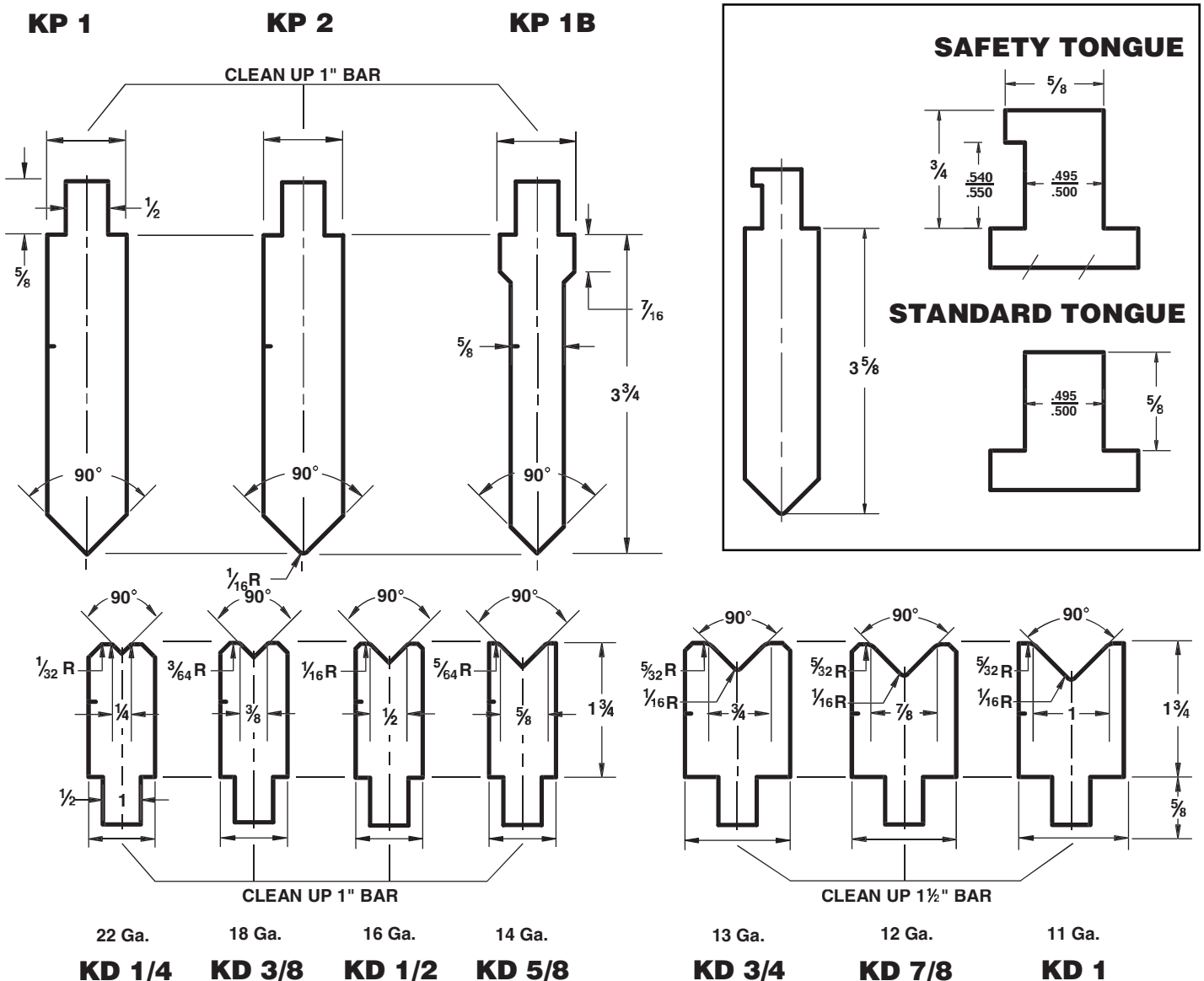


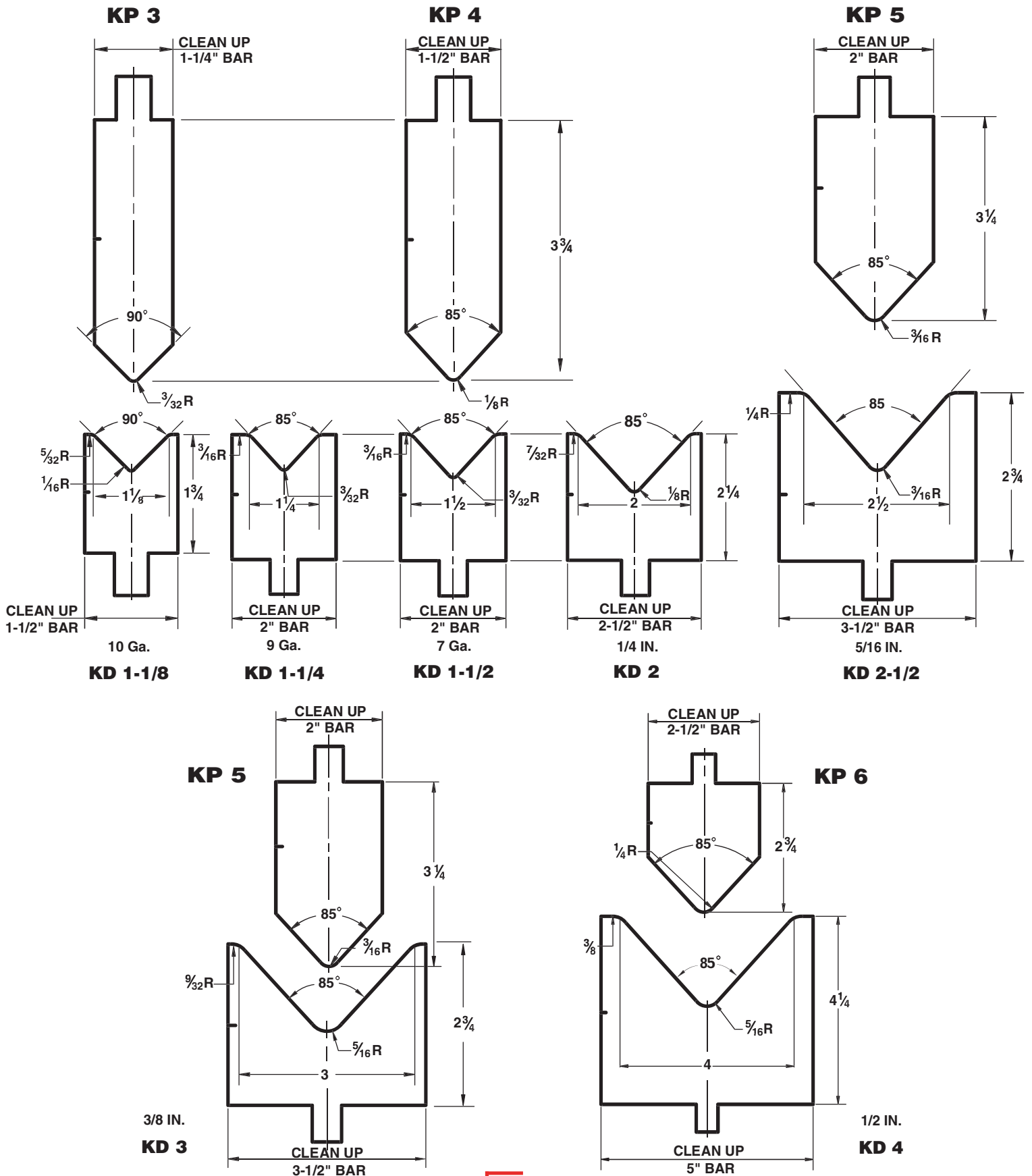
Standard Tooling

All standard tooling is stocked and available for quick delivery. The tooling illustrated below is recommended for the gauge indicated.

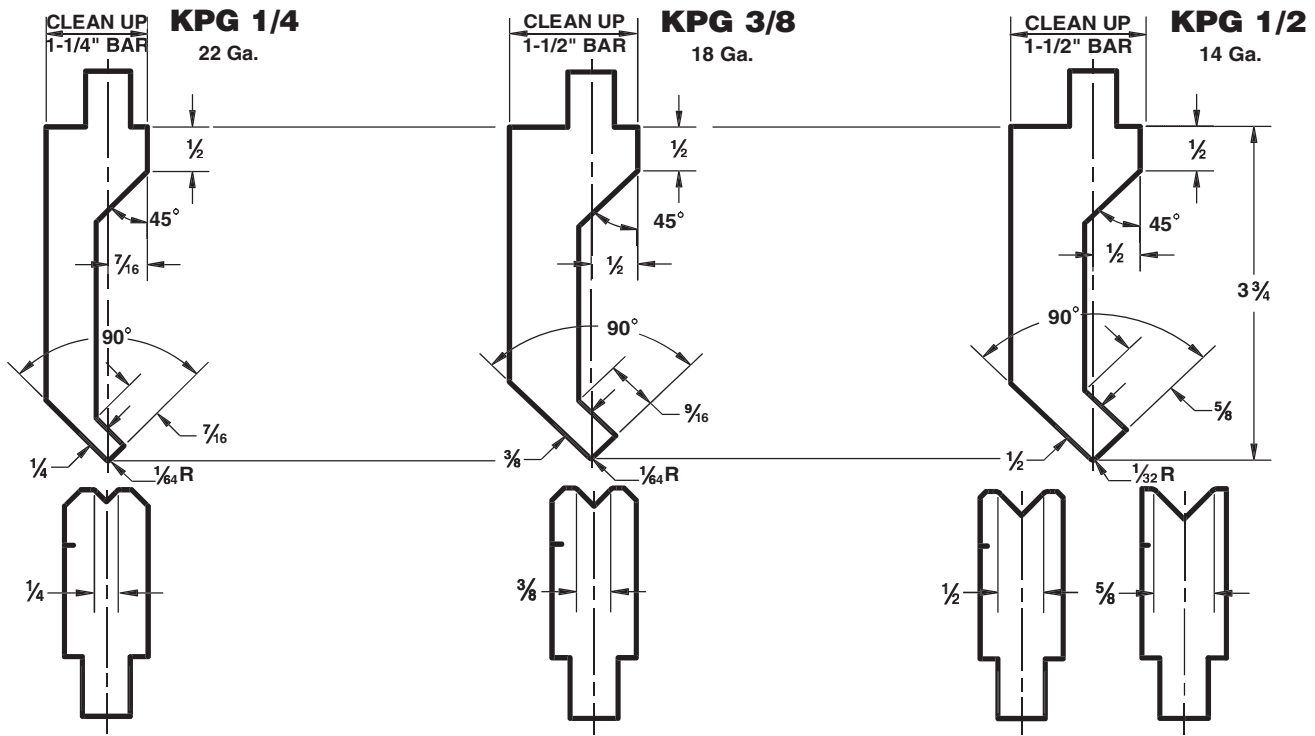
Punches KP1, KP2, KP1B and KP3 are for bottom forming at 90°. Through air forming, you can achieve angles greater than 90° by adjusting the ram to control the distance the punch penetrates into the die. Punches KP4, KP5 and KP6 are designed for use with heavier gauge material or plate. They are manufactured with an 85° forming angle in order to air form and must be used with lower dies that have the same angle. This air forming reduces the overall tonnage required to form the shape. Ideally, the lower die opening is 8 times the material thickness of metals up to 1/2" plate and 10 times material thickness for material greater than 1/2" plate. Safety tongue reduces net height by 1/8".



90° Forming Punches and Dies



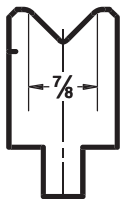
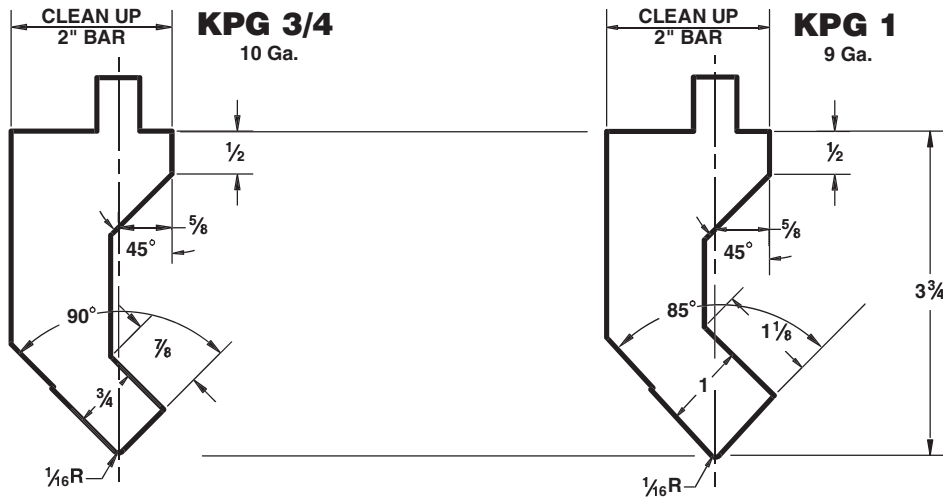
Gooseneck Punches



