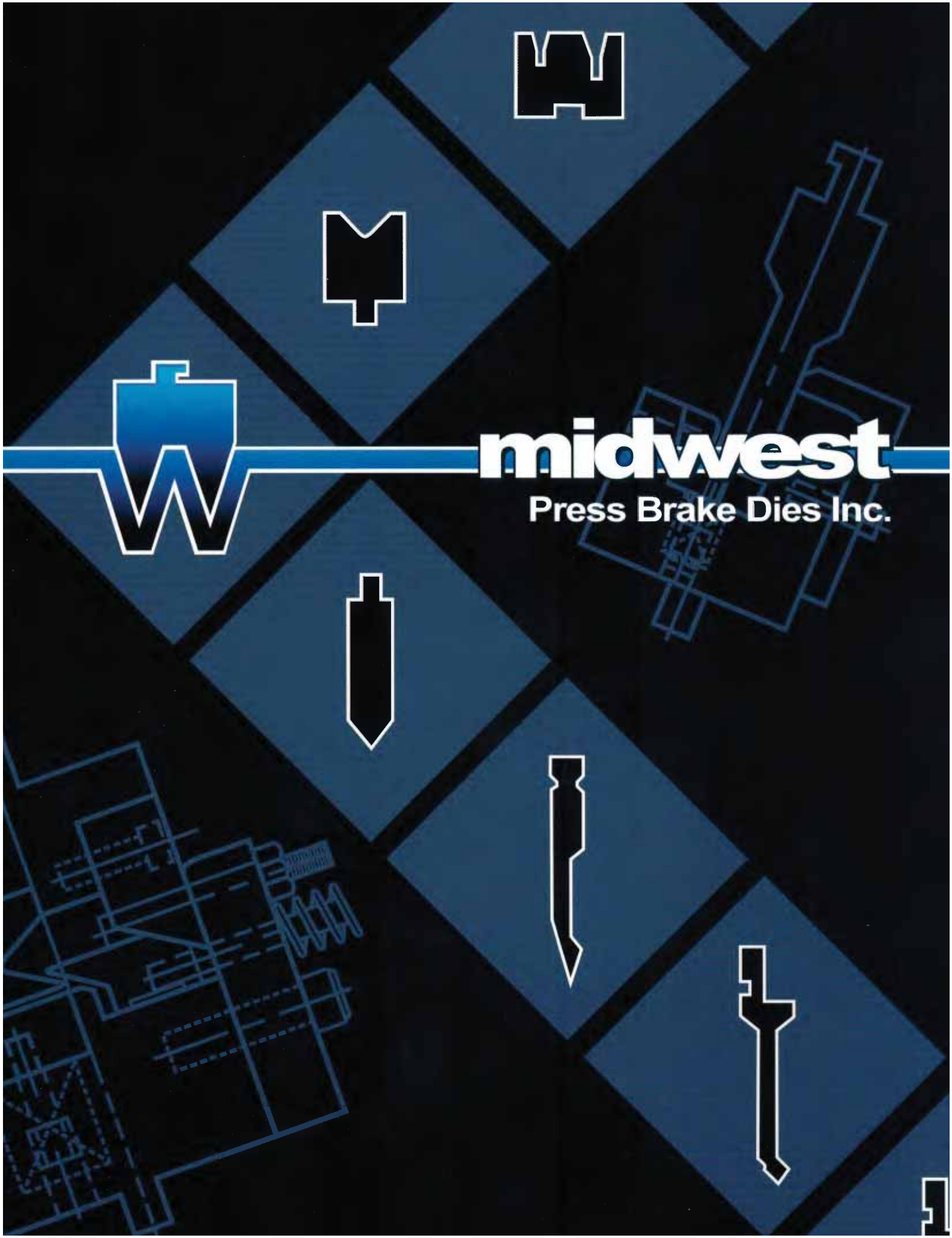

midwest
Press Brake Dies Inc.

SAFETY WARNING - SAFETY WARNING

As a manufacturer specializing in the design and build of all types of press brake tooling we endeavor at all times to supply dies in accordance with customer needs. To illustrate some of our capabilities, the dies in this catalog are a selection of both General Purpose and Special Design type, available at customer choice with either regular or safety tongue mounting provisions.

Whatever dies are selected by customer and furnished by Midwest Press Brake Dies, we emphasize, that they are never intended for use in a press brake, or similar machine, without adequate safeguards being provided by user to prevent fingers, hands, or any other parts of the body of an operator, helper or other employees, from inadvertently entering or remaining within the die space / point of operation, while the equipment is in motion.

Also, since we have no control over how dies may be put to use in-plant, after receipt, ie: use of gauging, machine guarding etc., it must be understood that it is the employer/user who must assume full responsibility to ensure at all times their proper application and use with special regard to operator safety.

This responsibility entails meeting the requirements of all mandatory Local, State and Federal safety codes as applicable, and suggested voluntary compliance with industry standards such as described and illustrated in the American National Standards bulletin ANSI-B11-3, covering "safety requirements for construction, care and use of Power Press Brakes."

To further assist the employer / user we offer the following basic safety suggestions:

1.) Provide adequate training with periodic follow-up, for all personnel involved or engaged in daily use of machinery and tooling.

2.) Ensure all have read and are familiar with information regarding maintenance, care, use and safety, contained in machine manufacturers manual.

3.) Provide all personnel with ready access to all safety bulletins, materials, pertinent to machine and tooling operations.

4.) Provide applicable point of operation guards of devices for each operation.

5.) Require machine, machine controls, and all tooling be set up by qualified, safety conscious personnel, overseen by safety trained supervision.

6.) Whenever practical, use two handed controls in lieu of a foot switch or pedal to activate the machine.

7.) Provide and use, whenever possible, hand tools in conjunction with suitable safeguards to insert, hold or remove parts as necessary.

8.) NEVER use a foot switch or pedal with machine set on "CONTINUOUS" operating mode without providing adequate point of operation guarding or devices, or making provisions for safe distance operation.

For additional information on providing a safe workplace, we suggest contact with your insurance carrier, OSHA, machine manufacturer, or manufacturers specializing in safety equipment and devices.

Die Steel

All Midwest Press Brake Dies, unless otherwise indicated, will be made from chrome-carbon brake die steel of a mean 280 Brinell hardness throughout. Of high compressive strength, the steel has excellent wear characteristics and tends to work harden as it is used. It can be modified or re-machined when necessary without having to be annealed.

Standard Tongue Dimensions

Normally 1/2" wide x 5/8" deep tongue are finished to fit most average type press brakes.

Hook Tongue Or Safety Tongue

Where punch is to be segmented (i.e., as in box forming, or where weight or stripping pressure can cause punch to leave ram slot) we recommend the use of a safety tongue for a nominal extra charge.

Flame Hardening

Where extra durability or wear life is needed such as maintenance of radii or wear surfaces, we can supply flame hardened dies at extra cost.

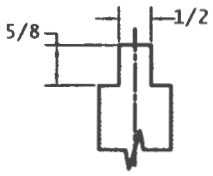
Die Finish

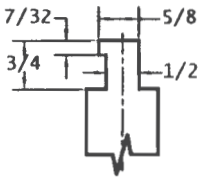
While every effort is made to provide good surface finish on each Midwest die, we suggest that when forming materials requiring a minimum of marking that they be supplied with a superfine polished finish of approximately 10 micro-inch for which there is a nominal extra charge.

Die Reconditioning

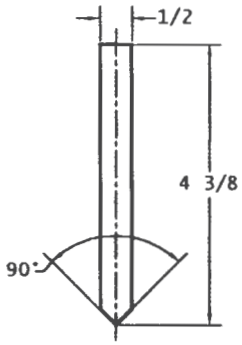
Reworking or resurfacing of existing dies is available at nominal cost. Special consideration is given to completion of this type work but we do suggest contacting our main facility to arrange timing of die return to ensure minimum delay.

