

PennEngineering®

FLOATING SELF-CLINCHING FASTENERS

BULLETIN **ALA**



# FLOATING SELF-CLINCHING FASTENERS

## Locking and Non-locking Threads <sup>(1)</sup>

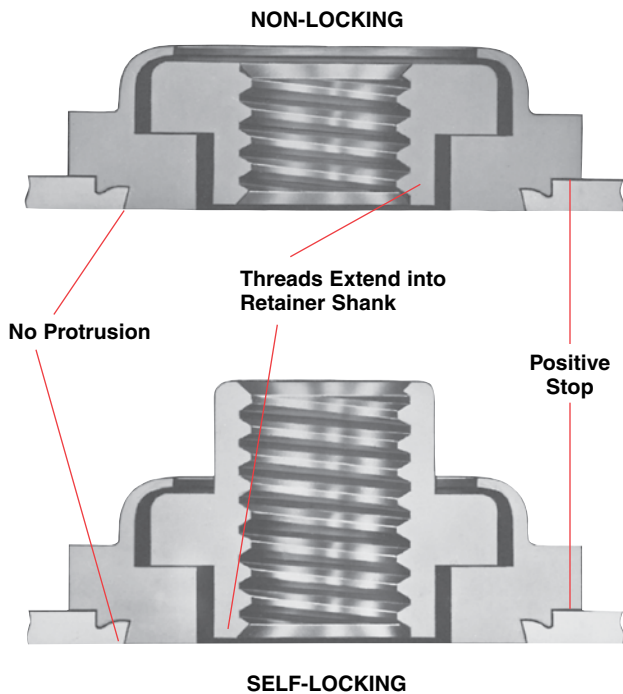
These fasteners provide load-bearing threads in thin sheets and permit a minimum of .030"/0.76mm adjustment for mating hole misalignment.

The self-clinching feature offers fast and simple assembly. The fasteners are squeezed into prepared holes using any standard press. The sheet remains flush on one side, and the fastener is permanently locked in place.

Extra strength and support in assembly is obtained by the threads of the floating nut extending into the retainer shank. A self-locking version of the fastener is also offered. Thread locking torque performance is equivalent to applicable NASM25027 specifications.

Non-locking Type A4 and self-locking Type LA4 fasteners provide load-bearing threads in stainless steel sheets as thin as .038"/0.97mm with hardness up to HRB 88 on the Rockwell "B" scale.

*(1) To meet national aerospace standards and to obtain testing documentation, product must be ordered to US NASM45938/11 specifications. Check our web site for a complete Military Specification and National Aerospace Standards Reference Guide (Bulletin NASM).*



## PART NUMBER DESIGNATION

<b>A</b>	<b>S</b>	<b>- 440 -</b>	<b>1</b>	<b>ZI</b>
↓	↓	↓	↓	↓
Type	Fastener	Thread	Shank	Finish
A = Non-locking LA = Locking	Material Code	Size Code	Code	Code
	S = heat-treated carbon steel C = 300 series stainless steel 4 = 400 series stainless steel			AS - ZI AC - None A4 - None LAS - MD LAC - MD LA4 - MD

### Double squares are a registered trademark

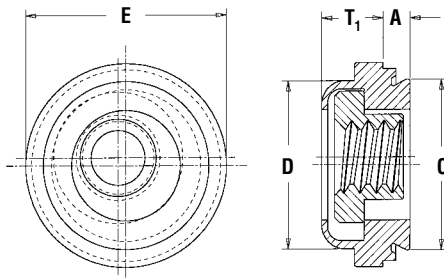
Always look for the square insert in a square retainer to be sure you are getting PEM brand fasteners and the best in self-clinching performance. Bottom view (same for both type fasteners)



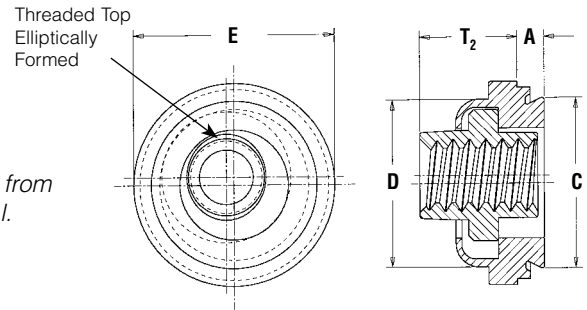
**Single groove** identifies product for installation into stainless steel sheets (Types A4 and LA4)

# FLOATING SELF-CLINCHING FASTENERS

## NON-LOCKING Types AS, AC, A4



## SELF-LOCKING Types LAS, LAC, LA4



**Float** – .015"/0.38mm minimum, in all directions from center, .030"/0.76mm total.

All dimensions are in inches.

