



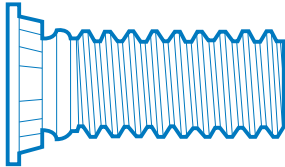
SHEET

METAL

FASTENERS

Wherever you are...

we have the solution!



The **P-FH / P-FHS SELF CLINCHING STUD** is a threaded fastener which incorporates a knurled platform under the head, which when embedded in the sheet, displaces material into the clinch ring securing the fastener firmly in place.

ADVANTAGES

- EASY ASSEMBLE WITH ANY SQUEEZE PRESS
- HIGH TORQUE RESISTANCE
- NO DAMAGE TO DECORATIVE FINISHES ON PANELS
- VISUAL PROOF OF SECURITY
- ALWAYS PERPENDICULAR TO PANEL
- HEAD INSTALLS FLUSH WITH SURFACE OF SHEET

DESIGN GUIDE

HOLE PREPARATION

It is recommended that the holes are formed using a punch operation, although drilled holes may be used. Holes should not be countersunk or de-burred.

HOLE SIZE

Holes must be held to a tolerance of $-0.00\text{mm} + 0.08\text{mm}$
($-.000'' + .003''$)

MINIMUM SHEET THICKNESS

See product data sheets and method of assembly.

MAXIMUM SHEET HARDNESS

Rb80 for Steel Studs (P-FH)
Rb70 for Stainless Steel Studs (P-FHS)

INSTALLATION

Apply squeezing pressure sufficient only to embed the head of the stud flush with surface of the sheet. Avoid excessive pressures.

Installation forces vary with sheet hardness and thickness.

See PERFORMANCE DATA for recommended forces.

TOOLING NOTE:

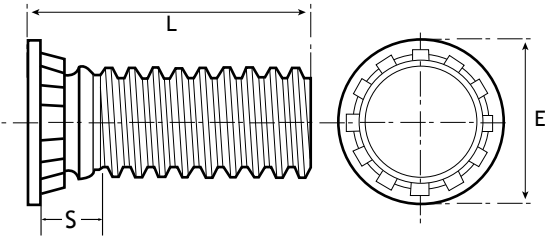
Studs are installed using a flat top punch and flat bottom anvil with a clearance hole to accept the threaded section of the stud.

Where the sheet material is thin, a special thin sheet bottom anvil is required which includes a countersink at the top to create space for clinch ring and displaced sheet material.

See METHODS OF ASSEMBLY page for details



TECHNICAL DATA



P-FH & P-FHS TYPES (METRIC)

MATERIALS CODES

- P-FH - Hardened Steel Zinc Plated
- P-FHS - Stainless Steel

STANDARD PLATING FINISH

Zinc & Clear Trivalent Passivation (Z)

GENERAL DIMENSIONS

All dimensions in mm

| THREAD SIZE / CODE | Min Sheet Thickness | Hole Size in Sheet +0.08 -0.00 | Max. Hole in Mating Component | S Max | Head Diameter E +/- 0.4 | Minimum distance centre line hole to sheet edge |
|--------------------|---------------------|-----------------------------------|-------------------------------|----------|-------------------------------|---|
| M2.5 | 1.0 | 2.5 | 3.1 | 1.95 | 4.1 | 5.4 |
| M3 | 1.0 | 3.0 | 3.6 | 2.10 | 4.6 | 5.6 |
| M3.5 | 1.0 | 3.5 | 4.1 | 2.25 | 5.3 | 6.4 |
| M4 | 1.0 | 4.0 | 4.6 | 2.4 | 5.9 | 7.2 |
| M5 | 1.0 | 5.0 | 5.6 | 2.7 | 6.5 | 7.2 |
| M6 | 1.5 | 6.0 | 6.6 | 3.0 | 8.2 | 7.9 |
| M8 | 2.4 | 8.0 | 8.6 | 3.7 | 9.6 | 9.6 |



