



FASTENERS FOR

USE IN OR WITH

PC BOARDS

# BULLETIN



**K** 602

# FASTENERS FOR USE IN OR WITH PC BOARDS

PEM® Fastening Systems manufactures and sells a wide variety of fasteners to satisfy component-to-board, board-to-board, and board-to-chassis production-fastening needs. These fasteners are designed for use with all types of printed circuit boards, as well as acrylic, polycarbonate and aluminum sheets. PEM® brand fasteners, available in many sizes and finishes, install simply, quickly and permanently.

## TYPES KF2 and KFS2 BROACHING NUTS

These nuts for pressing into PC boards offer permanent threads for board mounting or component attachment. Types KF2 and KFS2 meet US NASM45938/12 specifications.

## TYPES KFE AND KFSE STANDOFFS

Standoffs available threaded or unthreaded for stacking or spacing.

## TYPE KFB3 FLARE-MOUNTED STANDOFFS

Standoffs are flare-mounted for applications requiring greater pullout performance.

## TYPE KFH THREADED STUDS

Used as solderable connectors as well as permanently mounted mechanical fasteners with external threads.

## TYPE KSSB™ SNAP-TOP® STANDOFFS

All-metal standoffs with a spring action to hold a PC board securely without screws or other threaded hardware.

## TYPE PFK BOARD-MOUNT ASSEMBLIES

One-piece, board-mount screw assemblies. Screws remain captive for easy mounting and removal of PC boards.

## TYPE SOAG AND SOSG GROUNDING STANDOFFS

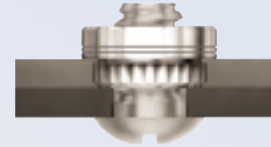
Standoffs designed for installation on steel and aluminum chassis to ground PC boards.

## TYPE KPS6™ SELF-EXPANDING FOILGARD® FASTENERS

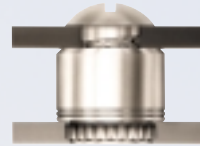
Self-expanding FOILGARD fasteners feature a self-expanding shank which ensures positive contact with plated thru-holes, and eliminates the risk of shaving the plating out of the hole.

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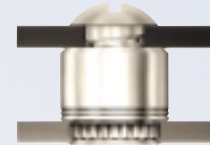
Types KF2 and KFS2  
(Page K-3)



Type KFE  
(Page K-3)



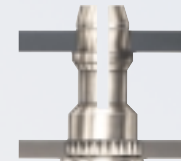
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(Page K-4)



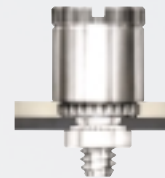
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(Page K-4)



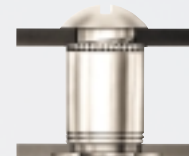
Type KSSB  
(Page K-5)



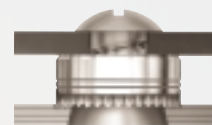
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(Page K-6)



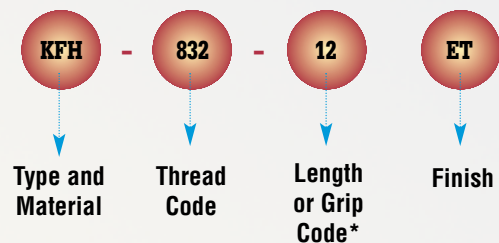
Types SOAG and SOSG  
(Page K-6)



Type KPS6  
(Page K-7)

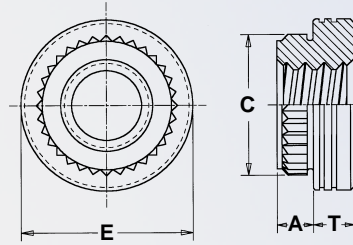


## Part Number Designation



\*Not applicable for Types KF2 and KFS2.

## TYPES KF2 AND KFS2 NUTS



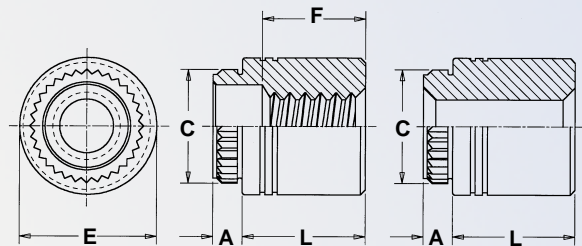
All dimensions are in inches.

