

PennEngineering®

KEYHOLE® STANDOFFS AND FASTENERS



BULLETIN

SK



# KEYHOLE® SELF-CLINCHING STANDOFFS AND SHEET JOINING FASTENERS

PEM® KEYHOLE® Standoffs (Type SKC™) and sheet joining fasteners (Type SKC-F™) are designed so that a PC board or panel can be quickly slipped into place and then removed from an assembly by simply sliding the board sideways and lifting it off. PEM KEYHOLE fasteners can save valuable time and dramatically reduce the amount of loose hardware required. Type SKC can be used for spacing or mounting of replaceable components. Typically, several SKC standoffs are used with one standard PEM threaded standoff which accepts a screw to secure the board or component against any unwanted movement. Type SKC-F is designed so that two sheets can be quickly joined flat against each other. Typically, several Type SKC-F fasteners are used with one standard PEM® threaded Type F flush nut which accepts a screw to secure the sheets against any unwanted movement.

## Type SKC - Allows detachable spacing of two sheets

- Clinch feature mounts fastener permanently into metal sheet.
- Unique barrel design allows for quick attachment and detachment.
- Head is flush with one side of metal sheet.
- Makes horizontal or vertical component mounting possible.

## Type SKC-F - Allows detachable joining of two sheets

- Clinch feature mounts fastener permanently into metal sheet.
- Unique barrel design allows for quick “panel-on-panel” attachment and detachment.
- Head is flush or sub-flush with one side of metal sheet.
- Can be clinched into blind hole where concealed-head is required.
- Makes horizontal or vertical component mounting possible.

## TYPE SKC STANDOFFS



## TYPE SKC-F FASTENERS



Component can easily be removed from top of standoff or fastener

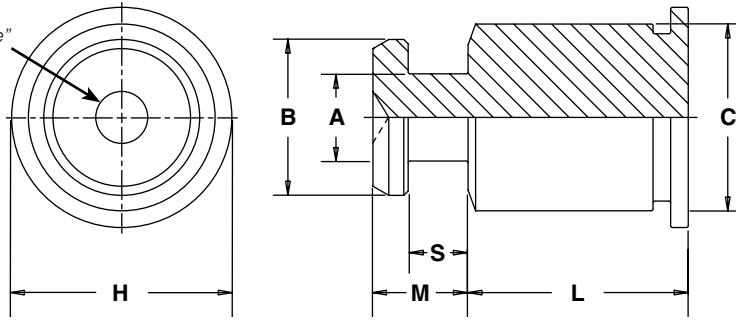
Clinches permanently to this sheet



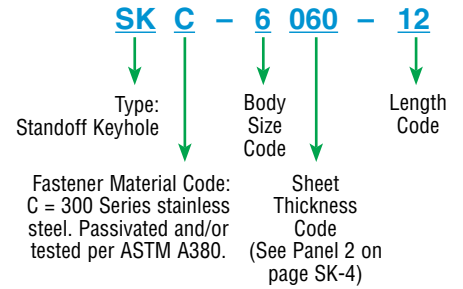
# DIMENSIONAL DATA

## TYPE SKC DIMENSIONAL DATA

Look for the PEM "dimple" trademark.



### PART NUMBER DESIGNATION



All dimensions are in inches.

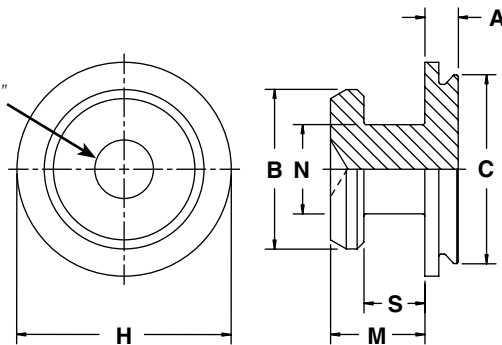
UNIFIED	Type	Body Size - Sheet Steel Code	Length "L" ± .005 (Length Code in 32nds of an inch)												A	B	C	S	M	H	
	Stainless Steel		.063	.125	.188	.250	.312	.375	.437	.500	.562	.625	.750	.875	1.00	± .003	± .003	Max.	± .003	Max.	Nom.
	SKC	6060	2	4	6	8	10	12	14	16	18	20	24	28	32	.099	.177	.212	.068	.108	.250

All dimensions are in millimeters.

