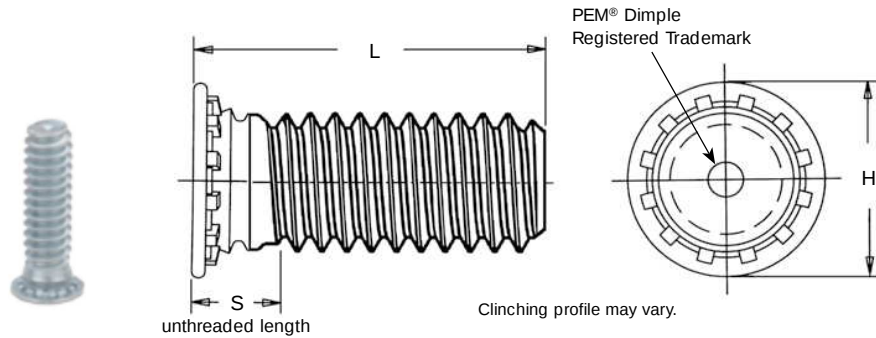


SELF-CLINCHING STUDS AND PINS

TYPES FH/FHS/FHA FLUSH-HEAD STUDS

- Flush-head for sheet thickness of .040" / 1 mm and greater.
- Type FH is recommended for use in steel or aluminum sheets HRB (Rockwell "B" scale) 80 or less and HB (Hardness Brinell) 150 or less.
- Type FHS is recommended for use in steel or aluminum sheets HRB (Rockwell "B" scale) 70 or less and HB (Hardness Brinell) 125 or less.
- Type FHA is recommended for use in aluminum sheets HRB (Rockwell "B" scale) 50 or less and HB (Hardness Brinell) 82 or less.



PART NUMBER DESIGNATION

FH	—	632	—	6	ZI
FH	S	632	—	6	
FH	A	632	—	6	
Type	Material Code	Thread Size Code	Length Code	Finish Code	

All dimensions are in inches.

UNIFIED	Thread Size	Type			Thread Code	Length Code "L" ±.015 (Length Code in 16ths of an inch)										Min. Sheet Thickness (1)	Hole Size in Sheet +.003 -.000	Max. Hole in Attach. Parts	H ± .015	S Max. (2)	Min. Dist. Hole to Edge
		Fastener Material																			
		Steel	Stainless Steel	Alu-minum		.250	.312	.375	.500	.625	.750	.875	1.00	1.25	1.50						
	.086-56 (#2-56)	FH	FHS	—	256	4	5	6	8	10	12	—	—	—	—	.040	.085	.105	.144	.075	.187
	.112-40 (#4-40)	FH	FHS	FHA	440	4	5	6	8	10	12	14	16	20	—	.040	.111	.135	.176	.085	.219
	.138-32 (#6-32)	FH	FHS	FHA	632	4	5	6	8	10	12	14	16	20	24	.040	.137	.160	.206	.090	.250
	.164-32 (#8-32)	FH	FHS	FHA	832	4	5	6	8	10	12	14	16	20	24	.040	.163	.185	.237	.090	.281
	.190-24 (#10-24)	FH	FHS	FHA	024	—	5	6	8	10	12	14	16	20	24	.040	.189	.210	.256	.100	.281
	.190-32 (#10-32)	FH	FHS	FHA	032	—	5	6	8	10	12	14	16	20	24	.040	.189	.210	.256	.100	.281
	.250-20 (1/4-20)	FH	FHS	FHA	0420	—	—	6	8	10	12	14	16	20	24	.062	.249	.270	.337	.135	.312
.313-18 (5/16-18)	FH	FHS	—	0518	—	—	—	8	10	12	14	16	20	24	.093	.311	.333	.376	.160	.375	

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type			Thread Code	Length Code "L" ±0.4 (Length Code in millimeters)										Min. Sheet Thickness (1)	Hole Size in Sheet +0.08	Max. Hole in Attach. Parts	H ± 0.4	S Max. (2)	Min. Dist. Hole to Edge
		Fastener Material																			
		Steel	Stainless Steel	Alu-minum																	
	M2.5 x 0.45	FH	FHS	FHA	M2.5	6	8	10	12	15	18	—	—	—	—	1	2.5	3.1	4.1	1.95	5.4
	M3 x 0.5	FH	FHS	FHA	M3	6	8	10	12	15	18	20	25	—	—	1	3	3.6	4.6	2.1	5.6
	M3.5 x 0.6	FH	FHS	FHA	M3.5	6	8	10	12	15	18	20	25	30	—	1	3.5	4.1	5.3	2.25	6.4
	M4 x 0.7	FH	FHS	FHA	M4	6	8	10	12	15	18	20	25	30	35	1	4	4.6	5.9	2.4	7.2
	M5 x 0.8	FH	FHS	FHA	M5	—	8	10	12	15	18	20	25	30	35	1	5	5.6	6.5	2.7	7.2
	M6 x 1	FH	FHS	FHA	M6	—	—	10	12	15	18	20	25	30	35	1.6	6	6.6	8.2	3	7.9
	M8 x 1.25	FH	FHS	—	M8	—	—	—	12	15	18	20	25	30	35	2.4	8	8.6	9.6	3.7	9.6

- (1) See page 16 for installation tool requirements.
- (2) Threads are gaugeable to within 2 pitches of the "S" Max. dimension. A class 3B/5H maximum material commercial nut shall pass up to the "S" Max. dimension.

