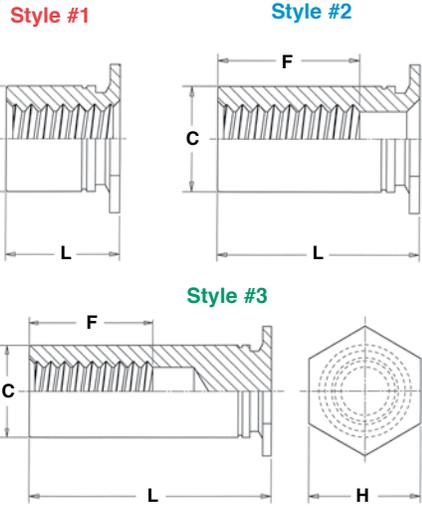


Type TSO4™ Self-clinching Standoffs

For installation into ultra-thin stainless steel sheets as thin as .025"/0.63 mm



Single groove identifier



GENERAL DIMENSIONAL DATA

All dimensions are in inches.

UNIFIED	Thread Code	Min. Sheet Thickness	Hole Size In Sheet +.003 -.000	C +.000 -.005	F Min. Thread Depth	H Nom.	Min. Dist. Hole ϕ To Edge
	256	.025	.166	.165	.200	.187	.23
	6256	.025	.213	.212		.250	.27
	440	.025	.166	.165	.220	.187	.23
	6440	.025	.213	.212		.250	.27
632	.025	.213	.212	.270	.250	.27	

All dimensions are in millimeters.

METRIC	Thread Code	Min. Sheet Thickness	Hole Size In Sheet +0.08	C -0.13	F Min. Thread Depth	H Nom.	Min. Dist. Hole ϕ To Edge
	M25	0.63	4.22	4.2	5.2	4.8	5.8
	6M25	0.63	5.41	5.39		6.4	7.1
	M3	0.63	4.22	4.2	6.2	4.8	5.8
	6M3	0.63	5.41	5.39		6.4	7.1
M35	0.63	5.41	5.39	7	6.4	7.1	

THREAD SIZE AND LENGTH SELECTION DATA

All dimensions are in inches.

UNIFIED	Thread Size	Type	Thread Code	Length "L" \pm .003											
				For other lengths / thread depth data see chart at bottom of page.											
				.090	.125	.187	.250	.312	.375	.437	.500	.562	.625	.687	.750
				Length Code (Length "L" without decimal point)											
.086-56 (#2-56)	TSO4	256	6256 ⁽⁴⁾	090 ⁽¹⁾	125 ⁽¹⁾	187 ⁽¹⁾	250 ⁽¹⁾	312 ⁽²⁾	375 ⁽²⁾	437 ⁽³⁾	500 ⁽³⁾	562 ⁽³⁾	625 ⁽³⁾	687 ⁽³⁾	750 ⁽³⁾
				440	6440 ⁽⁴⁾	090 ⁽¹⁾	125 ⁽¹⁾	187 ⁽¹⁾	250 ⁽¹⁾	312 ⁽²⁾	375 ⁽²⁾	437 ⁽²⁾	500 ⁽³⁾	562 ⁽³⁾	625 ⁽³⁾
.138-32 (#6-32)	TSO4	632	-	125 ⁽¹⁾	187 ⁽¹⁾	250 ⁽¹⁾	312 ⁽¹⁾	375 ⁽²⁾	437 ⁽²⁾	500 ⁽²⁾	562 ⁽³⁾	625 ⁽³⁾	687 ⁽³⁾	750 ⁽³⁾	

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type	Thread Code	Length "L" \pm 0.08										
				For other lengths / thread depth data see chart at bottom of page.										
				2.00	3.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	19.00
				Length Code (Length "L" without decimal point)										
M2.5 x 0.45	TSO4	M25	6M25 ⁽⁴⁾	200 ⁽¹⁾	300 ⁽¹⁾	400 ⁽¹⁾	600 ⁽¹⁾	800 ⁽²⁾	1000 ⁽³⁾	1200 ⁽³⁾	1400 ⁽³⁾	1600 ⁽³⁾	1800 ⁽³⁾	1900 ⁽³⁾
				M3	6M3 ⁽⁴⁾	200 ⁽¹⁾	300 ⁽¹⁾	400 ⁽¹⁾	600 ⁽¹⁾	800 ⁽²⁾	1000 ⁽²⁾	1200 ⁽³⁾	1400 ⁽³⁾	1600 ⁽³⁾
M3.5 x 0.6	TSO4	M35	-	300 ⁽¹⁾	400 ⁽¹⁾	600 ⁽¹⁾	800 ⁽¹⁾	1000 ⁽²⁾	1200 ⁽²⁾	1400 ⁽³⁾	1600 ⁽³⁾	1800 ⁽³⁾	1900 ⁽³⁾	

(1) Style #1. Thru-threaded.