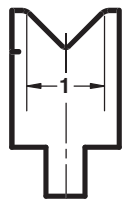
22 Ga.
KD 1/4

18 Ga.
KD 3/8

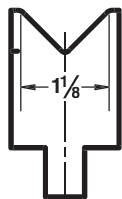
16 Ga. 14 Ga.
KD 1/2 **KD 5/8**



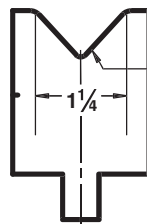
12 Ga.
KD 7/8



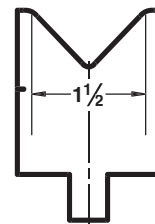
11 Ga.
KD 1



10 Ga.
KD 1-1/8

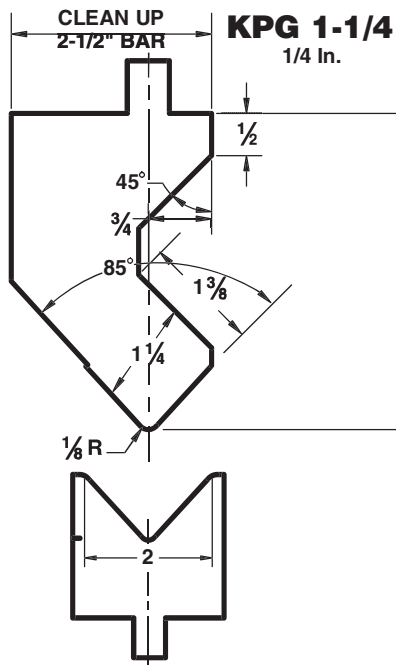


9 Ga.
KD 1-1/4

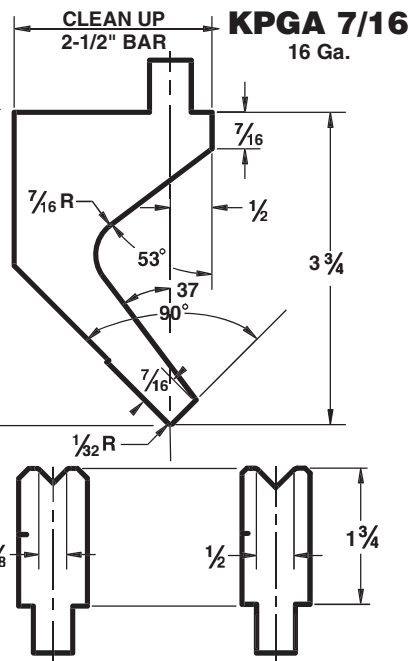


7 Ga.
KD 1-1/2

Gooseneck Punches

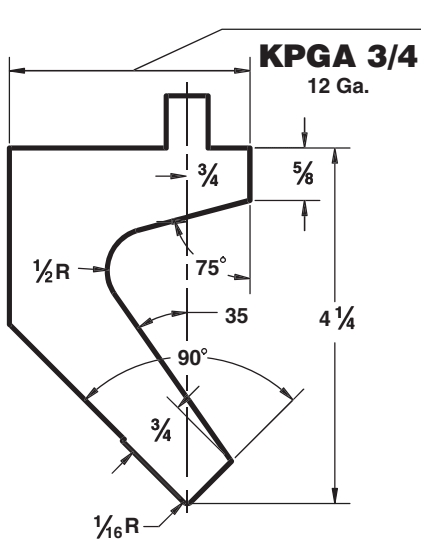


1/4 IN
KD 2



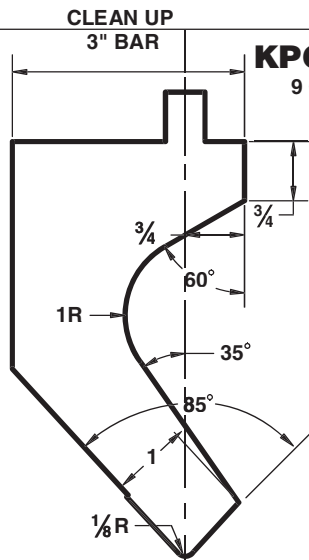
18 Ga.
KD 3/8

16 Ga.
KD 1/2

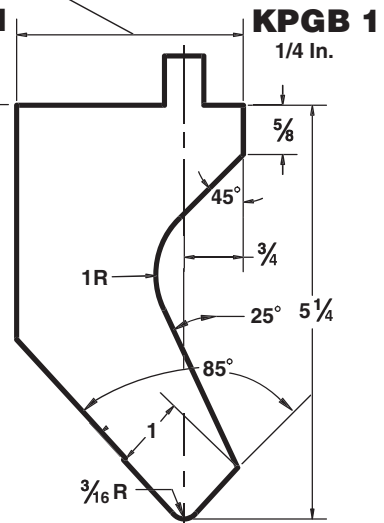


13 Ga.
KD 3/4

12 Ga.
KD 7/8

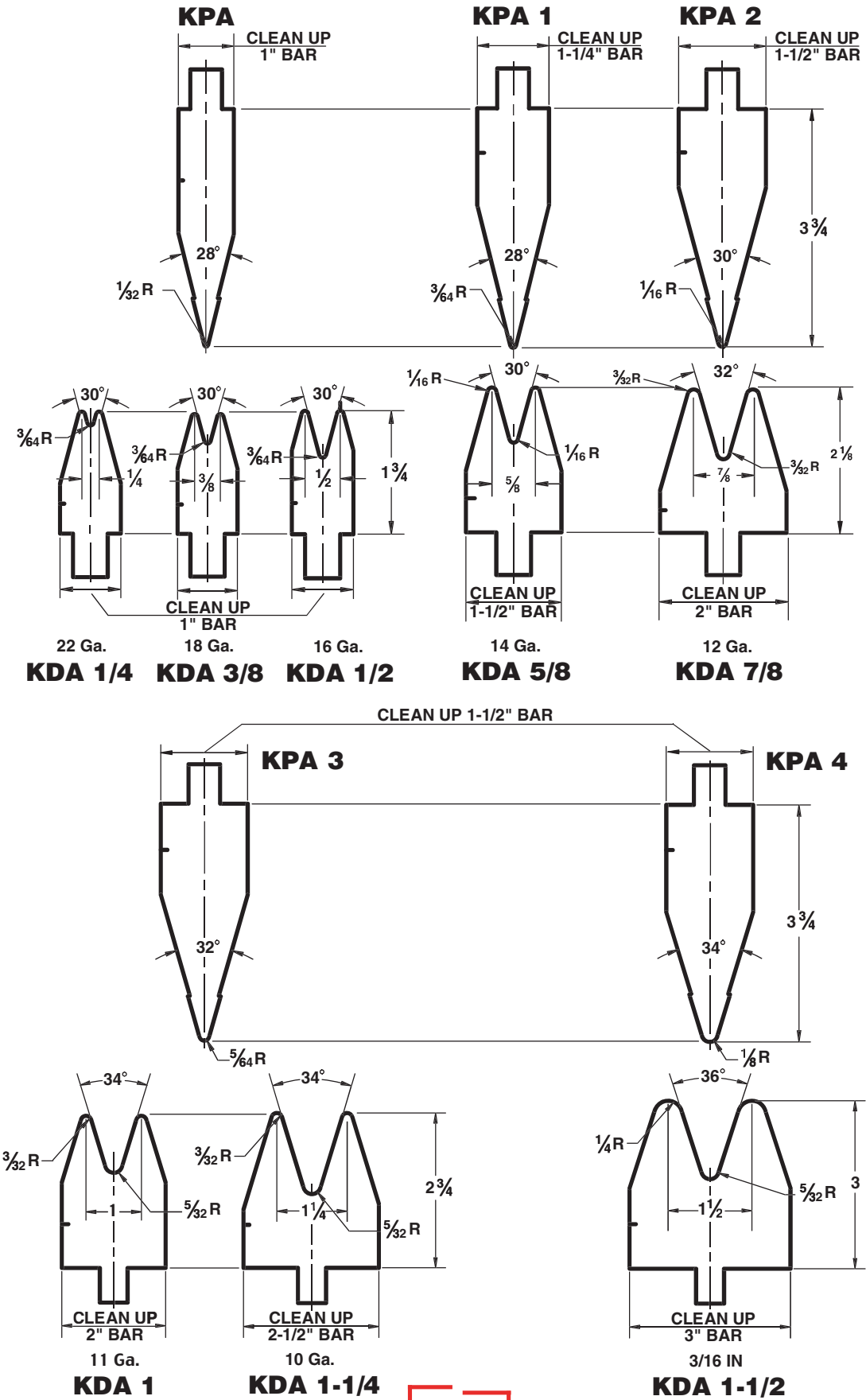


9 Ga.
KD 1-1/4

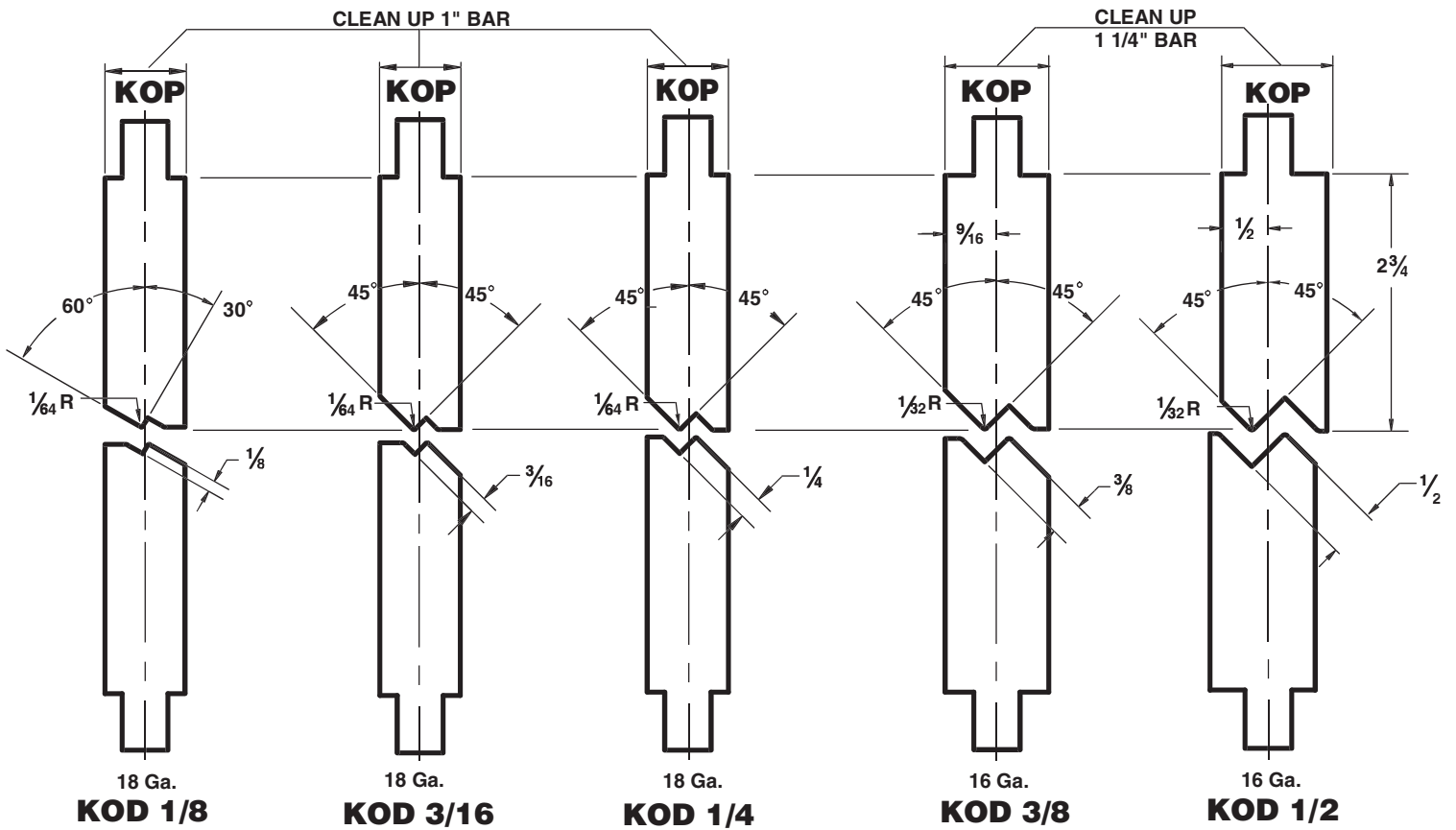


1/4 IN
KD 2

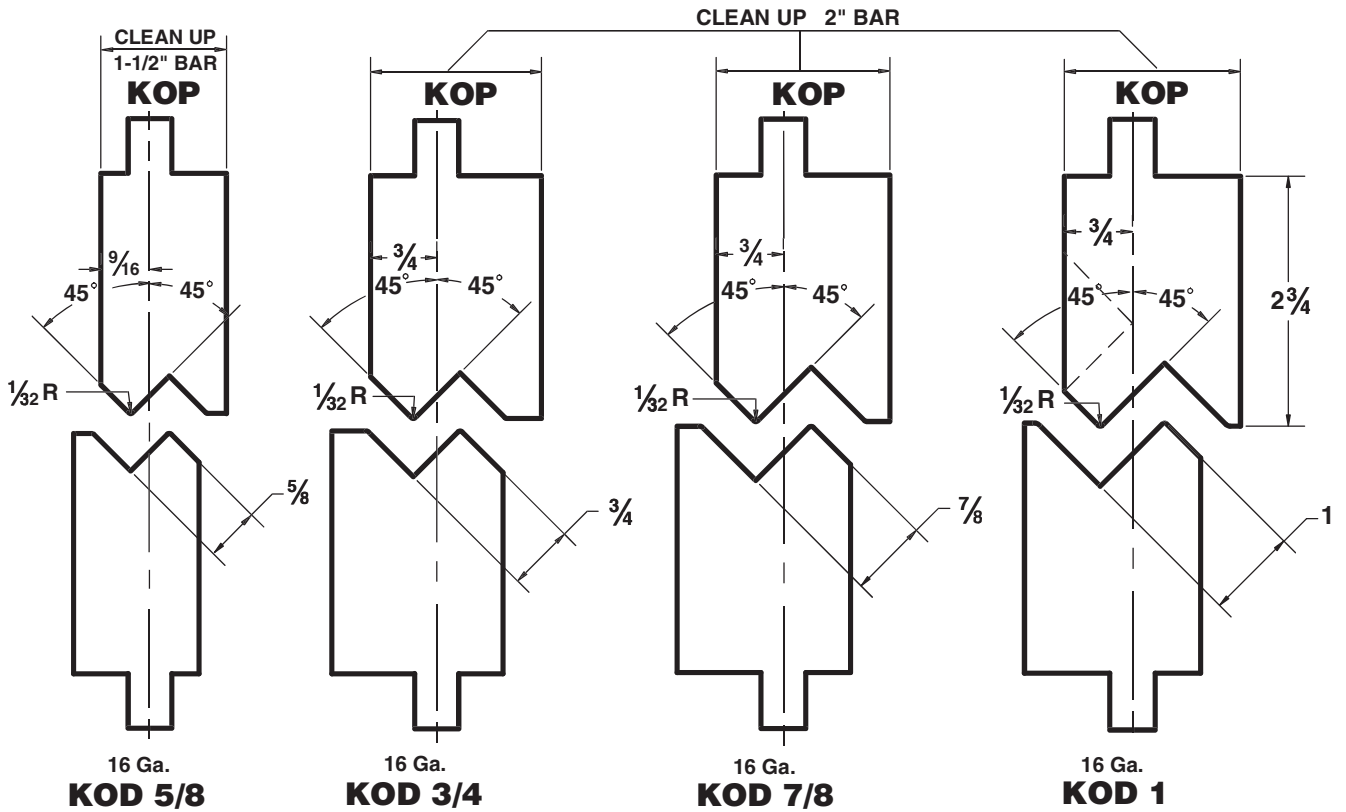
Acute Punches and Dies



