



Access

Hardware

BULLETIN



PEM® BRAND ACCESS HARDWARE

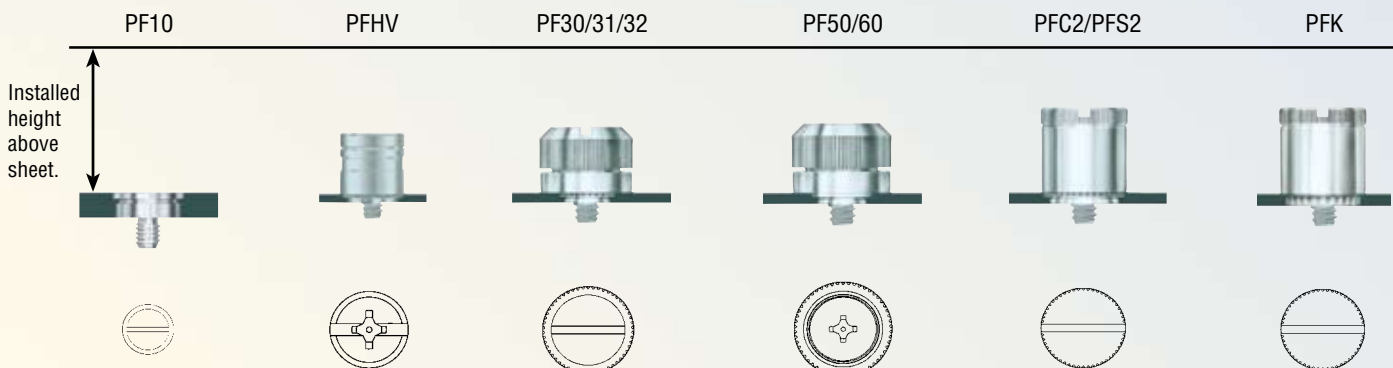
PEM brand access hardware is designed with captive screws to help keep parts to a minimum and eliminate risks associated with loose hardware that could fall out and damage internal components. These panel fastener assemblies are ideal to attach metal panels or other thin material components in applications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

PEM threaded access hardware types include self-clinching panel fasteners with low-profile design that hugs front panels and a large knurl for ease of use; self-clinching panel fasteners with universal slot/Phillips recess; tool or hand actuated self-clinching panel fasteners in steel or stainless steel to resist corrosion; stainless steel panel fasteners that meet UL 1950 “service access area” requirements; low-cost self-clinching panel fasteners featuring a small, compact, and low-profile design for limited access areas; flush-mounted panel screw components; snap-in panel fasteners designed to be installed without tools; press-in panel fasteners allowing for radial float to compensate for mating hole misalignment; and surface mount panel fasteners.

For special applications or designs, please consult your local engineering representative or a factory engineer.

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HEIGHT COMPARISON GUIDE AND STANDARD RECESS FOR SAME THREAD SIZE PANEL FASTENERS

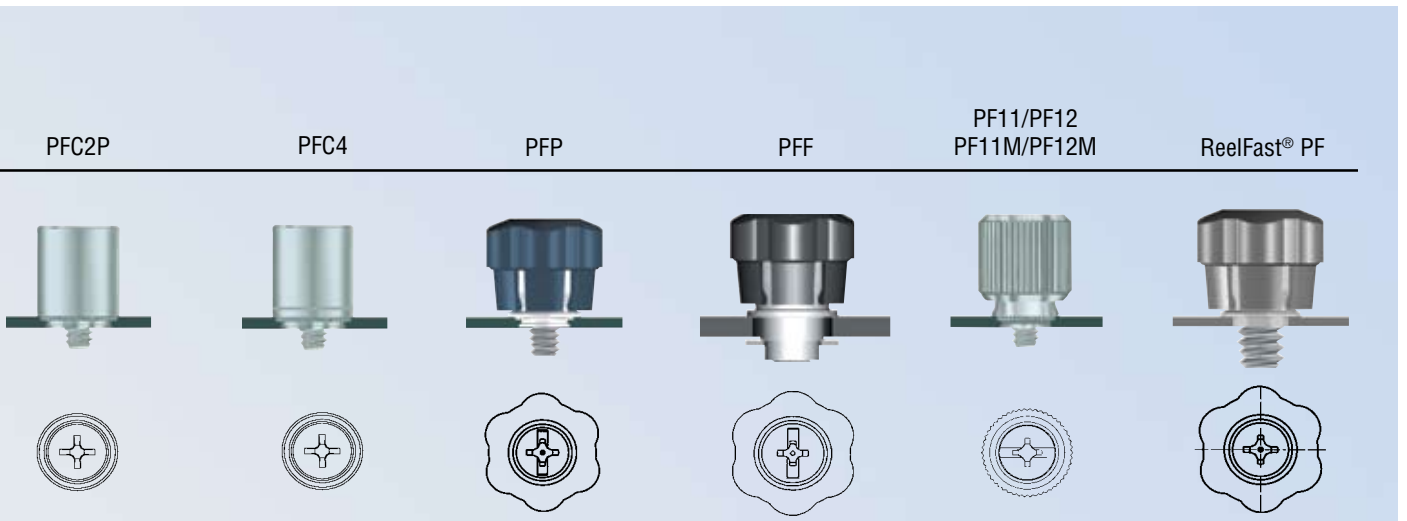


PEM® PANEL FASTENER SELECTOR GUIDE

PEM® Panel Fastener Type	Application Requires:																
	Meets UL 508 "operator access area" req.	Meets UL 1950 "service access area" req.	Recesses				Stainless steel for high corrosion resistance	Installs into stainless steel sheet	Spring loaded assembly	Tool actuated	Hand actuated	Installs into any thin material	Installs into printed circuit boards	Multiple screw lengths	Flush mounted	Available in black	Available in custom colors (2)
			Slot/Phillips	Phillips	Slot	Six-lobe/slot available											
PF11/PF11M	•		•					•	•	•			•		•		
PF12/PF12M		•	•					•	•				•		•		
PFC2	•				•		•	•	•	•			•		•		
PFC4		•		•			•	•	•				•				
PFS2	•				•			•	•	•			•		•		
PFHV			•			•			•	•			•		•		
PF30																	
PF31	•				•			•	•	•					•		
PF32																	
PF50	•			•				•	•	•			•		•		
PF60		•		•				•	•				•		•		
PF10					•		•		•					•	•		
PFC2P		•		•				•	•				•		•		
PFF			•					•	•	•	•	•			•(1)	•	
PFP	•		•			•			•	•			•		•(1)	•	
PFK	•				•		•	•	•	•		•	•		•		
ReelFast PF				•					•	•		•	•		•(1)	•	

(1) Standard color is black.

(2) See page PF-28 for custom color capabilities.



TYPE PF11™ AND PF12™ SELF-CLINCHING PANEL FASTENER ASSEMBLIES

- Shoulder provides positive stop during installation.
- Universal (slot/Phillips) recess.
- Type PF11 meets UL 508 "operator access area" requirements.
- Type PF12 meets UL 1950 "service access area" requirements.
- Available with durable black finish.
- Available in three screw lengths.

Part Number Designation

PF11 - 832 - 0

Type Thread Code Screw Length Code

Patented.

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

See installation data on page PF-21.

Four dimples on head designate metric thread. Driver size.

Shoulder provides positive stop during installation.

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

All dimensions are in inches.

	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 C/L To Edge
		Knurled Cap	Smooth Cap													
UNIFIED	.112-40 (#4-40)	PF11	PF12	440	0	.036	.036	.219	.218	.417	.170	.000	.310	.450	#1	.280
					1						.230	.060				
					2						.290	.120				
	.138-32 (#6-32)	PF11	PF12	632	0	.036	.036	.250	.249	.450	.230	.000	.450	.640	#2	.290
					1						.290	.060				
					2						.350	.120				
	.164-32 (#8-32)	PF11	PF12	832	0	.036	.036	.312	.311	.514	.230	.000	.450	.640	#2	.330
					1						.290	.060				
					2						.350	.120				
	.190-32 (#10-32)	PF11	PF12	032	0	.036	.036	.312	.311	.514	.230	.000	.450	.640	#2	.330
					1						.290	.060				
					2						.350	.120				
.250-20 (1/4-20)	PF11	PF12	0420	0	.036	.036	.375	.374	.575	.290	.000	.530	.790	#3	.460	
				1						.350	.060					
				2						.410	.120					

All dimensions are in millimeters.

	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 C/L To Edge
		Knurled Cap	Smooth Cap													
METRIC	M3 x 0.5	PF11	PF12	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	PF12	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	PF12	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	PF12	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	PF12	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					

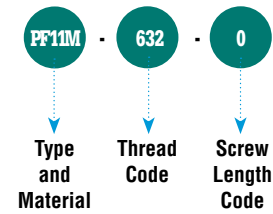
PF11M AND PF12M WITH ANTI-CROSS THREAD TECHNOLOGY

PennEngineering is a licensee for MATHread® anti cross-threading technology. This patented design helps speed assembly and eliminates failures, repairs, scrap, downtime, and warranty service associated with thread damage.

MATHread® is a registered trademark of MATHread Inc.

- Eases assembly.
- Aligns components.
- Improves assembly line productivity.
- Slides through clogged internal threads.

Part Number Designation



ANTI CROSS-THREAD TECHNOLOGY - HOW IT WORKS



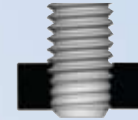
MISALIGNED AXIS:

This design offers users the benefits of self-aligning, anti cross-threading threads.



THREADS CAM:

As the threads come into contact, the patented anti cross-thread begins to cam over the female thread.



THREADS DRIVE NORMALLY:

The design promotes alignment of the two thread helixes. The fasteners drive easily with reduced effort.

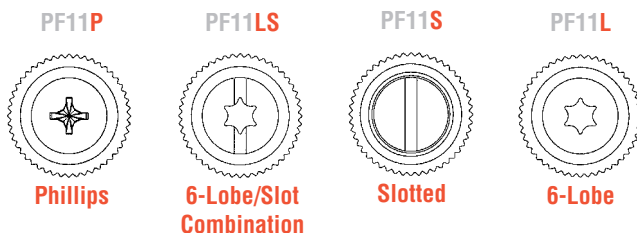
All dimensions are in inches.

