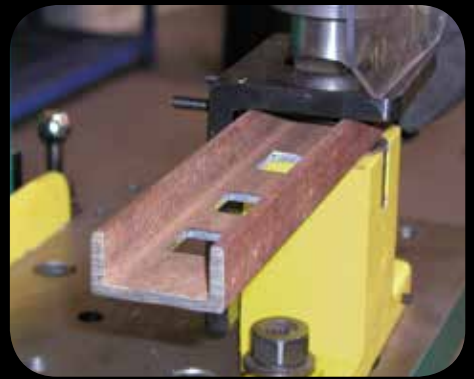




Piranha Ironworker Tooling & Attachments

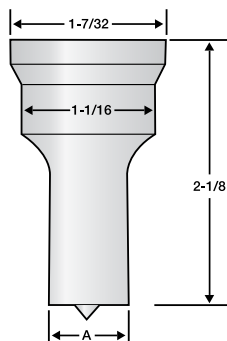


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Ironworker tooling that works as hard as your Piranha

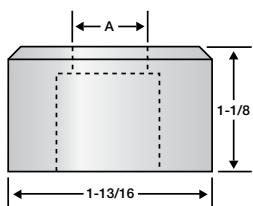
Piranha Standard Punches & Dies Dimensions & Specifications

Standard for P2, P-36, P-40, P-50, P65



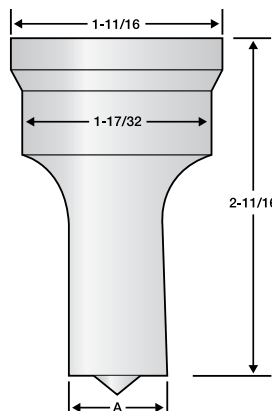
No. DH
"A" 1/8 to 1-1/8 Dia.

Existing P-36 and P-50 machines will require a larger coupling nut to accept 1-1/16" to 1-1/8" diameter tooling.

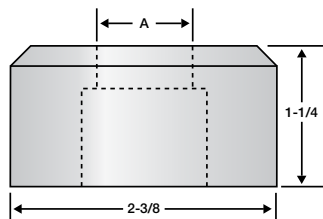


No. JB
"A" 9/64 to 1-3/16 Dia.

Standard for P-70, P-90, P-110, P-120, P-140 & PII-65/88/110/140

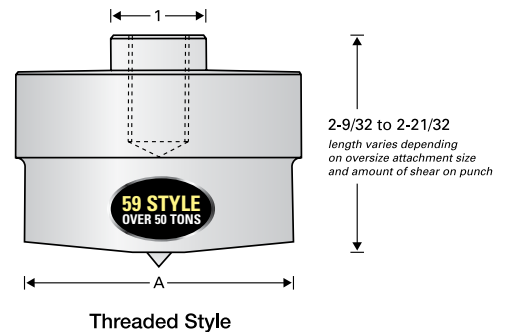


No. EF
"A" 1/8 to 1-9/16 Dia.

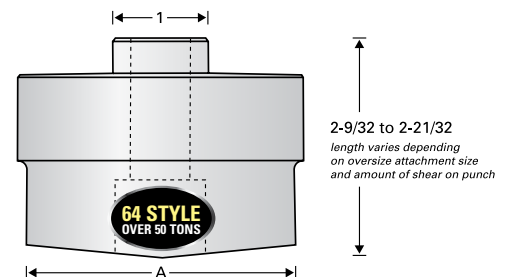


No. JF
"A" 7/32 to 1-5/8 Dia.

Heavy Duty Punches



Threaded Style



Bolt On Style

(Minimum size = 1.970 dia, or min. width of shape)



Piranha Tool School Tip
Attachments are available for optional punch sizes (see page 14).

Genuine Piranha Tooling

Get the most from your Piranha ironworker by using genuine Piranha ironworker tooling and replacement parts. All tooling available in inch and metric.

Place your order today. Call 1-800-338-5471.

For fastest order processing, have your Piranha model number, material thicknesses and hole size(s) ready.

Convenient payment via Visa, MasterCard, American Express.

Policies and Terms

Terms—All prices are net, f.o.b. factory. Minimum order is \$50. Net 30 days.

Returns—Prior to returning goods, approval must be received from the Tooling Service Department, 1-800-338-5471. Tools authorized for return are to be shipped pre-paid. Credit will not be allowed on damaged or used tooling.

Specials—Non-standard punches and dies are non-cancellable and non-returnable.



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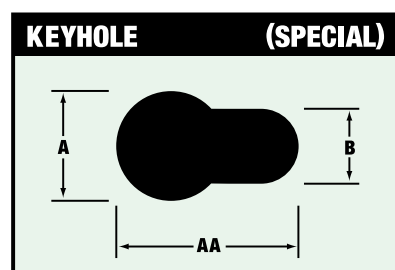
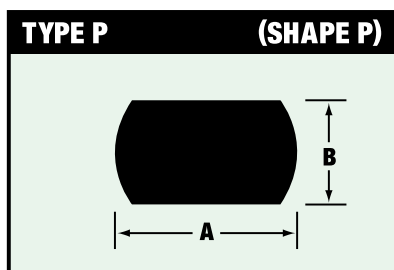
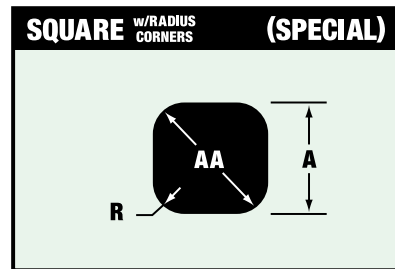
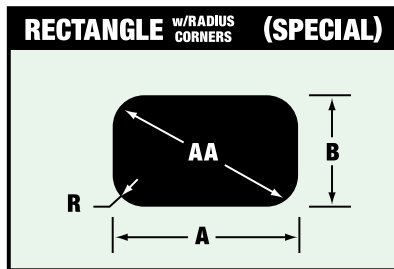
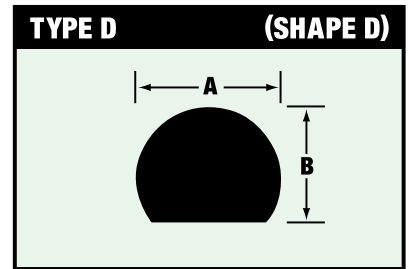
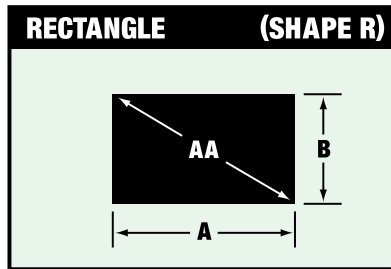
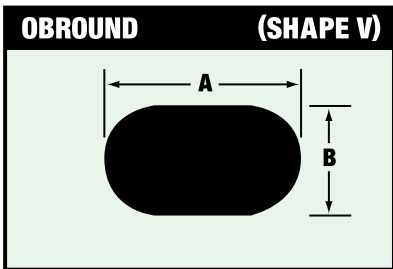
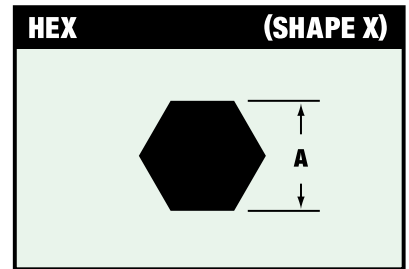
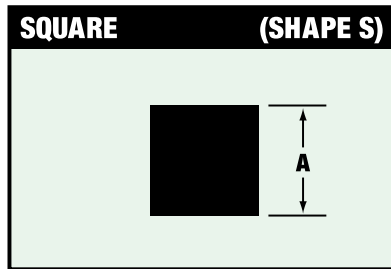
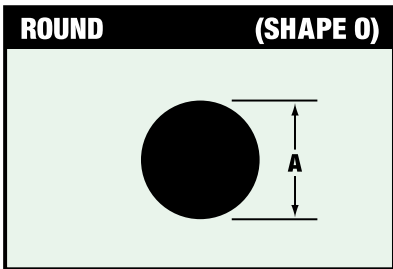
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Stock Punches & Dies are shipped the same day ordered. Non-stock sizes can be shipped as quickly as 24 hours.

