

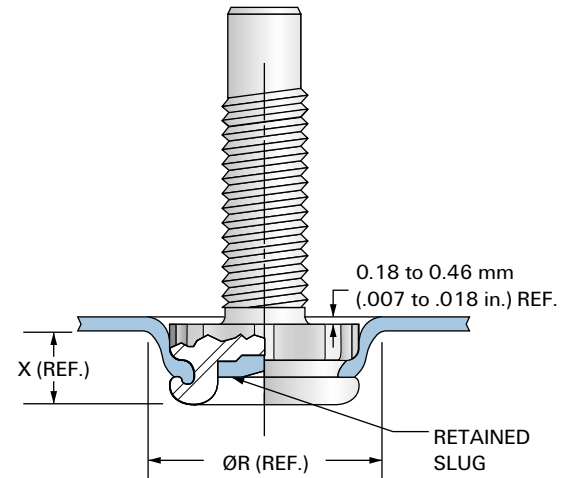
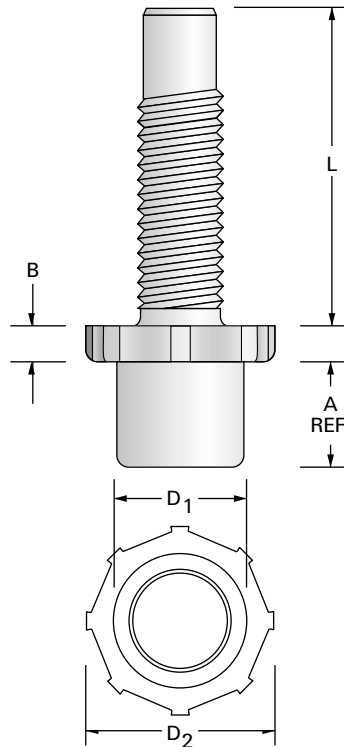


# CP Series PierceForm® Stud

## PIERCEFORM STUDS FOR METAL STAMPING APPLICATIONS



CP Series PierceForm Studs are property class 9.8 system-fed fasteners that pierce their own hole in a metal panel. Designed specifically for metal stamping applications, these fasteners make a consistent mechanical attachment which provides a secure, sealed, permanent installation. Because CP Series PierceForm Studs can be installed in the same die that forms the part, they offer many advantages over conventional fasteners.



\* NOTE: Standard end configuration is the Header Point. Standard stud lengths (L) are: 16, 20, 25, and 30 mm. For applications where other end configurations or lengths are required, consult your sales representative.

Metric Dimensions shown in **bold type**; Inch Dimensions shown in regular type

STUD NUMBER	THREAD SIZE (6 g. TOL.)	PROPERTY CLASS GRADE	METAL RANGE	L (TOL.)			A	B	D <sub>1</sub>	D <sub>2</sub>
				RANGE 10-18mm (.39-.71 in.)	RANGE 18-30mm (.71-1.18 in.)	RANGE 30-50mm (1.18-1.97 in.)	±0.13mm (±.005 in.)	±0.5mm (±.02 in.)	±0.5mm (±.02 in.)	±0.5mm (±.02 in.)
CP6M	<b>M6.0 x 1.0</b> 1/4 x 20	<b>9.8</b> GRADE 5	<b>0.75-2.00</b> 0.03-0.08	<b>±0.35</b> ±0.014	<b>±0.42</b> ±0.017	<b>±0.50</b> ±0.020	<b>8.05</b> 0.317	<b>2.38</b> 0.094	<b>8.70</b> 0.342	<b>12.17</b> 0.479
CP8M	<b>M8.0 x 1.25</b> 5/16 x 18	<b>9.8</b> GRADE 5	<b>0.75-2.25</b> 0.03-0.09	<b>±0.35</b> ±0.014	<b>±0.42</b> ±0.017	<b>±0.50</b> ±0.020	<b>8.60</b> 0.338	<b>2.88</b> 0.113	<b>11.20</b> 0.441	<b>15.62</b> 0.615
CP1M	<b>M10.0 x 1.5</b> 3/8 x 16	<b>9.8</b> GRADE 5	<b>0.75-2.50</b> 0.03-0.10	<b>±0.35</b> ±0.014	<b>±0.42</b> ±0.017	<b>±0.50</b> ±0.020	<b>11.00</b> 0.433	<b>3.08</b> 0.121	<b>13.75</b> 0.541	<b>19.00</b> 0.748