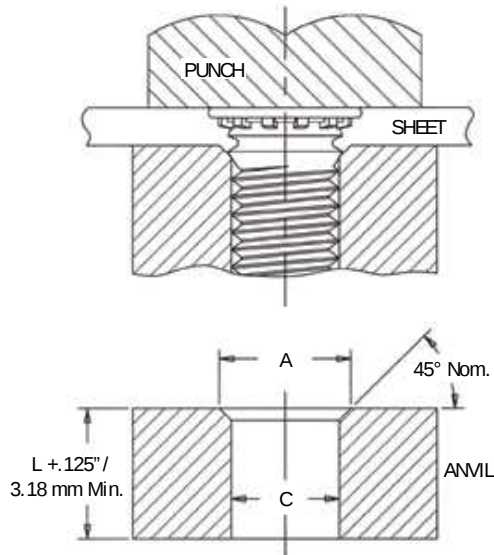


SELF-CLINCHING STUDS AND PINS

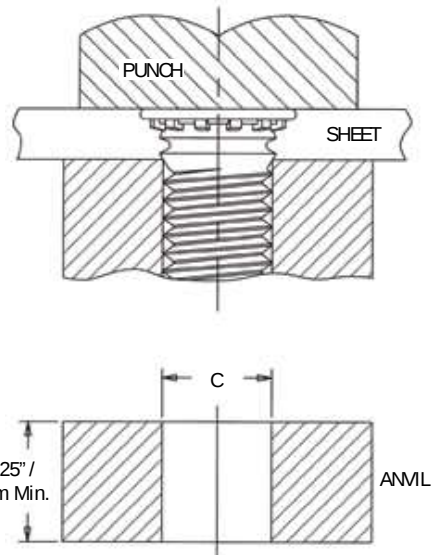
INSTALLATION - TYPES FH/FHS/FHA THREADED STUDS

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Insert stud through mounting hole (punch side) of sheet and into anvil hole.
3. With punch and anvil surfaces parallel, apply squeezing force to embed the head of the stud flush in the sheet. In most cases, when using sheets .060" / 1.51 mm and thicker, the anvil requires only a straight thru hole to accommodate the stud (see illustrations below for details). For sheets less than .060 / 1.51 mm, the hole requires a countersink with dimension A at the top to provide for metal flow around the shank of the stud.

Tooling for sheet thicknesses less than .060 / 1.51 mm with #2 thru #10 / M3 thru M5 thread sizes and less than .093" / 2.4 mm for 1/4" / M6 threads.



Tooling for sheet thicknesses .060" / 1.51 mm and greater with #2 thru #10 / M3 thru M5 thread sizes and .093" / 2.41 mm and greater for 1/4" and 5/16" / M6 and M8 threads.



See page 5 for "L".

PEMSERTER® Installation Tooling

	Thread Code	Anvil Dimensions (in.)		Anvil Part No. For Sheets > .060"	Anvil Part No. For Sheets ≤ .059"	Punch Part Number
		A	C			
UNIFIED	256	.110-.114	.087-.090	970200005300	970200240300	975200048
	440	.136-.140	.113-.116	970200006300	970200241300	
	632	.162-.166	.139-.142	970200007300	970200243300	
	832	.188-.192	.165-.168	970200008300	970200245300	
	024/032	.216-.220	.191-.194	970200009300	970200246300	
	0420	.295-.300	.250-.253	970200010300	970200249300	
				For Sheets > .075"	For Sheets ≤ .074"	
	0518	.334-.338	.3125-.3155	970200011300	970200250300	975200048

	Thread Code	Anvil Dimensions (mm)		Anvil Part No. For Sheets > 1.51 mm	Anvil Part No. For Sheets ≤ 1.5 mm	Punch Part Number
		A + 0.1	C + 0.08			
METRIC	M2.5	3.1	2.53	970200300300	970200493300	975200048
	M3	3.6	3.03	970200229300	970200242300	
	M3.5	4.1	3.53	970200007300	970200243300	
	M4	4.6	4.03	970200019300	970200244300	
	M5	5.6	5.03	970200020300	970200247300	
	M6	6.6	6.03	970200230300	970200248300	
				For Sheets > 1.9 mm	For Sheets ≤ 1.9 mm	
	M8	8.6	8.03	970200231300	970200251	975200048



SELF-CLINCHING STUDS AND PINS

Published installation forces are for general reference. Actual set-up and confirmation of complete installation should be made by observing proper seating of fastener as described in the installation steps. Other performance values reported are averages when all proper installation parameters and procedures are followed. Variations in mounting hole size, sheet material, and installation procedure may affect performance. Performance testing this product in your application is recommended. We will be happy to provide technical assistance and/or samples for this purpose.

