

PennEngineering®

PEM® CAPTIVE PANEL SCREWS



BULLETIN



















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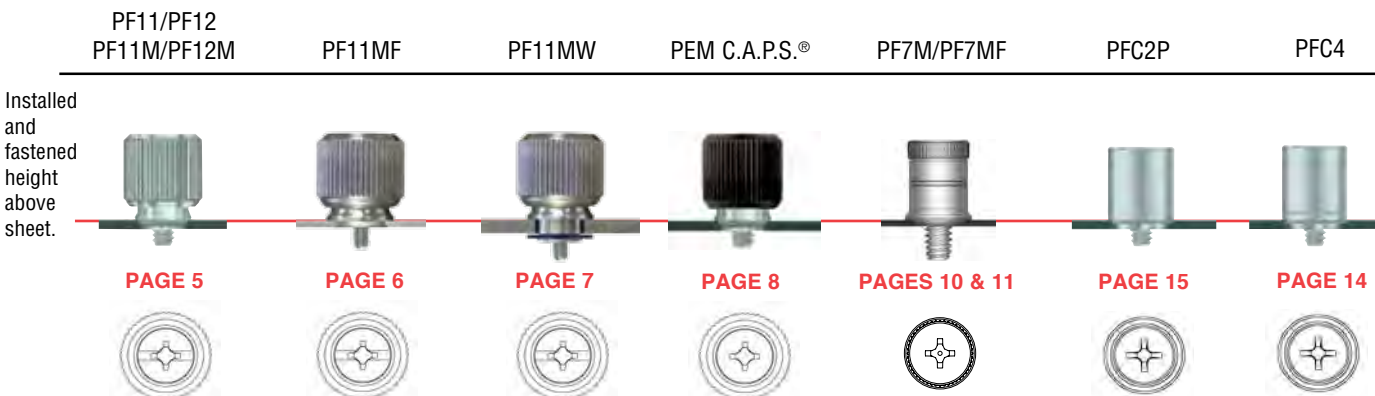
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PEM® CAPTIVE PANEL SCREWS

PEM brand captive panel screws are designed to help keep parts to a minimum and eliminate risks associated with loose hardware that could fall out and damage internal components. These panel fastener assemblies are ideal to attach metal panels or other thin material components in applications where subsequent access will be necessary.

| | | | |
|--|---|---|---|
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HEIGHT COMPARISON GUIDE AND STANDARD DRIVER RECESS



CAPTIVE PANEL SCREW SELECTOR GUIDE

| PEM® Panel Fastener Type | Page No. | Application Requires: | | | | | | | | | | | | | |
|--------------------------|----------|-----------------------|---------------------------|---------------|-----------|------|-------------------|------------------------|-----------------------|----------------|------------------------|------------------------|--------------------|----------------------------|---------------------------------------|
| | | UL Approved | High corrosion resistance | Spring loaded | Actuation | | Installs into | | | | Multiple screw lengths | Flush mounted top side | Available in black | Available in custom colors | Includes anti cross-threading feature |
| | | | | | Tool | Hand | Any thin material | Printed circuit boards | Stainless steel sheet | Painted panels | | | | | |
| PF11 | 5 | | | • | • | • | | | | | • | | • | | |
| PF11M | 5 | | | • | • | • | | | | | • | | • | | • |
| PF12 | 5 | | | • | • | | | | | | • | | • | | |
| PF12M | 5 | | | • | • | | | | | | • | | • | | • |
| PF11MF | 6 | | | • | • | • | • | | • | • | • | | • | | • |
| PF12MF | 6 | | | • | • | | • | | • | • | • | | • | | • |
| PF11MW | 7 | | | • | • | • | • | • | • | | • | | • | | • |
| PF12MW | 7 | | | • | • | | • | • | • | | • | | • | | • |
| PEM C.A.P.S. | 8 | | | • | • | | | | | | • | | •(1) | • | • |
| PFHV | 9 | | | | • | • | | | | | • | | • | | |
| PF7M | 10 | | | • | • | • | | | | | • | | | | • |
| PF7MF | 11 | | | • | • | • | • | • | • | • | • | | | | • |
| PF30 PF31 PF32 | 12 | | | • | • | • | | | | | | | • | | |
| PF50 PF51 PF52 | 13 | | | • | • | • | | | | | • | | • | | |
| PF60 PF61 PF62 | 13 | | | • | • | | | | | | • | | • | | |
| PFC4 | 14 | • | | • | • | | | | • | | • | | | | |
| PFC2P | 15 | • | | • | • | | | | | | • | | • | | |
| PFC2 | 16 | | • | • | • | • | | | | | • | | • | | |
| PFS2 | 16 | | | • | • | • | | | | | • | | • | | |
| SCBR | 18 | | | • | • | | | | | | | | | | |
| SCB/SCBJ | 19 | | | | • | | | | | | • | | | | |
| PF10 | 20-21 | • | • | | • | | | | | | | • | • | | |
| ReelFast PF | 22-23 | | | | • | • | | • | | | • | | •(1) | • | |
| PFK | 24 | | • | • | • | • | | • | | | • | | • | | |

(1) Standard color is black.

PFC2/PFS2
PFK

PF50/PF51/PF52
PF60/PF61/PF62

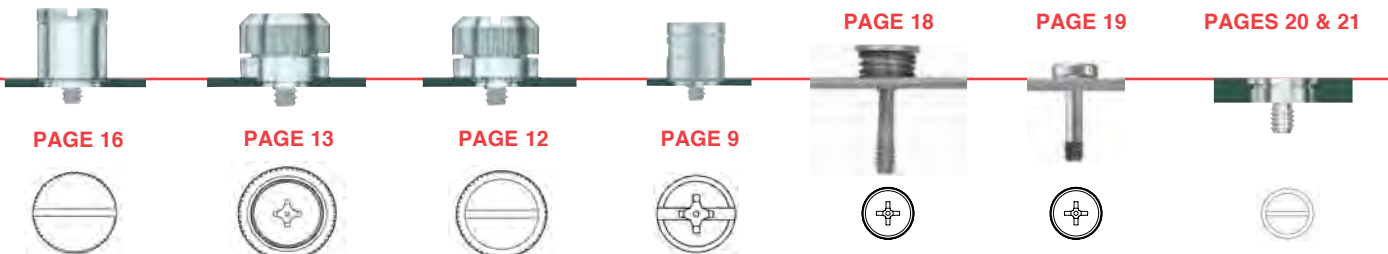
PF30/31/32

PFHV

SCBR

SCB/SCBJ

PF10



PEM® TYPE PF11™/PF12™ CAPTIVE PANEL SCREWS

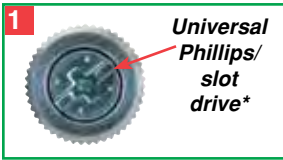
The PEM® Type PF11/PF12 family of panel fasteners provide design flexibility by offering three styles of installation types, each having the same profile or look above the sheet or panel into which it is installed. The various mounting types include self-clinching, flare-mounted, and floating styles. Each offers a distinct advantage depending on your application. The standard selection of knobs include knurled or smooth metal caps and plastic PEM C.A.P.S.® (colored access panel screws). Cap selection is dependent upon your service access and/or color requirements.



Self-clinching Flare-mounted Floating

Key features include:

- 1) Universal Phillips/slot drive (except for plastic cap).
- 2) Shoulder on retainer to provide positive stop during installation.
- 3) Anti cross-threading feature. Eases assembly, aligns components, improves assembly line productivity, prevents jamming, and slides through clogged internal threads.



1 Universal
Phillips/
slot
drive*



2 Shoulder
on
retainer

3 ANTI CROSS-THREAD TECHNOLOGY - HOW IT WORKS

PennEngineering is a licensee for MATHread® technology, a registered trademark of MATHread Inc.



* Plastic cap version has Phillips drive only.

Standard Mounting Styles:

Self-clinching

- Installs flush on back side of panel.
- Available in three screw lengths.



Flare-mounted

- Appropriate for close centerline-to-edge applications.
- Doesn't require high installation force.
- Installs into any panel hardness.
- Installs flush on back side of panel.
- Can be installed into most any thin material.
- Appropriate for painted panels.



Flare-mounted, Floating

- Compensates for mating hole misalignment.
- Installs into any panel hardness.



Standard Cap Selection:



Metal Cap knurled

All metal cap available with knurls.



Metal Cap Un-knurled

All metal cap available without knurls.



Black Metal Cap

DuraBlack™ finish is scratch resistant. Finish is on both metal cap and screw. (finish code "BL")



Plastic Cap

Available with custom color plastic cap. (See page 8 for colors)

Available Drive Configurations:



PF11
Phillips/slot
(Standard -
except for plastic cap)



PF11P
Phillips
(Optional)



PF11LS
Torx®/Slot
Combination
(Optional)



PF11S
Slotted
(Optional)



PF11L
Torx®/Torx Plus®
(Optional)



PEM® TYPES PF11™/PF12™/PF11M/PF12M CAPTIVE PANEL SCREWS

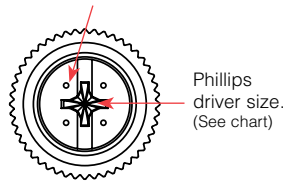


Type PF11
Knurled Cap
Patented

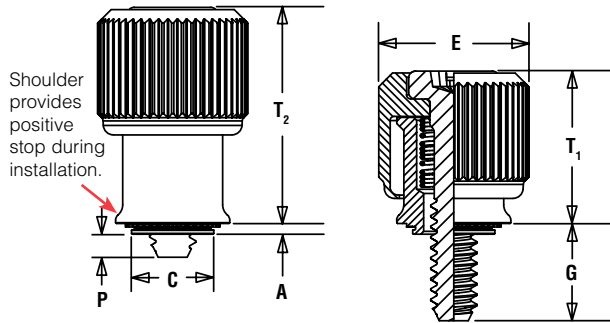


Type PF12
Smooth Cap

Dimples on head designate metric thread.



Phillips driver size. (See chart)



Shoulder provides positive stop during installation.

Min. Radial Float - .020" / 0.51 mm total.

Threads:
External, ASME B1.1, 2A / ASME B1.13M, 6g

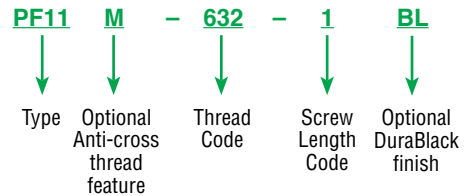
Material:
Knob: Aluminum
Retainer: Heat-treated Carbon Steel
Screw (Type PF11/PF12): 400 Series Stainless Steel
Screw (Type PF11M/PF12M): Heat-treated Carbon Steel ⁽¹⁾
Spring: 300 Series Stainless Steel

Finish:
Knob: Natural Finish
Retainer: Bright nickel over copper flash per ASTM B689
Screw (Type PF11/PF12): Passivated and/or tested per ASTM A380
Screw (Type PF11M/PF12M): Zinc plated, 5µm, colorless ⁽³⁾

Optional Finish (BL):
Knob: Black anodize ⁽²⁾
Screw: Black nitride ⁽²⁾

For use in sheet hardness:
HRB 80 or less (Hardness Rockwell "B" Scale) / HB 150 or less (Hardness Brinell)

PART NUMBER DESIGNATION



Installation Data page 26. Performance Data page 34.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | | Thread Code | Screw Length Code | A Max. | Min. Sheet Thickness | Hole Size In Sheet + .003 - .000 | C Max. | E ± .010 | G ± .025 | P ± .025 | T ₁ Nom. | T ₂ Nom. | Driver Size | Min. Dist. Hole Ø To Edge |
|------------------|---------------|---------------|------------|-------------|-------------------|--------|----------------------|----------------------------------|--------|----------|----------|----------|---------------------|---------------------|-------------|---------------------------|
| | | Knurled Cap | Smooth Cap | | | | | | | | | | | | | |
| .112-40 (#4-40) | PF11 PF11M | PF12 PF12M | 440 | 0 | .036 | .036 | .219 | .218 | .417 | .170 | .000 | .310 | .450 | #1 | .28 | |
| | | | | 1 | | | | | | .230 | .060 | | | | | |
| | | | | 2 | | | | | | .290 | .120 | | | | | |
| .138-32 (#6-32) | PF11 PF11M | PF12 PF12M | 632 | 0 | .036 | .036 | .250 | .249 | .450 | .230 | .000 | .450 | .640 | #2 | .29 | |
| | | | | 1 | | | | | | .290 | .060 | | | | | |
| | | | | 2 | | | | | | .350 | .120 | | | | | |
| .164-32 (#8-32) | PF11 PF11M | PF12 PF12M | 832 | 0 | .036 | .036 | .312 | .311 | .514 | .230 | .000 | .450 | .640 | #2 | .33 | |
| | | | | 1 | | | | | | .290 | .060 | | | | | |
| | | | | 2 | | | | | | .350 | .120 | | | | | |
| .190-32 (#10-32) | PF11 PF11M | PF12 PF12M | 032 | 0 | .036 | .036 | .312 | .311 | .514 | .230 | .000 | .450 | .640 | #2 | .33 | |
| | | | | 1 | | | | | | .290 | .060 | | | | | |
| | | | | 2 | | | | | | .350 | .120 | | | | | |
| .250-20 (1/4-20) | PF11 PF11M | PF12 PF12M | 0420 | 0 | .036 | .036 | .375 | .374 | .575 | .290 | .000 | .530 | .790 | #3 | .46 | |
| | | | | 1 | | | | | | .350 | .060 | | | | | |
| | | | | 2 | | | | | | .410 | .120 | | | | | |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | | Thread Code | Screw Length Code | A Max. | Min. Sheet Thickness | Hole Size In Sheet + 0.08 | C Max. | E ± 0.25 | G ± 0.64 | P ± 0.64 | T ₁ Nom. | T ₂ Nom. | Driver Size | Min. Dist. Hole Ø To Edge |
|------------|---------------------|---------------|------------|-------------|-------------------|--------|----------------------|---------------------------|--------|----------|----------|----------|---------------------|---------------------|-------------|---------------------------|
| | | Knurled Cap | Smooth Cap | | | | | | | | | | | | | |
| M3 x 0.5 | PF11 PF11M | PF12 PF12M | M3 | 0 | 0.92 | 0.92 | 5.56 | 5.54 | 10.59 | 4.32 | 0 | 7.87 | 11.43 | #1 | 7.11 | |
| | | | | 1 | | | | | | 5.84 | 1.52 | | | | | |
| | | | | 2 | | | | | | 7.37 | 3.05 | | | | | |
| M3.5 x 0.6 | PF11 PF11M | PF12 PF12M | M3.5 | 0 | 0.92 | 0.92 | 6.35 | 6.33 | 11.43 | 5.84 | 0 | 11.43 | 16.26 | #2 | 7.37 | |
| | | | | 1 | | | | | | 7.37 | 1.52 | | | | | |
| | | | | 2 | | | | | | 8.89 | 3.05 | | | | | |
| M4 x 0.7 | PF11 PF11M | PF12 PF12M | M4 | 0 | 0.92 | 0.92 | 7.92 | 7.9 | 13.06 | 5.84 | 0 | 11.43 | 16.26 | #2 | 8.38 | |
| | | | | 1 | | | | | | 7.37 | 1.52 | | | | | |
| | | | | 2 | | | | | | 8.89 | 3.05 | | | | | |
| M5 x 0.8 | PF11 PF11M | PF12 PF12M | M5 | 0 | 0.92 | 0.92 | 7.92 | 7.9 | 13.06 | 5.84 | 0 | 11.43 | 16.26 | #2 | 8.38 | |
| | | | | 1 | | | | | | 7.37 | 1.52 | | | | | |
| | | | | 2 | | | | | | 8.89 | 3.05 | | | | | |
| M6 x 1 | PF11 PF11M | PF12 PF12M | M6 | 0 | 0.92 | 0.92 | 9.53 | 9.5 | 14.61 | 7.37 | 0 | 13.46 | 20.07 | #3 | 11.68 | |
| | | | | 1 | | | | | | 8.89 | 1.52 | | | | | |
| | | | | 2 | | | | | | 10.41 | 3.05 | | | | | |

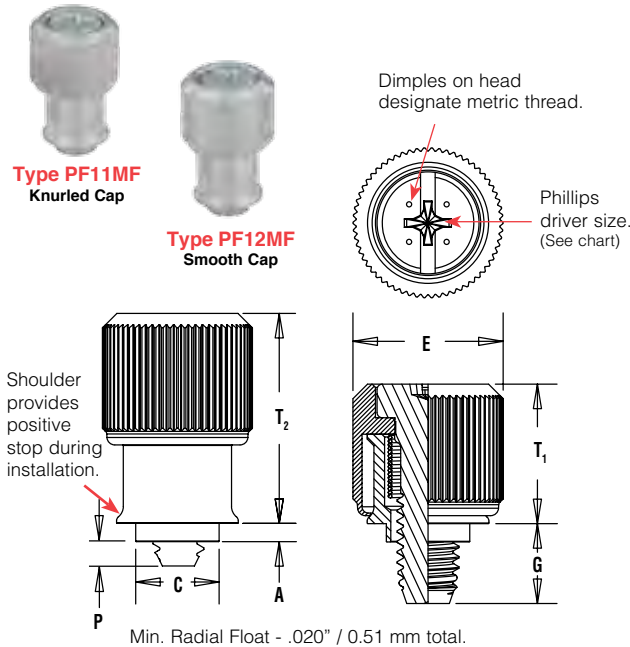
(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

(2) "BL" suffix will be added to part number to designate DuraBlack™ finish.

(3) See PEM Technical Support section of our web site (www.pemnet.com) for related plating standards and specifications.

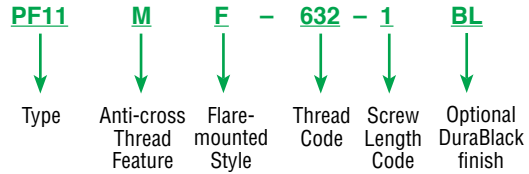


PEM® TYPE PF11MF™ FLARE-MOUNTED CAPTIVE PANEL SCREWS



| |
|--|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾ |
| Material: Knob: Aluminum Retainer: Aluminum Screw: Heat-treated Carbon Steel Spring: 300 Series Stainless Steel |
| Finish: Knob: Natural Finish Retainer: Natural Finish Screw: Zinc plated, 5µm, colorless ⁽³⁾ |
| Optional Finish (BL): Knob: Black anodize ⁽²⁾ Screw: Black nitride ⁽²⁾ |

PART NUMBER DESIGNATION



Installation Data page 26. Performance Data page 34.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | | Thread Code | Screw Length Code | A Max. | Min. Sheet Thickness | Hole Size In Sheet + .005 - .000 | C Max. | E ± .010 | G ± .025 | P ± .025 | T ₁ Nom. | T ₂ Nom. | Driver Size |
|------------------|------------------|-------------|------------|-------------|-------------------|--------|----------------------|----------------------------------|--------|----------|----------|----------|---------------------|---------------------|-------------|
| | | Knurled Cap | Smooth Cap | | | | | | | | | | | | |
| | .112-40 (#4-40) | PF11MF | PF12MF | 440 | 0 | .041 | .031 | .187 | .186 | .417 | .170 | .000 | .310 | .450 | #1 |
| | | | | | 1 | | | | | | .230 | .055 | | | |
| | | | | | 2 | | | | | | .290 | .115 | | | |
| | .138-32 (#6-32) | PF11MF | PF12MF | 632 | 0 | .072 | .060 | .213 | .212 | .450 | .230 | .000 | .450 | .640 | #2 |
| | | | | | 1 | | | | | | .290 | .024 | | | |
| | | | | | 2 | | | | | | .350 | .084 | | | |
| | .164-32 (#8-32) | PF11MF | PF12MF | 832 | 0 | .072 | .060 | .266 | .265 | .514 | .230 | .000 | .450 | .640 | #2 |
| | | | | | 1 | | | | | | .290 | .024 | | | |
| | | | | | 2 | | | | | | .350 | .084 | | | |
| | .190-32 (#10-32) | PF11MF | PF12MF | 032 | 0 | .072 | .060 | .266 | .265 | .514 | .230 | .000 | .450 | .640 | #2 |
| | | | | | 1 | | | | | | .290 | .024 | | | |
| | | | | | 2 | | | | | | .350 | .084 | | | |
| .250-20 (1/4-20) | PF11MF | PF12MF | 0420 | 0 | .072 | .060 | .323 | .322 | .575 | .290 | .000 | .530 | .790 | #3 | |
| | | | | 1 | | | | | | .350 | .024 | | | | |
| | | | | 2 | | | | | | .410 | .084 | | | | |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | | Thread Code | Screw Length Code | A Max. | Min. Sheet Thickness | Hole Size In Sheet + 0.1 | C Max. | E ± 0.25 | G ± 0.64 | P ± 0.64 | T ₁ Nom. | T ₂ Nom. | Driver Size |
|----------|---------------------|-------------|------------|-------------|-------------------|--------|----------------------|--------------------------|--------|----------|----------|----------|---------------------|---------------------|-------------|
| | | Knurled Cap | Smooth Cap | | | | | | | | | | | | |
| | M3 x 0.5 | PF11MF | PF12MF | M3 | 0 | 1.05 | 0.79 | 4.75 | 4.73 | 10.59 | 4.32 | 0 | 7.87 | 11.43 | #1 |
| | | | | | 1 | | | | | | 5.84 | 1.4 | | | |
| | | | | | 2 | | | | | | 7.37 | 2.92 | | | |
| | M4 x 0.7 | PF11MF | PF12MF | M4 | 0 | 1.83 | 1.52 | 6.76 | 6.74 | 13.06 | 5.84 | 0 | 11.43 | 16.26 | #2 |
| | | | | | 1 | | | | | | 7.37 | 0.61 | | | |
| | | | | | 2 | | | | | | 8.89 | 2.13 | | | |
| M5 x 0.8 | PF11MF | PF12MF | M5 | 0 | 1.83 | 1.52 | 6.76 | 6.74 | 13.06 | 5.84 | 0 | 11.43 | 16.26 | #2 | |
| | | | | 1 | | | | | | 7.37 | 0.61 | | | | |
| | | | | 2 | | | | | | 8.89 | 2.13 | | | | |
| M6 x 1 | PF11MF | PF12MF | M6 | 0 | 1.83 | 1.52 | 8.2 | 8.18 | 14.61 | 7.37 | 0 | 13.46 | 20.07 | #3 | |
| | | | | 1 | | | | | | 8.89 | 0.61 | | | | |
| | | | | 2 | | | | | | 10.41 | 2.13 | | | | |

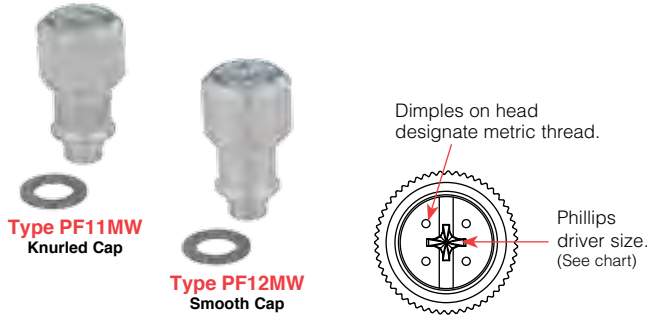
(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

(2) "BL" suffix will be added to part number to designate DuraBlack™ finish.