All punches in this catalog can be made in any shape.
Shown below are a few of the most commonly used shapes.
Please call or fax your inquiries to us.



Genuine Piranha Tooling

Ironworker tooling that works as hard as your Piranha

Genuine Piranha Tooling

Ironworker tooling that works as hard as your Piranha

Piranha Round Tooling

STOCK ROUND PUNCHES

Size	DH	EF
1/8	.	.
5/32	.	.
3/16	.	.
7/32	.	.
1/4	.	.
9/32	.	.
5/16	.	.
11/32	.	.
3/8	.	.
13/32	.	.
7/16	.	.
15/32	.	.
1/2	.	.
17/32	.	.
9/16	.	.
19/32	.	.
5/8	.	.
21/32	.	.
11/16	.	.
23/32	.	.
3/4	.	.
25/32	.	.
13/16	.	.
27/32	.	.
7/8	.	.
29/32	.	.
15/16	.	.
31/32	.	.
1	.	.
1-1/32	.	.
1-1/16	.	.
1-3/32	.	.
1-1/8	.	.
1-5/32	.	.
1-3/16	.	.
1-7/32	.	.
1-1/4	.	.
1-9/32	.	.
1-5/16	.	.
1-11/32	.	.
1-3/8	.	.
1-13/32	.	.
1-7/16	.	.
1-15/32	.	.
1-1/2	.	.
1-17/32	.	.
1-9/16	.	.

STOCK ROUND DIES

Size	JB	JF
5/32	.	.
3/16	.	.
7/32	.	.
1/4	.	.
9/32	.	.
5/16	.	.
11/32	.	.
3/8	.	.
13/32	.	.
7/16	.	.
15/32	.	.
1/2	.	.
17/32	.	.
9/16	.	.
19/32	.	.
5/8	.	.
21/32	.	.
11/16	.	.
23/32	.	.
3/4	.	.
25/32	.	.
13/16	.	.
27/32	.	.
7/8	.	.
29/32	.	.
15/16	.	.
31/32	.	.
1	.	.
1-1/32	.	.
1-1/16	.	.
1-3/32	.	.
1-1/8	.	.
1-5/32	.	.
1-3/16	.	.
1-7/32	.	.
1-1/4	.	.
1-9/32	.	.
1-5/16	.	.
1-11/32	.	.
1-3/8	.	.
1-13/32	.	.
1-7/16	.	.
1-15/32	.	.
1-1/2	.	.
1-17/32	.	.
1-9/16	.	.
1-19/32	.	.
1-5/8	.	.



Clearance Chart

For A-36 and Mild Steel Plate:

Material Thickness	Clearance
16 ga. thru 5/32"	1/64"
3/16" thru 5/16"	1/32"
11/32" thru 1/2"	1/16"
17/32" thru 3/4"	3/32"

WARNING

The user is responsible for set-up and use of the machinery and tooling in accordance with all OSHA laws and ANSI B11.5 standards. Extreme pressures can be generated in metal punching. Approved guards and safety glasses should be used at all times. Operators should be trained on set-up and machine operation and safety procedures should be enforced.

• Same-Day Shipment Sizes



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Piranha Square & Hexagon Tooling

Note: Hexagon punch and die sizes are measured from flat to flat.



STOCK SQUARE PUNCHES DIES

Size	DH	EF	JB	JF
7/32	.			
1/4	.		.	
9/32	.		.	
5/16	.	.	.	
11/32
3/8
13/32
7/16
15/32
1/2
17/32
9/16
19/32
5/8
21/32
11/16
23/32
3/4
25/32
13/16
27/32
7/8
29/32
15/16
31/32
1
1-1/32
1-1/16
1-3/32
1-1/8

• Same-Day Shipment Sizes

STOCK HEXAGON PUNCHES DIES

Size	DH	EF	JB	JF
11/32	.	.		
3/8
13/32
7/16
15/32
1/2
17/32
9/16
19/32
5/8
21/32
11/16
23/32
3/4
25/32
13/16
27/32
7/8
29/32
15/16
31/32
1
1-1/32
1-1/16
1-3/32
1-1/8
1-5/32
1-3/16
1-7/32
1-1/4
1-9/32
1-5/16

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Genuine Piranha Tooling

Ironworker tooling that works as hard as your Piranha

Piranha Obround Tooling

Please note:

Obround punches are stocked without v-groove in the head. V-groove is available upon request.

Obround dies are stocked without locators, but are available upon request.



STOCK OBROUND PUNCHES

Size	DH	EF
3/16 x 3/4	•	
3/16 x 1	•	•
7/32 x 7/16	•	•
7/32 x 1	•	•
1/4 x 1/2	•	•
1/4 x 3/4	•	•
1/4 x 1	•	•
9/32 x 9/16	•	•
9/32 x 3/4	•	•
9/32 x 1	•	•
5/16 x 1/2	•	•
5/16 x 5/8	•	•
5/16 x 3/4	•	•
5/16 x 1	•	•
5/16 x 1-1/16	•	•
5/16 x 1-1/4		•
5/16 x 1-1/2		•
11/32 x 11/16	•	•
11/32 x 1	•	•
3/8 x 1/2	•	•
3/8 x 3/4	•	•
3/8 x 1	•	•
3/8 x 1-1/4		•
3/8 x 1-1/2		•
13/32 x 13/16	•	•
13/32 x 1	•	•
13/32 x 1-1/4		•

Size	DH	EF
7/16 x 9/16	•	
7/16 x 3/4	•	•
7/16 x 7/8	•	•
7/16 x 1	•	•
7/16 x 1-1/16	•	•
7/16 x 1-1/4		•
7/16 x 1-1/2		•
15/32 x 1	•	•
1/2 x 3/4	•	•
1/2 x 1	•	•
1/2 x 1-1/16	•	•
1/2 x 1-1/4		•
1/2 x 1-1/2		•
17/32 x 1	•	•
17/32 x 1-1/4		•
17/32 x 1-1/2		•
9/16 x 3/4	•	•
9/16 x 1	•	•
9/16 x 1-1/16	•	•
9/16 x 1-1/8	•	•
9/16 x 1-1/4		•
9/16 x 1-1/2		•
5/8 x 1	•	•
5/8 x 1-1/4		•
5/8 x 1-1/2		•
11/16 x 1	•	•
11/16 x 1-1/16	•	•

