3600	4210	5500
Torque-out (Nm)	14	1.8	6.6	10.8	15.9	30.0
Pull through (N)	-	3300	8010	10020	14950	-

Metric Performance Data: KB-FHS

Thread	M2	M2.5	M3	M4	M5	M6	M8
Test sheet material	Stainless Steel						
Sheet thickness	1.5	1.5	1.5	1.5	1.5	2.5	2.5
Installation (kN)	13.5	13.5	14.7	26.0	32.0	44.0	49.9
Torsional resistance (Nm)	0.45	0.8	1.4	2.9	6.4	10.0	17.0
Pushout (N)	740	740	820	1790	2000	2500	2800
Pull through (N)	-	1800	2450	4800	6000	10600	13600

Metric Performance Data: KB-FH

Thread	M2	M2.5	M3	M3.5	M4	M5	M6	M8
Test sheet material	Steel							
Sheet thickness	1.5	1.5	1.5	1.5	1.5	1.5	2.5	2.5
Installation (kN)	9.0	11.0	14.7	22.3	28.0	33.5	45.0	45.0
Torsional resistance (Nm)	0.45	1.0	1.7	2.8	4.3	6.8	12.0	19.5
Pushout (N)	700	740	820	1335	1800	2100	2600	2900
Pull through (N)	1700	2800	3900	3780	5700	6300	11400	15500

KB-FH - Recommended for use in sheet hardness: HRB 80 or less

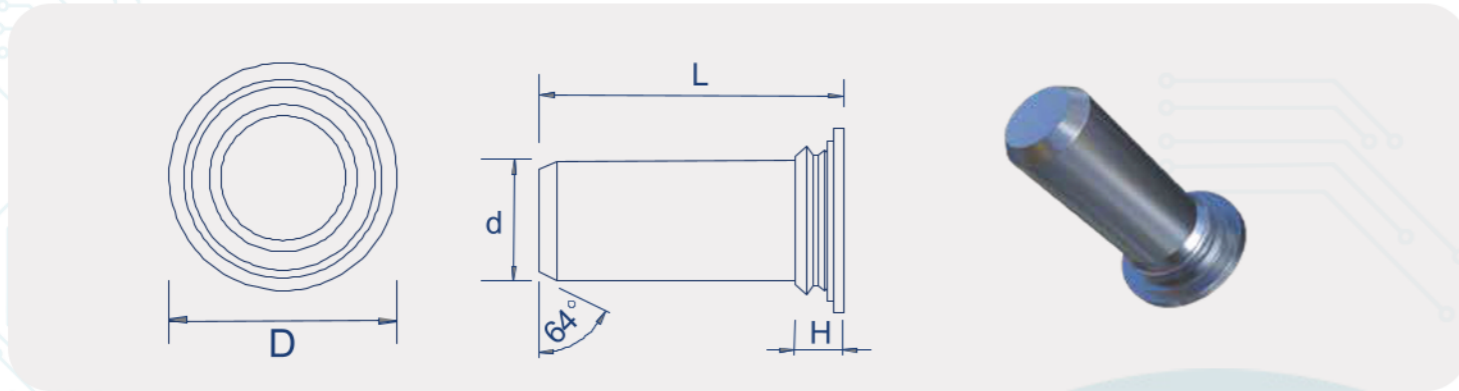
KB-FHS - Recommended for use in sheet hardness: HRB 70 or less

KB-FH4 - Recommended for use in sheet hardness: HRB 92 or less

KB-FHA - Recommended for use in sheet hardness: HRB 50 or less

Flush Head Pins

KB-TP/KB-TPS/KB-TP4



Metric Dimensions

(d) Pin diameter ±0.05	3	4	5	6
Minimum sheet thickness	1.0			
Recommended hole size	3.5	4.5	5.5	6.5
D ±0.4	5.20	6.12	7.19	8.13
H maximum	2.29	2.29	2.29	2.29
Minimum distance to edge of sheet	6.4	7.1	7.61	7.9

Preferred Range

Pin diameter ±0.05	3	4	5	6
(L) Length ±0.4	3	.		
	4	.		
	6	.	.	
	8	.	.	.
	10	.	.	.
	12	.	.	.
	16	.	.	.
	20	.	.	.

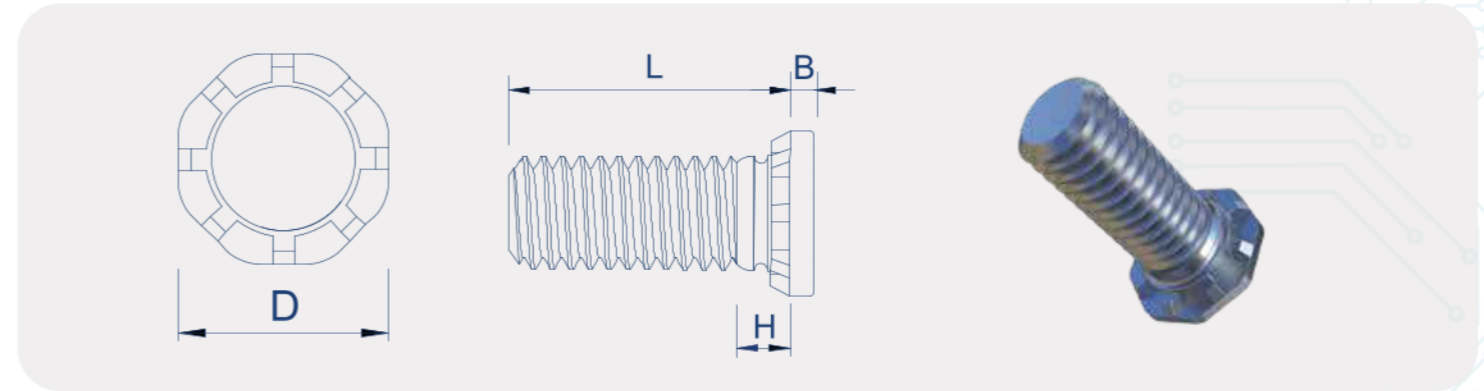
Metric Performance Data: KB-TP

Pin diameter	3	4	5	6
Test sheet material	Steel			
Installation (kN)	23	27	35	40
Pushout (kN)	1	1.6	1.8	2.2

- KB-TP** - Recommended for use in sheet hardness: HRB 80 or less
- KB-TPS** - Recommended for use in sheet hardness: HRB 70 or less
- KB-TP4** - Recommended for use in sheet hardness: HRB 92 or less

High Strength Studs

KB-HFH/KB-HFHS



Metric Dimensions

Thread	M5	M6	M8	M10
D ±0.25	7.8	9.4	12.5	15.7
H maximum	2.7	2.8	3.5	4.1
B maximum	1.14	1.27	1.78	2.29
Minimum sheet thickness	1.3	1.5	2.0	2.3
Recommended hole size +0.13	5.0	6.0	8.0	10.0
Minimum distance to edge of sheet	10.7	11.5	12.7	13.7

Preferred Range

Thread	M5	M6	M8	M10
(L) Length ±0.4	10	.		
	12	.	.	
	15	.	.	.
	16			.
	18			.
	20	.	.	.
	25		.	.
	30	.	.	.
	35		.	.
	40		.	.
	45			.
	50			.

Metric Performance Data: KB-HFH

Thread		M5	M6	M8	M10
Test sheet thickness	Aluminium	1.5	1.5	2.3	2.4
	Steel				
Test sheet hardness (HRB)	Aluminium	15	43	39	39
	Steel	65	59	58	58
Installation (kN)	Aluminium	14	30	36	41
	Steel	27	34	45	55
Pushout (N)	Aluminium	805	1280	1750	2450
	Steel	1550	1780	2210	3475
Torque-out (Nm)	Aluminium	5.4	14.5	30.1	36
	Steel	7.7	14.5	30.1	49.5

Metric Performance Data: KB-HFHS

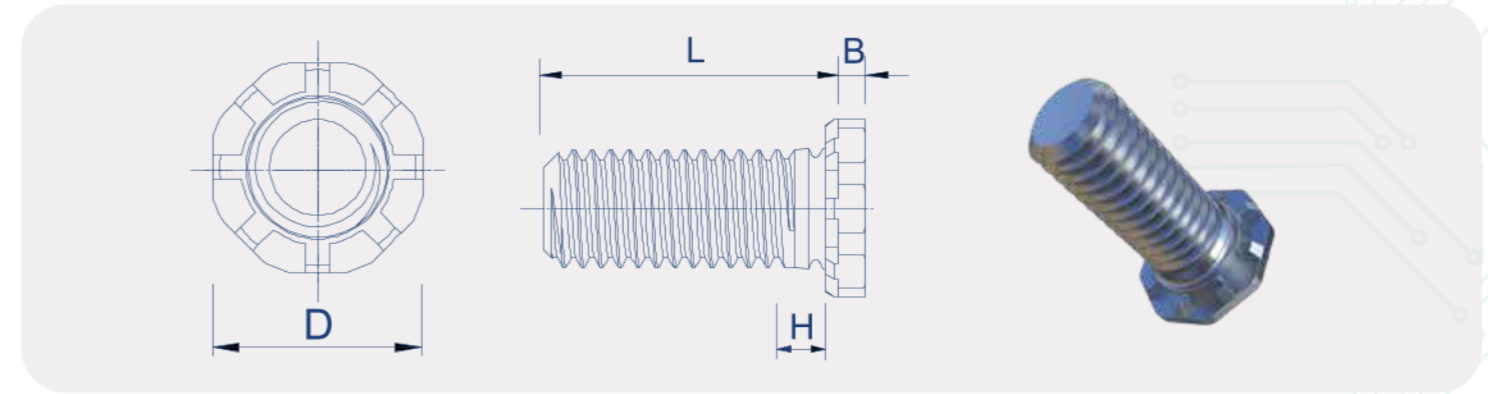
Thread		M5	M6	M8	M10
Test sheet thickness	Aluminium	1.62	1.62	2.23	2.3
	Steel	1.5	1.6	2.48	2.3
Test sheet hardness (HRB)	Aluminium	35	35	44	44
	Steel	54	45	43	44
Installation (kN)	Aluminium	13	15.5	24.5	34
	Steel	22.5	25	38	47
Pushout (N)	Aluminium	805	1280	1700	2450
	Steel	1505	1780	2200	3500
Torque-out (Nm)	Aluminium	5.4	11.5	21	36.5
	Steel	6.5	11.5	21	36.5

KB-HFH - Recommended for use in sheet hardness: HRB 85 or less

KB-HFHS - Recommended for use in sheet hardness: HRB 70 or less

High Strength Studs for Thin Sheets

KB-HFE



Metric Dimensions

Thread	M5	M6	M8
D ±0.25	9.60	11.35	15.30
H maximum	2.60	2.80	3.30
B maximum	1.35	1.52	2.13
Minimum sheet thickness	1.0	1.0	1.5
Recommended Hole Size +0.13	5.0	6.0	8.0
Minimum distance to edge of sheet	10.00	11.50	14.50

Preferred Range

Thread	M5	M6	M8
8	.		
15	.	.	
18		.	
20	.	.	.
25		.	.
30		.	.
35			.
40			.
50			.