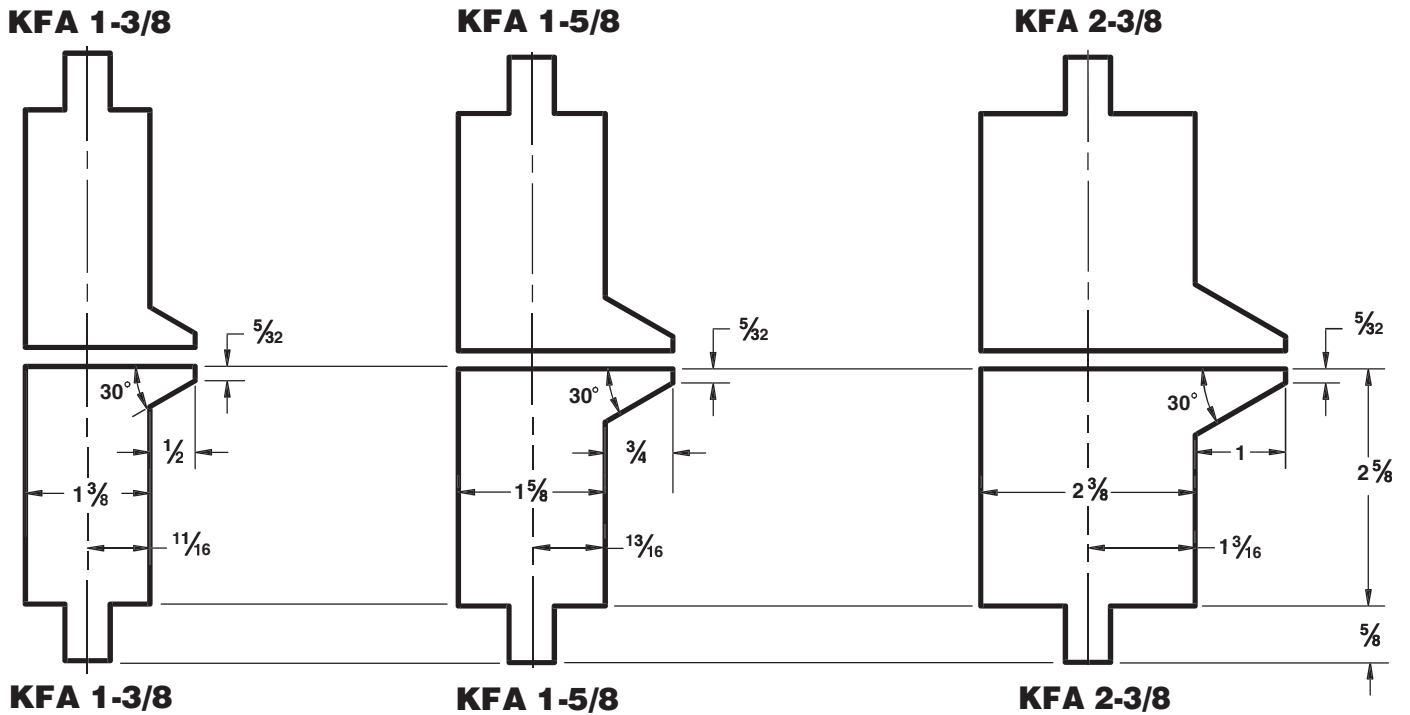
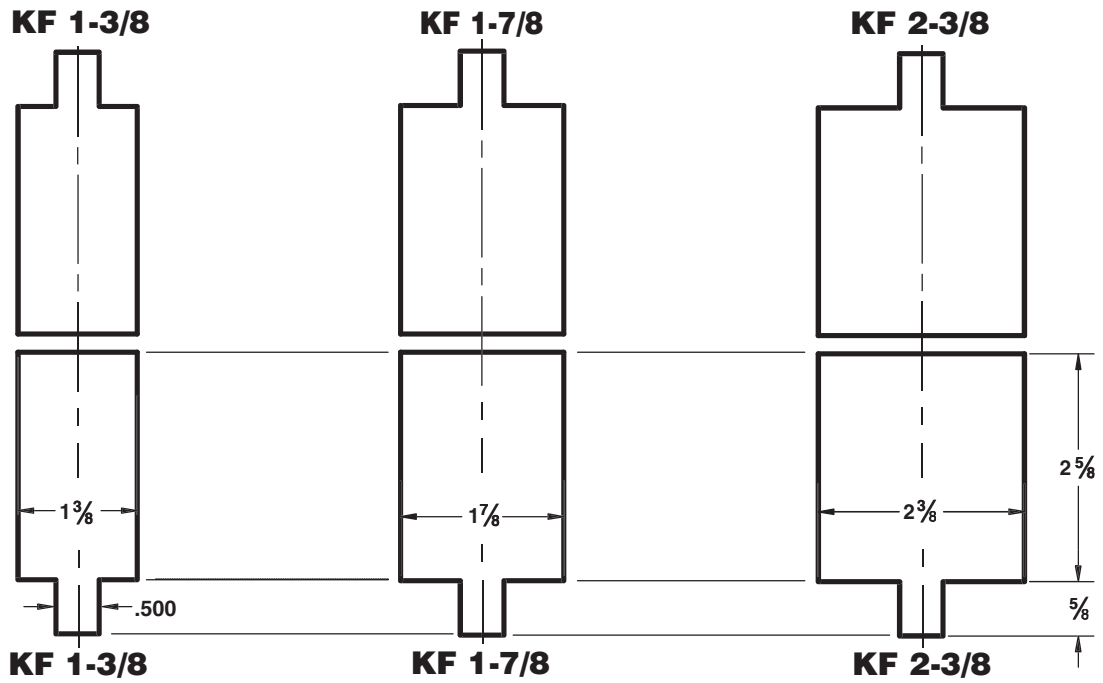
Offset Dies



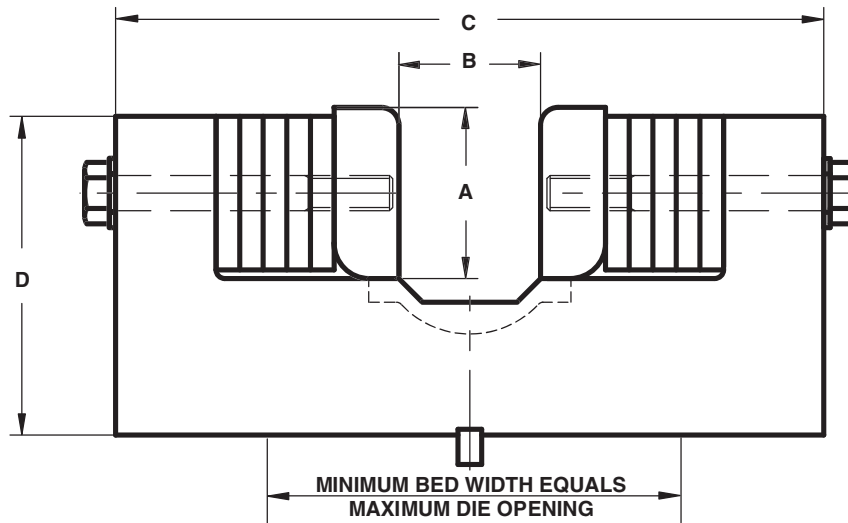
Any die can be relieved as shown by dashed line to clear a preformed offset.



Flattening Dies

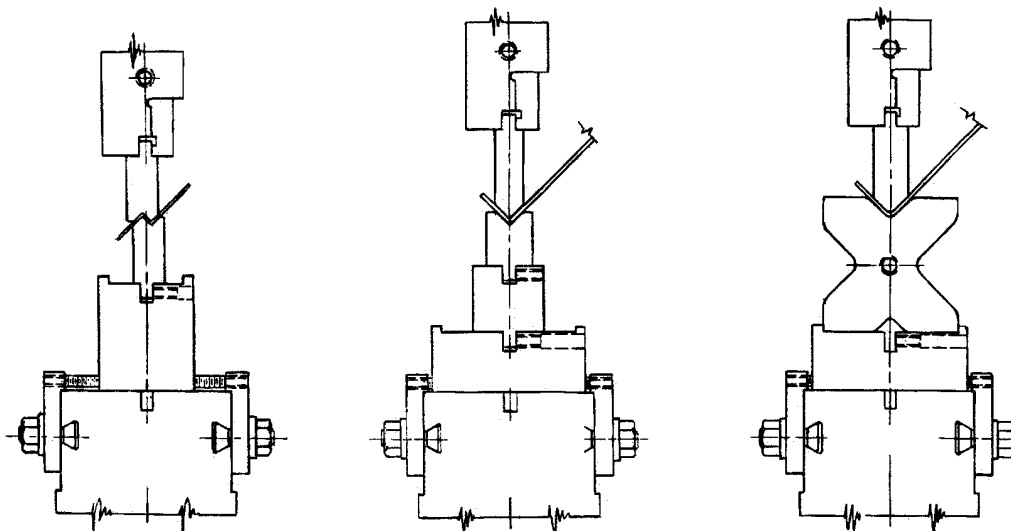


Adjustable Bottom Dies

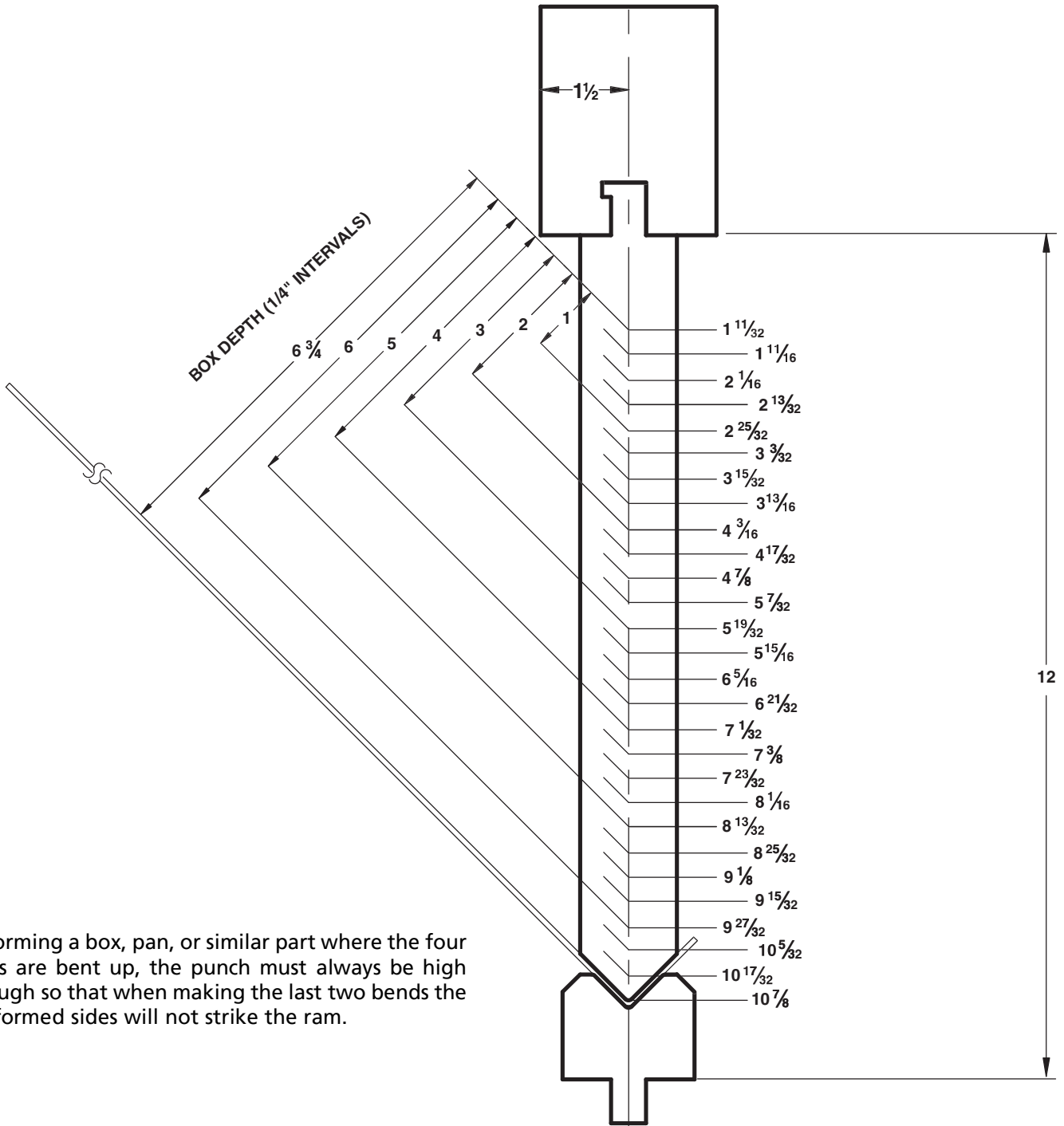


Die #	A	B	C	D
KAD3	1-1/2	1/4-3	7	3
KAD5	2-3/8	1/2-5	11	5
KAD6	3	1-6	13	6
KAD7	3-1/4	2-7	14	6-1/2
KAD8	3-5/8	3-8	15	6-3/4
KAD10	3-3/8	5-10	17-1/2	7
KAD12	4-3/8	7-12	22	9-1/2

COMBINATION FOUR WAY DIE HOLDERS



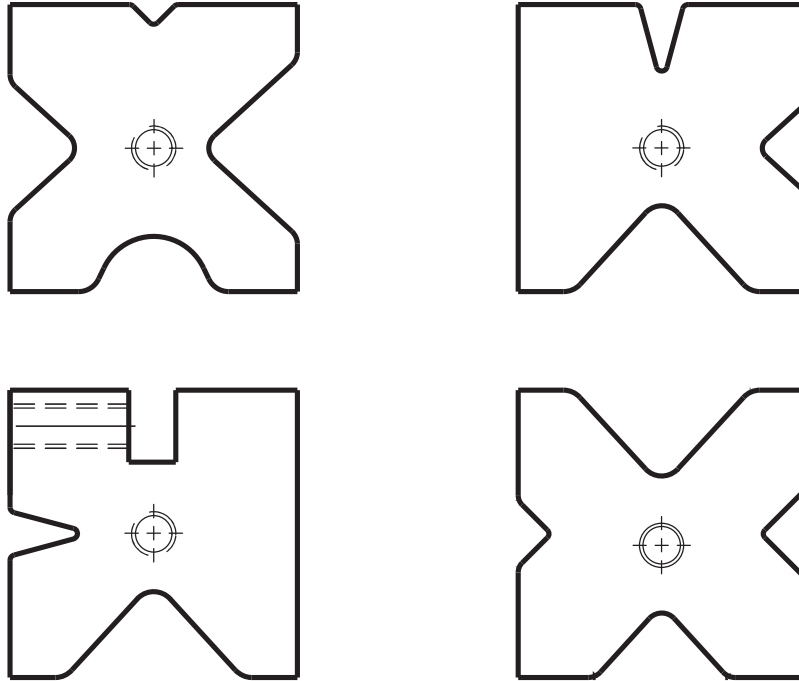
Box Forming Punches



In forming a box, pan, or similar part where the four sides are bent up, the punch must always be high enough so that when making the last two bends the preformed sides will not strike the ram.

