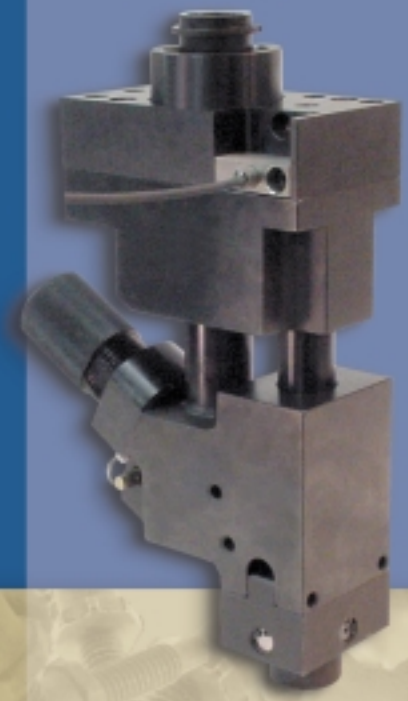
FabriSteel

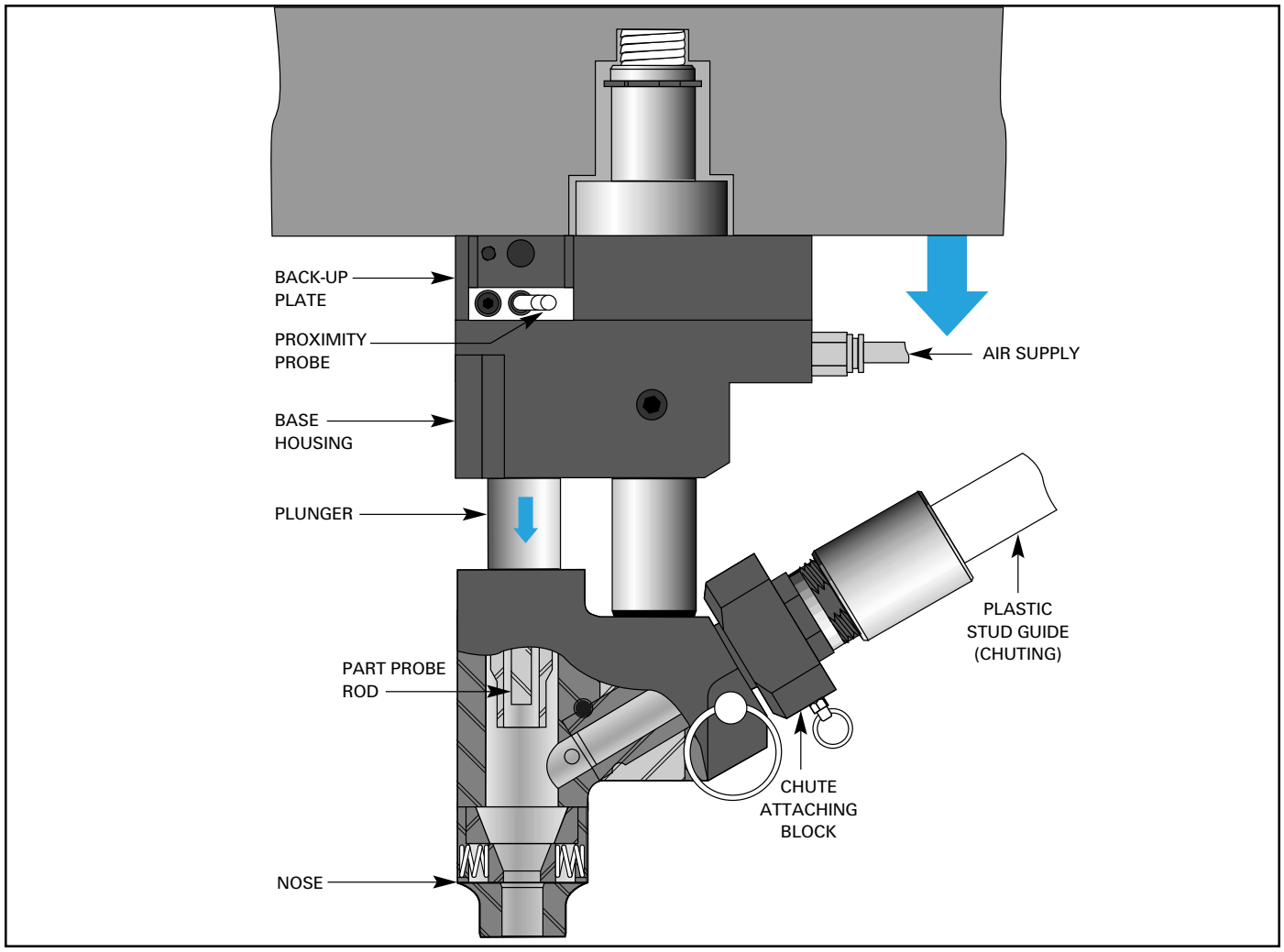


CP/CS PierceForm Stud Installation Tooling

THE TOTAL-SERVICE FASTENING SYSTEMS COMPANY

ISO 9001 ISO 14001 TS-16949

CP/CS PierceForm® Stud Installation Head



OPERATIONAL VIEW — PierceForm STUD INSTALLATION HEAD IN OPEN POSITION

OPERATION

A PierceForm® Stud is sent via an air feeder through the plastic stud guide into the PierceForm Stud installation head. The head partially closes to allow the stud to be sensed by the part probe rod and sensor. The stud is held in position in the head until the customer part is in place, supported underneath by a die button secured in a retainer. The stud displaces the part probe rod which activates a sensor that signals the system controller that a stud is in position, ready for installation.