(L) Length ±0.4

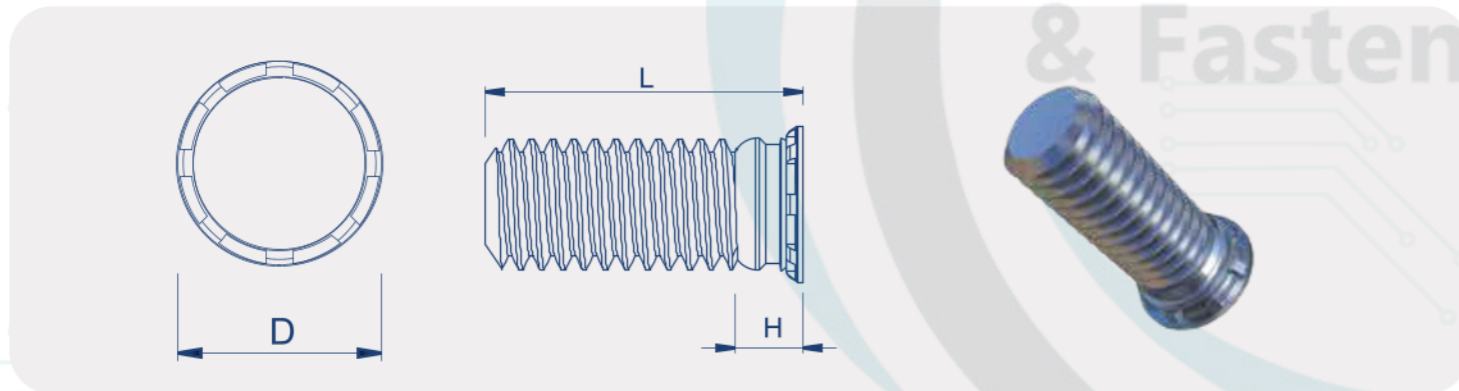
Metric Performance Data: KB-HFE

Thread	M5	M6	M8
Test sheet material	Steel		
Test sheet thickness	1.00	1.00	1.50
Maximum nut tightening torque (Nm)	4.40	10.00	21.70
Installation (kN)	51.10	60.00	71.10
Pushout (N)	1350	1400	2400
Torque-out (Nm)	8.10	14.40	33.90
Tensile strength (kN)	12.80	18.10	32.90
Pull through (kN)	10.60	15.50	27.50
Bushing hole size for pull through (mm)	7.40	8.20	10.30

KB-HFE - Recommended for use in sheet hardness: HRB 85 or less

Low Displacement Flush Head Studs

KB-FHL/KB-FHLS



Metric Dimensions

Thread	M2.5	M3	M4	M5
D ±0.4	3.15	3.65	4.65	5.9
H maximum	2.1	2.1	2.4	2.7
Minimum sheet thickness	1.0			
Recommended hole size +0.08	2.5	3.0	4.0	5.0
Minimum distance to edge of sheet	2.8	3.3	4.3	5.6

Preferred Range

Thread	M2.5	M3	M4	M5
(L) Length ±0.4	6	.	.	.
	8	.	.	.
	10	.	.	.
	12	.	.	.
	15	.	.	.
	18	.	.	.
	20	.	.	.
	25	.	.	.
	30	.	.	.

Metric Performance Data: KB-FHL/KB-FHLS

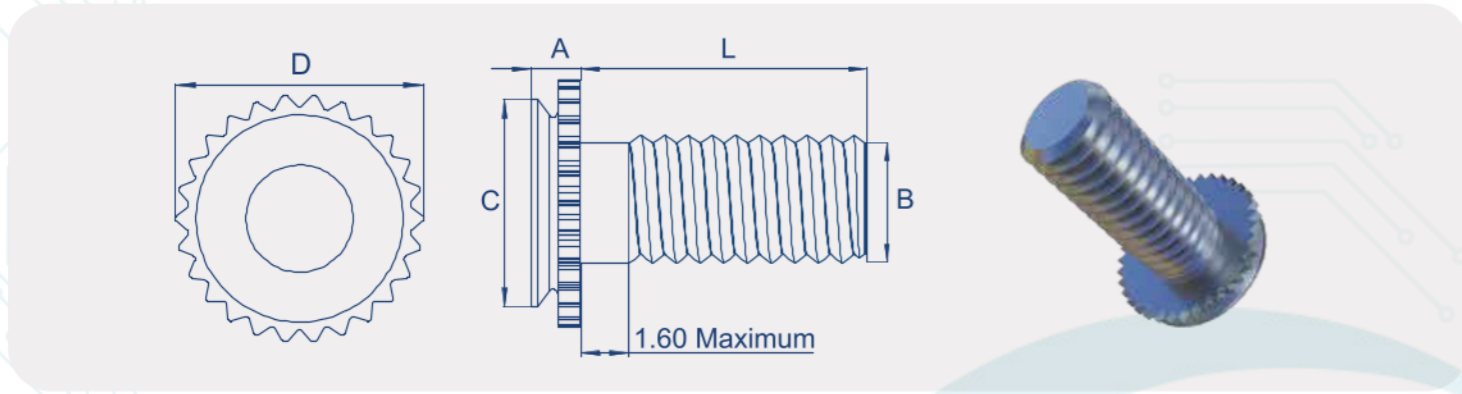
Thread		M2.5	M3	M4	M5
Test material sheet thickness	Aluminium	1.2	1.2	1.2	1.2
	Steel	1.1	1.1	1.1	1.1
Installation (kN)	Aluminium	3.2	4.5	5.4	11.1
	Steel	5.4	5.4	6.7	20.1
Pushout (N)	Aluminium	286	286	370	535
	Steel	451	476	555	1010
Torque-out (Nm)	Aluminium	0.56	0.66	1.2	2.2
	Steel	1.2	1.3	2.2	4.5
Pull through (N)	Aluminium	1250	1300	1560	1900
	Steel	2290	2550	3350	3760

KB-FHL - Recommended for use in sheet hardness: HRB 80 or less

KB-FHLS - Recommended for use in sheet hardness: HRB 70 or less

Concealed Head Studs

KB-CHC/KB-CFHC/KB-CHA/KB-CFHA



Metric Dimensions

Thread	M3	M4	M5
D ±0.4	5.21	8.33	8.89
C maximum	4.35	7.35	7.9
Blind mounting hole ±0.08	4.37	7.37	7.93
Minimum distance to edge of sheet	4.0	5.6	6.4
Hole in mating part +0.08	3.6	4.6	5.6
Hole depth	KB-CHC / KB-CHA	1.10	
	KB-CFHC / KB-CFHA	1.91	
A maximum	KB-CHC / KB-CHA	1.04	
	KB-CFHC / KB-CFHA	1.80	
Minimum sheet thickness	KB-CHC / KB-CHA	1.60	
	KB-CFHC / KB-CFHA	2.40	

Preferred Range

Thread	M3	M4	M5
6	.	.	
8	.	.	
10	.	.	
(L) Length ±0.4	.	.	.
12	.	.	.
16	.	.	.
20	.	.	.
25	.	.	.

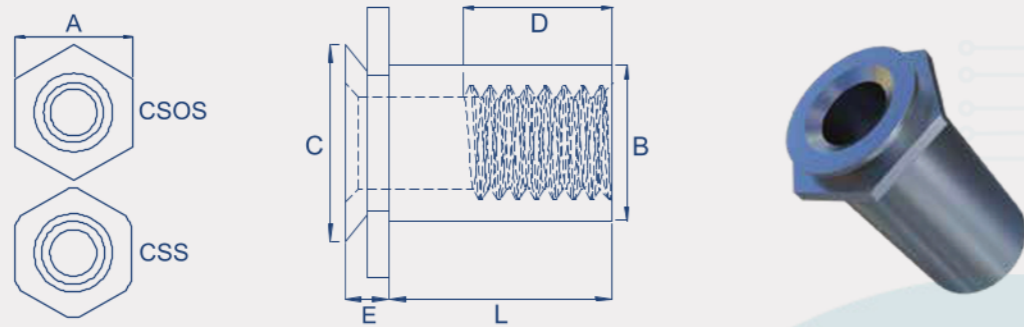
Metric Performance Data: KB-CHC/KB-CFHC/KB-CHA/KB-CFHA

Thread		M3	M4	M5
Installation (kN)	Stainless steel: KB-CHC	8.0	17.8	22.2
	Stainless steel: KB-CFHC	8.9	14.7	17.8
	Aluminium: KB-CHA	6.2	12.5	17.8
	Aluminium: KB-CFHA	6.7	13.3	15.6
Pushout (N)	Stainless steel: KB-CHC	1065	1200	1290
	Stainless steel: KB-CFHC	1065	1955	3020
	Aluminium: KB-CHA	555	645	755
	Aluminium: KB-CFHA	845	1065	1330
Maximum tightening torque	Stainless steel: KB-CHC	0.5	2.0	3.6
	Stainless steel: KB-CFHC	0.5	2.0	3.6
	Aluminium: KB-CHA	0.3	1.2	2.16
	Aluminium: KB-CFHA	0.3	1.2	2.16

KB-CHC/CFHC - Recommended for use in sheet hardness: HRB 70 or less
KB-CHA/CFHA - Recommended for use in sheet hardness: HRB 50 or less

Concealed Head Standoffs

KB-CSOS/KB-CSS



Metric Dimensions

Thread	M3	M4	M5	M6
A	6.35	8.73	9.53	11.11
D	5.0	6.5	9.6	9.6
B	4.2	6.23	7.37	9.0
C	5.39	7.9	8.72	9.89
Blind mounting hole ± 0.8	5.41	7.92	8.74	9.9
Minimum distance to edge of sheet	4.8	6.4	7.2	9.5
Hole in mating part $+0.08$	5.41	7.92	8.73	9.9
Hole depth	KB-CSOS	1.91	1.91	1.91
	KB-CSS	1.09	1.09	-
E Minimum depth of blind hole	KB-CSOS	1.83	1.83	1.83
	KB-CSS	1.04	1.04	-
Minimum sheet thickness	KB-CSOS	2.4	2.4	2.4
	KB-CSS	1.6	1.6	-

Preferred Range

Thread	M3	M4	M5	M6
4	.			
6	.	.		
8	.	.		
(L) Length ± 0.4				
10	.			
12	.			
16	.			
20	.			