Three and Four Way Dies

When the need to replace several single Vee dies is found, four female die openings can be formed from a single bar. The general use of a four way die is for straight bending operations. They can also be used as die holders or for radius forming.



Die No.	3 Way Die Opening Sizes			Block Size	Die No.	4 Way Die Opening Sizes			
K3W22	.50	.75	1.00	2.25	K4W22	.50	.75	1.00	1.25
K3W27	.75	1.125	1.50	2.75	K4W27	.625	.875	1.125	1.50
K3W32	1.00	1.50	2.00	3.25	K4W32	.75	1.00	1.50	2.00
K3W37	1.125	2.00	2.50	3.75	K4W37	.875	1.125	2.00	2.50
K3W42	1.00	2.00	3.00	4.25	K4W42	1.00	1.50	2.00	3.00
K3W47	1.25	2.00	3.00	4.75	K4W47	1.00	1.25	2.50	3.00
K3W52	1.50	2.50	3.50	5.25	K4W52	1.00	2.00	3.00	4.00
K3W57	1.50	2.50	4.00	5.75	K4W57	1.25	2.00	3.00	4.00
K3W67	1.50	3.00	5.00	6.75	K4W67	2.00	3.00	4.00	5.00
K3W77	2.00	3.50	6.00	7.75	K4W77	2.00	3.00	4.00	6.00
K3W10	2.50	4.00	8.00	10.00	K4W10	2.00	4.00	6.00	8.00
K3W12	3.00	6.00	10.00	12.00	K4W12	3.00	4.00	6.00	10.00

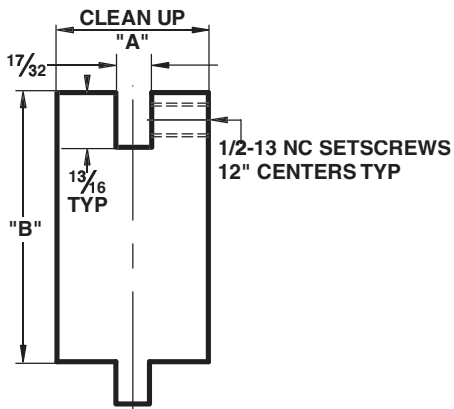
Above opening sizes are recommended for the block size shown. You may request other openings provided that they are appropriate for the block size you requested.

All openings shown above are at 85° for sizes one inch and greater. Smaller openings are at 90°

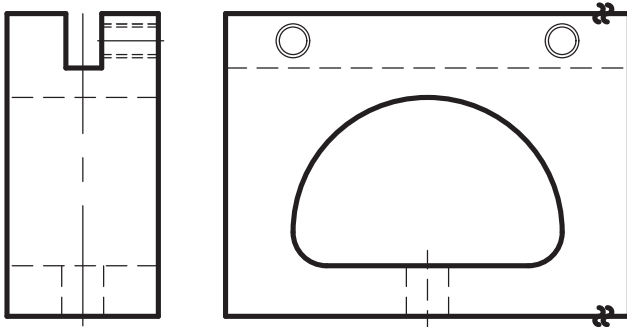
All three and four way die are manufactured with end holes tapped for easy rotation.

Die Holders Ram Adapters

DIE HOLDER

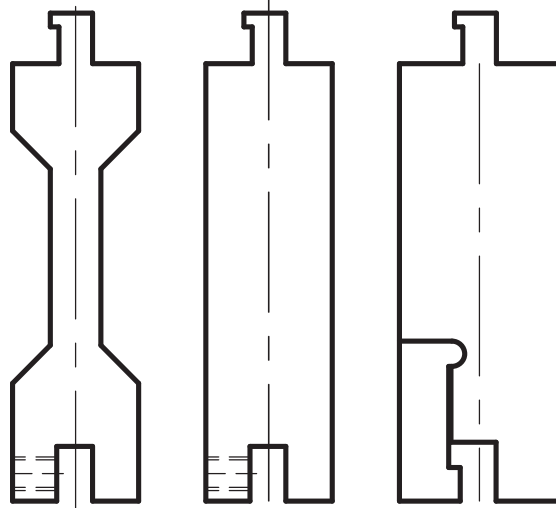


OPTIONAL "D" BURNOUTS FOR HOLDERS W/4" AND GREATER NET HEIGHT



Holder #	A (width)	B (net height)
RB1	2	1.5
RB2	2	2
RB3	2	2.5
RB4	2	3
RB5	2	3.5
RB6	2	4
RB7	3	1.5
RB8	3	2
RB9	3	3
RB10	3	3.5
RB11	3	4
RB12	3	5
RB13	3.5	3.5
RB14	3.5	4
RB15	3.5	5
RB16	4	4
RB17	4	5

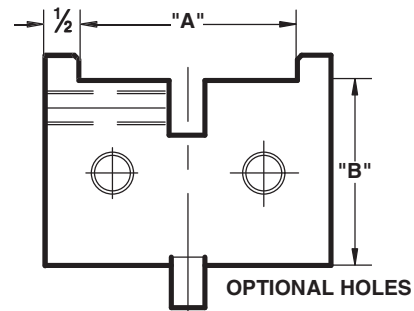
RAM ADAPTERS



KRA 30

KRA 40

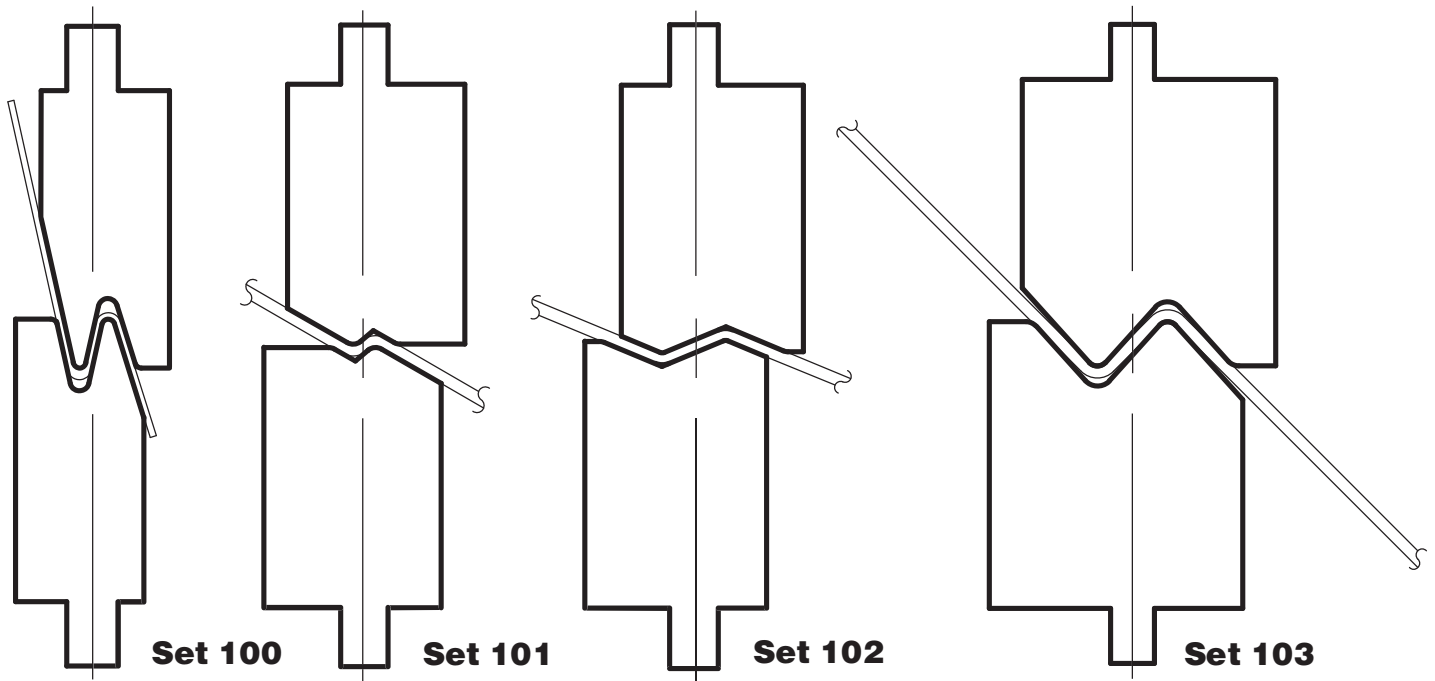
KRA 50



FOUR WAY HOLDER

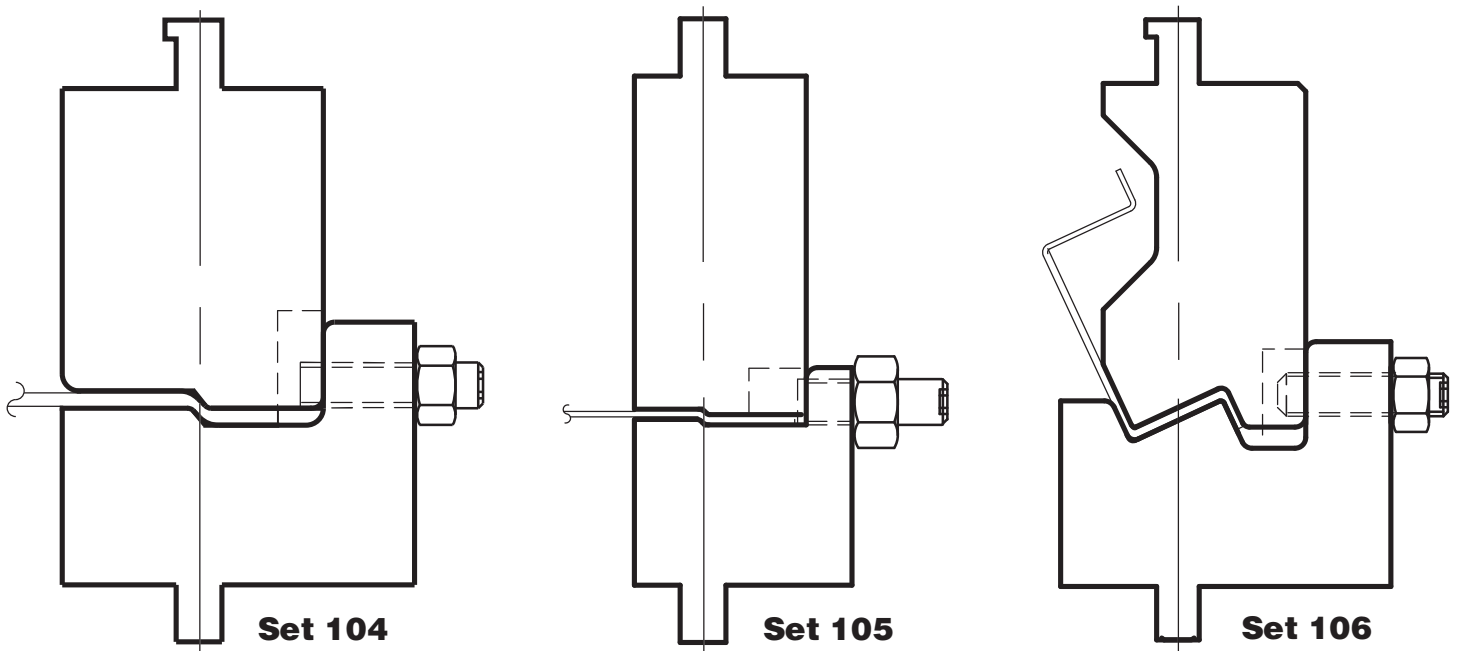
Holder #	A	B	Holder #	A	B
UDH01	2.25	3.5	UDH11	4.75	3.5
UDH02	2.25	5	UDH12	4.75	5
UDH03	2.75	3.5	UDH13	5.25	3.5
UDH04	2.75	5	UDH14	5.25	5
UDH05	3.25	3.5	UDH15	5.75	3.5
UDH06	3.25	5	UDH16	5.75	5
UDH07	3.75	3.5	UDH17	6.75	3.5
UDH08	3.75	5	UDH18	6.75	5
UDH09	4.25	3.5	UDH19	7.75	3.5
UDH10	4.25	5	UDH20	7.75	5

Special Offset Die Sets

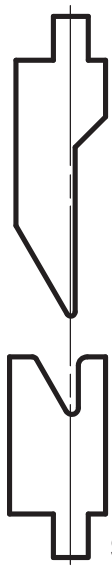


Die set 100 is designed for forming acute angle offsets on 18 ga. and lighter material. Set 101 is used for air forming open angle offset. Set 102 is for bottom bending shallow open angle offsets in material up to 16 ga. in thickness, Die set 103 will air form a 90° when available tonnage eliminates considering bottom forming dies.

