



# **FEATURES**

- Provide permanent male threads in sheets as thin as .040" (1.00mm).
- Ribbed self-clinching design mounts flush on the back of the sheet while transferring excellent push-out and torque-out resistance.
- Available in a wide variety of materials, finishes and sizes.
- Options include: thread locking, lubricated threads, and dog point.



### PART DESCRIPTION EXAMPLE







Flush-head studs join mating panels with a standard nut and washer. PENCOM also carries an assortment of nut and washer assemblies (shown). SB Flush Head Self–Clinching Studs



## **GENERAL – MATERIAL CODES ST, SS & AL**

All dimensions in inches

				Sheet		Maximum		
	Thread	Thread Code	Minimum Thickness	Hole Size +.003 000	Minimum Distance Hole Center to Edge	Hole Size in Attached Parts	H ±.015	S Max. (2)
	2-56 <sup>1</sup>	256	.040	.085	.187	.105	.144	.075
물	4-40	440	.040	.111	.219	.135	.176	.085
Ž	6-32	632	.040	.137	.250	.160	.206	.090
	8-32	832	.040	.163	.281	.185	.237	.090
	10-24	1024	.040	.189	.281	.210	.256	.100
	10-32	1032	.040	.189	.281	.210	.256	.100
	1/4-20	2520	.062	.249	.312	.270	.337	.135
	5/16-181	3118	.093	.311	.375	.333	.376	.160

All dimensions in millimeters

		-		Sheet		Maximum		
	Thread	Thread Code	Minimum Thickness	Hole Size +0.08 -0.00	Minimum Distance Hole Center to Edge	Hole Size in Attached Parts	Н ±0.4	S Max. (2)
<u>S</u>	M2.5 x 0.45	M2.5	1.0	2.50	5.4	3.1	4.1	1.95
ETR	M3 x 0.5	M3	1.0	3.00	5.6	3.6	4.6	2.10
M	M3.5 x 0.6	M3.5	1.0	3.50	6.4	4.1	5.3	2.25
	M4 x 0.7	M4	1.0	4.00	7.2	4.6	5.9	2.40
	M5 x 0.8	M5	1.0	5.00	7.2	5.6	6.5	2.70
	M6 x 1	M6	1.6	6.00	7.9	6.6	8.2	3.00
	M8 x 1.25 <sup>1</sup>	M8	2.4	8.00	9.6	8.6	9.6	3.70

(1) Thread size not available for AL material code.

(2) Threads are gaugeable to within two pitches of the "S max." dimension. A class 3B/5H maximum material commercial nut shall pass up to the "S Max." dimension.

# **GENERAL – MATERIAL CODE S4**

All dimensions in inches

		Thread Code		Sheet		Maximum		
H	Thread		Thickness (1)	Hole Size +.003 000	Minimum Distance Hole Center to Edge	Hole Size in Attached Parts	H ±.015	S Max. (2)
NCH	4-40	440	.040095	.111	.219	.131	.176	.085
=	6-32	632	.040095	.137	.250	.157	.206	.090
	8-32	832	.040095	.163	.281	.183	.237	.090
	10-32	1032	.040095	.189	.281	.209	.256	.100
	1/4-20	2520	.062117	.249	.312	.269	.337	.135

(1) Performance may be reduced for studs installed into thicker sheets.

(2) Threads are gaugeable to within two pitches of the "S max." dimension. A class 3B/5H maximum material commercial nut shall pass up to the "S Max." dimension.



### **GENERAL – MATERIAL CODE S4 (CONTINUED)**

		-		Sheet		Maximum		
TRIC	Thread	Thread Code	Thickness (1)	Hole Size +0.08 -0.00	Minimum Distance Hole Center to Edge	Hole Size in Attached Parts	Н ±0.4	S Max. (2)
LET	M3 x 0.5	M3	1.0 - 2.4	3.00	5.6	3.3	4.6	2.1
	M4 x 0.7	M4	1.0 - 2.4	4.00	7.2	4.7	5.9	2.4
	M5 x 0.8	M5	1.0 - 2.4	5.00	7.2	5.3	6.5	2.7
	M6 x 1	M6	1.6 - 3.0	6.00	7.9	6.8	8.2	3.0

(1) Performance may be reduced for studs installed into thicker sheets.