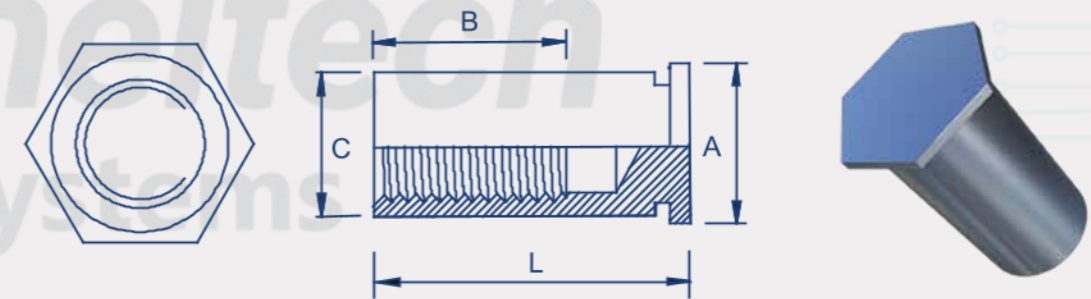
Metric Performance Data: KB-CSOS/KB-CSS

Thread		M3	M4	M5	M6
Installation (kN)	Stainless steel: KB-CSS	17.8	21.3	24.5	-
	Stainless steel: KB-CSOS	19.2	23.6	26.7	28.9
Pushout (N)	Stainless steel: KB-CSS	1330	1775	2000	-
	Stainless steel: KB-CSOS	1465	1955	2665	2860
Maximum tightening torque	Stainless steel: KB-CSS	0.55	2.0	3.6	-
	Stainless steel: KB-CSOS	0.44	1.6	2.9	7.2

KB-CSOS/CSS - Recommended for use in sheet hardness: HRB 70 or less

Blind Standoffs

KB-BSO/KB-BSOS/KB-BSO4/KB-BSOA



Metric Dimensions

Thread	M2, M2.5, M3	M3alt	M4	M5
C -0.13	4.2	5.39	7.12	7.12
A Nom.	4.8	6.4	7.9	7.9
Minimum sheet thickness	1.0	1.0	1.27	1.27
Recommended hole size $+0.08$	4.22	5.41	7.14	7.14
Minimum distance to edge of sheet	6.0	6.8	8.0	8.0

(L) Length $+0.05/-0.13$	5	6	7	8	10	12	14	15	16	18	20	22	25
(B) Thread depth - Minimum	2.8	3.2	3.6	4.0	5.0	6.5			9.5				

Metric Performance Data: KB-BSO/KB-BSOS

Thread		M2, M2.5, M3	M3alt	M3.5, M4	M5
Test sheet material		Steel			
Test sheet thickness		1.5			
Installation	(kN) Steel + Stainless	9.9	14.8	17.9	17.9
Torsional resistance	(Nm) Steel + Stainless	2.16	3.95	8.5	8.5
Pushout	(N) Steel + Stainless	1050	1870	2500	2500
Pull-through	(N) Steel	1470	1470	3180	3180
	(N) Stainless	1180	1180	2490	2490
Maximum torque for mating screw	(Nm) Steel	0.56	0.56	2.1	3.7
	(Nm) Stainless	0.45	0.45	1.7	2.9

KB-BSO - Recommended for use in sheet hardness: HRB 80 or less

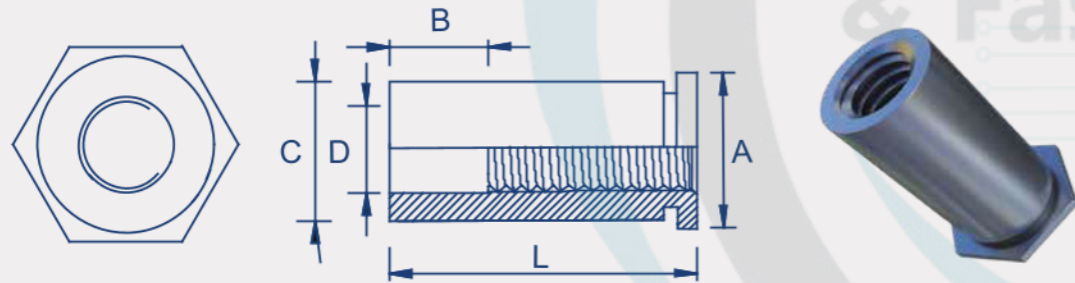
KB-BSOS - Recommended for use in sheet hardness: HRB 70 or less

KB-BSO4 - Recommended for use in sheet hardness: HRB 88 or less

KB-BSOA - Recommended for use in sheet hardness: HRB 50 or less

Through Standoffs

KB-SO/KB-SOS/KB-SO4/KB-SOA



Metric Dimensions

Thread	M2, M2.5, M3	M3alt	M4	M5
C ± 0.13	4.2	5.39	7.12	7.12
D counterbore diameter ± 0.13	3.2	3.2	4.8	5.35
A Nom.	4.8	6.4	7.9	7.9
Minimum sheet thickness	1.0	1.0	1.27	1.27
Recommended hole size +0.08	4.22	5.41	7.14	7.14
Minimum distance to edge of sheet	6.0	6.8	8.0	8.0

Metric Performance Data: KB-SO/KB-SOS

Thread		M2, M2.5, M3	M3alt	M3.5, M4	M5
Test sheet material		Steel			
Test sheet thickness		1.5			
Installation	Metric (kN)	9.9	14.8	17.9	17.9
Torsional resistance	Metric (Nm)	2.16	3.95	8.5	8.5
Pushout	Metric (N)	1050	1870	2500	2500
Pull-through	Metric (N) (Steel)	1470	1470	3180	3180
	(N) (st/st)	1180	1180	2490	2490

KB-SO - Recommended for use in sheet hardness: HRB 80 or less

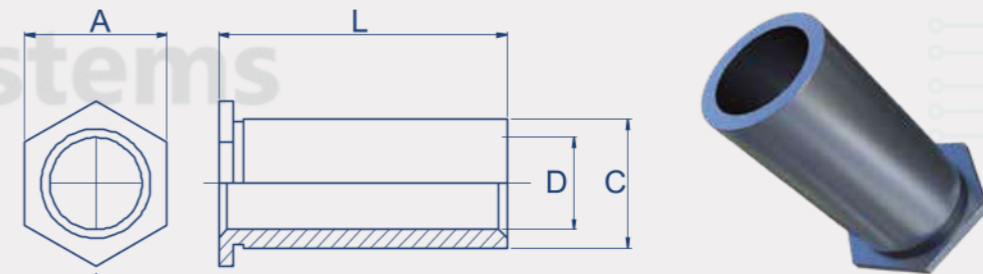
KB-SOS - Recommended for use in sheet hardness: HRB 70 or less

KB-SO4 - Recommended for use in sheet hardness: HRB 88 or less

KB-SOA - Recommended for use in sheet hardness: HRB 50 or less

Clear Hole Standoffs

KB-SO



Metric Dimensions

Diameter code	43.1	63.1	63.6	83.6	84.1	85.1
D counterbore diameter ± 0.13	3.1	3.1	3.6	3.6	4.1	5.1
C ± 0.13	4.2	5.39	5.39	7.12	7.12	7.12
A Nom.	4.8	6.4	6.4	7.9	7.9	7.9
Minimum sheet thickness	1.0	1.0	1.0	1.27	1.27	1.27
Recommended hole size +0.08	4.22	5.41	5.41	7.14	7.14	7.14
Minimum distance to edge of sheet	6.0	6.8	6.8	8.0	8.0	8.0

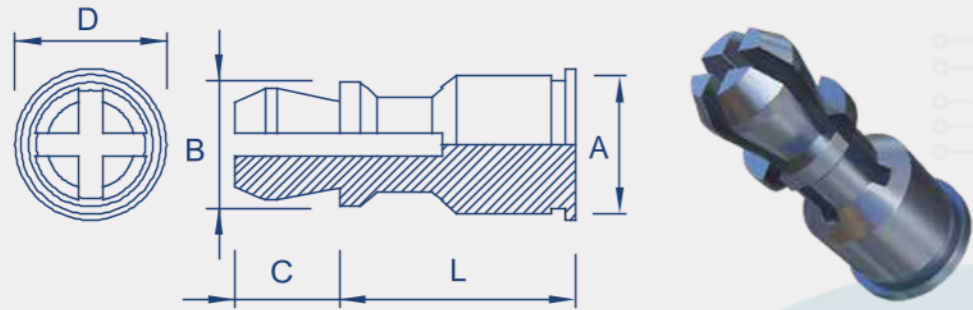
(L) Length +0.05/-0.13

3	4	5	6	8	10	12	14	16	18	20
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KB-SO - Recommended for use in sheet hardness: HRB 80 or less

Clip-on Standoffs

KB-SSS/KB-SSC/KB-SSA



Metric Dimensions

Top panel mounting hole diameter	(L) Length code ± 0.13								A maximum	B ± 0.13	C ± 0.13	D ± 0.13	Hole size $+0.08$	
Metric 4mm	8	10	12	14	16	18	20	22	25	5.39	4.78	3.58	6.35	5.4

Metric Performance Data: KB-SSS/KB-SSC/KB-SSA

Type	Steel Zinc	Stainless Steel	Aluminium
Installation (kN)	15.6	16.5	6.7
Pushout (kN)	1785	1785	881
Test sheet material	Steel	Steel	Aluminium
Test sheet thickness	1.5	1.5	1.0

Part number	Panel 1 - Metal HRB50					Panel 2 - PC board or metal			
	Bottom mounting hole $+0.08$	Maximum hardness	Minimum thickness	Minimum distance to edge of sheet	Maximum location tolerance	Top mounting hole $+0.08$	Maximum hardness	Thickness range	Minimum distance to edge of sheet
KB-SSS	5.41	HRB 60	1.0	6.6	± 0.13	4.0	Nolimit	1-1.8	2.54
KB-SSC		HRB 70							
KB-SSA		HRB 50							

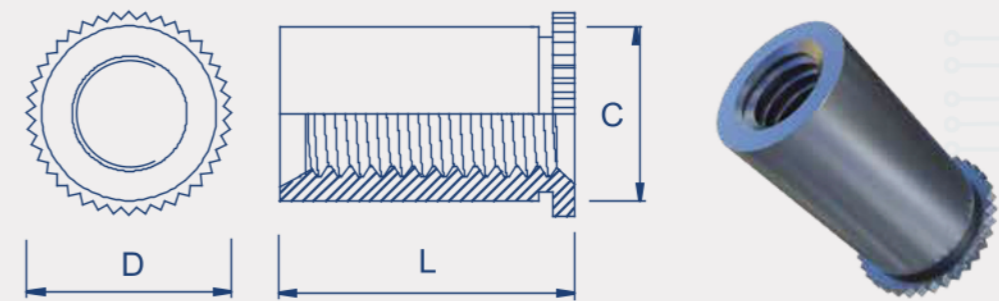
KB-SSS - Recommended for use in sheet hardness: HRB 60 or less