Size	DH	EF
11/16 x 1-1/8	•	
11/16 x 1-1/4		•
11/16 x 1-1/2		•
3/4 x 1	•	•
3/4 x 1-1/4		•
3/4 x 1-1/2		•
13/16 x 1	•	•
13/16 x 1-1/16	•	•
13/16 x 1-1/8	•	•
13/16 x 1-1/4		•
13/16 x 1-1/2		•
7/8 x 1-1/4		•
7/8 x 1-1/2		•
15/16 x 1-1/16	•	•
15/16 x 1-1/8	•	•
15/16 x 1-1/4		•
15/16 x 1-1/2		•
15/16 x 1-9/16		•
1 x 1-1/4		•
1 x 1-1/2		•
1 x 1-9/16		•
1-1/16 x 1-1/4		•
1-1/16 x 1-5/16		•
1-1/16 x 1-1/2		•
1-1/16 x 1-9/16		•
1-1/8 x 1-1/2		•

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STOCK OBOUND DIES

Size	JB	JF
7/32 x 25/32	•	
7/32 x 1-1/32	•	•
15/64 x 29/64	•	
1/4 x 15/32	•	
1/4 x 1-1/32	•	•
9/32 x 17/32	•	•
9/32 x 25/32	•	•
9/32 x 1-1/32	•	•
5/16 x 19/32	•	•
5/16 x 25/32	•	•
5/16 x 1-1/32	•	•
11/32 x 17/32	•	•
11/32 x 21/32	•	•
11/32 x 25/32	•	•
11/32 x 1-1/32	•	•
11/32 x 1-3/32	•	•
11/32 x 1-9/32	•	•
11/32 x 1-17/32	•	•
3/8 x 23/32	•	•
3/8 x 1-1/32	•	•
3/8 x 1-5/16	•	•
13/32 x 17/32	•	•
13/32 x 25/32	•	•
13/32 x 1-1/32	•	•
13/32 x 1-9/32	•	•
13/32 x 1-17/32	•	•
7/16 x 27/32	•	•
7/16 x 1-1/32	•	•
7/16 x 1-9/32	•	•
7/16 x 1-5/16	•	•
15/32 x 19/32	•	•
15/32 x 25/32	•	•
15/32 x 29/32	•	•
15/32 x 1-1/32	•	•
15/32 x 1-3/32	•	•
15/32 x 1-9/32	•	•
15/32 x 1-17/32	•	•
1/2 x 1-1/32	•	•
1/2 x 1-1/16	•	•
1/2 x 1-5/16	•	•
17/32 x 25/32	•	•
17/32 x 1-1/32	•	•
17/32 x 1-3/32	•	•

Size	JB	JF
17/32 x 1-9/32	•	•
17/32 x 1-17/32	•	•
9/16 x 13/16	•	•
9/16 x 1-1/32	•	•
9/16 x 1-1/16	•	•
9/16 x 1-1/8	•	•
9/16 x 1-3/16	•	•
9/16 x 1-9/32	•	•
9/16 x 1-5/16	•	•
9/16 x 1-17/32	•	•
9/16 x 1-9/16	•	•
19/32 x 25/32	•	•
19/32 x 1-1/32	•	•
19/32 x 1-3/32	•	•
19/32 x 1-5/32	•	•
19/32 x 1-9/32	•	•
19/32 x 1-17/32	•	•
5/8 x 13/16	•	•
5/8 x 1-1/16	•	•
5/8 x 1-1/8	•	•
5/8 x 1-3/16	•	•
5/8 x 1-5/16	•	•
5/8 x 1-9/16	•	•
21/32 x 1-1/32	•	•
21/32 x 1-9/32	•	•
21/32 x 1-17/32	•	•
11/16 x 1-1/16	•	•
11/16 x 1-5/16	•	•
11/16 x 1-9/16	•	•
23/32 x 1-1/32	•	•
23/32 x 1-3/32	•	•
23/32 x 1-5/32	•	•
23/32 x 1-9/32	•	•
23/32 x 1-17/32	•	•
3/4 x 1-1/16	•	•
3/4 x 1-1/8	•	•
3/4 x 1-3/16	•	•
3/4 x 1-5/16	•	•
3/4 x 1-9/16	•	•
25/32 x 1-1/32	•	•
25/32 x 1-9/32	•	•
25/32 x 1-17/32	•	•
13/16 x 1-1/16	•	•

Size	JB	JF
13/16 x 1-5/16	•	•
13/16 x 1-9/16	•	•
27/32 x 1-1/32	•	•
27/32 x 1-3/32	•	•
27/32 x 1-5/32	•	•
27/32 x 1-9/32	•	•
27/32 x 1-17/32	•	•
7/8 x 1-1/16	•	•
7/8 x 1-1/8	•	•
7/8 x 1-3/16	•	•
7/8 x 1-5/16	•	•
7/8 x 1-9/16	•	•
29/32 x 1-9/32	•	•
29/32 x 1-17/32	•	•
15/16 x 1-5/16	•	•
15/16 x 1-9/16	•	•
31/32 x 1-3/32	•	•
31/32 x 1-5/32	•	•
31/32 x 1-9/32	•	•
31/32 x 1-17/32	•	•
1 x 1-1/8	•	•
1 x 1-3/16	•	•
1 x 1-5/16	•	•
1 x 1-9/16	•	•
1 x 1-5/8	•	•
1-1/32 x 1-9/32	•	•
1-1/32 x 1-17/32	•	•
1-1/32 x 1-19/32	•	•
1-1/16 x 1-5/16	•	•
1-1/16 x 1-9/16	•	•
1-1/16 x 1-5/8	•	•
1-3/32 x 1-9/32	•	•
1-3/32 x 1-11/32	•	•
1-3/32 x 1-17/32	•	•
1-1/8 x 1-5/16	•	•
1-1/8 x 1-3/8	•	•
1-1/8 x 1-9/16	•	•
1-1/8 x 1-5/8	•	•
1-5/32 x 1-17/32	•	•
1-3/16 x 1-9/16	•	•

• Same-Day Shipment Sizes

Genuine Piranha Tooling

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Piranha Eccentric Dies

STOCK ROUND OFFSET DIES

Size	JB	JF
9/32	•	•
5/16	•	•
11/32	•	•
3/8	•	•
13/32	•	•
7/16	•	•
15/32	•	•
1/2	•	•
17/32	•	•
9/16	•	•
19/32	•	•
5/8	•	•
21/32	•	•
11/16	•	•
23/32	•	•
3/4	•	•
25/32	•	•
13/16	•	•
27/32	•	•
7/8	•	•
29/32	•	•
15/16	•	•
31/32	•	•
1	•	•
1-1/32	•	•
1-1/16	•	•
1-3/32	•	•
1-1/8	•	•

• Same-Day
Shipment Sizes

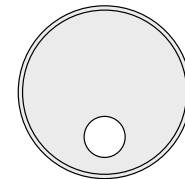
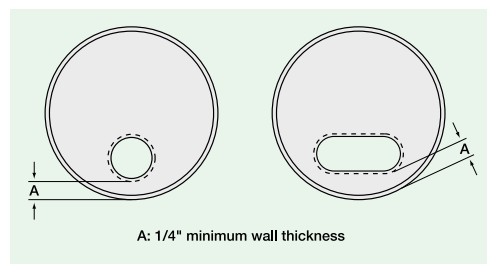
STOCK OBOUND OFFSET DIES

Size	JB	JF
13/32 x 25/32	•	•
13/32 x 1-1/32	•	•
15/32 x 25/32	•	•
15/32 x 1-1/32	•	•
17/32 x 1-1/32	•	•
19/32 x 25/32	•	•
19/32 x 1-1/32	•	•
23/32 x 1-1/32	•	•
27/32 x 1-1/32	•	•

Eccentric Dies

Offset dies are made with at least a 1/4" wall thickness.