As the die closes the nose of the head contacts the metal panel and the plunger begins to push the stud through the panel, piercing its own hole. When the stud contacts the die button the stud barrel is formed into a 360° mechanical attachment onto the back of the metal panel.

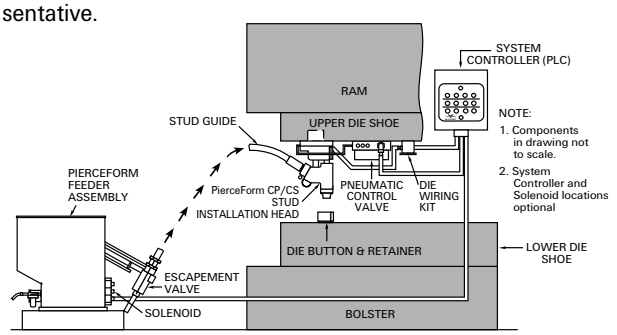
You now have a complete radial engagement of the stud to the panel and, as the die starts to open, another cycle is ready to begin.

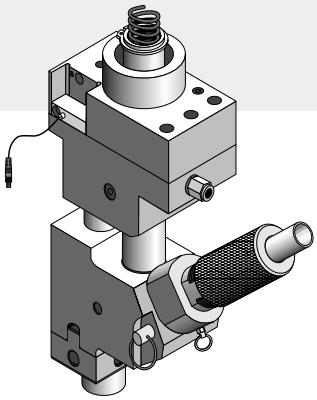
ORDERING INFORMATION:
When ordering, specify:
- PierceForm Stud number
- Length of head extension (if any)
- Alteration (if any)

For applications requiring alterations to standard tooling, contact your sales representative.