KB-SSC - Recommended for use in sheet hardness: HRB 70 or less

KB-SSA - Recommended for use in sheet hardness: HRB 50 or less

Screw Lock Threaded Standoffs

KB-DSO/KB-DSOS



Metric Dimensions

Thread	M3	
(L) Length $+0.05 -0.13$	6.35	7.0
C maximum	4.2	
D Nom.	4.92	
Sheet thickness	0.94 - 6.35	
Recommended hole size $+0.08$	4.2	
Minimum distance to edge of sheet	3.2	

Metric Performance Data: KB-DSO/KB-DSOS

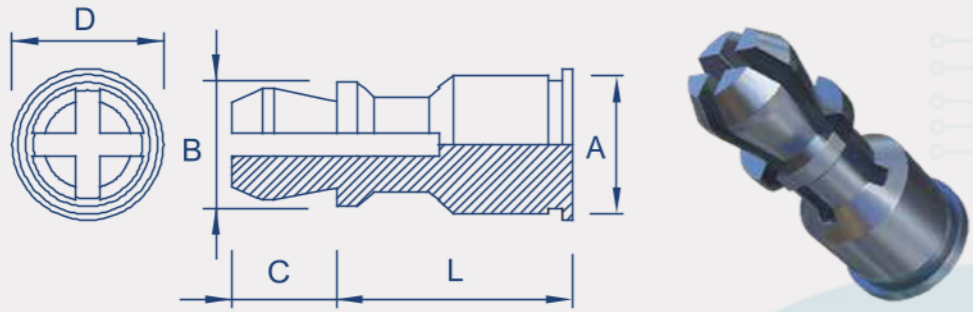
Thread	M3	
Sheet thickness	Steel	1.0
	Aluminium	1.0
Installation (kN)	Steel	5.85
	Aluminium	4.5
Pushout (N)	Steel	334
	Aluminium	225
Torsional resistance (Nm)	Steel	1.2
	Aluminium	1.1

KB-DSO - Recommended for use in sheet hardness: HRB 80 or less

KB-DSOS - Recommended for use in sheet hardness: HRB 70 or less

Hole Slide Lock Standoffs

KB-SKC



Metric Dimensions

Body size - Sheet code	61.5	D Nom.	6.35
A maximum	5.39	G ± 0.08	1.73
B ±0.08	4.5	Recommended hole size + 0.08	5.5
C maximum	2.75		

Length code 'L' mm ±0.13

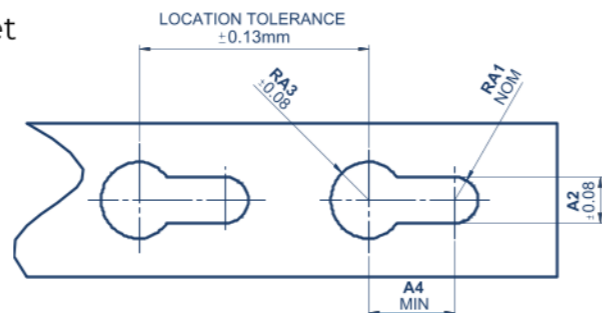
2	4	6	8	10	12	14	16	18	20	22	25
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Metric Performance Data: KB-SKC

Test sheet material	Steel		5052-H34 Aluminium	
Test sheet thickness	1.52			
Body sheet code	Installation (kN)	Pushout (N)	Installation (kN)	Pushout (N)
61.5	14.3	2650	7.0	1100

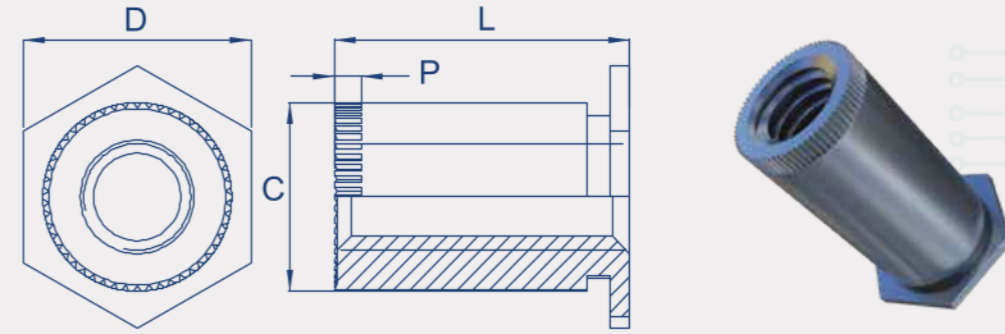
Part number	Panel 1 - Metal HRB50					Panel 2 - PC board or metal					
	Bottom mounting hole +0.08	Maximum hardness	Minimum thickness	Minimum distance to edge of sheet	Maximum location tolerance	Top mounting hole +0.08				Thickness range	Minimum distance to edge of sheet
						A1 Nom.	A2 ±0.08	A3 ±0.08	A4 Minimum.		
KB-SKC	5.4	HRB70	1.0	6.6	±0.13	1.5	3.0	5.0	3.75	1.45-1.62	4.1

KB-SKC - Recommended for use in sheet hardness: HRB 70 or less



Grounding Standoffs

KB-SOSG



Metric Dimensions

Thread	M3
C ± 0.13	5.39
D Nom.	6.4
Minimum sheet thickness	1.0
Knurling	0.76
Recommended hole size +0.08	5.4
Minimum distance to edge of sheet	6.8

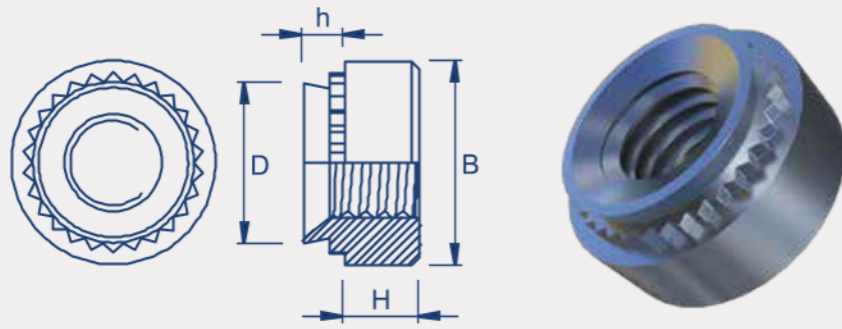
Metric Performance Data: KB-SOSG

Thread	Type	Length code 'L' mm ±0.13					
		3	4	6	8	10	12
M3	KB-SOSG						

KB-SOSG - Recommended for use in sheet hardness: HRB 70 or less

Nuts

KB-S/KB-CLS/KB-SP4/KB-SP2/KB-CLA/KB-H



Metric Dimensions

Thread	M2, M2.5, M3			M3alt			M3.5			M4			
Shank code	0	1	2	0	1	2	0	1	2	0	1	2	3
D maximum	4.20			4.73			4.73			5.38			
B ±0.2	6.35			7.1			7.1			7.95			
H ±0.25	1.5			1.5			1.5			2.0			
h maximum	0.77	0.97	1.38	0.77	0.97	1.38	0.77	0.97	1.38	0.77	0.97	1.38	2.21
Minimum sheet thickness	0.8	1.0	1.4	0.8	1.0	1.4	0.8	1.0	1.4	0.8	1.0	1.4	2.3
Recommended hole size +0.08	4.22			4.75			4.75			5.41			
Minimum distance to edge of sheet	4.8			5.6			5.6			6.9			

Thread	M5				M6				M8			M10		M12	
Shank code	0	1	2	3	00	0	1	2	3	1	2	3	1	2	1
D maximum	6.33				8.73				10.47			13.97		16.95	
B ±0.2	8.75				11.10				12.65			17.35		20.55	
H ±0.25	2.0				4.08				5.47			7.48		8.5	
h maximum	0.77	0.97	1.38	2.21	0.89	1.15	1.38	2.21	3.05	1.38	2.21	3.05	2.21	3.05	3.05
Minimum sheet thickness	0.8	1.0	1.4	2.3	0.92	1.2	1.4	2.3	3.2	1.4	2.3	3.2	2.31	3.18	3.18
Recommended hole size +0.08	6.35				8.75				10.5			14.0		17.0	
Minimum distance to edge of sheet	7.1				8.6				9.7			13.5		16.0	

Metric Dimensions: KB-H Non Locking Nuts - Zinc Plated Steel

Thread	Type	h maximum	Minimum sheet thickness	Rec hole size +0.13	D maximum	B ±0.25	H ±0.13	Minimum distance to edge of sheet
	Non locking							
M10	H	1.48	1.48	12.7	12.67	16.5	7.9	12

Metric Dimensions: KB-CLA

Thread	M2		M3		M3.5		M4		M5		M6	
Shank code	1	2	1	2	1	2	1	2	1	2	1	2
D maximum	4.22		4.73		5.38		5.97		7.47		8.72	
B ±0.2	6.3		6.3		7.1		7.9		9.5		11.05	
H ±0.25	1.5		2.0		2.0		3.0		3.8		4.08	
h maximum	0.98	1.38	0.98	1.38	0.98	1.38	0.98	1.38	0.98	1.38	1.38	2.21
Minimum sheet thickness	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4	1.4	2.3
Recommended hole size +0.08	4.25		4.75		5.4		6.0		7.5		8.75	
Minimum distance to edge of sheet	4.8		5.6		6.9		7.1		7.9		8.6	

Metric Performance Data: KB-S/KB-CLS

Thread	M2, M2.5			M3			M3alt			M3.5			M4				
Test material	Steel																
Shank code	0	1	2	0	1	2	3	0	1	2	0	1	2	0	1	2	3
Installation (kN)	11.2 - 15.6			11.2 - 15.6			13.4 - 26.7			13.4 - 26.7			18 - 27				
Torsional resistance (Nm)	1.5	1.75	2.0	1.5	1.75	2.0	2.1	1.8	2.4	2.4	1.8	2.4	2.4	3.0	4.0	5.0	4.2
Pushout (N)	480	560	1020	480	560	1020	1110	485	575	1200	485	575	1200	495	650	1255	1300

Thread	M5			M6			M8			M10		M12	
Test material	Steel												
Shank code	0	1	2	3	1	2	3	1	2	3	1	2	1
Installation (kN)	18 - 38			27 - 36			27 - 36			32 - 50		33-49	
Torsional resistance (Nm)	3.7	4.5	6.9	6.0	17.1	17.1	16.4	18.8	20.4	18.1	36.1	36.1	73.9
Pushout (N)	535	801	1115	1500	1765	1765	1755	1870	1870	1860	2021	2021	3065

