PennEngineering®

PEMSERT® SELF-CLINCHING FLUSH FASTENERS

BULLETIN F

PEM®

PEMSERT® SELF-CLINCHING FLUSH FASTENERS

PEMSERT® self-clinching flush nuts are designed to be completely flush in sheets as thin as .060”/1.5 mm.

These fasteners are ideal for applications where a thin sheet requires load-bearing threads but still must remain smooth, with no protrusions on either surface. The PEM® flush nut can be installed easily by squeezing it into a round hole in metal sheets. When the fastener is installed, both the top and the bottom of the sheet remain smooth, enhancing the functional and cosmetic qualities of the entire assembly. PEMSERT self-clinching flush nuts can be installed in metal sheets before bending and forming. This can provide strong threads in places which would be inaccessible for installation after chassis are formed.

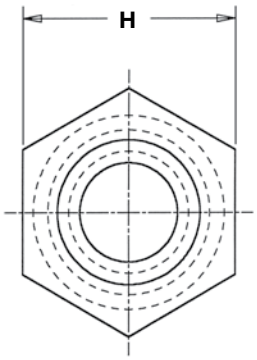
The hexagonal head along with the proven PEM self-clinching design ensures high axial and torsional strength and PEMSERT Type F fasteners can be ordered to conform to US NASM45938/4 specifications.*

**To meet national aerospace standards and to obtain testing documentation, product must be ordered to NASM45938/4 specifications. Consult our Marketing department for a complete Military Specification and National Aerospace Standards Reference Guide (Bulletin NASM) or check our web site.*

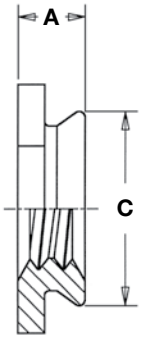
PART NUMBER DESIGNATION

F	–	440	–	2
↓		↓		↓
Type		Thread Size Code		Shank Code

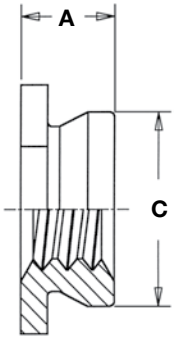
PEMSERT® SELF-CLINCHING FLUSH FASTENERS



Profile for -1 shank code.



Profile for -2, -3, -4, & -5 shank codes.



Clinching profile may vary.

All dimensions are in inches.

	Thread Size	Type	Thread Code	Shank Code	A (Shank) Max.	Sheet Thickness	Hole Size In Sheet +.003 -.000	C Max.	H Nom.	Min. Dist. Hole ℄ To Edge
UNIFIED	.086-56 (#2-56)	F	256	1	.060	.060-.090	.172	.171	.188	.23
				2	.090	.091 Min.				
	.112-40 (#4-40)	F	440	1	.060	.060-.090	.172	.171	.188	.23
				2	.090	.091 Min.				
	.138-32 (#6-32)	F	632	1	.060	.060-.090	.213	.212	.250	.27
				2	.090	.091 Min.				
	.164-32 (#8-32)	F	832	1	.060	.060-.090	.290	.289	.312	.28
				2	.090	.091 Min.				
	.190-32 (#10-32)	F	032	1	.060	.060-.090	.312	.311	.343	.31
				2	.090	.091 Min.				
	.250-20 (1/4-20)	F	0420	3	.120	.125-.155	.344	.343	.375	.34
				4	.151	.156-.186				
				5	.182	.187 Min.				

All dimensions are in millimeters.

	Thread Size x Pitch	Type	Thread Code	Shank Code	A (Shank) Max.	Sheet Thickness	Hole Size In Sheet +0.08	C Max.	H Nom.	Min. Dist. Hole ℄ To Edge
METRIC	M2 x 0.4	F	M2	1	1.53	1.53-2.3	4.37	4.35	4.8	6
				2	2.3	2.32 Min.				
	M2.5 x 0.45	F	M2.5	1	1.53	1.53-2.3	4.37	4.35	4.8	6
				2	2.3	2.32 Min.				
	M3 x 0.5	F	M3	1	1.53	1.53-2.3	4.37	4.35	4.8	6
				2	2.3	2.32 Min.				
	M4 x 0.7	F	M4	1	1.53	1.53-2.3	7.37	7.35	7.9	7.2
				2	2.3	2.32 Min.				
	M5 x 0.8	F	M5	1	1.53	1.53-2.3	7.92	7.9	8.7	8
				2	2.3	2.32 Min.				
	M6 x 1	F	M6	3	3.05	3.18-3.94	8.74	8.72	9.5	8.8
				4	3.84	3.96-4.72				
				5	4.63	4.75 Min.				