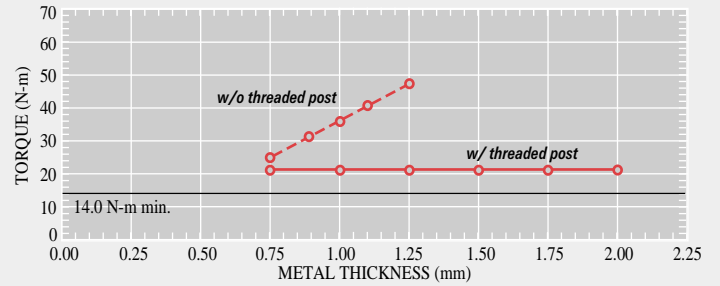
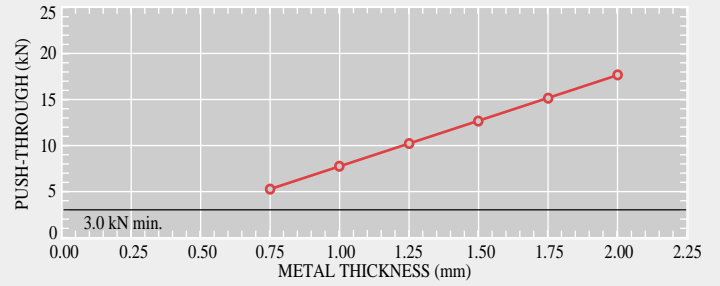
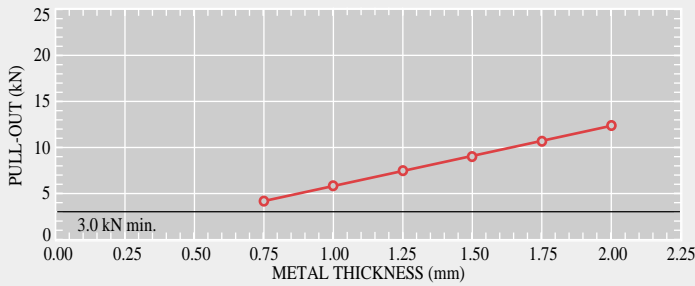
### ATTACHMENT FORM DATA

STUD NUMBER	CP5MXXX*		CP6MXXX* CP6E420		CP8MXXX* CP8E618		CP1MXXX* CP1E816	
	X (REF.)	ØR (REF.)	X (REF.)	ØR (REF.)	X (REF.)	ØR (REF.)	X (REF.)	ØR (REF.)
0.75-1.24 .030-.048	5.1 (.20)	13.4 (.53)	5.1 (.20)	13.4 (.53)	6.1 (.24)	16.8 (.66)	7.1 (.28)	20.3 (.80)
1.25-1.74 .049-.068	5.3 (.21)	13.5 (.53)	5.3 (.21)	13.5 (.53)	5.7 (.22)	17.2 (.68)	6.9 (.27)	20.9 (.82)
1.75-2.00 .069-.079	5.1 (.20)	14.0 (.55)	5.1 (.20)	14.0 (.55)				
1.75-2.25 .069-.089					5.4 (.21)	17.6 (.69)		
1.75-1.99 .069-.078							6.6 (.26)	21.3 (.84)
2.00-2.50 .079-.099							6.4 (.25)	21.6 (.85)