Metric Performance Data: KB-SP4/SP2

Thread	M2,M2.5			M3			M4			M5			M6		M8	
Test material	Stainless Steel															
Shank code	0	1	2	0	1	2	0	1	2	0	1	2	1	2	1	2
Installation (kN)	35	40	45	35	40	45	40	44	46	42	46	51	60	66	66	72
Torsional resistance (Nm)	-	-	-	1.6	2.0	2.3	3.4	4.2	5.1	4.0	5.1	6.7	17.0	19.0	19.0	21.8
Pushout (N)	580	720	1290	580	720	1290	650	800	1590	805	1030	1780	2005	2300	2100	2415

KB-S - Recommended for use in sheet hardness: HRB 80 or less

KB-CLS - Recommended for use in sheet hardness: HRB 70 or less

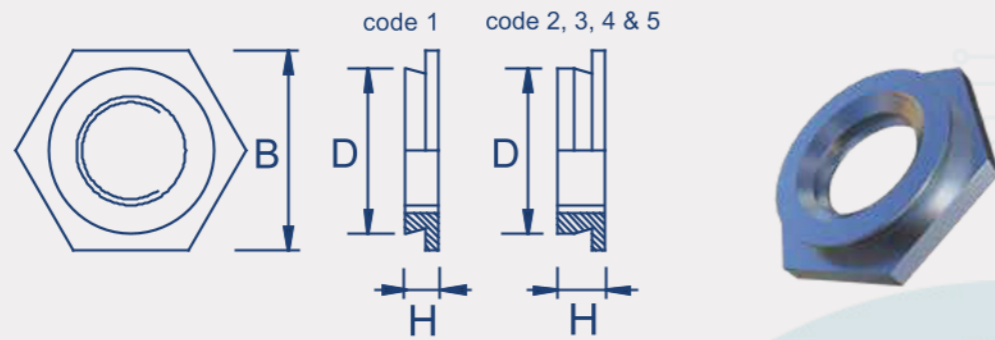
KB-SP4/SP2 - Recommended for use in sheet hardness: HRB 90 or less

KB-CLA - Recommended for use in sheet hardness: HRB 50 or less

KB-H - Recommended for use in sheet hardness: HRB 80 or less

Flush Nuts

KB-F



Metric Dimensions

Thread	M2, M2.5		M3		M3alt		M3.5		M4		M5		M6		
Shank code	1	2	1	2	1	2	1	2	1	2	1	2	3	4	5
D maximum	4.35		4.35		5.35		5.35		7.35		7.90		8.72		
B Nom.	4.8		4.8		6.4		6.4		7.9		8.7		9.5		
H maximum	1.53	2.3	1.53	2.3	1.53	2.3	1.53	2.3	1.53	2.3	1.53	2.3	3.05	3.84	4.63
Sheet thickness	1.53 - 2.3	2.32 min.	1.53 - 2.3	2.32 min.	1.53 - 2.3	2.32 min.	1.53 - 2.3	2.32 min.	1.53 - 2.3	2.32 min.	1.53 - 2.3	2.32 min.	3.18 - 3.94	3.96 - 4.72	4.75 min.
Recommended Hole size +0.08	4.37		4.37		5.4		5.4		7.37		7.92		8.74		
Minimum distance to edge of sheet	6.0		6.0		6.5		6.5		7.2		8.8		8.8		

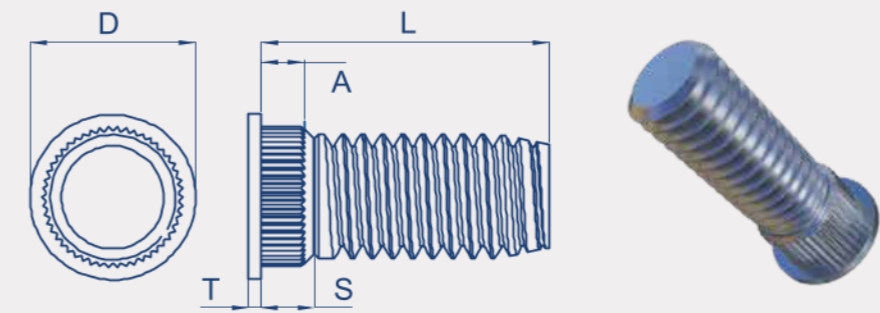
Metric Performance Data: KB-F

Thread	M2, M2.5		M3		M3alt		M3.5		M4		M5		M6		
Shank code	1	2	1	2	1	2	1	2	1	2	1	2	3	4	5
Test sheet material	Steel														
Test sheet thickness	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3	3.1	3.9	4.75
Installation (kN)	13.5		13.5		13.5		13.5		18.0		18.0		20.0		
Pushout (kN)	0.9		0.9		1.1		1.1		1.2		1.2		3.7		

KB-F - Recommended for use in sheet hardness: HRB 70 or less

Broaching Studs

KB-KFH



Metric Dimensions

Thread	M2.5	M3	M4	M5
D ±0.25	4.10	4.58	5.74	6.6
S maximum	2.30	2.3	2.3	2.3
A maximum	1.65	1.65	1.65	1.65
T ±0.13	0.51	0.51	0.51	0.51
Minimum sheet thickness	1.53	1.53	1.53	1.53
Recommended hole size +0.08	2.60	3.0	4.2	5.0
Minimum distance to edge of sheet	3.30	3.8	5.1	5.3

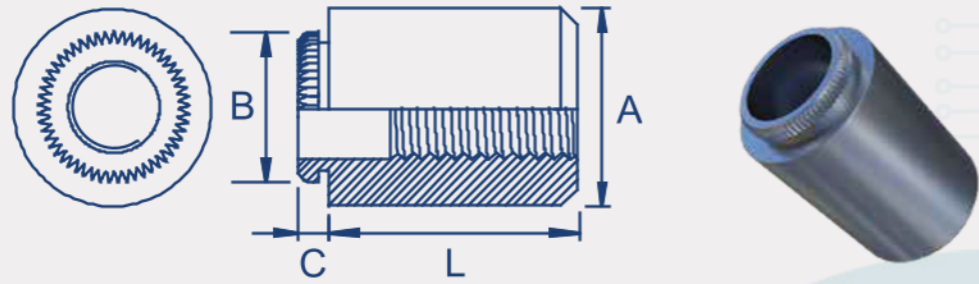
Preferred Range

Thread	M2.5	M3	M4	M5
6		.		
8		.		
10		.		
(L) Length ±0.25		.		
12		.		
15		.		
18		.		
25		.		

KB-KFH - Recommended for use in sheet hardness: HRB 55 or less

Broaching Standoffs

KB-KFE/KB-KFSE



Metric Dimensions - Length to suit customer requirements

Thread/through hole size	M2	M2.5	M3	3.6	M4	4.2
C maximum	1.53	1.53	1.53	1.53	1.53	1.53
B	4.68	4.68	4.68	5.87	6.75	6.86
A	5.56	5.56	5.56	7.14	8.74	8.74
Minimum sheet thickness	1.53	1.53	1.53	1.53	1.53	1.53
Recommended hole size +0.08	4.22	4.22	4.22	5.41	6.4	6.4
Minimum distance to edge of sheet	4.4	4.4	4.4	5.5	6.4	7.1

Preferred Range

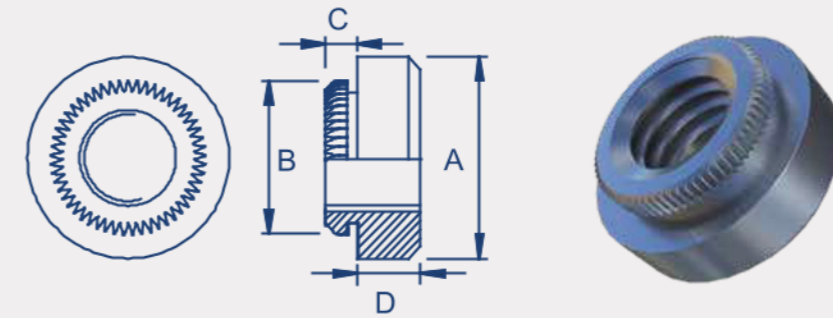
Thread	(L) Length ± 0.13								
	3	4	5	6	8	10	12	14	16
M2		.							
M2.5			.						
M3	
3.6		.							
M4			.						
4.2									

Metric Performance Data: KB-KFE/KB-KFSE

Thread	M2	M2.5	M3 & 3.6	M4 & 4.2
Test sheet material	FR4 fiberglass			
Test sheet thickness	1.5			
Installation (kN)	2.2	2.2	2.2	2.2
Torsional resistance (Nm)	1.36	1.36	1.36	3.0
Pushout (N)	290	290	290	400

Broaching Nuts

TR-KF2/TR-KFS2



Metric Dimensions

Thread	M2	M2.5	M3	M3.5	M4	M5
C maximum	1.53	1.53	1.53	1.53	1.53	1.53
B ± 0.08	4.19	4.68	4.68	5.88	6.86	7.37
A ± 0.13	5.56	5.56	5.56	7.0	8.74	9.53
D ± 0.13	1.5	1.5	1.5	1.6	2.0	3.0
Minimum sheet thickness	1.53	1.53	1.53	1.53	1.53	1.53
Recommended Hole size +0.08	3.73	4.22	4.22	5.5	6.40	6.90
Minimum distance to edge of sheet	4.2	4.4	4.4	5.5	6.4	7.1

Preferred Range

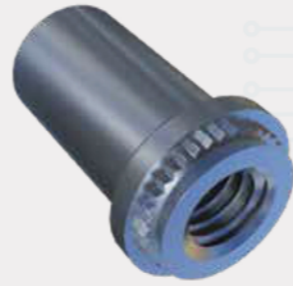
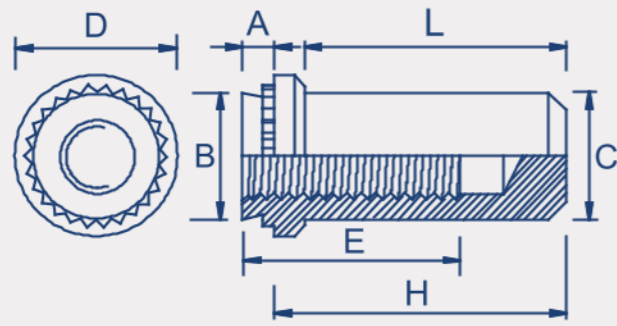
Thread	M2	M2.5	M3	M3.5	M4	M5
Test sheet material	FR4 fiberglass					
Test sheet thickness	1.5					
Installation (kN)	2.2	2.2	2.2	2.2	2.2	2.2
Torsional resistance (Nm)	1.36	1.36	2.06	3.75	4.55	
Pushout (N)	200	200	210	335	355	