(2) Threads are gaugeable to within two pitches of the "S max." dimension. A class 3B/5H maximum material commercial nut shall pass up to the "S Max." dimension.

### LENGTH - MATERIAL CODES ST, SS & AL

	Thread Code	L (Length) ±.015												
	256	.250	.312	.375	.500	.625	.750							
	440	.250	.312	.375	.500	.625	.750	.875	1.000	1.250	—			
포	632	.250	.312	.375	.500	.625	.750	.875	1.000	1.250	1.500			
N I	832	.250	.312	.375	.500	.625	.750	.875	1.000	1.250	1.500			
	1024		.312	.375	.500	.625	.750	.875	1.000	1.250	1.500			
	1032		.312	.375	.500	.625	.750	.875	1.000	1.250	1.500			
	2520			.375	.500	.625	.750	.875	1.000	1.250	1.500			
	3118				.500	.625	.750	.875	1.000	1.250	1.500			

All dimensions in millimeters

All dimensions in millimeters

All dimensions in inches

	Thread Code					L (Leng	th) ±0.4				
	M2.5	6	8	10	12	15	18				
<u>ບ</u>	MЗ	6	8	10	12	15	18	20	25		
TR	M3.5	6	8	10	12	15	18	20	25	30	
BE	M4	6	8	10	12	15	18	20	25	30	35
	M5		8	10	12	15	18	20	25	30	35
	M6			10	12	15	18	20	25	30	35
	M8				12	15	18	20	25	30	35



All dimensions in inches

### **LENGTH – MATERIAL CODE S4**

	Thread Code					L (Lengt	h) ±.015				
	440	.250	.312	.375	.500	.625	.750	.875	1.000		
INCH	632	.250	.312	.375	.500	.625	.750	.875	1.000	1.250	1.500
	832	.250	.312	.375	.500	.625	.750	.875	1.000	1.250	1.500
	1032		.312	.375	.500	.625	.750	.875	1.000	1.250	1.500
	2520			.375	.500	.625	.750	.875	1.000	1.250	1.500

All dimensions in millimeters

	Thread Code	L (Length) ±0.4													
RIC	M3	6	8	10	12	15	18	20	25						
Ē	M4	6	8	10	12	15	18	20	25	30	35				
2	M5		8	10	12	15	18	20	25	30	35				
	M6			10	12	15	18	20	25	30	35				

# **MATERIAL & FINISH**

Matarial	Matorial	Finich	Finich	I	For Use in Sh	eet Hardnes	5
Code	Description	Code	Description	HRB 50 Max.	HRB 70 Max.	HRB 80 Max.	HRB 92 Max.
ST	Heat Treated Carbon Steel	Z	Zinc (SC1) with Type III Clear Chromate per ASTM B633			•	
SS	300-Series Stainless Steel	Р	Passivated and/or tested per ASTM A967		•		
AL	Aluminum	PLN	Plain	•			
S4	400–Series Heat Treated Stainless Steel	Р	Passivated and/or tested per ASTM A967				•



Punch

Sheet

Anvil

Punch

Sheet

# **INSTALLATION – MATERIAL CODES ST, SS & AL**

- 1. Prepare correct sized mounting hole in sheet. Do not deburr edges.
- 2. Insert stud through punch side of hole in sheet and into the anvil as shown below.
- 3. Squeeze the sheet and stud head between parallel anvil and punch surfaces. Use only enough pressure to seat the stud head flush with the sheet.
- 4. Anvil with countersink is required for installation in sheets with thicknesses less than .060" (1.51 mm) for #2 thru #10 and M2.5 thru M5 thread sizes, and less than .093" (2.36 mm) for 1/4" and M6 thread sizes. Anvil with countersink is not required for installation in sheets with thicknesses greater than or equal to .060" (1.51 mm) for #2 thru #10 and M2.5 thru M5 thread sizes, and greater than or equal to .093" (2.36 mm) for 1/4", 5/16", M6 and M8 thread sizes. Anvils and punches may be ordered using the part numbers shown in the tables on page 6, or made from hardened tool steel.