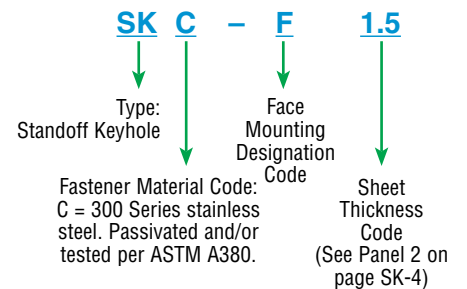
METRIC	Type	Body Size - Sheet Steel Code	Length "L" ± 0.13 (Length Code in millimeters)												A	B	C	S	M	H
	Stainless Steel		Code	.063	.125	.188	.250	.312	.375	.437	.500	.562	.625	.750	.875	1.00	± 0.08	± 0.08	Max.	± 0.08
	SKC	61.5	2	4	6	8	10	12	14	16	18	20	22	25	2.51	4.5	5.39	1.73	2.75	6.35

## TYPE SKC-F DIMENSIONAL DATA

Look for the PEM "dimple" trademark.



### PART NUMBER DESIGNATION



All dimensions are in inches.

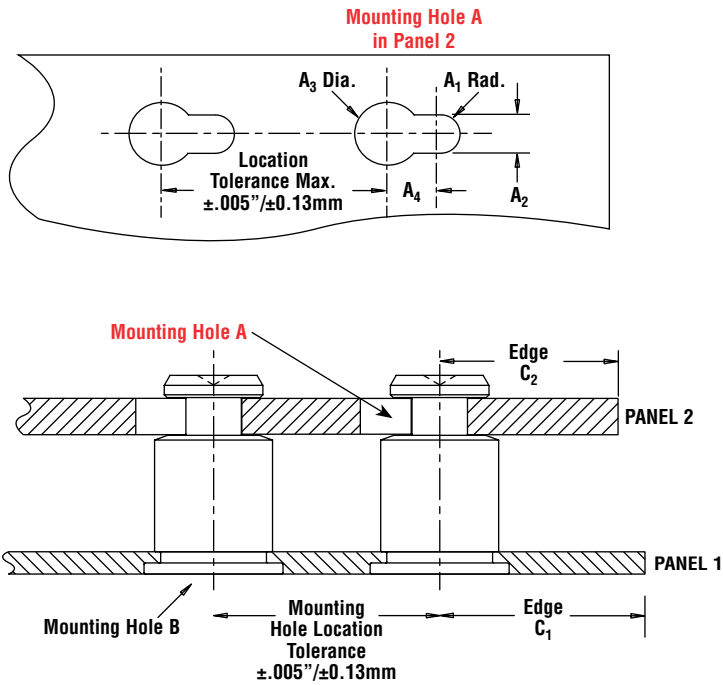
UNIFIED	Type	Face Mounting Designation Code	Sheet Thickness Code	A	B	C	H	M	N	S
	Stainless Steel			Max.	± .003	Max.	Nom.	Max.	± .003	±.003
	SKC	F	1.5	.039	.177	.212	.237	.108	.099	.068

All dimensions are in millimeters.