UNIFIED	Thread Size	Type		Thread Code	A Max.	Min. Sheet Thickness	Hole Size In Sheet $+0.003 \text{ } -0.000$ (1)	C $\pm 0.003$	E $\pm 0.005$	T $\pm 0.005$	Min. Dist. Hole C/L To Edge
		Carbon Steel	Stainless Steel								
	.086-56 (#2-56)	KF2	KFS2	256	.060	.060	.147	.165	.219	.065	0.16
	.112-40 (#4-40)	KF2	KFS2	440	.060	.060	.166	.184	.219	.065	0.17
	.138-32 (#6-32)	KF2	KFS2	632	.060	.060	.213	.231	.281	.065	0.22
	.164-32 (#8-32)	KF2	KFS2	832	.060	.060	.250	.268	.344	.096	0.25
	.190-32 (#10-32)	KF2	KFS2	032	.060	.060	.272	.290	.375	.127	0.28

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type		Thread Code	A Max.	Min. Sheet Thickness	Hole Size In Sheet $+0.08$ (1)	C $\pm 0.08$	E $\pm 0.13$	T $\pm 0.13$	Min. Dist. Hole C/L To Edge
		Carbon Steel	Stainless Steel								
	M2 x 0.4	KF2	KFS2	M2	1.53	1.53	3.73	4.19	5.56	1.5	4.2
	M2.5 x 0.45	KF2	KFS2	M2.5	1.53	1.53	4.22	4.68	5.56	1.5	4.4
	M3 x 0.5	KF2	KFS2	M3	1.53	1.53	4.22	4.68	5.56	1.5	4.4
	M4 x 0.7	KF2	KFS2	M4	1.53	1.53	6.4	6.86	8.74	2	6.4
	M5 x 0.8	KF2	KFS2	M5	1.53	1.53	6.9	7.37	9.53	3	7.1

## TYPES KFE AND KFSE STANDOFFS



All dimensions are in inches.

UNIFIED	Thread Size	Thru Hole +.004 -.003	Type		Thread or Thru Hole Code	Length "L" ±.005 (Length Code is in 32nds of an inch)								A Max.	Min. Sheet Thickness	Hole Size In Sheet +.003 -.000 (1)	C ±.003	E ±.005	Min. Dist. Hole C/L To Edge
			Carbon Steel	Stainless Steel		.125	.250	.375	.500	.625	.750 <sup>(2)</sup>	.875	1.00 <sup>(2)</sup>						
	.112-40 (#4-40)	(3)	KFE	KFSE	440	4	8	12	16	20	24 <sup>NS</sup>	NA	NA	.060	.060	.166	.184	.219	.17
	.138-32 (#6-32)	(3)	KFE	KFSE	632	4	8	12	16	20	24 <sup>NS</sup>	28 <sup>NS</sup>	32 <sup>NS</sup>	.060	.060	.213	.231	.281	.22
	(3)	.116	KFE	KFSE	116	4	8	12	16	20	24 <sup>NS</sup>	NA	NA	.060	.060	.166	.184	.219	.17
	(3)	.143	KFE	KFSE	143	4	8	12	16	20	24 <sup>NS</sup>	28 <sup>NS</sup>	32 <sup>NS</sup>	.060	.060	.213	.231	.281	.22
	"F" Minimum Thread Length (Where Applicable)					Full			.375 ± .016		.375 Blind								

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Thru Hole $+0.10 \text{ } -0.08$	Type		Thread or Thru Hole Code	Length "L" $\pm 0.13$ (Length Code is in millimeters)								A Max.	Min. Sheet Thickness	Hole Size In Sheet $+0.08$ (1)	C $\pm 0.08$	E $\pm 0.13$	Min. Dist. Hole C/L To Edge
			Carbon Steel	Stainless Steel		3	4	6	8	10	12	14	16 <sup>NS</sup>						
	M3 x 0.5	(3)	KFE	KFSE	M3	3	4	6	8	10	12	14	16 <sup>NS</sup>	1.53	1.53	4.22	4.68	5.56	4.4
	(3)	3.6	KFE	KFSE	3.6	3	4	6 <sup>NS</sup>	8 <sup>NS</sup>	10 <sup>NS</sup>	12 <sup>NS</sup>	14 <sup>NS</sup>	16 <sup>NS</sup>	1.53	1.53	5.41	5.87	7.14	5.5
	(3)	4.2	KFE	KFSE	4.2 <sup>NS</sup>	3	4	6	8	10	12	14	16	1.53	1.53	6.4	6.86	8.74	7.1
"F" Minimum Thread Length (Where Applicable)						Full			9.5 $\pm$ 0.4										

- (1) Types KF2, KFS2, KFE and KFSE are designed for unplated thru-hole applications. When used in plated thru-hole applications, a tolerance of  $+0.005 \text{ } -0.001 \text{ } / +0.13 \text{ } -0.03 \text{ mm}$  should be used. However, performance values may be reduced and knurl may damage plating. We recommend using Type KPS6 for plated thru-hole applications.

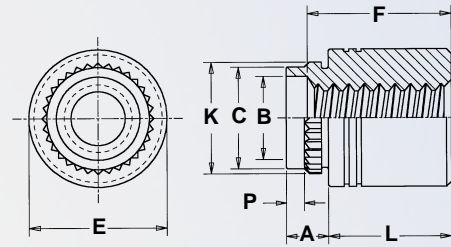
- (2) Blind at shank end with .375 minimum thread length from head end.

(3) Not applicable.

NA Not available.

NS Not Stocked. Available on special order.