	The Dimensions - MATERIAE CODES 51, 55 & AE												
				Anvil Par	t Number	Punch							
	Code	A	В	For Sheets < .060"	For Sheets ≥ .060"	Part Number							
	256	.090/.087	.114/.110	TL1706	TL1720	TL1695							
	440	.116/.113	.140/.136	TL1707	TL1721	TL1695							
Ξ	632	.142/.139	.166/.162	TL1708	TL1722	TL1695							
	832	.168/.165	.192/.188	TL1709	TL1723	TL1695							
	1024, 1032	.194/.191	.220/.216	TL1710	TL1724	TL1695							
				For Sheets < .093"	For Sheets ≥ .093"								
	2520	.253/.250	.300/.295	TL1711	TL1725	TL1695							
	3118	.3155/.3125			TL1726	TL1695							

### ANVIL DIMENSIONS – MATERIAL CODES ST, SS & AL

All dimensions in inches

	Thursd			Anvil Par	t Number	Punch
	Code	A	В	For Sheets < 1.52 mm	For Sheets ≥ 1.52 mm	Part Number
	M2.5	2.61/2.53	3.2/3.1	TL1713	TL1727	TL1695
	MЗ	3.11/3.03	3.7/3.6	TL1714	TL1728	TL1695
RIC	M3.5	3.61/3.53	4.2/4.1	TL1715	TL1729	TL1695
Ē	M4	4.11/4.03	4.7/4.6	TL1716	TL1730	TL1695
2	M5	5.11/5.03	5.7/5.6	TL1717	TL1731	TL1695
				For Sheets < 2.36 mm	For Sheets ≥ 2.36 mm	
	M6	6.11/6.03	6.7/6.6	TL1718	TL1732	TL1695
	M8	8.11/8.03			TL1733	TL1695

All dimensions in millimeters



### 1. Prepare correct sized mounting hole in sheet. Do not deburr edges. 2. Insert stud through punch side of hole in sheet and into the anvil as shown below. 3. Squeeze the sheet and stud head between parallel anvil and punch surfaces. Use only enough pressure to seat the stud head flush with the sheet.

**INSTALLATION – MATERIAL CODE S4** 

An anvil with raised ring is required to properly displace the stainless steel sheet 4. material and create the self-clinching union. Anvils and punches may be ordered using the part numbers shown in the tables on page 8, or made from hardened tool steel with anvil having a minimum hardness of HRC 55. The anvil "D" dimension should be measured after every 5,000 installations to ensure conformity with specifications.







All dimensions in inches

# **ANVIL DIMENSIONS – MATERIAL CODE S4**

	Thread Code	A +.003 000	B ±.002	C ±.002	D ±.001	R1 Max.	R2 Max.	Anvil Part Number	Punch Part Number
<del>.</del>	440	.113	.144	.174	.010	.003	.005	TL1734	TL1695
ĭ	632	.140	.170	.200	.010	.003	.005	TL1735	TL1695
	832	.166	.202	.236	.010	.003	.005	TL1736	TL1695
	1032	.191	.235	.275	.010	.003	.005	TL1737	TL1695
	2520	.252	.324	.360	.020	.003	.005	TL1738	TL1695

All dimensions in millimeters

C	Thread Code	A +0.08 -0.00	В ±0.05	C ±0.05	D ±0.025	R1 Max.	R2 Max.	Anvil Part Number	Punch Part Number
TR	M3	3.05	3.81	4.57	0.25	0.08	0.13	TL1739	TL1695
Ξ	M4	4.04	4.95	5.82	0.25	0.08	0.13	TL1740	TL1695
	M5	5.08	6.15	7.16	0.25	0.08	0.13	TL1741	TL1695
	M6	6.05	7.87	8.79	0.51	0.08	0.13	TL1742	TL1695



PENCOM supplies a wide variety of self-clinching and press-in studs for installation in thin metallic and non-metallic sheets. Visit www.pencomsf. com for more information.