90° Forming Punches and Dies





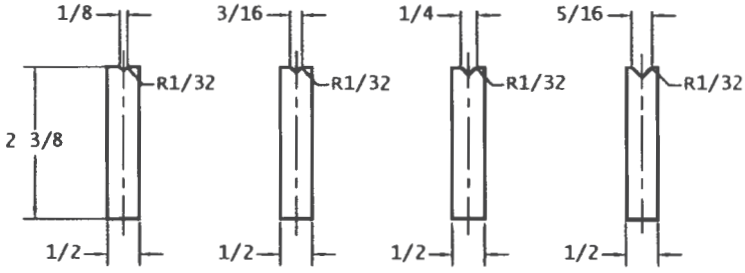
The dimensions shown are for standard punch tang. A safety tang should be added to any punch when it is to be cut into small length sections, or where the punch weight or stripping pressure could cause the tool to pull away from the ram slot.



20 Ga.

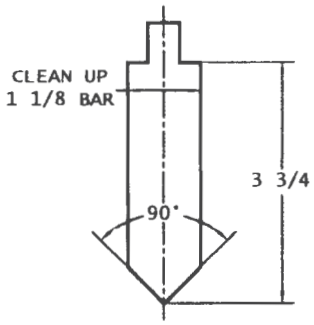
#1

#1 Punch and #'s 2, 4, 6, and 8 dies are economical dies for low cost forming of light gauge sheet metal, especially for short flange work.



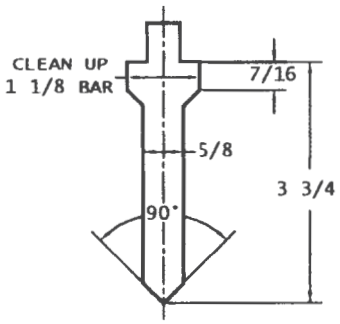
26 Ga. | 24 Ga. | 22 Ga. | 20 Ga.

#2 | **#4** | **#6** | **#8**



11 Ga.

#3



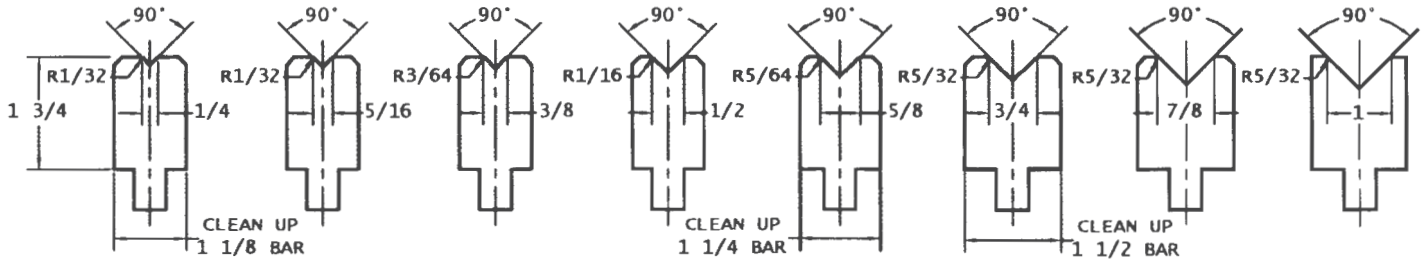
14 Ga.

#5

The 90° punches and dies as indicated below are available individually or as a set for performing 90° bottomed bends. Bends greater than 90° can be made by adjusting the depth of punch travel into the lower die.

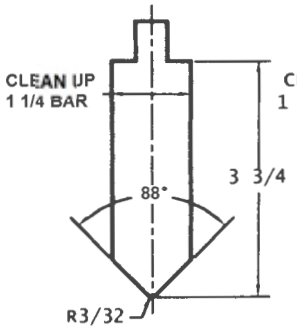
While punch #3 can be used with the complete range of dies 22ga. through 11ga., for bending up to 14ga. the narrower width of punch #5 allows closer back gauge positioning and for longer in-turned flanges when forming 22ga. through 14ga.

Angle and radii modifications to both punches and dies is available at a nominal extra cost.



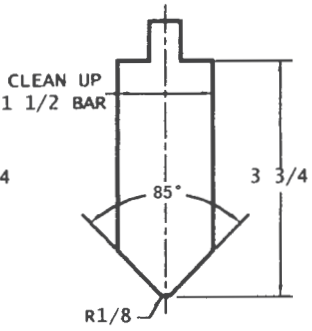
22 Ga. | 20 Ga. | 18 Ga. | 16 Ga. | 14 Ga. | 13 Ga. | 12 Ga. | 11 Ga.

#10 | **#12** | **#14** | **#16** | **#18** | **#20** | **#22** | **#24**



10 Ga.

#7

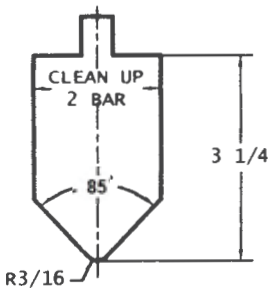


1/4

#9

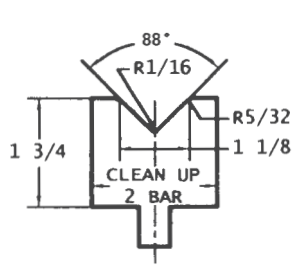
When forming 10 Ga. metals and heavier, punch #'s 7, 9, 11 and 13 are used with respective dies. These dies will produce 90° bends. However, air forming is most common, in order to keep press brake tonnage requirements to a minimum and to prevent material fracture.

Larger punches and vee dies are available upon customer's request.



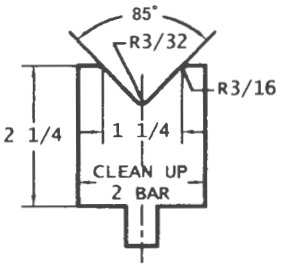
3/8

#11



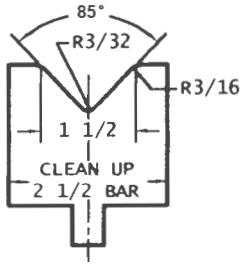
10 Ga.

#26



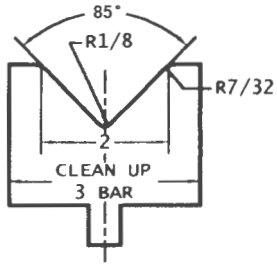
9 Ga.

