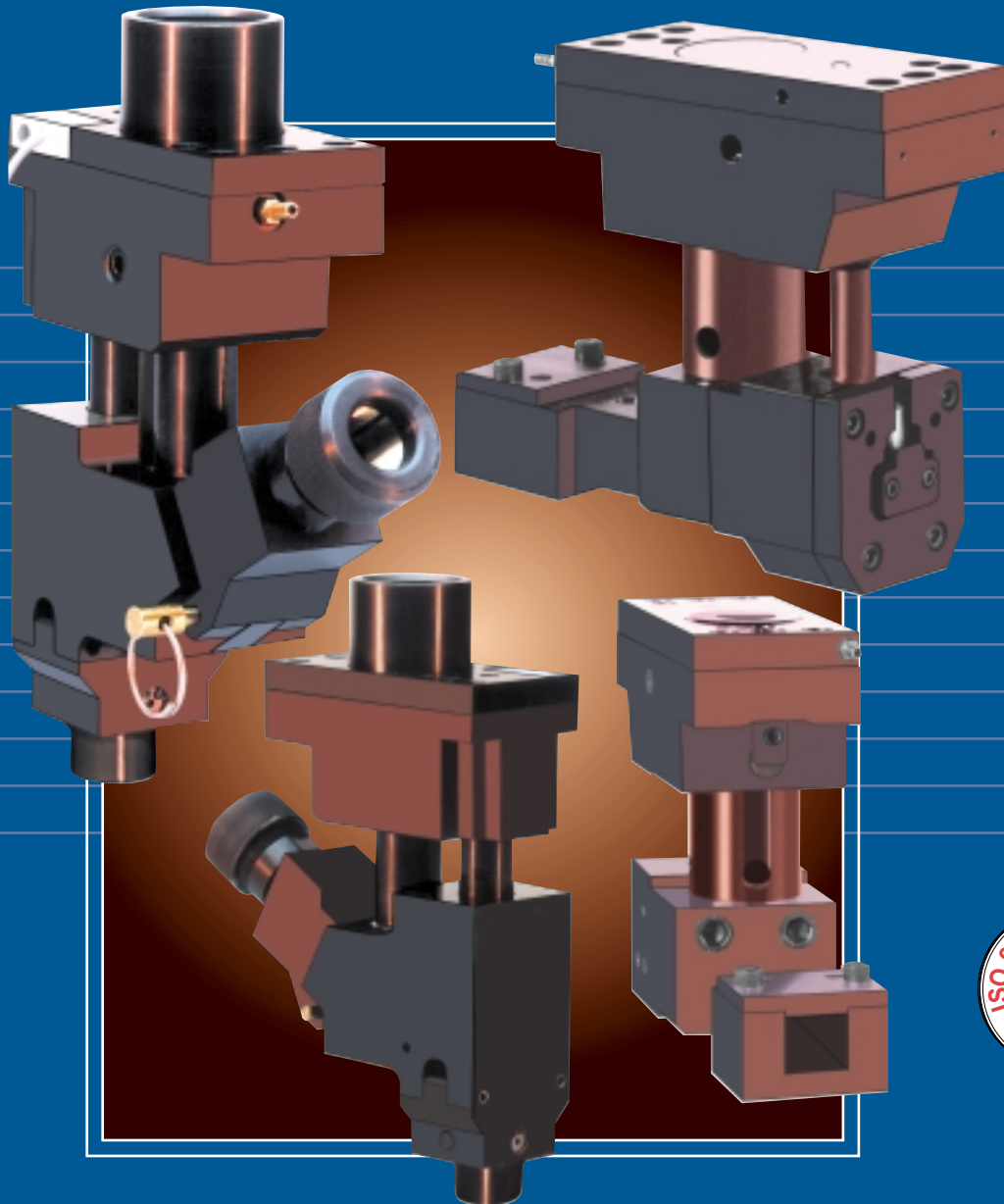


PIERCEFORM[®] INSTALLATION TOOLING

PIERCEFORM STUD INSTALLATION TOOLING

PIERCEFORM RSK NUT INSTALLATION TOOLING

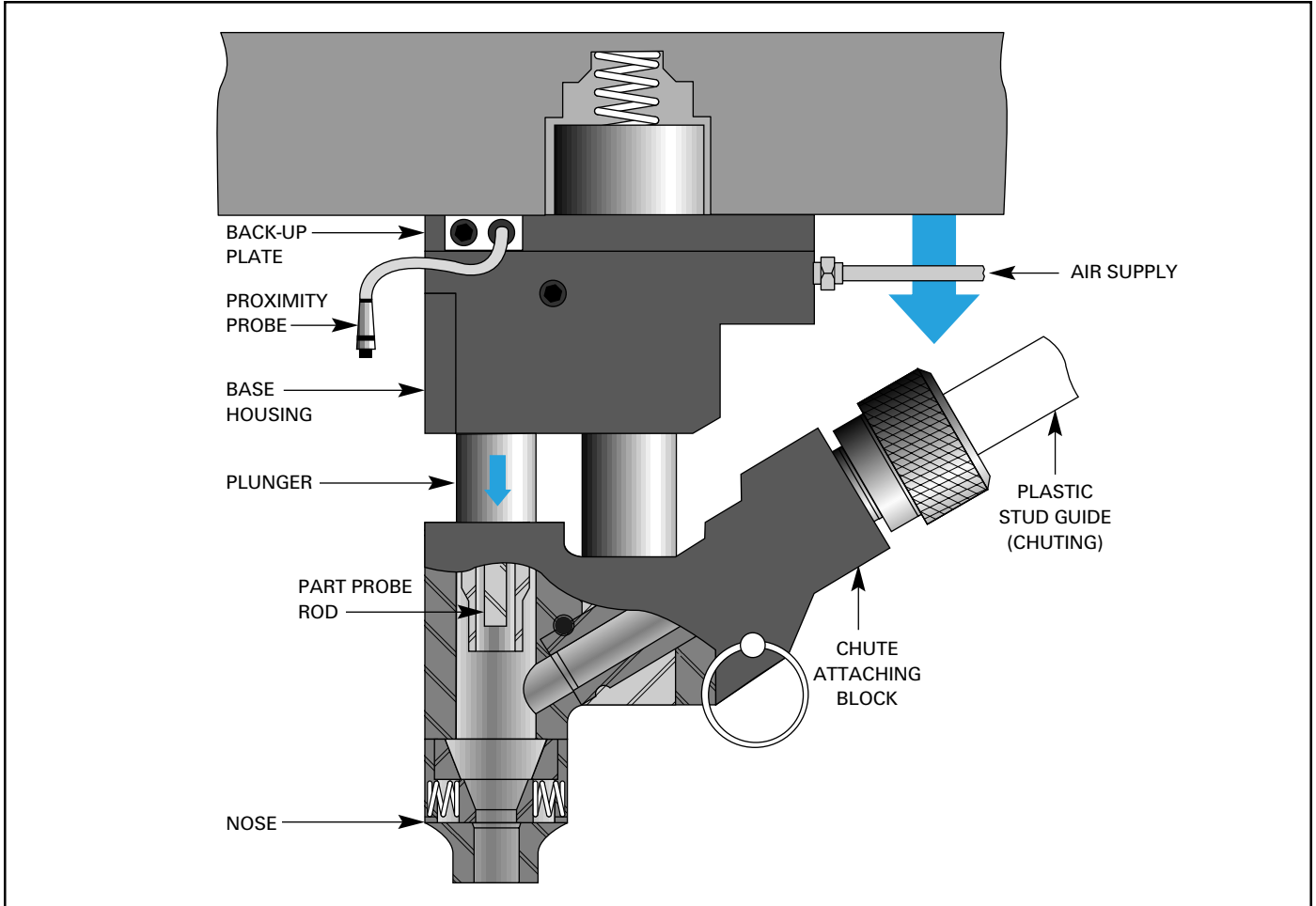


The total-service fastening
systems company.



MULTIFASTER[®]

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:

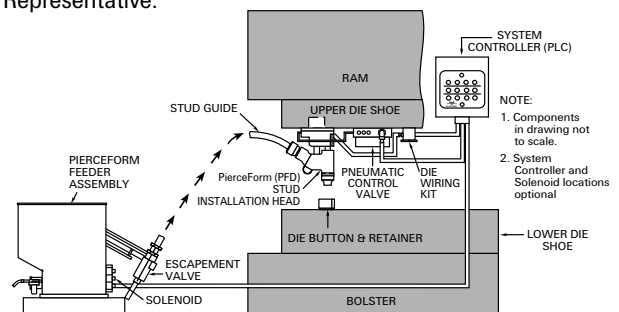
When ordering, specify:

- PierceForm Stud number
- Length of Head extension (if any)
- Alteration (if any)

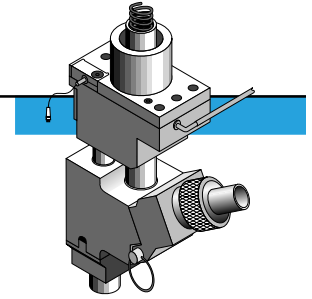
For applications requiring alterations to standard tooling, contact your Sales Representative.