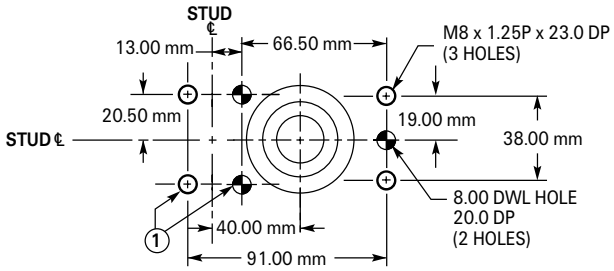
DIE DESIGN INFORMATION

- Other operations may be included in dies installing studs.
- Counterbore upper die shoe for shank and spring.
- Show oil lines, fittings and manifolds for multiple head installations on drawings.
- If possible position each head to allow access to the proximity probe, oil hole on side of base housing, and detent pin.
- Allow room for entry of the plastic stud guide. Arrange so plastic stud guide does not interfere with upper die shoe and ram; a 3-foot radius minimum is required.
- For all unique or special applications, consult your sales representative.



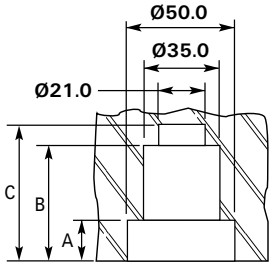


HEAD MOUNTING DIMENSIONS (VIEW THRU DIE SHOE FROM TOP)

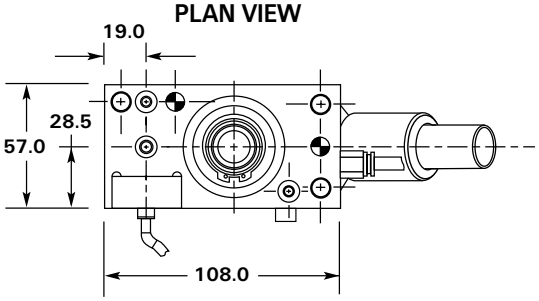


① MACHINE THIS MOUNTING SCREW & DOWEL HOLE ON OPPOSITE SIDE OF HEAD FROM PROBE (SIDE IS OPTIONAL)

DIE SHOE SPRING POCKET COUNTERBORE



PLAN VIEW

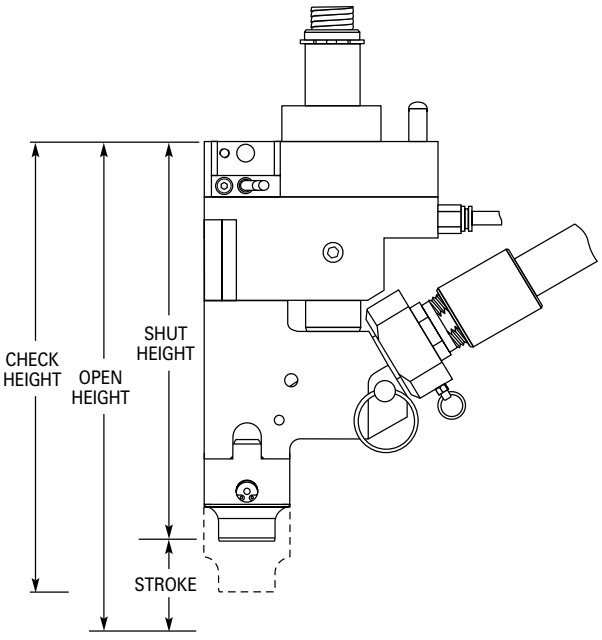


CP/CS PierceForm HEAD DIMENSIONS

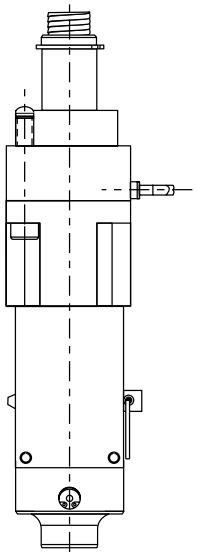
STUD NO.	STUD SIZE	SHUT HEIGHT	OPEN HEIGHT	CHECK HEIGHT	STROKE*	A	B	C
CP05/ CS 05	12-19mm	184.0	244.0	210.0	60.0	18.5	54.0	63.0
CP06/ CS06	20-27mm	184.0	249.0	215.0	65.0			
	28-35mm	199.0	279.0	230.0	80.0	33.5	69.0	78.0
CP08/ CS08	36-50mm	214.0	309.0	245.0	95.0	48.5	84.0	93.0
CP10/ CS10	12-19mm	193.0	262.0	220.0	69.0	26.5	63.0	72.0
	20-27mm	193.0	267.0	225.0	74.0			
	28-35mm	208.0	297.0	240.0	89.0	41.5	78.0	87.0
	36-50mm	223.0	327.0	255.0	104.0	56.5	93.0	102.0