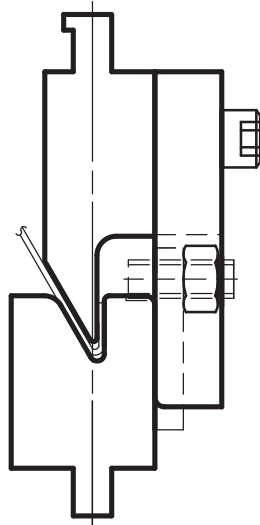
Die sets 104 and 105 are used for forming material thickness offsets close to the end of the sheet. Die set 106 is required when the flanges are shorter than the offset being formed; gauging is built into the set to ensure consistent and accurate parts.



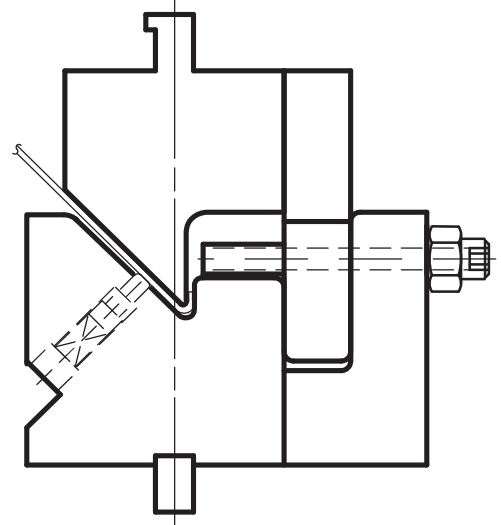
Hemming Dies



Set 107



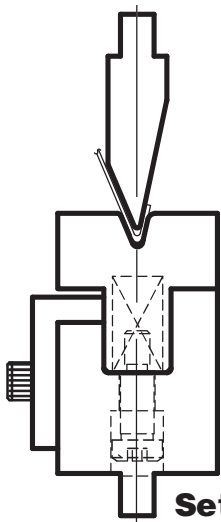
Set 108



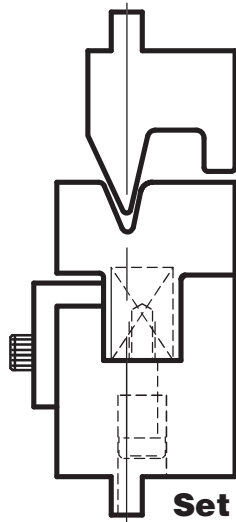
Set 109

107 is an inexpensive hemming die set for forming teardrop or open hems on 20 ga. and lighter material. It offers the advantage of performing the entire forming in a single set of tooling. The length of the foldover cannot exceed 2 inches. A slight bow in longer sheets may appear due to the uneven angles of the punch and die. The second or closing operation requires that the sheet be held high enough in

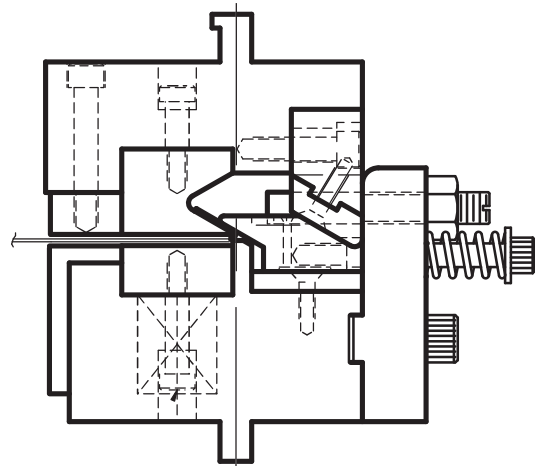
the die to ensure that the point of the punch passes over the edge of the first bend. 108 is modified with a leader for materials up to 16 ga. mild steel. 109 forms an open or teardrop hem in two operations on 14 ga. and lighter material. It is designed to reduce whip up and bowing in the center of longer sheets. It is limited to hems where the foldover is 3/4 in. or less.



Set 110



Set 111

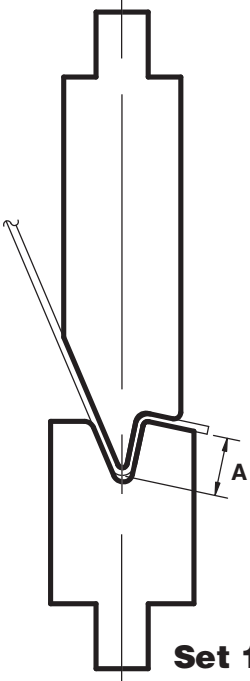


Set 112

Die set 110 is our standard hemming die for 18 ga. material and lighter. It produces a full range of open to closed hems by shimming under the adjustable angle of the lower section. 111 has been modified to handle up to 14 ga. material by adding a back heel to the top section of the die set.

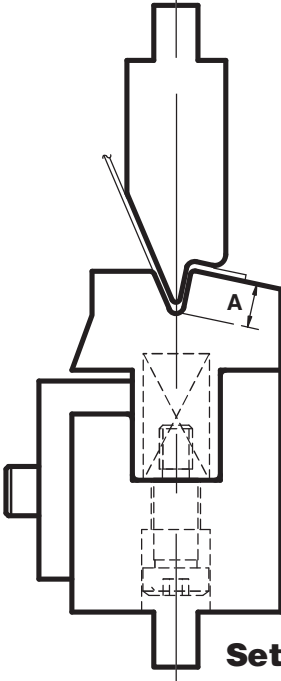
Die set 112 is a high production die set that is designed to eliminate sheet whip up and minimize poorly formed parts due to operator error. This set is designed to handle 18 ga. and lighter material.

Standing Seam Dies

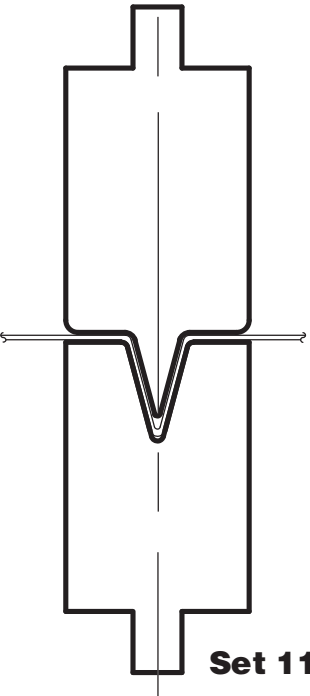


Set 113

Die set 113 is used in conjunction with flattening dies to form a standing seam in two operations. This set forms the acute angle offset and the flattening die close the angle. Die set 114 is used to perform both the acute angle offset and the closing operation in the same set. When ordering these die sets please specify the "A" dimension.

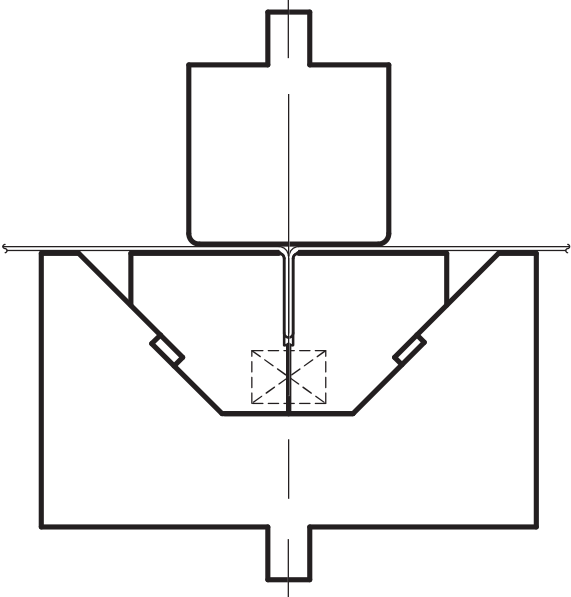


Set 114



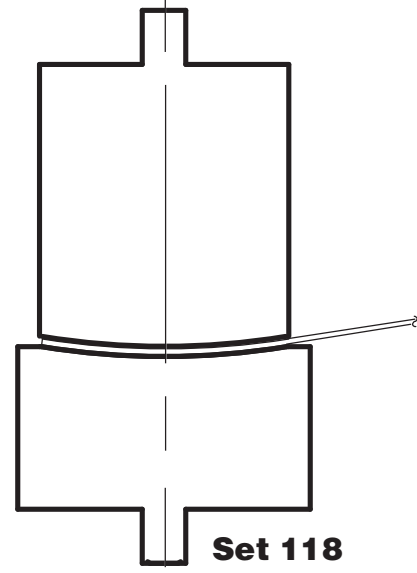
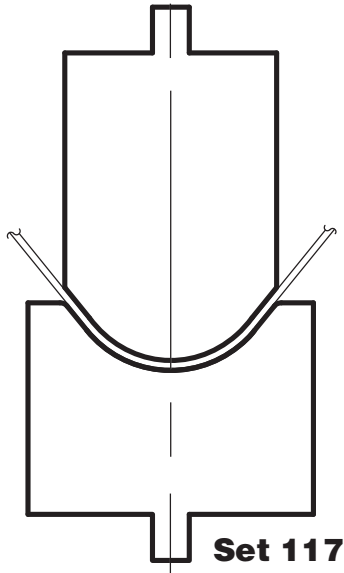
Set 115

Die sets 115 and 116 are used together in a two step operation when forming a seam in the middle of the sheet. Typically, these sets will have matched shut heights so that the operator can perform both steps in the same press brake.

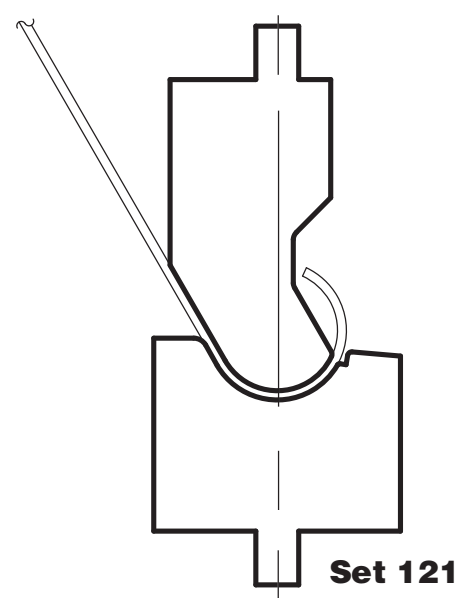
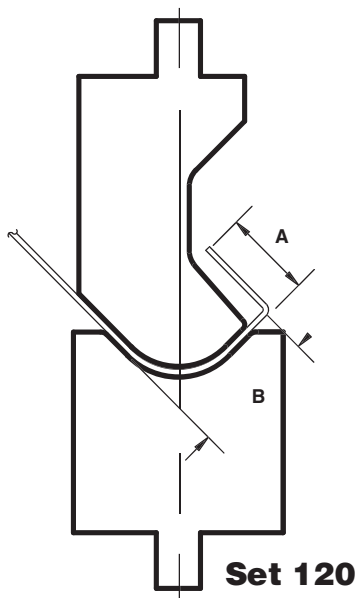
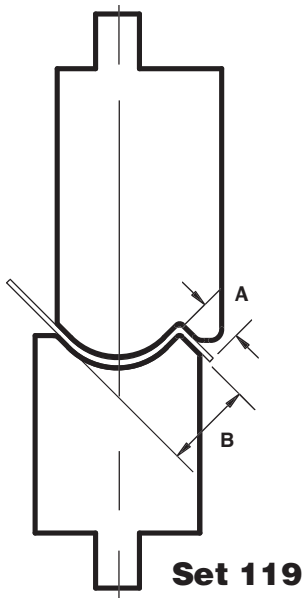


Set 116

Radius Die Sets



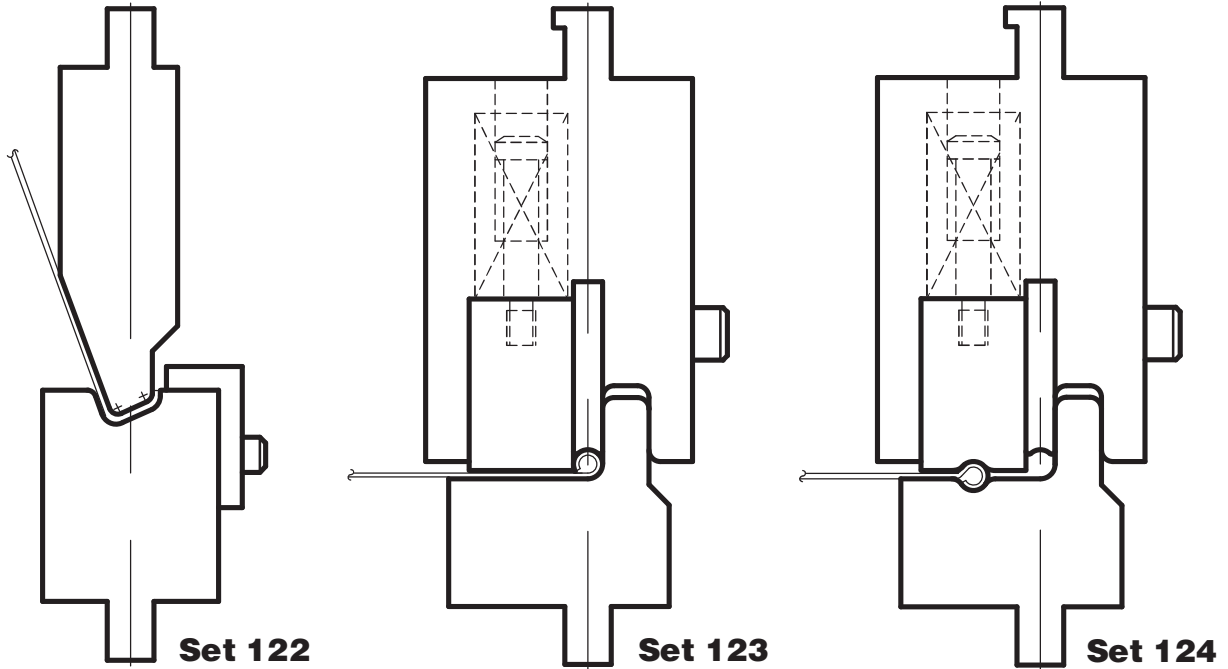
Die set 117 is used for bottom forming a given radius for a specific material. It is designed with compensation for spring back of material. Die set 118 is designed for forming a large radius in multiple hits. It may also be used for forming a radius on the edge of the sheet prior to a rolling operation.