\* XXX denotes stud length

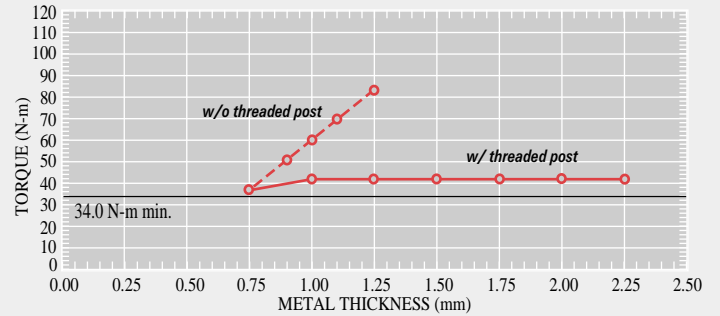
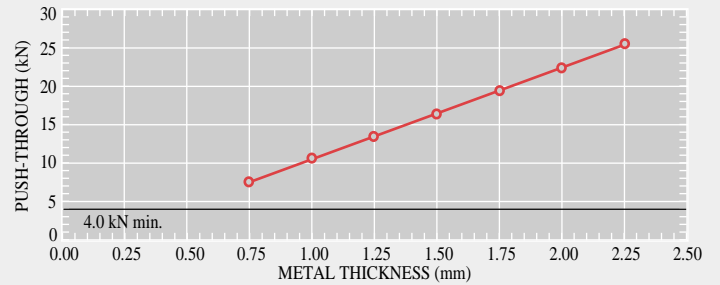
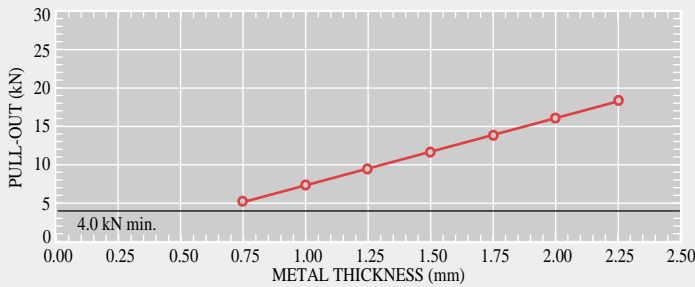
### CP6M PIERCEFORM STUD

Panel Thickness (mm)	Pull-Out Performance (kN)	Push-Through Performance (kN)	Torque Perform. w/o threaded post to apply torque (N-m)	Torque Perform. w/ threaded post to apply torque (N-m)
0.75	4.08	5.36	24.08	21.46
0.90	-	-	31.23	-
1.00	5.72	7.87	36.00	21.46
1.10	-	-	40.77	-
1.25	7.36	10.39	47.92	21.46
1.50	9.00	12.90	-	21.46
1.75	10.64	15.42	-	21.46
2.00	12.29	17.94	-	21.46