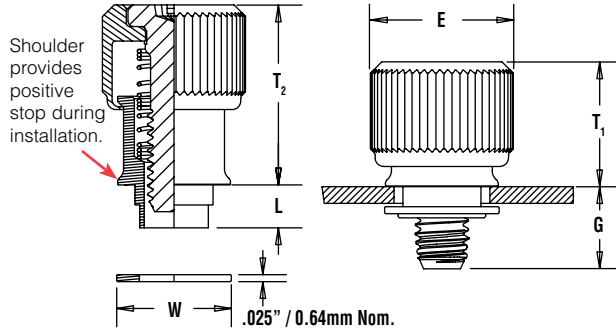
(3) See PEM Technical Support section of our web site (www.pemnet.com) for related plating standards and specifications.



PEM® TYPE PF11MW™ FLARE-MOUNTED, FLOATING CAPTIVE PANEL SCREW

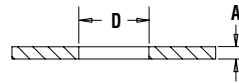


| | |
|--|---|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾ | |
| Material: Knob: Aluminum Retainer: Aluminum Screw: Heat-treated Carbon Steel Spring: 300 Series Stainless Steel Washer: 300 Series Stainless Steel | |
| Finish: Knob: Natural Finish Retainer: Natural Finish Screw: Zinc plated, 5µm, colorless ⁽³⁾ | Optional Finish (BL): Knob: Black anodize ⁽²⁾ Screw: Black nitride ⁽²⁾ |

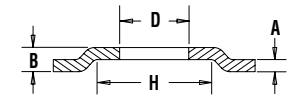


Installation Data page 27. Performance Data page 34.

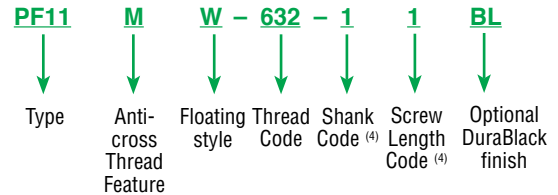
PANEL CONFIGURATION 1
For applications where a space between mating panels is acceptable.



PANEL CONFIGURATION 2
For applications where a space between mating panels is not acceptable.



PART NUMBER DESIGNATION



Type PF11MW panel fasteners are shipped with mating washers.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | | Thread Code | Shank Code (4) | Screw Length Code (4) | A Max. Sheet Thickness | B Min. | D Hole Size In Sheet +.003 -.001 | E ±.010 | G Nom. | H Min. | L Nom. | T ₁ Nom. | T ₂ Nom. | Driver Size | Min. Float | W Nom. |
|---------------------|-------------|-------------|------------|-------------|----------------|-----------------------|------------------------|--------|--|--------------|--------|--------|--------|---------------------|---------------------|-------------|------------|--------|
| | | Knurled Cap | Smooth Cap | | | | | | | | | | | | | | | |
| .112-40 (#4-40) | PF11MW | PF12MW | 440 | 1 | 1 | .063 | .111 | .250 | .417 | .230 .290 | .375 | .137 | .310 | .450 | #1 | .073 | .312 | |
| | | | | | | | | | | | | | | | | | | 2 |
| .138-32 (#6-32) | PF11MW | PF12MW | 632 | 1 | 1 | .063 | .115 | .283 | .450 | .290 .350 | .413 | .149 | .450 | .640 | #2 | .076 | .344 | |
| | | | | | | | | | | | | | | | | | | 2 |
| .164-32 (#8-32) | PF11MW | PF12MW | 832 | 1 | 1 | .063 | .121 | .346 | .514 | .290 .350 | .469 | .157 | .450 | .640 | #2 | .076 | .407 | |
| | | | | | | | | | | | | | | | | | | 2 |
| .190-32 (#10-32) | PF11MW | PF12MW | 032 | 1 | 1 | .063 | .121 | .346 | .514 | .290 .350 | .469 | .157 | .450 | .640 | #2 | .076 | .407 | |
| | | | | | | | | | | | | | | | | | | 2 |
| .250-20 (1/4-20) | PF11MW | PF12MW | 0420 | 1 | 1 | .063 | .128 | .413 | .575 | .350 .410 | .531 | .157 | .530 | .790 | #3 | .081 | .468 | |
| | | | | | | | | | | | | | | | | | | 2 |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | | Thread Code | Shank Code (4) | Screw Length Code (4) | A Max. Sheet Thickness | B Min. | D Hole Size In Sheet +0.08 -0.03 | E ±0.25 | G Nom. | H Min. | L Nom. | T ₁ Nom. | T ₂ Nom. | Driver Size | Min. Float | W Nom. |
|------------|---------------------|-------------|------------|-------------|----------------|-----------------------|------------------------|--------|--|---------------|--------|--------|--------|---------------------|---------------------|-------------|------------|--------|
| | | Knurled Cap | Smooth Cap | | | | | | | | | | | | | | | |
| M3 x 0.5 | PF11MW | PF12MW | M3 | 1 | 1 | 1.6 | 2.82 | 6.35 | 10.59 | 5.84 7.37 | 9.52 | 3.48 | 7.87 | 11.43 | #1 | 1.85 | 7.92 | |
| | | | | | | | | | | | | | | | | | | 2 |
| M3.5 x 0.6 | PF11MW | PF12MW | M3.5 | 1 | 1 | 1.6 | 2.92 | 7.19 | 11.43 | 7.37 8.89 | 10.49 | 3.78 | 11.43 | 16.26 | #2 | 1.93 | 8.74 | |
| | | | | | | | | | | | | | | | | | | 2 |
| M4 x 0.7 | PF11MW | PF12MW | M4 | 1 | 1 | 1.6 | 3.07 | 8.79 | 13.06 | 7.37 8.89 | 11.91 | 3.99 | 11.43 | 16.26 | #2 | 1.93 | 10.34 | |
| | | | | | | | | | | | | | | | | | | 2 |
| M5 x 0.8 | PF11MW | PF12MW | M5 | 1 | 1 | 1.6 | 3.07 | 8.79 | 13.06 | 7.37 8.89 | 11.91 | 3.99 | 11.43 | 16.26 | #2 | 1.93 | 10.34 | |
| | | | | | | | | | | | | | | | | | | 2 |
| M6 x 1 | PF11MW | PF12MW | M6 | 1 | 1 | 1.6 | 3.25 | 10.49 | 14.61 | 8.89 10.41 | 13.48 | 3.99 | 13.46 | 20.07 | #3 | 2.06 | 11.89 | |
| | | | | | | | | | | | | | | | | | | 2 |

- (1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.
- (2) "BL" suffix will be added to part number to designate DuraBlack™ finish.
- (3) See PEM Technical Support section of our web site (www.pemnet.com) for related plating standards and specifications.
- (4) Other shank and screw lengths available.

PEM® C.A.P.S.® CAPTIVE PANEL SCREWS

Color Capabilities ⁽¹⁾

Choose a knob color code and add it to the end of the base part number.

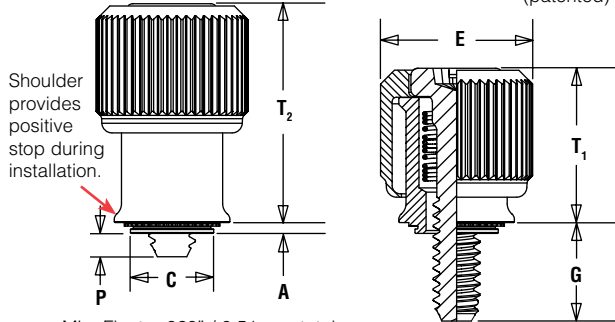
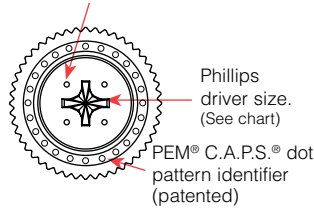


Patented.



Black = B
(Standard)

Dimples on head designate metric thread.



Installation Data page 26. Performance Data page 34.

Threads:

External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽²⁾

Material:

Knob: PC/ABS (UL 94V-0, halogen-free) ⁽³⁾
Retainer: Heat-treated Carbon Steel
Screw: Heat-treated Carbon Steel
Spring: 300 Series Stainless Steel

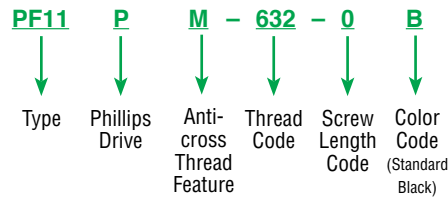
Finish:

Retainer: CN - Bright nickel over copper flash per ASTM B689
Screw: Zinc plated, 5µm, colorless ⁽⁴⁾

For use in sheet hardness:

HRB 80 or less (Hardness Rockwell "B" Scale)
HB 150 or less (Hardness Brinell)

PART NUMBER DESIGNATION



Also available with flare-mounted retainer as Type PF11PMF or with floating style retainer as Type PF11PMW.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +.003 - .000 | C Max. | E ± .010 | G ± .025 | P ± .025 | T ₁ Nom. | T ₂ Nom. | Driver Size | Min. Dist. Hole Φ To Edge |
|------------------|-------------|-------------|-------------|-------------------|----------------|----------------------|---------------------------------|--------|----------|----------|----------|---------------------|---------------------|-------------|---------------------------|
| | | Knurled Cap | | | | | | | | | | | | | |
| .112-40 (#4-40) | PF11PM | 440 | 0 | .036 | .036 | .219 | .218 | .417 | .170 | .000 | .310 | .450 | #2 | .28 | |
| | | | 1 | | | | | | .230 | .060 | | | | | |
| | | | 2 | | | | | | .290 | .120 | | | | | |
| .138-32 (#6-32) | PF11PM | 632 | 0 | .036 | .036 | .250 | .249 | .450 | .230 | .000 | .450 | .640 | #2 | .29 | |
| | | | 1 | | | | | | .290 | .060 | | | | | |
| | | | 2 | | | | | | .350 | .120 | | | | | |
| .164-32 (#8-32) | PF11PM | 832 | 0 | .036 | .036 | .312 | .311 | .514 | .230 | .000 | .450 | .640 | #2 | .33 | |
| | | | 1 | | | | | | .290 | .060 | | | | | |
| | | | 2 | | | | | | .350 | .120 | | | | | |
| .190-32 (#10-32) | PF11PM | 032 | 0 | .036 | .036 | .312 | .311 | .514 | .230 | .000 | .450 | .640 | #2 | .33 | |
| | | | 1 | | | | | | .290 | .060 | | | | | |
| | | | 2 | | | | | | .350 | .120 | | | | | |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet + 0.08 | C Max. | E ± 0.25 | G ± 0.64 | P ± 0.64 | T ₁ Nom. | T ₂ Nom. | Driver Size | Min. Dist. Hole Φ To Edge |
|----------|---------------------|-------------|-------------|-------------------|----------------|----------------------|---------------------------|--------|----------|----------|----------|---------------------|---------------------|-------------|---------------------------|
| | | Knurled Cap | | | | | | | | | | | | | |
| M3 x 0.5 | PF11PM | M3 | 0 | 0.92 | 0.92 | 5.56 | 5.54 | 10.59 | 4.32 | 0 | 7.87 | 11.43 | #2 | 7.11 | |
| | | | 1 | | | | | | 5.84 | 1.52 | | | | | |
| | | | 2 | | | | | | 7.37 | 3.05 | | | | | |
| M4 x 0.7 | PF11PM | M4 | 0 | 0.92 | 0.92 | 7.92 | 7.9 | 13.06 | 5.84 | 0 | 11.43 | 16.26 | #2 | 8.38 | |
| | | | 1 | | | | | | 7.37 | 1.52 | | | | | |
| | | | 2 | | | | | | 8.89 | 3.05 | | | | | |
| M5 x 0.8 | PF11PM | M5 | 0 | 0.92 | 0.92 | 7.92 | 7.9 | 13.06 | 5.84 | 0 | 11.43 | 16.26 | #2 | 8.38 | |
| | | | 1 | | | | | | 7.37 | 1.52 | | | | | |
| | | | 2 | | | | | | 8.89 | 3.05 | | | | | |

(1) The colors shown (except for black) are non-stocked standards and available on special order. Since actual color knob may vary slightly from those represented, we recommend that you request samples for color verification. If you require a custom color or you need a "color matched" knob, please contact us.

(2) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

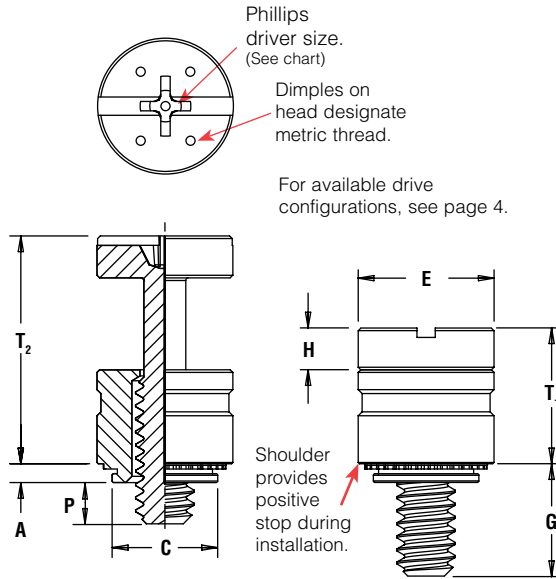
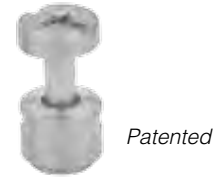
(3) Temperature limit is 210° F / 99° C.

(4) See PEM Technical Support section of our web site (www.pemnet.com) for related plating standards and specifications.



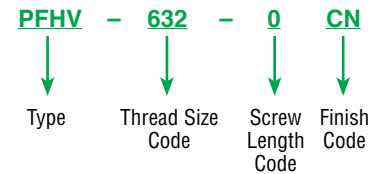
PEM® TYPE PFHV™ CAPTIVE PANEL SCREWS

- Low cost captive screw design to replace loose hardware.
- Small, compact and low profile design for limited access areas.
- Two screw lengths.
- Universal slot/Phillips recess standard.
- Available with MATHread® anti cross-thread technology. (See page 4 for more information).
- Available with Torx® recess.



| |
|--|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾ |
| Material: Retainer: Carbon Steel Screw: Heat-treated Carbon Steel |
| Finish: Retainer: CN - Bright nickel over copper flash per ASTM B689 Screw: CN - Bright nickel over copper flash per ASTM B689 ⁽¹⁾ |
| For use in sheet hardness: HRB 60 or less (Hardness Rockwell "B" Scale) HB 107 or less (Hardness Brinell) |

PART NUMBER DESIGNATION



Installation Data page 27. Performance Data page 34.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet + .003 - .000 | C Max. | E ± .010 | G ± .025 | H ± .005 | P ± .025 | T ₁ Nom. | T ₂ Nom. | Driver Size | Min. Dist. Hole Φ To Edge |
|-----------------|-----------------|------|-------------|-------------------|----------------|----------------------|----------------------------------|--------|----------|----------|----------|----------|---------------------|---------------------|-------------|--------------------------------|
| | .112-40 (#4-40) | PFHV | 440 | 0 | 1 | .036 | .036 | .203 | .202 | .260 | .216 | .080 | .000 | .260 | .436 | #1 |
| | | | | | .316 | | | | | | .095 | | | | | |
| .138-32 (#6-32) | PFHV | 632 | 0 | 1 | .036 | .036 | .219 | .218 | .276 | .234 | .092 | .000 | .290 | .484 | #2 | .23 |
| | | | | | | | | | | .359 | | .120 | | | | |
| .164-32 (#8-32) | PFHV | 832 | 0 | 1 | .036 | .036 | .252 | .251 | .309 | .259 | .111 | .000 | .335 | .555 | #2 | .26 |
| | | | | | | | | | | .371 | | .106 | | | | |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet + 0.08 | C Max. | E ± 0.25 | G ± 0.64 | H ± 0.13 | P ± 0.64 | T ₁ Nom. | T ₂ Nom. | Driver Size | Min. Dist. Hole Φ To Edge |
|------------|---------------------|------|-------------|-------------------|----------------|----------------------|---------------------------|--------|----------|----------|----------|----------|---------------------|---------------------|-------------|--------------------------------|
| | M3 x 0.5 | PFHV | M3 | M3 | 0 | 0.92 | 0.92 | 5.5 | 5.49 | 6.95 | 5.55 | 2.03 | 0 | 6.69 | 11.25 | #1 |
| 1 | | | | | 7.56 | | | | | | 1.9 | | | | | |
| M3.5 x 0.6 | PFHV | M3.5 | M3.5 | 0 | 0.92 | 0.92 | 6 | 5.98 | 7.45 | 6.01 | 2.34 | 0 | 7.45 | 12.47 | #2 | 6.3 |
| | | | | 1 | | | | | | 8.42 | | 2.3 | | | | |
| M4 x 0.7 | PFHV | M4 | M4 | 0 | 0.92 | 0.92 | 6.4 | 6.38 | 7.85 | 6.59 | 2.79 | 0 | 8.5 | 14.1 | #2 | 6.7 |
| | | | | 1 | | | | | | 9.39 | | 2.7 | | | | |

(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

PEM® TYPES PF7M™/PF7MF™ CAPTIVE PANEL SCREWS

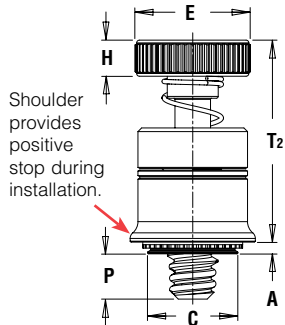
- Small, compact and low-profile design for limited access areas.
- MATHread® anti cross-thread technology. (See page 4 for more information).
- Installs flush on back side of panel.
- Type PF7M Self-clinching mounting design provides high pushout resistance.
- Type PF7M does not require special hole preparation.
- Type PF7MF is appropriate for close centerline-to-edge applications.
- Type PF7MF does not require high installation force.
- Type PF7MF installs into any panel hardness.
- Available with Torx® recess.



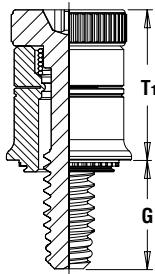
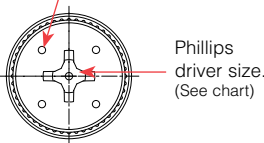
TYPE PF7M™ SELF-CLINCHING CAPTIVE PANEL SCREWS



Patented.



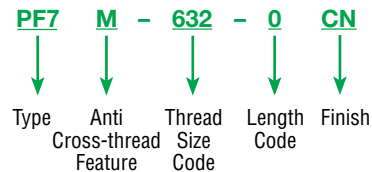
Dimples on head designate metric thread.



