

PennEngineering®

KEYHOLE® STANDOFFS AND FASTENERS



BULLETIN

SK



KEYHOLE® STANDOFFS AND 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



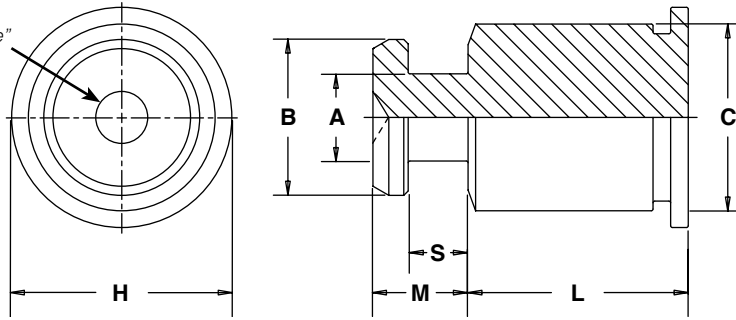
Type SKC-F



KEYHOLE® STANDOFFS AND FASTENERS

TYPE SKC DIMENSIONAL DATA

Look for the PEM "dimple" trademark.



PART NUMBER DESIGNATION

SK C - 6 060 - 12

SK ↓ Type: Standoff Keyhole
 C ↓ Body Size Code
 6 ↓ Sheet Thickness Code
 060 ↓ (See Panel 2 on page 4)
 12 ↓ Length Code

Fastener Material Code: C = 300 Series stainless steel. Passivated and/or tested per ASTM A380.

All dimensions are in inches.

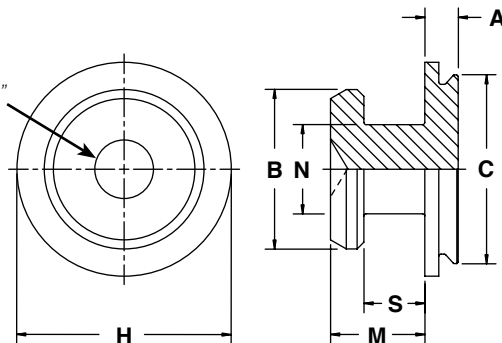
UNIFIED	Type	Body Size - Sheet Code	Length "L" ± .005 (Length Code in 32nds of an inch)												A	B	C	S	M	H	
	Stainless Steel		.063	.125	.188	.250	.312	.375	.437	.500	.562	.625	.750	.875	1.00	± .003	± .003	Max.	± .003	Max.	Nom.
	SKC	6060	2	4	6	8	10	12	14	16	18	20	24	28	32	.099	.177	.212	.068	.108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

All dimensions are in millimeters.

METRIC	Type	Body Size - Sheet Code	Length "L" ± 0.13 (Length Code in millimeters)												A	B	C	S	M	H
	Stainless Steel		Code													± 0.08	± 0.08	Max.	± 0.08	Max.
	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

SK C - F 1.5

SK ↓ Type: Standoff Keyhole
 C ↓ Body Size Code
 F ↓ Face Mounting Designation Code
 1.5 ↓ Sheet Thickness Code (See Panel 2 on page 4)

Fastener Material Code: C = 300 Series stainless steel. Passivated and/or tested per ASTM A380.

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.