	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 C/L To Edge
		Knurled Cap	Smooth Cap													
UNIFIED	.112-40 (#4-40)	PF11M	PF12M	440	0	.036	.036	.219	.218	.417	.200	.000	.310	.470	#1	.280
					1						.260	.060				
					2						.320	.120				
	.138-32 (#6-32)	PF11M	PF12M	632	0	.036	.036	.250	.249	.450	.230	.000	.450	.640	#2	.290
					1						.290	.060				
					2						.350	.120				
	.164-32 (#8-32)	PF11M	PF12M	832	0	.036	.036	.312	.311	.514	.230	.000	.450	.640	#2	.330
					1						.290	.060				
					2						.350	.120				
	.190-32 (#10-32)	PF11M	PF12M	032	0	.036	.036	.312	.311	.514	.230	.000	.450	.640	#2	.330
					1						.290	.060				
					2						.350	.120				
.250-20 (1/4-20)	PF11M	PF12M	0420	0	.036	.036	.375	.374	.575	.290	.000	.530	.800	#3	.460	
				1						.350	.060					
				2						.410	.120					

All dimensions are in millimeters.

	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 C/L To Edge
		Knurled Cap	Smooth Cap													
METRIC	M3 x 0.5	PF11M	PF12M	M3	0	0.92	0.92	5.56	5.54	10.59	5.08	0	7.87	11.94	#1	7.11
					1						6.6	1.52				
					2						8.13	3.05				
	M3.5 x 0.6	PF11M	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	PF11M	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	PF11M	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	PF11M	PF12M	M6	0	0.92	0.92	9.53	9.5	14.61	7.37	0	13.46	20.32	#3	11.68	
				1						8.89	1.52					
				2						10.41	3.05					

OPTIONAL RECESSES FOR TYPES PF11, PF12, PF11M, & PF12M



ALTERNATE RETAINER MOUNTING STYLES

- Broaching
- Flare-in
- Floating

TYPE PFHV™ PANEL FASTENER ASSEMBLIES

- Small, compact and low profile design for limited access areas.
- Two screw lengths.
- Universal slot/Phillips recess standard.
- Six-lobe/slot combination available.

Part Number Designation

PFHV - **632** - **0** **CN**

Type Thread Code Screw Length Code Finish Code

Driver size. Four dimples on head designate metric thread.

Available with six-lobe/slot combination drive (Type PFHVLS) on special order.

Patented.

See installation data on page PF-21.

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 C/L To Edge
	.112-40 (#4-40)	PFHV	440	0	0	.036	.036	.203	.202	.260	.216	.080	.000	.260	.436	#1
1					.095											
.138-32 (#6-32)	PFHV	632	0	0	.036	.036	.219	.218	.276	.234	.092	.000	.290	.484	#2	.230
				1												

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 C/L To Edge
	M3x0.5	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											
M3.5x0.6	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												
M4x0.7	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												

TYPE PFC2 AND PFS2 PANEL FASTENER ASSEMBLIES

- Assorted screw lengths for most applications.
- Available in steel or stainless steel.
- Meets UL 508 "operator access area" requirements.
- Tool or finger operation.
- Most sizes available in three screw lengths.

Part Number Designation

PFS2 - **832** - **50** **CN**

Type and Material Thread Code Screw Length Code Finish Code

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

See installation data on page PF-21.

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 C/L To Edge
		Steel	Stainless Steel													
	.112-40 (#4-40)	PFS2	PFC2	440	40	.060	.060	.265	.264	.312	.250	.072	.000	.36	.54	.25
					62						.375		.125			
	.138-32 (#6-32)	PFS2	PFC2	632	40	.060	.060	.281	.280	.344	.250	.072	.000	.36	.54	.28
					62						.375		.125			
					84 ^{NS}						.500		.250			
	.164-32 (#8-32)	PFS2	PFC2	832	50	.060	.060	.312	.311	.375	.312	.082	.000	.45	.69	.31
72					.437						.125					
94					.562						.250					
.190-32 (#10-32)	PFS2	PFC2	032	50	.060	.060	.344	.343	.406	.312	.082	.000	.45	.69	.34	
				72						.437		.125				
				94						.562		.250				
.250-20 (1/4"-20)	PFS2	PFC2	0420	60	.060	.060	.413	.412	.468	.375	.097	.000	.58	.88	.38	
				82 ^{NS}						.500		.125				
				04 ^{NS}						.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 C/L To Edge
		Steel	Stainless Steel													
	M3 x 0.5	PFS2	PFC2	M3	40	1.53	1.53	6.73	6.71	7.92	6.4	1.83	0	9.14	13.72	6.35
					62 ^{NS}						9.5		3.2			
	M4 x 0.7	PFS2	PFC2	M4	50	1.53	1.53	7.92	7.9	9.53	7.9	2.08	0	11.43	17.53	7.87
					72 ^{NS}						11.1		3.2			
					94 ^{NS}						14.3		6.4			
	M5 x 0.8	PFS2	PFC2	M5	50	1.53	1.53	8.74	8.72	10.31	7.9	2.08	0	11.47	17.53	8.63
72 ^{NS}					11.1						3.2					
94 ^{NS}					14.3						6.4					
M6 x 1	PFS2	PFC2	M6	60	1.53	1.53	10.49	10.47	11.89	9.5	2.46	0	14.73	22.35	9.65	
				82 ^{NS}						12.7		3.2				
				04 ^{NS}						15.9		6.4				

(NS) Not Stocked, available on special order.


TYPE PFC4™ PANEL FASTENER ASSEMBLIES

- Installs into stainless steel sheets.
- UL 1950 (service access requirements) approved.
- Assorted screw lengths for most applications.
- For use in sheets of HRB 88 or less.


Part Number Designation

PFC4 - 832 - 50

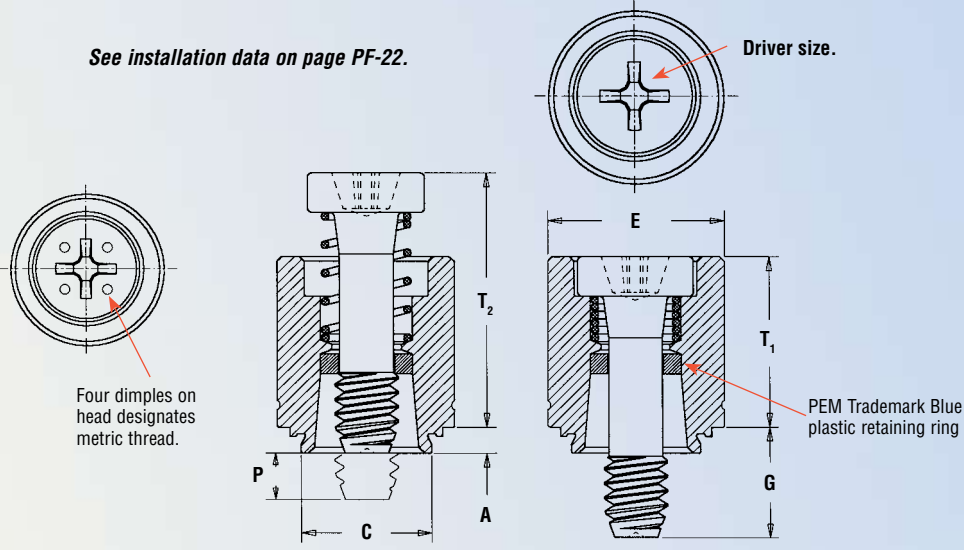
Type Thread Code Screw Length Code



Patented.



See installation data on page PF-22.



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 C/L To Edge
	.112-40 (#4-40)	PFC4	440	40	.060	.060	.265	.264	.344	.250	.000	.370	.540	#1	.25
.062					.250	.125									
.138-32 (#6-32)	PFC4	632	40	.060	.060	.281	.280	.375	.250	.000	.380	.540	#2	.28	
				.062	.375	.125									
				.084 ^{NS}	.500	.250									
.164-32 (#8-32)	PFC4	832	50	.060	.060	.312	.311	.406	.312	.000	.480	.705	#2	.31	
				.072	.437	.125									
				.094	.562	.250									
.190-32 (#10-32)	PFC4	032	50	.060	.060	.344	.343	.437	.312	.000	.490	.705	#2	.34	
				.072	.437	.125									
				.094	.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 C/L 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
1.53					6.73	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	
				1.53	7.92	3.2									
				1.53	9.4	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	
				1.53	8.74	3.2									
				1.53	9.4	6.4									

(NS) Not Stocked, available on special order.


TYPE PF30 LOW-PROFILE PANEL FASTENER ASSEMBLIES

- Satisfies many functional and cosmetic requirements.
- Large, slotted head for tool or finger operation.
- Low-profile design.
- Meets UL 508 "operator access area" requirements.


Part Number Designation

PF30 -
 832 -
 30
CN

Type Thread Code Screw Length Code Finish Code

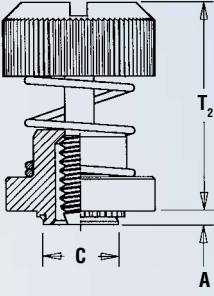
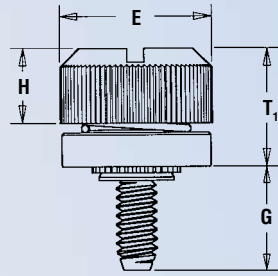


Patented.



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

See installation data on page PF-22.

Diagonal knurl identifies metric thread sizes.

All dimensions are in inches.

	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 C/L 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 ^{NS}	632	30	.030	.030	.219	.218	.438	.300	.202	.325	.595	.28
		PF31			.038	.040								
		PF32			.058	.060								
	.164-32 (#8-32)	PF30 ^{NS}	832	30	.030	.030	.250	.249	.468	.300	.207	.330	.600	.29
		PF31			.038	.040								
		PF32			.058	.060								
	.190-32 (#10-32)	PF30 ^{NS}	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.