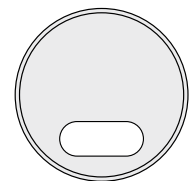
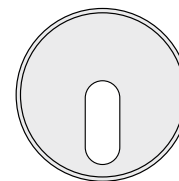
Please specify location of whistle notch if required. Stock dies do not have whistle notch.



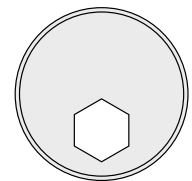
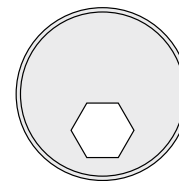
Round

Position A

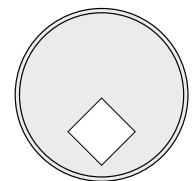
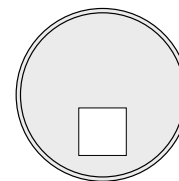
Position B



Obound



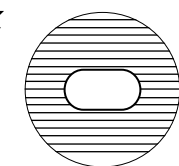
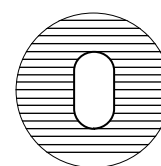
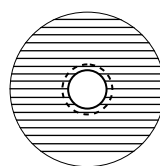
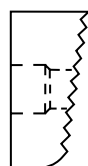
Hexagon



Square

Bevel Serrated Dies

Bevel serrated dies are available on request. Please specify die style, shape, orientation of shape to bevel and size.



Parallel
to Bevel

Perpendicular
to Bevel



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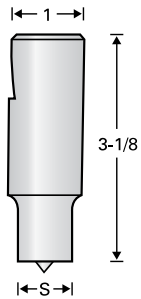


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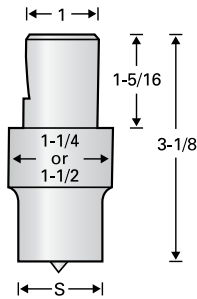
Stock Punches & Dies are shipped the same day ordered. Non-stock sizes can be shipped as quickly as 24 hours.

Piranha 28XX Tooling Dimensions & Specifications

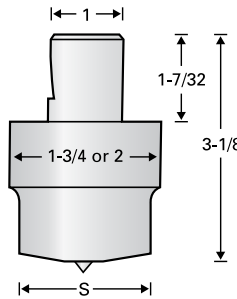
28XX round and shaped punches and dies for Piranha Ironworker oversize attachments.



Sizes .062 to 1.000 Dia.



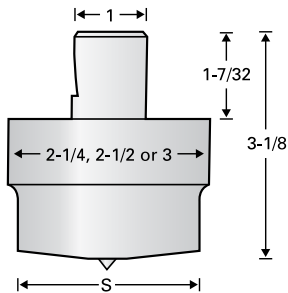
Sizes 1.001 to 1.453 Dia.



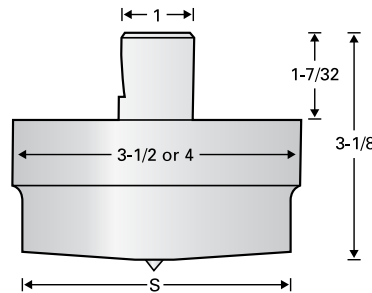
Sizes 1.454 to 1.969 Dia.

28XX Punches are available up to 5.000" in diameter.

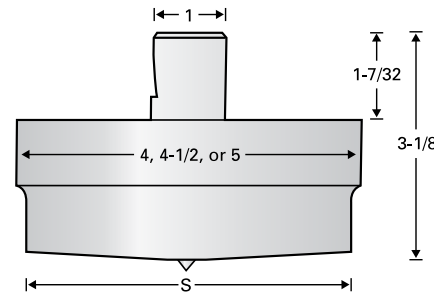
All round punches through 1.453" diameter (or equivalent size shape) are flat-faced, with a center point on the punch face. Larger punches are standard with 1/8" housetop shear and center point. Other shear types are available at customer request.



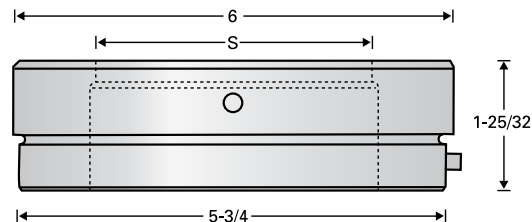
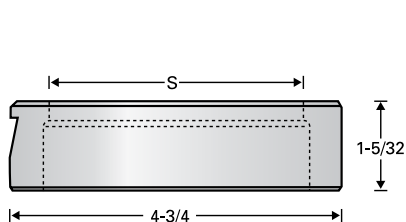
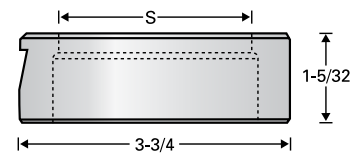
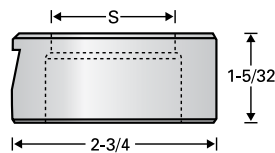
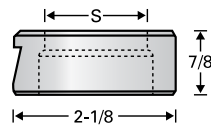
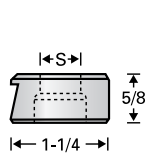
Sizes 1.970 to 2.969 Dia.



Sizes 2.970 to 3.969 Dia.



Sizes 3.970 to 5.000 Dia.



Please specify the size of the oversize attachment when ordering.

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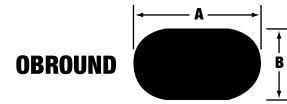
28XX Punches & Dies—Standard Shapes



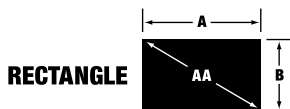
Punch (6301-) Size "A"	Die (6302-) Size "A"	Die O.D.
.050 - .172	Thru .209	1-1/4
.173 - .812	.210 - .824	1-1/4
.813 - 1.000	.825 - 1.068	2-1/8
1.001 - 1.453	1.069 - 1.465	2-1/8
1.454 - 2.000	1.466 - 2.012	2-3/4
2.001 - 2.500	2.013 - 2.537	3-3/4
2.501 - 3.000	2.538 - 3.012	3-3/4
3.001 - 3.500	3.013 - 3.537	4-3/4
3.501 - 4.000	3.538 - 4.012	4-3/4
4.001 - 4.500	4.013 - 4.537	5-3/4
4.501 - 5.000	4.538 - 5.012	5-3/4



Punch (6311-) Size "A"	Die (6312-) Size "A"	Die O.D.
.125 - .500	Thru .512	1-1/4
.501 - .688	.513 - .724	2-1/8
.689 - 1.000	.725 - 1.012	2-1/8
1.001 - 1.406	1.013 - 1.418	2-3/4
1.407 - 1.766	1.419 - 1.778	3-3/4
1.767 - 2.125	1.779 - 2.137	3-3/4
2.126 - 2.469	2.138 - 2.481	4-3/4
2.470 - 2.812	2.482 - 2.824	4-3/4
2.813 - 3.156	2.825 - 3.168	5-3/4
3.157 - 3.500	3.169 - 3.512	5-3/4