## TYPE KFB3 FLARE-MOUNTED STANDOFFS



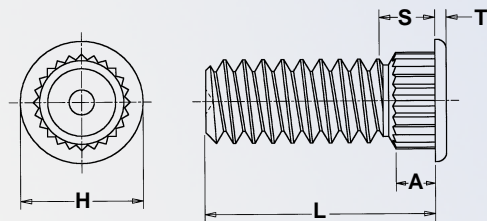
All dimensions are in inches.

UNIFIED	Thread Size	Type	Thread Code	Length "L" ±.005 (Length Code is in 32nds of an inch)										A Max.	Sheet Thick-ness	Hole Size in Sheet +.005 - .001	B ±.003	C Max.	E ±.005	K ±.003	P ±.010	Min. Dist. Hole C/L To Edge
				.062	.125	.187	.250	.312	.375	.500	.625	<sup>(1)</sup> .750	<sup>(1)</sup> 1.00									
	.112-40 (#4-40)	KFB3	440	2	4	6	8	10	12	16	20 <sup>NS</sup>	NA	NA	.09	.050-.065	.166	.122	.165	.220	.179	.040	.17
	.138-32 (#6-32)	KFB3	632	2	4	6	8	10	12	16	20 <sup>NS</sup>	24	32	.09	.050-.065	.213	.171	.212	.280	.226	.040	.22
	"F" Minimum Thread Length				Full						.375±.016		.375 Blind									

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type	Thread Code	Length "L" ±0.13 (Length Code is in millimeters)									A Max.	Sheet Thick-ness	Hole Size in Sheet +0.13 -0.03	B ±0.08	C Max.	E ±0.13	K ±0.08	P ±0.25	Min. Dist. Hole C/L To Edge
	M3 x 0.5	KFB3	M3 <sup>NS</sup>	2	3	4	6	8	10	12	14	16	2.29	1.27-1.65	4.22	3.23	4.2	5.56	4.55	1	4.33
	M4 x 0.7	KFB3	M4 <sup>NS</sup>	2	3	4	6	8	10	12	14	16	2.29	1.27-1.65	6.4	5.23	6.33	8.74	6.68	1	6.36
	"F" Minimum Thread Length			Full						9.5±0.4											

## TYPE KFH STUDS



All dimensions are in inches.

UNIFIED	Thread Size	Type	Thread Code	Length "L" $\pm .010$ (Length Code is in 16ths of an inch)						A Max.	Min. Sheet Thickness	Hole Size In Sheet $+.003 \text{ } -.000$ (2)	Max. Hole Size In Attach. Parts	H $\pm .010$	S Max.	T $\pm .005$	Min. Dist. Hole C/L To Edge	D Anvil Hole $+.003 \text{ } -.000$
				.250	.312	.375	.500	.625	.750									
	.112-40 (#4-40)	KFH	440	4	5	6	8	10	12	.065	.060	.120	.145	.180	.09	.020	.15	.113
	.138-32 (#6-32)	KFH	632	4	5	6	8	10	12	.065	.060	.140	.170	.200	.09	.020	.19	.140
	.164-32 (#8-32)	KFH	832	4 <sup>NS</sup>	5 <sup>NS</sup>	6	8	10	12	.065	.060	.166	.195	.225	.09	.020	.20	.166
	.190-32 (#10-32)	KFH	032	4 <sup>NS</sup>	5 <sup>NS</sup>	6	8	10	12	.065	.060	.189	.220	.250	.09	.020	.20	.191

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type	Thread Code	Length "L" $\pm 0.25$ (Length Code is in millimeters)						A Max.	Min. Sheet Thickness	Hole Size In Sheet $+0.08$ (2)	Max. Hole Size In Attach. Parts	H $\pm 0.25$	S Max.	T $\pm 0.13$	Min. Dist. Hole C/L To Edge	D Anvil Hole $+0.08$
				6	8	10	12	15	18									
	M3 x 0.5	KFH	M3	6	8	10	12	15	18	1.65	1.53	3	3.7	4.58	2.3	0.51	3.8	3.1
	M4 x 0.7	KFH	M4	6 <sup>NS</sup>	8	10	12	15	18	1.65	1.53	4.2	4.8	5.74	2.3	0.51	5.1	4.1
	M5 x 0.8	KFH	M5	6 <sup>NS</sup>	8 <sup>NS</sup>	10 <sup>NS</sup>	12 <sup>NS</sup>	15	18	1.65	1.53	5	5.8	6.6	2.3	0.51	5.3	5.1

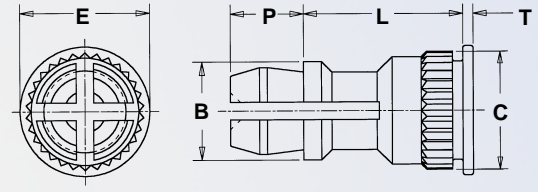
(1) Blind at shank end with .375" minimum thread length from head end.

(2) Type KFH studs are designed for unplated thru-hole applications. When used in plated thru-hole applications, a tolerance of  $+.005 \text{ } -.001 \text{ } / +0.13 \text{ } -0.03 \text{ mm}$  should be used. However, performance values may be reduced and knurl may damage plating.