* Difference between Open Height and Shut Height

SIDE VIEW



FRONT VIEW

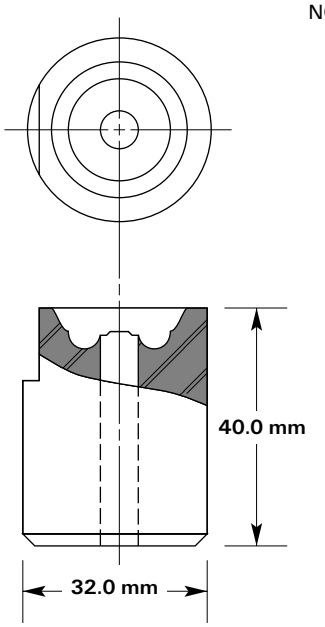


Die Button and Retainer

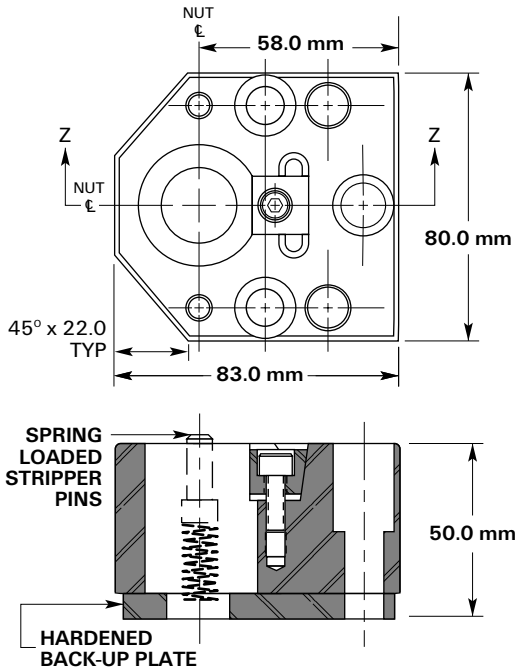
The Die Button, held firmly in the die by the Retainer, supports the metal panel and forms the barrel of the fastener to lock it in place against the bottom surface of the stamping with a complete radial engagement.

DIE BUTTON

NOTE:
Refer to
CP and CS tooling matrix



DIE BUTTON RETAINER HRAM-32



Metric dimensions shown

CP STUDS

STUD SIZE	METAL THICKNESS (MM)	DIE BUTTON NUMBER
5mm	0.75 - 1.24 1.25 - 1.74 1.75 - 2.00	CPB-06-100 CPB-06-150 CPB-06-200
6mm	0.75 - 1.24 1.25 - 1.74 1.75 - 2.00	CPB-06-100 CPB-06-150 CPB-06-200
8mm	0.75 - 1.24 1.25 - 1.74 1.75 - 2.25	CPB-08-100 CPB-08-150 CPB-08-200
10mm	0.75 - 1.24 1.25 - 1.74 1.75 - 1.99 2.00 - 2.50	CPB-10-100 CPB-10-150 CPB-10-190 CPB-10-230
12mm	1.50-2.00	CPB-12-175