#28



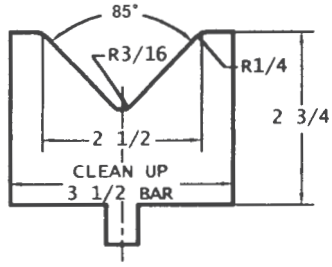
3/16

#30



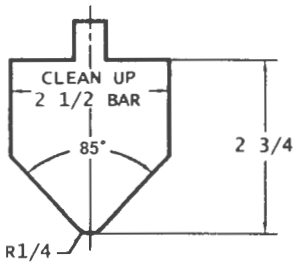
1/4

#32



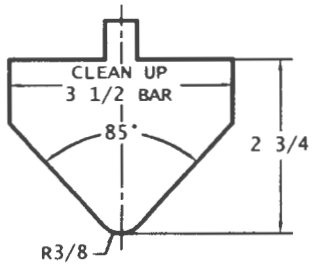
5/16

#34



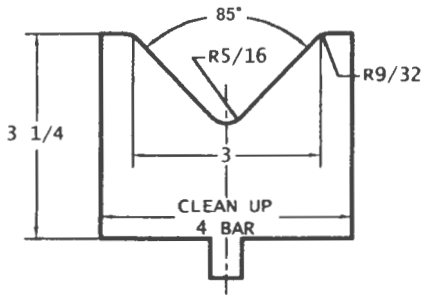
1/2

#13



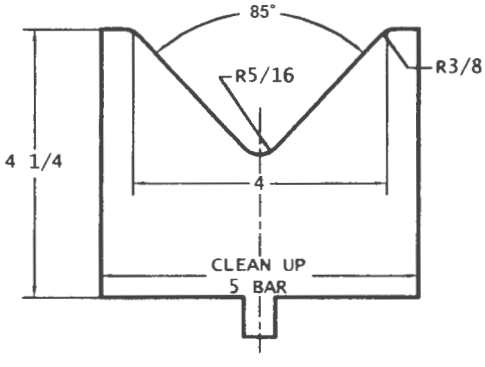
5/8

#13A



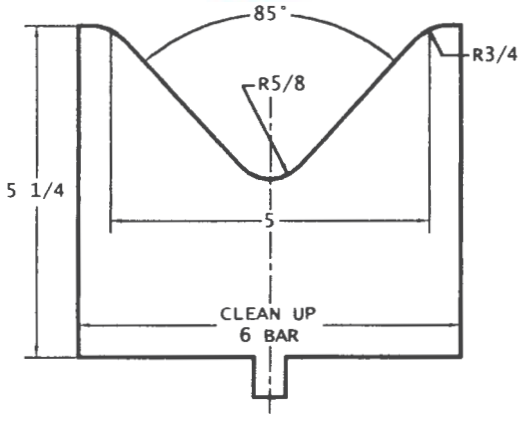
3/8

#36



1/2

#38

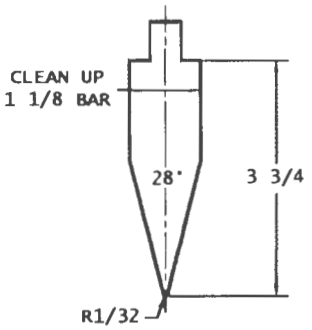


5/8

#38A

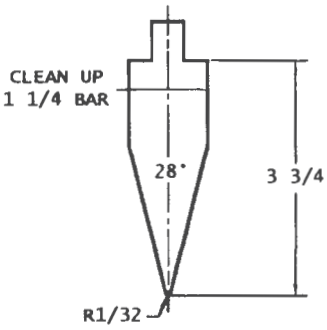
Acute punch and die sets are considered the most universal type tools available and an ideal addition to any brake tooling inventory. They are capable of forming a wide variety of bends ranging from acute to obtuse angles dependent on punch penetration into the die. They are also needed for the first operation of making a hem on the edge of a sheet.

Punch radii are minimum recommendations for noted capacity. Other radii can be supplied upon request.



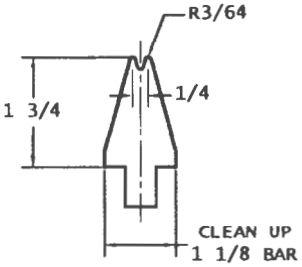
16 Ga.

#15



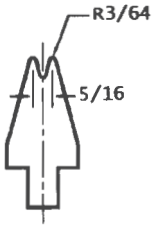
14 Ga.

#17



22 Ga.

#40



20 Ga.

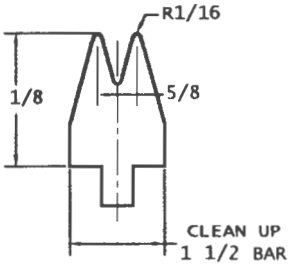
#42

18 Ga.

#44

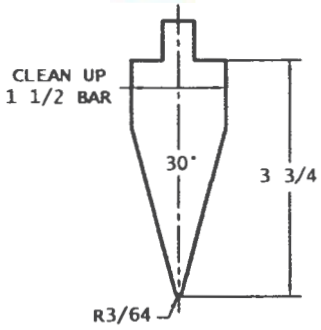
16 Ga.

#46



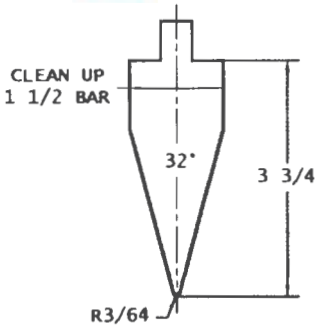
14 Ga.

#48



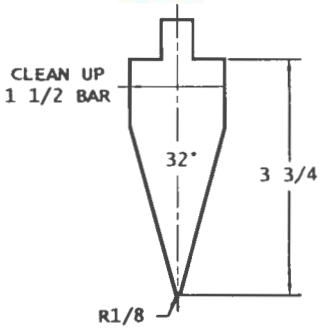
12 Ga.

#19



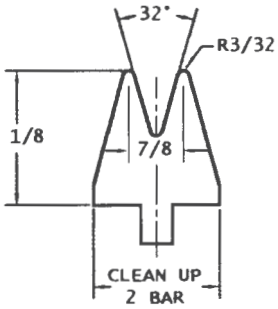
10 Ga.

#21



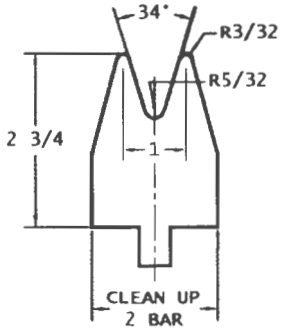
3/16

#23



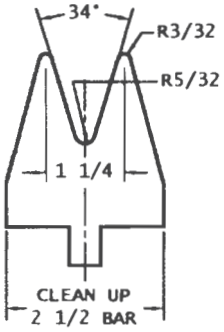
12 Ga.

#50



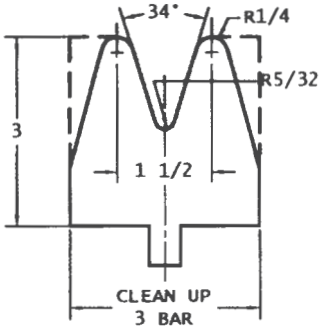
11 Ga.

#52



10 Ga.

#54



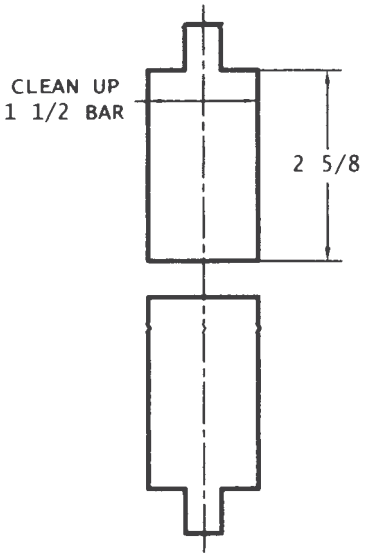
3/16

#56

Flattening And Hemming Dies

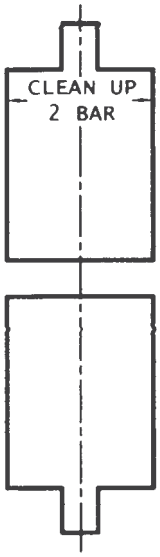
Flattening dies are used to close a previously formed acute angle to a given degree of opening, or to complete a hem.