Punch (6321-) Size "A"	Die (6322-) Size "A"	Die O.D.
.125 - .812	Thru .824	1-1/4
.813 - 1.000	.825 - 1.068	2-1/8
1.001 - 1.453	1.069 - 1.465	2-1/8
1.454 - 2.000	1.466 - 2.012	2-3/4
2.001 - 2.500	2.013 - 2.537	3-3/4
2.501 - 3.000	2.538 - 3.012	3-3/4
3.001 - 3.500	3.013 - 3.537	4-3/4
3.501 - 4.000	3.538 - 4.012	4-3/4
4.001 - 4.500	4.013 - 4.537	5-3/4
4.501 - 5.000	4.538 - 5.012	5-3/4



Punch (6331-) Size "AA"	Die (6332-) Size "AA"	Die O.D.
.125 - .750	Thru .762	1-1/4
.751 - .999	.763 - 1.068	2-1/8
1.000 - 1.438	1.069 - 1.450	2-1/8
1.439 - 2.000	1.451 - 2.012	2-3/4
2.001 - 2.500	2.013 - 2.537	3-3/4
2.501 - 3.000	2.538 - 3.012	3-3/4
3.001 - 3.500	3.013 - 3.537	4-3/4
3.501 - 4.000	3.538 - 4.012	4-3/4
4.001 - 4.500	4.013 - 4.537	5-3/4
4.501 - 5.000	4.538 - 5.012	5-3/4



Punch (6361-) Size "A"	Die (6362-) Size "A"	Die O.D.
.125 - .812	Thru .824	1-1/4
.813 - .999	.825 - 1.068	2-1/8
1.000 - 1.453	1.069 - 1.465	2-1/8
1.454 - 2.000	1.466 - 2.012	2-3/4
2.001 - 2.500	2.013 - 2.537	3-3/4
2.501 - 3.000	2.538 - 3.012	3-3/4



Punch (6351-) Size "A"	Die (6352-) Size "A"	Die O.D.
.125 - .812	Thru .824	1-1/4
.813 - .999	.825 - 1.068	2-1/8
1.000 - 1.453	1.069 - 1.465	2-1/8
1.454 - 2.000	1.466 - 2.012	2-3/4
2.001 - 2.500	2.013 - 2.537	3-3/4
2.501 - 3.000	2.538 - 3.012	3-3/4



Punch (6341-) Size "A"	Die (6342-) Size "A"	Die O.D.
.125 - .688	Thru .700	1-1/4
.689 - 1.250	.701 - 1.262	2-1/8
1.251 - 1.719	1.263 - 1.731	2-3/4
1.720 - 2.594	1.732 - 2.606	3-3/4



Punch (8XXX-) Size "AA"	Die (8XXX-) O.D.
Thru .812	1-1/4
.813 - 1.453	2-1/8
1.454 - 2.000	2-3/4
2.001 - 3.000	3-3/4
3.001 - 4.000	4-3/4
4.001 - 5.000	5-3/4



Punch (8XXX-) Size "AA"	Die (8XXX-) O.D.
Thru .812	1-1/4
.813 - 1.453	2-1/8
1.454 - 2.000	2-3/4
2.001 - 3.000	3-3/4
3.001 - 4.000	4-3/4
4.001 - 5.000	5-3/4



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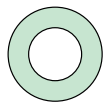
Stock Punches & Dies are shipped the same day ordered. Non-stock sizes can be shipped as quickly as 24 hours.

Orientations and Pin Locations

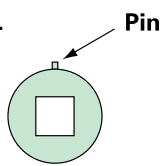
All shaped 28XX punches and dies are pinned for 0° and 90° positioning. Pin locations are shown for standard shapes. Other pin locations may be specified, at additional cost, when ordering. Use the three step procedure shown here to determine the proper degree of location for a custom pin location.

Pin Locations for Standard Shapes

View from top of die.



**Round
No Pin**



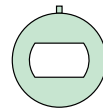
Square



Rectangle



Obround



Type "P"



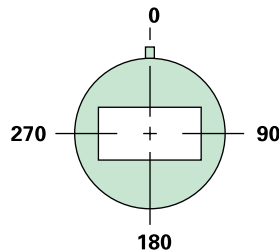
Type "D"



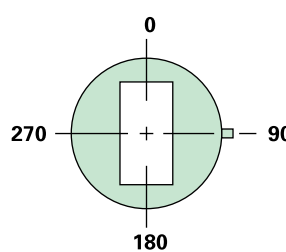
Hexagon

Standard Shaped Dies—Orientations in Machine

View from top of die.



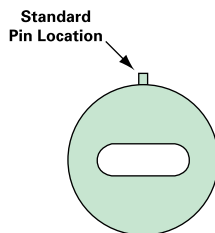
Tool Load Position



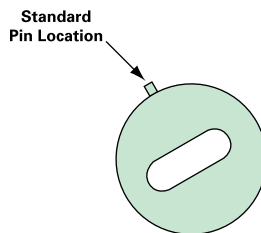
Tool Load Position

Determining Custom Pin Location

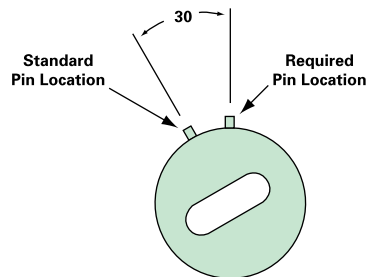
View from top of die.



1. Determine pin location of standard die.



2. Rotate to desired location.



3. Determine angle from standard location to required location (clockwise is positive).

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Calculating Punching Force Requirements

To determine the punching force needed to punch a single hole with a flat faced punch:

- Calculate the Hole Perimeter using the formulas on page 13.
- Find the Material Shear Strength on the table on page 13.
- Then use the following equation:

Flat Face Punching Force (lbs) = Punch Perimeter (inches) x Material Thickness (inches) x Material Shear Strength (lbs/in²)

To change from pounds of punching force to tons of punching force use the following equation: tons = lbs/2000

Example: To punch a 1/4" square hole in 3/16" stainless steel:
 $4(1/4") \times 3/16" \times 70,000 \text{ lbs/in}^2 = 13,125 \text{ lbs (6.56 tons)}$ of punching force.

Note: The required force to punch a hole is reduced when the punch has shear. To find actual punching force needed (for round holes only) find the shear factor and use the following formula:

Actual Punching Force with Shear (lbs or tons) = Flat Face Punching Force (lbs or tons) x Shear Factor

28XX™ punches up thru 1.453" diameter have no shear; 1.454" thru 5.000" diameter have 1/8" housetop shear.*

Thickness	1/8" Shear Factor
.135" (3.4 mm)	.55
.187" (5.0 mm)	.64
.250" (6.0 mm)	.74
.313" (8.0 mm)	.84
.375" (10.0 mm)	.95
.500" (12.0 mm)	1.00
.625" (16.0 mm)	1.00
.750" (18.0 mm)	1.00
.875" (22.0 mm)	1.00
1.00" (25.0 mm)	1.00

*Other shear sizes and types are available.