DIE DESIGN INFORMATION

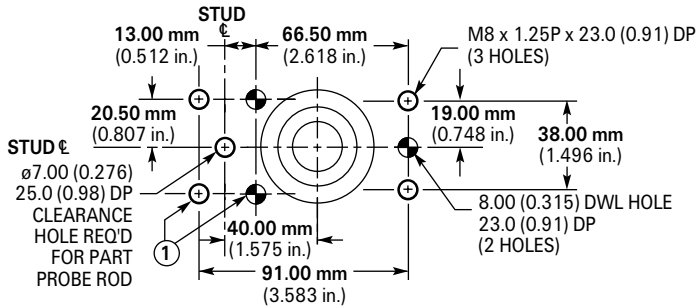
- Other operations may be included in dies installing Studs.
- Counterbore upper die shoe for shank and spring.
- Show oil lines, fittings and manifolds for multiple Head installations on drawings.
- If possible position each Head to allow access to the proximity probe, oil hole on side of base housing, 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.



PierceForm HEAD DIMENSIONS

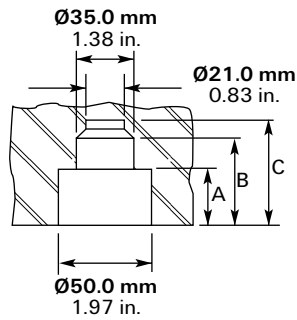


HEAD MOUNTING DIMENSIONS (VIEW THRU DIE SHOE FROM TOP)