CS STUDS

STUD SIZE	METAL THICKNESS (MM)	DIE BUTTON NUMBER
5mm	2.00-2.74 2.75-3.50 3.51-4.27 4.28-5.00	CSB-06-230 CSB-06-310 CSB-06-380 CSB-06-460
6mm	2.00-2.74 2.75-3.50 3.51-4.27 4.28-5.00	CSB-06-230 CSB-06-310 CSB-06-380 CSB-06-460
8mm	2.25-3.15 3.16-4.05 4.06-5.00 5.01-6.00	CSB-08-280 CSB-08-380 CSB-08-470 CSB-08-560
10mm	2.50-3.18 3.19-3.84 3.85-4.50 4.51-5.16 5.17-6.00	CSB-10-300 CSB-10-370 CSB-10-430 CSB-10-500 CSB-10-570

STUD SIZE	MINIMUM INSTALLATION TONNAGE
5mm	12
6mm	12
8mm	15
10mm	25
12mm	TBD

Part Design Guidelines

PierceForm® CP Studs 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 and stud, thereby offering many advantages over conventional fasteners.

PierceForm® CS Studs are property class 9.8 and are installed in pre-pierced holes to become rigidly and permanently attached to a metal panel within the same die used to form the stud.

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

PierceForm CP Studs and PierceForm CS 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 PierceForm CP Stud and PierceForm CS Stud specifications sheet.

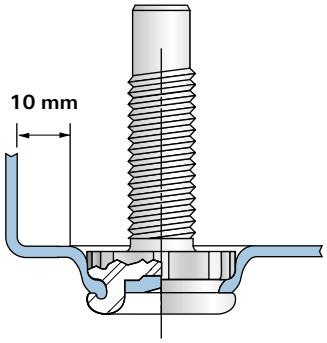
SIMULPIERCING TWO SHEETS OF METAL (PierceForm STUDS ONLY).
Total panel thickness not to exceed 90% of recommended thickness for PierceForm Stud metal range. For other panel materials, contact your representative.

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

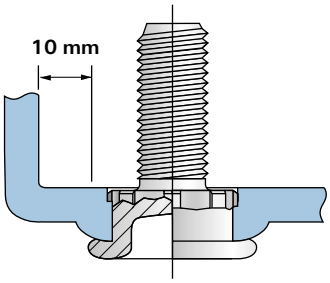
CRITICAL APPLICATIONS.
When extreme torque, stress, or environmental requirements exist, consult your representative prior to specifying PierceForm CP Studs and PierceForm CS Studs.

ACCURACY OF LOCATION (PierceForm STUDS ONLY).
In multiple stud installations the location of one stud to another will be within a diametral tolerance of 0.4mm.

WHEN A FORMING OPERATION FOLLOWS A STUD OPERATION.
Do not form part closer than 10.0mm after PierceForm CP Stud is installed, as shown. For PierceForm CS Studs, part material formed into the clinch must not be disturbed. For closer spacing requirements, consult your representative.

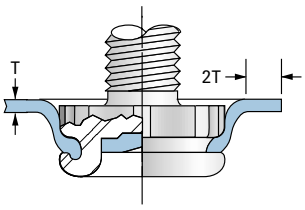


PierceForm CP STUD

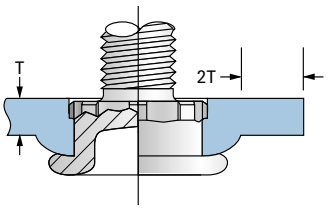


PierceForm CS STUD

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.