**NS** Not Stocked. Available on special order.

**NA** Not available.

# TYPE KSSB™ SNAP-TOP® STANDOFFS



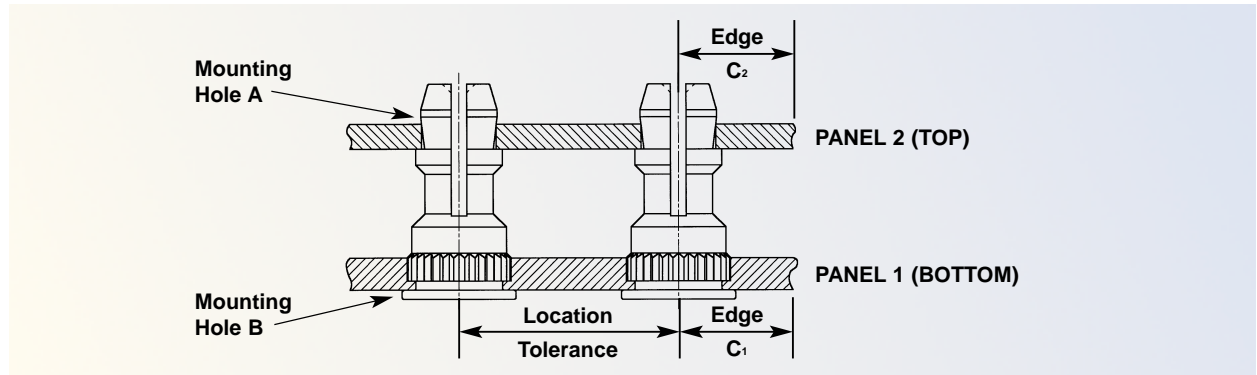
All dimensions are in inches.

UNIFIED	Type	Top Board Mounting Hole Diameter Code	Length "L" $\pm .005$ (Length Code is in 32nds of an inch)										B $\pm .005$	C $\pm .003$	E $\pm .005$	P $\pm .005$	T $\pm .005$	D Anvil Hole $+.003-.000$
			.250	.312	.375	.437	.500	.562	.625	.750	.875	1.00						
KSSB		156	8	10	12	14	16	18	20	24	28	32	.188	.226	.250	.141	.020	.216

All dimensions are in millimeters.

METRIC	Type	Top Board Mounting Hole Diameter Code	Length "L" ±0.13 (Length Code is in millimeters)									B ±0.13	C ±0.08	E ±0.13	P ±0.13	T ±0.13	D Anvil Hole +0.08
			KSSB	4mm	8	10	12	14	16	18	20	22	25	4.8	5.74	6.35	3.58

## TYPE KSSB APPLICATION DATA



All dimensions are in inches.

UNIFIED	PANEL 1 (Bottom)							PANEL 2 (Top)				
	Type	Bottom Mounting Hole B $+.003-.000$	Material	Hardness Max.	Thickness Min.	Edge Distance C <sub>1</sub> Min.	Location Tolerance Max.	Top Mounting Hole A $+.003-.000$	Material	Hardness Max.	Thickness Range	Edge Distance C <sub>2</sub> Min.
KSSB		.213	PC BOARD	HRB 65	.050	.220	$\pm .005$	.156	PC BOARD OR METAL	NO LIMIT	.040 - .070	.100

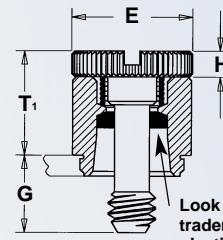
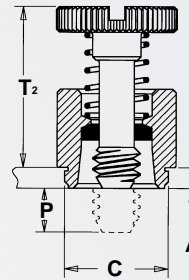
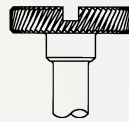
All dimensions are in millimeters.

METRIC	PANEL 1 (Bottom)							PANEL 2 (Top)				
	Type	Bottom Mounting Hole B $+0.08$	Material	Hardness Max.	Thickness Min.	Edge Distance C <sub>1</sub> Min.	Location Tolerance Max.	Top Mounting Hole A $+0.08$	Material	Hardness Max.	Thickness Range	Edge Distance C <sub>2</sub> Min.
KSSB		5.4	PC BOARD	HRB 65	1.25	5.6	$\pm 0.13$	4	PC BOARD OR METAL	NO LIMIT	1 - 1.8	2.5

## TYPE PFK BOARD-MOUNT PANEL FASTENER ASSEMBLIES



Diagonal knurl identifies metric thread sizes



Look for the PEM trademark - a blue plastic retaining ring.\*

All dimensions are in inches.