#25



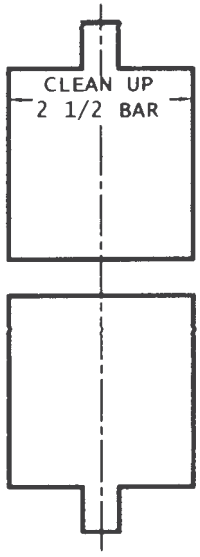
#25A

#27



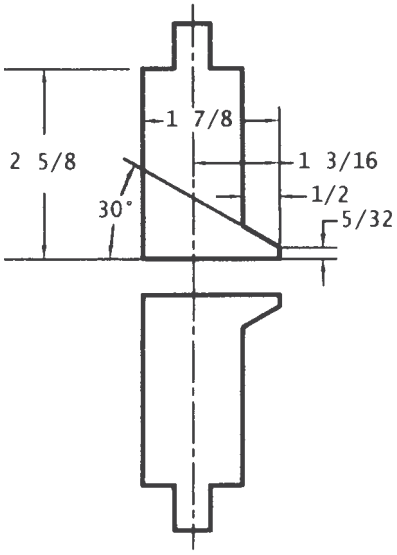
#27A

#29



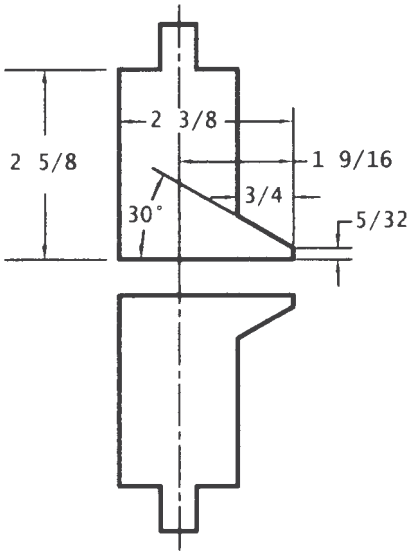
#29A

#31



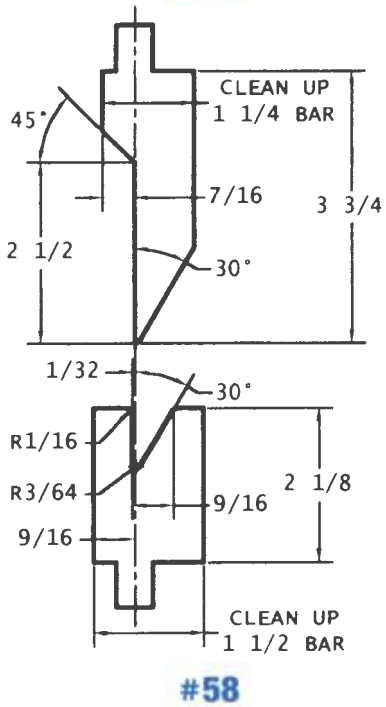
#31A

#33



#33A

#35



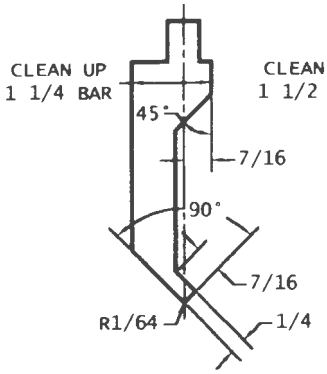
#58

Gooseneck Punches

For forming special shapes where 90° punch would interfere, or channel forming in two strokes, gooseneck punches are ideal. The width of face and the length of return flange are shown. If longer return flanges are required the punches can cut back beyond the centerline, but the work capacity of the punch is reduced. They are used with 90° female dies.

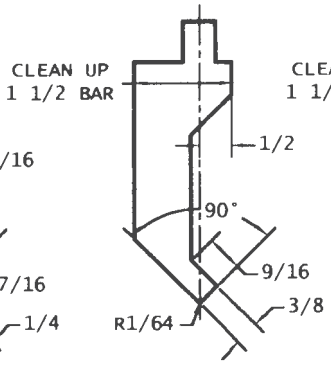
#37

22 Ga.



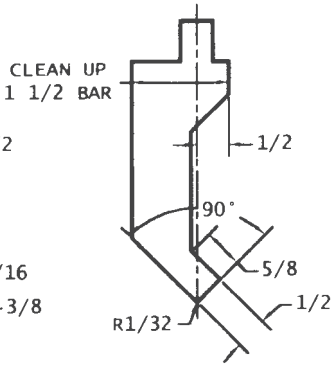
#39

18 Ga.



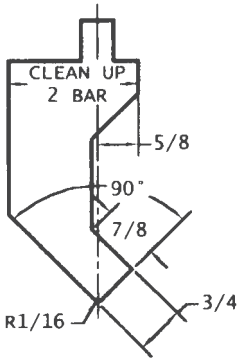
#41

14 Ga.



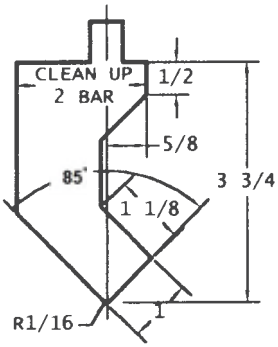
#43

10 Ga.



#45

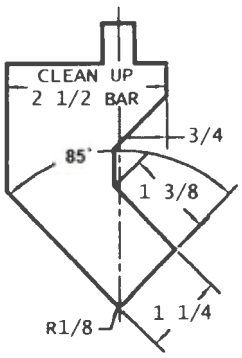
9 Ga.



Gooseneck punches #'s 47, 49, 51 and 53 are cut back beyond centerline allowing longer return flanges. Because of taper on inside of gooseneck, the width of channel must be increased.

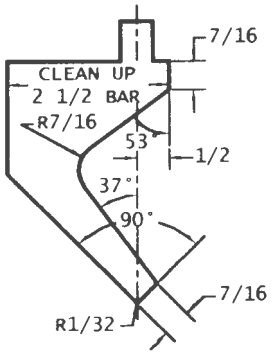
#47

3/16



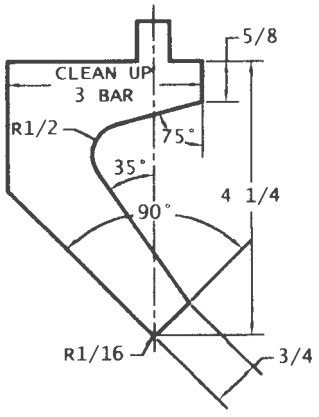
#49

16 Ga.



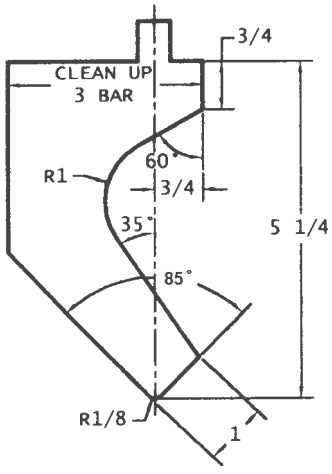
#51

12 Ga.



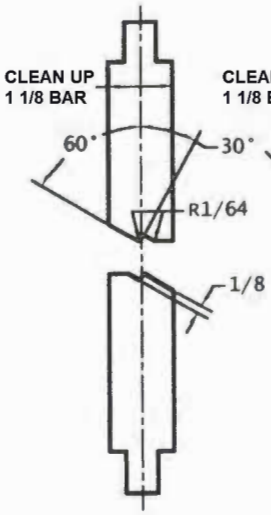
#53

9 Ga.



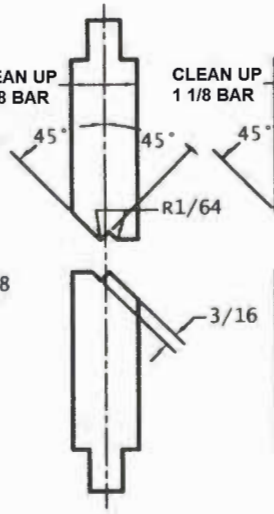
Offset dies form two 90° bends in one stroke. Dimensions show amount of offset inside to outside of material thickness. Sizes shown are suitable for mild steel to 18 gauge. Often heavier gauges of mild steel can be formed depending on size of offset and press brake capacity available.