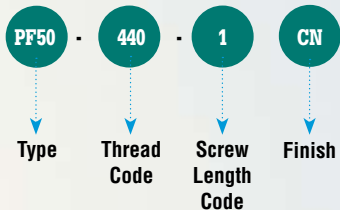
	Thread Size x Pitch	Type	Thread Code	Screw Length Code	A (Shank) Max.	Min. Sheet Thickness	Hole Size In Sheet + 0.08	C Max.	E ±0.25	G ± 0.4	H ± 0.13	T ₁ Max.	T ₂ Nom.	Min. Dist. Hole C/L To Edge
	M3 x 0.5	PF31 ^{NS}	M3	30	0.97	1	5.5	5.48	10.31	7.62	5.13	8.26	15.11	6.6
		PF32			1.48	1.5								
	M4 x 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 ^{NS}	M6	35	1.48	1.5	9.5	9.48	15.88	8.89	6.12	9.78	17.15	9.65

(NS) Not Stocked, available on special order.

TYPE PF50™ AND PF60™ LOW-PROFILE PANEL FASTENER ASSEMBLIES

- Satisfies many functional and cosmetic requirements.
- Type PF50 with large head and Phillips recess for tool or finger operation.
- Available with six-lobe recess.
- Type PF50 (knurled cap) meets UL 508 "operator access area" requirements.
- Type PF60 (smooth cap) meets UL 1950 "tool only access area" requirements.
- Available in black.

Part Number Designation



See installation data on page PF-24.



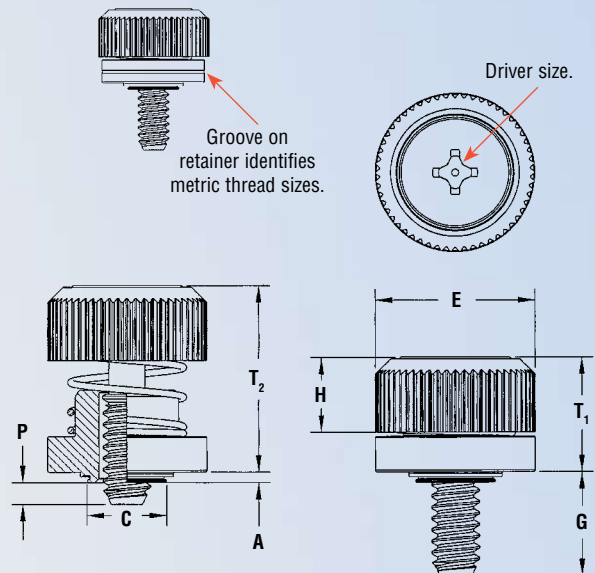
Type PF50



Type PF60



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



All dimensions are in inches.

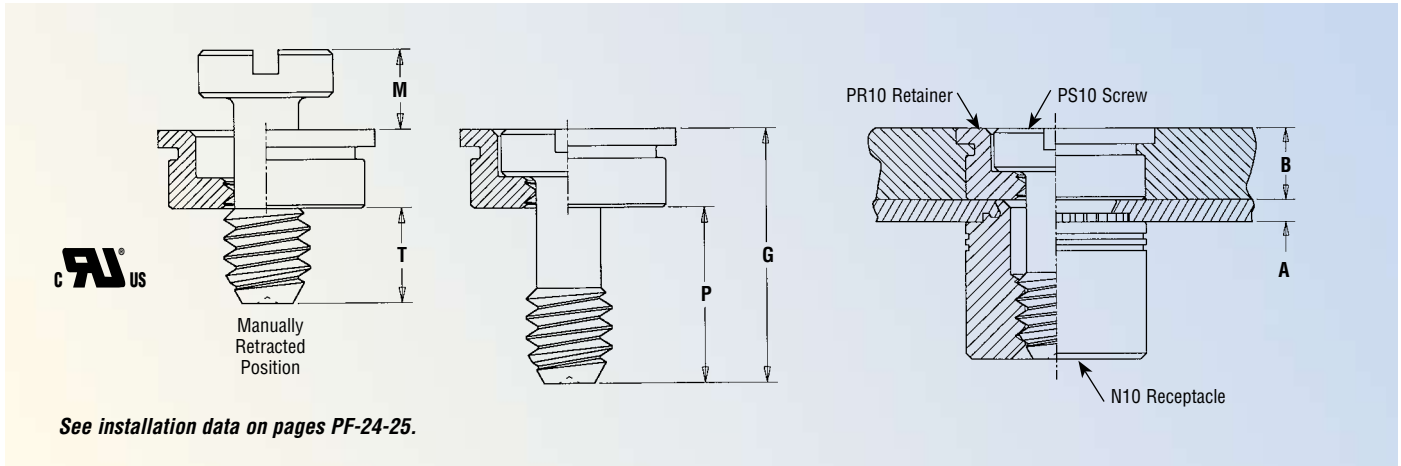
	Thread Size	Type		Thread Code	Screw Length Code	A (Shank) Max.	Min. Sheet Thickness	Hole Size In Sheet + .003 - .000	C Max.	E +.015 - .005	G ±.025	H ±.008	P ±.025	T ₁ Max.	T ₂ Nom.	Driver Size	Min. Dist Hole C/L To Edge
		Knurled Cap	Smooth Cap														
UNIFIED	.112-40 (#4-40)	PF50	PF60	440	0	.030	.030	.203	.202	.406	.230	.207	.000	.340	.520	#1	.26
					1						.290		.060				
	.138-32 (#6-32)	PF50	PF60	632	0	.030	.030	.219	.218	.438	.230	.207	.000	.340	.520	#2	.28
					1						.290		.060				
	.164-32 (#8-32)	PF50	PF60	832	0	.030	.030	.250	.249	.468	.230	.217	.000	.340	.530	#2	.29
					1						.290		.060				
	.190-32 (#10-32)	PF50	PF60	032	0	.030	.030	.312	.311	.530	.230	.225	.000	.360	.530	#2	.33
					1						.290		.060				
	.250-20 (1/4-20)	PF52	PF62	0420	0	.058	.060	.375	.374	.625	.280	.246	.000	.395	.600	#2	.38
					1						.340		.060				

All dimensions are in millimeters.

	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 C/L To Edge
		Knurled Cap	Smooth Cap														
METRIC	M3 x 0.5	PF50	PF60	M3	0	0.77	0.8	5.5	5.48	10.3	5.84	5.26	0	8.64	13.21	#1	6.6
					1						7.37		1.52				
	M3.5 x 0.6	PF50	PF60	M3.5	0	0.77	0.8	5.56	5.54	11.1	5.84	5.26	0	8.64	13.21	#2	7.1
					1						7.37		1.52				
	M4 x 0.7	PF50	PF60	M4	0	0.77	0.8	6.4	6.38	11.9	5.84	5.51	0	8.64	13.46	#2	7.4
					1						7.37		1.52				
	M5 x 0.8	PF50	PF60	M5	0	0.77	0.8	8	7.98	13.5	5.84	5.72	0	9.15	13.46	#2	8.4
					1						7.37		1.52				
	M6 x 1	PF52	PF62	M6	0	1.47	1.5	9.5	9.48	15.9	7.11	6.25	0	10.04	15.24	#2	9.7
					1						8.64		1.52				

TYPE PF10 FLUSH-MOUNTED PANEL SCREW COMPONENTS

- Screw head is flush in sheets as thin as .125" / 3.2 mm.
- Screw remains captive in retainer when disengaged.
- For use in sheets of HRB 70 or less.
- UL 1950 (service access requirements) approved.



All dimensions are in inches.

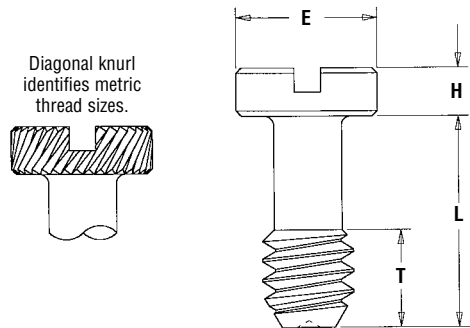
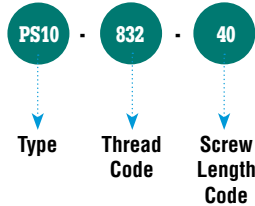
UNIFIED	A	B	G	M	P	T
	Min.	Nom.	± .010			Nom.
	.04	.125	.40	.16	.28	.13

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

PS10 Flush-Mounted Screws

Part Number Designation



All dimensions are in inches.

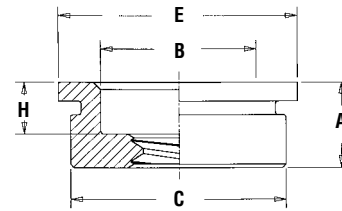
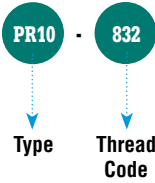
UNIFIED	Thread Size	Type	Thread Code	Screw Length Code	E	H	L	T
					Nom.	+ .002 - .006	± .010	Nom.
	.112-40 (#4-40)	PS10	440	40	.18	.075	.33	.13
	.138-32 (#6-32)	PS10	632	40	.21	.075	.33	.13
	.164-32 (#8-32)	PS10	832	40	.25	.075	.33	.13
	.190-32 (#10-32)	PS10	032	40	.28	.075	.33	.13

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

PR10 Self-Clinching Flush-Mounted Retainers

Part Number Designation



All dimensions are in inches.

UNIFIED	Thread Size	Type (1)	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 C/L 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

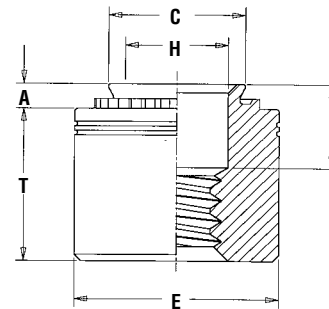
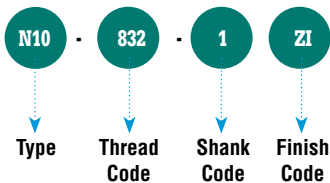
All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type (1)	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 C/L 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

(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.