			Roo Nut		Test Sheet						
	Thread Code	Stud Material Code	Tightening Torque (in-Ibs) (1)	Material	Thickness (in)	Hardness (HRB)	Installation (lbs)	Push-out (Ibs) (2)	Torque-out (in-Ibs) (2)	Pull-thru (lbs) (2)	
		OT	10	Aluminum	.062072	25-35	1700-2300	85-115	4.3-5.8	360-490	
	050	SI	4.0	Carbon Steel	.060070	55-65	2150-2900	155-205	4.3-5.8	360-490	
	256	00	0.5	Aluminum	.062072	25-35	1700-2300	85-115	3.8-5.2	255-345	
		55	2.5	Carbon Steel	.060070	55-65	2150-2900	155-205	3.8-5.2	255-345	
	440	ST	<u> </u>	Aluminum	.064074	25-35	3250-4350	145-195	8.5-12	555-745	
			6.0	Carbon Steel	.060070	55-65	3650-4950	235-315	8.5-12	555-745	
		SS	5.0	Aluminum	.064074	25-35	2700-3700	145-195	6.8-9.2	425-575	
		55	5.2	Carbon Steel	.060070	55-65	4000-5400	235-315	6.8-9.2	425-575	
	632 -	OT	10.0	Aluminum	.064074	25-35	3250-4350	155-205	14-20	725-975	
王		SI	12.0	Carbon Steel	.060070	55-65	4000-5400	255-345	17-23	725-975	
Ĭ			0.0	Aluminum	.064074	25-35	3000-4000	155-205	14-18	660-890	
		33	9.6	Carbon Steel	.060070	55-65	4250-5750	255-345	14-18	660-890	
		ST	CT.	01.0	Aluminum	.064074	25-35	4100-5500	185-255	24-32	850-1150
	020		21.0	Carbon Steel	.060070	55-65	5800-7800	320-430	34-46	1080-1460	
	832		10.0	Aluminum	.064074	25-35	3850-5200	185-255	24-32	800-1080	
		55	19.8	Carbon Steel	.060070	55-65	4700-6300	320-430	24-32	960-1300	
		OT	20.0	Aluminum	.064074	25-35	4700-6300	230-310	26-35	1040-1400	
	1004	SI	32.0	Carbon Steel	.060070	55-65	6400-8650	385-520	51-69	1200-1620	
	1024			Aluminum	.064074	25-35	4700-6300	230-310	26-35	1040-1400	
		SS	22.8	Carbon Steel	.060070	55-65	5800-7800	385-520	43-57	1200-1620	
		0.7	26.0	Aluminum	.064074	25-35	4700-6300	230-310	26-35	1040-1400	
	1020	SI	36.0	Carbon Steel	.060070	55-65	6400-8650	385-520	51-69	1200-1620	
	1032		217	Aluminum	.064074	25-35	4700-6300	230-310	26-35	1040-1400	
		55	31./	Carbon Steel	.060070	55-65	5800-7800	385-520	43-57	1200-1620	

# **PERFORMANCE – MATERIAL CODES ST & SS**

Recommended tightening torques for carbon steel studs are based on theoretical calculations using a standard torque formula for carbon steel screws. Torque values for stainless steel threaded fasteners cannot be calculated accurately due to unpredictable elasticity of the material and changes in surface friction during installation. Stainless steel values shown are results of publicly available laboratory testing not endorsed or witnessed by PENCOM. Testing in the application is strongly encouraged to establish actual torques as values may vary depending on joint materials and mating fasteners. Consult PENCOM literature for additional recommendations on determining tightening torques.
Push-out, torque-out and pull-thru values are for studs only and not the mating fasteners.

(3) Performance data are shown in ranges and should be used for general comparative 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.