#55



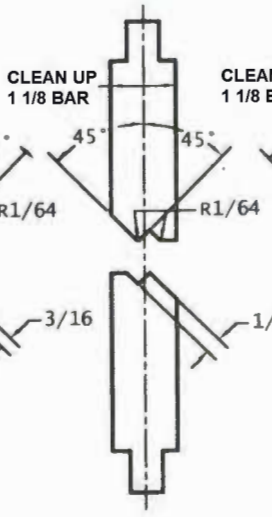
#55A

#57



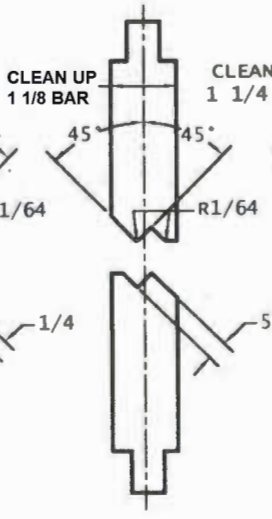
#57A

#59



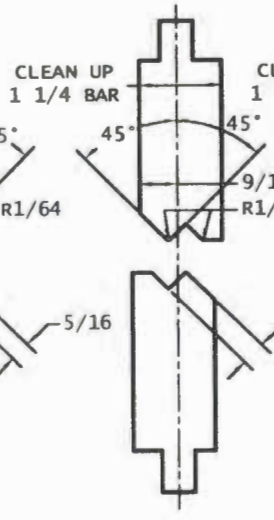
#59A

#61



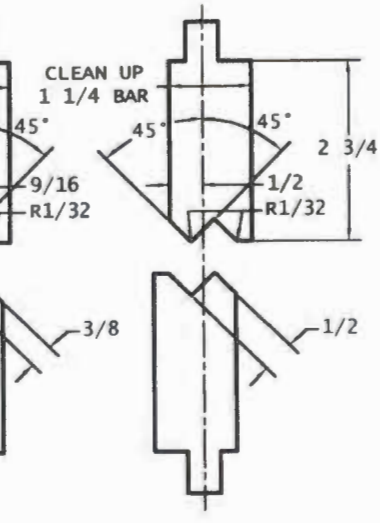
#61A

#63



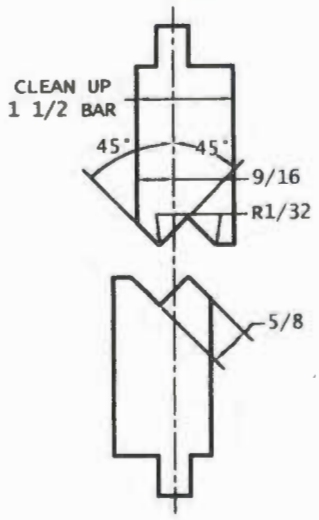
#63A

#65



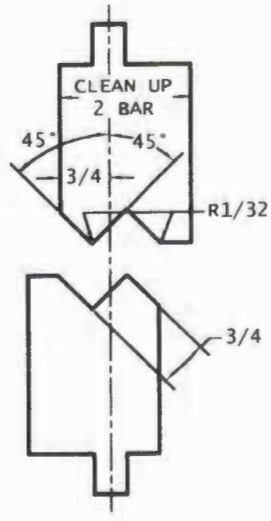
#65A

#67



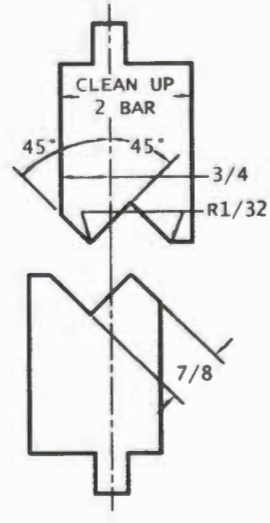
#67A

#69



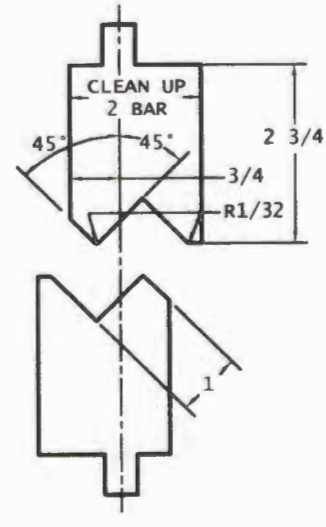
#69A

#71



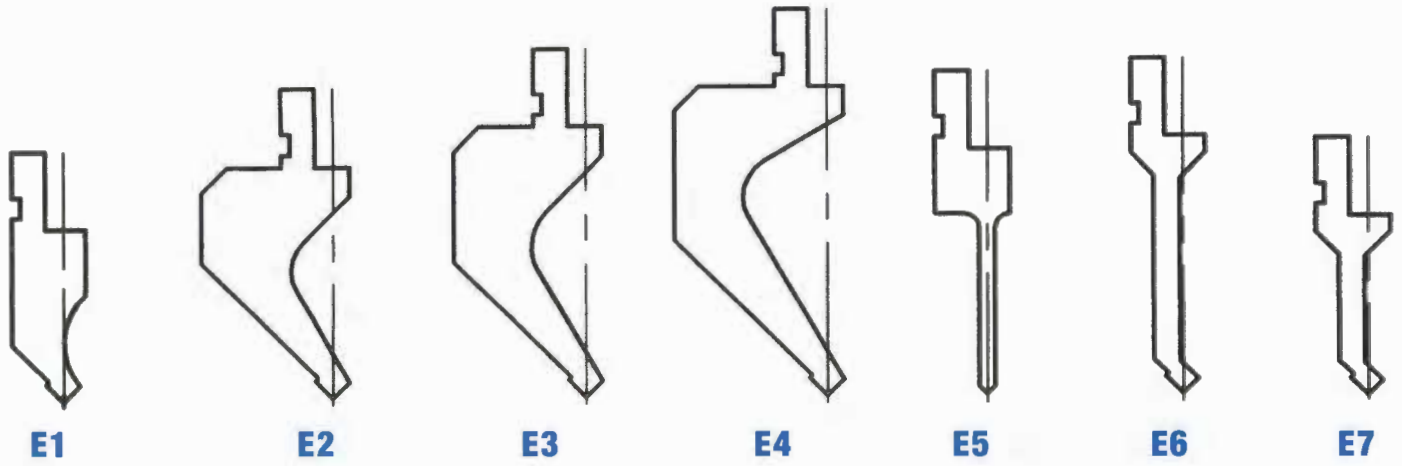
#71A

#73

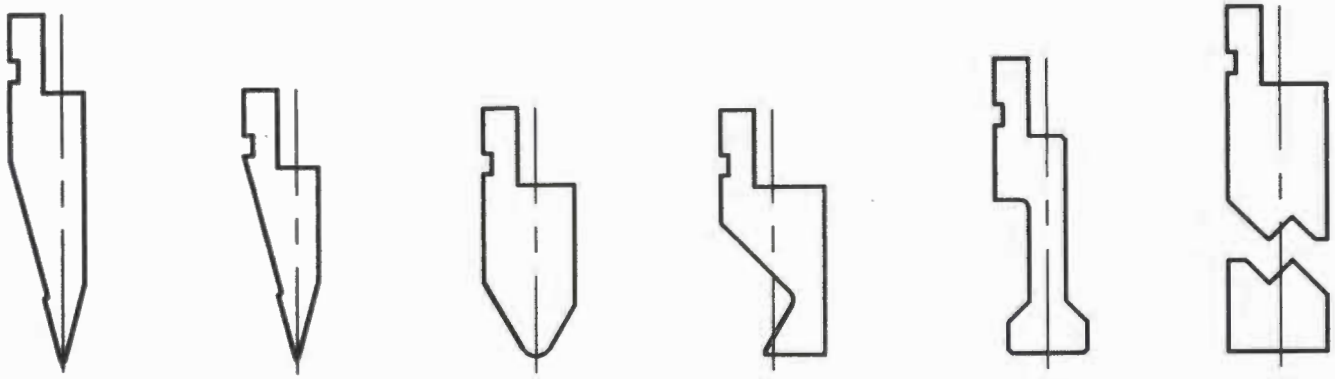


#73A

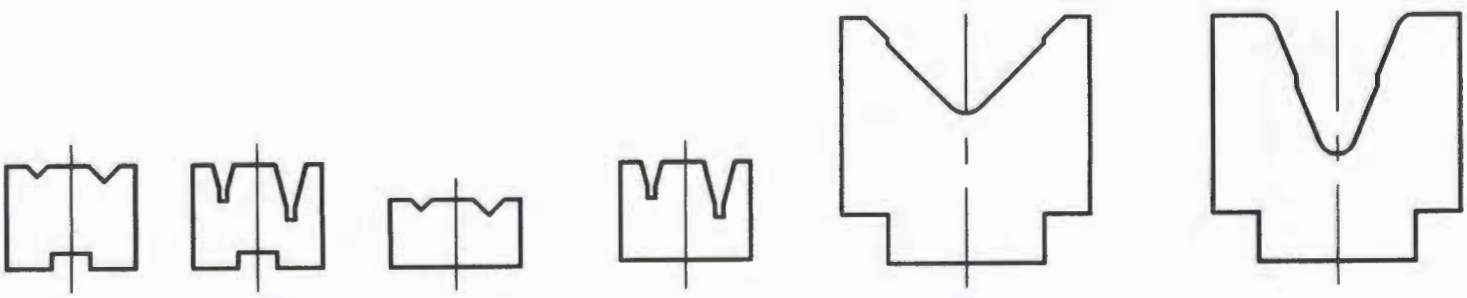
Midwest can supply all types of standard European style tooling. In addition to the standard tooling, we also can produce specialty tooling as shown in American style with European style tangs.