N10 Self-Clinching Receptacle Nuts

Part Number Designation



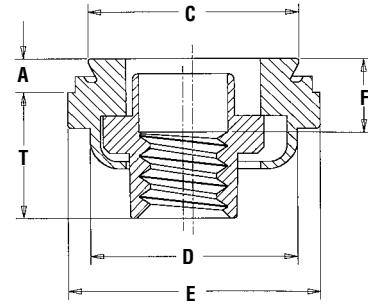
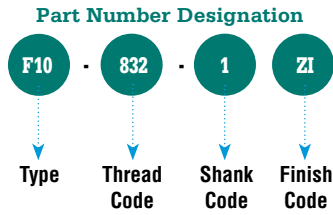
All dimensions are in inches.

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 C/L 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 C/L 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

F10 Self-Clinching Floating Receptacle Nuts *(Special order only)*



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.	D Max.	E Max.	F ± .010	T ± .010	Min. Dist. Hole C/L To Edge
	.112-40 (#4-40)	F10 ^{NS}	440	1	.038	.040	.290	.289	.290	.36	.102	.200	.30
	.138-32 (#6-32)	F10 ^{NS}	632	1	.038	.040	.328	.327	.330	.39	.102	.193	.32
	.164-32 (#8-32)	F10 ^{NS}	832	1	.038	.040	.368	.367	.365	.44	.102	.191	.34
	.190-32 (#10-32)	F10 ^{NS}	032	1	.038	.040	.406	.405	.405	.47	.102	.250	.36

All dimensions are in millimeters.

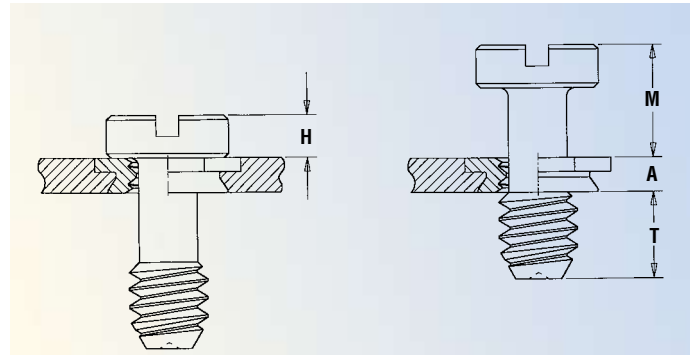
METRIC	Thread Size x Pitch	Type	Thread Code	Shank Code	A (Shank) Max.	Min. Sheet Thickness	Hole Size In Sheet + 0.08	C Max.	D Max.	E Max.	F ± 0.25	T ± 0.25	Min. Dist. Hole C/L To Edge
	M3 x 0.5	F10 ^{NS}	M3	1	0.97	1	7.37	7.34	7.37	9.15	2.59	5.08	7.62
	M4 x 0.7	F10 ^{NS}	M4	1	0.97	1	9.35	9.32	9.28	11.18	2.59	4.85	8.64
	M5 x 0.8	F10 ^{NS}	M5	1	0.97	1	10.31	10.29	10.29	11.94	2.59	6.53	9.14

(NS) Not Stocked, available on special order.

Special Application Note:

For applications where the screw head may project above the sheet surface, PS10 screws may be used with PEMSERT® Type F fasteners as retainers. Type F fasteners are self-clinching and flush mounted in sheets as thin as .060" / 1.5 mm. Screws are installed by turning them through the threads of the Type F fasteners. For dimensions and engineering data on Type F fasteners see PEM Bulletin F.

		A Max.	H Nom.	M Nom.	T Nom.
UNIFIED	PS10 with Type F Retainer (inches)	.060	.075	.21	.13
METRIC	PS10 with Type F Retainer (millimeters)	1.53	1.9	5.4	3.3



TYPE PFC2P™ PHILLIPS RECESS PANEL FASTENER ASSEMBLIES

- UL 1950 (service access requirements) approved
- Assorted screw lengths for most applications.

Part Number Designation

PFC2P - 832 - 50

Type Thread Code Screw Length Code

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

See installation data on page PF-21.

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 C/L To Edge
	.112-40 (#4-40)	PFC2P	440	40	40	.060	.060	.265	.264	.312	.250	.000	.370	.540	#1
62					.375						.125				
.138-32 (#6-32)	PFC2P	632	40	40	.060	.060	.281	.280	.344	.250	.000	.380	.540	#2	.28
				62						.375	.125				
				84 ^{NS}						.500	.250				
.164-32 (#8-32)	PFC2P	832	50	50	.060	.060	.312	.311	.375	.312	.000	.480	.705	#2	.31
				72						.437	.125				
				94						.562	.250				
.190-32 (#10-32)	PFC2P	032	50	50	.060	.060	.344	.343	.406	.312	.000	.490	.705	#2	.34
				72						.437	.125				
				94						.562	.250				
.250-20 (1/4-20)	PFC2P	0420	60	60	.060	.060	.413	.412	.468	.375	.000	.620	.905	#3	.38
				82 ^{NS}						.500	.125				
				04 ^{NS}						.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 ± 0.25	G ± 0.4	P ± 0.64	T ₁ Max.	T ₂ Nom.	Driver Size	Min. Dist. Hole C/L To Edge
	M3 x 0.5	PFC2P	M3	40	40	1.53	1.53	6.73	6.71	7.92	6.4	0	9.4	13.72	#1
62 ^{NS}					9.5						3.2				
M4 x 0.7	PFC2P	M4	50	50	1.53	1.53	7.92	7.9	9.53	7.9	0	12.19	17.91	#2	7.87
				72 ^{NS}						11.1	3.2				
				94 ^{NS}						14.3	6.4				
M5 x 0.8	PFC2P	M5	50	50	1.53	1.53	8.74	8.72	10.31	7.9	0	12.45	17.91	#2	8.63
				72						11.1	3.2				
				94 ^{NS}						14.3	6.4				
M6 x 1	PFC2P	M6	60	60	1.53	1.53	10.49	10.47	11.89	9.5	0	15.75	22.99	#3	9.65
				82 ^{NS}						12.7	3.2				
				04 ^{NS}						15.9	6.4				

(NS) Not Stocked, available on special order.

TYPE PFF™ HYBRID™ FLOATING PANEL FASTENER ASSEMBLIES

- Molded-thru color knob.
- Compensates for up to .060" / 1.52mm mating hole misalignment.
- Tool or finger operation.
- Optional colors available.
- Installs into any panel material.

Part Number Designation

PFF

↓

Type

032

↓

Thread Code

0

↓

Shank Code

L

↓


Knob Style

001

↓

Knob Color Code*

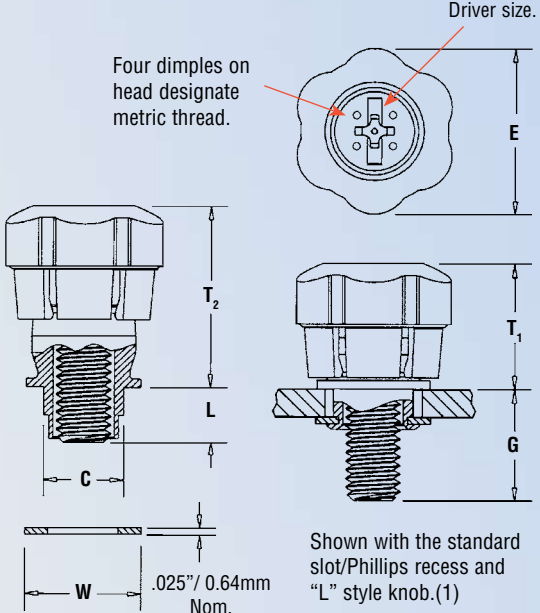
*For color capabilities see page PF-28.



Patented.

Type PFF panel fasteners are shipped with mating washers.

See installation data on page PF-23.



Driver size.

Four dimples on head designate metric thread.

.025" / 0.64mm Nom.

Shown with the standard slot/Phillips recess and "L" style knob.(1)

All dimensions are in inches.

UNIFIED	Thread Size	Type	Thread Code	Shank Code	C Max.	E ±.010	G Nom.	L Nom.	T ₁ Nom.	T ₂ Nom.	Driver Size	Min. Radial Float in Sheet	W Max.	Washer Part Number
	.190-32 (#10-32)	PFF	032	0	1	.283	.594	.315	.154	.468	.668	#2	.030	.411
1					.346			.185	.498	.698				
.216-24 (#12-24)	PFF	1224	0	1	.345	.646	.309	.160	.504	.698	#2	.030	.473	PFFW-12
				1			.341	.191	.534	.728				

All dimensions are in millimeters.

METRIC	Thread Size x Pitch	Type	Thread Code	Shank Code	C Max.	E ±0.25	G Nom.	L Nom.	T ₁ Nom.	T ₂ Nom.	Driver Size	Min. Radial Float in Sheet	W Max.	Washer Part Number
	M5 x 0.8	PFF	M5	M5	0	7.19	15.09	8	3.91	11.89	16.97	#2	0.76	10.44
1					8.79			4.7	12.65	17.73				
M6 x 1	PFF	M6	M6	0	8.77	16.41	7.85	4.06	12.8	17.73	#2	0.76	12.02	PFFW-M6
				1			8.66	4.85	13.56	18.49				

(1) For special recess types consult our Engineering Department.

For hole size and sheet thickness data, see charts on page PF-23.

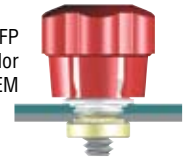
TYPE PFP™ HYBRID™ PANEL FASTENER ASSEMBLIES

- Metal slot/Phillips recess.
- Standard black ABS knob.
- Steel retainer and screw.
- Optional colors available.
- Molded-thru color.

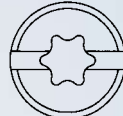
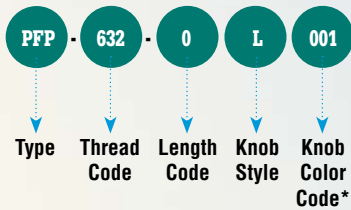
Spring action of plastic "fingers" holds knob in retracted position. Photo represents -0 length screw.



Shown here is the Type PFP panel fastener (custom color 002) threaded into a PEM Type S nut.