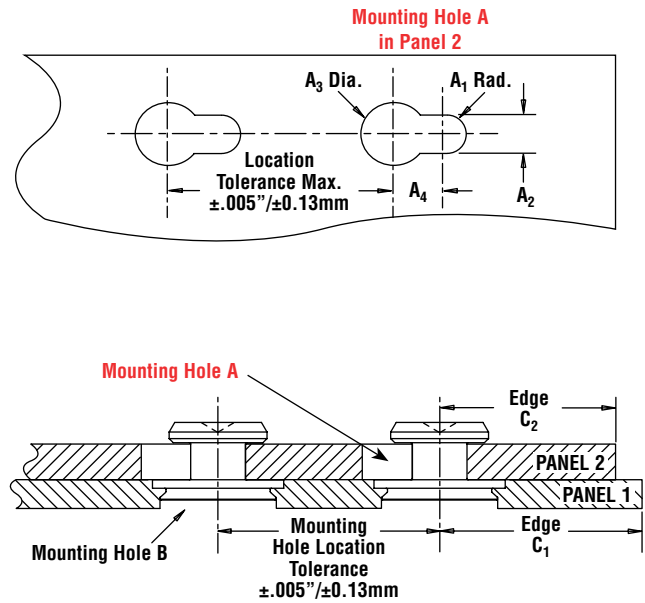
METRIC	Type	Face Mounting Designation Code	Sheet Thickness Code	A	B	C	H	M	N	S
	Stainless Steel			Max.	± 0.08	Max.	Nom.	Max.	± 0.08	±0.08
	SKC	F	1.5	1	4.5	5.39	6.02	2.75	2.5	1.73

# APPLICATION DATA

## TYPE SKC



## TYPE SKC-F



All dimensions are in inches.

UNIFIED	Type	PANEL 1				PANEL 2						
		Bottom Mounting Hole B +.003 -.000	Sheet Hardness Max. (1)	Min. Sheet Thickness	Edge Distance C <sub>1</sub> Min.	Top Mounting Hole A				Material	Thickness Range	Edge Distance C <sub>2</sub> Min.
						A <sub>1</sub> Nom.	A <sub>2</sub> ± .003	A <sub>3</sub> ± .003	A <sub>4</sub> Min.			
SKC	.213	HRB 70 / HB 125	.040	.260	.059	.118	.197	.148	ANY	.057 - .064	.160	
SKC-F	.213	HRB 70 / HB 125	.039 <sup>(2)</sup>	.150	.059	.118	.197	.148	ANY	.057 - .064	.160	

All dimensions are in millimeters.

METRIC	Type	PANEL 1				PANEL 2						
		Bottom Mounting Hole B +0.08	Sheet Hardness Max. (1)	Min. Sheet Thickness	Edge Distance C <sub>1</sub> Min.	Top Mounting Hole A				Material	Thickness Range	Edge Distance C <sub>2</sub> Min.
						A <sub>1</sub> Nom.	A <sub>2</sub> ± 0.08	A <sub>3</sub> ± 0.08	A <sub>4</sub> Min.			
SKC	5.41	HRB 70 / HB 125	1.02	6.6	1.5	3	5	3.75	ANY	1.45 - 1.62	4.1	
SKC-F	5.41	HRB 70 / HB 125	1 <sup>(2)</sup>	3.8	1.5	3	5	3.75	ANY	1.45 - 1.62	4.1	

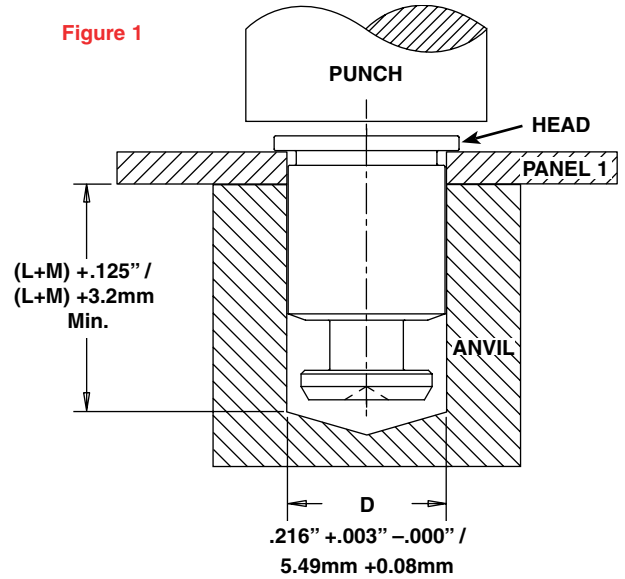
(1) HRB - Hardness Rockwell "B" Scale. HB - Hardness Brinell.