E1 E2 E3 E4 E5 E6 E7



E8 E9 E10 E11 E12 E13



E14 E15 E16 E17 E18 E19

E20

E21

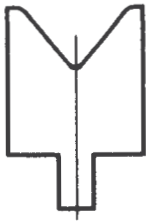
E22

E23

E24

E25

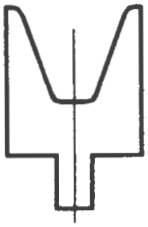
E26



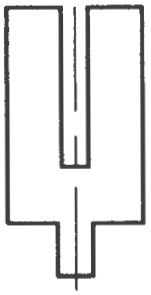
E27

E28

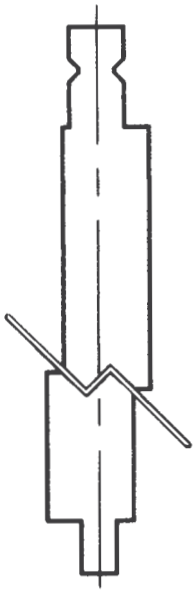
E29



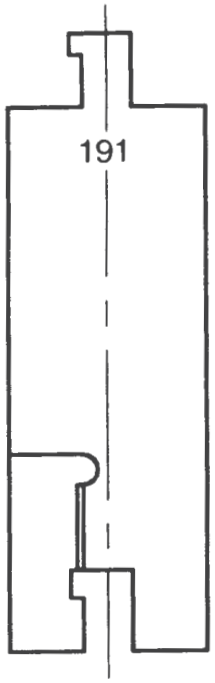
E30

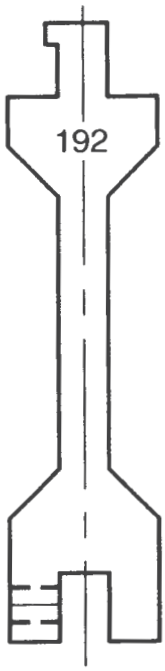


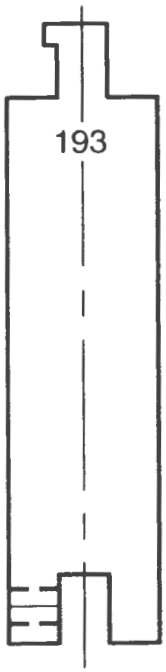
E31

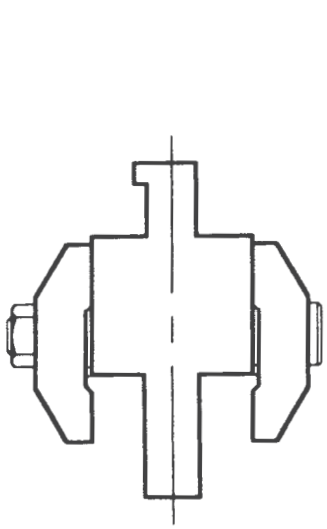


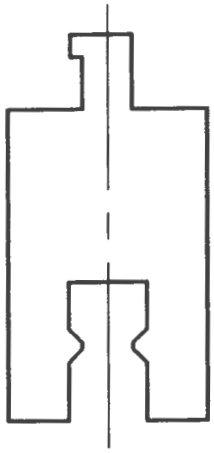
E32

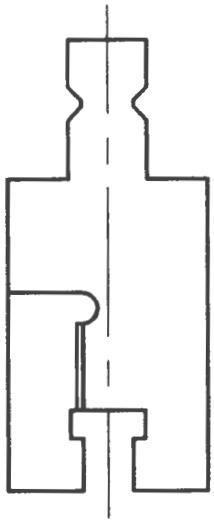


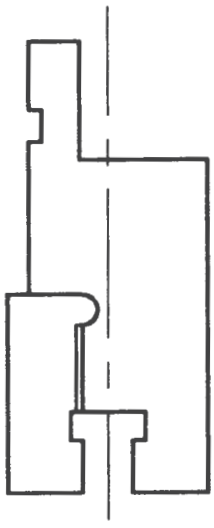






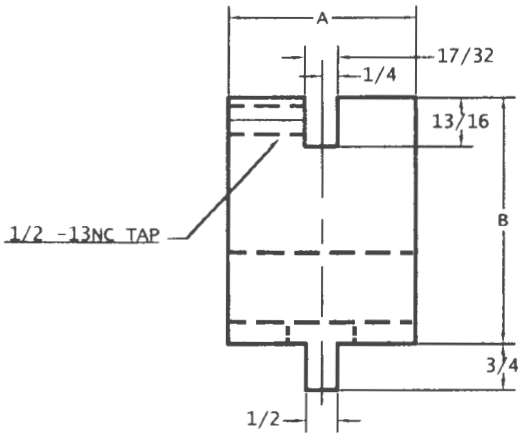




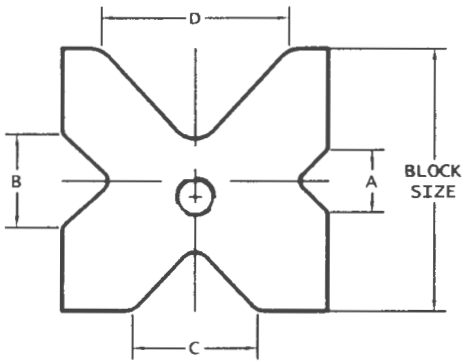


Ram adapters are mounted to the press brake ram and are used to fill the die space if ram adjustment is insufficient. Ram adapters can be made any height, width or style to suit conditions.

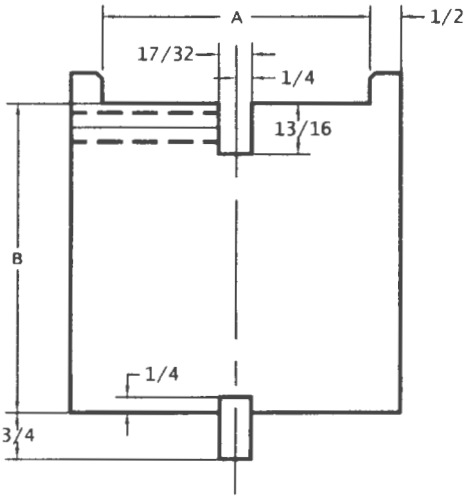
DIE #	A	B	DIE #	A	B
DHA	2	1 1/2	DHJ	3	5
DHB	2	2	DHK	4	2
DHC	2	3	DHL	4	3
DHD	2	4	DHM	4	4
DHE	2	5	DHN	4	5
DHF	3	1 1/2	DHO	5	2
DHG	3	2	DHP	5	3
DHH	3	3	DHQ	5	4
DHI	3	4	DHR	5	5

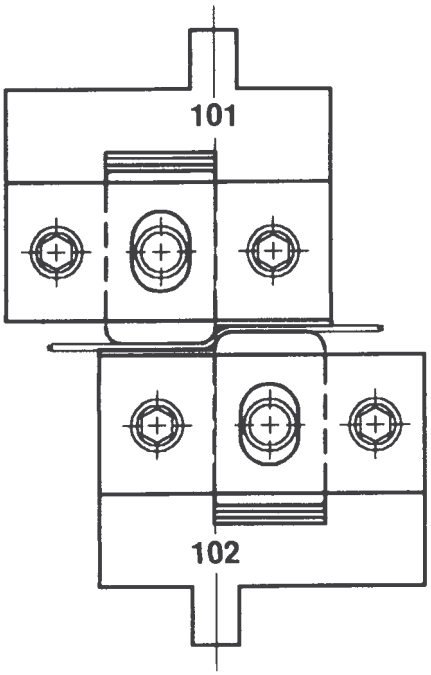


DIE #	BLOCK SIZE	A	B	C	D
4WD-A	2 1/4	.50	.75	1.00	1.25
4WD-B	2 3/4	.625	.875	1.125	1.50
4WD-C	3 1/4	.75	1.00	1.50	2.00
4WD-D	3 3/4	.875	1.125	2.00	2.50
4WD-E	4 1/4	1.00	1.50	2.00	3.00
4WD-F	4 3/4	1.00	1.25	2.50	3.00
4WD-G	5 1/4	1.25	1.50	3.00	3.50
4WD-H	5 3/4	1.25	2.00	3.00	4.00
4WD-I	6 3/4	1.50	2.50	3.50	5.00
4WD-J	7 3/4	2.00	3.00	3.50	6.00

