

PennEngineering®

FLOATING SELF-CLINCHING FASTENERS

BULLETIN

ALA







FLOATING SELF-CLINCHING FASTENERS

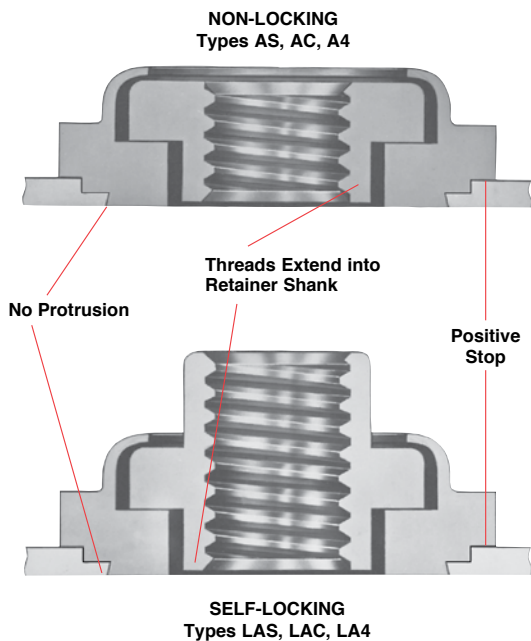
Locking and Non-locking Threads ⁽¹⁾

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.

(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).

<p>Type AC (300 series stainless steel), Type AS (carbon steel), and Type A4 (400 series stainless steel) nuts with load-bearing, non-locking threads in sheets as thin as .038"/0.97mm. Types AC and AS install into sheets with hardness up to HRB 70 / HB 125 on the Rockwell "B" scale. Type A4 installs into stainless steel sheets with hardness up to HRB 88 / HB 183 on the Rockwell "B" scale.</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Types AC/AS</p>  </div> <div style="text-align: center;"> <p>Type A4</p>  </div> </div>
<p>Type LAC (300 series stainless steel), Type LAS (carbon steel), and Type LA4 (400 series stainless steel) nuts with load-bearing, self-locking threads in sheets as thin as .038"/0.97mm. Types LAC and LAS install into sheets with hardness up to HRB 70 / HB 125 on the Rockwell "B" scale. Type LA4 installs into stainless steel sheets with hardness up to HRB 88 / HB 183 on the Rockwell "B" scale.</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Types LAC/LAS</p>  </div> <div style="text-align: center;"> <p>Type LA4</p>  </div> </div>



PART NUMBER DESIGNATION

A	C	-	440	-	1	
A	S	-	440	-	1	ZI
A	4	-	440	-	1	
LA	C	-	440	-	1	MD
LA	S	-	440	-	1	MD
LA	4	-	440	-	1	MD
↓	↓		↓	↓	↓	↓
Type	Retainer Material Code		Thread Size Code	Shank Code		Finish Code

Double squares (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.

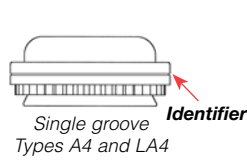
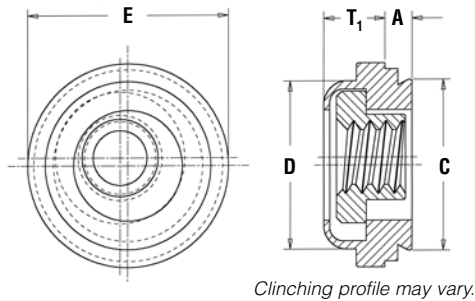


Single groove (Registered Trademark)

Identifies product for installation into stainless steel sheets (Types A4 and LA4)

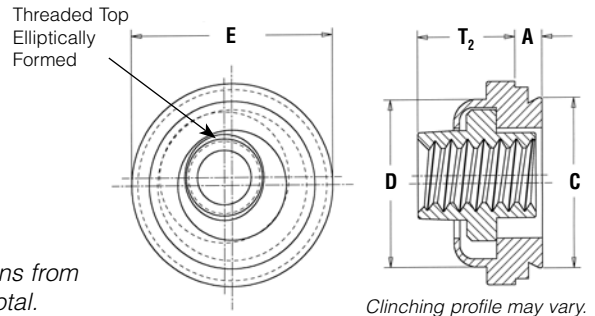
FLOATING SELF-CLINCHING FASTENERS

NON-LOCKING Types AS, AC, A4



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

SELF-LOCKING Types LAS, LAC, LA4



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 ₁ Max.	T ₂ 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	-	LAS	LAC	-	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	-	LAS	LAC	-	0420	2	.054	.054	.515	.514	.510	.600	.210	.310	.42
.250-28 (1/4-28)	AS	AC	-	LAS	LAC	-	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 ₁ Max.	T ₂ 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	-	LAS	LAC	-	M6	2	1.38	1.38	13.08	13.06	12.96	15.24	5.34	7.88	10.67