Punching Force Requirements for Round Holes in Mild Steel

HOLE DIA (INCHES)	20 GA .0359	18 GA 0.0478	16 GA 0.0598	14 GA 0.0747	12 GA 0.1046	11 GA 0.1196	10 GA 0.1345	3/16 0.1875	1/4 0.2500	5/16 0.3125	3/8 0.3750	1/2 0.5000	5/8 0.6250	3/4 0.7500	7/8 0.8750	1 1.0000
1/8	0.35	0.47	0.59	0.73	1.0	1.2										
3/16	0.53	0.70	0.88	1.1	1.5	1.8	2.0	2.8								
1/4	0.70	0.94	1.2	1.5	2.1	2.3	2.6	3.7	4.9							
5/16	0.88	1.2	1.5	1.8	2.6	2.9	3.3	4.6	6.1	7.7						
3/8	1.06	1.4	1.8	2.2	3.1	3.5	4.0	5.5	7.4	9.2	11.0					
7/16	1.23	1.6	2.1	2.6	3.6	4.1	4.6	6.4	8.6	10.7	12.9	17.2				
1/2	1.41	1.9	2.3	2.9	4.1	4.7	5.3	7.4	9.8	12.3	14.7	19.6				
9/16	1.59	2.1	2.6	3.3	4.6	5.3	5.9	8.3	11.0	13.8	16.6	22.1	27.6			
5/8	1.76	2.3	2.9	3.7	5.1	5.9	6.6	9.2	12.3	15.3	18.4	24.5	30.7			
11/16	1.94	2.6	3.2	4.0	5.6	6.5	7.3	10.1	13.5	16.9	20.2	27.0	33.7	40.5		
3/4	2.11	2.8	3.5	4.4	6.2	7.0	7.9	11.0	14.7	18.4	22.1	29.5	36.8	44.2		
13/16	2.29	3.1	3.8	4.8	6.7	7.6	8.6	12.0	16.0	19.9	23.9	31.9	39.9	47.9	55.8	
7/8	2.47	3.3	4.1	5.1	7.2	8.2	9.2	12.9	17.2	21.5	25.8	34.4	43.0	51.5	60.1	68.7
15/16	2.64	3.5	4.4	5.5	7.7	8.8	9.9	13.8	18.4	23.0	27.6	36.8	46.0	55.2	64.4	73.6
1.00	2.82	3.8	4.7	5.9	8.2	9.4	10.6	14.7	19.6	24.5	29.5	39.3	49.1	58.9	68.7	78.5
1.50	4.23	5.6	7.0	8.8	12.3	14.1	15.8	22.1	29.5	36.8	44.2	58.9	73.6	88.4	103	118
2.00	5.64	7.5	9.4	11.7	16.4	18.8	21.1	29.5	39.3	49.1	58.9	78.5	98.2	118	137	157
2.50	7.05	9.4	11.7	14.7	20.5	23.5	26.4	36.8	49.1	61.4	73.6	98.2	123	147	172	196
3.00	8.46	11.3	14.1	17.6	24.6	28.2	31.7	44.2	58.9	73.6	88.4	118	147	177	206	236
3.50	9.87	13.1	16.4	20.5	28.8	32.9	37.0	51.5	68.7	85.9	103	137	172	206	241	275
4.00	11.28	15.0	18.8	23.5	32.9	37.6	42.3	58.9	78.5	98.2	118	157	196	236	275	314
4.50	12.69	16.9	21.1	26.4	37.0	42.3	47.5	66.3	88.4	110	133	177	221	265	309	353
5.00	14.10	18.8	23.5	29.3	41.1	47.0	52.8	73.6	98.2	123	147	196	245	295	344	393

Single Hole Punching—When using a press for single round hole punching, refer to the chart above to determine the amount of force required to punch a given hole. This chart is based on punching mild steel—50,000 PSI shear strength using flat face punches only.

Example: To punch a 15/16" diameter hole through 10 gauge mild steel, the required punching force is 9.9 tons.



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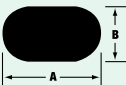



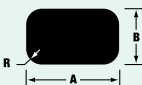
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Stock Punches & Dies are shipped the same day ordered. Non-stock sizes can be shipped as quickly as 24 hours.

Formulas for Calculating the Perimeter of Standard Shapes

Round $P = 3.142(A)$ 	Square $P = 4(A)$ 	Ovoid $P = 1.142(B) + 2(A)$ 	Rectangle $P = 2(A) + 2(B)$ 
Hexagon $P = 3.465(A)$ 	Square with radius corners $P = 4(A) - 1.717(R)$ 	Rectangle with radius corners $P = 2(A) + 2(B) - 1.717(R)$ 	

Calculate your own tonnage requirements or call a Piranha Service Representative.

Average Shear Strength of Materials (pounds per square inch)

Material	Shear Strength (PSI)	Chart Multiplier	Material	Shear Strength (PSI)	Chart Multiplier
<u>Aluminum</u>			<u>Steel</u>		
1100-0	9,500	.19	Mild Steel	50,000	1.00
1100-H14	11,000	.22	Boiler Plate	55,000	1.10
3003-H14	14,000	.28	Cold Drawn	60,000	1.20
2024-T4	44,000	.88	40-50 Carbon	74,000	1.48
5005-H18	19,000	.38	Structural A-36	60,000	1.20
6063-T5	18,000	.36	Structural EX-TEN		
6061-T4	24,000	.48	(ASTM-A572) – Grade 42	50,000	1.00
6061-T6	29,000	.58	Grade 45	50,000	1.00
7075-T6	54,000	1.08	Grade 50	55,000	1.10
<u>Brass</u>			Grade 55	60,000	1.20
Rolled Sheet (Soft)	42,000	.84	Grade 60	65,000	1.30
1/2 Hard	56,000	1.12	Grade 65	70,000	1.40
Hard	68,000	1.36	Structural COR-TEN		
<u>Copper</u>			(ASTM-A242)	60,000	1.20
1/4 Hard	29,000	.58	Cold Rolled C-1018	60,000	1.20
Hard	43,000	.86	Hot Rolled C-1050	125,000	2.50
Chart Multiplier			Hot Rolled C-1095	125,000	2.50
For piercing materials with a different shear strength than 50,000 psi it is necessary to use a multiplier for calculating the proper amount of force required to punch the hole.			Hot Rolled C-1095 Annealed	90,000	1.80
Example: To pierce a 15/16" diameter hole through 10 gage stainless steel (70,000 psi shear strength) the force required (from the table on page 22) is 9.9 tons. The multiplier is 1.4—therefore, 9.9 tons x 1.4 = 13.9 tons actual force.			Stainless 302 Annealed	70,000	1.40
			Stainless 304 Cold Rolled	70,000	1.40
			Stainless 316 Cold Rolled	70,000	1.40
			Steel, Abrasion Resisting	110,000	2.20
			ASTM A656 – Grade 80	85,000	1.70

These are average values only. Actual shear strength can be higher depending on actual tensile and yield strengths of material batch. Consult Piranha engineers with any punching problems.

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Piranha Oversize Attachments

Please Note: Standard 28XX punch holders have a 50 ton maximum punching capacity. Heavy duty punches must be used when punching applications exceed 50 tons. 28XX punch attachments are furnished without strippers. Contact Piranha's engineering department for heavy duty part numbers.