THREAD & LENGTH DATA

| THREAD SIZE / CODE | Type | | Length Code "L" +/- .04 (Length Code in millimeters) | | | | | | | | | |
|--------------------|-------|-----------------|--|-----|-----|----|----|----|-----|-----|-----|-----|
| | Steel | Stainless Steel | 6 | 8 | 10 | 12 | 15 | 18 | N/A | N/A | N/A | N/A |
| M2.5 | P-FH | P-FHS | 6 | 8 | 10 | 12 | 15 | 18 | N/A | N/A | N/A | N/A |
| M3 | P-FH | P-FHS | 6 | 8 | 10 | 12 | 15 | 18 | 20 | 25 | N/A | N/A |
| M3.5 | P-FH | P-FHS | 6 | 8 | 10 | 12 | 15 | 18 | 20 | 25 | 30 | N/A |
| M4 | P-FH | P-FHS | 6 | 8 | 10 | 12 | 15 | 18 | 20 | 25 | 30 | 35 |
| M5 | P-FH | P-FHS | N/A | 8 | 10 | 12 | 15 | 18 | 20 | 25 | 30 | 35 |
| M6 | P-FH | P-FHS | N/A | N/A | 10 | 12 | 15 | 18 | 20 | 25 | 30 | 35 |
| M8 | P-FH | P-FHS | N/A | N/A | N/A | 12 | 15 | 18 | 20 | 25 | 30 | 35 |

HOW TO SPECIFY

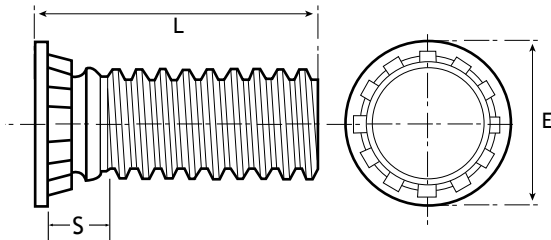
P-FH (Steel Standard Sizes)

| | |
|--------------|--------------|
| Product Code | P-FH-M4-10-Z |
| Thread Code | P-FH-M4-10-Z |
| Length Code | P-FH-M4-10-Z |
| Plating Code | P-FH-M4-10-Z |

P-FHS (Stainless Steel Standard Sizes)

| | |
|--------------|-------------|
| Product Code | P-FHS-M4-10 |
| Thread Code | P-FHS-M4-10 |
| Length Code | P-FHS-M4-10 |

TECHNICAL DATA



P-FH & P-FHS TYPES (UNIFIED)

MATERIALS CODES

P-FH - Hardened Steel Zinc Plated
P-FHS - Stainless Steel

STANDARD PLATING FINISH

Zinc & Clear Trivalent Passivation (Z)

GENERAL DIMENSIONS

All dimensions in inches

| THREAD SIZE / CODE | Min Sheet Thickness | Hole Size in Sheet + .003 - .000 | Max. Hole in Mating Component | S Max | Head Diameter E +/- 0.015 | Minimum distance centre line hole to sheet edge |
|--------------------|---------------------|----------------------------------|-------------------------------|-------|---------------------------|---|
| 256 | .040 | .085 | .105 | .075 | .144 | .187 |
| 440 | .040 | .111 | .135 | .085 | .176 | .219 |
| 632 | .040 | .137 | .160 | .090 | .206 | .250 |
| 832 | .040 | .163 | .185 | .090 | .237 | .281 |
| 032/024 | .040 | .189 | .210 | .100 | .256 | .281 |
| 0420/0428 | .062 | .249 | .270 | .135 | .337 | .312 |
| 0518/0524 | .093 | .311 | .333 | .160 | .376 | .375 |



