

Thru-Hole Unthreaded Self-Clinching Standoffs

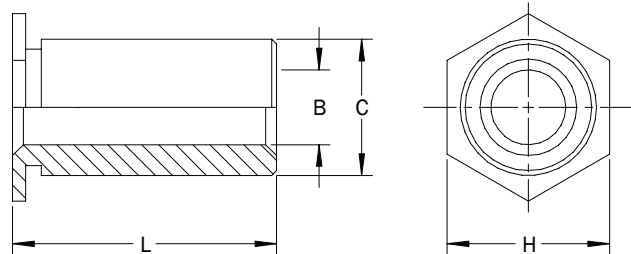
FEATURES

- Unthreaded standoffs that precisely space mating panels and chasses.
- Self-clinching design creates a permanent installation in sheets as thin as .040" (1.00 mm).
- A wide variety of diameters and lengths allow flexibility with male thread fasteners.



PART DESCRIPTION EXAMPLE

TNST — 4116 — .312 — Z
 T T T T
 Material Thru-Hole Length Finish
 Code Code Code Code



GENERAL

All dimensions in inches

INCH	B Thru-Hole Diameter +.004 -.003	Thru-Hole Code	Sheet			C +.000 -.005	H Nominal
			Minimum Thickness	Hole Size +.003 -.000	Minimum Distance Hole Center to Edge		
.116		4116	.040	.166	.23	.165	.187
		6116	.040	.213	.27	.212	.250
.143		6143	.040	.213	.27	.212	.250
		8143	.050	.281	.31	.280	.312
.169		8169	.050	.281	.31	.280	.312
.194		8194	.050	.281	.31	.280	.312

All dimensions in millimeters

METRIC	B Thru-Hole Diameter +0.10 -0.08	Thru-Hole Code	Sheet			C +0.00 -0.13	H Nominal
			Minimum Thickness	Hole Size +0.08 -0.00	Minimum Distance Hole Center to Edge		
3.1		43.1	1.00	4.22	6.0	4.20	4.76
		63.1	1.00	5.41	6.8	5.39	6.35
3.6		63.6	1.00	5.41	6.8	5.39	6.35
		83.6	1.27	7.14	8.0	7.12	7.94
4.1		84.1	1.27	7.14	8.0	7.12	7.94
5.1		85.1	1.27	7.14	8.0	7.12	7.94

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LENGTH

All dimensions in inches

INCH	L (Length) +.002/-.005										
		.125	.187	.250	.312	.375	.437	.500	.562	.625	.687

All dimensions in millimeters

METRIC	L (Length) +0.05/-0.13									
		3	4	6	8	10	12	14	16	18

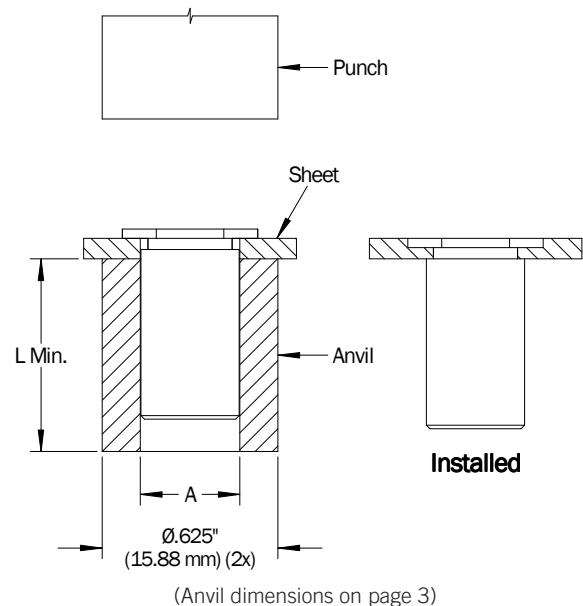
(1) Custom lengths available by request.