**P-50/65/70/90/110/120/140
28XX Oversized Heavy Duty
Stripping Attachment**

*Max. punch diameter on P-50 is 3".
Max. punch diameter on P-70/90/120 is 5".*



**PII-65/88 28XX
Punch Holder**



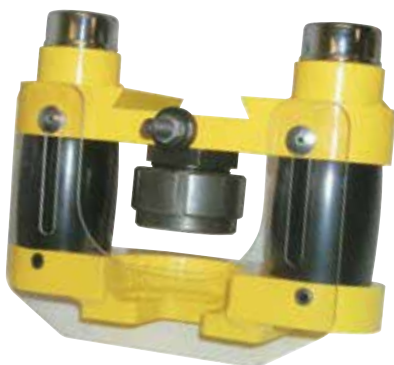
**PII-110/140 28XX
Punch Holder**



**28XX
Punch Holder**



**28XX
Punch Holder**



**P2/40/50/65
1-1/2" Oversize Attachment**

Note: Spanner wrench required.

Max. punch diameter is 1-1/2".



**28XX 3-3/4"
Die Holder**



**28XX 5-3/4"
Die Holder**



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Stock Punches & Dies are shipped the same day ordered. Non-stock sizes can be shipped as quickly as 24 hours.

Piranha Parts

Piranha Punch Stems, Coupling Nuts and Miscellaneous Parts

The table below lists our stock Piranha punch stems, coupling nuts, die holders, urethane strippers and filter elements. Please provide the model and serial number when ordering replacement parts. If the part required is not listed, please provide a part number, sketch or drawing.



Die Holder



Die Holder



Punch Stems



Urethane Strippers



Filter Element



Coupling Nut



Coupling Nut



**Coupling Nut
Oversize Attachment**

Model No.	P2	P-36	P-40	P-50 (P-3)	RP-50	P-65	P-70	P-90	P-110	P-120	P-140	PII-35	PII-65	PII-88	PII-110	PII-140	SEPP-35	SEPP-65	SEPP-88	SEP-120	SEPP-140	
Urethane Stripper	•	•	•	•	•	•	•	•	•	•	•	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Punch Stem	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Die Holder	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Coupling Nut	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Filter Element	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

• Same-Day Shipment Items

Genuine Piranha Tooling

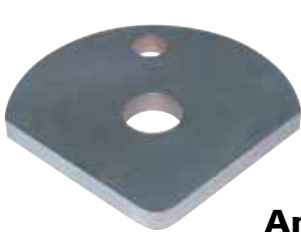
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Piranha Blades

The table below lists our stock Piranha shear blades, angle blades and copers. Please provide the model and serial number when ordering replacement blades. If the blade required is not listed, please provide a part number, sketch or drawing.



Upper Angle Blade

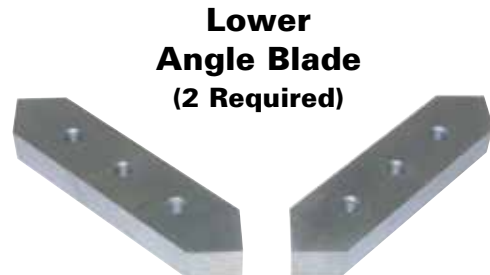


Upper Coper

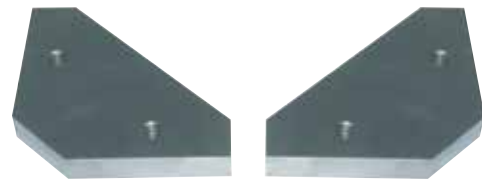


**Lower Coper—Side
(2 Required)**

Lower Coper—Front



**Lower Angle Blade
(2 Required)**



**Shear Blade
(2 Required)**

Long and short available

Model No.	P2	P-36	P-40	P-50 (P-3)	RP-50	P-65	P-70	P-90	P-110	P-120	P-140	PII-35	PII-65	PII-88	PII-110	PII-140
Short Shear Blade (2 Required)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Long Shear Blade (2 Required)	•	•	•	•	N/A	N/A	N/A	•*	•	•	•	•	•	•	N/A	•
Upper Angle	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Lower Angle (2 Required)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Upper Coper	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Lower Coper—Front	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Lower Coper—Side (2 Required)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

• Same-Day Shipment Items

* Prior to serial # 3000



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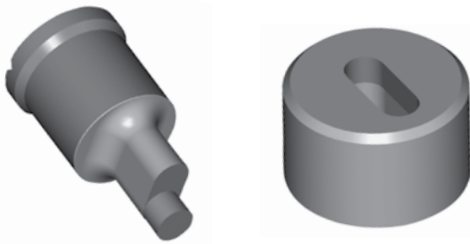
Stock Punches & Dies are shipped the same day ordered. Non-stock sizes can be shipped as quickly as 24 hours.

Piranha Special Tooling

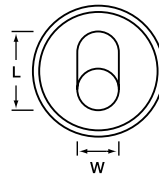
Expand Your Metal Fabricating Capabilities

Get greater productivity from your Piranha through the use of special tooling. Our design engineering department has a thorough understanding of your machine's capabilities for special parts fabrication. We can assist you with tooling to precisely fit your Piranha machine and maximize its capabilities.

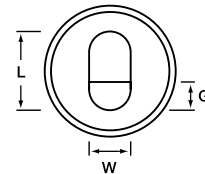
Ripping and Heel Punches



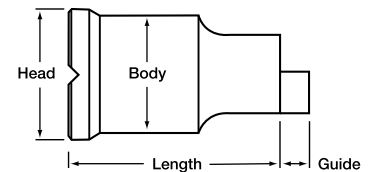
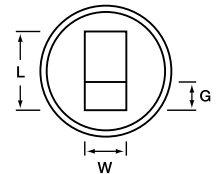
Obround Ripping Punch



Obround Heel Punch

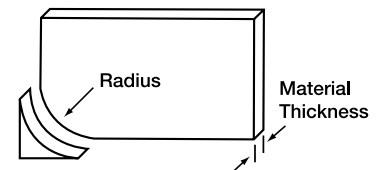
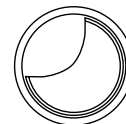
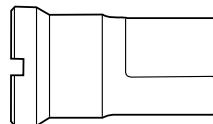
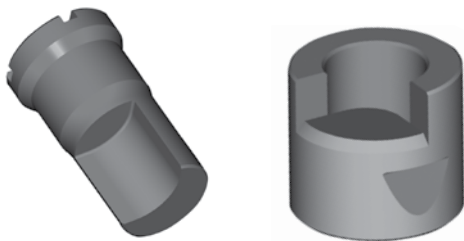


Rectangular Heel Punch



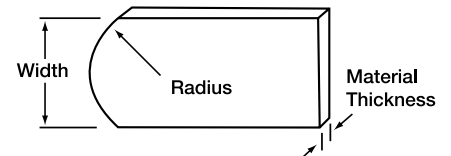
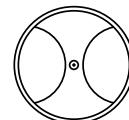
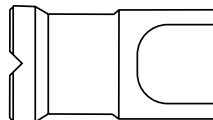
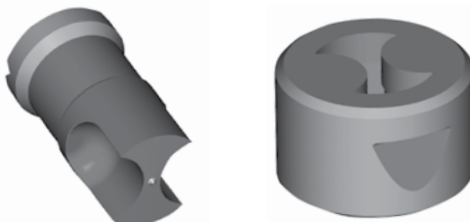
When ordering, please provide shape, material thickness and the dimensions shown. Guide should be 1/8" to 1/4" greater than material thickness.