(2) Type SKC-F may also be installed into a .043"/1.1mm deep blind milled hole in a .062"/1.6mm minimum sheet thickness.

# INSTALLATION

## TYPE SKC

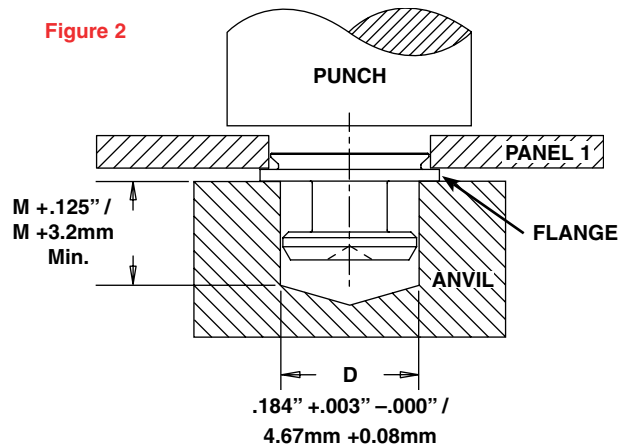
1. Prepare properly sized mounting hole in Panel 1.
2. Place the barrel of the fastener through mounting hole and into anvil as shown in figure 1.
3. With the punch and anvil surfaces parallel, apply only enough squeezing force to embed the head flush with the panel.



## TYPE SKC-F

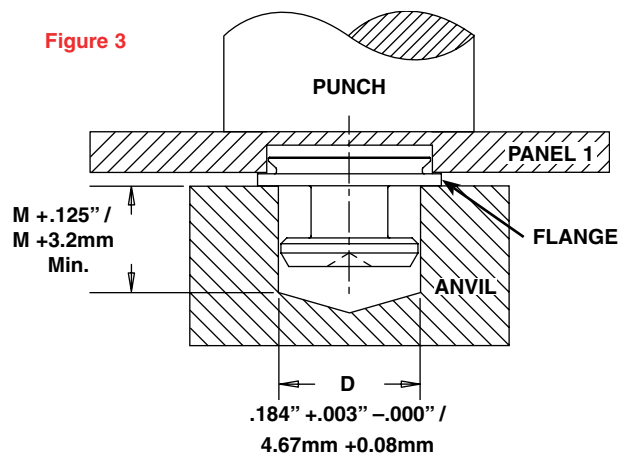
### Through Hole Installation Procedure

1. Prepare properly sized mounting hole in Panel 1.
2. Place the fastener into anvil hole as shown in figure 2.
3. Place the panel over the shank of the fastener.
4. With the punch and anvil surfaces parallel, apply only enough squeezing force until flange is flush with panel.



### Blind Hole Installation Procedure

1. Mill a properly sized blind hole to .043 inches / 1.1mm minimum depth.
2. Place the fastener into anvil hole as shown in figure 3.
3. Place the panel over the shank of the fastener.
4. With the punch and anvil surfaces parallel, apply only enough squeezing force to embed the flange flush with the panel.