THREADS: Internal, ASME B1.1, 2B / ASME B1.13M, 6H.
FASTENER MATERIAL: 300 Series Stainless Steel.
FINISH: Passivated and/or tested per ASTM A380.
FOR USE IN SHEET HARDNESS: HRB 70 / HB 125 or less.

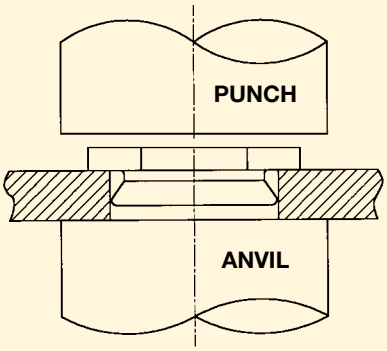
HRB - Hardness Rockwell "B" Scale. HB - Hardness Brinell.

INSTALLATION

1. Prepare properly sized round mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place shank of fastener into mounting hole (preferably the punch side) as show in the drawing.
3. With installation punch and anvil surfaces parallel, apply sufficient squeezing force only to embed hexagonal head flush in sheet. The metal displaced by the head flows evenly and smoothly around the back-tapered shank of the fastener, securely locking it into place with high pullout resistance while at the same time, the embedded hexagonal head provides high torque resistance.

PEMSERTER® Installation Tooling

Thread Code	Anvil Part Number	Punch Part Number
256/M2/M2.5	8006193	975200048
440/M3	975200040	
632	975200041	
832/M4	975200042	
1032/M5	975200043	
0420/M6	975200044	



PERFORMANCE DATA(1)

	Thread Code	Shank Code	Axial Tensile Strength (lbs.) (2)	Max. Screw Tightening Torque (3) (in. lbs.)	Test Sheet Material: 5052-H34 Aluminum Installation (lbs.)	5052-H34 Aluminum Pushout (lbs.)	Cold-rolled Steel Installation (lbs.)	Cold-rolled Steel Pushout (lbs.)
UNIFIED	256	1	130	1.50	2000	200	3000	200
		2						
	440	1	165	2.50	2000	200	3000	200
		2						
	632	1	190	3.50	2000	200	3000	200
		2						
	832	1	230	5.25	2000	240	4000	240
		2						
	032	1	280	7.50	2500	240	4000	240
		2						
	0420	3	1035	36	3500	640	4500	840
		4						
		5						

	Thread Code	Shank Code	Axial Tensile Strength (kN) (2)	Max. Screw Tightening Torque (3) (N•m)	Test Sheet Material: 5052-H34 Aluminum Installation (kN)	5052-H34 Aluminum Pushout (N)	Cold-rolled Steel Installation (kN)	Cold-rolled Steel Pushout (N)
METRIC	M2	1	0.57	0.16	8.9	890	13.3	890
		2						
	M2.5	1	0.68	0.23	8.9	890	13.3	890
		2						
	M3	1	0.85	0.36	8.9	890	13.3	890
		2						
	M4	1	1	0.58	8.9	1068	17.8	1068
		2						
	M5	1	1.3	0.88	11.1	1068	17.8	1068
		2						
	M6	3	4.5	3.7	15.6	2847	20	3736
		4						
		5						

(1) The values reported are averages when all installation specifications and procedures are followed. Variations in mounting hole size, sheet 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) Failure occurs in screw stripping using a 60 ksi screw and the shortest shank length fastener.

(3) Head of the F nut may bend and/or fail if screw is over-torqued beyond these values.

Regulatory compliance information is available in Technical Support section of our website.

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

PennEngineering®

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