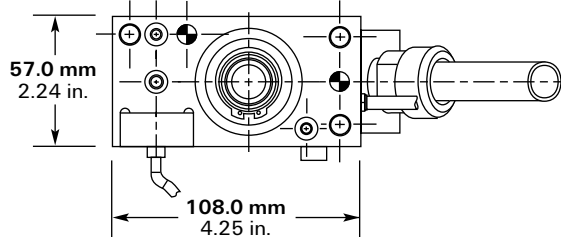


① MOUNTING SCREW & DOWEL HOLES TO BE ON OPPOSITE SIDE OF HEAD FROM PROBE

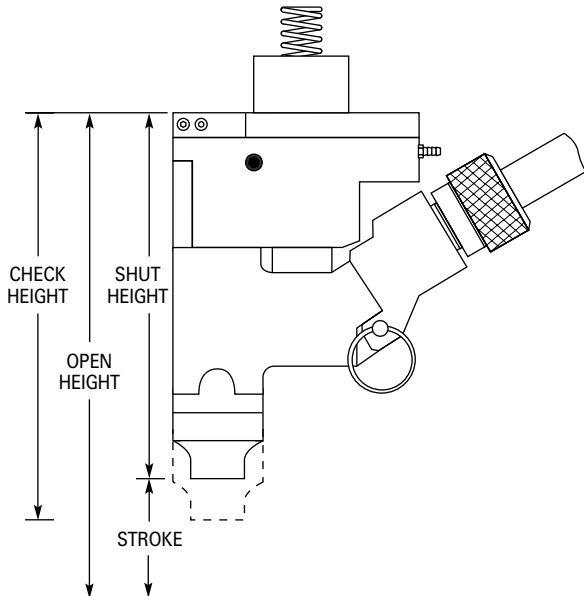
DIE SHOE SPRING POCKET COUNTERBORE



PLAN VIEW



SIDE VIEW



PierceForm STUDS

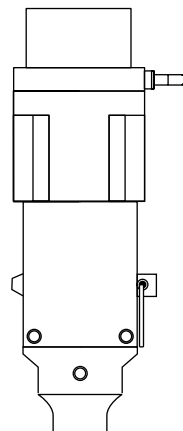
PFS STUD NO.	SIZE	SHUT HEIGHT	OPEN HEIGHT	CHECK HEIGHT	STROKE*	A	B	C
PFS-05	12-19MM	169.0 6.65	234.0 9.21	200.0 7.87	65.0 2.56	33.5 1.32	69.0 2.72	78.0 3.07
	20-27MM	169.0 6.65	234.0 9.21	200.0 7.87	65.0 2.56	33.5 1.32	69.0 2.72	78.0 3.07
PFS-06	12-19MM	169.0 6.65	234.0 9.21	200.0 7.87	65.0 2.56	33.5 1.32	69.0 2.72	78.0 3.07
	20-27MM	169.0 6.65	234.0 9.21	200.0 7.87	65.0 2.56	33.5 1.32	69.0 2.72	78.0 3.07
	28-35MM	184.0 7.24	264.0 10.39	215.0 8.46	80.0 3.15	48.5 1.91	84.0 3.31	93.0 3.66
	36-50MM	199.0 7.83	294.0 11.57	230.0 9.06	95.0 3.74	63.5 2.50	99.0 3.90	108.0 4.25
PFS-08	12-19MM	169.0 6.65	234.0 9.21	200.0 7.87	65.0 2.56	33.5 1.32	69.0 2.72	78.0 3.07
	20-27MM	169.0 6.65	234.0 9.21	200.0 7.87	65.0 2.56	33.5 1.32	69.0 2.72	78.0 3.07
	28-35MM	184.0 7.24	264.0 10.39	215.0 8.46	80.0 3.15	48.5 1.91	84.0 3.31	93.0 3.66
	36-50MM	199.0 7.83	294.0 11.57	230.0 9.06	95.0 3.74	63.5 2.50	99.0 3.90	108.0 4.25
PFS-10	12-19MM	178.0 7.01	252.0 9.92	210.0 8.27	74.0 2.91	41.5 1.63	78.0 3.07	87.0 3.43
	20-27MM	178.0 7.01	252.0 9.92	210.0 8.27	74.0 2.91	41.5 1.63	78.0 3.07	87.0 3.43

PierceForm SBK STUDS

SBK STUD NO.	SIZE	SHUT HEIGHT	OPEN HEIGHT	CHECK HEIGHT	STROKE*	A	B	C
SBK-06	20-27MM	169.0 6.65	234.0 9.21	200.0 7.87	65.0 2.56	33.5 1.32	69.0 2.72	78.0 3.07
SBK-08	20-27MM	169.0 6.65	234.0 9.21	200.0 7.87	65.0 2.56	33.5 1.32	69.0 2.72	78.0 3.07
SBK-10	20-27MM	178.0 7.01	252.0 9.92	210.0 8.27	74.0 2.91	41.5 1.63	78.0 3.07	87.0 3.43

* Difference between Open Height and Shut Height
Note: Metric Dimensions shown in bold type

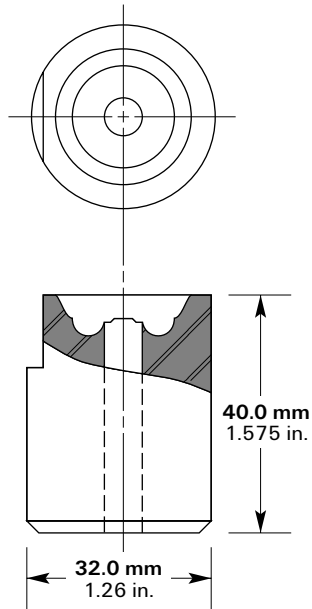
FRONT VIEW



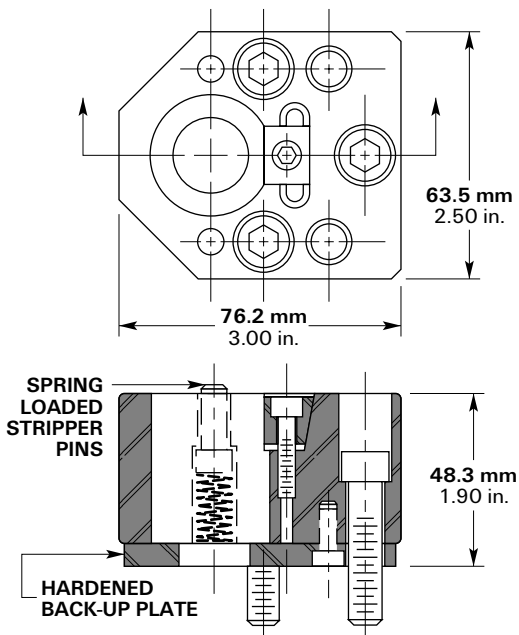
Die Button and Retainer

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



DIE BUTTON RETAINER PFRAM-32



Metric Dimensions shown in bold type

PFS STUDS

STUD SIZE	METAL THICKNESS (MM)	DIE BUTTON NUMBER
5mm	0.75 - 1.24	PSB-05-100
	1.25 - 1.74	PSB-05-150
	1.75 - 2.00	PSB-05-190
6mm	0.75 - 1.24	PSB-06-100
	1.25 - 1.74	PSB-06-150
	1.75 - 2.00	PSB-06-200
8mm	0.75 - 1.24	PSB-08-100
	1.25 - 1.74	PSB-08-150
	1.75 - 2.25	PSB-08-200
10mm	0.75 - 1.24	PSB-10-100
	1.25 - 1.74	PSB-10-150
	1.75 - 1.99	PSB-10-190
	2.00 - 2.50	PSB-10-230

SBK STUDS

STUD SIZE	METAL THICKNESS (MM)	DIE BUTTON NUMBER
5mm	1.75 - 2.83	SBK-06-230
	2.84 - 3.92	SBK-06-340
	3.93 - 5.00	SBK-06-450
6mm	1.75 - 2.83	SBK-06-230
	2.84 - 3.92	SBK-06-340
	3.93 - 5.00	SBK-06-450
8mm	2.00 - 3.33	SBK-08-270
	3.34 - 4.67	SBK-08-400
	4.68 - 6.00	SBK-08-530
10mm	2.00 - 3.33	SBK-10-270
	3.34 - 4.67	SBK-10-400
	4.68 - 6.00	SBK-10-530

STUD SIZE	MINIMUM INSTALLATION TONNAGE
5mm	12
6mm	12
8mm	15
10mm	17

Part Design Guidelines

PierceForm® Studs and PierceForm SBK 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, thereby offering many advantages over conventional male fasteners.