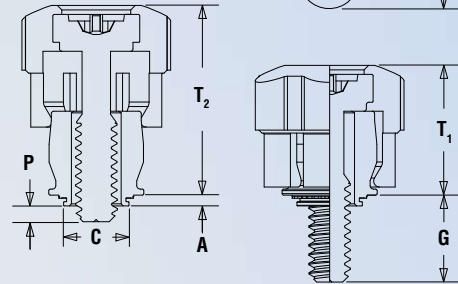
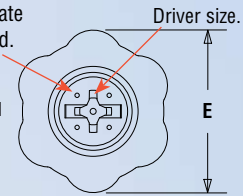
Part Number Designation



Available with six-lobe recess on special order.

Four dimples on head designate metric thread.

Shown with standard slot/Phillips recess and "L" style knob.⁽¹⁾



Patented.

*For color capabilities see page PF-28.

See installation data on page PF-25.

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 C/L To Edge	Total Radial Float Min.
	.112-40 (#4-40)	PFP	440	0	.036	.036	.203	.202	.542	.230	.000	.436	.636	#1	.213	.015
1																
2																
.138-32 (#6-32)	PFP	632	0	.036	.036	.219	.218	.542	.230	.000	.436	.636	#2	.230	.020	
			1													
			2													
.164-32 (#8-32)	PFP	832	0	.036	.036	.250	.249	.594	.230	.000	.436	.636	#2	.263	.020	
			1													
			2													
.190-32 (#10-32)	PFP	032	0	.036	.036	.281	.280	.594	.230	.000	.436	.636	#2	.294	.020	
			1													
			2													


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 C/L To Edge	Total Radial Float Min.
	M3 x 0.5	PFP	M3	0	0.92	0.92	5.16	5.14	13.77	5.84	0	11.07	16.15	#1	5.41	.38
1																
2																
M3.5 x 0.6	PFP	M3.5	0	0.92	0.92	5.56	5.54	13.77	5.84	0	11.07	16.15	#2	5.84	.51	
			1													
			2													
M4 x 0.7	PFP	M4	0	0.92	0.92	6.35	6.33	15.09	5.84	0	11.07	16.15	#2	6.68	.51	
			1													
			2													
M5 x 0.8	PFP	M5	0	0.92	0.92	7.14	7.12	15.09	5.84	0	11.07	16.15	#2	7.47	0.51	
			1													
			2													

(1) For special drive types consult our Engineering Department.

TYPE PFK PANEL FASTENER ASSEMBLIES

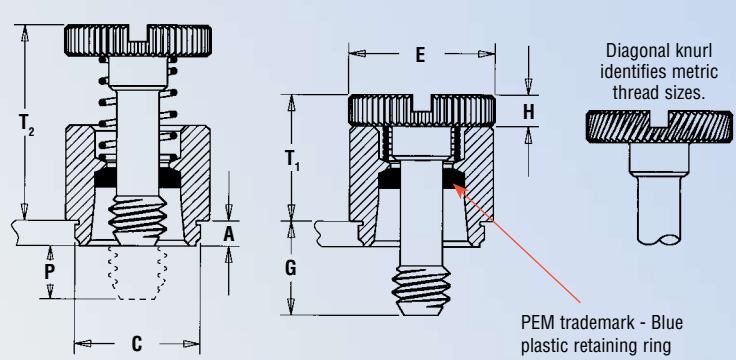
- For use in PC boards and sheets of HRB 70 or less.



Part Number Designation

PFK - **632** - **40**

Type Thread Code Screw Length Code



Diagonal knurl identifies metric thread sizes.

PEM trademark - Blue plastic retaining ring

See installation data on page PF-25.

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 C/L To Edge
	.112-40 (#4-40)	PFK	440	40	40	.060	.060	.265	.283	.312	.250	.072	.000	.36	.54
62 ^{NS}					.375						.125				
84 ^{NS}					.500						.250				
.138-32 (#6-32)	PFK	632	40	.060	.060	.281	.299	.344	.250	.072	.000	.36	.54	.26	
			62						.375		.125				
			84 ^{NS}						.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 C/L To Edge
	M3 x 0.5	PFK	M3	M3	40	1.53	1.53	6.73	7.19	7.92	6.4	1.83	0	9.14	13.72
62 ^{NS}					9.5						3.2				
84 ^{NS}					12.7						6.4				

(NS) Not Stocked, available on special order.

TYPE PTL2 SPRING-LOADED PLUNGER ASSEMBLIES

- Reverse side of sheet is flush when plunger is retracted.
- Quick lockout feature holds plunger in retracted position.
- For use in sheets of HRB 80 or less.
- Available as type PSL2 without lockout feature on special order.



Part Number Designation

PTL2 - **04** - **4** - **CN**

Type Plunger Diameter Code Plunger Length Code Finish Code



See installation data on page PF-26.

All dimensions are in inches.

UNIFIED	Type	Plunger Diameter Code	Plunger Length Code	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.	TR ± .005	Min. Dist. Hole C/L To Edge
	PTL2	04	4	.060	.328	.327	.250	.50	.406	.310	.17	.595	.895	.430	.34
PSL2 ^{NS}	04	4	.060	.328	.327	.250	.50	.406	.310	.17	.510	.780	.350	.34	

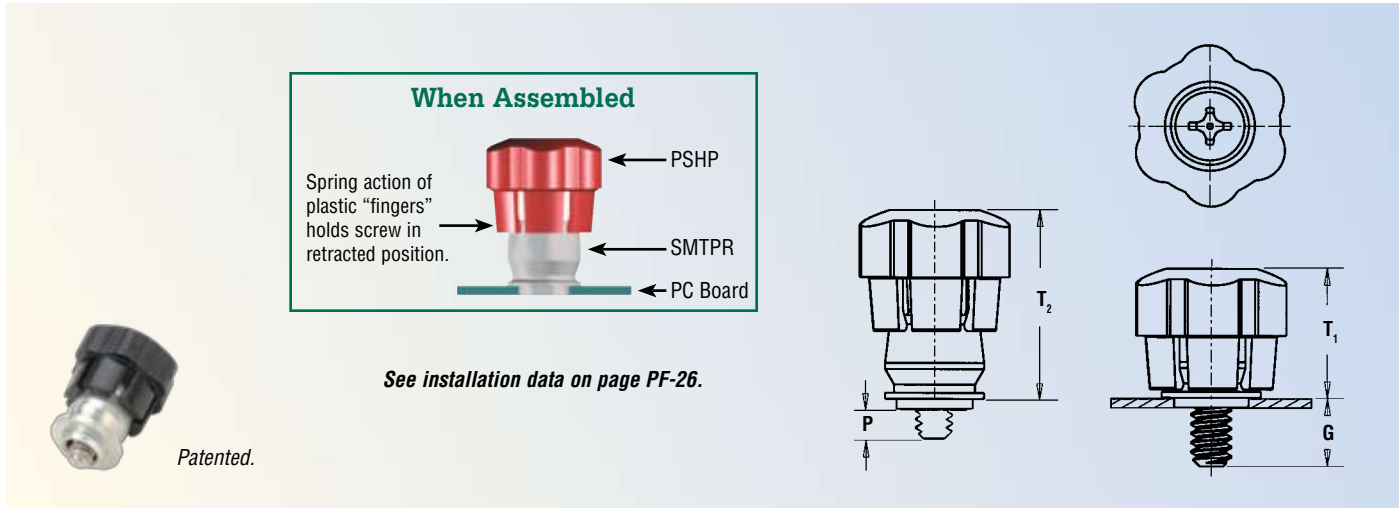
All dimensions are in millimeters.

METRIC	Type	Plunger Diameter Code	Plunger Length Code	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.	TR ± 0.13	Min. Dist. Hole C/L To Edge
	PTL2	04	4	1.53	8.33	8.31	6.35	12.7	10.3	7.87	4.32	15.11	22.73	10.92	8.64
PSL2 ^{NS}	04	4	1.53	8.33	8.31	6.35	12.7	10.3	7.87	4.32	12.95	19.81	8.89	8.64	

(NS) Not Stocked, available on special order.

ReelFast® PANEL FASTENER COMPONENTS AND ASSEMBLY DATA

- Installed using conventional surface mount techniques.
- Simply snap screw into retainer to complete assembly.
- Black ABS knob standard.
- Optional molded-thru colors available.



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			

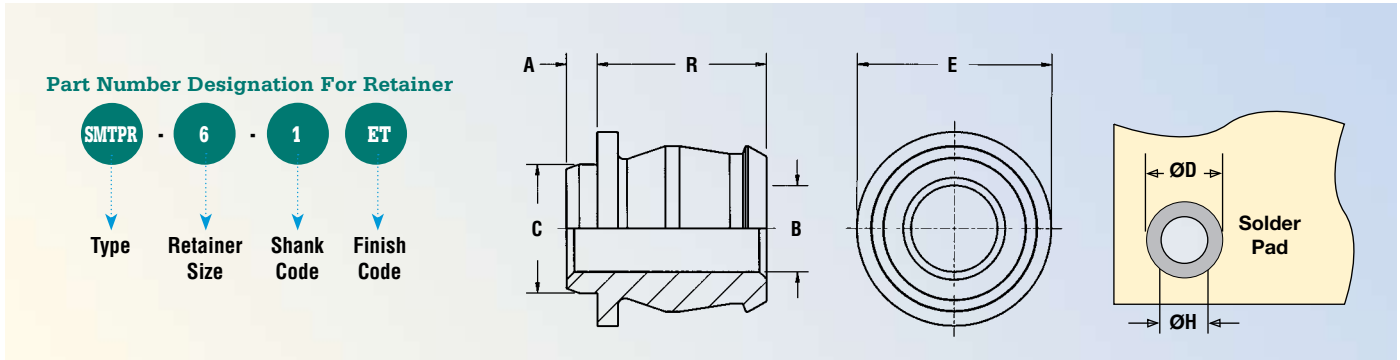
All dimensions are in millimeters.

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			



RETAINER

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



All dimensions are in inches.