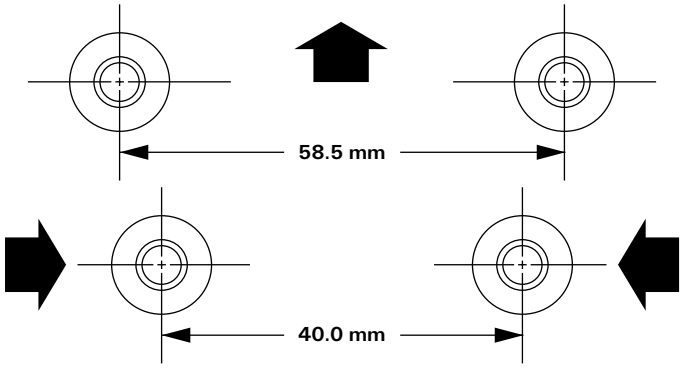


PierceForm CP STUD

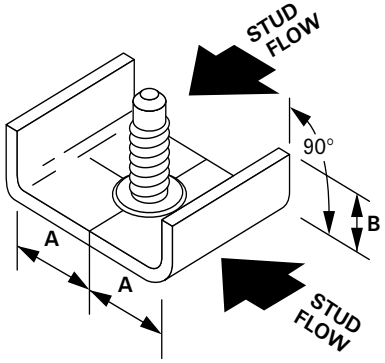


PierceForm CS STUD

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 SIZE	A	B
M5, 6, 8, 10	26.5 mm	32.5 mm

"Good" and "Not Good" Registry Marker

The Multifastener registry marker is designed to provide immediate visual determination of proper or improper ram setting.

FUNCTION

- The registry marker has a raised circle with the letters "N" and "G" located within, raised to different levels (see Fig. 2).
- At the bottom of the die stroke, if a circle and a "G" are stamped in your metal panel, the die is set properly (see Fig. 1).
- If a circle and "NG" appears, the hit is too hard (see Fig. 1).
- If no mark appears, the hit is too light (see Fig. 1).

LOCATION IN THE DIE

The registry marker is mounted in the same die shoe as the installation head and is positioned over the part panel that is to receive the PierceForm® Stud (see Fig. 3). The registry marker should be located as close to the head as possible.

SETTING

The proper shut height of the "Good" registry marker is 76.07mm (2.995") (see Fig 3). Shut height dimension does not include retainer plate thickness.

MOUNTING IN THE DIE

The registry marker incorporates a heavy-duty lock feature to facilitate mounting in the die. (Ball lock retainer must be provided by customer.)

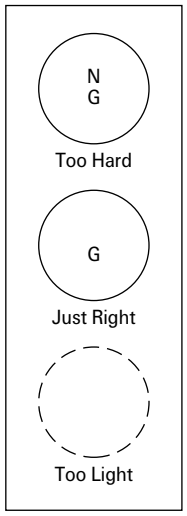
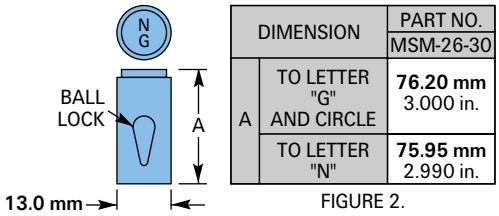


FIGURE 1.



DIMENSION		PART NO. MSM-26-30
A	TO LETTER "G" AND CIRCLE	**76.20 mm** 3.000 in.
	TO LETTER "N"	**75.95 mm** 2.990 in.

FIGURE 2.