PierceForm® Studs and PierceForm SBK 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.

PierceForm Studs and PierceForm SBK 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 Stud and PierceForm SBK 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.

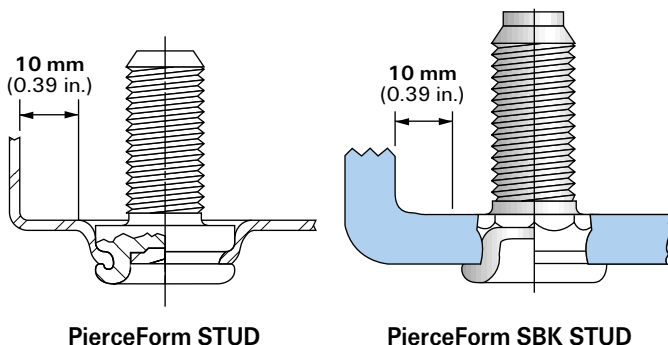
When extreme torque, stress, or environmental requirements exist, consult your representative prior to specifying PierceForm Studs and PierceForm SBK Studs.

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 (0.015 in.).

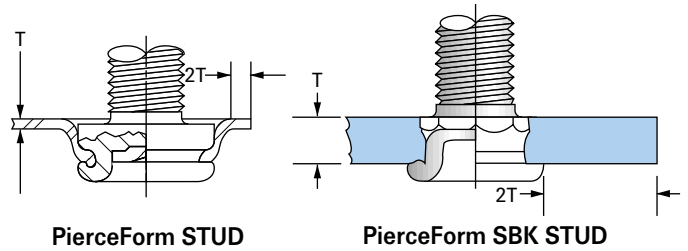
WHEN A FORMING OPERATION FOLLOWS A STUD OPERATION.

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



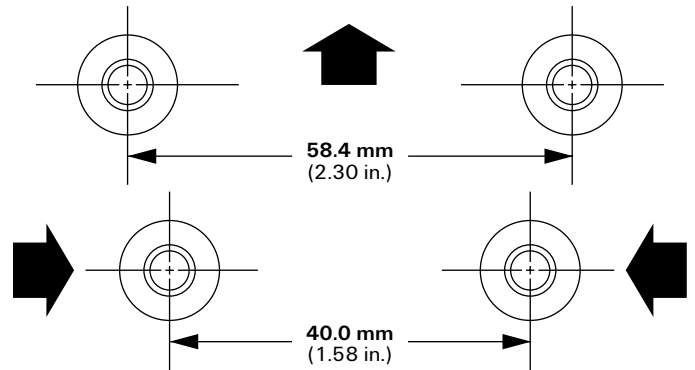
STUD EDGE TO PANEL EDGE DISTANCE.

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



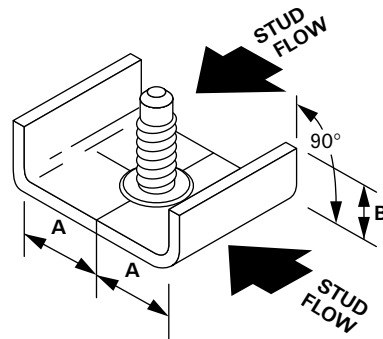
MINIMUM STUD SPACING (WITH STANDARD HEAD INSTALLATION TOOLING, RETAINERS MAY REQUIRE ALTERATION).

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



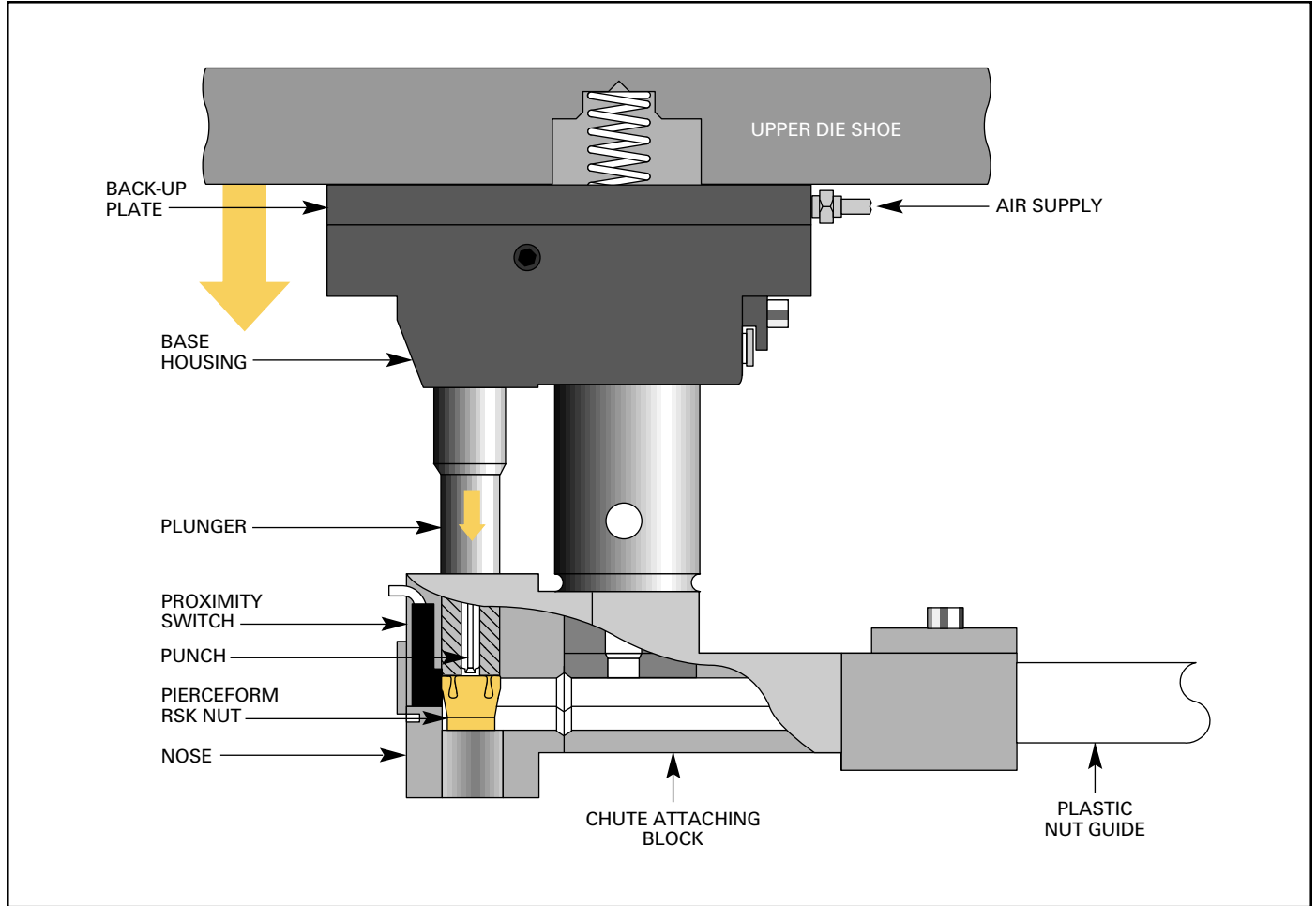
STUD TO FLANGE DISTANCES (WITH STANDARD INSTALLATION TOOLING).