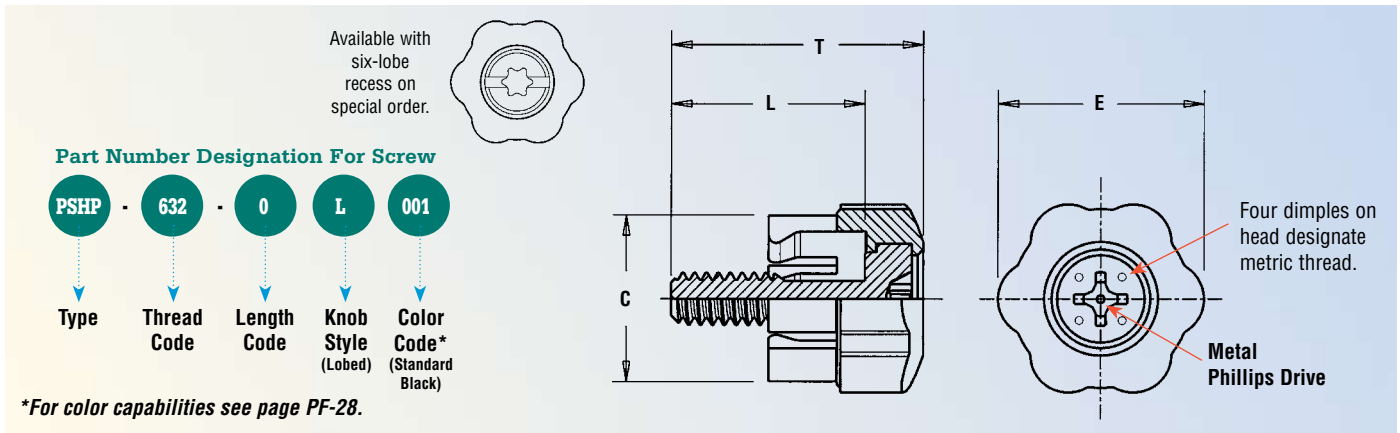
UNIFIED	Retainer Part Number	A Max.	Min. Sheet Thickness	B ±.003	C Max.	E Nom.	R ±.005	ØH Hole Size In Sheet +.003 -.000	ØD Min. Solder Pad
		SMTPR-6-1	.060	.060	.167	.249	.375	.325	.250

All dimensions are in millimeters.

METRIC	Retainer Part Number	A 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

SCREW

Packaged in bags.



All dimensions are in inches.

UNIFIED	Type	Thread Code	Screw Length Code	C ±.010	E ±.010	L ±.012	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 ±0.3	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	

MATERIAL & FINISH SPECIFICATIONS

Type	Threads		Fastener Materials					Standard Finishes					Optional Finishes			For Use In Sheet Hardness:						
	Internal, ANSI B1.1, 2B ANSI/ASME B1.13M, 6H	External, ANSI B1.1, 2A ANSI/ASME B1.13M, 6g (1)	300 Series Stainless Steel	Carbon Steel	Heat-Treated Carbon Steel	Aluminum	Acetal (4)	400 Series Stainless Steel	ABS (3)	Passivated and/or Tested Per ASTM A380	Bright Nickel Over Copper Flash per ASTM B689	Zinc Per ASTM B 633 SC1 (5µm), Type III, Colorless	Electro Plated Bright Tin ASTM B 545, Class B W/Preservative Coating	Natural Finish	Black Anodize	Black Nitride	Matte Electro-Tin ASTM B 545 Class A W/Preservative Coating, Annealed	HRB 88 / HB 183 or Less (6)	HRB 80 / HB 150 or Less (6)	HRB 70 / HB 125 or Less (6)	HRB 60 / HB 107 or Less (6)	PC Board
PF11																						
PF12																						
Knob																						
Retainer																						
Screw																						
Spring																						
PF11M																						
PF12M																						
Knob																						
Retainer																						
Screw																						
Spring																						
PFC2																						
Retainer																						
Screw																						
Spring																						
PFC4																						
Retainer																						
Screw																						
Spring																						
PFS2																						
Retainer																						
Screw																						
Spring																						
PFHV																						
Retainer																						
Screw																						
PF30																						
PF31																						
PF32																						
Retainer																						
Screw																						
Spring																						
PF50																						
PF60																						
Cap																						
Retainer																						
Screw																						
Spring																						
PR10																						
PS10																						
N10																						
F10																						
PFC2P																						
Retainer																						
Screw																						
Spring																						
PFF																						
Knob																						
Retainer																						
Screw																						
Washer																						
PFP																						
Knob																						
Retainer																						
Screw																						
PFK																						
Retainer																						
Screw																						
Spring																						
PTL2																						
PSL2																						
Retainer																						
Plunger																						
ReelFast																						
Knob																						
Retainer																						
Screw																						
Part Number Codes for Finishes									None	CN	ZI	ET	None	BL ⁽⁶⁾	BN	DT						

- (1) As with all external plated threads, Class 2A/6g, the maximum major and pitch, after plating, may equal basic sizes and be gauged to Class 3A/6h, 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.
- (3) Temperature limit is 200° F / 93° C.
- (4) Temperature range 32°F - 150°F / 0°C - 65°C.
- (5) For Types PF11, PF12, PF11M, and PF12M use part number finish code "BL".
- (6) HRB - Hardness Rockwell "B" Scale. HB - Hardness Brinell.

INSTALLATION⁽¹⁾

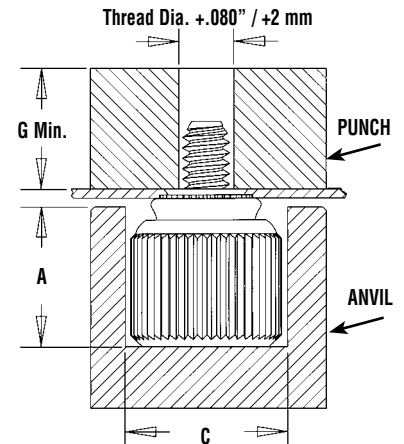
Type PF11 and PF12

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
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 sheet material.

Anvil Dimensions

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	



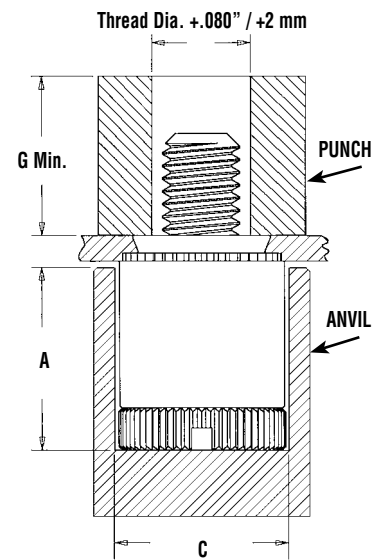
Type PFC2/PFS2/PFC2P

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
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 sheet material.

Anvil Dimensions

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	



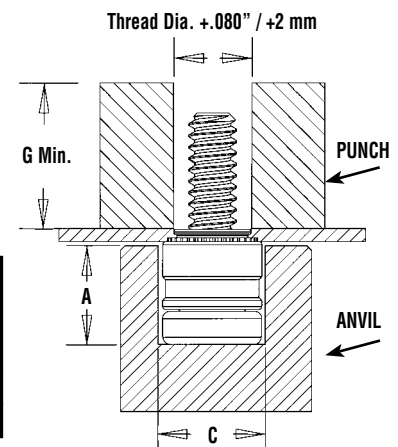
Type PFHV

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
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 sheet material.

Anvil Dimensions

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	

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	



(1) Punches and anvils should be hardened.

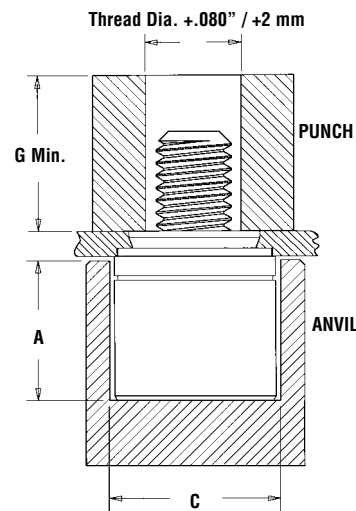
INSTALLATION (Continued)

Type PFC4

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into the 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 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.



Anvil Dimensions

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	975200064

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	975200064

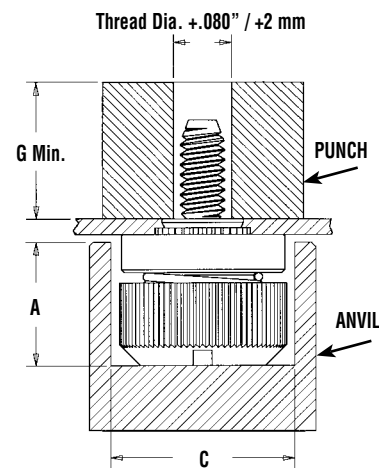
Type PF30, PF31, & PF32

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
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 sheet material.

Anvil Dimensions

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	97520164	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



INSTALLATION (Continued)

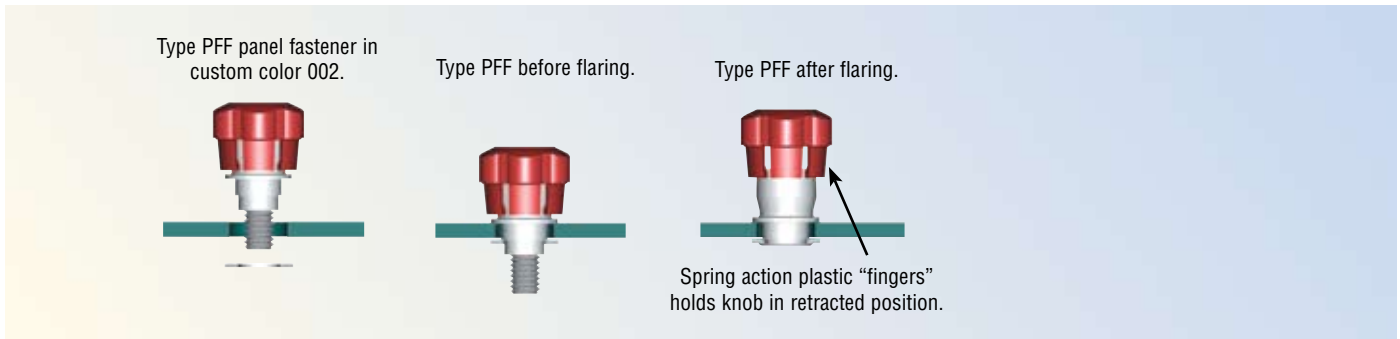
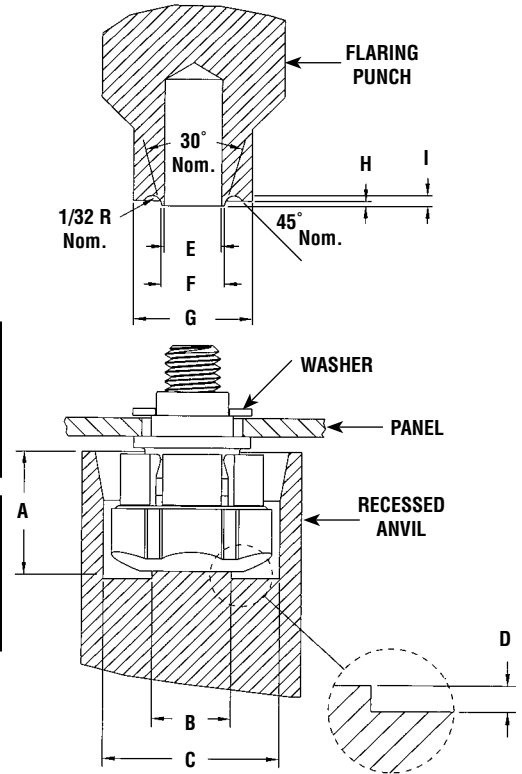
Type PFF

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil and workpiece over shank of fastener, and then place the washer over the shank of fastener.
3. With punch and anvil surfaces parallel, apply swaging force with flaring punch.