PERFORMANCE DATA - TYPES FH/FHS FLUSH-HEAD STUDS

UNIFIED	Thread Code	Max. Nut Tightening Torque (in. lbs.)	Type	Test Sheet Thickness & Material	Sheet Hardness HRB	Installation (lbs.)	Pushout (lbs.)	Torque-out (in. lbs.)	Pull Thru (lbs.)
	256	2.3	FH	.062" Aluminum	29	2000	100	5	425
			FHS	.062" Aluminum	29	2000	100	4.5	300
			FH	.060" Steel	59	2500	180	5	425
			FHS	.060" Steel	59	2500	180	4.5	300
	440	5	FH	.064" Aluminum	29	3800	170	10	650
			FHS	.064" Aluminum	29	3200	170	8	500
			FH	.060" Steel	59	4300	275	10	650
			FHS	.060" Steel	59	4700	275	8	500
	632	9	FH	.064" Aluminum	29	3800	180	17	850
			FHS	.064" Aluminum	29	3500	180	16	775
			FH	.060" Steel	59	4700	300	20	850
			FHS	.060" Steel	59	5000	300	16	775
	832	17	FH	.064" Aluminum	29	4800	220	28	1000
			FHS	.064" Aluminum	29	4500	220	28	940
			FH	.060" Steel	59	6800	375	40	1270
			FHS	.060" Steel	59	5500	375	28	1130
	032 024	27 24	FH	.064" Aluminum	29	5500	270	30	1220
			FHS	.064" Aluminum	29	5500	270	30	1220
			FH	.060" Steel	59	7500	450	60	1410
			FHS	.060" Steel	59	6800	450	50	1410
	0420	58	FH	.093" Aluminum	28	6500	310	65	2300
			FHS	.093" Aluminum	28	6500	310	65	2100
			FH	.088" Steel	46	9500	575	100	2550
			FHS	.088" Steel	46	10000	575	100	2550
	0518	120	FH	.093" Aluminum	28	6500	430	100	2260
			FHS	.093" Aluminum	28	6700	430	100	2260
			FH	.093" Steel	46	10000	650	175	3475
			FHS	.093" Steel	46	11200	650	175	3120

METRIC	Thread Code	Max. Nut Tightening Torque (N•m)	Type	Test Sheet Thickness & Material	Sheet Hardness HRB	Installation (kN)	Pushout (N)	Torque-out (N•m)	Pull Thru (N)
	M2.5	0.41	FH	1.6 mm Aluminum	29	8.9	465	1.0	2600
			FHS	1.6 mm Aluminum	29	11.6	465	0.8	1820
			FH	1.5 mm Steel	59	11.1	740	1.0	2800
			FHS	1.5 mm Steel	59	13.8	740	0.8	1820
	M3	0.74	FH	1.6 mm Aluminum	29	12.9	600	1.7	3150
			FHS	1.6 mm Aluminum	29	12.9	600	1.3	2570
			FH	1.5 mm Steel	59	14.7	820	1.7	3840
			FHS	1.5 mm Steel	59	14.7	820	1.3	2440
	M3.5	1.15	FH	1.6 mm Aluminum	29	15.6	800	1.7	3780
			FHS	1.6 mm Aluminum	29	15.6	800	1.7	3445
			FH	1.5 mm Steel	59	22.3	1335	2.8	3780
			FHS	1.5 mm Steel	59	22.3	1335	2.0	3445
	M4	1.7	FH	1.6 mm Aluminum	29	20	975	2.9	4448
			FHS	1.6 mm Aluminum	29	22.3	975	2.9	4180
			FH	1.5 mm Steel	59	28.9	1780	4.2	5650
			FHS	1.5 mm Steel	59	26.7	1780	2.9	4775
	M5	3.5	FH	1.6 mm Aluminum	29	24.5	1070	3.5	5170
			FHS	1.6 mm Aluminum	29	24.5	1070	3.5	4760
			FH	1.5 mm Steel	59	33.4	2000	6.5	6270
			FHS	1.5 mm Steel	59	32.5	2000	6.3	6000
	M6	5.9	FH	2.4 mm Aluminum	28	28.9	1660	7.3	10200
			FHS	2.4 mm Aluminum	28	28.9	1660	7.3	9090
			FH	2.2 mm Steel	46	44.5	2560	11.3	11300
			FHS	2.2 mm Steel	46	44.5	2560	10.1	10600
	M8	14.2	FH	2.4 mm Aluminum	28	29.8	1910	11.3	10500
			FHS	2.4 mm Aluminum	28	29.8	1910	11.3	9540
			FH	2.4 mm Steel	46	44.5	2890	19.2	15450
			FHS	2.4 mm Steel	46	49.8	2890	17.5	13630