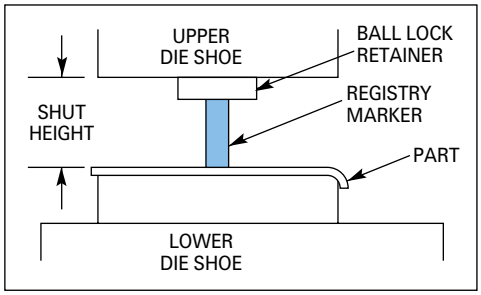
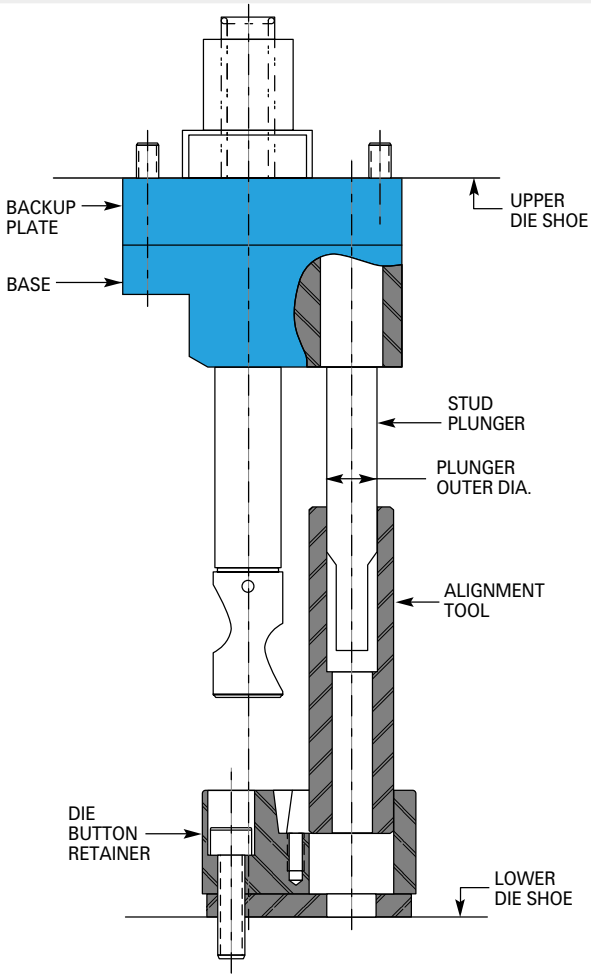


FIGURE 3.

Alignment Procedures

RECOMMENDED ALIGNMENT METHOD

- Install die button retainer, screws, and dowels by math data or direct layout.
- Refer to installation drawings to machine mounting screws and spring pockets in upper die shoe. Do not machine dowel holes at this time.
- Loosely mount head assembly to upper die shoe with screws only.
- Place alignment tool into retainer and lower upper die shoe so that plunger outer diameter is approximately 10mm above alignment tool.
- Align installation head by sliding alignment tool up so that plunger enters into it freely.
- Tighten head mounting screws, open die and transfer dowel holes using base as a drill guide.
- Repeat for all heads in die, then double check that alignment tool slides freely onto plunger after doweling.



METRIC DIMENSIONS

CP PIERCEFORM® STUD

STUD SIZE	PIERCE METAL RANGE	DIE BUTTON PART NOS.	DIE BUTTON METAL RANGES	RETAINER ASSEMBLY PART NOS.	HEAD ASSEMBLY PART NUMBERS		STUD FEEDER		STUD HOLDER NO.
CP6MXXX	0.75 - 2.00	CPB-06-100	0.75 - 1.24	HRAM-32	CPA-06B1-00Y	12-19 mm lg. studs	2-track	FP-2X-CP6MXXX-X	PFH-06-00-XX
		CPB-06-150	1.25 - 1.74		CPA-06-00Y	20-27 mm lg. studs			
		CPB-06-190	1.75 - 2.00		CPA-06C-00Y-15	28-35 mm lg. studs	3-track	FP-3X-CP6MXXX-X	
					CPA-06D-00Y-30	36-50 mm lg. studs			
CP8MXXX	0.75 - 2.25	CPB-08-100	0.75 - 1.24	HRAM-32	CPA-08B1-00Y	12-19 mm lg. studs	2-track	FP-2X-CP8MXXX-X	PFH-08-00-XX
		CPB-08-150	1.25 - 1.74		CPA-08-00Y	20-27 mm lg. studs			
		CPB-08-200	1.75 - 2.25		CPA-08C-00Y-15	28-35 mm lg. studs	3-track	FP-3X-CP8MXXX-X	
					CPA-08D-00Y-30	36-50 mm lg. studs			
CP1MXXX	0.75 - 2.50	CPB-10-100	0.75 - 1.24	HRAM-32	CPA-10B1-00Y	12-19 mm lg. studs	2-track	FP-2X-CP1MXXX-X	PFH-10-00-XX
		CPB-10-150	1.25 - 1.74		CPA-10-00Y	20-27 mm lg. studs			
		CPB-10-190	1.75 - 1.99		CPA-10C-00Y-15	28-35 mm lg. studs	3-track	FP-3X-CP1MXXX-X	
		CPB-10-230	2.00 - 2.50		CPA-10D-00Y-30	36-50 mm lg. studs			
CP2MXXX	1.50 - 3.00	CPB-12-175	1.50 - 2.00	HRAM-32	CPA-12B1-00Y	12-19 mm lg. studs	2-track	FP-2X-CP2MXXX-X	PFH-12-00-XX
					CPA-12-00Y	20-27 mm lg. studs			
					CPA-12C-00Y-15	28-35 mm lg. studs	3-track	FP-3X-CP2MXXX-X	
					CPA-12D-00Y-30	36-50 mm lg. studs			