KB-KF2 - Recommended for use in sheet hardness: HRB 60 or less

KB-KFS2 - Recommended for use in sheet hardness: HRB 70 or less

Blind Nuts

KB-B/KB-BS



Metric Dimensions

Thread	M3		M4		M5		M6	
Shank code	1	2	1	2	1	2	1	2
A maximum	0.97	1.38	0.97	1.38	0.97	1.38	1.38	2.21
Minimum sheet thickness	1.0	1.4	1.0	1.4	1.0	1.4	1.4	2.29
Recommended hole size +0.08	4.22		5.41		6.35		8.75	
B maximum	4.20		5.38		6.33		8.73	
C maximum	3.84		5.2		6.02		7.8	
D ±0.25	6.35		7.95		8.75		11.1	
E minimum	5.3		7.1		7.1		7.8	
H ±0.25	9.6		11.2		11.2		14.3	
L maximum	8.5		9.8		9.8		12.7	
Minimum distance to edge of sheet	4.8		6.9		7.1		8.6	

Metric Performance Data: KB-B/KB-BS

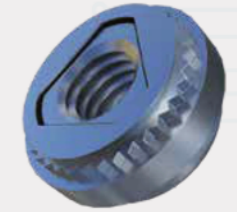
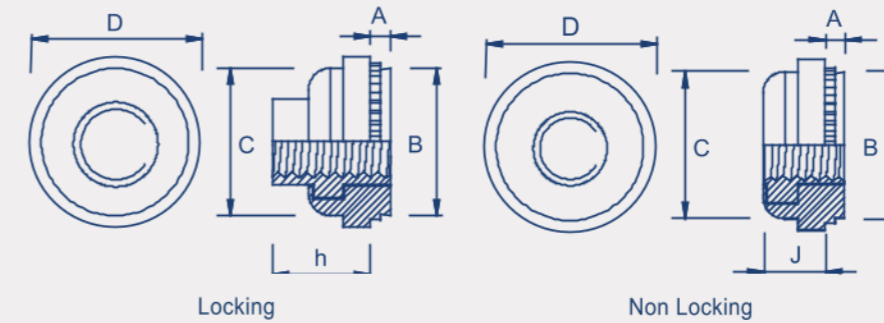
Thread	M3		M4		M5		M6	
Shank code	1	2	1	2	1	2	1	2
Test sheet material	Steel							
Sheet thickness	1.0	1.4	1.0	1.4	1.0	1.4	1.4	2.3
Installation (kN)	11.5	14.0	16.0	21.0	18.0	25.0	26.0	26.0
Pushout (N)	572	1021	604	1256	631	1419	1782	1782
Torque-out (Nm)	1.7	2.15	3.5	5.1	4.1	6.9	11.9	12.0

KB-B - Recommended for use in sheet hardness: HRB 80 or less

KB-BS - Recommended for use in sheet hardness: HRB 70 or less

Floating Fasteners (Locking & Non-Locking)

KB-LAS/KB-AS/KB-LAC/KB-AC



Metric Dimensions

Thread	M3		M4		M5		M6
Shank code	1	2	1	2	1	2	2
A maximum	0.97	1.38	0.97	1.38	0.97	1.38	1.38
Minimum sheet thickness	0.97	1.38	0.97	1.38	0.97	1.38	1.38
Recommended hole size +0.08	7.37		9.35		10.31		13.08
B maximum	7.35		9.33		10.29		13.06
C maximum	7.37		9.28		10.29		12.96
D ±0.4	9.14		11.18		11.94		15.24
h maximum	4.83		5.34		6.86		7.88
J maximum	3.31		3.31		4.32		5.34
Minimum distance to edge of sheet	7.62		8.64		9.14		10.67

Metric Performance Data: KB-LAS/KB-LAC

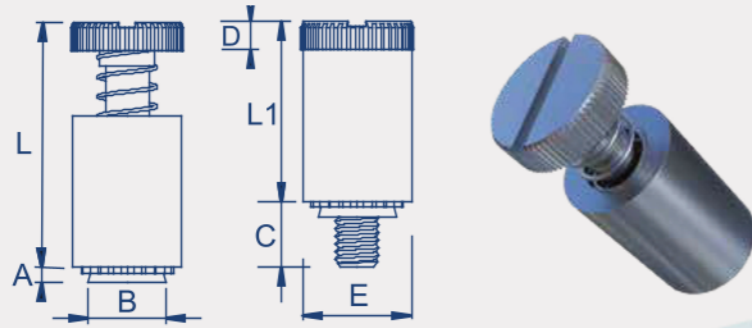
Thread	M3		M4		M5		M6	
Shank code	1	2	1	2	1	2	2	
Test sheet material	Steel							
Sheet thickness	1.0	1.6	1.0	1.6	1.0	1.6	1.6	
Installation (kN)	KB-LAS & KB-LAC	13.3	13.3	13.3	13.3	15.6	15.6	22.2
Pushout (N)	KB-LAS & KB-LAC	1341	1340	1338	1784	1789	2009	2226
Torque-out (Nm)	KB-LAS & KB-LAC	9.7	17.0	17.1	22.8	16.9	22.9	36.9

KB-LAS/AS - Recommended for use in sheet hardness: HRB 70 or less

KB-LAC/AC - Recommended for use in sheet hardness: HRB 70 or less

Panel Fasteners

KB-PFS2/KB-PFC2



Metric Dimensions

Thread	M3			M4			M5			M6		
Screw length code	40	62		50	72	94	50	72	94	60	82	04
A maximum	1.53			1.53			1.53			1.53		
B maximum	6.71			7.9			8.72			10.47		
C ±0.4	6.4	9.5		7.9	11.1	14.3	7.9	11.1	14.3	9.5	12.7	15.9
D ±0.13	1.83			2.08			2.08			2.46		
E ±0.25	7.92			9.53			10.31			11.89		
L Nom.	13.72			17.53			17.53			22.35		
L1 maximum	9.14			11.43			11.47			14.73		
Minimum sheet thickness	1.53			1.53			1.53			1.53		
Recommended hole size +0.08	6.73			7.90			8.74			10.49		
Screw protrusion before installation ±0.64	0	3.2		0	3.2	6.4	0	3.2	6.4	0	3.2	6.4
Minimum distance to edge of sheet	6.35			7.87			8.63			9.65		

Metric Performance Data: KB-PFS2/KB-PFC2

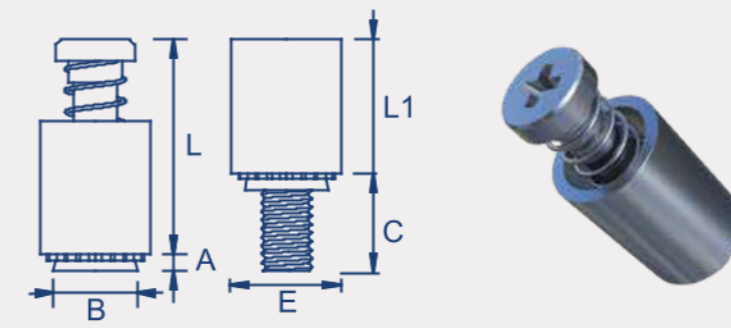
Thread		M3	M4	M5	M6
Installation (kN)	Aluminium	10.8	13.0	13.4	15.6
	Steel	13.4	17.0	17.9	22.3
Pushout (N)	Aluminium	1070	1335	1780	1780
	Steel	1335	1780	2230	2670

KB-PFS2 - Recommended for use in sheet hardness: HRB 80 or less

KB-PFC2 - Recommended for use in sheet hardness: HRB 70 or less

Recess Panel Fasteners

KB-PFC2P



Metric Dimensions

Thread	M3			M4			M5			M6		
Screw length code	40	60		50	72	94	50	72	94	62	82	04
A maximum	1.53			1.53			1.53			1.53		
B maximum	6.71			7.9			8.72			10.47		
C ±0.4	6.4	9.5		7.9	11.1	14.3	7.9	11.1	14.3	9.5	12.7	15.9
Driver size	No.1			No.2			No.2			No.3		
E ±0.25	7.92			9.53			10.31			11.89		
L Nom.	13.72			17.91			17.91			22.99		
L1 maximum	9.4			12.19			12.45			15.75		
Minimum sheet thickness	1.53			1.53			1.53			1.53		
Recommended hole size +0.08	6.73			7.92			8.74			10.49		
Screw protrusion before installation ±0.64	0	3.2		0	3.2	6.4	0	3.2	6.4	0	3.2	6.4
Minimum distance to edge of sheet	6.35			7.87			8.63			9.65		

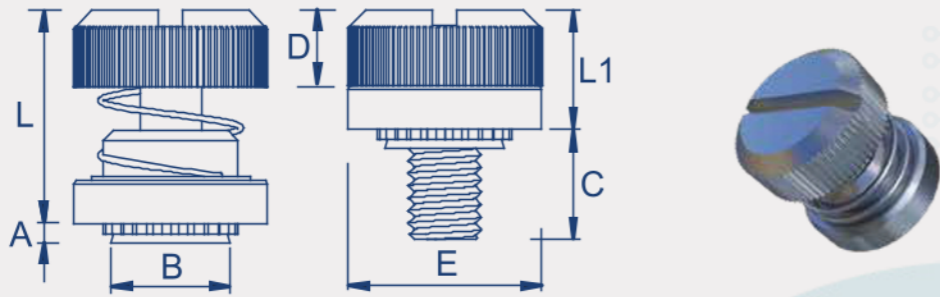
Metric Performance Data: KB-PFC2P

Thread		M3	M4	M5	M6
Installation (kN)	Aluminium	10.8	13.0	13.4	15.6
	Steel	13.4	17.0	17.9	22.3
Pushout (N)	Aluminium	1070	1335	1780	1780
	Steel	1335	1780	2230	2670

KB-PFC2P - Recommended for use in sheet hardness: HRB 70 or less

Low Profile Panel Fasteners

KB-PF31/KB-PF32



Metric Dimensions

Thread	M3		M4		M5		M6
Type	KB-PF31	KB-PF32	KB-PF31	KB-PF32	KB-PF31	KB-PF32	KB-PF32
Screw length code	30		30		30		35
A maximum	0.97	1.48	0.97	1.48	0.97	1.48	1.48
Minimum sheet thickness	1.0	1.5	1.0	1.5	1.0	1.5	1.5
Recommended hole size +0.08	5.5		6.4		8.0		9.5
B maximum	5.48		6.38		7.98		9.48
L Nom.	15.11		15.24		15.37		17.15
D ±0.13	5.13		5.26		5.59		6.12
E ±0.25	10.31		11.89		13.46		15.88
C ±0.4	7.62		7.62		7.62		8.89
L1 maximum	8.26		8.38		8.51		9.78
Minimum distance to edge of sheet	6.6		7.37		8.38		9.65

Metric Performance Data: KB-PF31/KB-PF32

Thread	M3	M4	M5	M6
Test sheet material	Aluminium			
Installation (kN)	9.9	12.6	15.6	19.2