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



STUD SIZE	A	B
M5, 6, 8	26.5 mm 1.043 in.	22.5 mm .886 in.
M10	20.0 mm .787 in.	22.5 mm .886 in.

PierceForm RSK Nut Installation Head



OPERATIONAL VIEW — PierceForm RSK NUT INSTALLATION HEAD IN OPEN POSITION

OPERATION

A PierceForm RSK Nut is sent via a hopper feeder, assisted by an inline power feeder, through the plastic nut guide into the PierceForm RSK Nut Installation Head. The Nut is held in position in the Head until the customer part is in place, supported underneath by a die button secured in a retainer.

As the die closes the nose of the Head contacts the metal panel and the plunger inside the Head begins to push the PierceForm RSK Nut through the panel, piercing its own hole. When the PierceForm RSK Nut has penetrated the panel it contacts the die button which forms the nut barrel into a 360° mechanical attachment onto the back of the metal panel.

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

ORDERING INFORMATION:

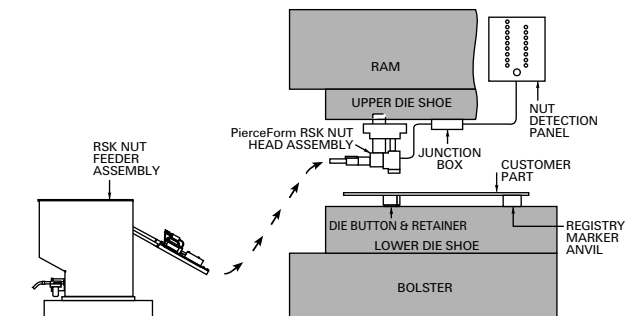
When ordering, specify:

- PierceForm RSK Nut number
- Length of Head extension (if any)
- Alteration (if any)

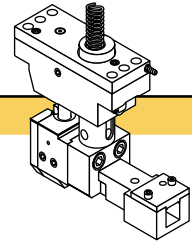
For applications requiring alterations to standard tooling, contact your Sales Representative.

DIE DESIGN INFORMATION

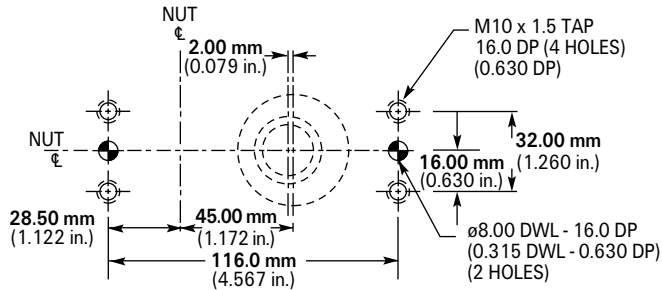
- Other operations may be included in dies installing RSK Nuts.
- Counterbore upper die shoe for shank and spring.
- Show oil lines, fittings and manifolds for multiple Head installations on drawings.
- If possible position each Head to allow access to the proximity probe and oil hole on side of base housing.
- Allow room for entry of the Plastic Nut Guide. Arrange so Plastic Nut Guide does not interfere with press operation.
- For all unique or special applications, consult your Sales Representative.



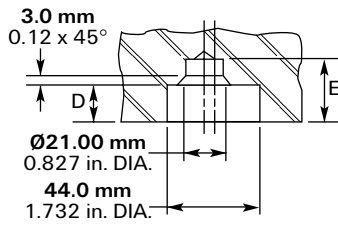
PierceForm HEAD DIMENSIONS



HEAD MOUNTING DIMENSIONS (VIEW THRU DIE SHOE FROM TOP)