Die set 119 is used when forming a radius with an outside flange in one hit if spring back of material is not too great. When ordering, please specify the "A" and "B" dimensions.

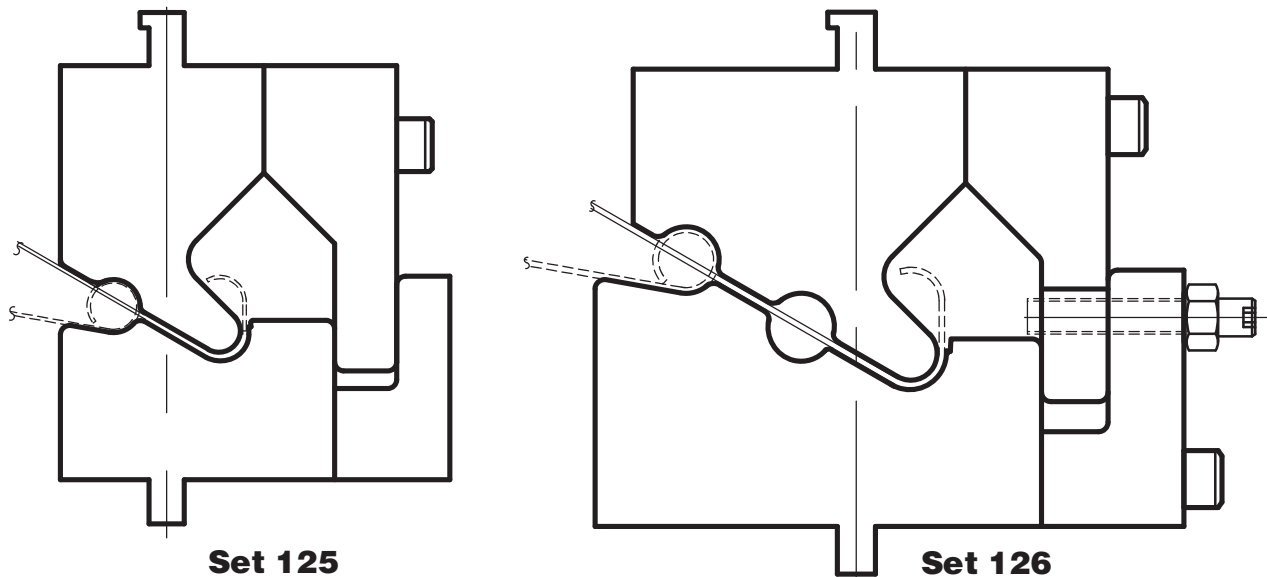
Die set 120 and 121 have gooseneck style radii punches. Set 120 is used to form a radius with a preformed return flange. Set 121 is used to form a sanitary curl common in the restaurant industry and forms 200° of radius in two hits.

Curling Dies

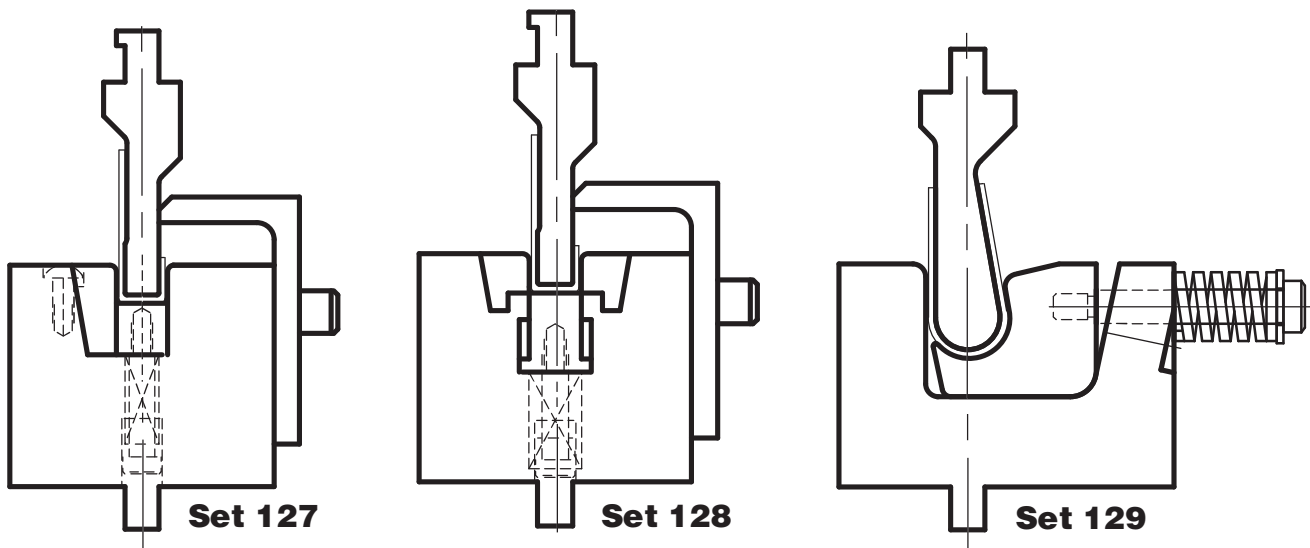


Die set 122 and 123 or 124 are used in combination to form the smallest curls possible provided that the inside diameter is at least three times the material thickness. Die set 123 is used when an off center curl is desired and required two hits; and 124 is used for an on center curl in three hits. When forming heavier gauge material, a tool steel insert can be used.

Die set 125 and 126 are used to minimize whip up. Die set 125 forms an off center curl in three hits, and die set 126 forms an on center curl in four hits. Both sets can be designed to accommodate material up to 16 gauge and curls between 1/4" and 3/4" inside diameter.

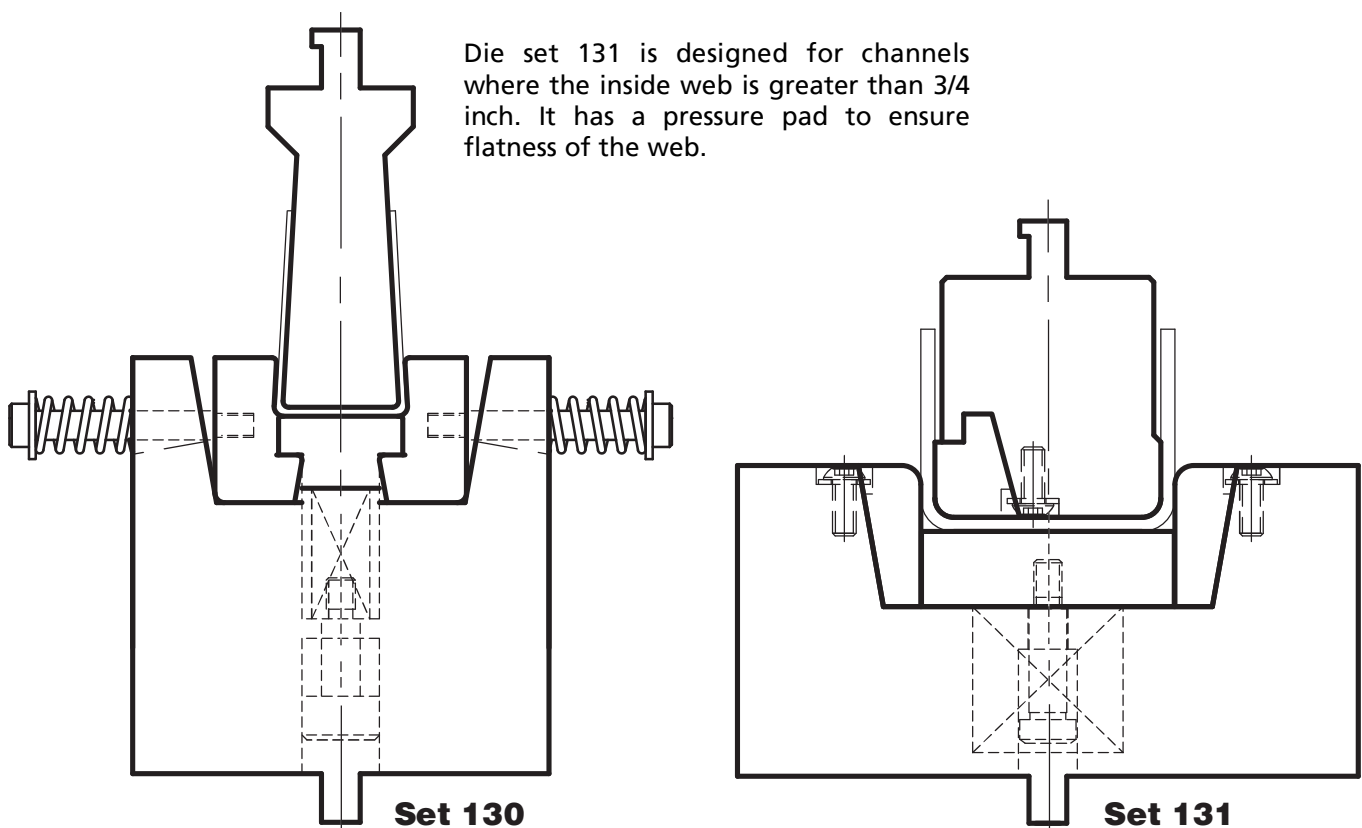


Channel Die Sets



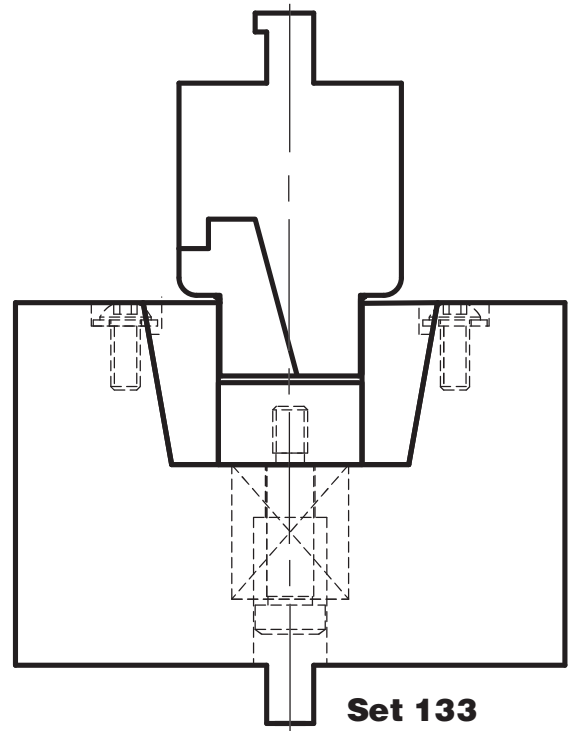
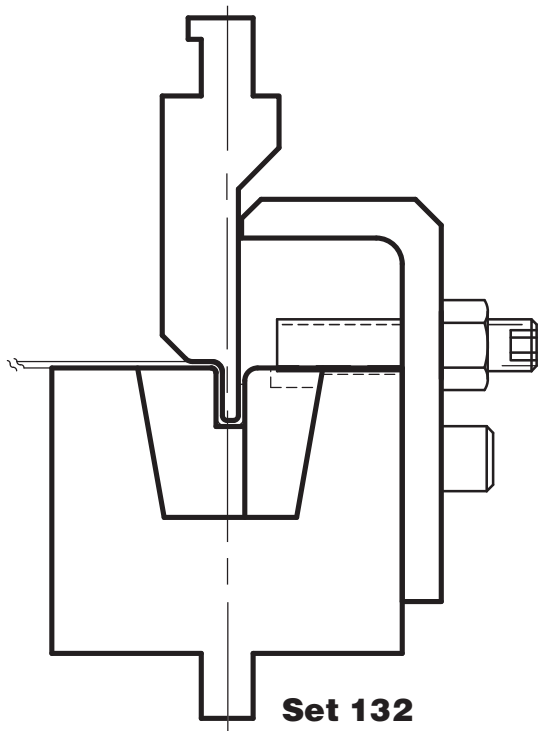
Die sets 127 and 128 are used to form channels with an inside web of 3/4" or less. A stripper is provided to remove the part. Die set 128 is used where flatness of the web is critical. Die set 129 is used to form a "U" shaped channel. It has a built in allowance for spring back due to the overbending caused by the rocker insert in the bottom die. Applications for this die set are limited by material type and thickness.

Die set 130 is designed to form a channel where the inside radii may cause springback due to being 1-1/2 to 2 times material thickness or greater. Rocker inserts overform the channel to compensate for this. The part is easily removed as it springs open to the desired shape.



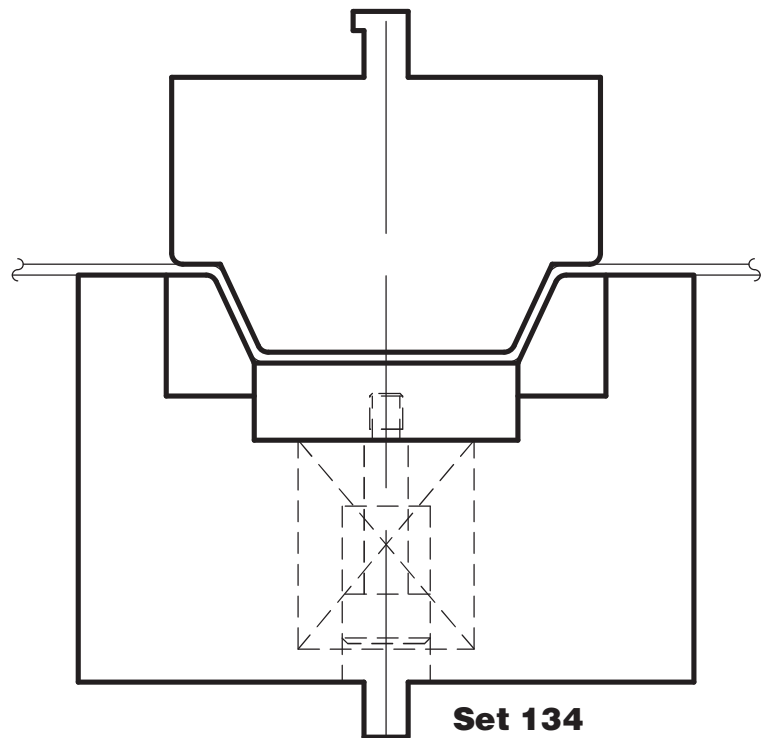
Die set 131 is designed for channels where the inside web is greater than 3/4 inch. It has a pressure pad to ensure flatness of the web.