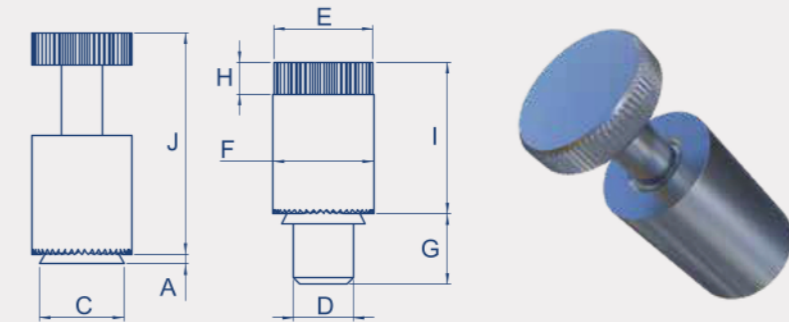
*Can be used in cold rolled provided hardness does not exceed rockwell B30

KB-PF31 - Recommended for use in sheet hardness: HRB 60 or less

KB-PF32 - Recommended for use in sheet hardness: HRB 60 or less

Locating Pin Panel Fasteners

KB-PTL2/KB-PSL2



Metric Dimensions

Type	KB-PTL2	KB-PSL2
Plunger diameter code	04	04
Plunger length code	4.0	4.0
A maximum	1.47	1.47
Minimum sheet thickness	1.53	1.53
Recommended hole size+0.08	8.33	8.33
C maximum	8.31	8.31
D -0.13	6.35	6.35
E ±0.25	12.7	12.7
F ±0.25	10.3	10.3
G ±0.25	7.87	7.87
H ±0.25	4.32	4.32
I ±0.25	15.11	12.95
J Nom.	22.73	19.81
Minimum distance to edge of sheet	8.64	8.64

Metric Performance Data

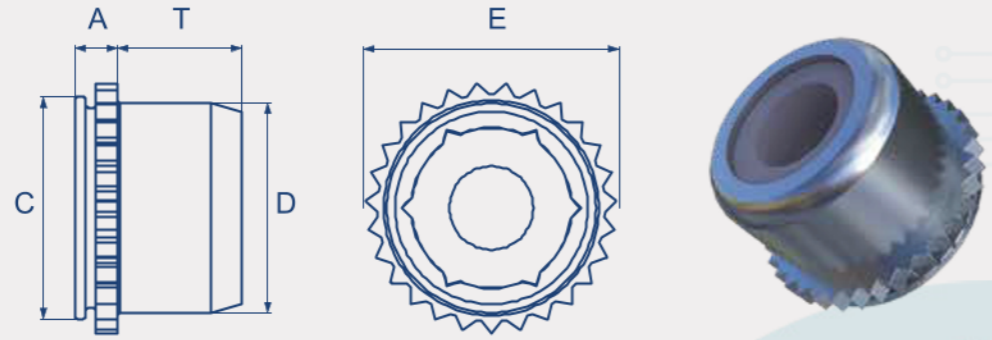
Aluminium		Steel	
Installation (Kn)	Pushout (N)	Installation (Kn)	Pushout (N)
13.3	1779	17.8	2224

KB-PTL2 - Recommended for use in sheet hardness: HRB 80 or less

KB-PSL2 - Recommended for use in sheet hardness: HRB 80 or less

Nylon Lock Nuts

KB-PL/KB-PLC



Metric Dimensions

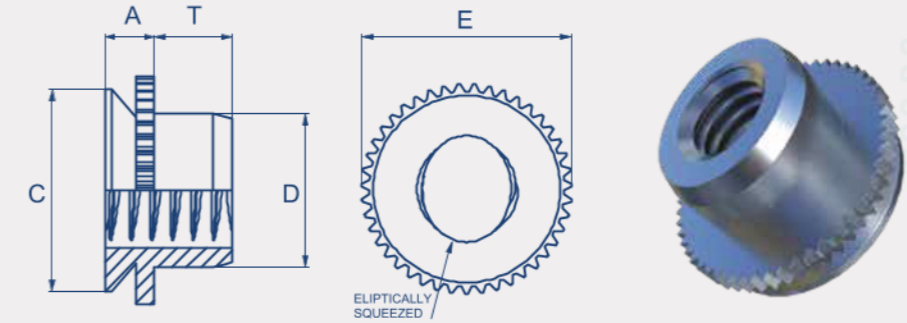
Thread	M3	M4	M5
A maximum	1.53	1.53	1.53
Sheet thickness	1.0 - 1.78	1.0 - 1.78	1.0 - 1.78
Recommended hole size +0.08	6.0	7.5	8.0
C maximum	5.98	7.48	7.98
D maximum	5.52	7.01	7.52
E maximum	7.01	8.54	9.0
T maximum	3.56	4.2	4.45
Minimum distance to edge of sheet	4.32	5.59	6.35
Maximum hole in attached parts	3.5	4.5	5.5

KB-PL - Recommended for use in sheet hardness: HRB 70 or less

KB-PLC - Recommended for use in sheet hardness: HRB 70 or less

Self-Locking Mini Squeezed Nuts

KB-UL/KB-FE/KB-FEO



Metric Dimensions: KB-UL

Thread	M2
E	4.07
A	0.79
C	3.60
D	2.50
T	1.65
Sheet thickness	0.76 - 0.91
Recommended hole size +0.08	3.61
Minimum distance to edge of sheet	2.80

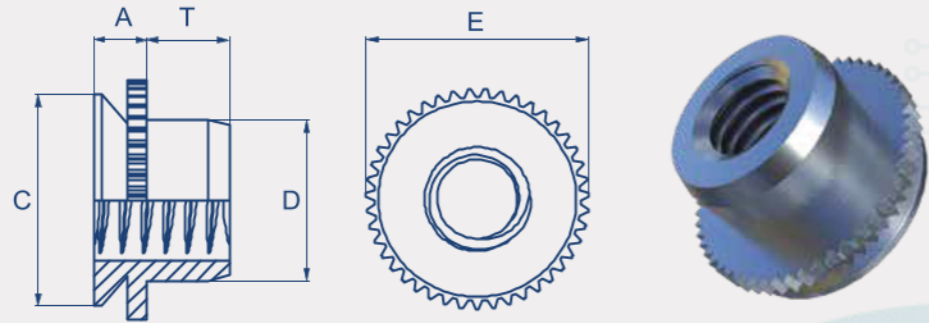
Metric Dimensions: KB-FE/KB-FEO

Thread		M3	M4	M5	M6
E		4.88	8.17	8.17	9.74
A	FE	1.53	1.52	1.53	1.53
	FEO	1.02	1.02	1.02	
C		4.37	7.37	7.37	8.72
D		3.96	5.23	6.48	7.72
T		1.9	2.55	3.05	3.3
Sheet thickness	FE	1.5 - 1.78	1.5 - 1.78	1.5 - 1.78	1.5 - 1.78
	FEO	0.99 - 1.14	0.99 - 1.14	0.99 - 1.14	
Hole size in sheet +0.08		4.39	7.39	7.39	8.74
Minimum distance to edge of sheet		3.6	5.2	5.2	7.1

KB-UL/FE/FEO - Recommended for use in sheet hardness: HRB 70 or less

Non-Locking Mini Squeezed Nuts

KB-U/TR-FEX/KB-FEOX



Metric Dimensions: KB-U

Thread	M2
E	4.07
A	0.79
C	3.60
D	2.50
T	1.65
Sheet thickness	0.76 - 0.91
Recommended hole size +0.08	3.61
Minimum distance to edge of sheet	2.80

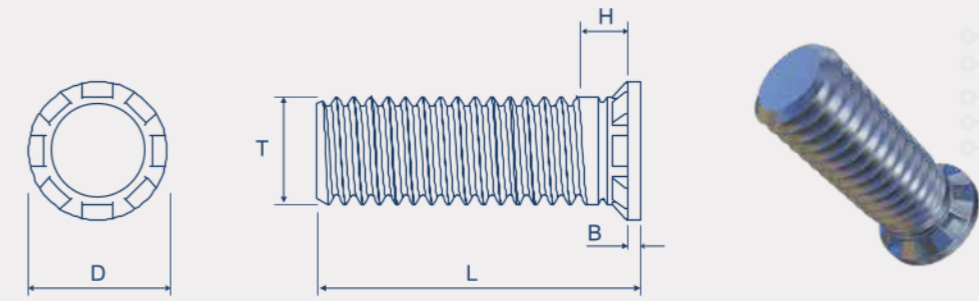
Metric Dimensions: KB-FEX/KB-FEOX

Thread		M3	M4	M5	M6
E		4.88	8.17	8.17	9.74
A	FEX	1.53	1.53	1.53	1.53
	FEOX	1.02	1.02	1.02	
C		4.37	7.37	7.37	8.72
D		3.96	5.23	6.48	7.72
T		1.9	2.55	3.05	3.3
Sheet thickness	FEX	1.5 - 1.78	1.5 - 1.78	1.5 - 1.78	1.5 - 1.78
	FEOX	0.99 - 1.14	0.99 - 1.14	0.99 - 1.14	
Hole size in sheet +0.08		4.39	7.39	7.39	8.74
Minimum distance to edge of sheet		3.6	5.2	5.2	7.1

KB-U/FEX/FEOX - Recommended for use in sheet hardness: HRB 70 or less

Thin Sheet Studs

KB-TFH/KB-TFHS



Metric Dimensions

Thread	M3	M4	M5
D ±0.25	4.5	5.8	6.4
H maximum	1.8	1.8	2.3
B maximum	0.64	0.64	0.64
Minimum sheet thickness	0.51	0.51	0.51
Recommended Hole Size +0.08	3.0	4.0	5.0

Preferred Range

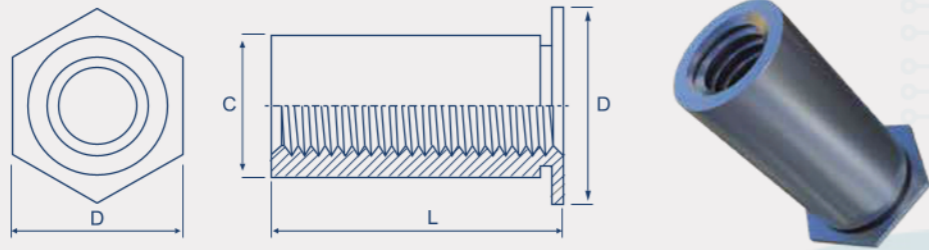
Thread	M3	M4	M5
6	.	.	.
8	.	.	.
10	.	.	.
(L) Length ±0.4	.	.	.
12	.	.	.
15	.	.	.
18	.	.	.
20	.	.	.