THREAD & LENGTH DATA

| THREAD SIZE / CODE | Type | | Length Code "L" +/- .015 (Length Code in 16ths of an inch) | | | | | | | | | |
|--------------------|-------|-----------------|--|-----------|----------|----------|----------|----------|----------|--------|------------|------------|
| | Steel | Stainless Steel | 1/4 .250 | 5/16 .312 | 3/8 .375 | 1/2 .500 | 5/8 .625 | 3/4 .750 | 7/8 .875 | 1 1.00 | 1.1/4 1.25 | 1.1/2 1.50 |
| 256 | P-FH | P-FHS | 4 | 5 | 6 | 8 | 10 | 12 | N/A | N/A | N/A | N/A |
| 440 | P-FH | P-FHS | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | N/A | N/A |
| 632 | P-FH | P-FHS | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 20 | 24 |
| 832 | P-FH | P-FHS | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 20 | 24 |
| 032 / 024 | P-FH | P-FHS | N/A | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 20 | 24 |
| 0420 / 0428 | P-FH | P-FHS | N/A | N/A | 6 | 8 | 10 | 12 | 14 | 16 | 20 | 24 |
| 0518 / 0524 | P-FH | P-FHS | N/A | N/A | N/A | 8 | 10 | 12 | 14 | 16 | 20 | 24 |

HOW TO SPECIFY

P-FH (Steel Standard Sizes)

| | |
|--------------|---------------|
| Product Code | P-FH-832-10-Z |
| Thread Code | P-FH-832-10-Z |
| Length Code | P-FH-832-10-Z |
| Plating Code | P-FH-832-10-Z |

P-FHS (Stainless Steel Standard Sizes)

| | |
|--------------|--------------|
| Product Code | P-FHS-832-10 |
| Thread Code | P-FHS-832-10 |
| Length Code | P-FHS-832-10 |



P-FH / P-FHS SELF CLINCHING STUDS are easy to install because no special tooling is necessary. However, it is very important to note that they must always be installed by a squeeze action press rather than a hammer blow.

Punched holes are recommended.

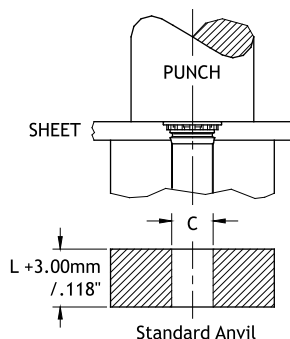
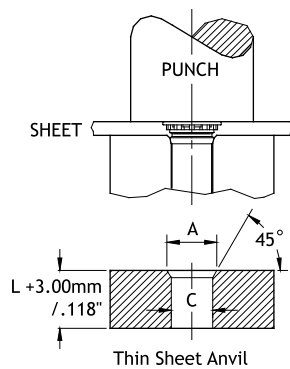
METHOD OF ASSEMBLY

1. Punch a hole in the metal sheet to the size recommended in our technical data table. Deburring of the hole is not recommended.
2. Insert the stud through the hole in sheet and into the appropriate anvil as detailed below.
3. Apply squeezing pressure sufficient to install the head flush with top face of sheet.

| Thread Size Metric | Anvil | |
|--------------------|-------------|-------------|
| | A mm | C mm |
| 2.5 | 3.10 - 3.20 | 2.53 - 2.61 |
| 3 | 3.61 - 3.71 | 3.02 - 3.10 |
| 3.5 | 4.12 - 4.22 | 3.53 - 3.61 |
| 4 | 4.60 - 4.70 | 4.01 - 4.07 |
| 5 | 5.66 - 5.77 | 5.03 - 5.11 |
| 6 | 7.14 - 7.26 | 6.01 - 6.07 |
| 8 | 9.14 - 9.26 | 8.01 - 8.08 |

| Thread Size Unified | Anvil | |
|---------------------|-------------|-------------|
| | A inch | C inch |
| 256 | .110 - .114 | .087 - .090 |
| 440 | .136 - .140 | .113 - .116 |
| 632 | .162 - .166 | .139 - .142 |
| 832 | .188 - .192 | .165 - .168 |
| 032 | .216 - .220 | .191 - .194 |
| 0420 | .295 - .300 | .250 - .253 |
| 0518 | .334 - .338 | .313 - .316 |