<b>PERFORMANCE</b> –	MATERIAL	CODES	ST &	SS	(CONTINUED)
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			Rec Nut		Test Sheet																
	Thread Code	Stud Material Code	Tightening Torque (in-lbs) (1)	Material	Thickness (in)	Hardness (HRB)	Installation (Ibs)	Push-out (Ibs) (2)	Torque-out (in-Ibs) (2)	Pull-thru (Ibs) (2)											
		ст	76.0	Aluminum	.093103	25-35	5550-7450	265-355	55-75	1960-2650											
<del>उ</del>	2520	31	70.0	Carbon Steel	.088098	40-50	8100-10900	490-660	85-115	2170-2930											
Ĭ	2520	SS	22	75.0	Aluminum	.093103	25-35	5550-7450	265-355	55-75	1790-2420										
			/5.2	Carbon Steel	.088098	40-50	8500-11500	490-660	85-115	2170-2930											
		ст	155	Aluminum	.093103	25-35	5550-7450	365-495	85-115	1920-2600											
	2110	31	155	Carbon Steel	.093103	40-50	8500-11500	555-745	150-200	2950-4000											
	5110	22	122	Aluminum	.093103	25-35	5700-7700	365-495	85-115	1920-2600											
			SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS	SS 132	Carbon Steel	.093103	40-50	9500-12900	555-745	150-200	2650-3590

Recommended tightening torques for carbon steel studs are based on theoretical calculations using a standard torque formula for carbon steel screws. Torque values for stainless steel threaded fasteners cannot be calculated accurately due to unpredictable elasticity of the material and changes in surface friction during installation. Stainless steel values shown are results of publicly available laboratory testing not endorsed or witnessed by PENCOM. Testing in the application is strongly encouraged to establish actual torques as values may vary depending on joint materials and mating fasteners. Consult PENCOM literature for additional recommendations on determining tightening torques.
Push-out, torque-out and pull-thru values are for studs only and not the mating fasteners.

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# **PERFORMANCE – MATERIAL CODES ST & SS (CONTINUED)**

			Poc Nut		Test Sheet						
	Thread Code	Stud Material Code	Tightening Torque (N-m) (1)	Material	Thickness (mm)	Hardness (HRB)	Installation (kN)	Push-out (N) (2)	Torque-out (N-m) (2)	Pull-thru (N) (2)	
		CT.	0.59	Aluminum	1.60-1.85	25-35	7.6-10.2	395-535	0.85-1.15	2210-2990	
	MOE	51	0.58	Carbon Steel	1.50-1.75	55-65	9.4-12.8	630-850	0.85-1.15	2380-3220	
	1012.0	22		Aluminum	1.60-1.85	25-35	9.9-13.3	395-535	0.68-0.92	1550-2090	
				Carbon Steel	1.50-1.75	55-65	11.7-15.9	630-850	0.68-0.92	1550-2090	
		ST	ST	1.02	Aluminum	1.60-1.85	25-35	11.0-14.8	510-690	1.44-1.95	2680-3620
	MS	51	1.02	Carbon Steel	1.50-1.75	55-65	12.5-16.9	695-945	1.44-1.95	3260-4420	
	IVIS	22	1.00	Aluminum	1.60-1.85	25-35	11.0-14.8	510-690	1.11-1.49	2180-2960	
		33	1.00	Carbon Steel	1.50-1.75	55-65	12.5-16.9	695-945	1.11-1.49	2070-2810	
		ST	1.60	Aluminum	1.60-1.85	25-35	13.3-17.9	680-920	1.44-1.95	3210-4350	
	M2.5	51	1.00	Carbon Steel	1.50-1.75	55-65	19.0-25.6	1130-1540	2.38-3.22	3210-4350	
	WI3.5	00	1 10	Aluminum	1.60-1.85	25-35	13.3-17.9	680-920	1.44-1.95	2930-3960	
'RIC		33	1.10	Carbon Steel	1.50-1.75	55-65	19.0-25.6	1130-1540	1.7-2.3	2930-3960	
MET	M4	ст	2.25	Aluminum	1.60-1.85	25-35	17.0-23.0	830-1120	2.46-3.33	3780-5120	
			2.55	Carbon Steel	1.50-1.75	55-65	24.6-33.2	1510-2050	3.57-4.83	4800-6500	
		00	2.60	Aluminum	1.60-1.85	25-35	19.0-25.6	830-1120	2.46-3.33	3550-4810	
		33	2.00	Carbon Steel	1.50-1.75	55-65	22.7-30.7	1510-2050	2.46-3.33	4060-5490	
		ст	1 90	Aluminum	1.60-1.85	25-35	20.8-28.2	910-1230	2.98-4.02	4390-5950	
	МБ	51	51	4.00	Carbon Steel	1.50-1.75	55-65	28.4-38.4	1700-2300	5.5-7.5	5330-7210
	CIVI	00	5 10	Aluminum	1.60-1.85	25-35	20.8-28.2	910-1230	2.98-4.02	4050-5470	
		33	5.10	Carbon Steel	1.50-1.75	55-65	27.6-37.4	1700-2300	5.4-7.2	5100-6900	
		ст	0.15	Aluminum	2.40-2.65	25-35	24.6-33.2	1410-1910	6.2-8.4	8670-11700	
	MG	31	0.15	Carbon Steel	2.20-2.45	40-50	37.8-51.2	2180-2940	9.6-13	9610-13000	
	IVIO	<u> </u>	9.70	Aluminum	2.40-2.65	25-35	24.6-33.2	1410-1910	6.2-8.4	7730-10500	
		33	8.70	Carbon Steel	2.20-2.45	40-50	37.8-51.2	2180-2940	8.6-12	9010-12200	
		CT.	10.0	Aluminum	2.40-2.65	25-35	25.3-34.3	1620-2200	9.6-13	8930-12100	
	MO	51	19.8	Carbon Steel	2.40-2.65	40-50	37.8-51.2	2460-3320	16-22	13130-17800	
	IVI8	<u> </u>	21.0	Aluminum	2.40-2.65	25-35	25.3-34.3	1620-2200	9.6-13	8110-11000	
		22	21.2	Carbon Steel	2.40-2.65	40-50	42.3-57.3	2460-3320	15-20	11600-15700	