Corner Rounding Punch & Die



When ordering, please provide corner radius and material thickness. Minimum radius is 1/8". Maximum material thickness is 3/8".

Trim & Part (Lattice Bar) Punch & Die



Trim and Part tooling produces end radii on flat bar stock. When ordering please provide radius, material thickness and width. Maximum material thickness is 3/8".

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Piranha Special Tooling

Explore Your Metal Fabricating Possibilities



Strap bending



Adjustable bending attachment for solid round bar. Used for non-scaff bending of anchor bolts.



Channel punch



Bending attachment for acute angle bending of flat bar.



Tube crimper



Convertible "U" bracket bending attachment. Capable of bending different "U" widths using the same base.



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Extend Your Metal Fabricating Potential



Aluminum extrusion channel flange punch



Custom shear knives



Tube punch



One-hit tread plate tooling punch & form



Multiple hole punch



Multiple hole punch. Equal force applied though each punch.

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Optional Tooling to Enhance Your Piranha's Versatility



Quickset Gauging Tables

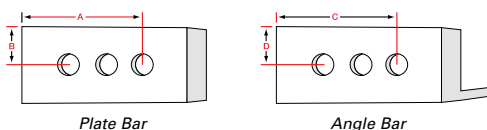
- Unit includes both plate- and angle-gauging guide bars.
- Chrome-plated guide bar rods are made from 3/4" 1050 round bar, induction hardened to RC 63-65.
- Gauging table mounts on machine platen table without removing punch attachment or die block.
- Table and both guide bars have measuring rules.
- Table has recessed scale.
- All models include two left-hand stops on the table and six stops (three left hand and three right hand) on the angle guide bar.
- Table extensions are available in 5' and 10' lengths for the left and right sides.

* See specifications for number of plate guide bar stops. Additional stops can be ordered.

Model	A	B	C	D	Plate Guide Bar # Flip Stops
PII-35	24"	5"	12"	4-1/2"	3
P2/36/40/50*	24"	3"	12"	6"	3
P-50/65	24"	6"	12"	6"	3
P-70/90**	36"	8"	18"	5-3/4"	4
P-90/110	36"	10"	18"	6"	4
P-120/140	36"	10"	18"	9"	4
PII-65/88	36"	7"	18"	5-1/2"	4
PII-110/140	48"	18"	18"	9"	6
SEPP-35	24"	5"	12"	4-1/2"	3
SEPP-65/88	36"	7"	18"	5-1/2"	4
SEPP-140	48"	18"	18"	9"	6
SEP-120	48"	18"	18"	9"	6

A - Minimum 1-1/2"
B - Minimum 1/2"

From either end of the material



* Above serial number 13,001 on P-50 ** Above serial number 3001 on P-90

Mechanical Backgauge

- Bolts on with no machine modifications.
- Easy access of sheared material.
- Backgauge material stop allows for infinite length adjustment.
- Backgauge carriage utilizes a compression sleeve for positive locking and no marring of the gauge bar.
- Chromed, 2" diameter, solid gauge bar allows easy gauge adjustment, provides rigidity and resists corrosion.
- Accommodates angle, plate and round bar shear sections.



Electrical Backgauge

- Incorporates all features of the mechanical backgauge.
- May be purchased with new machine or as an option for field installation on existing machines.*
- Utilizes existing limit switches for stroke control.
- Dedicated power switch and run light standard.

* Field installation requires minor modifications to electrical components.

Specifications

- Mechanical backgauges are available for all Piranha ironworker models.
- Electrical backgauges are available for models P2, P-40, P-50, P-65, P-70, P-90, P-110, P-120, P-140, PII-65, PII-88, PII-110 and PII-140.
- Backgauge lengths are available in 3-, 6-, 9- and 12-foot lengths.
- 9- and 12-foot lengths include leg support.



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28XX Punch Attachment

- Mounts in place of the standard punch holder and die block.
- Punch holder can accommodate all standard 28XX punches. The size is limited to the capacity of the machine.

Specifications

Four die blocks are available:

Die Outside Diameter	Maximum Punch Diameter	
2-3/4"	2"	
3-3/4"	3"*	* Adapter rings are available to utilize smaller O.D. dies.
4-3/4"	4"*	
5-3/4"	5"*	

Notes: A material stripper is NOT furnished with these attachments.

Standard 28XX tooling is for 50-ton and lighter applications. For applications greater than 50 tons, a heavy-duty punch is required. Contact factory for information.

Channel Punch Die Block

- Each model uses standard punch holder and material stripper.
- Channel die block mounts in place of the standard die block.

Specifications

- Channel die block uses figure JB dies.
- Die is flush with front of channel die block.
- Standard channel die block is designed to punch a hole in the leg of a 3" through 6" standard weight channel.
- 50-ton punching capacity for all models.
- Standard channel die block is designed to punch a hole in the web of 4" through 6" standard weight channel.

Note: The machine stroke control must be used with this option.

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Optional Tooling to Enhance Your Piranha's Versatility



1-1/2" Oversize Punch Attachment

- Mounts in place of standard punch holder and die block.
- Use same stripper action as standard punch attachment.



Specifications

- Use figure EF punches and figure JF dies.
- Allows punching up to a 1-9/16" hole within the capacity limits of the machine.
- Available in P2, P-36, P-40, P-50, P-65, PII-35 and SEPP-35 models

Note: This punch holder with automatic urethane stripper action is available as an option on models PII-65, PII-88, SEPP-65 and SEPP-88.

Pipe/Tube Notching Attachment

- Mounts easily to platen.
- Spring-loaded return.
- Standard base die accommodates several die sizes.
- Perfect for hand-rail fabrication.

Specifications

- Pipe: 3/4" through 2" diameter for schedule 40 wall thickness.
- For larger sizes, tubing and other schedules of pipe, please contact the factory for information.

Notes: A striker (mounted in the standard punch attachment) will be required to actuate this attachment. Contact the factory for any special notching applications.



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Channel Shear

- Channel shear bolts to worktable and attaches to dovetail slide or punch ram in place of standard punch holder.
- This channel shear is a sectional shear for standard weight channel, and removes a 1/2" slug during cut. Slug must be removed after each cut on all models.
- Adjustment for channel size is accomplished by using a pinned block and adjustment knob. Material is secured by quick release locking handle.

Note: The machine stroke control must be used with this option.

Press Brake Tooling Holders

- Available for models P-50*, P-65, P-70, P-90, P-110, P-120, P-140, PII-65, PII-88, PII-110, PII-140, SEPP-65, SEPP-88, SEPP-140 up to 24" length.
- Punch holder will accept a 1/2" wide by 5/8" tall tang.

Note: Tooling sold separately.

** Prior to serial number 13,001 on P-50*

Roller Feed Tables

- Roller feed tables accommodate the bar, plate and angle shearing sections of the machine, making material feeding fast and easy.
- Roller feed table assemblies are available in 5' increments and are adjustable to allow for variances in floor height and machine type.
- Can be bolted together to make up longer lengths.

Please note that the roller feed table can be positioned away from the machine for better work space accessibility.

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Piranha Punch Lube

Piranha Punch Lube is an extreme pressure, heavy-duty lubricant for metal bending, shaping, and punching. It effectively prevents scoring and galling problems by reducing the heat produced from the punching and stripping process.

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