(2) Style #2. Screw might not pass through unthreaded end. Tapped to minimum full thread depth shown. Incomplete threads on tap may allow screw to pass through.

(3) Style #3. Blind.

(4) Standoffs with thread codes 6256, 6440, 6M25 and 6M3 offer oversized body for increased bearing surface, wall thickness and performance.

Please contact your local PEM® distributor for availability, minimum quantity, and pricing information.

Threads: Internal, ASME B1.1, 2B / ASME B1.13M, 6H

Material: Heat treated 400 series stainless steel

Finish: Passivated and/or tested per ASTM A380

For use in: HRB 88 / HB 183 or less

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

LENGTH/STYLE DATA

All dimensions are in inches.

(Length can be specified in .001" increments.)

UNIFIED	Thread Code	Length "L" (Style #1)	Length "L" (Style #2)	Length "L" (Style #3)
	256	.090 - .250	.251 - .375	.376 - .750
	6256			
	440	.090 - .280	.281 - .450	.451 - .750
	6440			
632	.120 - .350	.351 - .540	.541 - .750	

All dimensions are in millimeters.

(Length can be specified in .02 mm increments.)

METRIC	Thread Code	Length "L" (Style #1)	Length "L" (Style #2)	Length "L" (Style #3)
	M25	2.00 - 6.30	6.32 - 9.50	9.52 - 19.00
	6M25			
	M3	2.00 - 7.50	7.52 - 11.00	11.02 - 19.00
	6M3			
M35	3.00 - 8.80	8.82 - 12.80	12.82 - 19.00	

Part Number Designation

TSO4 - 440 - 250

↓ ↓ ↓

Type & Material Thread Size Code Length Code



Type TSO4™ Self-clinching Standoffs

For installation into ultra-thin stainless steel sheets as thin as .025"/0.63 mm

INSTALLATION

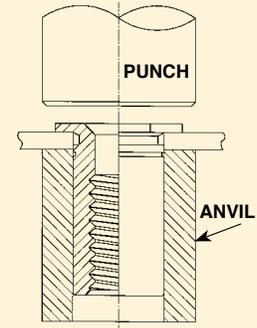
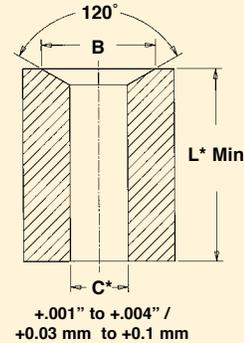
1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operation such as deburring.
2. Insert standoff through mounting hole (preferably the punch side) of sheet and into anvil as shown in drawing.
3. With installation punch and anvil surfaces parallel, apply only enough squeezing force to embed the standoff's head flush into the sheet. Drawing at right shows required installation anvil for sheet thickness of .025" to .032"/0.63 to 0.81 mm. A chamfered anvil is not required for sheets over .032"/0.81 mm.

PEMSERTER® Installation Tooling

UNIFIED	Thread Code	Anvil Dimensions (in.) For Sheets Below .032"		Anvil Part No. For Sheets Over .032"	Punch Part Number
		B	Anvil Part No.		
	256/440	.187 - .194	8003291	970200487300	975200048
6256/6440/632	.250 - .257	8003292	970200012300	975200048	

METRIC	Thread Code	Anvil Dimensions (mm) For Sheets Below .63 mm		Anvil Part No. For Sheets Over .63 mm	Punch Part Number
		B	Anvil Part No.		
	M2.5/M3	4.75 - 4.93	8003291	970200487300	975200048
6M25/6M3/M35	6.35 - 6.53	8003292	970200012300	975200048	

REQUIRED INSTALLATION
ANVIL FOR SHEETS
BELOW .032" / 0.81 MM



*See page 1 for
"C" and "L".

PERFORMANCE DATA⁽¹⁾

Standoff "C" Dimension	Test Sheet Material					
	.025" / 0.64 mm 300 series stainless steel					
	Installation		Pushout		Torque-out ⁽²⁾	
	(lbs.)	(kN)	(lbs.)	(N)	(in. lbs.)	(N•m)
.165" / 4.2 mm	5700	25.4	125	555	13	1.5
.212" / 5.39 mm	6800	30.3	160	710	22	2.5



(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) Joint failure in torque-out and pull-thru will depend on the strength and type of screw being used. In some cases the failure will be in the screw and not in the self-clinching standoff. Please contact our Applications Engineering group with any questions.

Single Groove
(registered trademark)
Parts that install into
stainless steel



See PEM Bulletin SO for other
standoff types and materials.

Regulatory compliance information is available in Technical Support section of our website. © 2014 PennEngineering.

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