UNIFIED	Thread Size	Type					Thread Code	Shank Code	A (shank) Max.	Min. Sheet Thickness	Hole Size in Sheet +.003 - .000	C Max.	D Max.	E ±.015	T <sub>1</sub> Max.	T <sub>2</sub> Max.	Min. Dist. Hole $\varnothing$ To Edge
		Non-Locking			Self-Locking												
		Fastener Material			Fastener Material												
		Steel	300 Series Stainless	400 Series Stainless	Steel	300 Series Stainless											
.112-40 (#4-40)	AS	AC	A4	LAS	LAC	LA4	440	1	.038	.038	.290	.289	.290	.360	.130	.190	.30
.138-32 (#6-32)	AS	AC	A4	LAS	LAC	LA4	632	1	.038	.038	.328	.327	.335	.390	.130	.200	.32
.164-32 (#8-32)	AS	AC	A4	LAS	LAC	LA4	832	1	.038	.038	.368	.367	.365	.440	.130	.210	.34
.190-24 (#10-24)	AS	AC	NA	LAS	LAC	NA	024	1	.038	.038	.406	.405	.405	.470	.170	.270	.36
.190-32 (#10-32)	AS	AC	A4	LAS	LAC	LA4	032	1	.038	.038	.406	.405	.405	.470	.170	.270	.36
.250-20 (1/4-20)	AS	AC	NA	LAS	LAC	NA	0420	2	.054	.054	.515	.514	.510	.600	.210	.310	.42
.250-28 (1/4-28)	AS	AC	NA	LAS	LAC	NA	0428	2	.054	.054	.515	.514	.510	.600	.210	.310	.42

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type					Thread Code	Shank Code	A (shank) Max.	Min. Sheet Thickness	Hole Size in Sheet +0.08	C Max.	D Max.	E ±0.38	T <sub>1</sub> Max.	T <sub>2</sub> Max.	Min. Dist. Hole $\varnothing$ To Edge
		Non-Locking			Self-Locking												
		Fastener Material			Fastener Material												
		Steel	300 Series Stainless	400 Series Stainless	Steel	300 Series Stainless											
M3 x 0.5	AS	AC	A4	LAS	LAC	LA4	M3	1	0.97	0.97	7.37	7.35	7.37	9.14	3.31	4.83	7.62
M4 x 0.7	AS	AC	A4	LAS	LAC	LA4	M4	1	0.97	0.97	9.35	9.33	9.28	11.18	3.31	5.34	8.64
M5 x 0.8	AS	AC	A4	LAS	LAC	LA4	M5	1	0.97	0.97	10.31	10.29	10.29	11.94	4.32	6.86	9.14
M6 x 1	AS	AC	NA	LAS	LAC	NA	M6	2	1.38	1.38	13.08	13.06	12.96	15.24	5.34	7.88	10.67

(1) This length code not available for Types A4 and LA4.

NA - Not Available.

## MATERIAL AND FINISH SPECIFICATIONS

Type	Threads		Fastener Materials					Standard Finishes					For Use In Sheet Hardness (2)	
	Non-locking	Self-locking	Retainer			Nut		Non-locking		Self-locking				
			Retainer & Nut	Retainer & Nut	Retainer	Retainer	Nut							
	Internal ASME B1.1, 2B/ASME B1.13M, 6H	Internal ASME B1.1, 3B/ASME B1.13M, 6H	Heat-Treated Carbon Steel	400 Series Stainless Steel	300 Series Stainless Steel	Carbon Steel	300 Series Stainless Steel	Zinc Plated, 5µm, Colorless (3)	Passivated and/or tested per ASTM A380	Zinc Plated, 5µm, Colorless (3)	Passivated and/or tested per ASTM A380	Black Dry-film Lubricant	HRB 70/ HB 125 or Less	HRB 88/ HB 183 or Less
AS	•		•			•		•					•	
AC	•				•		•		•				•	
A4	•			•			•		•					•
LAS		•	•				•			•		•	•	
LAC		•			•		•				•	•	•	
LA4		•		•			•				•	•	•	
Part number codes for finishes								ZI	None	MD				

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

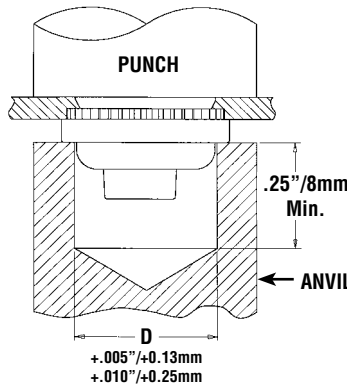
(3) See PEM Technical Support section of our web site ([www.pemnet.com](http://www.pemnet.com)) for related plating standards and specifications.