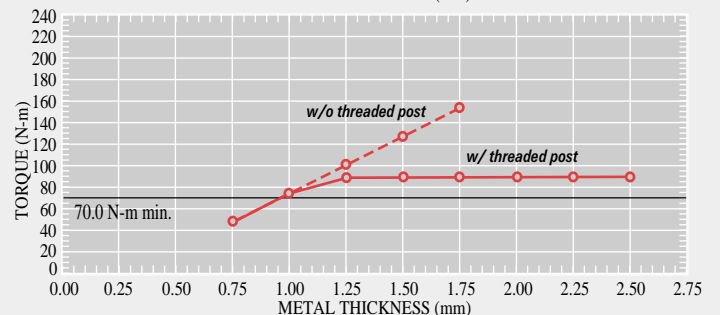
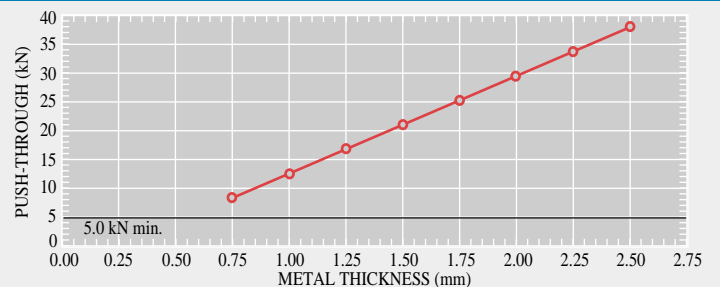
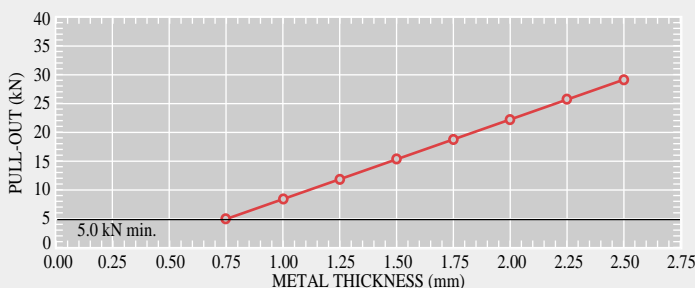
### CP8M PIERCEFORM STUD

Panel Thickness (mm)	Pull-Out Performance (kN)	Push-Through Performance (kN)	Torque Perform. w/o threaded post to apply torque (N-m)	Torque Perform. w/ threaded post to apply torque (N-m)
0.75	5.16	7.74	36.50	36.50
0.90	-	-	50.72	-
1.00	7.38	10.67	60.19	42.00
1.10	-	-	69.67	-
1.25	9.60	13.59	83.88	42.00
1.50	11.82	16.52	-	42.00
1.75	14.04	19.44	-	42.00
2.00	16.26	22.37	-	42.00
2.25	18.48	25.30	-	42.00



### CP1M PIERCEFORM STUD

Panel Thickness (mm)	Pull-Out Performance (kN)	Push-Through Performance (kN)	Torque Perform. w/o threaded post to apply torque (N-m)	Torque Perform. w/ threaded post to apply torque (N-m)
0.75	5.00	8.27	48.64	48.64
1.00	8.44	12.54	74.98	74.98
1.25	11.88	16.82	101.33	90.10
1.50	15.32	21.09	127.67	90.10
1.75	18.76	25.36	154.02	90.10
2.00	22.20	29.63	-	90.10
2.25	25.64	33.90	-	90.10
2.50	29.08	38.17	-	90.10



NOTE: ALL DATA ARE MEAN 3σ FOR STUDS INSTALLED IN 1008/1010 MILD STEEL

# Part Design Guidelines

CP Series PierceForm Studs, as designed, are property class 9.8 and act as their own punch to become rigidly and permanently attached to a metal panel within the same die used to form the part, thereby offering many advantages over conventional male fasteners. All CP Series PierceForm Studs can be heat treated to property class 10.9 if your application requires.

CP Series PierceForm Studs make a consistent mechanical attachment which provides a secure, sealed, permanent installation; standard stud lengths are 16, 20, 25 and 30mm; standard end configurations are the header and ISO short dog point.

CP Series PierceForm Studs may be installed in almost any panel material, of almost any shape, and in almost any multiple-pattern configuration, within the constraints shown below. HOWEVER — if you have a unique application not covered here, give us a call. We will help work out a solution with you.

## APPLICATION IN SPECIAL MATERIALS.

For HSLA, stainless steel, aluminum, and/or plastic material, consult your representative.

## SELECT PROPER STUD.

Select according to tables found on this CP Series PierceForm Stud Specifications sheet.

## SIMULPIERCING TWO SHEETS OF METAL.

Total panel thickness not to exceed 90% of recommended thickness for CP Series PierceForm Stud metal range. For other panel materials, contact your representative.

## SEALING APPLICATIONS.

Sealing is attained as an integral feature of the installation process. Consult your representative for further details.