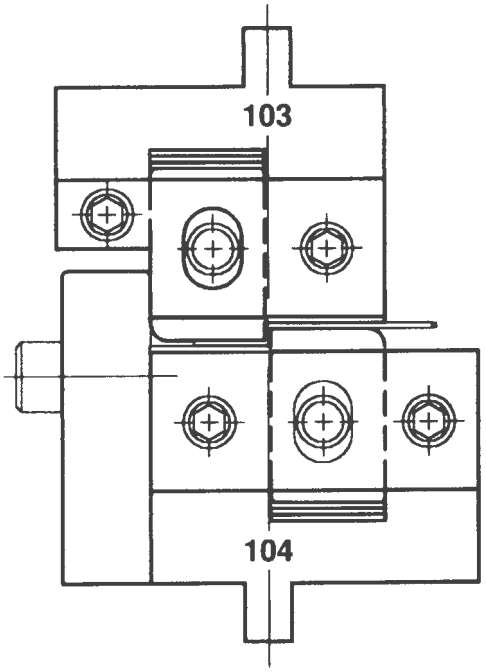


DIE #	A	B	DIE #	A	B
4WDH-A	2.25	3.50	4WDH-J	4.25	5
4WDH-B	2.25	5	4WDH-K	4.75	3.50
4WDH-C	2.75	3.50	4WDH-L	4.75	5
4WDH-D	2.75	5	4WDH-M	5.25	3.50
4WDH-E	3.25	3.50	4WDH-N	5.25	5
4WDH-F	3.25	5	4WDH-O	5.75	3.50
4WDH-G	3.75	3.50	4WDH-P	5.75	5
4WDH-H	3.75	5	4WDH-Q	6.75	3.50
4WDH-I	4.25	3.50	4WDH-R	7.75	3.50

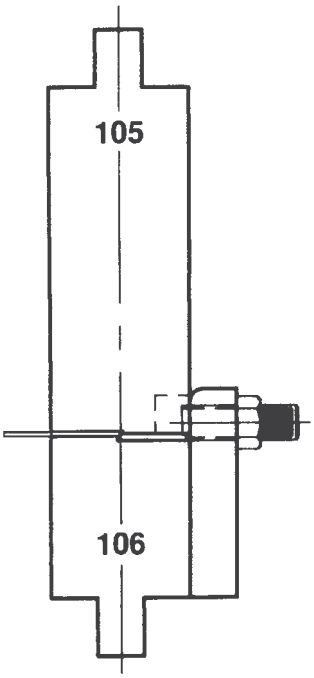




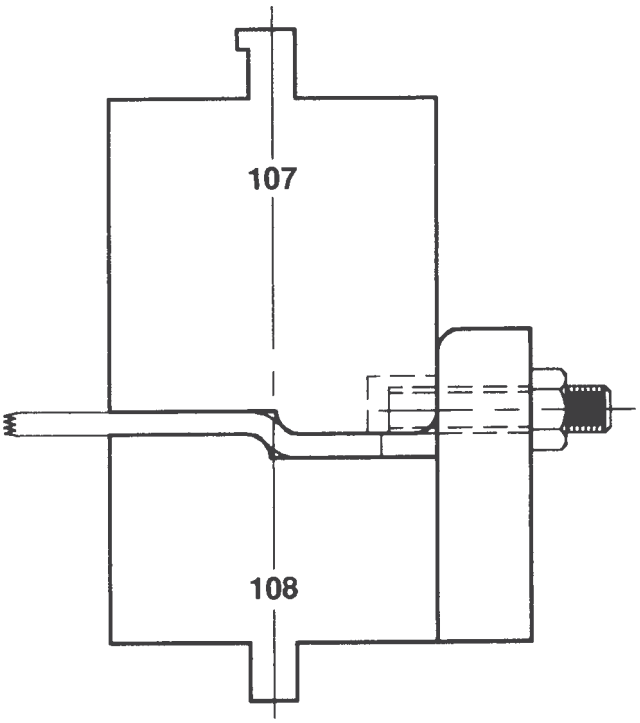
Open angle offsets adjustable to 5/16" can be performed in die set #'s 101-102. Shimming behind reversible blocks changes depth of offset. Rotation of blocks changes the radius. Each corner has a different radius to allow for various material thickness.



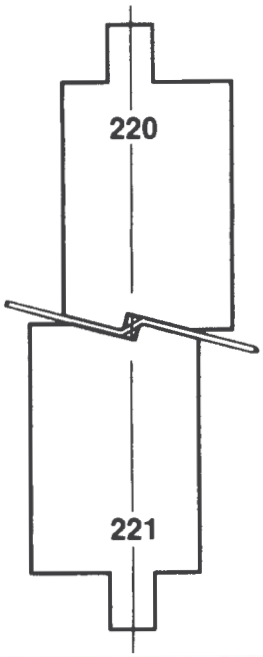
If the offset is 1" or less from the edge of die set #'s 103-104 can be used. Dies have a heel plate to minimized spreading and sharper offsets will result.



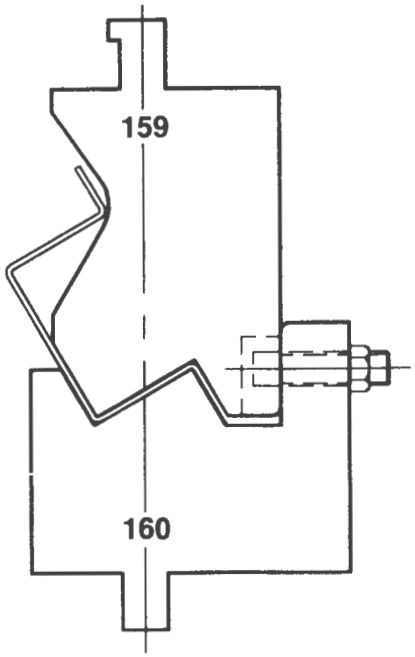
For forming metal thickness offsets, best results are in die set #'s 105-106. Dies have a heel plate.



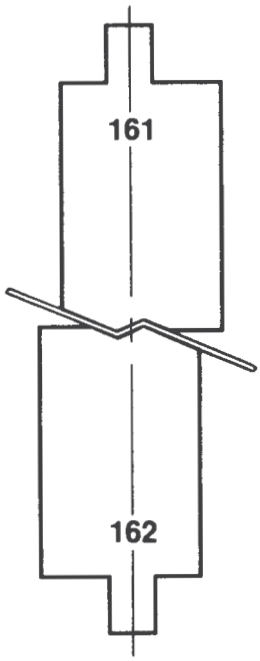
Die set #'s 107-108 is recommended on heavier gauge stock for open angle offset.



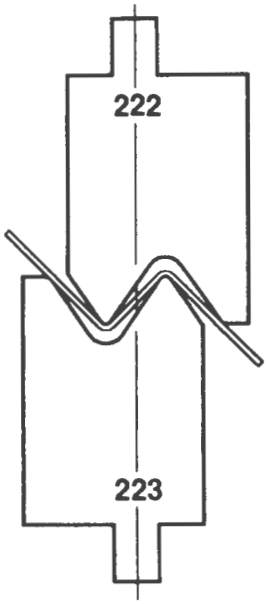
In forming a shallow open angle offset in the middle of a sheet, die set #'s 220-221 is recommended. Large radii and maximum relief help reduce press brake requirements.



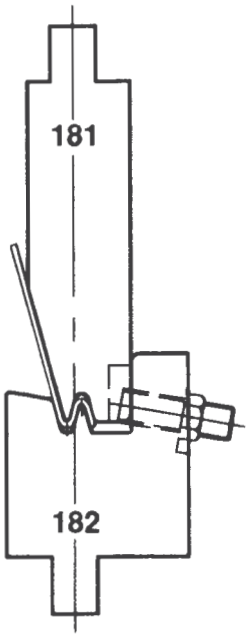
For forming larger offsets and prevent bowing of offset web, die set #'s 159-160 is recommended.



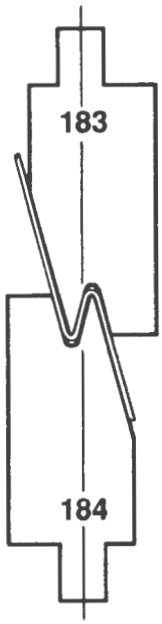
Die set #'s 161-162 is used to bottom form 135° offsets.