DIE SHOE SPRING POCKET COUNTERBORE

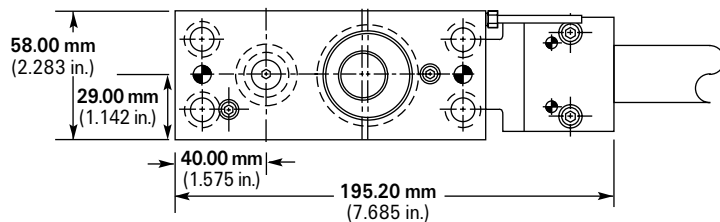


PierceForm RSK NUTS

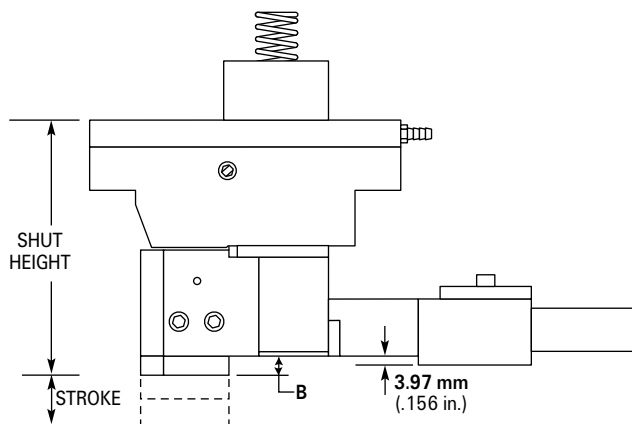
NUT SIZE	EXT.	SHUT HEIGHT	OPEN HEIGHT	STROKE*	B	D	E
RSK-06	13	120.19	165.81	45.62	13.0	41.5	61.5
	.50	4.732	6.528	1.796	.512	1.634	2.421
	26	133.19	191.81	58.62	26.0	54.5	87.5
RSK-08	1.00	5.244	7.552	2.308	1.024	2.146	3.445
	39	146.19	217.81	71.62	39.0	67.5	113.5
	1.50	5.756	8.576	2.820	1.535	2.657	4.469
RSK-10	13	120.19	171.63	51.44	13.0	41.5	61.5
	.50	4.732	6.757	2.025	.512	1.634	2.421
	26	133.19	197.63	64.44	26.0	54.5	87.5
RSK-10	1.00	5.244	7.781	2.537	1.024	2.146	3.445
	39	146.19	223.63	77.44	39.0	67.5	113.5
	1.50	5.756	8.804	3.049	1.535	2.657	4.469

* Difference between Open Height and Shut Height
 Note: Metric Dimensions shown in bold type

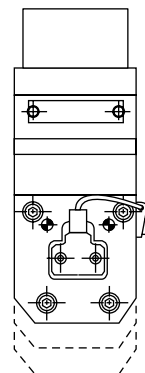
PLAN VIEW



SIDE VIEW



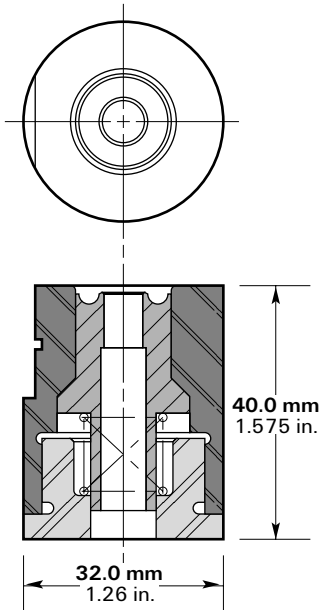
FRONT VIEW



Die Button and Retainer

The die button, held firmly in the die with a retainer, supports the metal panel for piercing and forms the barrel of the fastener over its circumference to lock it in place against the bottom surface of the part in complete radial engagement.

DIE BUTTON



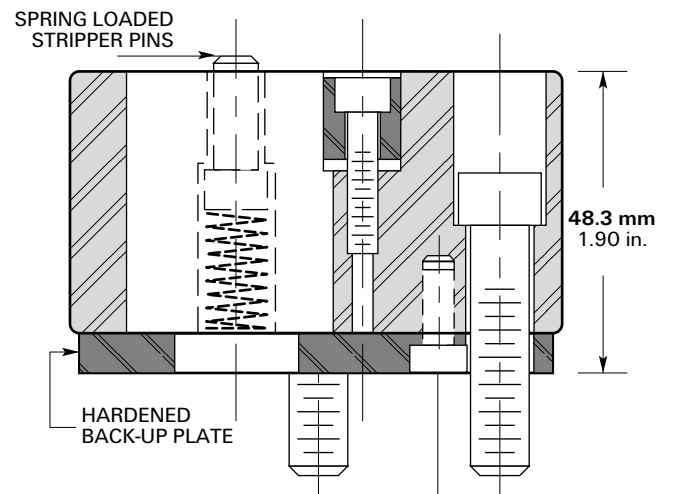
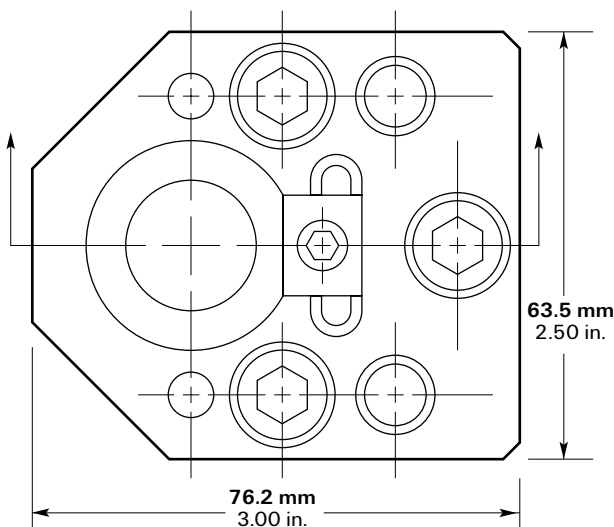
DIE BUTTONS

NUT SIZE	METAL THICKNESS (MM)	METAL THICKNESS (INCHES)	DIE BUTTON NUMBER
RSK-06	0.75-1.25 1.26-1.75	.030-.049 .050-.069	RSKSB-06-100 RSKSB-06-150
RSK-08	0.88-1.45 1.46-2.00	.035-.057 .058-.079	RSKSB-08-115 RSKSB-08-175
RSK-10	1.00-1.50 1.51-2.00	.039-.059 .060-.079	RSKSB-10-125 RSKSB-10-175

Metric Dimensions shown in bold type

NUT SIZE	INSTALLATION TONNAGE
RSK-06	10
RSK-08	16
RSK-10	20

DIE BUTTON RETAINERS PART # RSKBAM-32



NOTE: Diagrams not to scale

Part Design Guidelines

The PierceForm® RSK Nut is a property class 9.8 automatically installed, system-fed fastener that does not require a pre-pierced hole. Offered by Multifastener, the PierceForm RSK Nut makes a consistent mechanical attachment which provides a secure, permanent installation. The PierceForm RSK Nut can be installed in the same die used to form the part, thereby offering many advantages over conventional fasteners. Many metal panel thicknesses and shapes will make excellent installations; however, the metal panel and configuration are critical to obtaining a good installation. If aspects of your application are not covered here, please contact your Multifastener representative.

MATERIAL SPECIFICATIONS.

Material for proper installation of the PierceForm RSK Nut should be of DDQ specifications.

APPLICATION IN SPECIAL MATERIALS.

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

SELECT PROPER PierceForm RSK NUT.