Channel Die Sets



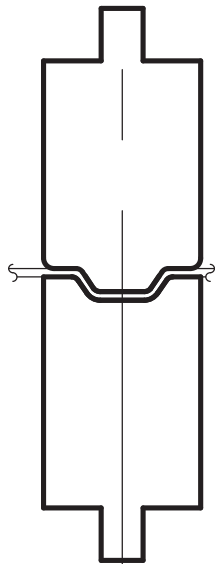
Die set 132 is made to form a semi hat channel at the edge of the sheet. This die set includes a release wedge and stripper to ensure easy part removal.

Die sets 133 and 134 are used to form hat channels. 133 forms four 90 degree bends in one hit and includes a pressure pad to ensure flatness of the set and release wedges in the punch and die to allow for easy part removal. Die set 134 forms an open hat channel in one hit.

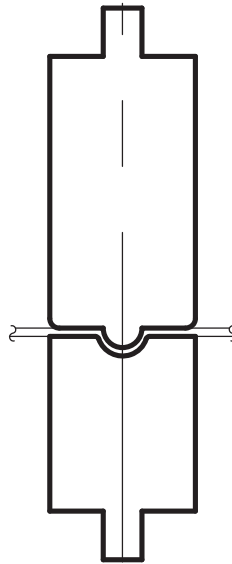


Rib Die Sets

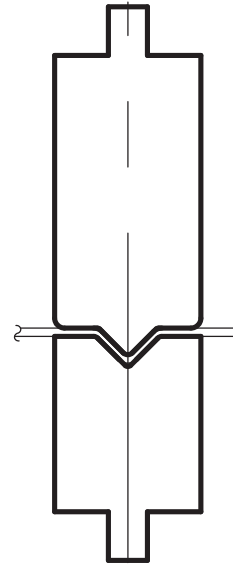
Die sets 135, 136 and 137 represent tooling to form standard stiffening ribs on light guage material.



Set 135

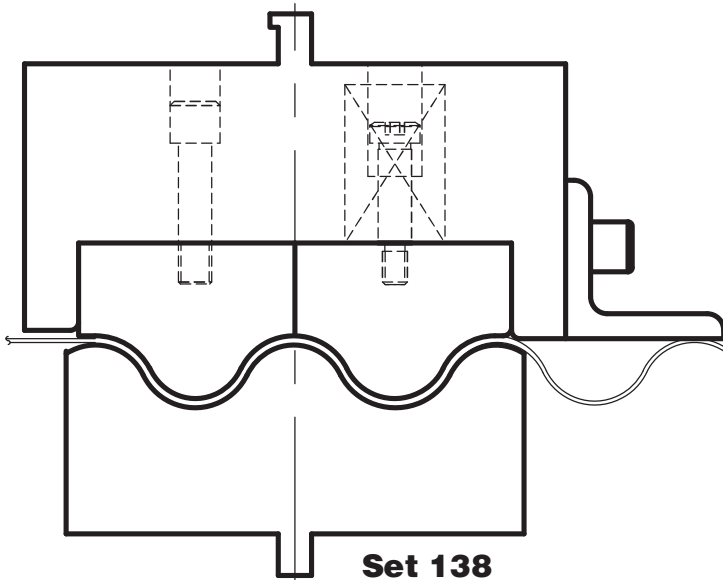


Set 136

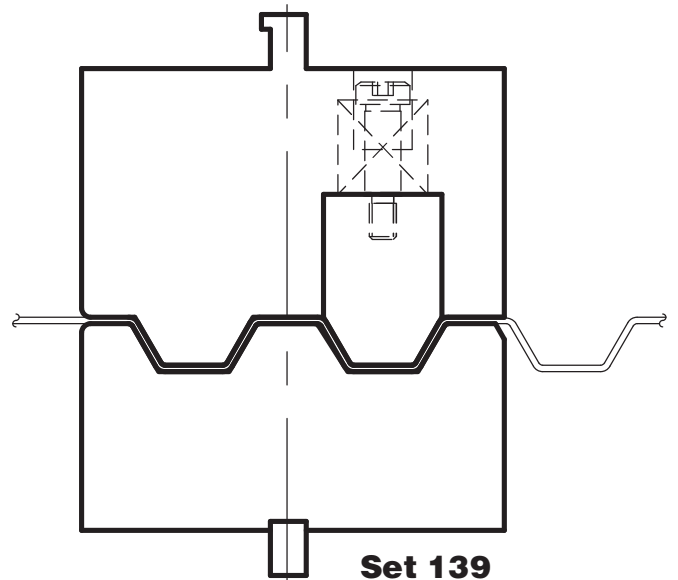


Set 137

Corrugating Dies



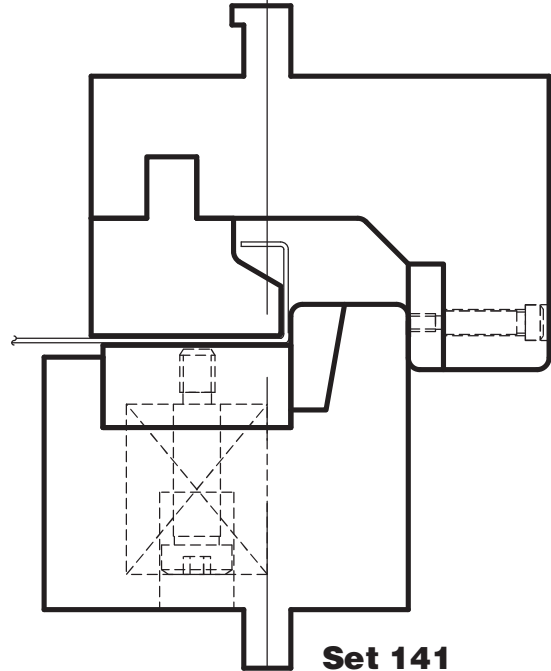
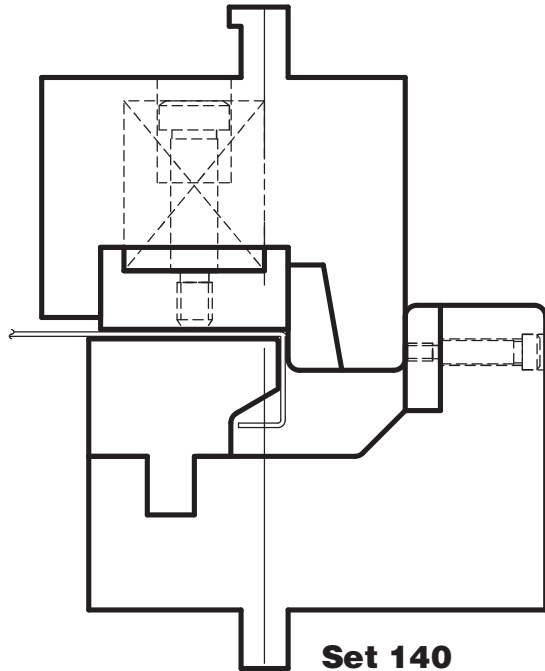
Set 138



Set 139

138 and 139 are examples of high production corrugating die sets. These sets are designed for forming a continuous corrugation while maintaining accurate and consistent shapes. This is accomplished through the use of spring loaded pressure pads which trap the previously formed section of the corrugation, making these sets self gauging.

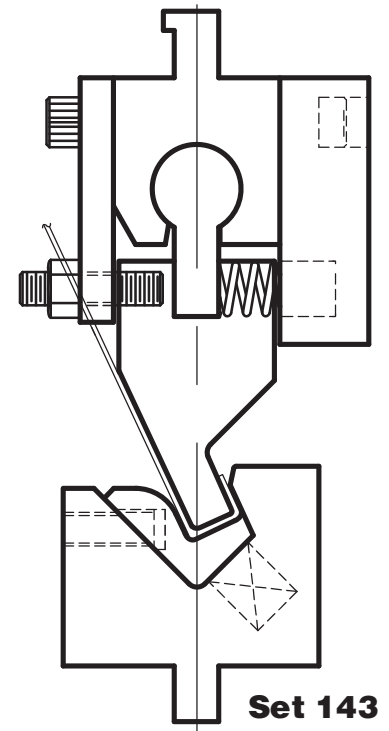
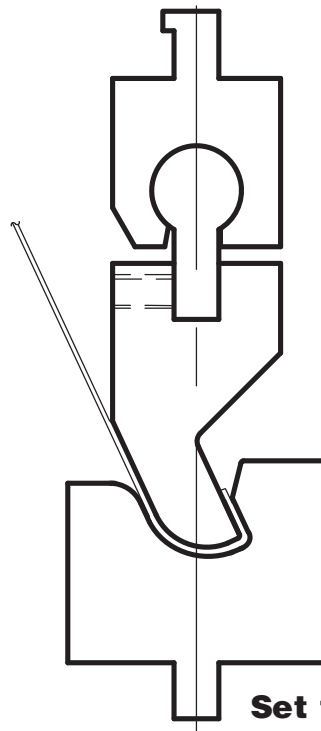
Wiping Dies



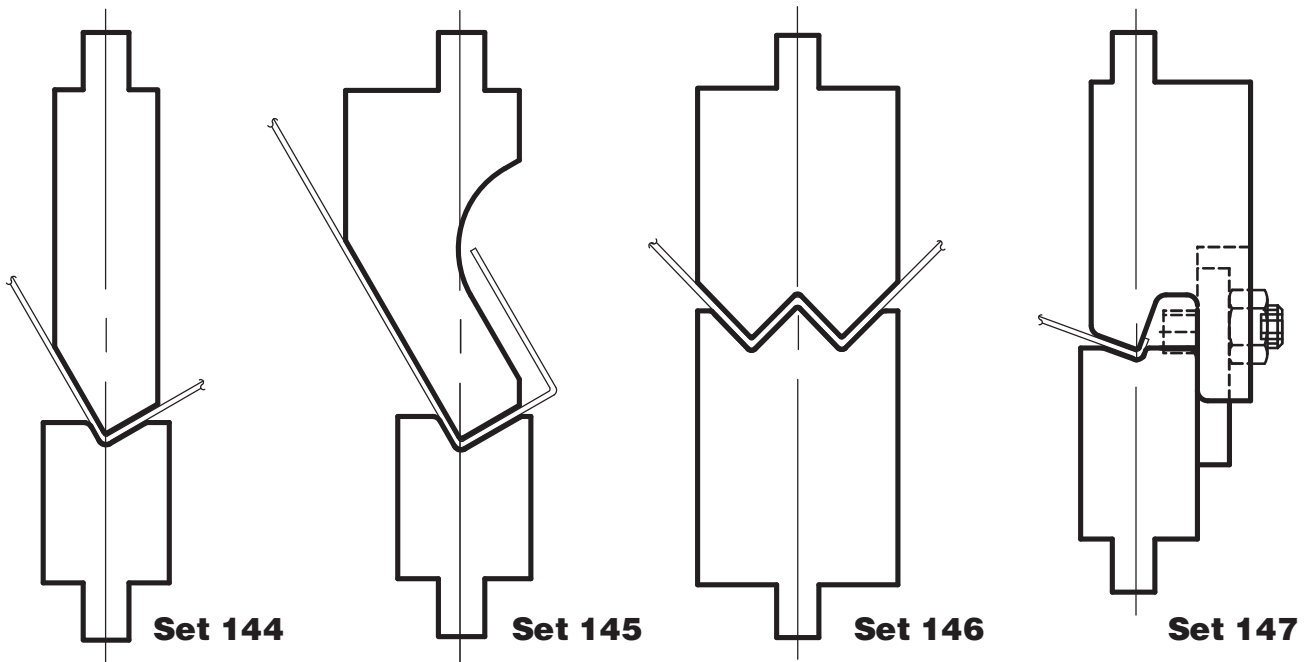
Rocker Dies

Wiping dies are designed for lighter gauge material where whip up must be eliminated. They are used to form flanges or edge channels at the end of the sheet. Die sets 140 and 141 are designed for 18 gauge and lighter material. These die sets can be adjusted to account for variations in material thickness by shimming the insert at the back of the die.

Rocker dies are used for applications where clearance problems make other die sets impractical. They are limited to 16 ga. and lighter material. Rocker dies can perform a variety of multiple bend shapes in one hit such as table edges -Set 142 and edge channels - Set 143

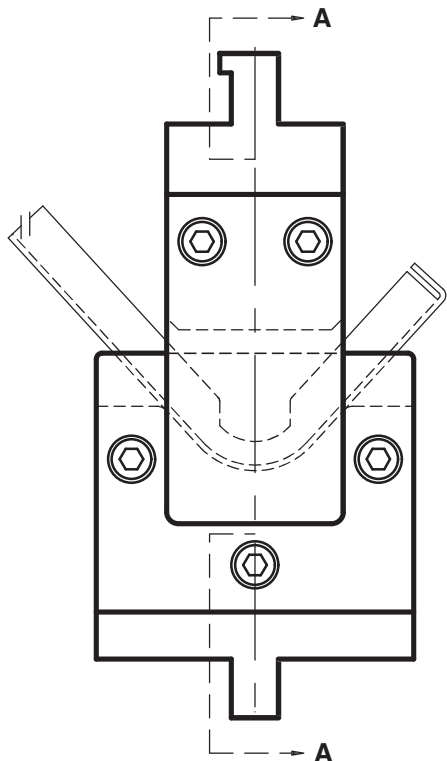


Special Purpose Die Sets

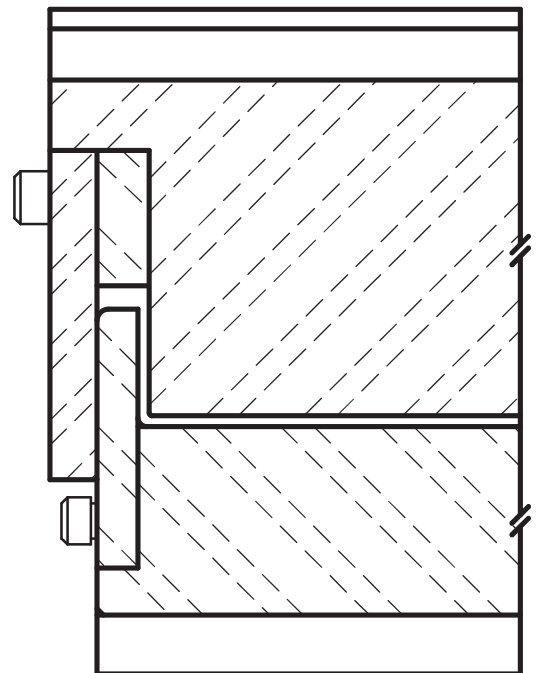


Die sets 144 and 145 are tipped angle sets that are used to form deep channels in two hits. They are used for up to 12 ga. material. They may cause marking and bowing in longer length parts; and at heavier gauges, put extra wear on the ram of the press brake.