CS PIERCEFORM® STUD

STUD SIZE	PIERCE METAL RANGE	DIE BUTTON PART NOS.	DIE BUTTON METAL RANGES	RETAINER ASSEMBLY PART NOS.	HEAD ASSEMBLY PART NUMBERS		STUD FEEDER		STUD HOLDER NO.
CS6MXXX	2.00 - 5.00	CSB-06-230	2.00 - 2.74	HRAM-32	CSA-06B1-00Y	12-19 mm lg. studs	2-track	FP-2X-CS6MXXX-X	PFH-06-00-XX
		CSB-06-310	2.75 - 3.50		CSA-06-00Y	20-27 mm lg. studs			
		CSB-06-380	3.51 - 4.27		CSA-06C-00Y-15	28-35 mm lg. studs	3-track	FP-3X-CS6MXXX-X	
		CSB-06-460	4.28 - 5.00		CSA-06D-00Y-30	36-50 mm lg. studs			
CS8MXXX	2.25 - 6.00	CSB-08-280	2.25 - 3.15	HRAM-32	CSA-08B1-00Y	12-19 mm lg. studs	2-track	FP-2X-CS8MXXX-X	PFH-08-00-XX
		CSB-08-380	3.16 - 4.05		CSA-08-00Y	20-27 mm lg. studs			
		CSB-08-470	4.06 - 5.00		CSA-08C-00Y-15	28-35 mm lg. studs	3-track	FP-3X-CS8MXXX-X	
		CSB-08-560	5.01 - 6.00		CSA-08D-00Y-30	36-50 mm lg. studs			
CS1MXXX	2.50 - 6.00	CSB-10-300	2.50 - 3.18	HRAM-32	CSA-10B1-00Y	12-19 mm lg. studs	2-track	FP-2X-CS1MXXX-X	PFH-10-00-XX
		CSB-10-370	3.19 - 3.84		CSA-10-00Y	20-27 mm lg. studs			
		CSB-10-430	3.85 - 4.50		CSA-10C-00Y-15	28-35 mm lg. studs	3-track	FP-3X-CS1MXXX-X	
		CSB-10-500	4.51 - 5.16		CSA-10D-00Y-30	36-50 mm lg. studs			
		CSB-10-570	5.17 - 6.00						
CS2MXXX	2.50 - 6.00			HRAM-32	CSA-12B1-00Y	12-19 mm lg. studs	2-track	FP-2X-CS2MXXX-X	PFH-12-00-XX
					CSA-12-00Y	20-27 mm lg. studs			
					CSA-12C-00Y-15	28-35 mm lg. studs	3-track	FP-3X-CS2MXXX-X	
					CSA-12D-00Y-30	36-50 mm lg. studs			

A Complete Worldwide Systems Approach to Self-Piercing Fastening

MULTIFASTENER®

A BRAND OF

WHITESELL INTERNATIONAL CORPORATION

22100 TROLLEY INDUSTRIAL DRIVE TAYLOR, MI 48180-1872
PHONE: (313) 299-8500 FAX: (313) 299-7966
WEBSITE: www.fabristeel.com

© 2006 Whitesell International Corporation
® Indicates a registered trademark exclusively licensed to Whitesell International Corporation