ASSEMBLY DETAIL



Thin Sheet Anvil Use

M2.5 - M5 for sheet 1.0 - 1.49
 M6 for sheet 1.5 - 2.4
 M8 for sheet 2.0 - 2.4

256 - 032 for sheet .040" - .060"
 0420 for sheet .062" - .092"
 0518 for sheet .078" - .092"



PERFORMANCE DATA (METRIC)

| Thread Code | Stud Type | Max Nut Tightening Torque (Nm) | Test Sheet Material | | | | | |
|-------------|-----------------|--------------------------------|---------------------|-------------|-----------------|-------------------|-------------|-----------------|
| | | | Cold Rolled Steel | | | Aluminum | | |
| | | | Installation (kN) | Pushout (N) | Torque-out (Nm) | Installation (kN) | Pushout (N) | Torque-out (Nm) |
| M2.5 | Steel | 0.41 | 14 | 800 | 1.2 | 12 | 500 | 1.0 |
| | Stainless Steel | | | | | | | |
| M3 | Steel | 0.85 | 17 | 900 | 1.9 | 14 | 600 | 1.7 |
| | Stainless Steel | | | | | | | |
| M3.5 | Steel | 1.15 | 23 | 1400 | 2.8 | 16 | 850 | 2.0 |
| | Stainless Steel | | | | | | | |
| M4 | Steel | 1.9 | 26 | 1800 | 4.0 | 20 | 1050 | 3.0 |
| | Stainless Steel | | | | | | | |
| M5 | Steel | 3.8 | 30 | 2300 | 7.0 | 25 | 1300 | 4.0 |
| | Stainless Steel | | | | | | | |
| M6 | Steel | 8.0 | 40 | 2800 | 12.0 | 30 | 1700 | 7.0 |
| | Stainless Steel | | | | | | | |
| M8 | Steel | 14.0 | 50 | 3200 | 22.0 | 35 | 1950 | 12.0 |
| | Stainless Steel | | | | | | | |

PERFORMANCE DATA (UNIFIED)

| Thread Code | Stud Type | Max Nut Tightening Torque (in/lbs) | Test Sheet Material | | | | | |
|-------------|-----------------|------------------------------------|---------------------|---------------|---------------------|--------------------|---------------|---------------------|
| | | | Cold Rolled Steel | | | Aluminum | | |
| | | | Installation (lbs) | Pushout (lbs) | Torque-out (in/lbs) | Installation (lbs) | Pushout (lbs) | Torque-out (in/lbs) |
| 256 | Steel | 2.5 | 2800 | 160 | 7.0 | 2000 | 100 | 6.0 |
| | Stainless Steel | | | | | | | |
| 440 | Steel | 5.0 | 3800 | 240 | 12.0 | 3000 | 150 | 12.0 |
| | Stainless Steel | | | | | | | |
| 632 | Steel | 9.0 | 5000 | 315 | 23.0 | 3600 | 190 | 18.0 |
| | Stainless Steel | | | | | | | |
| 832 | Steel | 18.0 | 6300 | 400 | 38.0 | 4800 | 250 | 22.0 |
| | Stainless Steel | | | | | | | |
| 032 | Steel | 32 | 7000 | 500 | 60.0 | 5500 | 290 | 35.0 |
| | Stainless Steel | | | | | | | |
| 0420 | Steel | 70.0 | 9000 | 630 | 105.0 | 6700 | 380 | 65.0 |
| | Stainless Steel | | | | | | | |
| 0518 | Steel | 130.0 | 11200 | 720 | 190.0 | 7800 | 440 | 105.0 |
| | Stainless Steel | | | | | | | |

Note: The above values are averages when correct installation is performed. Variations in holes size, material and installation will affect these results. For specific advice we strongly recommend consultation with your PSM Technology Centre.