KB-TFH - Recommended for use in sheet hardness: HRB 80 or less

KB-TFHS - Recommended for use in sheet hardness: HRB 70 or less

Thin Sheet Standoffs

KB-TSO/KB-TSOS



Metric Dimensions

Thread	M2.5	M2.5 Alt	M3	M3 Alt	M3.5
C -0.13	4.2	5.39	4.2	5.39	5.39
D ±0.25	4.8	6.4	4.8	6.4	6.4
Minimum sheet thickness	0.63				
Recommended hole size +0.08	4.22 - 4.30	5.41 - 5.49	4.22 - 4.30	5.41 - 5.49	5.41 - 5.49
Minimum distance to edge of sheet	5.8	7.1	5.8	7.1	7.1

Preferred Range

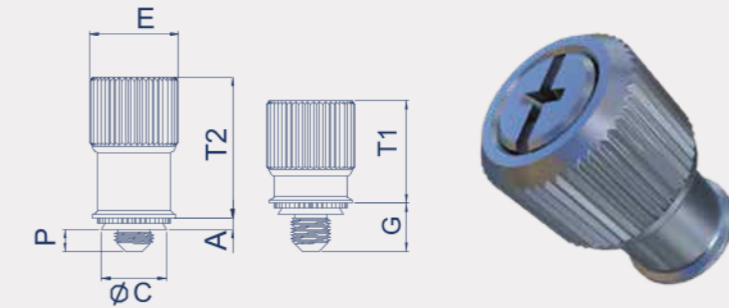
Thread	M2.5	M2.5 Alt	M3	M3 Alt	M3.5
(L) Length					
2mm			.		
3mm	.		.		
4mm	.		.		
6mm	.	.	.		
8mm	.	.	.		
10mm	Blind	.	.		
12mm			Blind		
14mm	Blind		Blind		
16mm					
18mm					
19mm					

KB-TSO - Recommended for use in sheet hardness: HRB 60 or less

KB-TSOS - Recommended for use in sheet hardness: HRB 70 or less

Captive Panel Screws

KB-PF11



Metric Dimensions

Thread	M3			M4			M5			M6
Screw length code	0	1		0	1	2	0	1	2	2
A maximum	0.92			0.92			0.92			0.92
Minimum sheet thickness	0.92			0.92			0.92			0.92
Recommended hole size +0.08	5.56			7.92			7.92			9.53
C maximum	5.54			7.90			7.90			9.50
E ±0.25	10.59			13.06			13.06			14.61
G ±0.64	4.32	5.84		5.84	7.37	8.89	5.84	7.37	8.89	10.41
P ±0.64	0	1.52		0	1.52	3.05	0	1.52	3.05	3.05
T1 Nom.	7.87			11.43			11.43			13.46
T2 Nom.	11.43			16.26			16.26			20.07
Driver size	#1			#2			#2			#3
Minimum distance to edge of sheet	7.11			8.38			8.38			11.68

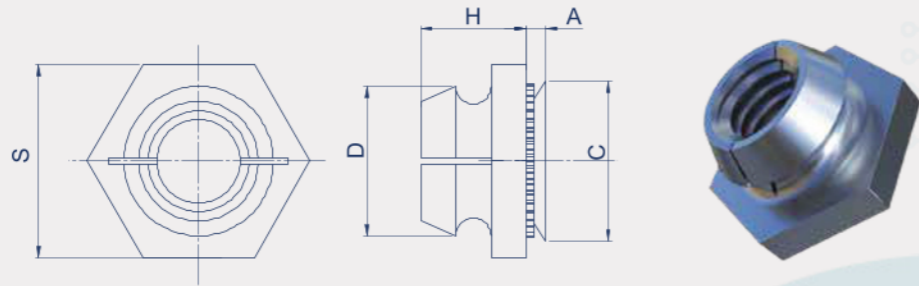
Metric Performance Data: KB-PF11

Thread		M3	M4	M5	M6
Installation (kN)	Aluminium	6.7	13.3	13.3	15.6
	Steel	11.1	20.0	20.0	22.2
Pushout (N)	Aluminium	355	445	445	465
	Steel	645	710	710	865

KB-PF11 - Recommended for use in sheet hardness: HRB 80 or less.

Self Clinch Locking Nuts

KB-LK/KB-LKS



Metric Dimensions

Thread	M2.5		M3		M4		M5	
Shank code	1	2	1	2	1	2	1	2
A shank maximum	0.97	1.38	0.97	1.38	0.97	1.38	0.97	1.38
Minimum sheet thickness	1.0	1.4	1.0	1.4	1.0	1.4	1.0	1.4
Recommended hole size +0.08	4.37		4.75		6.76		7.92	
C maximum	4.35		4.73		6.73		7.90	
D maximum	4.45		4.85		6.20		7.40	
S Nom.	6.35		6.35		8.73		9.53	
H ±0.25	3.43		3.43		4.45		5.21	
Minimum distance to edge of sheet	3.90		4.00		5.20		5.60	

Preferred Range

Shank Code	Thread			
	M2.5	M3	M4	M5
1
2

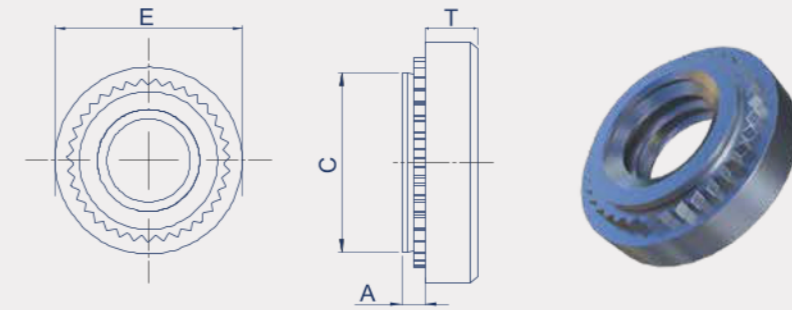
Metric Performance Data: KB-LK/KB-LKS

Thread		M2.5		M3		M4		M5	
		1	2	1	2	1	2	1	2
Installation (kN)	Aluminium	7.1	8.9	7.1	8.9	12.0	13.3	14.2	14.2
	Steel	13.3	13.3	13.3	13.3	17.8	19.1	17.8	19.1
Pushout (N)	Aluminium	578	667	578	890	667	1112	667	1112
	Steel	667	711	667	1112	845	1334	1112	1334

KB-LK/LKS - Recommended for use in sheet hardness: HRB 70 or less

Thin Sheet Nuts

KB-SMPS



Metric Dimensions

Thread	M2.5	M3	M3.5
A shank maximum		0.61	
Minimum sheet thickness		0.64	
Recommended hole size +0.08	3.8	4.24	4.75
C maximum	3.79	4.22	4.73
E ±0.25	5.6	5.6	6.4
T ±0.25		1.4	
Minimum distance to edge of sheet	3.7	4.3	5.1

Preferred Range

Thread	M2.5	M3	M3.5
	.	.	.

Metric Performance Data: KB-SMPS

Thread	M2.5	M3	M3.5
Test sheet material		Steel	
Installation (kN)	6.7	8.0	8.8
Pushout (N)	156	267	289
Torque-Out (Nm)	1.13	1.35	1.58

KB-SMPS - Recommended for use in sheet hardness: HRB 70 or less

CONTACT US



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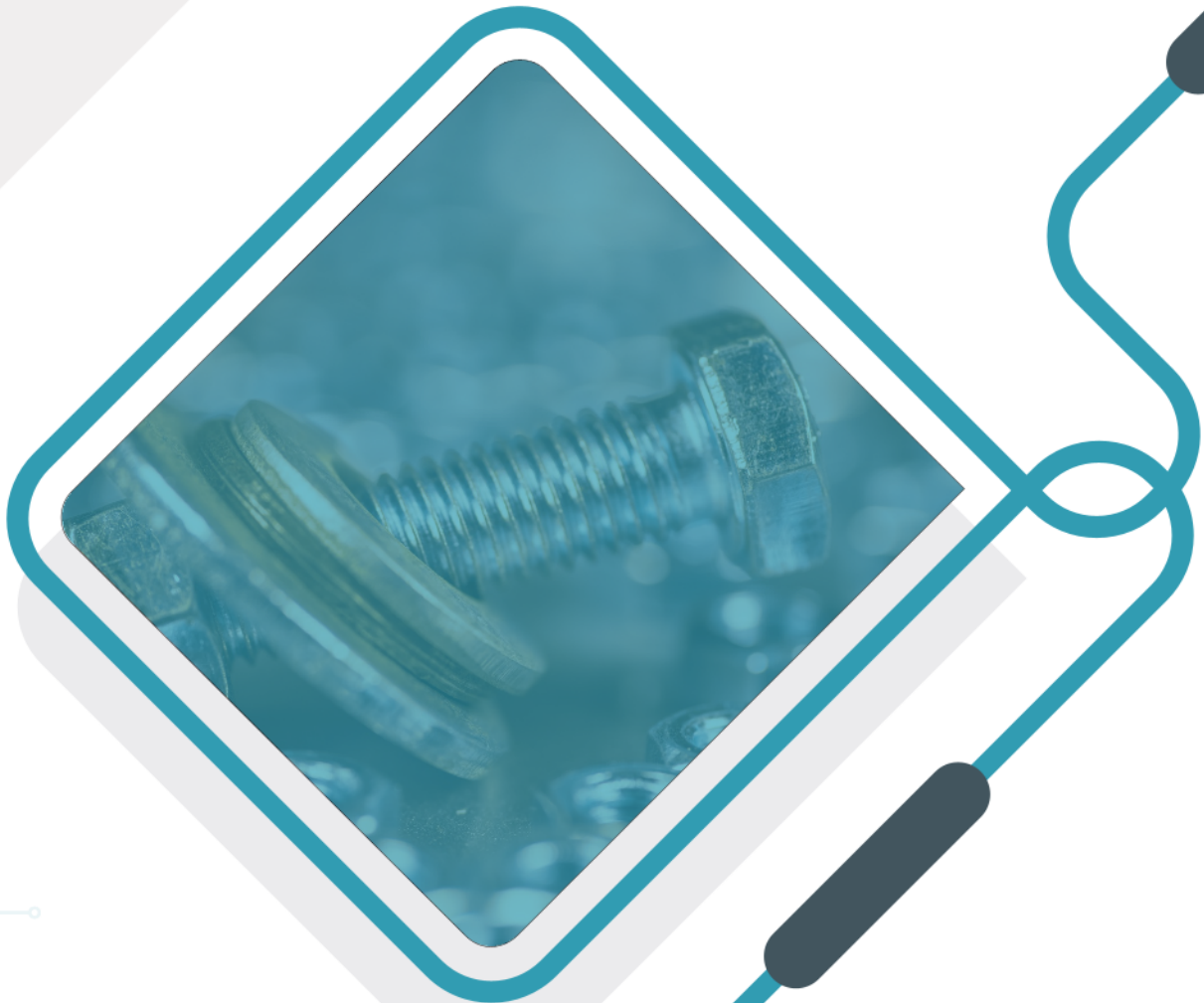
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