NEW!

| |
|---|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾ |
| Material: Retainer: Carbon Steel Screw: Heat-treated Carbon Steel Spring: 300 Series Stainless Steel |
| Finish: Retainer: CN - Bright nickel over copper flash per ASTM B689 Screw: CN - Bright nickel over copper flash per ASTM B689 |
| For use in sheet hardness: HRB 60 or less (Hardness Rockwell "B" Scale) HB 107 or less (Hardness Brinell) |

PART NUMBER DESIGNATION



Installation Data page 28. Performance Data page 35.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +.003 -.000 | C Max. | E ±.010 | H ±.010 | G ±.025 | P ±.025 | T1 Nom. | T2 Nom. | Driver Size | Min. Dist. Hole \varnothing To Edge |
|---------|-----------------|-------------------------|-------------|-------------------|----------------|----------------------|--------------------------------------|--------|---------|---------|---------|---------|---------|---------|-------------|---------------------------------------|
| | | Fastener Material Steel | | | | | | | | | | | | | | |
| | .112-40 (#4-40) | PF7M | 440 | 0 | .036 | .036 | .219 | .218 | .280 | .100 | .210 | .000 | .380 | .550 | #2 | .28 |
| | | | | 1 | | | | | | | .270 | .065 | | | | |
| | .138-32 (#6-32) | PF7M | 632 | 0 | .036 | .036 | .250 | .249 | .310 | .100 | .240 | .000 | .410 | .610 | #2 | .29 |
| | | | | 1 | | | | | | | .300 | .065 | | | | |
| | .164-32 (#8-32) | PF7M | 832 | 0 | .036 | .036 | .312 | .311 | .370 | .120 | .240 | .000 | .430 | .630 | #2 | .33 |
| | | | | 1 | | | | | | | .300 | .065 | | | | |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +0.08 | C Max. | E ±0.25 | H ±0.25 | G ±0.64 | P ±0.64 | T1 Nom. | T2 Nom. | Driver Size | Min. Dist. Hole \varnothing To Edge |
|--------|---------------------|-------------------------|-------------|-------------------|----------------|----------------------|-----------------------------|--------|---------|---------|---------|---------|---------|---------|-------------|---------------------------------------|
| | | Fastener Material Steel | | | | | | | | | | | | | | |
| | M3 x 0.5 | PF7M | M3 | 0 | 0.92 | 0.92 | 5.56 | 5.54 | 7 | 2.5 | 5.33 | 0 | 9.65 | 13.97 | #2 | 7.11 |
| | | | | 1 | | | | | | | 6.86 | 1.65 | | | | |
| | M4 x 0.7 | PF7M | M4 | 0 | 0.92 | 0.92 | 7.92 | 7.9 | 9.4 | 3 | 6.1 | 0 | 10.92 | 16 | #2 | 8.38 |
| | | | | 1 | | | | | | | 7.62 | 1.65 | | | | |

(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

PEM® TYPE PF7M™/PF7MF™ CAPTIVE PANEL SCREWS

TYPE PF7MF™ FLARE-MOUNTED CAPTIVE PANEL SCREWS

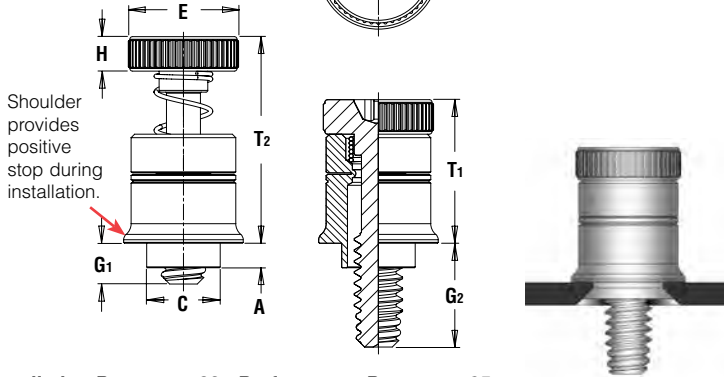


Patented.

Dimples on head designate metric thread.

NEW!

Phillips driver size. (See chart)



Shoulder provides positive stop during installation.

Threads:

External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾

Material:

Retainer: Aluminum
Screw: Heat-treated Carbon Steel
Spring: 300 Series Stainless Steel

Finish:

Retainer: Natural finish
Screw: CN - Bright nickel over copper flash per ASTM B689

PART NUMBER DESIGNATION

PF7 **M** **F** - **632** - **0**

↓ ↓ ↓ ↓ ↓

Type Anti Cross-thread Feature Flaring Thread Size Code Length Code

Installation Data page 28. Performance Data page 35.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +.005 -.000 | C Max. | E ±.010 | H ±.010 | G1 | G2 | T1 Nom. | T2 Nom. | Driver Size |
|---------|--------------------|-------------------------|-------------|-------------------|----------------|----------------------|--------------------------------------|--------|---------|---------|-------|-------|---------|---------|-------------|
| | | Fastener Material Steel | | | | | | | | | ±.025 | ±.025 | | | |
| | .112-40 (#4-40) | PF7MF | 440 | 0 | .041 | .031 | .187 | .186 | .280 | .100 | .040 | .210 | .380 | .550 | #2 |
| | | | | 1 | | | | | | | .100 | .270 | | | |
| | .138-32 (#6-32) | PF7MF | 632 | 0 | .072 | .060 | .213 | .212 | .310 | .100 | .040 | .240 | .410 | .610 | #2 |
| | | | | 1 | | | | | | | .100 | .300 | | | |
| | .164-32 (#8-32) | PF7MF | 832 | 0 | .072 | .060 | .266 | .265 | .370 | .120 | .040 | .240 | .430 | .630 | #2 |
| | | | | 1 | | | | | | | .100 | .300 | | | |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +0.13 | C Max. | E ±0.25 | H ±0.25 | G1 | G2 | T1 Nom. | T2 Nom. | Driver Size |
|--------|---------------------|-------------------------|-------------|-------------------|----------------|----------------------|-----------------------------|--------|---------|---------|-------|-------|---------|---------|-------------|
| | | Fastener Material Steel | | | | | | | | | ±0.64 | ±0.64 | | | |
| | M3 x 0.5 | PF7MF | M3 | 0 | 1.05 | 0.79 | 4.75 | 4.73 | 7 | 2.5 | 1.02 | 5.33 | 9.65 | 13.97 | #2 |
| | | | | 1 | | | | | | | 2.54 | 6.86 | | | |
| | M4 x 0.7 | PF7MF | M4 | 0 | 1.83 | 1.52 | 6.76 | 6.74 | 9.4 | 3 | 1.02 | 6.1 | 10.92 | 16 | #2 |
| | | | | 1 | | | | | | | 2.54 | 7.62 | | | |

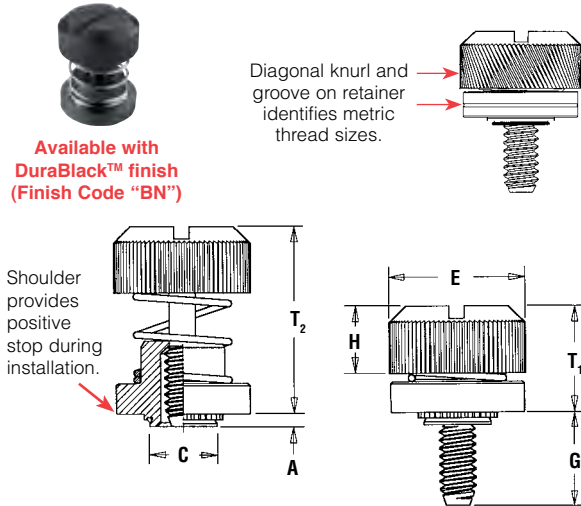
(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

PEM® TYPE PF30™/PF50™/PF60™ CAPTIVE PANEL SCREWS

- Low-profile design satisfies many functional and cosmetic requirements.
- Convenient large head for tool or finger operation.
- Types PF50/PF60 are available with Torx® recess.
- Types PF50/PF60 are available with MAThread® anti cross-thread technology. (See page 4 for more information).



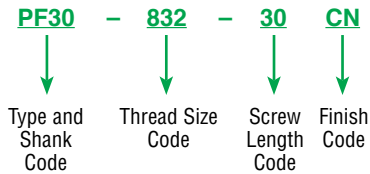
TYPE PF30™ LOW-PROFILE CAPTIVE PANEL SCREWS



Available with DuraBlack™ finish (Finish Code "BN")

| |
|--|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾ |
| Material: Retainer: Carbon Steel Screw: Heat-treated Carbon Steel (#4-40 and M3 sizes only) Carbon Steel (all other sizes) Spring: 300 Series Stainless Steel |
| Finish: Retainer: CN - Bright nickel over copper flash per ASTM B689 Screw: CN - Bright nickel over copper flash per ASTM B689 |
| Optional Finish: Retainer: BN - Black nitride Screw: BN - Black nitride |
| For use in sheet hardness: HRB 60 or less (Hardness Rockwell "B" Scale) HB 107 or less (Hardness Brinell) |

PART NUMBER DESIGNATION



Installation Data page 29. Performance Data page 35.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +.003 - .000 | C Max. | E ±.010 | G ±.015 | H ±.005 | T ₁ Max. | T ₂ Nom. | Min. Dist. Hole ⌀ To Edge |
|------------------|-----------------|------|-------------|-------------------|----------------|----------------------|---------------------------------|--------|---------|---------|---------|---------------------|---------------------|---------------------------|
| | .112-40 (#4-40) | PF30 | 440 | 30 | .030 | .030 | .203 | .202 | .406 | .300 | .202 | .325 | .595 | .26 |
| PF31 | | .038 | | | .040 | | | | | | | | | |
| PF32 | | .058 | | | .060 | | | | | | | | | |
| .138-32 (#6-32) | PF30 | 632 | 30 | .030 | .030 | .219 | .218 | .438 | .300 | .202 | .325 | .595 | .28 | |
| | PF31 | | | .038 | .040 | | | | | | | | | |
| | PF32 | | | .058 | .060 | | | | | | | | | |
| .164-32 (#8-32) | PF30 | 832 | 30 | .030 | .030 | .250 | .249 | .468 | .300 | .207 | .330 | .600 | .29 | |
| | PF31 | | | .038 | .040 | | | | | | | | | |
| | PF32 | | | .058 | .060 | | | | | | | | | |
| .190-32 (#10-32) | PF30 | 032 | 30 | .030 | .030 | .312 | .311 | .530 | .300 | .220 | .335 | .605 | .33 | |
| | PF31 | | | .038 | .040 | | | | | | | | | |
| | PF32 | | | .058 | .060 | | | | | | | | | |
| .250-20 (1/4-20) | PF32 | 0420 | 35 | .058 | .060 | .375 | .374 | .625 | .350 | .242 | .385 | .675 | .38 | |

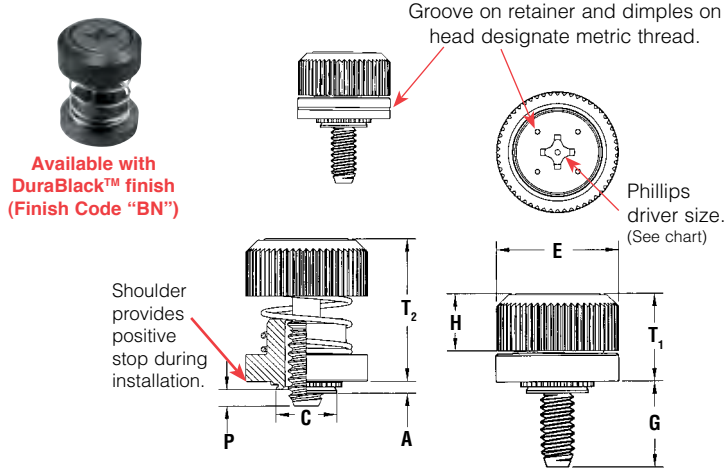
All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet + 0.08 | C Max. | E ±0.25 | G ± 0.4 | H ± 0.13 | T ₁ Max. | T ₂ Nom. | Min. Dist. Hole ⌀ To Edge |
|----------|---------------------|------|-------------|-------------------|----------------|----------------------|---------------------------|--------|---------|---------|----------|---------------------|---------------------|---------------------------|
| | M3 x 0.5 | PF31 | M3 | 30 | 0.97 | 1 | 5.5 | 5.48 | 10.31 | 7.62 | 5.13 | 8.26 | 15.11 | 6.6 |
| PF32 | | 1.48 | | | 1.5 | | | | | | | | | |
| M4 x 0.7 | PF31 | M4 | 30 | 0.97 | 1 | 6.4 | 6.38 | 11.89 | 7.62 | 5.26 | 8.38 | 15.24 | 7.37 | |
| | PF32 | | | 1.48 | 1.5 | | | | | | | | | |
| M5 x 0.8 | PF31 | M5 | 30 | 0.97 | 1 | 8 | 7.98 | 13.46 | 7.62 | 5.59 | 8.51 | 15.37 | 8.38 | |
| | PF32 | | | 1.48 | 1.5 | | | | | | | | | |
| M6 x 1 | PF32 | M6 | 35 | 1.48 | 1.5 | 9.5 | 9.48 | 15.88 | 8.89 | 6.12 | 9.78 | 17.15 | 9.65 | |

(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

PEM® TYPE PF30™/PF50™/PF60™ CAPTIVE PANEL SCREWS

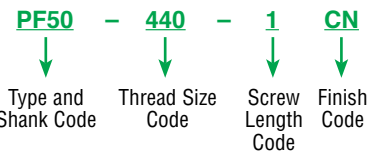
TYPE PF50™ AND PF60™ LOW-PROFILE CAPTIVE PANEL SCREWS



Available with DuraBlack™ finish (Finish Code "BN")

| |
|---|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g (1) |
| Material: Knob: Carbon Steel Retainer: Carbon Steel Screw: Carbon Steel Spring: 300 Series Stainless Steel |
| Finish: Knob: CN - Bright nickel over copper flash per ASTM B689 Retainer: CN - Bright nickel over copper flash per ASTM B689 Screw: CN - Bright nickel over copper flash per ASTM B689 |
| Optional Finish: Knob: BN - Black Nitride Retainer: BN - Black Nitride Screw: BN - Black Nitride |
| For use in sheet hardness: HRB 60 or less (Hardness Rockwell "B" Scale) HB 107 or less (Hardness Brinell) |

PART NUMBER DESIGNATION



Installation Data page 29. Performance Data page 36.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +.003 -.000 | C Max. | E +.015 -.005 | G ±.025 | H ±.008 | P ±.025 | T ₁ Max. | T ₂ Nom. | Driver Size | Min. Dist Hole To Edge |
|------------------|-----------------|-------------|------------|-------------|-------------------|----------------|----------------------|--------------------------------|--------|---------------|------------|--------------|--------------|---------------------|---------------------|-------------|------------------------|
| | | Knurled Cap | Smooth Cap | | | | | | | | | | | | | | |
| | .112-40 (#4-40) | PF50 | PF60 | 440 | 0 1 | .030 | .030 | .203 | .202 | .406 | 230 290 | .207 | .000 .060 | .340 | .520 | #1 | .26 |
| | | PF51 | PF61 | 440 | 0 1 | .038 | .040 | .203 | .202 | .406 | 230 290 | .207 | .000 .052 | .340 | .520 | #1 | .26 |
| | | PF52 | PF62 | 440 | 0 1 | .058 | .060 | .203 | .202 | .406 | 230 290 | .207 | .000 .032 | .340 | .520 | #1 | .26 |
| | .138-32 (#6-32) | PF50 | PF60 | 632 | 0 1 | .030 | .030 | .219 | .218 | .438 | 230 290 | .207 | .000 .060 | .340 | .520 | #2 | .28 |
| | | PF51 | PF61 | 632 | 0 1 | .038 | .040 | .219 | .218 | .438 | 230 290 | .207 | .000 .052 | .340 | .520 | #2 | .28 |
| | | PF52 | PF62 | 632 | 0 1 | .058 | .060 | .219 | .218 | .438 | 230 290 | .207 | .000 .032 | .340 | .520 | #2 | .28 |
| | .164-32 (#8-32) | PF50 | PF60 | 832 | 0 1 | .030 | .030 | .250 | .249 | .468 | 230 290 | .217 | .000 .060 | .340 | .520 | #2 | .29 |
| | | PF51 | PF61 | 832 | 0 1 | .038 | .040 | .250 | .249 | .468 | 230 290 | .217 | .000 .052 | .340 | .520 | #2 | .29 |
| | | PF52 | PF62 | 832 | 0 1 | .058 | .060 | .250 | .249 | .468 | 230 290 | .217 | .000 .032 | .340 | .520 | #2 | .29 |
| .190-32 (#10-32) | PF50 | PF60 | 032 | 0 1 | .030 | .030 | .312 | .311 | .530 | 230 290 | .225 | .000 .060 | .340 | .530 | #2 | .33 | |
| | PF51 | PF61 | 032 | 0 1 | .038 | .040 | .312 | .311 | .530 | 230 290 | .225 | .000 .052 | .340 | .530 | #2 | .33 | |
| | PF52 | PF62 | 032 | 0 1 | .058 | .060 | .312 | .311 | .530 | 230 290 | .225 | .000 .032 | .340 | .530 | #2 | .33 | |
| .250-20 (1/4-20) | PF52 | PF62 | 0420 | 0 1 | .058 | .060 | .375 | .374 | .625 | 280 340 | .246 | .000 .060 | .395 | .600 | #2 | .38 | |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet + 0.08 | C Max. | E +0.4 -0.13 | G ±0.64 | H ±0.2 | P ±0.64 | T ₁ Max. | T ₂ Nom. | Driver Size | Min. Dist Hole To Edge |
|----------|---------------------|-------------|------------|-------------|-------------------|----------------|----------------------|---------------------------|--------|--------------|--------------|-----------|-----------|---------------------|---------------------|-------------|------------------------|
| | | Knurled Cap | Smooth Cap | | | | | | | | | | | | | | |
| | M3 x 0.5 | PF50 | PF60 | M3 | 0 1 | 0.77 | 0.8 | 5.5 | 5.48 | 10.3 | 5.84 7.37 | 5.26 | 0 1.52 | 8.64 | 13.21 | #1 | 6.6 |
| | | PF51 | PF61 | M3 | 0 1 | 0.97 | 1 | 5.5 | 5.48 | 10.3 | 5.84 7.37 | 5.26 | 0 1.32 | 8.64 | 13.21 | #1 | 6.6 |
| | | PF52 | PF62 | M3 | 0 1 | 1.48 | 1.5 | 5.5 | 5.48 | 10.3 | 5.84 7.37 | 5.26 | 0 0.81 | 8.64 | 13.21 | #1 | 6.6 |
| | M3.5 x 0.6 | PF50 | PF60 | M3.5 | 0 1 | 0.77 | 0.8 | 5.56 | 5.54 | 11.1 | 5.84 7.37 | 5.26 | 0 1.52 | 8.64 | 13.21 | #2 | 7.1 |
| | | PF51 | PF61 | M3.5 | 0 1 | 0.97 | 1 | 5.56 | 5.54 | 11.1 | 5.84 7.37 | 5.26 | 0 1.32 | 8.64 | 13.21 | #2 | 7.1 |
| | | PF52 | PF62 | M3.5 | 0 1 | 1.48 | 1.5 | 5.56 | 5.54 | 11.1 | 5.84 7.37 | 5.26 | 0 0.81 | 8.64 | 13.21 | #2 | 7.1 |
| | M4 x 0.7 | PF50 | PF60 | M4 | 0 1 | 0.77 | 0.8 | 6.4 | 6.38 | 11.9 | 5.84 7.37 | 5.51 | 0 1.52 | 8.64 | 13.46 | #2 | 7.4 |
| | | PF51 | PF61 | M4 | 0 1 | 0.97 | 1 | 6.4 | 6.38 | 11.9 | 5.84 7.37 | 5.51 | 0 1.32 | 8.64 | 13.46 | #2 | 7.4 |
| | | PF52 | PF62 | M4 | 0 1 | 1.48 | 1.5 | 6.4 | 6.38 | 11.9 | 5.84 7.37 | 5.51 | 0 0.81 | 8.64 | 13.46 | #2 | 7.4 |
| M5 x 0.8 | PF50 | PF60 | M5 | 0 1 | 0.77 | 0.8 | 8 | 7.98 | 13.5 | 5.84 7.37 | 5.72 | 0 1.52 | 8.64 | 13.46 | #2 | 8.4 | |
| | PF51 | PF61 | M5 | 0 1 | 0.97 | 1 | 8 | 7.98 | 13.5 | 5.84 7.37 | 5.72 | 0 1.32 | 8.64 | 13.46 | #2 | 8.4 | |
| | PF52 | PF62 | M5 | 0 1 | 1.48 | 1.5 | 8 | 7.98 | 13.5 | 5.84 7.37 | 5.72 | 0 0.81 | 8.64 | 13.46 | #2 | 8.4 | |
| M6 x 1 | PF52 | PF62 | M6 | 0 1 | 1.48 | 1.5 | 9.5 | 9.48 | 15.9 | 7.11 8.64 | 6.25 | 0 1.52 | 10.04 | 15.24 | #2 | 9.7 | |

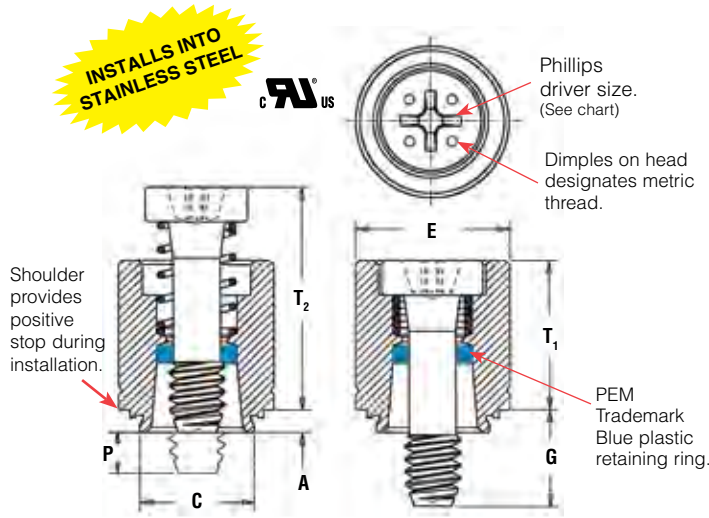
(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

PEM® TYPES PFC4™/PFC2P™ CAPTIVE PANEL SCREWS

- Types PFC4/PFC2P have fully concealed-head for tool only access.
- Types PFC4/PFC2P comply with UL 60950 standards.
- Type PFC4 installs into stainless steel sheets HRB 88 or less.
- Types PFC4/PFC2P are available with MATHread® anti cross-thread technology. (See page 4 for more information).
- Types PFC4/PFC2P available with Torx® recess.