## CRITICAL APPLICATIONS.

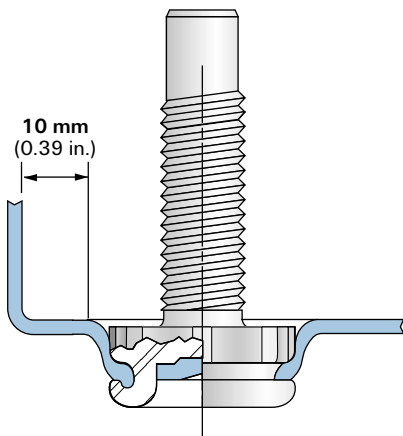
When extreme torque, stress, or environmental requirements exist, consult your representative prior to specifying CP Series PierceForm Studs.

## ACCURACY OF LOCATION.

In multiple Stud installations the location of one Stud to another will be within a diametral tolerance of 0.4MM (0.015 in.).

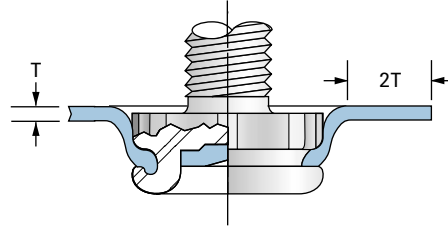
## WHEN A FORMING OPERATION FOLLOWS A STUD OPERATION.

Do not form part closer than 10.0MM (0.39 in.) after Stud is installed, as shown. For CP Series PierceForm Studs, part material formed into the clinch must not be disturbed. For closer spacing requirements, consult your representative.



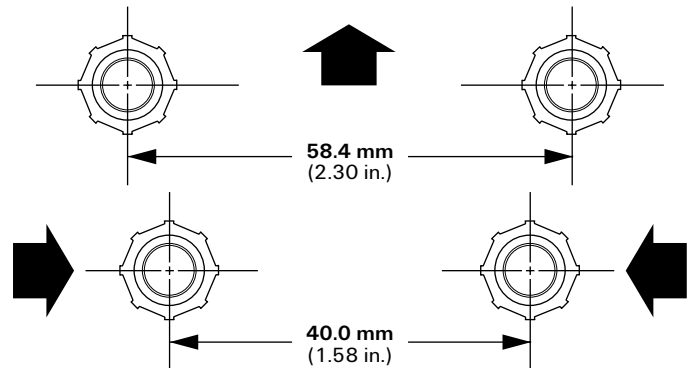
## STUD EDGE TO PANEL EDGE DISTANCE.

Studs must not be installed closer to the edge of a panel than twice the thickness of the metal panel, as shown.



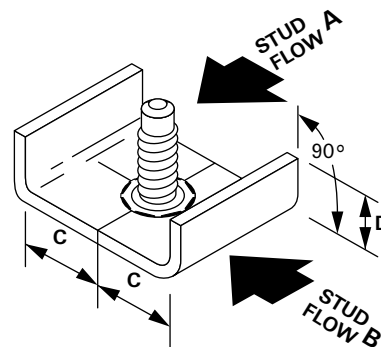
## MINIMUM STUD SPACING (WITH STANDARD HEAD INSTALLATION TOOLING, RETAINERS MAY REQUIRE ALTERATION).

NOTE: Closer stud-to-stud distances may be achieved using altered standard and/or special tooling. Consult your representative.



## STUD TO FLANGE DISTANCES (WITH STANDARD INSTALLATION TOOLING).

Closer stud-to-flange distances may be achieved using altered standard and/or special tooling. Consult your representative.