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

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							
			Internal ASME B1.1, 2B/ASME B1.13M, 6H	Internal ASME B1.1, 3B/ASME B1.13M, 6H	Hardened Carbon Steel	Hardened 400 Series Stainless Steel	300 Series Stainless Steel	Carbon Steel	300 Series Stainless Steel	Retainer & Nut	Retainer & Nut	Retainer			Retainer	Nut	
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) for related plating standards and specifications.

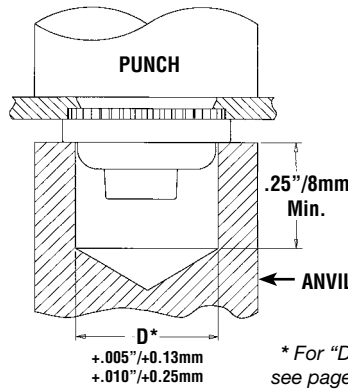


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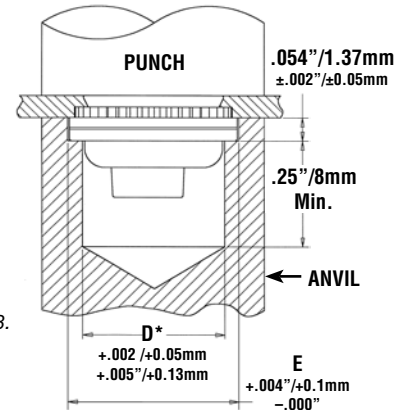
INSTALLATION

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 installation 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



Tooling for installation into stainless steel sheets
Types A4 and LA4



Installation Tooling

Type	Thread Code	Anvil Part Number	Punch Part Number
AC/AS/LAC/LAS	440/M3	975200006	975200048
AC/AS/LAC/LAS	632	8013890	975200048
AC/AS/LAC/LAS	832/M4	8013891	975200048
AC/AS/LAC/LAS	032/M5	8013892	975200048
AC/AS/LAC/LAS	0420/M6	975200010	975200048

Type	Thread Code	Anvil Part Number	Punch Part Number
A4/LA4	440/M3	8013889	975200048
A4/LA4	632	8013890	975200048
A4/LA4	832/M4	8013891	975200048
A4/LA4	032/M5	8013892	975200048

* For "D", see page 3.

PERFORMANCE DATA⁽¹⁾⁽²⁾

Types AC, AS, LAC, and LAS

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	2000	300	150	3500	400	150	
	2		200		350	175		450	200		
0420	2	5000		300	3000	400	325	5000	500	325	
0428				325							

Types A4 and LA4

UNIFIED	Thread Code	Test Sheet Material		
		300 Series Stainless Steel		
		Installation (lbs.)	Retainer Pushout (lbs.)	Retainer Torque-out (in. lbs.)
440	9000	200	85	
632	10000	200	85	
832	12000	200	85	
032	13000	250	125	

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	13.3	978	7.3	6.7	956	7.3	13.3	1334	9.6	
	2		1000	16.9	8.9	1000	9	13.3	1334	16.9	
M4	1	13.3	1067	12.4	8.9	1112	15.8	13.3	1334	16.9	
	2		1334	16.9	8.9	1178	16.9	13.3	1779	22.6	
M5	1	15.6	1334	16.9	8.9	1334	16.9	15.6	1779	16.9	
	2		1334	22.6	8.9	1556	19.7	15.6	2001	22.6	
M6	2	22.2	1334	36.7	13.3	1779	36.7	22.2	2224	36.7	

METRIC	Thread Code	Test Sheet Material		
		300 Series Stainless Steel		
		Installation (kN)	Retainer Pushout (N)	Retainer Torque-out (N·m)
M3	40	890	9.6	
M4	53	890	9.6	
M5	57	1100	14.1	

- (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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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

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