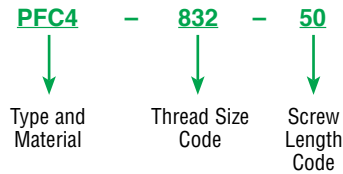
TYPE PFC4™ RECESSED-HEAD CAPTIVE PANEL SCREWS



Installation Data page 30. Performance Data page 36.

| |
|--|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g |
| Material: Retainer: 400 Series Stainless Steel Screw: 400 Series Stainless Steel Spring: 300 Series Stainless Steel Retaining Ring: Nylon, temperature limit 200° F / 93° C |
| Finish: Retainer: Passivated and/or tested per ASTM A380 Screw: Passivated and/or tested per ASTM A380 |
| For use in sheet hardness: HRB 88 or less (Hardness Rockwell "B" Scale) HB 183 or less (Hardness Brinell) |

PART NUMBER DESIGNATION



All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +.003 - .000 | C Max. | E ± .010 | G ± .016 | P ± .025 | T ₁ Max. | T ₂ Nom. | Driver Size | Min. Dist. Hole \varnothing To Edge | |
|------------------|-----------------|------|-------------|-------------------|----------------|----------------------|---------------------------------|--------|----------|----------|----------|---------------------|---------------------|-------------|---------------------------------------|------|
| | .112-40 (#4-40) | PFC4 | 440 | 40 | .060 | .060 | .265 | .264 | .344 | .250 | .000 | .370 | .540 | #1 | .25 | |
| 62 | | | | .375 | | | | | | | | | | | | .125 |
| .138-32 (#6-32) | PFC4 | 632 | 40 | .060 | .060 | .281 | .280 | .375 | .250 | .000 | .380 | .540 | #2 | .28 | | |
| | | | 62 | | | | | | | | | | | | .375 | .125 |
| | | | 84 | | | | | | | | | | | | .500 | .250 |
| .164-32 (#8-32) | PFC4 | 832 | 50 | .060 | .060 | .312 | .311 | .406 | .312 | .000 | .480 | .705 | #2 | .31 | | |
| | | | 72 | | | | | | | | | | | | .437 | .125 |
| | | | 94 | | | | | | | | | | | | .562 | .250 |
| .190-32 (#10-32) | PFC4 | 032 | 50 | .060 | .060 | .344 | .343 | .437 | .312 | .000 | .490 | .705 | #2 | .34 | | |
| | | | 72 | | | | | | | | | | | | .437 | .125 |
| | | | 94 | | | | | | | | | | | | .562 | .250 |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet + 0.08 | C Max. | E ± 0.25 | G ± 0.4 | P ± 0.64 | T ₁ Max. | T ₂ Nom. | Driver Size | Min. Dist. Hole \varnothing To Edge | |
|----------|---------------------|------|-------------|-------------------|----------------|----------------------|---------------------------|--------|----------|---------|----------|---------------------|---------------------|-------------|---------------------------------------|-----|
| | M3 x 0.5 | PFC4 | M3 | 40 | 1.53 | 1.53 | 6.73 | 6.71 | 8.74 | 6.4 | 0 | 9.4 | 13.72 | #1 | 6.35 | |
| 62 | | | | 9.5 | | | | | | | | | | | | 3.2 |
| M4 x 0.7 | PFC4 | M4 | 50 | 1.53 | 1.53 | 7.92 | 7.9 | 10.31 | 7.9 | 0 | 12.19 | 17.91 | #2 | 7.87 | | |
| | | | 72 | | | | | | | | | | | | 11.1 | 3.2 |
| | | | 94 | | | | | | | | | | | | 14.3 | 6.4 |
| M5 x 0.8 | PFC4 | M5 | 50 | 1.53 | 1.53 | 8.74 | 8.72 | 11.1 | 7.9 | 0 | 12.45 | 17.91 | #2 | 8.63 | | |
| | | | 72 | | | | | | | | | | | | 11.1 | 3.2 |
| | | | 94 | | | | | | | | | | | | 14.3 | 6.4 |

PEM® TYPES PFC2/PFS2 CAPTIVE PANEL SCREWS

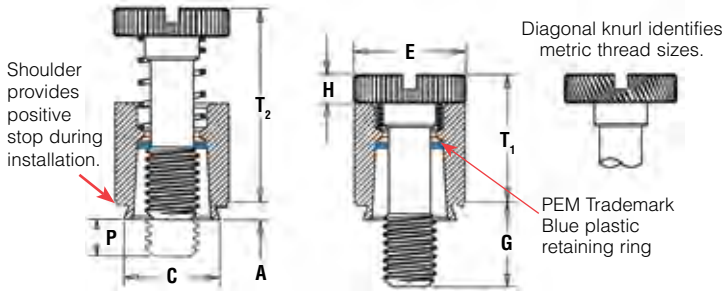
- Types PFC2/PFS2 are for tool or finger operation.



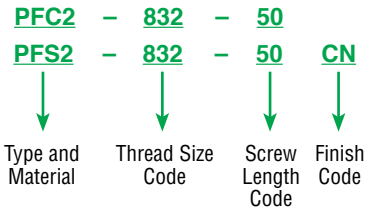
Type PFC2/PFS2

Available with DuraBlack™ finish (Finish Code "BN")

| TYPE PFC2 | TYPE PFS2 |
|---|--|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g | Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾ |
| Material: Retainer: 300 Series Stainless Steel ⁽²⁾ Screw: 300 Series Stainless Steel Spring: 300 Series Stainless Steel Retaining Ring: Nylon, temperature limit 200° F / 93° C | Material: Retainer: Heat-treated Carbon Steel ⁽²⁾ Screw: Carbon Steel Spring: 300 Series Stainless Steel Retaining Ring: Nylon, temperature limit 200° F / 93° C |
| Finish: Retainer: Passivated and/or tested per ASTM A380 Screw: Passivated and/or tested per ASTM A380 | Finish: Retainer: CN - Bright nickel over copper flash per ASTM B689 Screw: CN - Bright nickel over copper flash per ASTM B689 |
| Optional Finish: Retainer: BN - Black nitride Screw: BN - Black nitride | Optional Finish: Retainer: BN - Black nitride Screw: BN - Black nitride |
| For use in sheet hardness: HRB 70 or less (Hardness Rockwell "B" Scale) HB 125 or less (Hardness Brinell) | For use in sheet hardness: HRB 80 or less (Hardness Rockwell "B" Scale) HB 150 or less (Hardness Brinell) |



PART NUMBER DESIGNATION



Installation Data page 31. Performance Data page 36.

All dimensions are in inches.

| UNIFIED | Thread Size | Type | | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet + .003 - .000 | C Max. | E ± .010 | G ± .016 | H ± .005 | P ± .025 | T ₁ Max. | T ₂ Nom. | Min. Dist. Hole \varnothing To Edge | |
|------------------|-------------|-----------------|-------|-------------|-------------------|----------------|----------------------|----------------------------------|--------|----------|----------|----------|----------|---------------------|---------------------|---------------------------------------|------|
| | | Stainless Steel | Steel | | | | | | | | | | | | | | |
| .112-40 (#4-40) | PFC2 | PFS2 | 440 | 40 | .060 | .060 | .265 | .264 | .312 | .250 | .072 | .000 | .360 | .540 | .25 | | |
| | | | | | | | | | | | | | | | | .375 | .125 |
| .138-32 (#6-32) | PFC2 | PFS2 | 632 | 40 | .060 | .060 | .281 | .280 | .344 | .250 | .072 | .000 | .360 | .540 | .28 | | |
| | | | | | | | | | | | | | | | | .375 | .125 |
| | | | | | | | | | | | | | | | | .500 | .250 |
| .164-32 (#8-32) | PFC2 | PFS2 | 832 | 50 | .060 | .060 | .312 | .311 | .375 | .312 | .082 | .000 | .450 | .690 | .31 | | |
| | | | | | | | | | | | | | | | | .437 | .125 |
| | | | | | | | | | | | | | | | | .562 | .250 |
| .190-32 (#10-32) | PFC2 | PFS2 | 032 | 50 | .060 | .060 | .344 | .343 | .406 | .312 | .082 | .000 | .450 | .690 | .34 | | |
| | | | | | | | | | | | | | | | | .437 | .125 |
| | | | | | | | | | | | | | | | | .562 | .250 |
| .250-20 (1/4-20) | PFC2 | PFS2 | 0420 | 60 | .060 | .060 | .413 | .412 | .468 | .375 | .097 | .000 | .580 | .880 | .38 | | |
| | | | | | | | | | | | | | | | | .500 | .125 |
| | | | | | | | | | | | | | | | | .625 | .250 |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet + 0.08 | C Max. | E ± .25 | G ± 0.4 | H ± 0.13 | P ± 0.64 | T ₁ Max. | T ₂ Nom. | Min. Dist. Hole \varnothing To Edge | |
|----------|---------------------|-----------------|-------|-------------|-------------------|----------------|----------------------|---------------------------|--------|---------|---------|----------|----------|---------------------|---------------------|---------------------------------------|-----|
| | | Stainless Steel | Steel | | | | | | | | | | | | | | |
| M3 x 0.5 | PFC2 | PFS2 | M3 | 40 | 1.53 | 1.53 | 6.73 | 6.71 | 7.92 | 6.4 | 1.83 | 0 | 9.14 | 13.72 | 6.35 | | |
| | | | | | | | | | | | | | | | | 9.5 | 3.2 |
| M4 x 0.7 | PFC2 | PFS2 | M4 | 50 | 1.53 | 1.53 | 7.92 | 7.9 | 9.53 | 7.9 | 2.08 | 0 | 11.43 | 17.53 | 7.87 | | |
| | | | | | | | | | | | | | | | | 11.1 | 3.2 |
| | | | | | | | | | | | | | | | | 14.3 | 6.4 |
| M5 x 0.8 | PFC2 | PFS2 | M5 | 50 | 1.53 | 1.53 | 8.74 | 8.72 | 10.31 | 7.9 | 2.08 | 0 | 11.47 | 17.53 | 8.63 | | |
| | | | | | | | | | | | | | | | | 11.1 | 3.2 |
| | | | | | | | | | | | | | | | | 14.3 | 6.4 |
| M6 x 1 | PFC2 | PFS2 | M6 | 60 | 1.53 | 1.53 | 10.49 | 10.47 | 11.89 | 9.5 | 2.46 | 0 | 14.73 | 22.35 | 9.65 | | |
| | | | | | | | | | | | | | | | | 12.7 | 3.2 |
| | | | | | | | | | | | | | | | | 15.9 | 6.4 |

(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

(2) The blue plastic retaining rings are a PEM trademark. The temperature limit is 200° F / 93° C.

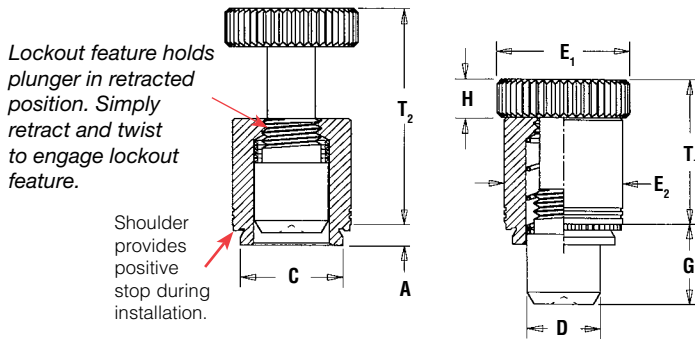
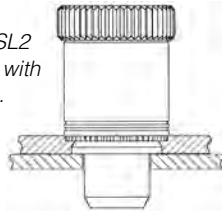


PEM® TYPES PTL2/PSL2 SPRING-LOADED PLUNGER ASSEMBLIES

- Used as positioning pins for sliding components such as drawer slides and equipment consoles.
- Fast installation and removal of components.
- Reverse side of sheet is flush when plunger is retracted.
- Type PTL2 has quick lockout feature to hold plunger in fully retracted position.
- For use in sheets of HRB 80 or less.
- Available as Type PSL2 without lockout feature on special order.

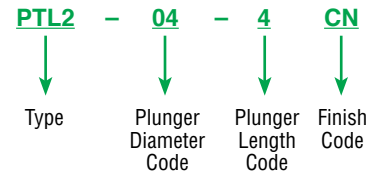


Type PTL2/PSL2 installed and with mating panel.



| |
|---|
| Material: Plunger: Heat-treated Carbon Steel Retainer: Heat-treated Carbon Steel |
| Finish: Plunger: CN - Bright nickel over copper flash per ASTM B689 Retainer: CN - Bright nickel over copper flash per ASTM B689 |
| For use in sheet hardness: HRB 80 or less (Hardness Rockwell "B" Scale) HB 150 or less (Hardness Brinell) |

PART NUMBER DESIGNATION



Installation Data page 31. Performance Data page 36.

All dimensions are in inches.

| UNIFIED | Type | Plunger Diameter Code | Plunger Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +.003 -.000 | C Max. | D +.000 -.005 | E ₁ ± .010 | E ₂ ± .010 | G ± .010 | H ± .010 | T ₁ ± .010 | T ₂ Nom. | Min. Dist. Hole \varnothing To Edge |
|----------|------|-----------------------|---------------------|----------------|----------------------|--------------------------------|--------|---------------|-----------------------|-----------------------|----------|----------|-----------------------|---------------------|---------------------------------------|
| | PTL2 | 04 | 4 | .058 | .060 | .328 | .327 | .250 | .50 | .406 | .310 | .17 | .595 | .895 | .34 |
| PSL2 (1) | 04 | 4 | .058 | .060 | .328 | .327 | .250 | .50 | .406 | .310 | .17 | .510 | .780 | .34 | |

All dimensions are in millimeters.

| METRIC | Type | Plunger Diameter Code | Plunger Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet + 0.08 | C Max. | D - 0.13 | E ₁ ± 0.25 | E ₂ ± 0.25 | G ± 0.25 | H ± 0.25 | T ₁ ± 0.25 | T ₂ Nom. | Min. Dist. Hole \varnothing To Edge |
|----------|------|-----------------------|---------------------|----------------|----------------------|---------------------------|--------|----------|-----------------------|-----------------------|----------|----------|-----------------------|---------------------|---------------------------------------|
| | PTL2 | 04 | 4 | 1.47 | 1.53 | 8.33 | 8.31 | 6.35 | 12.7 | 10.3 | 7.87 | 4.32 | 15.11 | 22.73 | 8.64 |
| PSL2 (1) | 04 | 4 | 1.47 | 1.53 | 8.33 | 8.31 | 6.35 | 12.7 | 10.3 | 7.87 | 4.32 | 12.95 | 19.81 | 8.64 | |

(1) Without lockout feature. Available on special order.

PEM® TYPES SCBR™/SCB™/SCBJ™ CAPTIVE PANEL SCREWS

- Permanently captivates into sheets as thin as .040" / 1.02 mm and greater.
- Lowest cost captive screw design to replace loose hardware.
- Available with self-retracting (Type SCBR), axial float (Type SCB), or jacking feature (Type SCBJ).
- Appropriate for close centerline-to-edge applications.



Type SCBR

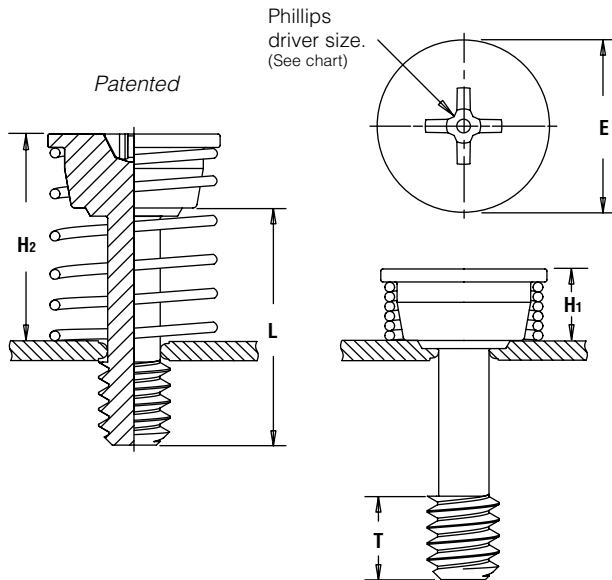


Type SCB



Type SCBJ

TYPE SCBR™ SPINNING CLINCH BOLT WITH SELF-RETRACTING FEATURE



Type SCBR retracted



Type SCBR engaged



| | |
|-----------------------------------|---|
| Threads: | External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾ |
| Material: | Screw - Heat-treated Carbon Steel Spring - 300 series stainless steel |
| Finish: | Screw - ZI - Zinc plated, 5µm, colorless (standard) ⁽²⁾ |
| For use in sheet hardness: | HRB 80 or less (Hardness Rockwell "B" Scale) HB 150 or less (Hardness Brinell) |

PART NUMBER DESIGNATION

SCBR - 632 - 8 ZI

↓ ↓ ↓ ↓

Type Thread Size Code Length Code Finish

Installation Data page 32. Performance Data page 37.

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 | Hole Size in Sheet +.003 - .000 | E | | H ₁ ±.005 | H ₂ Ref. | T Nom. | Driver Size | Min. Dist Hole Φ To Edge |
|---------|-----------------|------|-------------|--|----------------------|------------------------------------|-------|-------|----------------------|---------------------|--------|-------------|-------------------------------|
| | | | | .500 | | | +.005 | -.010 | | | | | |
| | .112-40 (#4-40) | SCBR | 440 | 8 | .040 | .112 | .348 | .165 | .495 | .130 | #1 | .175 | |
| | .138-32 (#6-32) | SCBR | 632 | 8 | .040 | .138 | .381 | .170 | .500 | .130 | #2 | .190 | |
| | .164-32 (#8-32) | SCBR | 832 | 8 | .040 | .164 | .410 | .175 | .505 | .130 | #2 | .205 | |

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 | Hole Size in Sheet +0.08 | E | | H ₁ ±0.13 | H ₂ Ref. | T Nom. | Driver Size | Min. Dist Hole Φ To Edge |
|--------|---------------------|------|-------------|--|----------------------|-----------------------------|-------|-------|----------------------|---------------------|--------|-------------|-------------------------------|
| | | | | | | | +0.13 | -0.25 | | | | | |
| | M3 x 0.5 | SCBR | M3 | 12 | 1.02 | 3 | 9.1 | 4.2 | 11.8 | 3.3 | #1 | 4.5 | |
| | M4 x 0.7 | SCBR | M4 | 12 | 1.02 | 4 | 10.7 | 4.5 | 12.1 | 3.3 | #2 | 5.4 | |

(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

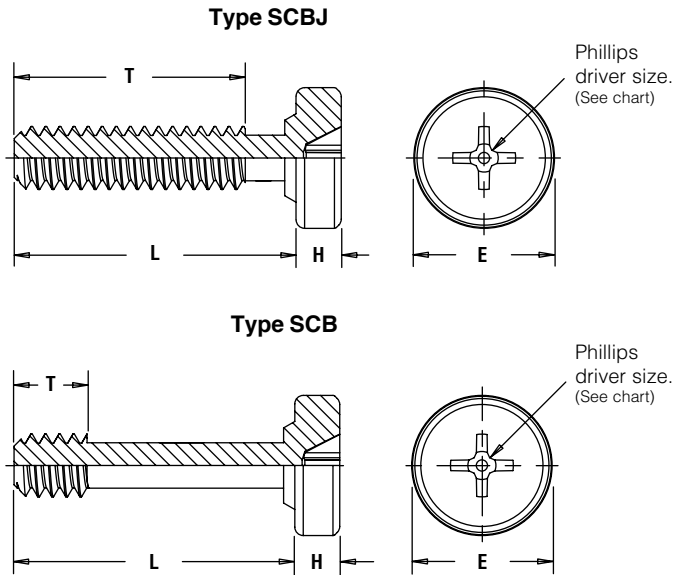
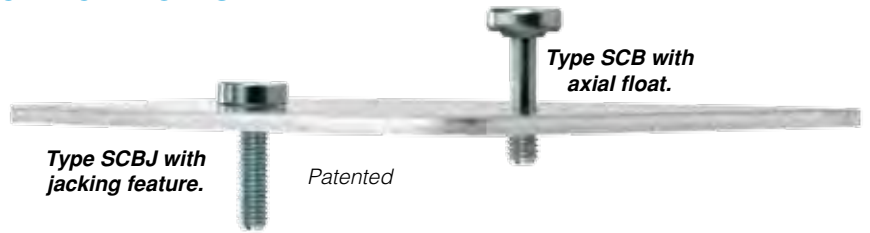
(2) See PEM Technical Support section of our web site (www.pemnet.com) for related plating standards and specifications.