MATERIAL AND FINISH

Material Code	Material Description	Finish Code	Finish Description	For Use in Sheet Hardness			
				HRB 50 Max.	HRB 70 Max.	HRB 80 Max.	HRB 88 Max.
AL	Aluminum	PLN	Plain	•			
SS	300-Series Stainless Steel	P	Passivated and/or tested per ASTM A967		•		
ST	Heat Treated Carbon Steel	Z	Zinc (SC1) with Type III Clear Chromate per ASTM B633			•	
S4	Heat Treated 400-Series Stainless Steel	P	Passivated and/or tested per ASTM A967				•

INSTALLATION

1. Prepare correct sized mounting hole in sheet. Do not deburr edges.
2. Insert standoff through hole in punch side of the sheet and into the anvil as shown.
3. Squeeze the sheet and standoff head between parallel anvil and punch surfaces. Use only enough pressure to seat the standoff head flush with the sheet. Anvils and punches should be made from hardened tool steel.
4. For installation in stainless steel, the sheet should be annealed and avoid standoff installation next to bends or other highly cold-worked areas. The hole punch diameter should be no greater than .001" (0.025 mm) over the minimum recommended mounting hole diameter and kept sharp to minimize work hardening around the hole.



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ANVIL DIMENSIONS

INCH	Standoff C Dimension	A
	.165	.172/.169
	.212	.219/.216
	.280	.287/.284

All dimensions in inches

METRIC	Standoff C Dimension	A
	4.20	4.38/4.30
	5.39	5.57/5.49
	7.12	7.30/7.22

All dimensions in millimeters

PERFORMANCE - Material Codes AL, SS and ST

INCH	Thru Hole Code	Standoff Material Code	Test Sheet Material			
			.060" 5052-H34 Aluminum		.060" Cold-rolled Steel	
			Installation (lbs)	Push-out (lbs)	Installation (lbs)	Push-out (lbs)
			4116	AL	950-1250	135-185
SS	950-1250	135-185		1850-2550	190-260	
ST	950-1250	135-185		1850-2550	190-260	
6116 6143	AL	1450-1950	255-345	-	-	
	SS	1450-1950	255-345	2800-3800	355-485	
	ST	1450-1950	255-345	2800-3800	355-485	
8143 8169 8194	AL	2050-2750	340-460	-	-	
	SS	2050-2750	340-460	3400-4600	475-645	
	ST	2050-2750	340-460	3400-4600	475-645	

METRIC	Thru Hole Code	Standoff Material Code	Test Sheet Material			
			1.50 mm 5052-H34 Aluminum		1.50 mm Cold-rolled Steel	
			Installation (kN)	Push-out (N)	Installation (kN)	Push-out (N)
			43.1	AL	4.2-5.6	605-815
SS	4.2-5.6	605-815		8.3-11.3	850-1150	
ST	4.2-5.6	605-815		8.3-11.3	850-1150	
63.1 63.6	AL	6.5-8.7	1130-1530	-	-	
	SS	6.5-8.7	1130-1530	12.5-16.9	1580-2140	
	ST	6.5-8.7	1130-1530	12.5-16.9	1580-2140	
83.6 84.1 85.1	AL	9.1-12.3	1510-2050	-	-	
	SS	9.1-12.3	1510-2025	15.1-20.5	2120-2860	
	ST	9.1-12.3	1510-2025	15.1-20.5	2120-2860	

(1) Performance data are shown in ranges and should be used for estimating purposes only as actual results may be affected by variations in installation and panel preparation equipment and procedures; and panel hardness, hole size, material and thickness. PENCOM strongly recommends testing in each application to determine actual loads.

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PERFORMANCE - Material Code S4

INCH	Thru Hole Code	Standoff Material Code	Test Sheet Material	
			.050" 300-Series Stainless Steel	
			Installation (lbs)	Push-out (lbs)
	4116	S4	4700-6300	285-385
	6116 6143	S4	8100-10950	550-745
	8143 8169 8194	S4	8950-12100	765-1040

METRIC	Thru Hole Code	Standoff Material Code	Test Sheet Material	
			1.30 mm 300-Series Stainless Steel	
			Installation (kN)	Push-out (N)
	43.1	S4	20.8-28.2	1270-1720
	63.1 63.6	S4	36.0-48.6	2450-3310
	83.6 84.1 85.1	S4	39.7-53.7	3400-4600

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