STUD FLOW	C	D
STUD FLOW A	26.5 mm	26.5 mm
STUD FLOW B	20.0 mm	37.5 mm

# CP Series PierceForm Stud Installation. As easy as...

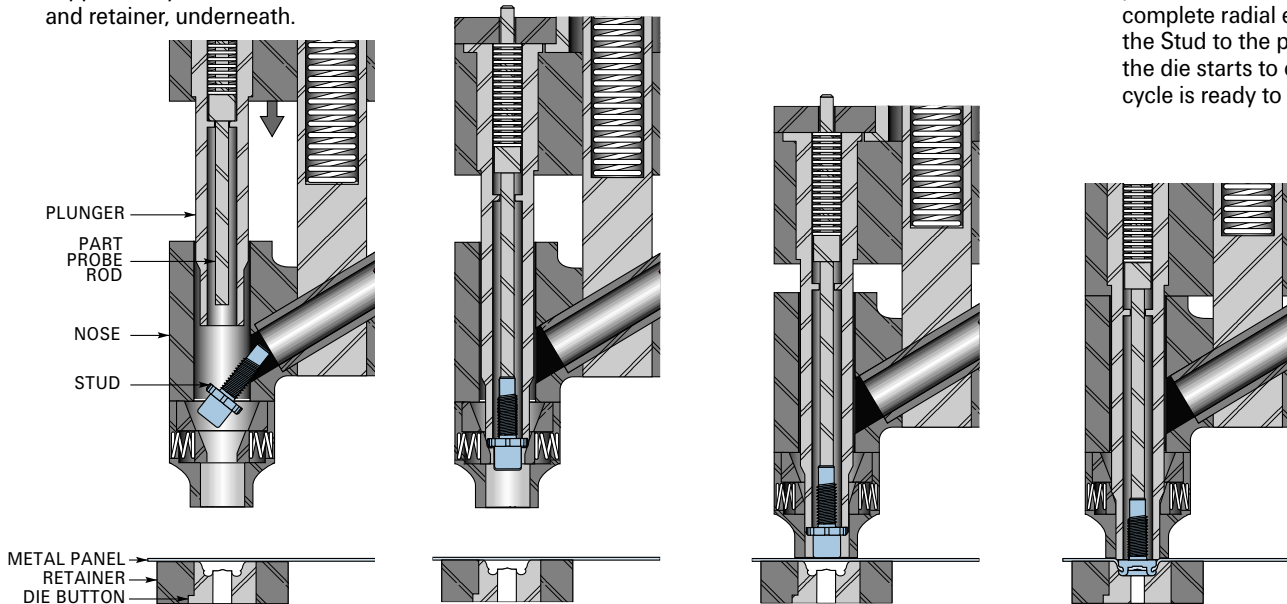
After aligning the CP Series PierceForm Stud Installation Head in the die it is necessary to establish the proper shut height with respect to the thickness of the panel being used. Use visual inspection of the Stud installation as well as the Multifastener "Registry Marker" for establishing the proper shut height and as a continuous means of control installation integrity.

**1** A CP Series PierceForm Stud is sent into the Head via an air feeder. The Stud is held in position by the CP Series PierceForm Stud Installation Head until the customer part is in place, supported by the die button and retainer, underneath.

**2** The Head is partially closed with the use of a valve. Stud displaces part probe rod which activates sensor and signals system controller that Stud is in position for installation.

**3** As the die closes, the nose of the installation head contacts the metal panel and the plunger inside the Head begins to push the CP Series PierceForm Stud through the panel, piercing its own hole.

**4** When the CP Series PierceForm Stud has penetrated the panel it contacts the Die Button which forms the Stud barrel into a 360° mechanical attachment onto the back of the metal panel. You now have a complete radial engagement of the Stud to the panel and, as the die starts to open, another cycle is ready to start.



Note: The pierce slug is retained in the barrel of the Stud to simplify die designs and eliminate scrap handling.

## Operation

The CP Series PierceForm Stud Feed System operates in unison with your press equipment to produce Stud to panel attachments that are consistent time after time. For details concerning each component's setup and operation, plus maintenance and troubleshooting procedures, contact your Multifastener sales representative.