UNIFIED	Thread Size	Type	Thread Code	Screw Length Code	A Max.	Min. Sheet Thickness	Hole Size In Sheet +.003 -.000	C ±.003	E +.015 -.005	G ±.016	H ±.005	(1) P Nom.	T <sub>1</sub> Max.	T <sub>2</sub> Nom.	Min. Dist. Hole C/L To Edge	D Anvil Hole +.003 -.000
	.112-40 (#4-40)	PFK	440	40	.060	.060	.265	.283	.310	.250	.072	.000	.36	.54	.20	.173
				62 <sup>NS</sup>												
				84 <sup>NS</sup>												
UNIFIED	.138-32 (#6-32)	PFK	632	40	.060	.060	.281	.299	.340	.250	.072	.000	.36	.54	.26	.190
				62												
				84 <sup>NS</sup>												

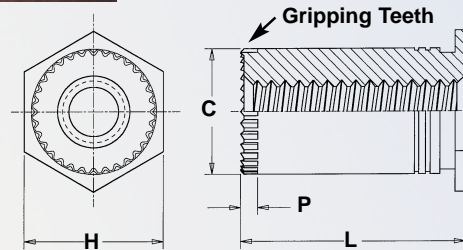
All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type	Thread Code	Screw Length Code	A Max.	Min. Sheet Thickness	Hole Size In Sheet +.08	C ±0.08	E +0.4 -0.13	G ±0.4	H ±0.13	(1) P Nom.	T <sub>1</sub> Max.	T <sub>2</sub> Nom.	Min. Dist. Hole C/L To Edge	D Anvil Hole +0.08
	M3 x 0.5	PFK	M3	40	1.53	1.53	6.75	7.19	7.87	6.4	1.83	0	9.15	13.72	5.1	4.5
				62 <sup>NS</sup>												
				84 <sup>NS</sup>												
METRIC	M3 x 0.5	PFK	M3	40	1.53	1.53	6.75	7.19	7.87	6.4	1.83	0	9.15	13.72	5.1	4.5
				62 <sup>NS</sup>												
				84 <sup>NS</sup>												

\*Retaining rings are plastic with normal 250°F / 120°C temperature limit.

(1) Screw may protrude .005" beyond nominal dimensions.

## TYPE SOSG AND SOAG GROUNDING STANDOFFS



(For installation in metal sheets)

All dimensions are in inches.

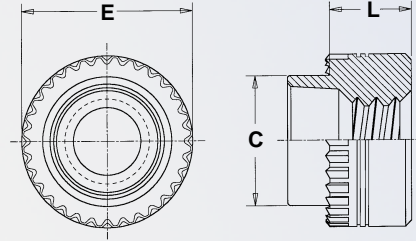
UNIFIED	Thread Size	Type		Thread Code	Length "L" + .010 -.000 (1) (Length Code is in 32nds of an inch)						Min. Sheet Thickness	Hole Size In Sheet +.003 -.000	C +.000 -.005	H ±.005	P Nom.	Min. Dist. Hole C/L To Edge	D Anvil Hole +.003 -.000	
		Stainless Steel	Aluminum		.125	.187	.250	.312	.375	.437								.500
	.112-40 (#4-40)	SOSG	SOAG	6440	4 <sup>NS</sup>	6	8	10	12	14	16	.040	.213	.212	.250	.030	.27	.216
	.138-32 (#6-32)	SOSG	SOAG	8632	4 <sup>NS</sup>	6 <sup>NS</sup>	8	10	12	14	16	.050	.281	.280	.312	.030	.31	.284

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type		Thread Code	Length "L" +.025 (Length Code is in millimeters) (1)						Min. Sheet Thickness	Hole Size In Sheet +.08	C -0.13	H ±0.25	P Nom.	Min. Dist. Hole C/L To Edge	D Anvil Hole +0.08
		Stainless Steel	Aluminum														
	M3 x 0.5	SOSG	SOAG	3.5M3	3 <sup>NS</sup>	4 <sup>NS</sup>	6	8	10	12	1	5.4	5.39	6.4	0.76	6.8	5.5

(1) For special lengths greater than .500" / 12 mm, Types SOSG and SOAG are blind threaded.

# TYPE KPS6 SELF-EXPANDING FOILGARD® FASTENERS



(For plated thru-holes)

All dimensions are in inches.

UNIFIED	Thread Size	Type	Thread Code	Length "L" ±.005 (Length Code is in 32nds of an inch)				Board Thickness (1)	Plated Hole Size In Board +.004 -.003	C Max.	E ±.005
				.125	.250	.375	.500				
	.112-40 (#4-40)	KPS6	440	4	8	12	16	.056 - .065	.166	.163	.219
	.138-32 (#6-32)	KPS6	632	4	8	12	16	.056 - .065	.213	.210	.281
	.164-32 (#8-32)	KPS6	832	4	8	12	16	.056 - .065	.250	.247	.344
	.190-32 (#10-32)	KPS6	032	4	8	12	16	.056 - .065	.272	.269	.375

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type	Thread Code	Length "L" ±0.13 (Length Code is in millimeters)						Board Thickness (1)	Plated Hole Size In Board +0.1 -0.08	C Max.	E ±0.13
				3	4	6	8	10	12				
	M3 x 0.5	KPS6	M3	3	4	6	8	10	12	1.42 - 1.65	4.22	4.14	5.56
	M4 x 0.7	KPS6	M4	3	4	6	8	10	12	1.42 - 1.65	6.4	6.32	8.74
	M5 x 0.8	KPS6	M5	3	4	6	8	10	12	1.42 - 1.65	6.91	6.84	9.52

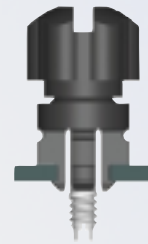
(1) Fasteners for other board thicknesses available on special order.