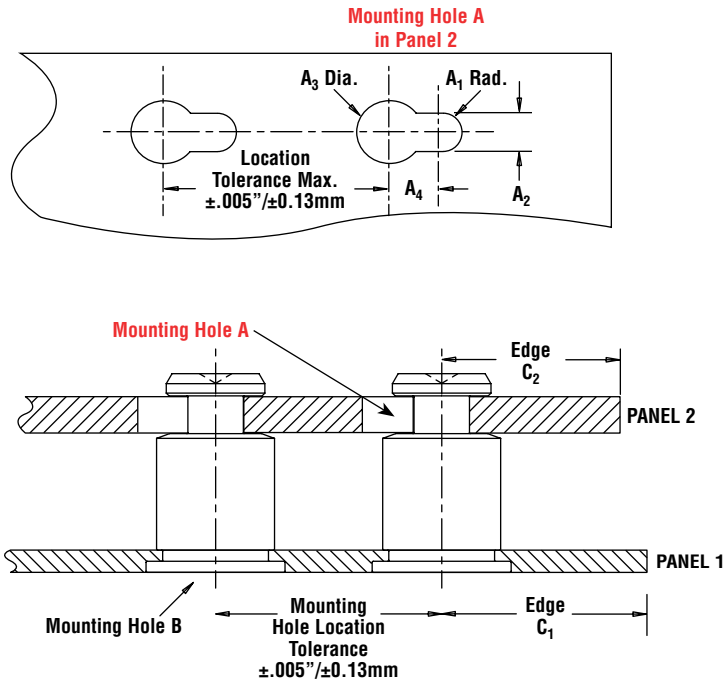
METRIC	Type	Face Mounting Designation Code	Sheet Thickness Code	A	B	C	H	M	N	S
	Stainless Steel			Max.	± 0.08	Max.	Nom.	Max.	± 0.08	± 0.08
	SKC	F	1.5	1	4.5	5.39	6.02	2.75	2.5	1.73



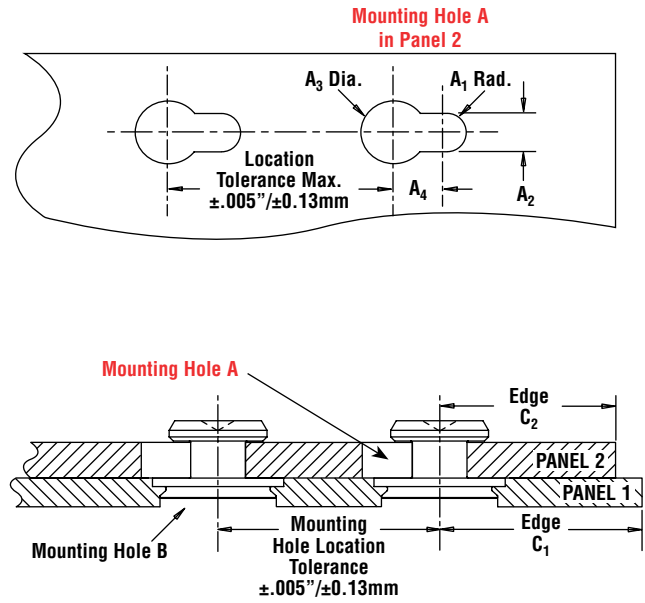
KEYHOLE® STANDOFFS AND FASTENERS

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 ₁ Min.	Top Mounting Hole A				Material	Thickness Range	Edge Distance C ₂ Min.
						A ₁ Nom.	A ₂ ± .003	A ₃ ± .003	A ₄ 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 ⁽²⁾	.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 ₁ Min.	Top Mounting Hole A				Material	Thickness Range	Edge Distance C ₂ Min.
						A ₁ Nom.	A ₂ ± 0.08	A ₃ ± 0.08	A ₄ 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 ⁽²⁾	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.

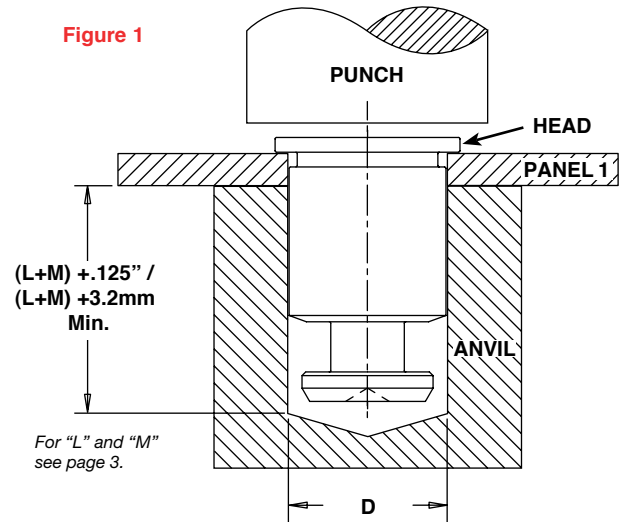
INSTALLATION

TYPE SKC

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

UNIFIED	Body Size Sheet Code	Anvil Dimension (in.) D +.003 -.000	Anvil Part Number	Punch Part Number
	6060	.216	970200012300	975200048