Anvil Dimensions

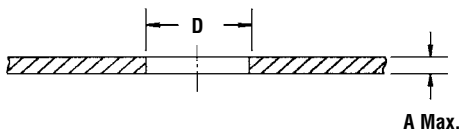
UNIFIED	Thread Code	Anvil Dimensions (in.)				Punch Dimensions (in.)					Anvil Part Number	Punch Part Number
		A ±.002	B ±.002	C ±.001	D ±.002	E	F ±.001	G ±.003	H ±.002	I ±.004		
	032	.449	.268	.607	.047	.198-.201	.205	.404	.016	.032	8006825	8006702
	1224	.485	.320	.659	.047	.217-.220	.236	.468	.018	.036	8006701	8006703

METRIC	Thread Code	Anvil Dimensions (mm)				Punch Dimensions (mm)					Anvil Part Number	Punch Part Number
		A ±0.05	B ±0.05	C ±0.03	D ±0.05	E	F ±0.03	G ±0.08	H ±0.05	I ±0.1		
	M5	11.4	6.81	15.42	1.19	5.03-5.11	5.21	10.26	0.41	0.81	8006825	8006702
	M6	12.32	8.13	16.74	1.19	5.99-6.07	6.4	11.89	0.51	1.02	8006701	8006704



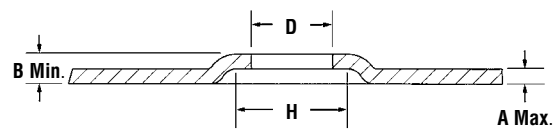
PANEL CONFIGURATION 1

For applications where a space between mating panels is acceptable.



PANEL CONFIGURATION 2

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



UNIFIED	Type	Thread Code	Shank Code	A Sheet Thickness	B Min.	D Hole Size in Sheet (1) +.003 - .000	H Min. (2)
	PFF	032		0	.031 - .063	.125	.344
1				.064 - .094	.160		
PFF	1224		0	.031 - .063	.125	.406	.534
			1	.064 - .094	.160		

METRIC	Type	Thread Code	Shank Code	A Sheet Thickness	B Min.	D Hole Size in Sheet (1) +0.08	H Min. (2)
	PFF	M5		0	0.79 - 1.6	3.18	8.74
1				1.61 - 2.39	4.06		
PFF	M6		0	0.79 - 1.6	3.18	10.32	13.56
			1	1.61 - 2.39	4.06		

(1) Hole size may be as small as .001" / 0.3mm larger than the C dimension if radial float is not required.

(2) H dimension may be as small as .001" / 0.3mm larger than the W dimension if radial float is not required.

INSTALLATION (Continued)

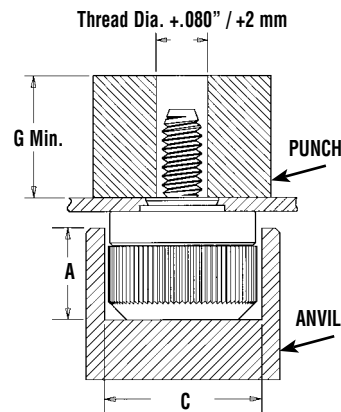
Type PF50 and PF60

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
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 sheet material.

Anvil Dimensions

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



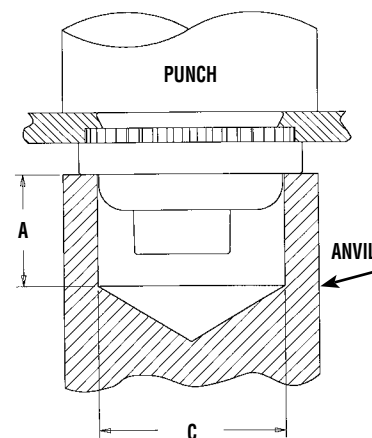
Type F10

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
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 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	.310	.302	975200006	975200048
	632	.310	.339	975200007	975200048
	832	.310	.375	975200008	975200048
	032	.310	.413	975200009	975200048

METRIC	Thread Code	Anvil Dimensions (mm)		Anvil Part Number	Punch Part Number
		A ±0.05	C ±0.05		
	M3	7.87	7.67	975200006	975200048
	M4	7.87	9.53	975200008	975200048
	M5	7.87	10.49	975200009	975200048



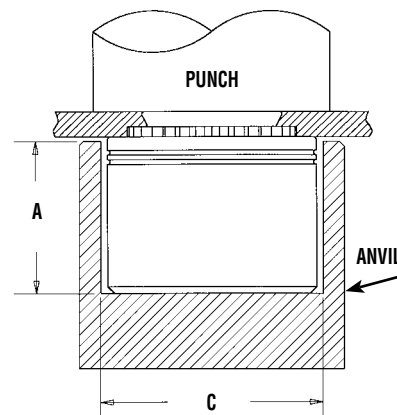
Type N10

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
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 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

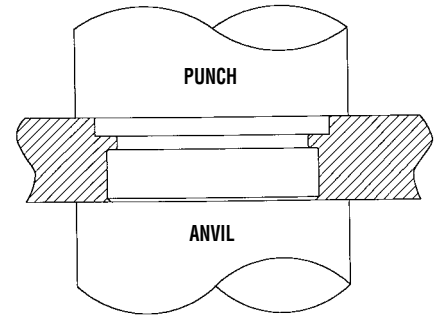
METRIC	Thread Code	Anvil Dimensions (mm)		Anvil Part Number	Punch Part Number
		A ±0.05	C ±0.05		
	M3	5.72	7.57	8006124	975200048
	M4	5.72	9.17	8006736	975200048
	M5	5.72	9.6	8006174	975200048



INSTALLATION (Continued)

Type PR10

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



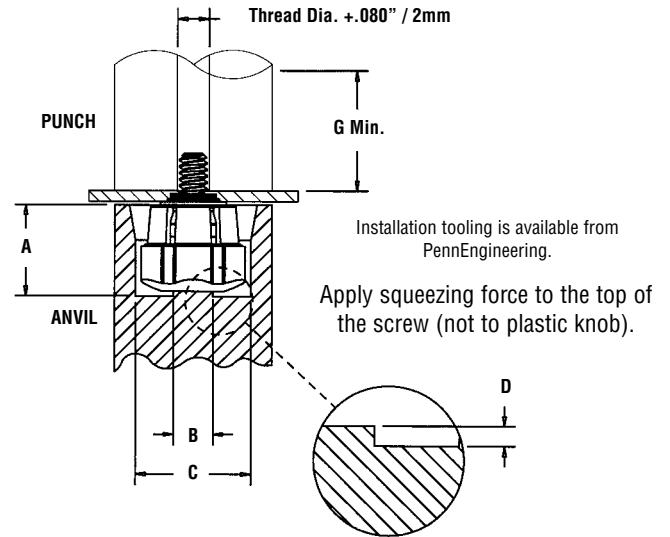
Type PFP

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
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 nut comes in contact with the sheet material.

Anvil Dimensions

UNIFIED	Thread Code	Anvil Dimensions (in.)				Anvil Part Number	Punch Part Number
		A ±.002	B ±.002	C ±.001	D ±.002		
	440	.432	.221	.552	.047	8005413	8005440
	632	.432	.221	.552	.047	8005413	8005441
	832	.432	.277	.604	.047	8005414	8005442
	032	.432	.277	.604	.047	8005414	8005993

METRIC	Thread Code	Anvil Dimensions (mm)				Anvil Part Number	Punch Part Number
		A ±0.05	B ±0.05	C ±0.03	D ±0.05		
	M3	10.97	5.61	14.02	1.19	8005413	8005440
	M3.5	10.97	5.61	14.02	1.19	8005413	8005441
	M4	10.97	7.04	15.34	1.19	8005414	8005442
	M5	10.97	7.04	15.34	1.19	8005414	8005993



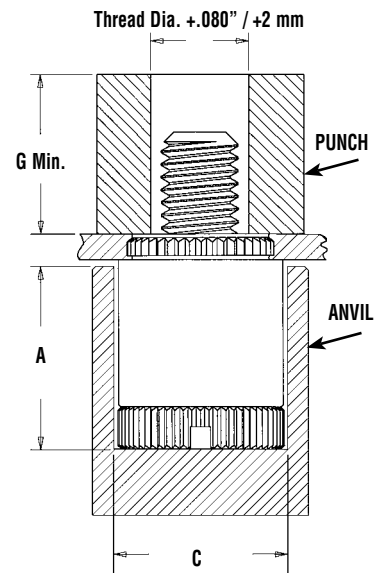
Type PFK

1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
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 sheet material.