## OTHER FASTENERS FOR USE IN OR WITH PC BOARDS

### TYPE PFS™ SNAP-IN PANEL FASTENER

Installs into mounting hole without tools. Just snaps into place.

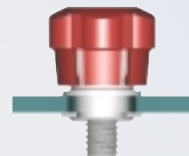
- Max. sheet thickness .065"/ 1.65mm.
- Standard recess: six-lobe in screw, slot in cap.
- Dog point feature on screw.
- Molded-thru color with optional colors available.



### TYPE PFF™ HYBRID™ FLOATING PANEL FASTENER

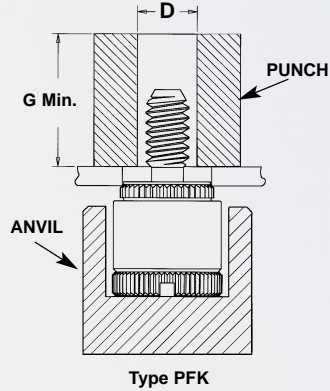
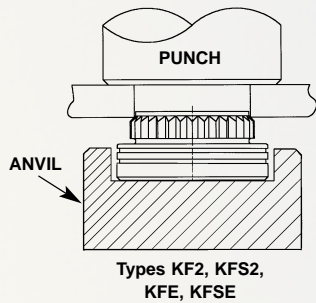
Unique flare mount feature allow fasteners to "float" in mounting hole.

- .025"/ 0.64 mm nom. sheet thickness.
- Compensates for up to .060"/ 1.52 mm mating hole misalignment.
- Tool or finger operation.
- Molded-thru color knob with optional colors available.



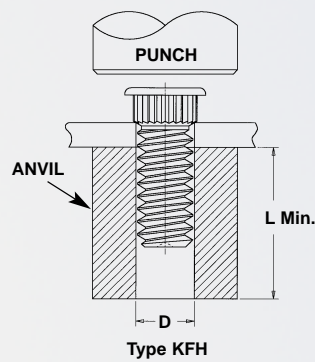
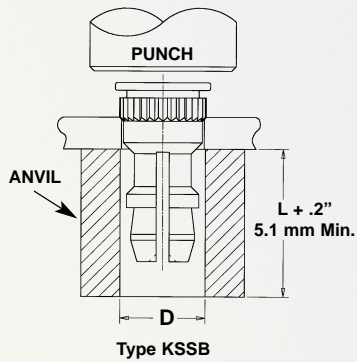
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# INSTALLATION



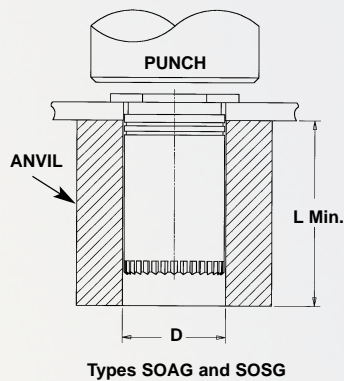
## For Types KF2, KFS2, KFE, KFSE, and PFK

1. Punch or drill properly sized mounting hole in board.
2. Place fastener into the anvil hole and place the mounting hole over the shank of the fastener as shown in diagram to the left.
3. With punch and anvil surfaces parallel, apply squeezing force until shoulder contacts the board.



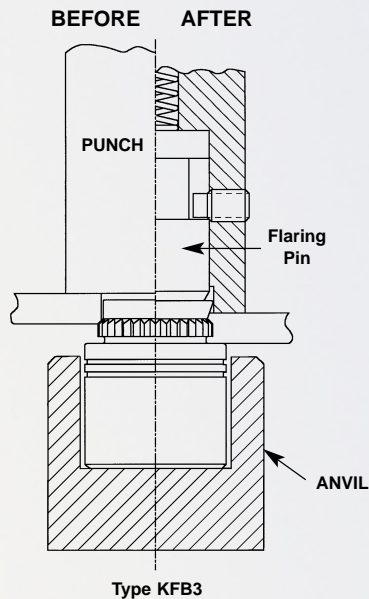
## For Types KSSB and KFH

1. Punch or drill properly sized mounting hole in board.
2. Place fastener into mounting hole as shown in diagram to the left.
3. With punch and anvil surfaces parallel, apply squeezing force until head contacts the board.



## For Types SOAG and SOSG

1. Punch or drill properly sized round mounting hole in sheet.
2. Place barrel end of fastener into mounting hole as shown in diagram to the left.
3. With punch and anvil surfaces parallel, apply squeezing force until the head is embedded and flush with the surface.