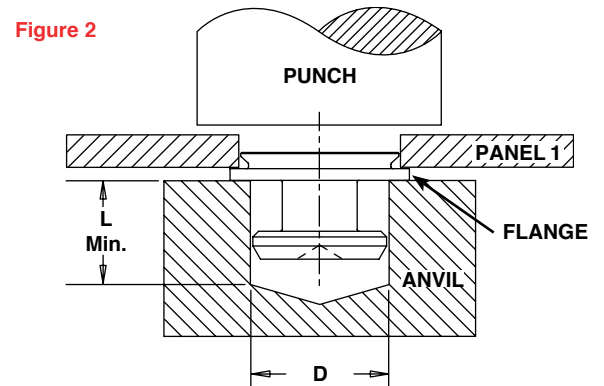
METRIC	Body Size Sheet Code	Anvil Dimension (mm) D +0.08	Anvil Part Number	Punch Part Number
	61.5	5.49	970200012300	975200048



TYPE SKC-F

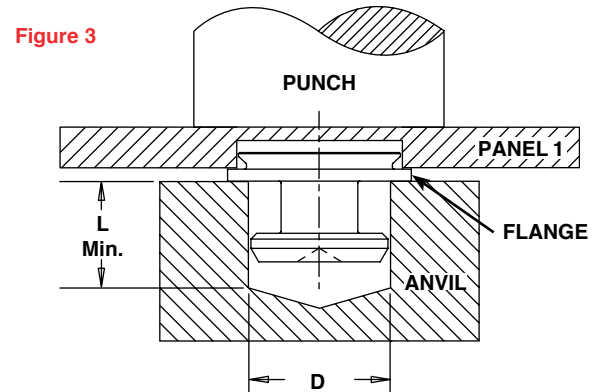
Through Hole Installation Procedure

1. Prepare properly sized mounting hole in Panel 1.
2. Place the fastener into anvil hole as shown in Figure 2.
3. Place the (punch side of) mounting hole over the shank of the fastener.
4. With installation 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" / 1.1mm minimum depth.
2. Place the fastener into anvil hole as shown in Figure 3.
3. Place the panel mounting hole over the shank of the fastener.
4. With installation punch and anvil surfaces parallel, apply only enough squeezing force to embed the flange flush with the panel.



UNIFIED	Sheet Thickness Code	Anvil Dimensions (in.)		Anvil Part Number	Punch Part Number
		L Min.	D +.003 -.000		
1.5	.233	.184	8012608	975200048	

METRIC	Sheet Thickness Code	Anvil Dimensions (mm)		Anvil Part Number	Punch Part Number
		L Min.	D +0.08		
1.5	5.95	4.67	8012608	975200048	

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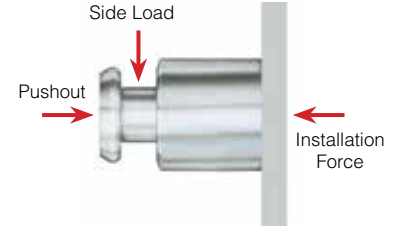
PERFORMANCE DATA⁽¹⁾

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.)	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)	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
		6060	Side-Load Force Max. (lbs.)											Side-Load Force Max. (lbs.)										
		130	95	82	63	52	44	38	34	27	22	17	185	120	197	153	126	106	92	81	66	55	42	

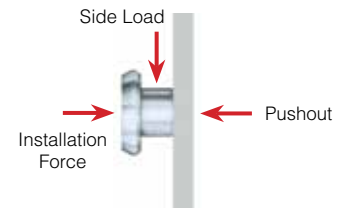
Test Sheet Material →		5052-H34 Aluminum											Cold-Rolled Steel													
Test Sheet Thick. →		1 mm ⁽²⁾		1.5 mm									1 mm ⁽²⁾		1.5 mm											
METRIC	Body Size - Sheet Code	Length Codes											Length Codes													
			-2	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-25	-2	-4	-6	-8	-10	-12	-14	-16	-18	-20	-22	-25
		61.5	Side-Load Force Max. (N)											Side-Load Force Max. (N)												
		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.
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