Select according to tables found on PierceForm RSK Nut Specifications sheet.

SIMULPIERCING TWO SHEETS OF METAL.

Total panel thickness not to exceed 90% of recommended thickness of the PierceForm RSK Nut metal range. For other panel materials, contact your representative.

SEALING APPLICATIONS.

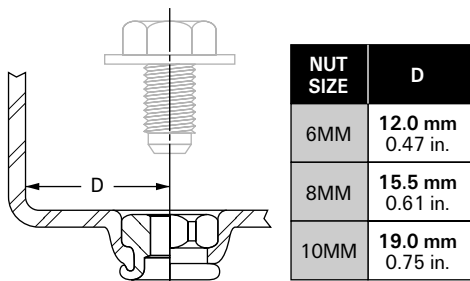
Sealing is attained as an integral feature of the installation process. Consult your representative for further details.

SPECIAL APPLICATIONS.

When special torque, stress, or environmental requirements exist, consult your representative when specifying PierceForm RSK Nut installation.

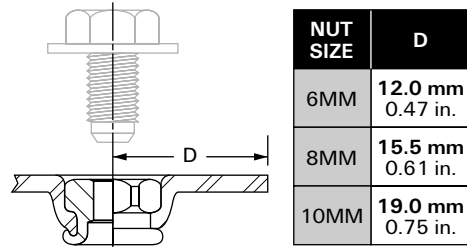
WHEN A FORMING OPERATION FOLLOWS A PierceForm RSK NUT OPERATION.

Do not form part closer than D after the PierceForm RSK Nut is installed, as shown. For closer spacing requirements, consult your representative.



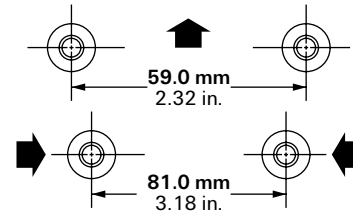
NUT-EDGE TO PANEL-EDGE DISTANCE.

PierceForm RSK Nuts must not be installed closer to the edge of a panel than D.



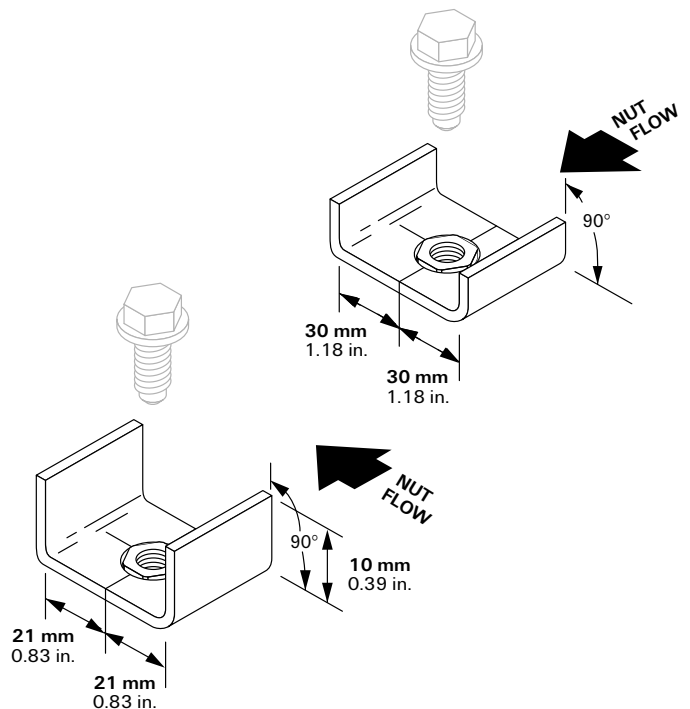
MINIMUM PierceForm RSK NUT SPACING (WITH STANDARD HEADS).

When closer spacing is required, consult your representative.



NUT TO FLANGE DISTANCES (WITH STANDARD INSTALLATION TOOLING).

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



“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

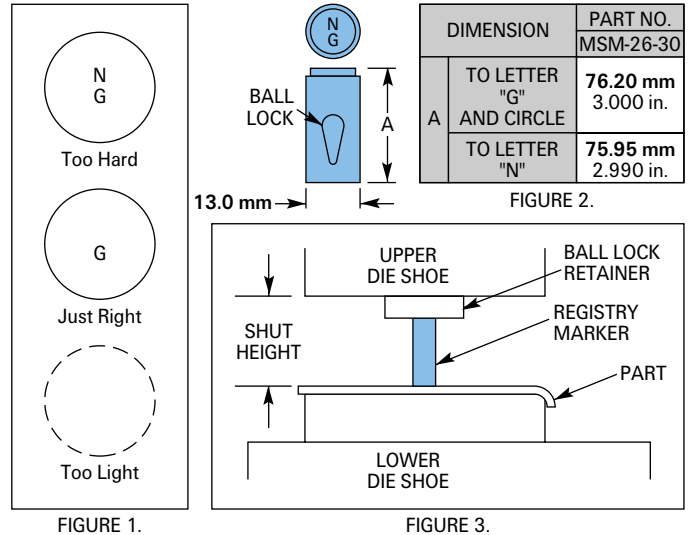
The Registry Marker is mounted in the same die shoe as the Installation Head and is positioned over the part panel that is to receive the PierceForm Stud or Nut (see Fig. 3). The Registry Marker should be located as close to the Head as possible.

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.)



Set-Up and Alignment Procedures

PierceForm Installation Heads may be mounted in the die by either of two methods: Direct Layout or Die Layout.