Type KFB3

Unified.

Thread Code	Length Code	Anvil	Punch (Flaring Tool)
#4-40	-2	975201213300	975200791400
#4-40	-4 to -8	975200846300	
#4-40	-10 to -12	975200847300	
#4-40	-16 to -20	975200848300	
#4-40	-20 to -24	975200882300	975200790400
#6-32	-2	975201215300	
#6-32	-4 to -8	975200849300	
#6-32	-10 to -12	975200850300	
#6-32	-16 to -20	975200851300	
#6-32	-22 to -24	975200883300	
#6-32	-28 to -32	975200884300	

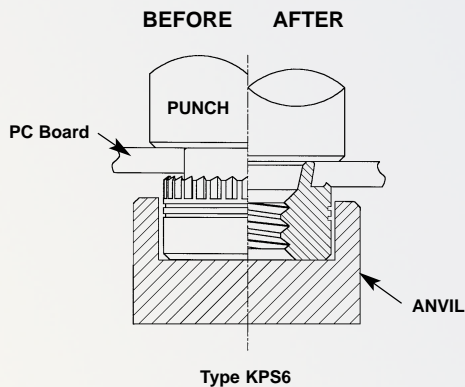
Metric.

Thread Code	Length Code	Anvil	Punch (Flaring Tool)
M3	-2	975201213300	975200791400
M3	-3 to -6	975200846300	
M3	-8 to -10	975200847300	
M3	-12 to -14	975201222300	
M3	-14 to -16	975200848300	975201221400
M4	-2	975201216300	
M4	-3 to -6	975201217300	
M4	-8 to -10	975201218300	
M4	-12 to -14	975201220300	
M4	-14 to -16	975201219300	

### For Type KFB3<sup>(1)</sup>

1. Punch or drill properly sized round mounting hole in board.
2. Place fastener into the anvil hole and place the mounting hole over the shank of the fastener as shown in diagram to the left.
3. Using a punch flaring tool and a recessed anvil, apply squeezing force until the shoulder of the fastener contacts the board. As the fastener seats itself in the proper position, the punch tool will flare the extended portion of the shank outward to complete the installation. The combination of broaching and flaring provides high pushout performance.

(1) PEM® Fastening Systems manufactures and stocks the installation tooling for the KFB3.



Type KPS6

### For Type KPS6

1. Punch or drill a hole of suitable diameter so that after plating the "plated hole size in board" is as specified in the tabulation on page K-7.
2. Place fastener into the anvil hole and place the mounting hole over the shank of the fastener as shown in diagram to the left.
3. Using a flat punch and anvil, squeeze the fastener with sufficient force so that the tips of the projecting knurl teeth are embedded and the inside shoulder of the knurl contacts the board (most of the knurl will remain visible). As the fastener seats itself in the proper position, the shank will expand outward to complete the installation. Punch and anvil surfaces must be parallel.

### PEMSERTER® PRESSES

For best results we recommend using a PEMSERTER® press for either manual or automatic installation of PEM Type KF2, KFS2, KFH and KPS6 fasteners. For more information on our line of presses call 1-800-523-5321 or check our website.

## MATERIAL & FINISH SPECIFICATIONS

Type	Threads (1)		Fastener Materials					Standard Finishes			Optional Finishes (2)		For Use in Sheet Hardness:					
	Internal, ANSI B1.1 2B/ANSI/ASME B1.13M 6H	External, ANSI B1.1 2A/ANSI/ASME B1.13M 6g	7075-T6 Aluminum	Carbon Steel	300 Series Stainless Steel	CDA-510 Phosphor Bronze	CDA-353 Brass	Passivated and/or Tested Per ASTM A380	Electro-Plated Bright Tin ASTM B 545, Class B W/Preservative Coating	No Finish	Zinc Per ASTM B 633 SC1 (5µm), Type III, Colorless	Electro-Plated Bright Tin ASTM B 545, Class B W/Preservative Coating	70 or less on the Rockwell "B" Scale	65 or less on the Rockwell "B" Scale	60 or less on the Rockwell "B" Scale	55 or less on the Rockwell "B" Scale	50 or less on the Rockwell "B" Scale	PC Board
KF2	•			•					•		•				•			•
KFS2	•				•			•					•					•
KFE	•			•					•		•				•			•
KFSE	•				•			•					•					•
KFB3	•						•		•					•				•
KFH		•				•			•							•		•
KSSB							•			•		•		•				•
PFK		•			•			•					•					•
SOAG	•		•							(3)							•	
SOSG	•				•			•					•					
KPS6	•				•			•										•
Part Number Codes For Finishes								None	ET	X	ZI	ET						

(1) For plated studs, Class 2A/6g, the maximum major and pitch diameter, after plating, may equal basic sizes and can be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

(2) Available on special order.

(3) Aluminum parts have no finish suffix.