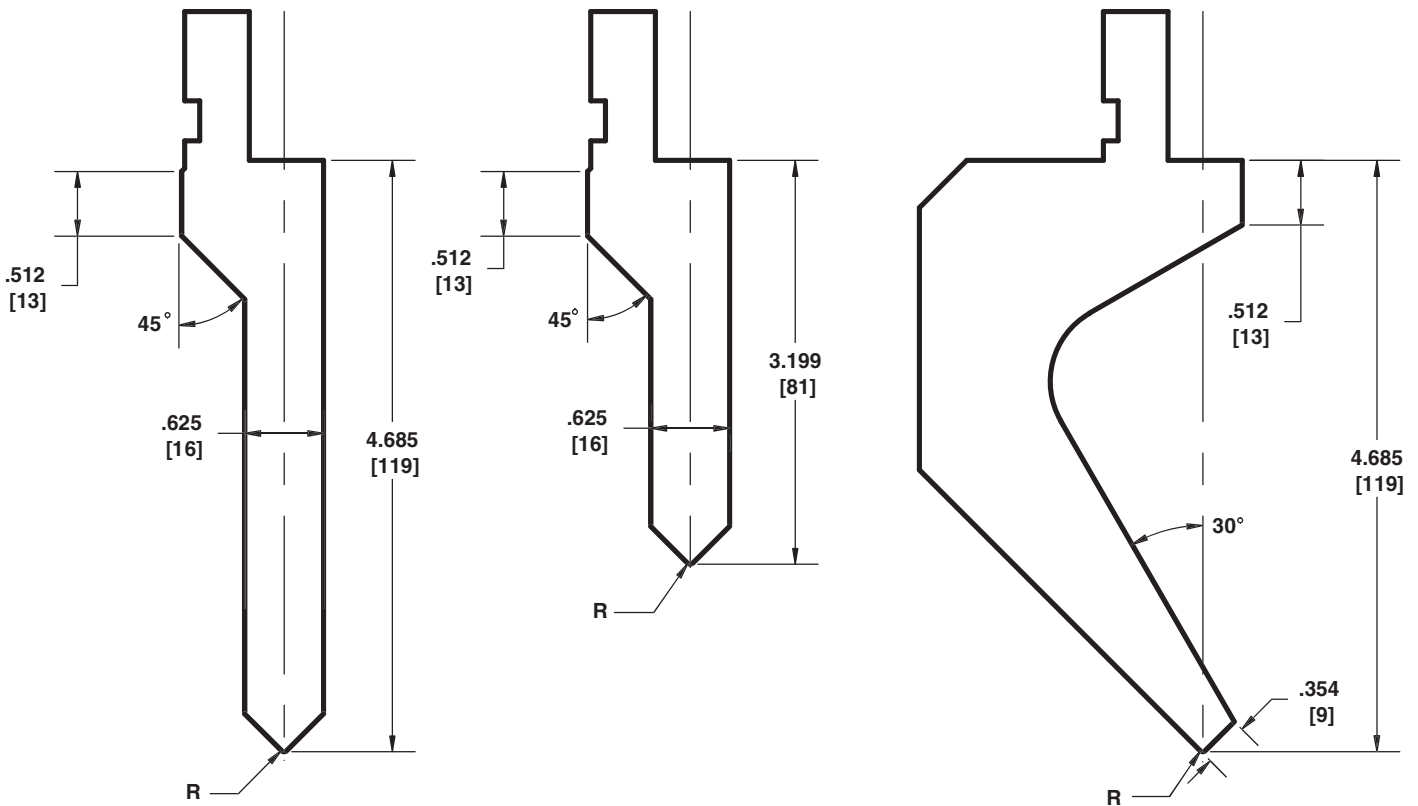
Die set 146 makes a "W" shape in one stroke. A heel may be added for heavier gauge material. Die set 147 is used when the flange length is too short to be safely formed with standard tooling. This set has built in gauging and is heeled to prevent spreading.



Die set 148 is used to form a radius on a part that has preformed up-turned flanges on the ends. The bottom die has clapper plates to hold the flanges and help to minimize flange deformation while forming the radius.



European Tooling



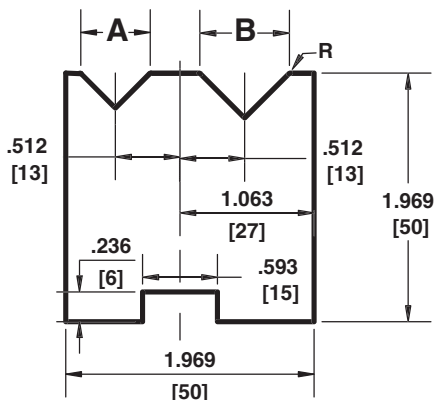
Straight Punch @ 88 or 90 Degrees

Tool No.	Height	Radius
KPE1	4.685 (119)	.016 (.4)
KPE2	3.189 (81)	.016 (.4)
KPE3	4.685 (119)	.031 (.8)
KPE4	3.189 (81)	.031 (.8)

Gooseneck Punch @ 88 or 90 Degrees

Tool No.	Radius
KPGE1	.016 (.4)
KPGE2	.031 (.8)

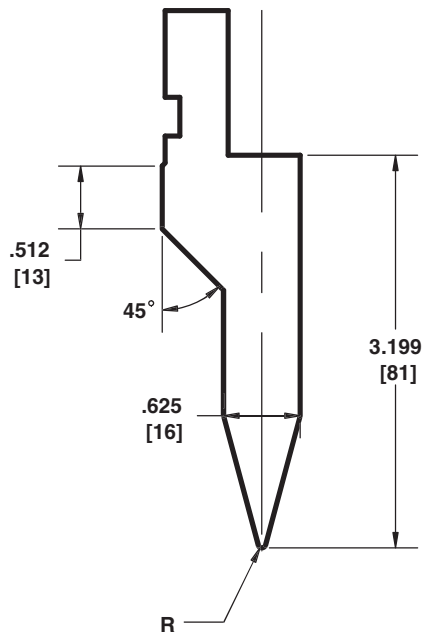
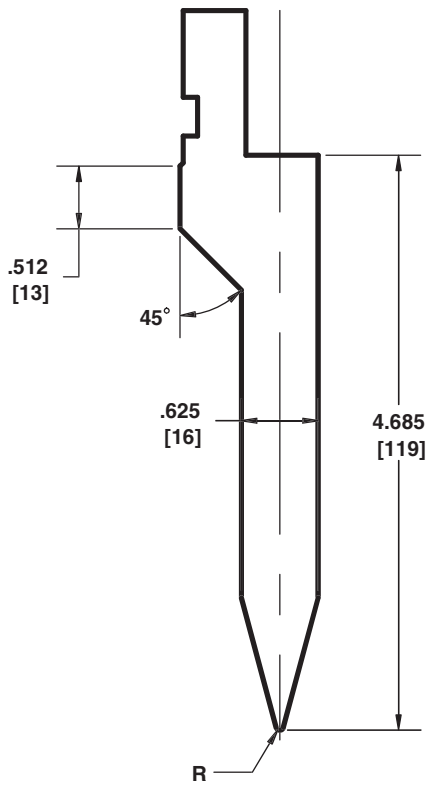
Kazmier Tooling, Incorporated offers an inexpensive alternative to precision ground European style tooling. The tooling is available in standard lengths and sectionalized lengths. Additionally, you can order the tooling at specific lengths at 12 feet or 3,000 millimeters. Our tooling is precision planed to +/- .002 in. - .05 mm. on critical dimensions.



Double Vee Dies @ 88 or 90 Degrees Quick Change

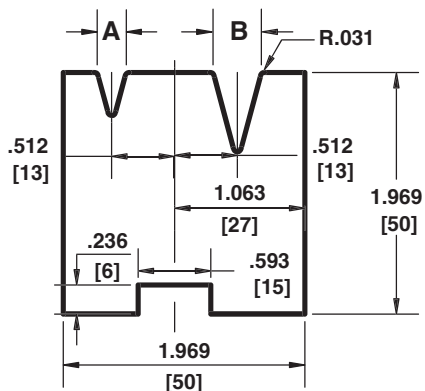
Die No.	A	B	R
KDE1	.551 (14)	.709 (18)	.016 (.4)
KDE2	.472 (12)	.787 (20)	.016 (.4)
KDE3	.630 (16)	.984 (25)	.031 (.8)
KDE4	.236 (6)	.394 (10)	.063 (1.6)
KDE5	.472 (12)	.787 (20)	.063 (1.6)

European Tooling



ACUTE PUNCH @ 30 DEGREES

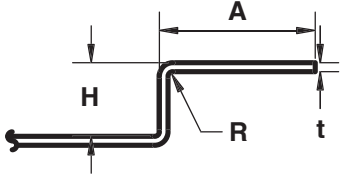
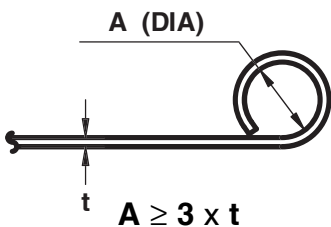
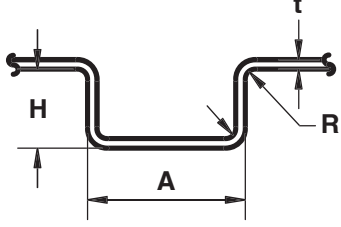
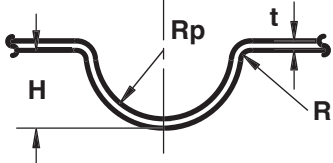
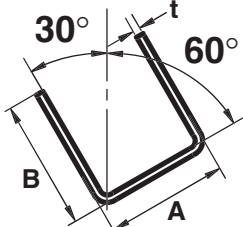
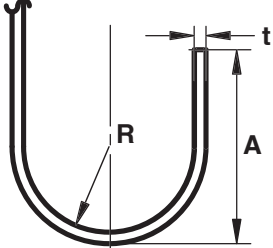
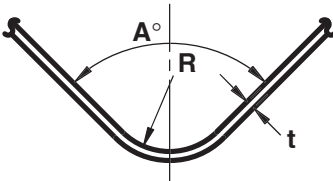
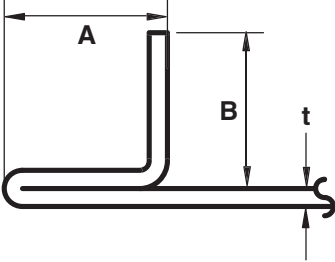
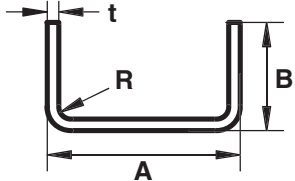
Tool No.	Height	Radius
KPAE1	4.685 (119)	.031 (.8)
KPAE2	3.189 (81)	.031 (.8)
KPAE3	4.685 (119)	.063 (1.6)
KPAE4	3.189 (81)	.063 (1.6)



DOUBLE ACUTE DIES @ 30 DEGREES QUICK CHANGE

Tool No.	A	B
KDAE1	.236 (6)	.394 (10)
KDAE2	.315 (8)	.472 (12)

Examples of Common Special Shapes

<p>Offset</p> 	<p>Off Center Curl</p>  <p>$A \geq 3 \times t$</p>	<p>Hat Channel</p> 
<p>Radius Rib</p> 	<p>Un-Balanced Bend</p>  <p>Maximum thickness 10 ga.</p>	<p>U-Bend with Radius</p> 
<p>Large Radius</p> 	<p>Hem with Flange</p> 	<p>U-Channel</p> 

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Specializing in Press Brake Tooling

Forming Chart

Approximate pressure in tons per linear foot required to make 90 degree air bend in mild steel.
 Opening in red is the recommended opening for the given material thickness.

		WIDTH OF FEMALE DIE OPENING																						
Thickness of Metal		1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	7	8	10	12	
20	.036	2.6	2.26	1.6	1.2	1.0																		
18	.048		3.5	2.28	2.1	1.7	1.3																	
16	.048			5.3	3.7	2.8	2.2	1.7																
14	.075				5.5	4.6	3.5	3.0	2.5	2.1														
13	.090					6.4	5.5	4.3	3.6	3.2	2.8													
12	.105					9.2	6.9	6.2	5.0	4.3	3.9	3.1												
11	.120						10.1	8.0	7.0	6.1	5.3	4.3	2.9											
10	.135							10.3	8.7	7.8	6.9	5.7	3.9											
9	.150								11.9	9.8	8.8	7.0	5.0	3.7										
7	.188									16.9	13.9	11.2	8.3	6.7	4.9									
1/4	.250									27.5	22.1	15.0	11.6	9.6	7.9	6.7								
5/16	.312										39.2	26.5	19.3	15.0	12.5	10.4	7.7							
3/8	.375											42.7	31.2	23.8	19.5	16.3	12.4	9.6						
7/16	.437												45.5	35.2	28.5	24.4	17.4	15.0	11.5					
1/2	.500													48.5	39.5	33.2	24.6	19.5	16.1	13.4				
5/8	.625														65.5	57.9	42.8	33.1	27.3	23.3	17.0			
3/4	.750															92.3	68.1	53.0	43.2	36.2	26.9	21.0		
7/8	.875																103.1	79.9	63.9	52.3	39.2	31.2		
1	1.00																	112.1	90.4	75.5	55.7	43.7		

Soft Brass / Aluminum
 Heat Treated Aluminum
 Stainless Steel

50% of Tonnage Above
 Same as Mild Steel
 150% of Tonnage Above