(1) Recommended tightening torques for carbon steel studs are based on theoretical calculations using a standard torque formula for carbon steel screws. Torque values for stainless steel threaded fasteners cannot be calculated accurately due to unpredictable elasticity of the material and changes in surface friction during installation. Stainless steel values shown are results of publicly available laboratory testing not endorsed or witnessed by PENCOM. Testing in the application is strongly encouraged to establish actual torques as values may vary depending on joint materials and mating fasteners. Consult PENCOM literature for additional recommendations on determining tightening torques.

(2) Push-out, torque-out and pull-thru values are for studs only and not the mating fasteners.

(3) Performance data are shown in ranges and should be used for general comparative 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.

PERFORMANCE – MATERIAL CODE AL	
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		Rec Nut	Test S	Sheet					
   _	Thread Code	Tightening Torque (in-Ibs) (1)	Material	Thickness (in)	Hardness (HR15T)	Installation (Ibs)	Push-out (Ibs) (2)	Torque-out (in–lbs) (2)	Pull-thru (Ibs) (2)
N N	440	2.9	5052-H34 Aluminum	.061071	70-80	2150-2900	130-180	3.4-4.6	230-310
=	632	5.3	5052-H34 Aluminum	.061071	70-80	2200-3000	155-205	6.8-9.2	325-435
	832	10.8	5052-H34 Aluminum	.061071	68-78	2700-3700	160-220	13-17	425-575
	1032	19.2	5052-H34 Aluminum	.061071	70-80	2700-3700	185-255	24-32	510-690
	2520	45.6	5052-H34 Aluminum	.062072	70-80	4700-6300	255-345	47-63	895-1210

		Rec Nut	Test S	heet						
RIC	Thread Code	Tightening Torque (N-m) (1)	Material	Thickness (mm)	Hardness (HR15T)	Installation (kN)	Push-out (N) (2)	Torque-out (N-m) (2)	Pull-thru (N) (2)	
H H	M3	0.42	5052-H34 Aluminum	1.55-1.80	70-80	9.1-12.3	490-660	0.43-0.57	1280-1720	
	M4	1.18	5052-H34 Aluminum	1.55-1.80	70-80	12.2-16.4	660-890	1.15-1.55	1700-2300	
	M5	2.37	5052-H34 Aluminum	1.55-1.80	70-80	12.9-17.5	765-1040	2.21-2.99	2130-2880	
	M6	5.00	5052-H34 Aluminum	1.60-1.85	70-80	20.8-28.2	1280-1720	4.51-6.1	3830-5180	

(1) Torque values for aluminum threaded fasteners cannot be calculated accurately due to unpredictable elasticity of the material and changes in surface friction during installation. Values shown are results of publicly available laboratory testing not endorsed or witnessed by PENCOM. Testing in the application is strongly encouraged to establish actual torques as values may vary depending on joint materials and mating fasteners. Consult PENCOM literature for additional recommendations on determining tightening torques.