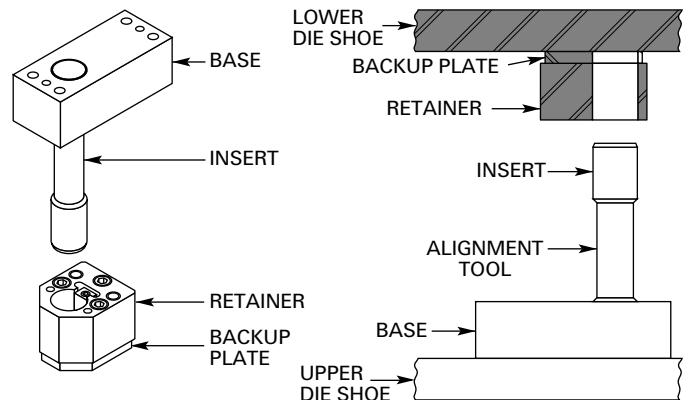
DIRECT LAYOUT METHOD

- Install die button retainer by direct layout or with template.
- Invert die set (so die button retainer is on top).
- Set assembled alignment tool in Head position.
- Lower die shoe (with retainer) so alignment insert enters retainer. **Alignment insert and retainer must be equivalent sizes.**
- Transfer alignment tool mounting holes to die (with punch).
- Repeat steps above for all Heads in die by transferring complete alignment tool to each Head location.
- Drill and tap mounting holes for screws.
- Loosely mount alignment plates in each Head location.
- Replace mating die shoe.
- Attach alignment plate in first Head position.
- Lower die shoe (with retainer) so alignment insert enters retainer.
- Tighten alignment plate screws through access holes, then remove insert.
- Repeat steps above for each Head in die.
- Remove mating die shoe; transfer dowel holes using alignment plates as drill fixtures. Drill as required for reaming.
- Ream for press fit for dowel pins.
- Locate and machine clearance holes for shank and spring.
- Install Head in each Head location. Follow plate die tryout procedures; follow Multifastener ram setting procedures in this manual.

DIE LAYOUT METHOD

- Install die button retainer by direct layout or with template.
- Loosely mount alignment plates in each Head location by die layout procedure.
- Attach alignment insert to alignment plate in first Head position.

- Lower die shoe (with retainer) and align tool so alignment insert properly enters retainer.
- Tighten alignment plate screws through access holes, then remove alignment insert.
- Remove mating die shoe; transfer dowel holes using alignment plates as drill fixtures. Drill as required for reaming.
- Ream for press fit for dowel pins.
- Repeat steps above for each Head.
- Locate and machine clearance holes for shank and spring.
- Install Head in each Head location. Follow plate die tryout procedures; follow Multifastener ram setting procedures in this manual.



Note: Alignment Tooling available for customer use upon request. Contact Multifastener.

Tooling Standards

PierceForm STUD TOOLING STANDARDS (METRIC DIMENSIONS)

STUD SIZE	METAL RANGE	INSTALLATION LOAD	DIE BUTTON	RETAINER
PFS-05	0.75-1.24	12 tons	PSB-05-100	PFRAM-32
	1.25-1.74		PSB-05-150	
	1.75-2.00		PSB-05-190	
PFS-06	0.75-1.24	12 tons	PSB-06-100	PFRAM-32
	1.25-1.74		PSB-06-150	
	1.75-2.00		PSB-06-200	
PFS-08	0.75-1.24	15 tons	PSB-08-100	PFRAM-32
	1.25-1.74		PSB-08-150	
	1.75-2.25		PSB-08-200	
PFS-10	0.75-1.24	17 tons	PSB-10-100	PFRAM-32
	1.25-1.74		PSB-10-150	
	1.75-1.99		PSB-10-190	
	2.00-2.50		PSB-10-230	
SBK-05	1.75-2.83	12 tons	SBK-06-230	PFRAM-32
	2.84-3.92		SBK-06-340	
	3.93-5.00		SBK-06-450	
SBK-06	1.75-2.83	12 tons	SBK-06-230	PFRAM-32
	2.84-3.92		SBK-06-340	
	3.93-5.00		SBK-06-450	
SBK-08	2.00-3.33	15 tons	SBK-08-270	PFRAM-32
	3.34-4.67		SBK-08-400	
	4.68-6.00		SBK-08-530	
SBK-10	2.00-3.33	17 tons	SBK-10-270	PFRAM-32
	3.34-4.67		SBK-10-400	
	4.68-6.00		SBK-10-530	

STUD SIZE	STUD LENGTH	HEAD ASSEMBLY PART NUMBER
PFS-05	12-19MM	PFDPSB-05B-00Y
	20-27MM	PFDPSB-05-00Y
	28-35MM	PFDPSB-05C-00Y-15
	36-50MM	PFDPSB-05D-00Y-30
PFS-06	12-19MM	PFDPSB-06B-00Y
	20-27MM	PFDPSB-06-00Y
	28-35MM	PFDPSB-06C-00Y-15
	36-50MM	PFDPSB-06D-00Y-30
PFS-08	12-19MM	PFDPSB-08B-00Y
	20-27MM	PFDPSB-08-00Y
	28-35MM	PFDPSB-08C-00Y-15
	36-50MM	PFDPSB-08D-00Y-30
PFS-10	12-19MM	PFDPSB-10B-00Y
	20-27MM	PFDPSB-10-00Y
	28-35MM	PFDPSB-10C-00Y-15
	36-50MM	PFDPSB-10D-00Y-30
SBK-05	13-19MM	SBKDS-06B-00Y
	20-27MM	SBKDS-06-00Y
	28-35MM	SBKDS-06C-00Y-15
	36-50MM	SBKDS-06D-00Y-30
SBK-06	13-19MM	SBKDS-06B-00Y
	20-27MM	SBKDS-06-00Y
	28-35MM	SBKDS-06C-00Y-15
	36-50MM	SBKDS-06D-00Y-30
SBK-08	12-19MM	SBKDS-08B-00Y
	20-27MM	SBKDS-08-00Y
	28-35MM	SBKDS-08C-00Y-15
	36-50MM	SBKDS-08D-00Y-30
SBK-10	12-19MM	SBKDS-10B-00Y
	20-27MM	SBKDS-10-00Y
	28-35MM	SBKDS-10C-00Y-15
	36-50MM	SBKDS-10D-00Y-30

PierceForm RSK NUT TOOLING STANDARDS (METRIC DIMENSIONS)

STUD SIZE	METAL RANGE	INSTALLATION LOAD	DIE BUTTON	RETAINER	HEAD ASSEMBLY PART NO.
RSK-06	0.75-1.25	10 tons	RSKSB-06-100	RSKBAM-32	RSK-06-00
	1.26-1.75		RSKSB-06-150		
RSK-08	0.88-1.45	16 tons	RSKSB-08-115	RSKBAM-32	RSK-08-00
	1.46-2.00		RSKSB-08-175		
RSK-10	1.00-1.50	20 tons	RSKSB-10-125	RSKBAM-32	RSK-10-00
	1.51-2.00		RSKSB-10-175		

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