Anvil Dimensions

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

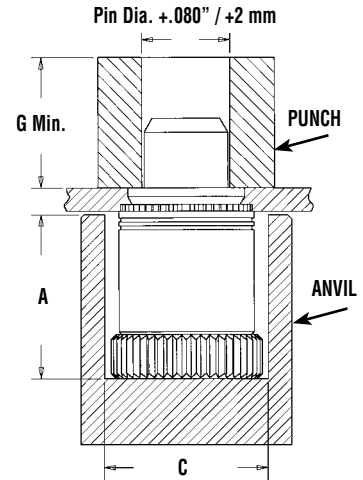
METRIC	Thread Code	Anvil Dimensions (mm)		Anvil Part Number	Punch Part Number
		A ±0.05	C ±0.05		
	M3	8.13	8.2	975200026	975200060



INSTALLATION (Continued)

Type PTL2

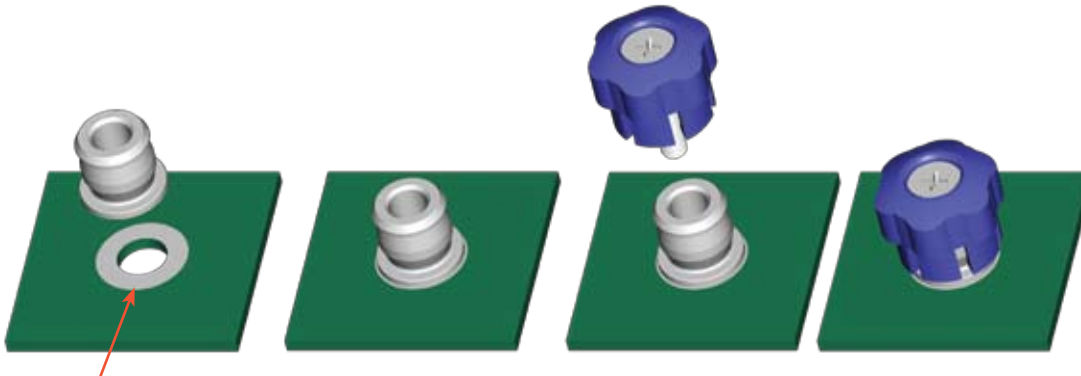
1. Punch or drill properly sized mounting hole in sheet. Do not perform any secondary operations such as deburring.
2. Place fastener into recessed anvil, and place workpiece over shank of fastener.
3. With punch and anvil surfaces parallel, apply squeezing force until the shoulder of the retainer comes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



Anvil Dimensions

UNIFIED	Plunger Diameter Code	Anvil Dimensions (in.)		Anvil Part Number	Punch Part Number	METRIC	Plunger Diameter Code	Anvil Dimensions (mm)		Anvil Part Number	Punch Part Number
		A ±.002	C ±.002					A ±0.05	C ±0.05		
	04	.585	.520	975201245	970200013300		04	14.86	13.21	975201245	970200013300

ReelFast® Panel Fastener



Solder paste applied to pad on PCB.

Retainer soldered in place using standard surface mount techniques.

Screw snapped in place.

ReelFast® product 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 specific performance data.

PERFORMANCE DATA⁽¹⁾

UNIFIED	Type	Thread Code	Test Sheet Material				
			Aluminum		Cold-Rolled Steel		
			Installation (lbs.)	Pushout (lbs.)	Installation (lbs.)	Pushout (lbs.)	
PF11	PF12	440	1500	80	2500	145	
		632	2000	95	3500	150	
		832/032	3000	100	4500	160	
		0420	3500	105	5000	195	
PFS2	PFC2	PFC2P	440	2400	240	3000	300
			632	2700	275	3500	350
			832	2900	300	3800	400
			032	3000	400	4000	500
PFHV	PFHV	PFHV	440	1700	108	2200	118
			632	1850	117	2400	128
			440	2200	64-185 ⁽³⁾	(4)	(4)
			632	2400	66-190 ⁽³⁾	(4)	(4)
PF30	PF31	PF32	832	2800	68-200 ⁽³⁾	(4)	(4)
			032	3500	72-260 ⁽³⁾	(4)	(4)
			0420	4300	(2)	(4)	(4)
			440	2200	64	2200	64
PF50	PF60	(5)	632	2400	66	2400	66
			832	2800	68	2800	68
			032	3500	72	3500	72
			0420	4300	300	4600	340
F10	N10	PR10	440	1500	215	3000	300
			632	2000	240	3000	300
			832	2000	250	3000	300
			032	2000	300	3500	400
N10	PR10	PR10	440	2500	95	3600	130
			632	2500	105	4000	145
			832	3000	110	5000	180
			032	3500	120	6300	200
PR10	PR10	PR10	440	2100	(2)	3000	(2)
			632	2100	(2)	3000	(2)
			832	2100	(2)	3600	(2)
			032	2400	(2)	4200	(2)
PSL2	PTL2	(2)	3000	400	4000	500	

METRIC	Type	Thread Code	Test Sheet Material				
			Aluminum		Cold-Rolled Steel		
			Installation (kN)	Pushout (N)	Installation (kN)	Pushout (N)	
PF11	PF12	M3	6.7	355	11.1	645	
		M4/M5	13.3	445	20	710	
PFS2	PFC2	PFC2P	M3	10.7	1068	13.3	1334
			M4	12.9	1334	16.9	1779
			M5	13.3	1779	17.8	2224
			M6	15.6	1779	22.2	2669
PFHV	PFHV	PFHV	M3	8.1	516	10.5	564
			M3.5	8.8	561	11.4	614
			M4	9.4	599	12.1	656
PF30	PF31	PF32	M3	9.8	285-823 ⁽³⁾	(4)	(4)
			M4	12.5	302-890 ⁽³⁾	(4)	(4)
			M5	15.6	320-1156 ⁽³⁾	(4)	(4)
			M6	19.1	1423	(4)	(4)
PF50	PF60	(5)	M3	9.8	284	9.8	284
			M3.5	10.7	294	10.7	294
			M4	12.5	302	12.5	302
PF52	PF62	PF62	M5	15.6	320	15.6	320
			M6	19.1	1334	20.5	1512
F10	N10	PR10	M3	6.7	956	13.3	1334
			M4	8.9	1112	13.3	1334
			M5	8.9	1335	15.6	1779
N10	PR10	PR10	M3	11.1	423	16	578
			M4	13.3	489	22.2	800
			M5	15.6	534	28	890
PR10	PR10	PR10	M3	9.3	(2)	13.3	(2)
			M4	9.3	(2)	16	(2)
			M5	10.7	(2)	18.7	(2)
PSL2	PTL2	(2)	13.3	1779	17.8	2224	

UNIFIED	Type	Thread Code	Max. Rec. Tightening Torque (in. lbs.)	Swaging Force (lbs.)	Pushout (lbs.)
PFF	PFF	032	21	600	100
		1224	21	800	120

METRIC	Type	Thread Code	Max. Rec. Tightening Torque (N•m)	Swaging Force (kN)	Pushout (N)
PFF	PFF	M5	2.37	2.67	445
		M6	2.37	3.56	534

UNIFIED	Type	Thread Code	Max. Rec. Tightening Torque (in. lbs.)	Cold-rolled Steel		5052-H34 Aluminum	
				Installation (lbs.)	Pushout (lbs.)	Installation (lbs.)	Pushout (lbs.)
PFP	PFP	440	10	2100	80	1300	73
		632	15	2200	114	1500	75
		832	21	2400	126	1600	80
		032	21	3000	151	2000	88

METRIC	Type	Thread Code	Max. Rec. Tightening Torque (N•m)	Cold-rolled Steel		5052-H34 Aluminum	
				Installation (kN)	Pushout (N)	Installation (kN)	Pushout (N)
PFP	PFP	M3	1.13	9.3	355	5.8	325
		M3.5	1.7	9.8	507	6.7	335
		M4	2.37	10.7	560	7.1	355
		M5	2.37	13.3	672	8.9	400

- (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 PFF) will affect this data. Performance testing of this product in your application is recommended. We will be happy to provide samples for this purpose.
- (2) Not applicable.
- (3) Pushout depends on shank length.
- (4) Can be used in cold-rolled steel provided sheet hardness does not exceed Rockwell B 60.
- (5) To obtain these values the aluminum test sheet thickness should be .030" to .040" / 0.76mm to 1.02mm, HRB 15 to 35 and the cold-rolled steel sheet should be .030" to .040" / 0.76mm to 1.02mm, HRB 45 to 65.

PERFORMANCE DATA⁽¹⁾ (Continued)

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	

UNIFIED	Type	Thread Code	Test Sheet Material	
			304 Stainless Steel	
			Installation (lbs.)	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)	Pushout (N)
PFC4	M3	40.5	1557	
	M4	48	2002	
	M5	52.5	2447	

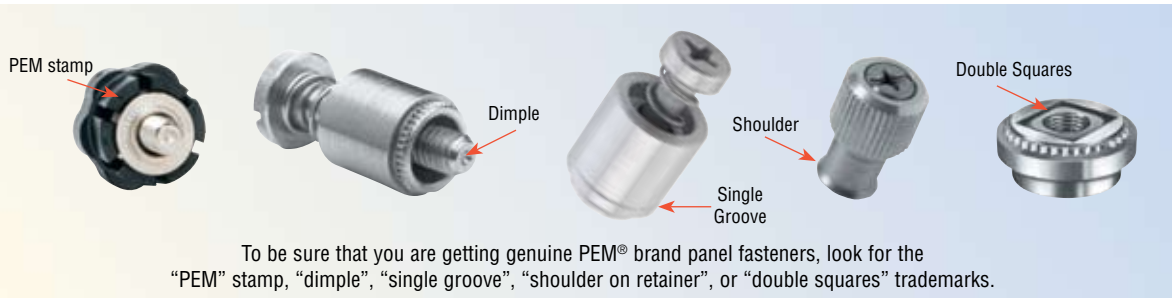
(1) Performance values reported are averages when all installations and procedures are followed. Variations in mounting hole size, sheet material and installation force will affect this data. Performance data testing of this product in your application is recommended. We will be happy to provide samples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

COLOR CAPABILITIES

For Types PFP, PFF, and ReelFast PF

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.



To be sure that you are getting genuine PEM® brand panel fasteners, look for the "PEM" stamp, "dimple", "single groove", "shoulder on retainer", or "double squares" trademarks.