NOTE: Type SCBR screws are shipped with mating springs.

For designs requiring a specific spring rate, contact our PEM Technical Support group at techsupport@pemnet.com.

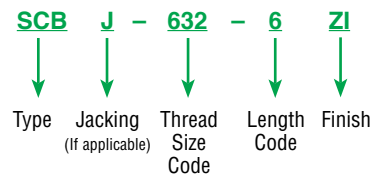
PEM® TYPES SCBR™/SCB™/SCBJ™ CAPTIVE PANEL SCREWS

TYPES SCB™/SCBJ™ SPINNING CLINCH BOLTS



| | |
|-----------------------------------|---|
| Threads: | External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾ |
| Material: | Heat-treated Carbon Steel |
| Finish: | ZI - Zinc plated, 5µm, colorless (standard) ⁽²⁾ |
| For use in sheet hardness: | HRB 80 or less (Hardness Rockwell "B" Scale) HB 150 or less (Hardness Brinell) |

PART NUMBER DESIGNATION



Installation Data page 32. Performance Data page 37.

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 | Hole Size in Sheet +.003 -.000 | E ±.010 | H Nom. | T Nom. | | | Nom. Axial Float | Driver Size | Min. Dist. Hole \varnothing To Edge |
|---------|--------------------|---------|-------------|-------------|--|------|------|----------------------|-----------------------------------|------------|-----------|-----------|------|------|------------------|-------------|---------------------------------------|
| | | Jacking | Non-jacking | | .250 | .375 | .500 | | | | | -4 | -6 | -8 | | | |
| | | | | | | | | | | | | | | | | | |
| | .112-40 (#4-40) | SCBJ | — | 440 | 4 | 6 | 8 | .040 | .112 | .250 | .080 | .160 | .285 | .410 | NA | #1 | .13 |
| | | — | SCB | | NA | NA | 8 | | | | | NA | NA | .130 | | | |
| | .138-32 (#6-32) | SCBJ | — | 632 | 4 | 6 | 8 | .040 | .138 | .291 | .080 | .160 | .285 | .410 | NA | #2 | .15 |
| | | — | SCB | | NA | NA | 8 | | | | | NA | NA | .130 | | | |

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 | Hole Size in Sheet +0.08 | E ±0.25 | H Nom. | T Nom. | | | | Nom. Axial Float | Driver Size | Min. Dist. Hole \varnothing To Edge |
|--------|---------------------|---------|-------------|-------------|--|-----|-----|-----|----------------------|-----------------------------|------------|-----------|-----------|-----|-----|------|------------------|-------------|---------------------------------------|
| | | Jacking | Non-jacking | | -6 | -10 | -12 | -14 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | M3 x 0.5 | SCBJ | — | M3 | 6 | 10 | 12 | 14 | 1.02 | 3 | 6.6 | 2.03 | 3.7 | 7.7 | 9.7 | 11.7 | NA | #1 | 3.3 |
| | | — | SCB | | NA | NA | 12 | 14 | | | | | NA | NA | 3.3 | 5.3 | | | |
| | M4 x 0.7 | SCBJ | — | M4 | 6 | 10 | 12 | 14 | 1.02 | 4 | 8.28 | 2.03 | 3.7 | 7.7 | 9.7 | 11.7 | NA | #2 | 5 |
| | | — | SCB | | NA | NA | 12 | 14 | | | | | NA | NA | 3.3 | 5.3 | | | |

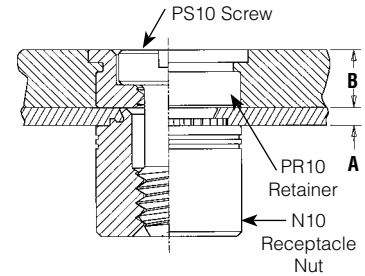
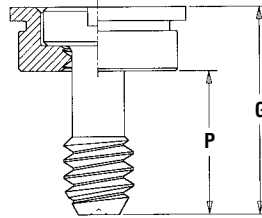
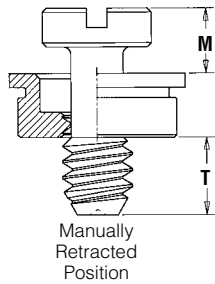
(1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.

(2) See PEM Technical Support section of our web site for related plating standards and specifications.

NA - Not Available.

PEM® TYPE PF10 FLUSH-MOUNTED CAPTIVE PANEL SCREWS

- Type PS10 screw head is flush in sheets as thin as .125" / 3.2 mm.
- Type PS10 screw remains captive in retainer when disengaged.
- Type PR10 retainer and F10 receptacle nut is for use in sheets of HRB 70 or less.
- Type N10 nut is for use in sheets of HRB 80 or less.
- Complies with UL 60950 standards.



Installation Data page 33. Performance Data page 37-38.

All dimensions are in inches.

| UNIFIED | A | B | G | M | P | T |
|---------|------|------|--------|-----|-----|------|
| | Min. | Nom. | ± .010 | | | Nom. |
| | .04 | .125 | .40 | .16 | .28 | .13 |

All dimensions are in millimeters.

| METRIC | A | B | G | M | P | T |
|--------|------|------|--------|------|------|------|
| | Min. | Nom. | ± 0.25 | | | Nom. |
| | 1 | 3.18 | 10.16 | 4.06 | 7.11 | 3.3 |

Floating Receptacle Nuts



Available on special order Type F10 self-clinching floating receptacle nuts permit a minimum of .015"/0.38mm adjustment for mating hole misalignment.

Type F Fasteners as retainers

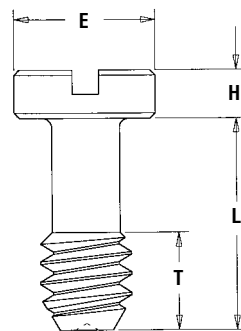


For applications where the screw head may project above the sheet surface, PS10 screws may be used with PEMSERT® Type F fasteners as retainers. For dimensions and engineering data on Type F fasteners, see PEM Bulletin F.

PS10 FLUSH MOUNTED SCREWS



Diagonal knurl identifies metric thread sizes.



Threads:

External, ASME B1.1, 2A / ASME B1.13M, 6g

Material:

300 Series Stainless Steel

Finish:

Passivated and/or tested per ASTM A380

PART NUMBER DESIGNATION

PS10

832

40

Type and Material

Thread Size Code

Screw Length Code

All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | Screw Length Code | E | H | L | T |
|---------|------------------|------|-------------|-------------------|------|------------------|--------|------|
| | | | | | Nom. | + .002 - .006 | ± .010 | Nom. |
| | .112-40 (#4-40) | PS10 | 440 | 40 | .18 | .075 | .33 | .13 |
| | .138-32 (#6-32) | PS10 | 632 | 40 | .21 | .075 | .33 | .13 |
| | .164-32 (#8-32) | PS10 | 832 | 40 | .25 | .075 | .33 | .13 |
| | .190-32 (#10-32) | PS10 | 032 | 40 | .28 | .075 | .33 | .13 |

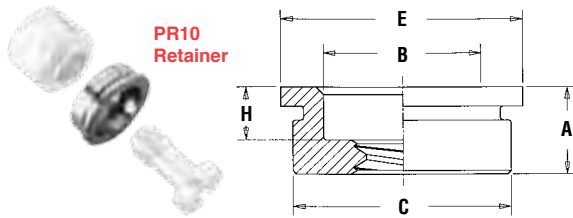
All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Screw Length Code | E | H | L | T |
|--------|---------------------|------|-------------|-------------------|------|------------------|--------|------|
| | | | | | Nom. | + 0.05 - 0.15 | ± 0.25 | Nom. |
| | M3 x 0.5 | PS10 | M3 | 40 | 4.7 | 1.91 | 8.38 | 3.3 |
| | M4 x 0.7 | PS10 | M4 | 40 | 6.3 | 1.91 | 8.38 | 3.3 |
| | M5 x 0.8 | PS10 | M5 | 40 | 7.1 | 1.91 | 8.38 | 3.3 |



PEM® TYPE PF10 FLUSH-MOUNTED CAPTIVE PANEL SCREWS

PR10 SELF-CLINCHING FLUSH-MOUNTED RETAINERS



PART NUMBER DESIGNATION

PR10 - 832
 ↓ ↓
 Type Thread Size Code

| |
|--|
| Threads: Internal, ASME B1.1, 2B / ASME B1.13M, 6H ⁽¹⁾ |
| Material: 300 Series Stainless Steel |
| Finish: Passivated and/or tested per ASTM A380 |
| For use in sheet hardness: HRB 70 or less (Hardness Rockwell "B" Scale) HB 125 or less (Hardness Brinell) |

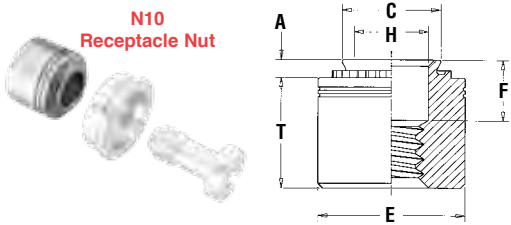
All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | A (Shank) Max. | Min. Sheet for Self-Clinching | Min. Sheet for Flush Installation | Hole Size in Sheet + .003 - .000 | B Nom. | C Max. | E Nom. | H Nom. | Min. Dist. Hole \varnothing to Edge |
|---------|------------------|------|-------------|----------------|-------------------------------|-----------------------------------|----------------------------------|--------|--------|--------|--------|---------------------------------------|
| | .112-40 (#4-40) | PR10 | 440 | .125 | .050 | .125 | .281 | .195 | .280 | .31 | .075 | .31 |
| | .138-32 (#6-32) | PR10 | 632 | .125 | .050 | .125 | .312 | .225 | .311 | .34 | .075 | .33 |
| | .164-32 (#8-32) | PR10 | 832 | .125 | .050 | .125 | .344 | .255 | .343 | .37 | .075 | .34 |
| | .190-32 (#10-32) | PR10 | 032 | .125 | .050 | .125 | .375 | .290 | .374 | .41 | .075 | .36 |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | A (Shank) Max. | Min. Sheet for Self-Clinching | Min. Sheet for Flush Installation | Hole Size in Sheet + 0.08 | B Nom. | C Max. | E Nom. | H Nom. | Min. Dist. Hole \varnothing to Edge |
|--------|---------------------|------|-------------|----------------|-------------------------------|-----------------------------------|---------------------------|--------|--------|--------|--------|---------------------------------------|
| | M3 x 0.5 | PR10 | M3 | 3.18 | 1.27 | 3.18 | 7.14 | 4.75 | 7.12 | 7.87 | 1.91 | 7.87 |
| | M4 x 0.7 | PR10 | M4 | 3.18 | 1.27 | 3.18 | 8.74 | 6.48 | 8.72 | 9.53 | 1.91 | 8.64 |
| | M5 x 0.8 | PR10 | M5 | 3.18 | 1.27 | 3.18 | 9.53 | 7.37 | 9.5 | 10.41 | 1.91 | 9.14 |

N10 SELF-CLINCHING RECEPTACLE NUTS⁽³⁾



PART NUMBER DESIGNATION

N10 - 832 - 1 ZI
 ↓ ↓ ↓ ↓
 Type Thread Size Code Shank Code Finish Code

| |
|--|
| Threads: Internal, ASME B1.1, 2B / ASME B1.13M, 6H ⁽¹⁾ |
| Material: Heat-treated Carbon Steel |
| Finish: ZI - Zinc plated, 5µm, colorless (standard) ⁽²⁾ |
| For use in sheet hardness: HRB 80 or less (Hardness Rockwell "B" Scale) HB 150 or less (Hardness Brinell) |

All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | Shank Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size in Sheet + .003 - .000 | C Max. | E Nom. | F ± .010 | H Nom. | T ± .005 | Min. Dist. Hole \varnothing To Edge |
|---------|------------------|------|-------------|------------|----------------|----------------------|----------------------------------|--------|--------|----------|--------|----------|---------------------------------------|
| | .112-40 (#4-40) | N10 | 440 | 1 | .038 | .040 | .187 | .186 | .28 | .130 | .126 | .24 | .22 |
| | .138-32 (#6-32) | N10 | 632 | 1 | .038 | .040 | .213 | .212 | .31 | .130 | .156 | .24 | .27 |
| | .164-32 (#8-32) | N10 | 832 | 1 | .038 | .040 | .250 | .249 | .34 | .130 | .187 | .24 | .28 |
| | .190-32 (#10-32) | N10 | 032 | 1 | .038 | .040 | .277 | .276 | .37 | .130 | .213 | .24 | .31 |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Shank Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size in Sheet + 0.08 | C Max. | E Nom. | F ± 0.25 | H Nom. | T ± 0.13 | Min. Dist. Hole \varnothing To Edge |
|--------|---------------------|------|-------------|------------|----------------|----------------------|---------------------------|--------|--------|----------|--------|----------|---------------------------------------|
| | M3 x 0.5 | N10 | M3 | 1 | 0.97 | 1 | 4.75 | 4.73 | 7.11 | 3.3 | 3.2 | 6 | 5.59 |
| | M4 x 0.7 | N10 | M4 | 1 | 0.97 | 1 | 6.35 | 6.33 | 8.64 | 3.3 | 4.75 | 6 | 7.11 |
| | M5 x 0.8 | N10 | M5 | 1 | 0.97 | 1 | 7.04 | 7.01 | 9.53 | 3.3 | 5.41 | 6 | 7.87 |

(1) 2B (unified) and 6H (metric) go gauge may stop at pilot end but class 3A (unified) and 4h (metric) screws will pass through with finger torque.

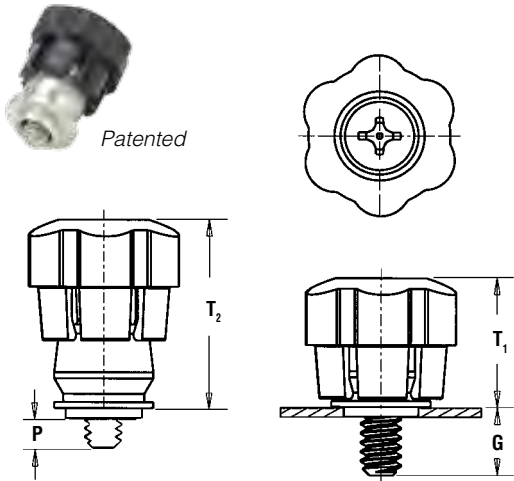
(2) See PEM Technical Support section of our web site (www.pemnet.com) for related plating standards and specifications.

(3) Also available on special order Type F10 self-clinching floating receptacle nuts.

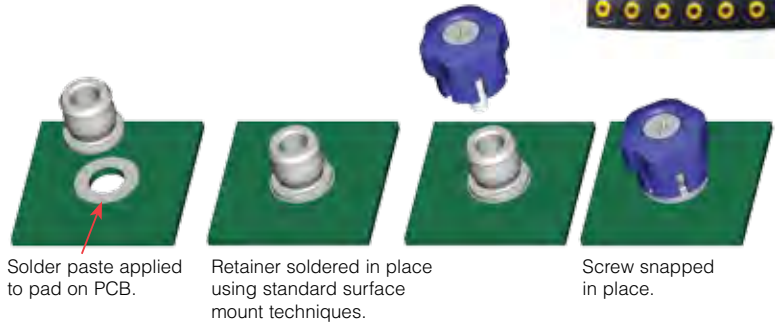
REELFAST® SMT PANEL SCREW COMPONENTS AND ASSEMBLY DATA

- Retainer installed using conventional surface mount techniques.
- Simply snap screw into retainer to complete assembly.
- Black ABS knob standard.
- Optional molded-thru colors available.
- Available with Torx® recess.

| |
|---|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g ⁽¹⁾ |
| Material: Knob: ABS ⁽²⁾ Retainer: Carbon Steel Screw: Carbon Steel |
| Finish: Retainer: ET - Electro Plated Bright Tin ASTM B545, Class B with Preservative coating (standard) DT - Matte Electro-tin ASTM B545, Class A with Preservative Coating, Annealed (optional) Screw: CN - Bright nickel over copper flash per ASTM B689 |



Performance Data page 38.



All dimensions are in inches.

| UNIFIED | Thread Size | Screw Part Number | | | Retainer Part Number | G ± .025 | P ± .025 | T ₁ Nom. | T ₂ Nom. | Total Radial Float |
|---------|--------------------|-------------------|-------------|-------------------|----------------------|-------------|-------------|------------------------|------------------------|--------------------|
| | | Type | Thread Code | Screw Length Code | | | | | | |
| | .112-40 (#4-40) | PSHP | 440 | 0 | SMTPR-6-1 | .188 | .000 | .478 | .646 | .015 |
| | | | | 1 | | .248 | .026 | | | |
| | .138-32 (#6-32) | PSHP | 632 | 0 | SMTPR-6-1 | .188 | .000 | .478 | .646 | .020 |
| | | | | 1 | | .248 | .026 | | | |

All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Screw Part Number | | | Retainer Part Number | G ± 0.64 | P ± 0.64 | T ₁ Nom. | T ₂ Nom. | Total Radial Float |
|--------|---------------------|-------------------|-------------|-------------------|----------------------|-------------|-------------|------------------------|------------------------|--------------------|
| | | Type | Thread Code | Screw Length Code | | | | | | |
| | M3 x 0.5 | PSHP | M3 | 0 | SMTPR-6-1 | 4.78 | 0 | 12.14 | 16.41 | .38 |
| | | | | 1 | | 6.3 | .66 | | | |
| | M3.5 x 0.6 | PSHP | M3.5 | 0 | SMTPR-6-1 | 4.78 | 0 | 12.14 | 16.41 | .51 |
| | | | | 1 | | 6.3 | .66 | | | |

- (1) As with all Class 2A/6g external threads with an additive finish, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/4h, per ANSI B1.1, Section 8, Table 3A and ANSI B1.13M, Section 8, Paragraph 8.2.
- (2) Temperature limit is 200° F / 93° C.

Color Capabilities

Choose a knob color code and add it to the end of the standard part number.

The colors shown (except for black) are non-stocked standards and available on special order. Since actual color knob and retainer may vary slightly from those represented, we recommend that you request samples for color verification. If you require a custom color or you need a "color matched" knob or retainer, please contact us.



Black = 001
(Standard)



Red = 002



Orange = 003



Yellow = 004



Green = 005

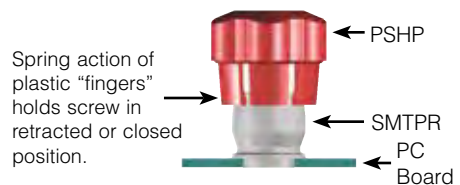


Blue = 006



Violet = 007

WHEN ASSEMBLED



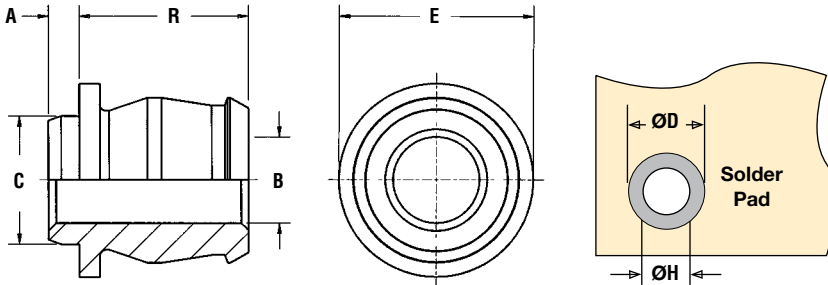
REELFAST® SMT PANEL SCREW COMPONENTS AND ASSEMBLY DATA

TYPE SMTPR RETAINER

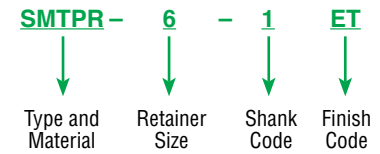
Supplied on 13" recyclable reels of 465 pieces. Tape width is 24mm.
Supplied with polyamide patch for vacuum pick up. Reels conform to EIA-481.



SMTPR Retainer



PART NUMBER DESIGNATION



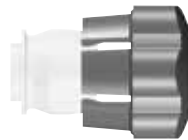
All dimensions are in inches.

| UNIFIED | Retainer Part Number | A (Shank) Max. | Min. Sheet Thickness | B ±.003 | C Max. | E Nom. | R ±.005 | ØH Hole Size In Sheet +.003 -.000 | ØD Min. Solder Pad |
|---------|----------------------|----------------|----------------------|---------|--------|--------|---------|-----------------------------------|--------------------|
| | | SMTPR-6-1 | .060 | .060 | .167 | .249 | .375 | .325 | .250 |

All dimensions are in millimeters.