# FLOATING SELF-CLINCHING FASTENERS

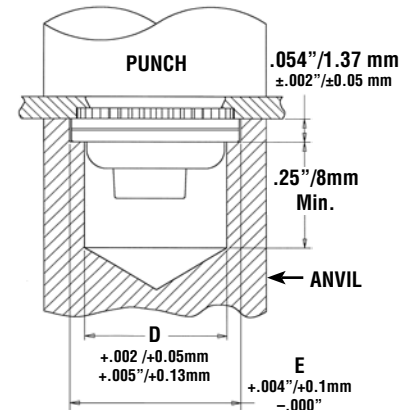
## INSTALLATION

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into the anvil hole and place the mounting hole (preferably the punch side) over the shank of the fastener.
3. With the punch and anvil surfaces parallel, apply sufficient squeezing force until flange contacts mounting sheet. Sketches at right show suggested tooling for applying these forces. Installation force and performance data shown below.

Types AC, AS, LAC and LAS



Types A4 and LA4



## PERFORMANCE DATA<sup>(1)(2)</sup>

### Types AS, AC, LAS, and LAC

UNIFIED	Thread Code	Shank Code	Test Sheet Material								
			2024-T3 Aluminum			5052-H34 Aluminum			Cold-Rolled Steel		
			Installation (lbs.)	Retainer Pushout (lbs.)	Retainer Torque-out (in. lbs.)	Installation (lbs.)	Retainer Pushout (lbs.)	Retainer Torque-out (in. lbs.)	Installation (lbs.)	Retainer Pushout (lbs.)	Retainer Torque-out (in. lbs.)
440	1	3000	220	65	1500	215	65	3000	300	85	
	2		225	150	2000	225	80			150	
632	1	3000	235	110	2000	240	140	3000	300	150	
	2		275	150		250	150			175	
832	1	3000	240	110	2000	250	140	3000	300	150	
	2		300	150		265	150		400	200	
032	1	3500	150	200	2000	300	150	3500	400	150	
	2		350			175	450		200		
0420	2	5000	300	325	3000	400	325	5000	500	325	
0428											

METRIC	Thread Code	Shank Code	Test Sheet Material								
			2024-T3 Aluminum			5052-H34 Aluminum			Cold-Rolled Steel		
			Installation (kN)	Retainer Pushout (N)	Retainer Torque-out (N•m)	Installation (kN)	Retainer Pushout (N)	Retainer Torque-out (N•m)	Installation (kN)	Retainer Pushout (N)	Retainer Torque-out (N•m)
M3	1	2	13.3	978	7.3	6.7	956	7.3	13.3	1334	9.6
	2		13.3	1000	16.9	8.9	1000	9	13.3	1334	16.9
M4	1	2	13.3	1067	12.4	8.9	1112	15.8	13.3	1334	16.9
	2		15.6	1334	16.9	8.9	1178	16.9	13.3	1779	22.6
M5	1	2	15.6	1334	16.9	8.9	1334	16.9	15.6	1779	16.9
	2		16.6	1334	22.6	8.9	1556	19.7	15.6	2001	22.6
M6	2	2	22.2	1334	36.7	13.3	1779	36.7	22.2	2224	36.7

### Types A4 and LA4

UNIFIED	Thread Code	Test Sheet Material			Anvil Part Number	Punch Part Number
		300 Series Stainless Steel				
		Installation (lbs.)	Retainer Pushout (lbs.)	Retainer Torque-out (in. lbs.)		
440	9000	200	85	8013889	975200048	
632	10000	200	85	8013890	975200048	
832	12000	200	85	8013891	975200048	
032	13000	250	125	8013892	975200048	

METRIC	Thread Code	Test Sheet Material			Anvil Part Number	Punch Part Number
		300 Series Stainless Steel				
		Installation (kN)	Retainer Pushout (N)	Retainer Torque-out (N•m)		
M3	40	890	9.6	8013889	975200048	
M4	53	890	9.6	8013891	975200048	
M5	57	1100	14.1	8013892	975200048	

(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) For Types LAC, LAS and LA4 fasteners, thread locking performance is equivalent to applicable NASM25027 specifications. Consult document PEM-REF25027 for details.

RoHS compliance information can be found on our website.  
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