# PERFORMANCE DATA <sup>(1)</sup>

UNIFIED	Type	Thread Code	Max. Nut Tightening Torque (in. lbs.)	Test Sheet Thickness & Test Sheet Material	Installation (lbs.)	Pushout (lbs.) (2)	Torque-out (in. lbs.)
	KF2	256	(3)	.060" FR-4 Fiberglass	400	60	6
		440	(3)	.060" FR-4 Fiberglass	400	65	15
	KFS2	632	(3)	.060" FR-4 Fiberglass	500	80	30
		832	(3)	.060" FR-4 Fiberglass	700	95	35
	KFSE	032	(3)	.060" FR-4 Fiberglass	700	100	40
	KFB3	440	(3)	.060" FR-4 Fiberglass	1,000	140	18
		632	(3)	.060" FR-4 Fiberglass	1,500	170	28
	KFH	440	4	.060" FR-4 Fiberglass	400	65	7
		632	8	.060" FR-4 Fiberglass	400	70	11
		832	15	.060" FR-4 Fiberglass	400	80	16
		032	18	.060" FR-4 Fiberglass	400	90	17
	PFK	440	(3)	.060" FR-4 Fiberglass	250	55	(3)
		632	(3)	.060" FR-4 Fiberglass	400	60	(3)
	SOAG/SOSG	6440	(3)	.064" 5052-H34 Aluminum	1700	300	25
		8632	(3)	.064" 5052-H34 Aluminum	1700	400	45
	KPS6	440	(3)	.060" FR-4 Fiberglass (5)	2,500	40	5
		632	(3)	.060" FR-4 Fiberglass (5)	3,300	50	7
		832	(3)	.060" FR-4 Fiberglass (5)	5,000	70	12
		032	(3)	.060" FR-4 Fiberglass (5)	6,000	80	15

UNIFIED	Type	Panel 1 (.060" FR-4 Fiberglass) (4)		Panel 2 (Removable) (4)		
		Installation (lbs.)	Pushout (lbs.)	Max. First On Force (lbs.)	Min. First Off Force (lbs.)	Min. 15th Off Force (lbs.)
	KSSB	500	110	13	3.0	1.0

METRIC	Type	Thread Code	Max. Nut Tightening Torque (N•m)	Test Sheet Thickness & Test Sheet Material	Installation (kN)	Pushout (N) (2)	Torque-out (N•m)
	KF2	M3	(3)	1.5 mm FR-4 Fiberglass	2.2	200	1.35
		M4	(3)	1.5 mm FR-4 Fiberglass	2.2	330	3.73
	KFS2	M3	(3)	1.5 mm FR-4 Fiberglass	2.2	330	3.73
		M4	(3)	1.5 mm FR-4 Fiberglass	2.2	330	3.73
	KFSE	M5	(3)	1.5 mm FR-4 Fiberglass	2.9	350	4.52
	KFB3	M3	(3)	1.5 mm FR-4 Fiberglass	4.4	560	2.03
		M4	(3)	1.5 mm FR-4 Fiberglass	6	680	3.2
	KFH	M3	0.45	1.5 mm FR-4 Fiberglass	1.8	285	0.79
		M4	1.6	1.5 mm FR-4 Fiberglass	1.8	355	1.8
		M5	2.1	1.5 mm FR-4 Fiberglass	1.8	400	1.92
	PFK	M3	(3)	1.5 mm FR-4 Fiberglass	1.1	245	(3)
	SOAG/SOSG	3.5M3	(3)	1.6 mm 5052-H34 Aluminum	7.6	1330	2.82
	KPS6	M3	(3)	1.5 mm FR-4 Fiberglass (5)	9.8	178	.56
		M4	(3)	1.5 mm FR-4 Fiberglass (5)	22.2	312	1.36
		M5	(3)	1.5 mm FR-4 Fiberglass (5)	26.7	356	1.7

METRIC	Type	Panel 1 (1.5 mm FR-4 Fiberglass) (4)		Panel 2 (Removable) (4)		
		Installation (kN)	Pushout (N)	Max. First On Force (N)	Min. First Off Force (N)	Min. 15th Off Force (N)
	KSSB	2.2	484	57.7	13.3	4.4

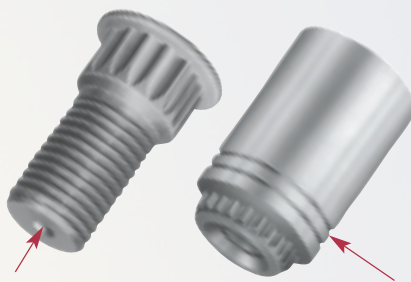
(1) The installation, pushout and torque-out values reported are averages when all installation specifications and procedures are followed. Variations in mounting hole size, sheet material and installation procedure will affect this data. Performance testing of this product in your application is recommended. We will be happy to provide samples for this purpose.

(2) These are typical values for parts installed in drilled mounting holes. Punched mounting holes yield values approximately 15% less.

(3) Not applicable.

(4) See Application Data drawing on page K-5.

(5) 1 Mil Cu, .5 Mil Sn/Pb plated thru-hole.



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