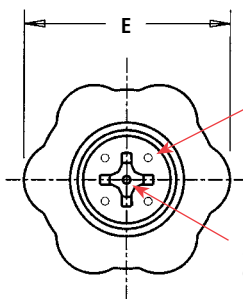
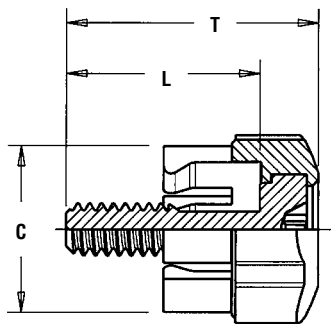
| METRIC | Retainer Part Number | A (Shank) Max. | Min. Sheet Thickness | B ±0.08 | C Max. | E Nom. | R ±0.13 | ØH Hole Size In Sheet +0.08 | ØD Min. Solder Pad |
|--------|----------------------|----------------|----------------------|---------|--------|--------|---------|-----------------------------|--------------------|
| | | SMTPR-6-1 | 1.53 | 1.53 | 4.24 | 6.33 | 9.53 | 8.26 | 6.35 |

TYPE PSHP SCREW



PSHP Screw

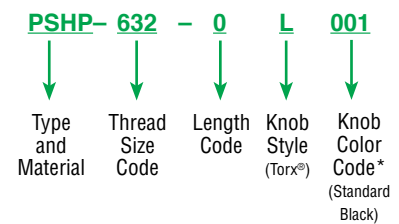
Available with Torx® recess on special order.



Dimples on head designate metric thread.

Phillips driver size. (See chart)

PART NUMBER DESIGNATION



*For color capabilities see page 22.

All dimensions are in inches.

| UNIFIED | Type | Thread Code | Screw Length Code | C ±.010 | E ±.010 | L ±.015 | T Nom. | Driver Size |
|---------|------|-------------|-------------------|---------|---------|---------|--------|-------------|
| | PSHP | 440 | | 0 | .440 | .542 | .510 | .663 |
| 1 | | | | .570 | | | .723 | |
| PSHP | 632 | | 0 | .440 | .542 | .510 | .663 | #2 |
| | | | 1 | | | .570 | .723 | |

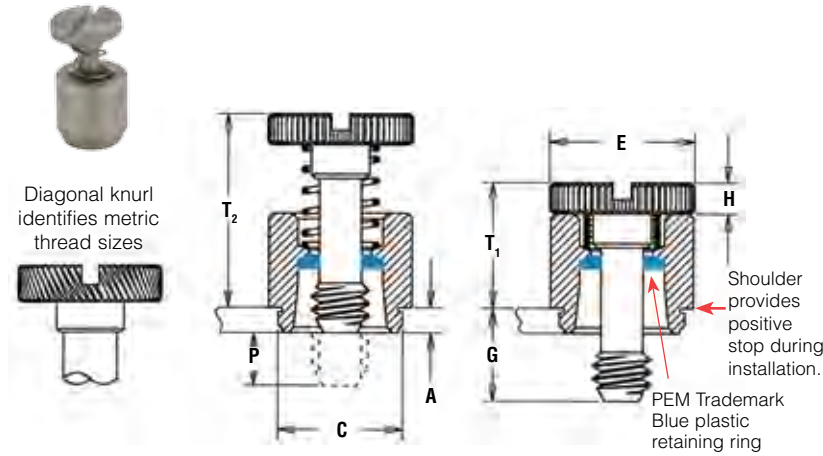
All dimensions are in millimeters.

| METRIC | Type | Thread Code | Screw Length Code | C ±0.25 | E ±0.25 | L ±0.38 | T Nom. | Driver Size |
|--------|------|-------------|-------------------|---------|---------|---------|--------|-------------|
| | PSHP | M3 | | 0 | 11.18 | 13.77 | 12.95 | 16.84 |
| 1 | | | | 14.48 | | | 18.36 | |
| PSHP | M3.5 | | 0 | 11.18 | 13.77 | 12.95 | 16.84 | #2 |
| | | | 1 | | | 14.48 | 18.36 | |

TYPE PFK BROACHING CAPTIVE PANEL SCREWS

- For permanent and reliable installation in PC boards and sheets of HRB 70 or less.
- Screw assemblies remain captive for easy mounting and removal.

| |
|--|
| Threads: External, ASME B1.1, 2A / ASME B1.13M, 6g |
| Material: Retainer: 300 Series Stainless Steel Screw: 300 Series Stainless Steel Spring: 300 Series Stainless Steel Retaining Ring: Nylon, temperature limit 200° F / 93° C |
| Finish: Retainer: Passivated and/or tested per ASTM A380 Screw: Passivated and/or tested per ASTM A380 |
| For use in: PC Board and sheets HRB 70 or less (Hardness Rockwell "B" Scale) HB 125 or less (Hardness Brinell) |



Installation Data page 31. Performance Data page 38.

PART NUMBER DESIGNATION

PFK - **632** - **40**
 ↓ ↓ ↓
 Type Thread Size Code Screw Length Code

All dimensions are in inches.

| UNIFIED | Thread Size | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +.003 -.000 | C ± .003 | E ± .010 | G ± .016 | H ± .005 | P ± .025 | T ₁ Max. | T ₂ Nom. | Min. Dist. Hole ϕ To Edge | |
|-----------------|-----------------|------|-------------|-------------------|----------------|----------------------|--------------------------------|----------|----------|----------|----------|----------|---------------------|---------------------|--------------------------------|------|
| | .112-40 (#4-40) | PFK | 440 | 40 | .060 | .060 | .265 | .283 | .312 | .250 | .072 | .000 | .36 | .54 | .20 | |
| | | | 62 | .375 | | | | | | | | | | | | .125 |
| | | | 84 | .500 | | | | | | | | | | | | .250 |
| .138-32 (#6-32) | PFK | 632 | 40 | .060 | .060 | .281 | .299 | .344 | .250 | .072 | .000 | .36 | .54 | .26 | | |
| | | | 62 | | | | | | | | | | | | .375 | .125 |
| | | | 84 | | | | | | | | | | | | .500 | .250 |














All dimensions are in millimeters.

| METRIC | Thread Size x Pitch | Type | Thread Code | Screw Length Code | A (Shank) Max. | Min. Sheet Thickness | Hole Size In Sheet +0.08 | C ± 0.08 | E ± .25 | G ± 0.4 | H ± 0.13 | P ± 0.64 | T ₁ Max. | T ₂ Nom. | Min. Dist. Hole ϕ To Edge | |
|--------|---------------------|------|-------------|-------------------|----------------|----------------------|--------------------------|----------|---------|---------|----------|----------|---------------------|---------------------|--------------------------------|-----|
| | M3 x 0.5 | PFK | M3 | 40 | 1.53 | 1.53 | 6.73 | 7.19 | 7.92 | 6.4 | 1.83 | 0 | 9.14 | 13.72 | 5.08 | |
| 62 | | | | 9.5 | | | | | | | | | | | | 3.2 |
| 84 | | | | 12.7 | | | | | | | | | | | | 6.4 |

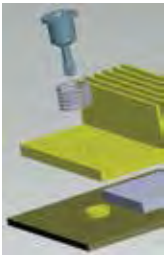






CAPTIVE PANEL SCREW CAPABILITIES

RECOMMENDED USES OF PEM® CAPTIVE PANEL SCREWS

| Installation into | | | |
|--|--|---|--|
| Stainless Panels | Painted Panels | P.C. Boards | Non-ductile Materials |
| PFC4  | PF11MF  | SMTPF  | PF11MW  |
| PF11MF  | PF7MF  | PF11MW  | PFK  |
| PF11MW  | | PFK  | PF11MF  |
| PF7MF  | | | PF7MF  |

VALUE-ADDED CAPABILITIES

| Heat Sink Fastening Solutions | ATCA Solutions | Tight Seal Solutions |
|---|--|---|
|  <p>Captivated screw and spring eliminate loose hardware, and when used with the mating nut or standoff will provide accurate and reliable clamp loads, while preventing damage to P.C. Board.</p> |  <p>Use Type PF11PM captive panel screw and Type TPXS pin in conjunction to satisfy the requirements of the PICMG 3.0 of the Advanced TCA®.</p> |  <p>Consider adding an o-ring to our PEM C.A.P.S.® captive panel screw. When fastened, it provides a tight seal above the panel.</p> |
| Washer Locking Feature | Nylon Locking Patch | Thread-forming Opportunity |
|  <p>Consider a modified Type PF7MF with integrated split washer for applications requiring a high cycle lockout feature. And it prevents loosening due to vibration.</p> |  <p>Nylon locking patch is available to be added to any of PEM captive panel screws for applications requiring a locking element. And it prevents loosening due to vibration.</p> | <p>PennEngineering named official licensee for TRILOBULAR™ and REMFORM® fastener products. Both proprietary thread-forming fastener families are designed to promote lower overall assembly costs. Contact us to learn more.</p> <p>E-mail us at: techsupport@pemnet.com.</p> |

CAPTIVE PANEL SCREW INSTALLATION ⁽¹⁾

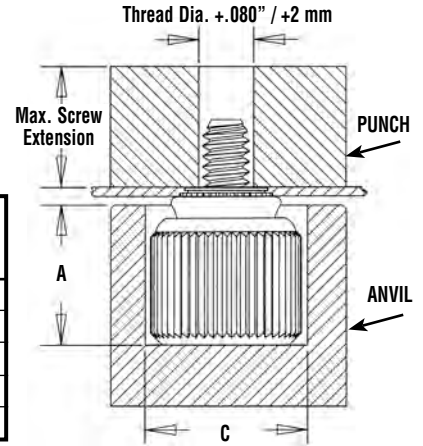
TYPE PF11/PF12/PF11M/PF12M/PEM C.A.P.S.®

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the sheet material.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|---------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .260 | .437 | 8003521 | 8003518 |
| | 632 | .390 | .468 | 8003522 | 8003519 |
| | 832 | .390 | .531 | 8003523 | 8003520 |
| | 032 | .390 | .531 | 8003523 | 8004350 |
| | 0420 | .480 | .598 | 8004351 | 8004352 |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|---------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 6.6 | 11.1 | 8003521 | 8003518 |
| | M3.5 | 9.91 | 11.89 | 8003522 | 8003519 |
| | M4 | 9.91 | 13.49 | 8003523 | 8003520 |
| | M5 | 9.91 | 13.49 | 8003523 | 8004350 |
| | M6 | 12.19 | 15.19 | 8004351 | 8004352 |



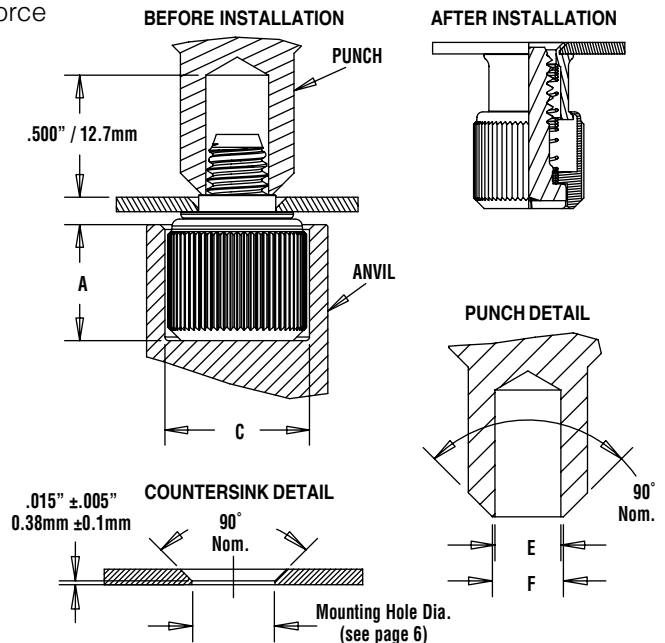
TYPE PF11MF/PF12MF (flare-mount installation)

1. Prepare properly sized mounting hole in sheet with countersink.
2. Place fastener into recessed anvil, and place workpiece over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force to flare the retainer of the fastener.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Punch Dimensions (in.) | | Anvil Part No. | Punch Part No. |
|---------|-------------|------------------------|---------|------------------------|---------|----------------|----------------|
| | | A ±.002 | C ±.002 | E +.003 - .000 | F ±.002 | | |
| | 440 | .260 | .437 | .123 | .133 | 8003521 | 8013670 |
| | 632 | .390 | .468 | .143 | .156 | 8003522 | 8013671 |
| | 832 | .390 | .531 | .202 | .210 | 8003523 | 8013672 |
| | 032 | .390 | .531 | .202 | .210 | 8003523 | 8013672 |
| | 0420 | .480 | .598 | .255 | .264 | 8004351 | 8013674 |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Punch Dimensions (mm) | | Anvil Part No. | Punch Part No. |
|--------|-------------|-----------------------|---------|-----------------------|---------|----------------|----------------|
| | | A ±0.05 | C ±0.05 | E +0.08 | F ±0.05 | | |
| | M3 | 6.6 | 11.1 | 3.12 | 3.38 | 8003521 | 8013670 |
| | M4 | 9.91 | 13.49 | 5.13 | 5.33 | 8003523 | 8013672 |
| | M5 | 9.91 | 13.49 | 5.13 | 5.33 | 8003523 | 8013672 |
| | M6 | 12.19 | 15.19 | 6.48 | 6.71 | 8004351 | 8016374 |

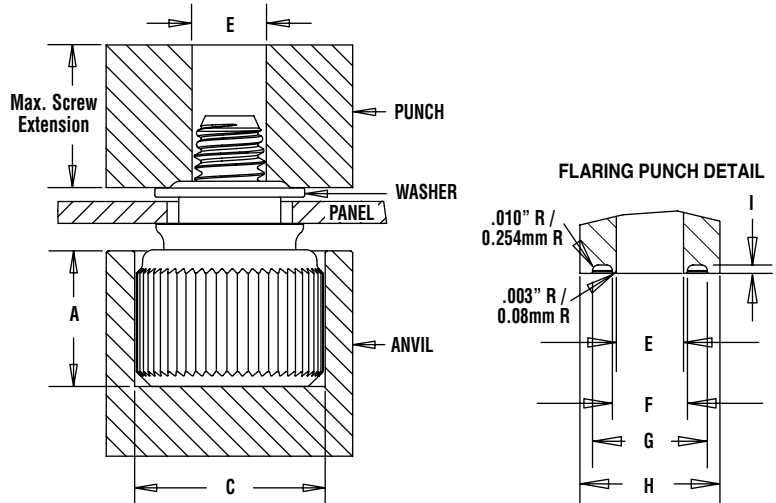


(1) Punches and anvils should be hardened.

CAPTIVE PANEL SCREW INSTALLATION

TYPE PF11MW/PF12MW

1. Prepare properly sized mounting hole in sheet.
2. Place fastener into recessed anvil, place workpiece over shank of fastener, then place the washer over the shank of the fastener.
3. With punch and anvil surfaces parallel, apply squeezing force with flaring punch.



Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Punch Dimensions (in.) | | | | | Anvil Part No. | Punch Part No. |
|---------|-------------|------------------------|------------|------------------------|------------|------------|-----------|------------|----------------|----------------|
| | | A ±.002 | C ±.001 | E +.003 - .000 | F ±.001 | G ±.003 | H Min. | I ±.004 | | |
| | 440 | .260 | .437 | .120 | .135 | .204 | .250 | .015 | 8003521 | 8014304 |
| | 632 | .390 | .468 | .140 | .159 | .249 | .300 | .015 | 8003522 | 8014305 |
| | 832 | .390 | .531 | .201 | .217 | .340 | .400 | .028 | 8003523 | 8014306 |
| | 032 | .390 | .531 | .201 | .217 | .340 | .400 | .028 | 8003523 | 8014306 |
| | 0420 | .480 | .598 | .252 | .271 | .430 | .500 | .028 | 8004351 | 8014307 |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Punch Dimensions (mm) | | | | | Anvil Part No. | Punch Part No. |
|--------|-------------|-----------------------|------------|-----------------------|------------|------------|-----------|-----------|----------------|----------------|
| | | A ±0.05 | C ±0.03 | E +0.08 | F ±0.03 | G ±0.08 | H Min. | I ±0.1 | | |
| | M3 | 6.6 | 11.1 | 3.05 | 3.43 | 5.18 | 6.35 | .381 | 8003521 | 8014304 |
| | M3.5 | 9.9 | 11.9 | 3.56 | 4.04 | 6.32 | 7.62 | .381 | 8003522 | 8014305 |
| | M4 | 9.9 | 13.5 | 5.11 | 5.51 | 8.64 | 10.16 | .711 | 8003523 | 8014306 |
| | M5 | 9.9 | 13.5 | 5.11 | 5.51 | 8.64 | 10.16 | .711 | 8003523 | 8014306 |
| | M6 | 12.2 | 15.2 | 6.4 | 6.88 | 10.92 | 12.7 | .711 | 8004351 | 8014307 |

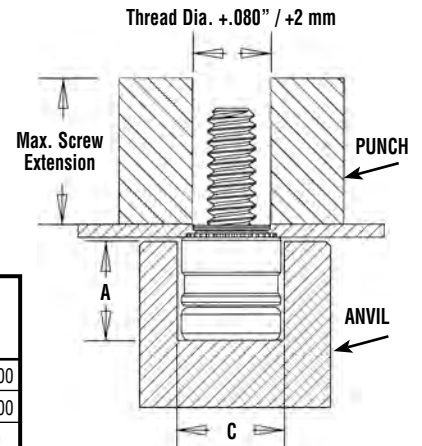
TYPE PFHV

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the sheet material.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|------------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .220 | .285 | 8004688 | 97020006400 |
| | 632 | .250 | .301 | 8004689 | 97020007400 |
| | 832 | .285 | .332 | 8005439 | 970200060 |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|------------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 5.59 | 7.24 | 8004688 | 97020006400 |
| | M3.5 | 6.35 | 7.65 | 8004689 | 97020007400 |
| | M4 | 7.24 | 8.43 | 8005439 | 970200060 |



CAPTIVE PANEL SCREW INSTALLATION

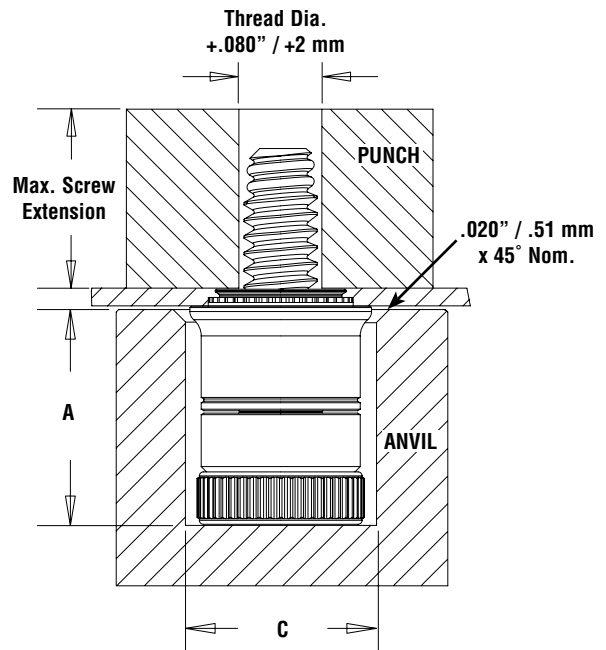
TYPE PF7M

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over the shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the sheet material.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|------------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .319 | .290 | 8016175 | 8003518 |
| | 632 | .333 | .330 | 8016176 | 8003519 |
| | 832 | .353 | .385 | 8016177 | 8003520 |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|------------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 8.1 | 7.34 | 8016175 | 8003518 |
| | M4 | 8.9 | 9.8 | 8016177 | 8003520 |



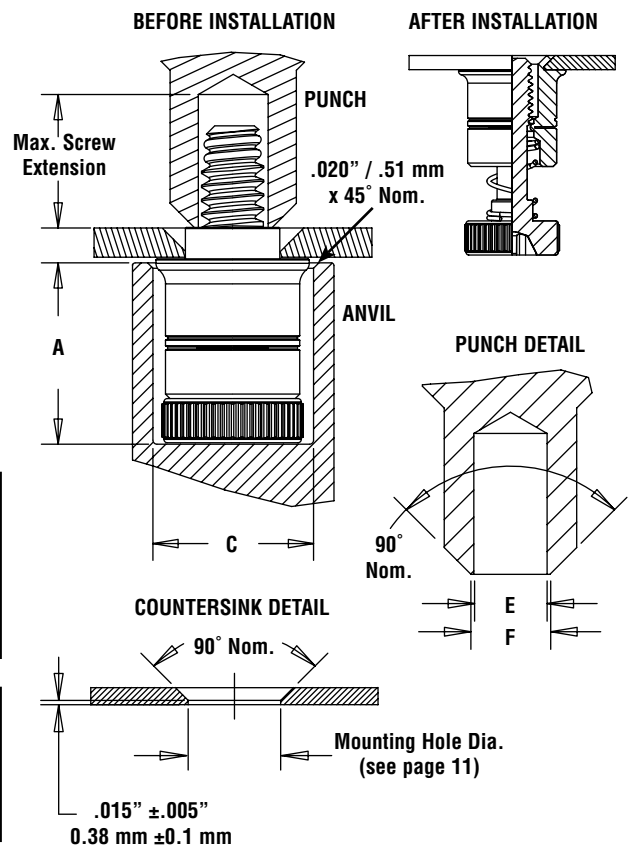
TYPE PF7MF (flare-mount installation)