(2) Push-out, torque-out and pull-thru values are for studs only and not the mating fasteners.

(3) Performance data are shown in ranges and should be used for general comparative 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.



# **PERFORMANCE – MATERIAL CODE S4**

			Test Sheet						
-	Thread Code	Material	Thickness (in)	Hardness (HRB)	Installation (Ibs)	Push-out (Ibs) (1)	Torque-out (in–lbs) (1)	Pull-thru (Ibs) (1)	
고 고	440	Stainless Steel	.060070	82-92	7650-10400	385-520	14-18	680-920	
=	632	Stainless Steel	.060070	82-92	8100-10900	460-620	23-31	1150-1550	
	832	Stainless Steel	.060070	82-92	9500-12900	665-895	49-67	1530-2070	
	1032	Stainless Steel	.060070	82-92	10200-13800	680-920	81-110	1910-2590	
	2520	Stainless Steel	.062072	82-92	19600-26400	850-1150	135-180	3320-4490	

			Test Sheet					
RIC	Thread Code	Material	Thickness (mm)	Hardness (HRB)	Installation (kN)	Push-out (N) (1)	Torque-out (N-m) (1)	Pull-thru (N) (1)
ΛET	M3	Stainless Steel	1.50-1.75	82-92	34.0-46.0	1890-2550	1.53-2.07	2980-4020
2	M4	Stainless Steel	1.50-1.75	82-92	42.5-57.5	2730-3690	5.5-7.5	6800-9200
	M5	Stainless Steel	1.50-1.75	82-92	45.0-60.9	3030-4090	9.1-12	8500-11500
	M6	Stainless Steel	1.60-1.85	82-92	85.0-115	3570-4830	14-18	12700-17100

(1) Push-out, torque-out and pull-thru values are for studs only and not the mating fasteners.

(2) Performance data are shown in ranges and should be used for general comparative 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.



# **OPTIONS**

### **Thread Locking Element**

A nylon thread locking element can be applied to the stud threads to reduce loosening due to vibration. To specify, insert **PATCH** at the end of the part description. Other locking elements such as micro–encapsulated epoxy available by request.

Ex. SBST-632-1.250-Z-**PATCH** 

### Thread Lubricating and Masking

Studs can be supplied with a variety of thread lubricating and masking materials. Available coatings reduce friction, heat buildup and galling during installation and prevent paint, weld spatter and electro–deposited undercoatings from adhering to stud threads. Contact a PENCOM Account Representative to discuss your application.



CONTRACTOR OF



### **OPTIONS (CONTINUED)**

### DOG POINT

A dog point lead–in improves location of the mating fastener and protects the beginning threads during engagement. To specify, insert **DOG** at the end of the part description.

Ex. SBST-632-1.250-Z-DOG





All	dime	nsions	in	inches

	Thread Code	C ±.005 (2)	E ±.010	B Nom. Transitional Length to Full Thread
н	632	.086	.050	.098
Ň	832	.111	.055	.099
	1024	.124	.065	.127
	1032	.138	.065	.098
	2520	.173	.085	.149
	3118	.228	.105	.164

(1) For "L" refer to stud length tables.

(2) Maximum dog point diameter is .003" less than minimum minor diameter of 2B nut threads.

All dimensions in m	nillimeters
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C	Thread Code	C ±0.13 (2)	E ±0.25	B Nom. Transitional Length to Full Thread
ETR	M3.5	2.40	1.27	1.88
Σ	M4	2.79	1.40	2.26
	M5	3.66	1.78	2.48
	M6	4.37	2.03	3.05
	M8	6.05	2.67	3.73

(1) For "L" refer to stud length tables.

(2) Maximum dog point diameter is 0.08 mm less than minimum minor diameter of 6H nut threads.