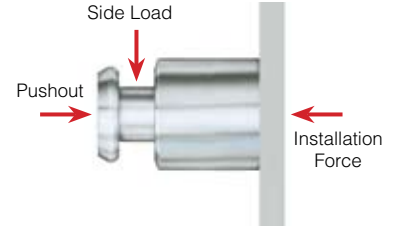
# PERFORMANCE DATA<sup>(1)</sup>

## TYPE SKC

### Installation and Pushout

Test Sheet Material →		.060" 5052-H34 Aluminum			.060" Cold-Rolled Steel	
UNIFIED	Body Size - Sheet Code	Installation (lbs.)	Pushout (lbs.)	Installation (lbs.)	Pushout (lbs.)	
		6060	1600	250	3200	600

Test Sheet Material →		1.52 mm 5052-H34 Aluminum			1.52 mm Cold-Rolled Steel	
METRIC	Body Size - Sheet Code	Installation (kN)	Pushout (N)	Installation (kN)	Pushout (N)	
		61.5	7.1	1100	14.2	2600



### Side-Load

Test Sheet Material →		5052-H34 Aluminum										Cold-Rolled Steel													
Test Sheet Thick. →		.040" (2)		.060"								.040" (2)		.060"											
UNIFIED	Body Size - Sheet Code	Length Codes												Length Codes											
		-2	-4	-6	-8	-10	-12	-14	-16	-20	-24	-32	-2	-4	-6	-8	-10	-12	-14	-16	-20	-24	-32		
		Side-Load Force Max. (lbs.)												Side-Load Force Max. (lbs.)											
	6060	130	95	82	63	52	44	38	34	27	22	17	185	120	197	153	126	106	92	81	66	55	42		

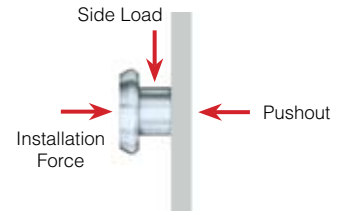
Test Sheet Material →		5052-H34 Aluminum										Cold-Rolled Steel													
Test Sheet Thick. →		1 mm (2)		1.5 mm								1 mm (2)		1.5 mm											
METRIC	Body Size - Sheet Code	Length Codes												Length Codes											
		-2	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-25	-2	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-25
		Side-Load Force Max. (N)												Side-Load Force Max. (N)											
	61.5	545	370	296	228	184	156	136	116	104	96	88	76	735	490	696	540	440	372	320	280	252	228	208	184

## TYPE SKC-F

### Installation, Pushout and Side-Load

Test Sheet Material →		.060" 5052-H34 Aluminum			.060" Cold-Rolled Steel		
UNIFIED	Type	Installation (lbs.)	Pushout (lbs.)	Side-Load Force Max. (lbs.)	Installation (lbs.)	Pushout (lbs.)	Side-Load Force Max. (lbs.)
		SKC-F	1100	120	120	2100	160

Test Sheet Material →		1.52 mm 5052-H34 Aluminum			1.52 mm Cold-Rolled Steel		
METRIC	Type	Installation (kN)	Pushout (N)	Side-Load Force Max. (N)	Installation (kN)	Pushout (N)	Side-Load Force Max. (N)
		SKC-F	4.9	533	533	9.3	711



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

(2) .040"/1mm test sheet material thickness was used for the -2 and -4 SKC standoffs due to the short length of the parts.

RoHS compliance information can be found on our website.  
© 2010 PennEngineering.

Specifications subject to change without notice.  
Check our website for the most current version of this bulletin.

**PennEngineering®**



**North America:** Danboro, PA USA • E-mail: info@pemnet.com • Tel: +1-215-766-8853 • Fax: +1-215-766-0143 • 800-237-4736 (USA Only)  
**Europe:** Galway, Ireland • E-mail: europe@pemnet.com • Tel: +353-91-751714 • Fax: +353-91-753541  
**Asia/Pacific:** Singapore • E-mail: singapore@pemnet.com • Tel: +65-6-745-0660 • Fax: +65-6-745-2400  
 Shanghai, China • E-mail: china@pemnet.com • Tel: +86-21-5868-3688 • Fax: +86-21-5868-3988

Visit our PEMNET™ Resource Center at [www.pemnet.com](http://www.pemnet.com)

Technical support e-mail: [techsupport@pemnet.com](mailto:techsupport@pemnet.com)