1. Prepare properly sized mounting hole in sheet with countersink. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over the shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force to flare the retainer of the fastener.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Punch Dimensions (in.) | | Anvil Part No. | Punch Part No. |
|---------|-------------|------------------------|------------|------------------------|------------|----------------|----------------|
| | | A ±.002 | C ±.002 | E +.003 -.000 | F ±.002 | | |
| | 440 | .319 | .290 | .123 | .133 | 8016175 | 8013670 |
| | 632 | .333 | .330 | .143 | .156 | 8016176 | 8013671 |
| | 832 | .353 | .385 | .202 | .210 | 8016177 | 8013672 |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Punch Dimensions (mm) | | Anvil Part No. | Punch Part No. |
|--------|-------------|-----------------------|------------|-----------------------|------------|----------------|----------------|
| | | A ±0.05 | C ±0.05 | E +0.08 | F ±0.05 | | |
| | M3 | 8.1 | 7.34 | 3.12 | 3.38 | 8016175 | 8013670 |
| | M4 | 8.9 | 9.8 | 5.13 | 5.33 | 8016177 | 8013672 |



CAPTIVE PANEL SCREW INSTALLATION

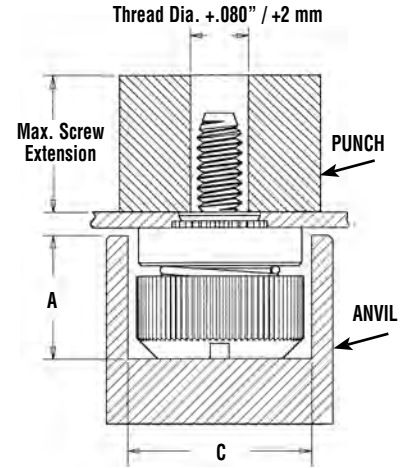
TYPE PF30/PF31/PF32

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the sheet material.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|-----------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .295 | .421 | 975201060 | 975200060 |
| 632 | .295 | .453 | 975201061 | 975200061 | |
| 832 | .310 | .484 | 975201062 | 975200062 | |
| 032 | .310 | .546 | 975201063 | 975200063 | |
| 0420 | .365 | .640 | 975201064 | 975200064 | |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|-----------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 7.49 | 10.69 | 975201060 | 975200060 |
| M4 | 7.87 | 12.29 | 975201062 | 975200062 | |
| M5 | 7.87 | 13.87 | 975201063 | 975200063 | |
| M6 | 9.27 | 16.26 | 975201064 | 975200064 | |



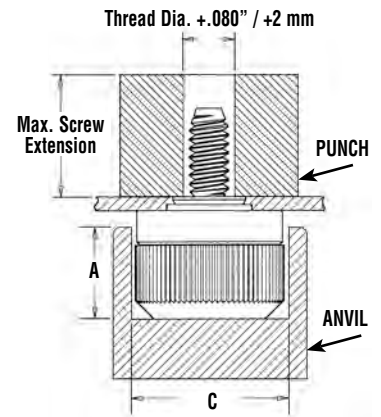
TYPE PF50/PF51/PF52/PF60/PF61/PF62

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the sheet material.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|-----------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .295 | .421 | 975201060 | 975200060 |
| 632 | .295 | .453 | 975201061 | 975200061 | |
| 832 | .310 | .484 | 975201062 | 975200062 | |
| 032 | .310 | .546 | 975201063 | 975200063 | |
| 0420 | .365 | .640 | 975201064 | 975200064 | |

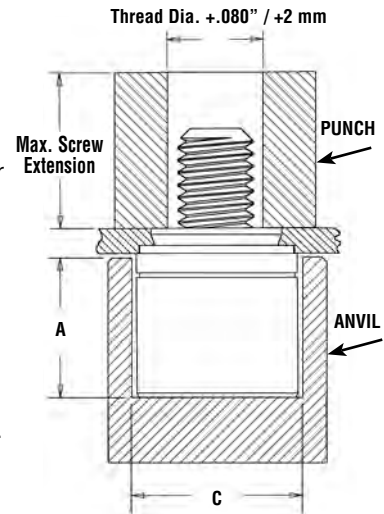
| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|-----------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 7.49 | 10.69 | 975201060 | 975200060 |
| M3.5 | 7.49 | 11.51 | 975201061 | 975200061 | |
| M4 | 7.87 | 12.29 | 975201062 | 975200062 | |
| M5 | 7.87 | 13.87 | 975201063 | 975200063 | |
| M6 | 9.27 | 16.26 | 975201064 | 975200064 | |



CAPTIVE PANEL SCREW INSTALLATION

TYPE PFC4

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the sheet material.



Installation Requirements

1. Sheet hardness must be less than 88 on the Rockwell "B" scale.
2. Hole punch should be kept sharp to minimize work hardening around hole.
3. Fastener should be installed in punch side of hole.
4. Fastener should not be installed near bends or other highly cold worked areas where sheet hardness may be greater than 88 on the Rockwell "B" scale.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|---------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .345 | .358 | 975200027 | 975200060 |
| | 632 | .345 | .390 | 975201243 | 975200061 |
| | 832 | .435 | .421 | 975200029 | 975200062 |
| | 032 | .435 | .452 | 975201244 | 975200063 |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|---------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 8.76 | 9.09 | 975200027 | 975200060 |
| | M4 | 11.05 | 10.69 | 975200029 | 975200062 |
| | M5 | 11.05 | 11.48 | 975201244 | 975200063 |

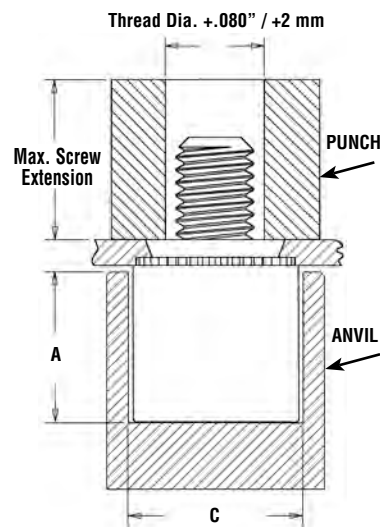
TYPE PFC2P

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the sheet material.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|---------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .345 | .323 | 975200026 | 975200060 |
| | 632 | .345 | .358 | 975200027 | 975200061 |
| | 832 | .435 | .386 | 975200028 | 975200062 |
| | 032 | .435 | .421 | 975200029 | 975200063 |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|---------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 8.76 | 8.2 | 975200026 | 975200060 |
| | M4 | 11.05 | 9.8 | 975200028 | 975200062 |
| | M5 | 11.05 | 10.69 | 975200029 | 975200063 |



CAPTIVE PANEL SCREW INSTALLATION

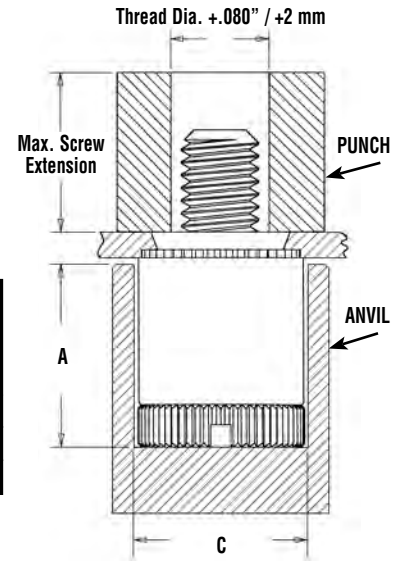
TYPE PFC2/PFS2

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the sheet material.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|------------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .345 | .323 | 975200026 | 975200060 |
| 632 | .345 | .358 | 975200027 | 975200061 | |
| 832 | .435 | .386 | 975200028 | 975200062 | |
| 032 | .435 | .421 | 975200029 | 975200063 | |
| 0420 | .565 | .484 | 975200030 | 975200064 | |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|------------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 8.76 | 8.2 | 975200026 | 975200060 |
| M4 | 11.05 | 9.8 | 975200028 | 975200062 | |
| M5 | 11.05 | 10.69 | 975200029 | 975200063 | |
| M6 | 14.35 | 12.29 | 975200030 | 975200064 | |



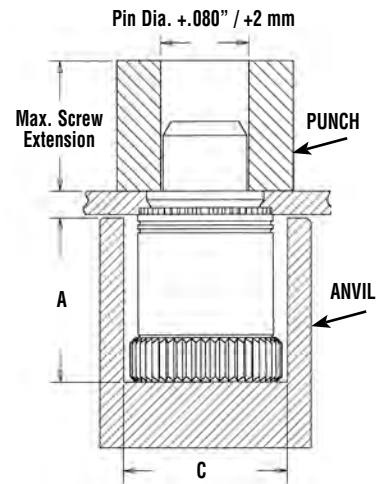
TYPE PTL2/PSL2

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the sheet material.

Installation Tooling

| UNIFIED | Plunger Diameter Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-----------------------|------------------------|------------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 04 | .580 | .520 | 975201245 | 970200013300 |

| METRIC | Plunger Diameter Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-----------------------|-----------------------|------------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | 04 | 14.86 | 13.21 | 975201245 | 970200013300 |



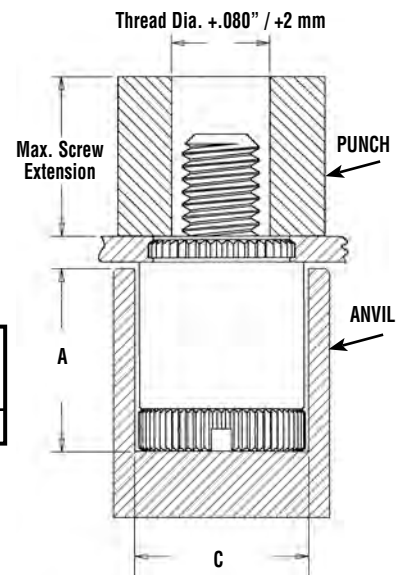
TYPE PFK

1. Prepare properly sized mounting hole in board.
2. Place fastener into recessed anvil, and place workpiece over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes in contact with the board.

Installation Tooling

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|------------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .320 | .323 | 975200026 | 975200060 |
| 632 | .320 | .358 | 975200027 | 975200061 | |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|------------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 8.13 | 8.2 | 975200026 | 975200060 |



CAPTIVE PANEL SCREW INSTALLATION

TYPE SCBR

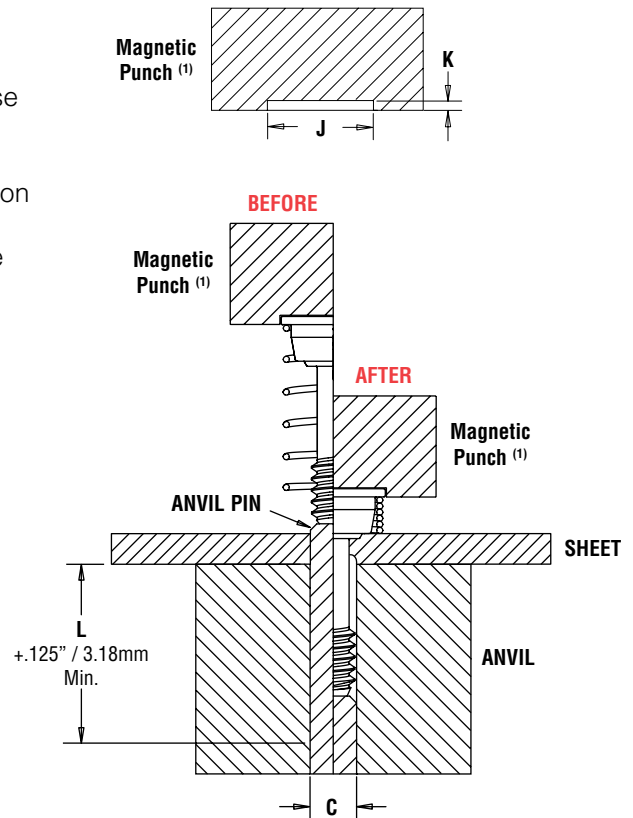
1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring. If the hole is punched, be sure to install fastener into punched side of hole.
2. Assemble spring on screw by rotating spring counter clockwise and position assembly into recessed magnetic punch.
3. Position hole in workpiece over retractable anvil pin.
4. With punch and anvil surfaces parallel, apply squeezing force on top of the screw head and the underside of the sheet material. The squeezing action forces the displacer of the screw into the sheet, causing it to reduce the mounting hole diameter and captivate the screw.

Installation Tooling

| UNIFIED | Thread Code | Installation Tooling Dimensions (in.) | | | Anvil Part Number | Magnetic Punch Part Number (1) |
|---------|-------------|---------------------------------------|-------------|------|-------------------|--------------------------------|
| | | C | J | K | | |
| | 440 | .113 - .116 | .354 - .357 | .035 | 970200048300 | 8016210 |
| | 632 | .139 - .142 | .387 - .390 | .035 | 970200052300 | 8016211 |
| | 832 | .165 - .168 | .416 - .419 | .035 | 970200054300 | 8016212 |

| METRIC | Thread Code | Installation Tooling Dimensions (mm) | | | Anvil Part Number | Magnetic Punch Part Number (1) |
|--------|-------------|--------------------------------------|-------------|------|-------------------|--------------------------------|
| | | C | J | K | | |
| | M3 | 3.03 - 3.11 | 9.25 - 9.32 | 0.89 | 970200049300 | 8016213 |
| | M4 | 4.03 - 4.11 | 10.8 - 10.9 | 0.89 | 970200053300 | 8016214 |

(1) Pneumatic punch may also be used. Please contact our PEMserter tooling division for punch part numbers.



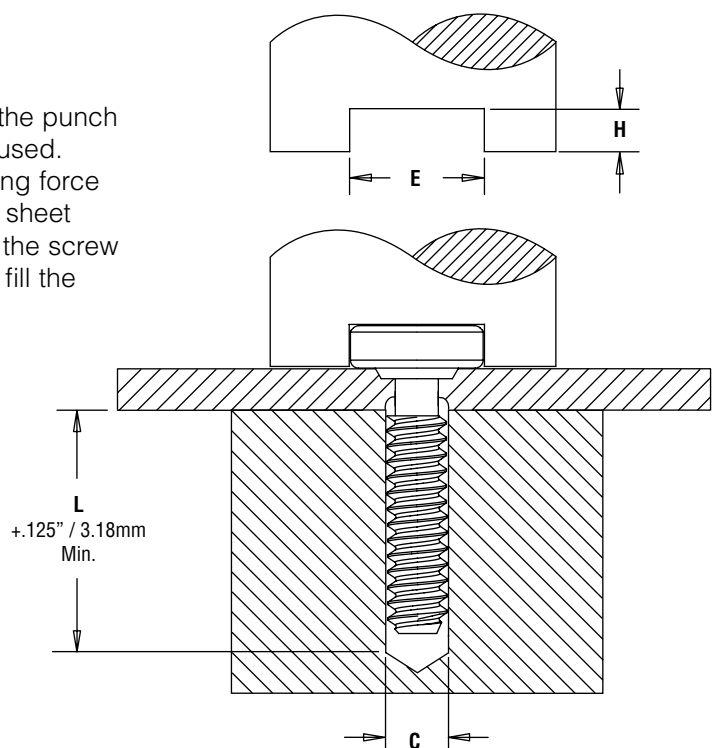
TYPE SCB/SCBJ

1. Prepare properly sized mounting hole in sheet.
2. Place the fastener through mounting hole (preferably the punch side) and into anvil. A flat or recessed punch can be used.
3. With punch and anvil surfaces parallel, apply squeezing force to the top of the screw head and the underside of the sheet material. The squeezing action forces the shoulder of the screw into the sheet, displacing sheet material, causing it to fill the void under the head and shoulder of the screw.

Installation Tooling

| UNIFIED | Thread Code | Installation Tooling Dimensions (in.) | | |
|---------|-------------|---------------------------------------|-------------|-------------|
| | | C | E | H |
| | 440 | .113 - .116 | .270 - .280 | .073 - .074 |
| | 632 | .139 - .142 | .308 - .318 | .073 - .074 |

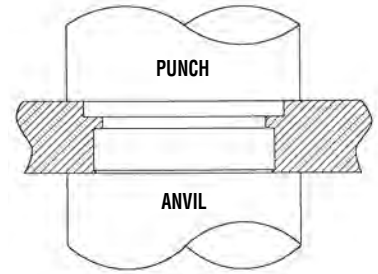
| METRIC | Thread Code | Installation Tooling Dimensions (mm) | | |
|--------|-------------|--------------------------------------|-------------|-------------|
| | | C | E | H |
| | M3 | 3.03 - 3.11 | 6.86 - 7.11 | 1.85 - 1.88 |
| | M4 | 4.03 - 4.11 | 8.53 - 8.79 | 1.85 - 1.88 |



CAPTIVE PANEL SCREW INSTALLATION

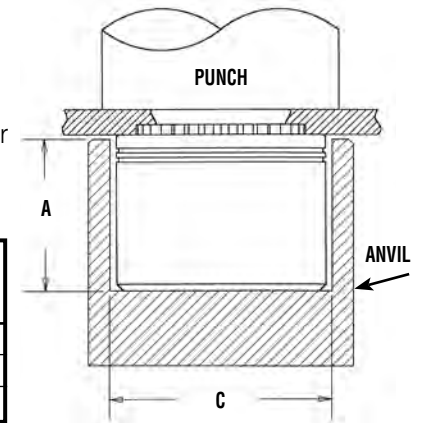
TYPE PR10

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into the mounting hole (preferably the punch side).
3. With punch and anvil surfaces parallel, apply squeezing force until the retainer is flush in the sheet.



TYPE N10

1. Prepare properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece (preferably the punch side) over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the nut comes in contact with the sheet material.



Anvil Dimensions

| UNIFIED | Thread Code | Anvil Dimensions (in.) | | Anvil Part Number | Punch Part Number |
|---------|-------------|------------------------|------------|-------------------|-------------------|
| | | A ±.002 | C ±.002 | | |
| | 440 | .225 | .298 | 8006124 | 975200048 |
| | 632 | .225 | .329 | 8006735 | 975200048 |
| | 832 | .225 | .361 | 8006736 | 975200048 |
| | 032 | .225 | .392 | 8006174 | 975200048 |

| METRIC | Thread Code | Anvil Dimensions (mm) | | Anvil Part Number | Punch Part Number |
|--------|-------------|-----------------------|------------|-------------------|-------------------|
| | | A ±0.05 | C ±0.05 | | |
| | M3 | 5.72 | 7.57 | 8006124 | 975200048 |
| | M4 | 5.72 | 9.17 | 8006736 | 975200048 |
| | M5 | 5.72 | 9.6 | 8006174 | 975200048 |

CAPTIVE PANEL SCREW PERFORMANCE DATA⁽¹⁾

TYPE PF11/PF12/PF11M/PF12M/PEM C.A.P.S.[®]

| UNIFIED | Type | Thread Code | Test Sheet Material | | | |
|---------|------|-------------|---------------------|-------------------------|---------------------|-------------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (lbs.) | Retainer Pushout (lbs.) | Installation (lbs.) | Retainer Pushout (lbs.) |
| PF11 | 440 | 1500 | 80 | 2500 | 145 | |
| | 632 | 2000 | 95 | 3500 | 150 | |
| PF12 | 832 | 3000 | 100 | 4500 | 160 | |
| | 032 | 3000 | 100 | 4500 | 160 | |
| | 0420 | 3500 | 105 | 5000 | 195 | |

| METRIC | Type | Thread Code | Test Sheet Material | | | |
|--------------|------|-------------|---------------------|----------------------|-------------------|----------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (kN) | Retainer Pushout (N) | Installation (kN) | Retainer Pushout (N) |
| PF11 PF12 | M3 | 6.7 | 355 | 11.1 | 645 | |
| | M4 | 13.3 | 445 | 20 | 710 | |
| | M5 | 13.3 | 445 | 20 | 710 | |
| | M6 | 15.6 | 465 | 22.2 | 865 | |

TYPE PF11MF

| UNIFIED | Type | Thread Code | Installation (lbs.) | Retainer Pullout (lbs.) |
|---------|--------|-------------|---------------------|-------------------------|
| | PF11MF | 440 | 250 | 81 |
| | | 632 | 300 | 175 |
| | | 832 | 350 | 180 |
| | | 032 | 350 | 180 |
| | | 0420 | 400 | 200 |

| METRIC | Type | Thread Code | Installation (kN) | Retainer Pullout (N) |
|--------|--------|-------------|-------------------|----------------------|
| | PF11MF | M3 | 1.1 | 360 |
| | | M4 | 1.5 | 800 |
| | | M5 | 1.5 | 800 |
| | | M6 | 2 | 890 |

TYPE PF11MW

| UNIFIED | Type | Thread Code | Test Sheet Material | |
|---------|------|-------------|-------------------------|-------------------------|
| | | | .060" Cold-rolled Steel | |
| | | | Swaging Force (lbs.) | Retainer Pullout (lbs.) |
| PF11MW | 440 | 350 | 112 | |
| | 632 | 400 | 138 | |
| | 832 | 700 | 202 | |
| | 032 | 700 | 202 | |
| | 0420 | 900 | 212 | |

| METRIC | Type | Thread Code | Test Sheet Material | |
|--------|------|-------------|--------------------------|----------------------|
| | | | 1.52mm Cold-rolled Steel | |
| | | | Swaging Force (N) | Retainer Pullout (N) |
| PF11MW | M3 | 1557 | 499 | |
| | M3.5 | 1779 | 612 | |
| | M4 | 3114 | 897 | |
| | M5 | 3114 | 897 | |
| | M6 | 4003 | 945 | |

TYPE PFHV

| UNIFIED | Type | Thread Code | Test Sheet Material | | | |
|---------|------|-------------|---------------------|-------------------------|---------------------|-------------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (lbs.) | Retainer Pushout (lbs.) | Installation (lbs.) | Retainer Pushout (lbs.) |
| PFHV | 440 | 1700 | 108 | 2200 | 118 | |
| | 632 | 1850 | 117 | 2400 | 128 | |
| | 832 | 2100 | 134 | 2700 | 147 | |

| METRIC | Type | Thread Code | Test Sheet Material | | | |
|--------|------|-------------|---------------------|----------------------|-------------------|----------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (kN) | Retainer Pushout (N) | Installation (kN) | Retainer Pushout (N) |
| PFHV | M3 | 8.1 | 516 | 10.5 | 564 | |
| | M3.5 | 8.8 | 561 | 11.4 | 614 | |
| | M4 | 9.4 | 599 | 12.1 | 656 | |

(1) Performance values reported are averages when all installation specifications and procedures are followed. Variations in mounting hole size, sheet material and installation force (or swaging force for Type PF11MW) will affect results. Performance testing of this product in your application is recommended. We will be happy to provide samples for this purpose.

(2) Torque values shown will produce a preload of 70% minimum tensile with nut factor "k" equal to .1

CAPTIVE PANEL SCREW PERFORMANCE DATA⁽¹⁾

TYPE PF7M

| UNIFIED | Type | Thread Code | Rec. Tightening Torque (in. lbs.) (2) | Min. Screw Tensile (lbs.) | Test Sheet Material | | | |
|---------|------|-------------|---------------------------------------|---------------------------|---------------------|-------------------------|---------------------|-------------------------|
| | | | | | Aluminum | | Cold-rolled Steel | |
| | | | | | Installation (lbs.) | Retainer Pushout (lbs.) | Installation (lbs.) | Retainer Pushout (lbs.) |
| | PF7M | 440 | 4.5 | 580 | 1500 | 80 | 2500 | 145 |
| | PF7M | 632 | 8.6 | 855 | 2000 | 95 | 3500 | 150 |
| | PF7M | 832 | 15.6 | 1300 | 3000 | 100 | 4500 | 160 |

| METRIC | Type | Thread Code | Rec. Tightening Torque (N • m) (2) | Min. Screw Tensile (N) | Test Sheet Material | | | |
|--------|------|-------------|------------------------------------|------------------------|---------------------|----------------------|-------------------|----------------------|
| | | | | | 5052-H34 Aluminum | | Cold-rolled Steel | |
| | | | | | Installation (kN) | Retainer Pushout (N) | Installation (kN) | Retainer Pushout (N) |
| | PF7M | M3 | 0.66 | 2900 | 6.7 | 355 | 11.1 | 645 |
| | PF7M | M4 | 1.57 | 5010 | 13.3 | 445 | 20 | 710 |

TYPE PF7MF

| UNIFIED | Type | Thread Code | Rec. Tightening Torque (in. lbs.) (2) | Min. Screw Tensile (lbs.) | Installation (lbs.) | Retainer Pullout (lbs.) |
|---------|-------|-------------|---------------------------------------|---------------------------|---------------------|-------------------------|
| | PF7MF | 440 | 4.5 | 580 | 250 | 81 |
| | PF7MF | 632 | 8.6 | 855 | 300 | 175 |
| | PF7MF | 832 | 15.6 | 1300 | 350 | 180 |

| METRIC | Type | Thread Code | Rec. Tightening Torque (N•m) (2) | Min. Screw Tensile (N) | Installation (kN) | Retainer Pullout (N) |
|--------|-------|-------------|----------------------------------|------------------------|-------------------|----------------------|
| | PF7MF | M3 | 0.66 | 2900 | 1.1 | 360 |
| | PF7MF | M4 | 1.57 | 5010 | 1.5 | 800 |

TYPE PF30/PF31/PF32

| UNIFIED | Type | Thread Code | Test Sheet Material | | | |
|---------|------|-------------|---------------------|-------------------------|---------------------|-------------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (lbs.) | Retainer Pushout (lbs.) | Installation (lbs.) | Retainer Pushout (lbs.) |
| | PF30 | 440 | 2200 | 64 | 5000 | 90 |
| | PF31 | 440 | 2200 | 105 | 5000 | 110 |
| | PF32 | 440 | 2200 | 185 | 5000 | 300 |
| | PF30 | 632 | 2400 | 66 | 5500 | 90 |
| | PF31 | 632 | 2400 | 105 | 5500 | 130 |
| | PF32 | 632 | 2400 | 190 | 5500 | 300 |
| | PF30 | 832 | 2800 | 68 | 6000 | 90 |
| | PF31 | 832 | 2800 | 110 | 6000 | 130 |
| | PF32 | 832 | 2800 | 200 | 6000 | 300 |
| | PF30 | 032 | 3500 | 72 | 8000 | 95 |
| | PF31 | 032 | 3500 | 150 | 8000 | 160 |
| | PF32 | 032 | 3500 | 260 | 8000 | 425 |
| | PF32 | 0420 | 4300 | 320 | 12000 | 450 |

| METRIC | Type | Thread Code | Test Sheet Material | | | |
|--------|------|-------------|---------------------|----------------------|-------------------|----------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (kN) | Retainer Pushout (N) | Installation (kN) | Retainer Pushout (N) |
| | PF30 | M3 | 9.8 | 285 | 22.2 | 400 |
| | PF31 | M3 | 9.8 | 465 | 22.2 | 489 |
| | PF32 | M3 | 9.8 | 823 | 22.2 | 1334 |
| | PF30 | M4 | 12.5 | 302 | 26.7 | 400 |
| | PF31 | M4 | 12.5 | 489 | 26.7 | 578 |
| | PF32 | M4 | 12.5 | 890 | 26.7 | 1334 |
| | PF30 | M5 | 15.6 | 320 | 35.6 | 423 |
| | PF31 | M5 | 15.6 | 667 | 35.6 | 712 |
| | PF32 | M5 | 15.6 | 1156 | 35.6 | 1890 |
| | PF32 | M6 | 19.1 | 1423 | 53.4 | 2002 |

(1) Performance values reported are averages when all installation specifications and procedures are followed. Variations in mounting hole size, sheet material and installation force (or swaging force for Type PF11MW) will affect results. Performance testing of this product in your application is recommended. We will be happy to provide samples for this purpose.

(2) Torque values shown will produce a preload of 70% minimum tensile with nut factor "k" equal to .1

CAPTIVE PANEL SCREW PERFORMANCE DATA⁽¹⁾

TYPE PF50/PF51/PF52/PF60/PF61/PF62

| UNIFIED | Type | Thread Code | Test Sheet Material | | | |
|-----------|------|-------------|---------------------|-------------------------|---------------------|-------------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (lbs.) | Retainer Pushout (lbs.) | Installation (lbs.) | Retainer Pushout (lbs.) |
| PF50/PF60 | 440 | 2200 | 64 | 5000 | 90 | |
| PF51/PF61 | 440 | 2200 | 105 | 5000 | 110 | |
| PF52/PF62 | 440 | 2200 | 185 | 5000 | 300 | |
| PF50/PF60 | 632 | 2400 | 66 | 5500 | 90 | |
| PF51/PF61 | 632 | 2400 | 105 | 5500 | 130 | |
| PF52/PF62 | 632 | 2400 | 190 | 5500 | 300 | |
| PF50/PF60 | 832 | 2800 | 68 | 6000 | 90 | |
| PF51/PF61 | 832 | 2800 | 110 | 6000 | 130 | |
| PF52/PF62 | 832 | 2800 | 200 | 6000 | 300 | |
| PF50/PF60 | 032 | 3500 | 72 | 8000 | 95 | |
| PF51/PF61 | 032 | 3500 | 150 | 8000 | 160 | |
| PF52/PF62 | 032 | 3500 | 260 | 8000 | 425 | |
| PF52/PF62 | 0420 | 4300 | 320 | 12000 | 450 | |

| METRIC | Type | Thread Code | Test Sheet Material | | | |
|-----------|------|-------------|---------------------|----------------------|-------------------|----------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (kN) | Retainer Pushout (N) | Installation (kN) | Retainer Pushout (N) |
| PF50/PF60 | M3 | 9.8 | 285 | 22.2 | 400 | |
| PF51/PF61 | M3 | 9.8 | 465 | 22.2 | 489 | |
| PF52/PF62 | M3 | 9.8 | 823 | 22.2 | 1334 | |
| PF50/PF60 | M3.5 | 10.7 | 294 | 24.4 | 400 | |
| PF51/PF61 | M3.5 | 10.7 | 465 | 24.4 | 578 | |
| PF52/PF62 | M3.5 | 10.7 | 845 | 24.4 | 1334 | |
| PF50/PF60 | M4 | 12.5 | 302 | 26.7 | 400 | |
| PF51/PF61 | M4 | 12.5 | 489 | 26.7 | 578 | |
| PF52/PF62 | M4 | 12.5 | 890 | 26.7 | 1334 | |
| PF50/PF60 | M5 | 15.6 | 320 | 35.6 | 423 | |
| PF51/PF61 | M5 | 15.6 | 667 | 35.6 | 712 | |
| PF52/PF62 | M5 | 15.6 | 1156 | 35.6 | 1890 | |
| PF52/PF62 | M6 | 19.1 | 1423 | 53.4 | 2002 | |

TYPE PFC4

| UNIFIED | Type | Thread Code | Test Sheet Material | |
|---------|------|-------------|---------------------|-------------------------|
| | | | 304 Stainless Steel | |
| | | | Installation (lbs.) | Retainer Pushout (lbs.) |
| PFC4 | 440 | 9100 | 350 | |
| | 632 | 10300 | 400 | |
| | 832 | 10800 | 450 | |
| | 032 | 11800 | 550 | |

| METRIC | Type | Thread Code | Test Sheet Material | |
|--------|------|-------------|---------------------|----------------------|
| | | | 304 Stainless Steel | |
| | | | Installation (kN) | Retainer Pushout (N) |
| PFC4 | M3 | 40.5 | 1557 | |
| | M4 | 48 | 2002 | |
| | M5 | 52.5 | 2447 | |

TYPE PFC2/PFS2/PFC2P

| UNIFIED | Type | Thread Code | Test Sheet Material | | | |
|---------|------|-------------|---------------------|-------------------------|---------------------|-------------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (lbs.) | Retainer Pushout (lbs.) | Installation (lbs.) | Retainer Pushout (lbs.) |
| PFC2 | 440 | 2400 | 240 | 3000 | 300 | |
| | 632 | 2700 | 275 | 3500 | 350 | |
| PFS2 | 832 | 2900 | 300 | 3800 | 400 | |
| PFC2P | 032 | 3000 | 400 | 4000 | 500 | |
| | 0420 | 3500 | 400 | 5000 | 600 | |

| METRIC | Type | Thread Code | Test Sheet Material | | | |
|--------|------|-------------|---------------------|----------------------|-------------------|----------------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (kN) | Retainer Pushout (N) | Installation (kN) | Retainer Pushout (N) |
| PFC2 | M3 | 10.7 | 1068 | 13.3 | 1334 | |
| | M4 | 12.9 | 1334 | 16.9 | 1779 | |
| PFS2 | M5 | 13.3 | 1779 | 17.8 | 2224 | |
| PFC2P | M6 | 15.6 | 1779 | 22.2 | 2669 | |

TYPE PTL2/PSL2

| UNIFIED | Type | Test Sheet Material | | | |
|--------------|------|---------------------|-------------------------|---------------------|-------------------------|
| | | Aluminum | | Cold-Rolled Steel | |
| | | Installation (lbs.) | Retainer Pushout (lbs.) | Installation (lbs.) | Retainer Pushout (lbs.) |
| PTL2 PSL2 | 3000 | 400 | 4000 | 500 | |

| METRIC | Type | Test Sheet Material | | | |
|--------------|------|---------------------|----------------------|-------------------|----------------------|
| | | Aluminum | | Cold-Rolled Steel | |
| | | Installation (kN) | Retainer Pushout (N) | Installation (kN) | Retainer Pushout (N) |
| PTL2 PSL2 | 13.3 | 1779 | 17.8 | 2224 | |

(1) Performance values reported are averages when all installation specifications and procedures are followed. Variations in mounting hole size, sheet material and installation force will affect results. Performance testing of this product in your application is recommended. We will be happy to provide samples for this purpose.

(2) Torque values shown will produce a preload of 70% minimum tensile (125 ksi / 935 MPa) with nut factor "k" equal to .1

CAPTIVE PANEL SCREW PERFORMANCE DATA⁽¹⁾

TYPE SCBR

| UNIFIED | Type | Thread Code | Rec. Tightening Torque (in. lbs.) (2) | Min. Screw Tensile (lbs.) | Test Sheet Material | | | |
|---------|------|-------------|---------------------------------------|---------------------------|---------------------|----------------|---------------------|----------------|
| | | | | | Aluminum | | Cold-rolled Steel | |
| | | | | | Installation (lbs.) | Pushout (lbs.) | Installation (lbs.) | Pushout (lbs.) |
| | SCBR | 440 | 5 | 590 | 1900 | 130 | 2600 | 145 |
| | SCBR | 632 | 9 | 990 | 2000 | 175 | 3500 | 200 |
| | SCBR | 832 | 17 | 1460 | 2250 | 225 | 3825 | 260 |

| METRIC | Type | Thread Code | Rec. Tightening Torque (N • m) (2) | Min. Screw Tensile (N) | Test Sheet Material | | | |
|--------|------|-------------|------------------------------------|------------------------|---------------------|-------------|-------------------|-------------|
| | | | | | 5052-H34 Aluminum | | Cold-rolled Steel | |
| | | | | | Installation (kN) | Pushout (N) | Installation (kN) | Pushout (N) |
| | SCBR | M3 | 0.74 | 3400 | 8 | 580 | 12 | 650 |
| | SCBR | M4 | 1.7 | 5700 | 10 | 1000 | 17 | 1150 |

TYPE SCB/SCBJ

| UNIFIED | Type | Thread Code | Rec. Tightening Torque (in. lbs.) (2) | Min. Screw Tensile (lbs.) | Test Sheet Material | | | |
|---------|------------|-------------|---------------------------------------|---------------------------|---------------------|----------------|---------------------|----------------|
| | | | | | Aluminum | | Cold-rolled Steel | |
| | | | | | Installation (lbs.) | Pushout (lbs.) | Installation (lbs.) | Pushout (lbs.) |
| | SCB / SCBJ | 440 | 5 | 590 | 1900 | 130 | 2600 | 145 |
| | SCB / SCBJ | 632 | 9 | 990 | 2000 | 175 | 3500 | 200 |

| METRIC | Type | Thread Code | Rec. Tightening Torque (N • m) (2) | Min. Screw Tensile (N) | Test Sheet Material | | | |
|--------|------------|-------------|------------------------------------|------------------------|---------------------|-------------|-------------------|-------------|
| | | | | | 5052-H34 Aluminum | | Cold-rolled Steel | |
| | | | | | Installation (kN) | Pushout (N) | Installation (kN) | Pushout (N) |
| | SCB / SCBJ | M3 | 0.74 | 3400 | 8 | 580 | 12 | 650 |
| | SCB / SCBJ | M4 | 1.7 | 5700 | 10 | 1000 | 17 | 1150 |

TYPE PR10

| UNIFIED | Type | Thread Code | Test Sheet Material | |
|---------|------|-------------|---------------------|---------------------|
| | | | Aluminum | Cold-Rolled Steel |
| | | | Installation (lbs.) | Installation (lbs.) |
| | PR10 | 440 | 2100 | 3000 |
| | | 632 | 2100 | 3000 |
| | | 832 | 2100 | 3600 |
| | | 032 | 2400 | 4200 |

| METRIC | Type | Thread Code | Test Sheet Material | |
|--------|------|-------------|---------------------|-------------------|
| | | | Aluminum | Cold-Rolled Steel |
| | | | Installation (kN) | Installation (kN) |
| | PR10 | M3 | 9.3 | 13.3 |
| | | M4 | 9.3 | 16 |
| | | M5 | 10.7 | 18.7 |

(1) Unless specified, performance values reported are averages when all installation specifications and procedures are followed. Variations in mounting hole size, sheet material and installation force will affect results. Performance testing of this product in your application is recommended. We will be happy to provide samples for this purpose.

(2) Torque values shown will produce a preload of 70% minimum tensile (125 ksi / 935 MPa) with nut factor "k" equal to .1

CAPTIVE PANEL SCREW PERFORMANCE DATA⁽¹⁾

TYPE N10

| UNIFIED | Type | Thread Code | Test Sheet Material | | | |
|---------|------|-------------|---------------------|----------------|---------------------|----------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (lbs.) | Pushout (lbs.) | Installation (lbs.) | Pushout (lbs.) |
| N10 | 440 | 2500 | 95 | 3600 | 130 | |
| | 632 | 2500 | 105 | 4000 | 145 | |
| | 832 | 3000 | 110 | 5000 | 180 | |
| | 032 | 3500 | 120 | 6300 | 200 | |

| METRIC | Type | Thread Code | Test Sheet Material | | | |
|--------|------|-------------|---------------------|-------------|-------------------|-------------|
| | | | Aluminum | | Cold-Rolled Steel | |
| | | | Installation (kN) | Pushout (N) | Installation (kN) | Pushout (N) |
| N10 | M3 | 11.1 | 423 | 16 | 578 | |
| | M4 | 13.3 | 489 | 22.2 | 800 | |
| | M5 | 15.6 | 534 | 28 | 890 | |

REELFAST® TYPE SMTPR RETAINER⁽²⁾

| Part Number | Test Sheet Material | |
|-------------|-------------------------|-------------|
| | .062" Single Layer RF-4 | |
| | Pushout (lbs.) | Pushout (N) |
| SMTPR-6-1ET | 161.4 | 718 |

TESTING CONDITIONS

Oven Quad ZCR convection oven with 4 zones
High Temp 518°F / 270°C
Board Finish 62% Sn, 38% Pb
Screen Printer Ragin Manual Printer
Vias None

Spokes 2 Spoke Pattern
Paste Amtech NC559LF Sn96.5/3.0Ag/0.5Cu (SAC305) - Lead-free
Stencil .0067" / 0.17mm thick

TYPE PFK

| UNIFIED | Type | Thread Code | Test Sheet Material | |
|---------|------|-------------|---------------------|----------------|
| | | | FR-4 Fiberglass | |
| | | | Installation (lbs.) | Pushout (lbs.) |
| PFK | 440 | 250 | 55 | |
| | 632 | 400 | 60 | |

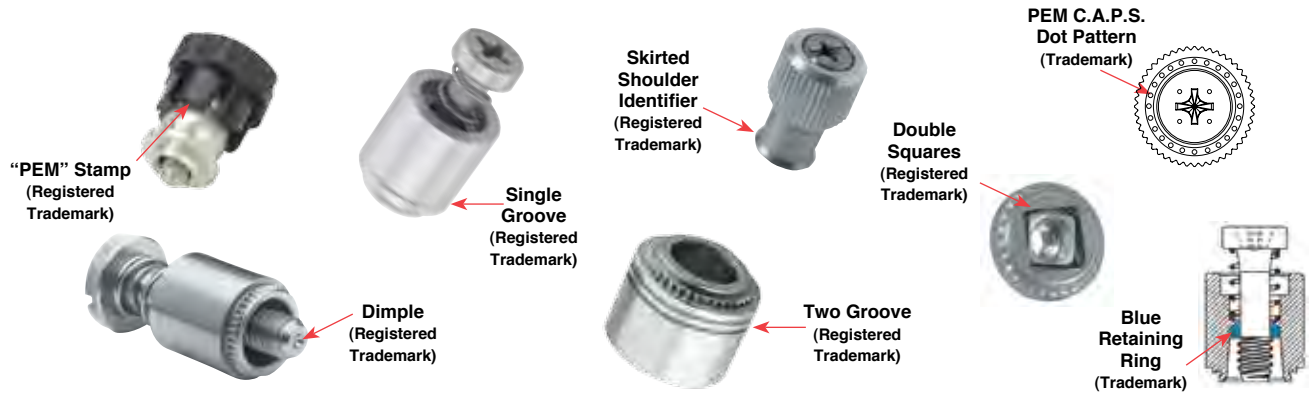
| METRIC | Type | Thread Code | Test Sheet Material | |
|--------|------|-------------|---------------------|-------------|
| | | | FR-4 Fiberglass | |
| | | | Installation (kN) | Pushout (N) |
| PFK | M3 | 1.1 | 245 | |

(1) Performance values reported are averages when all installation specifications and procedures are followed. Variations in mounting hole size, sheet material and installation force (or swaging force for Type PF11MW) will affect results. Performance testing of this product in your application is recommended. We will be happy to provide samples for this purpose.

(2) With lead-free paste. Average values of 30 test points. The data presented here is for general comparison purposes only. Actual performance is dependent upon application variables. We will be happy to provide samples for you to install. If required, we can also test your installed hardware and provide you with the performance data specific to your application.

PEM® FASTENER IDENTIFICATION AND TRADEMARKS

To be sure that you are getting genuine PEM® brand fasteners, look for the unique PEM product markings and identifiers.



These panel fastener styles are protected by U.S. patents:



No. D400,430



No. D437,209S



No. 6,814,530



No. 5,256,019



No. D656,392S



No. D603,693S

CAPTIVE PANEL SCREWS

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