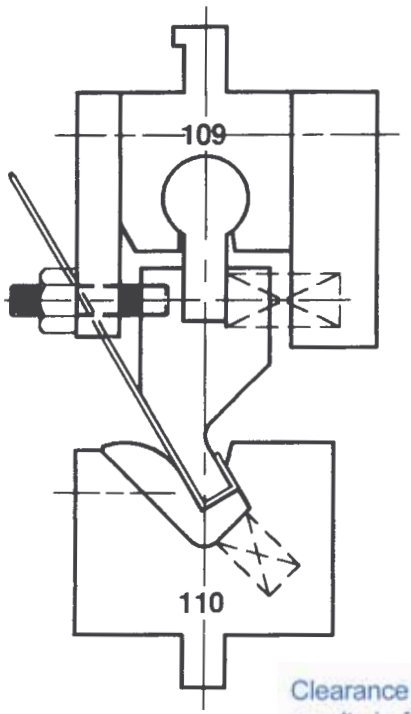
If press brake capacity will not permit a bottoming offset operation, comparatively good results can be obtained by air forming with die #'s 222-223.

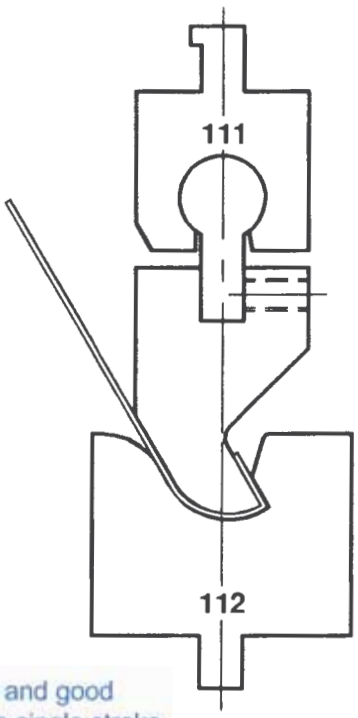


When forming an acute angle offset at the edge of a sheet, our die set #'s 181-182 can be used.

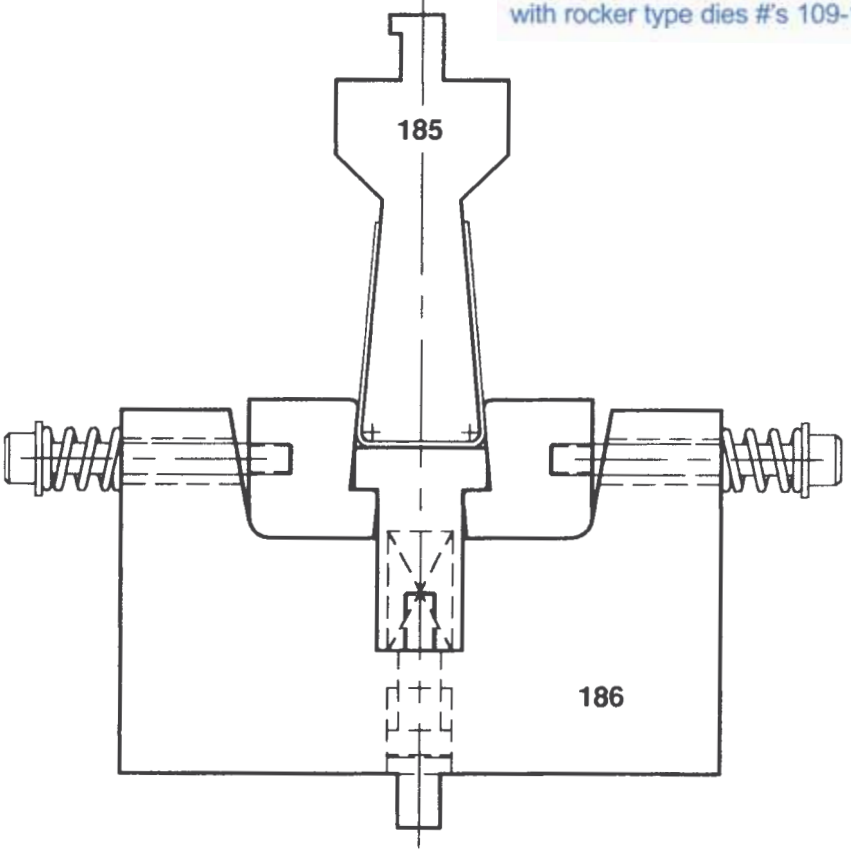


Die set #'s 183-184 is designed for forming acute angle offsets on 18 ga. and lighter material.

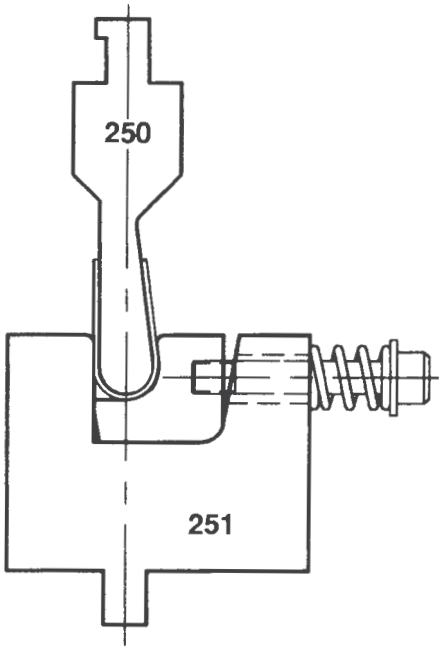




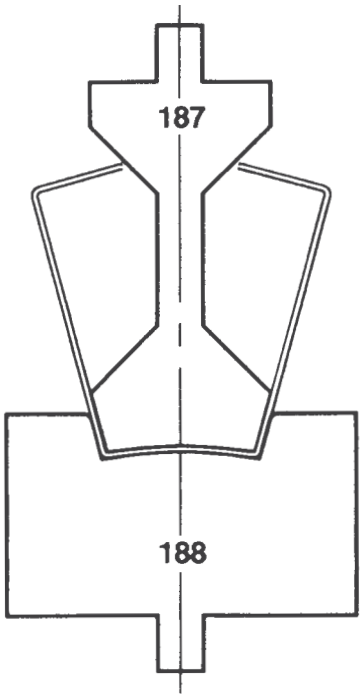
Clearance difficulties are avoided and good results in forming are assured in a single stroke with rocker type dies #'s 109-110- & 111-112.

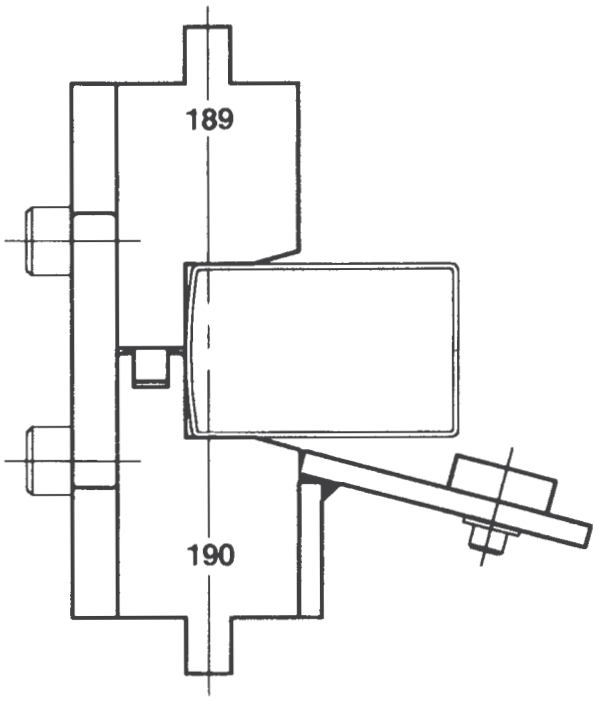


When considerable material spring back is encountered in channel forming, overbending is necessitated. Die set #185-186 is recommended.

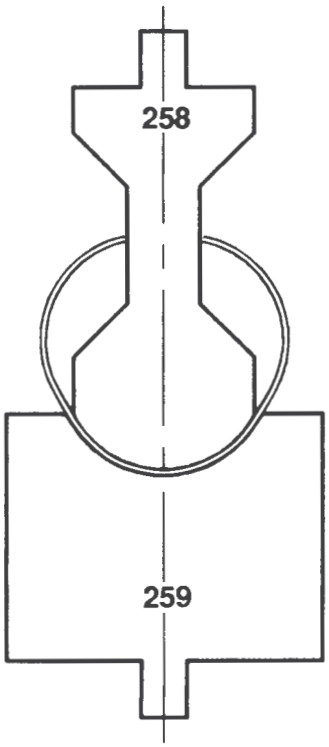


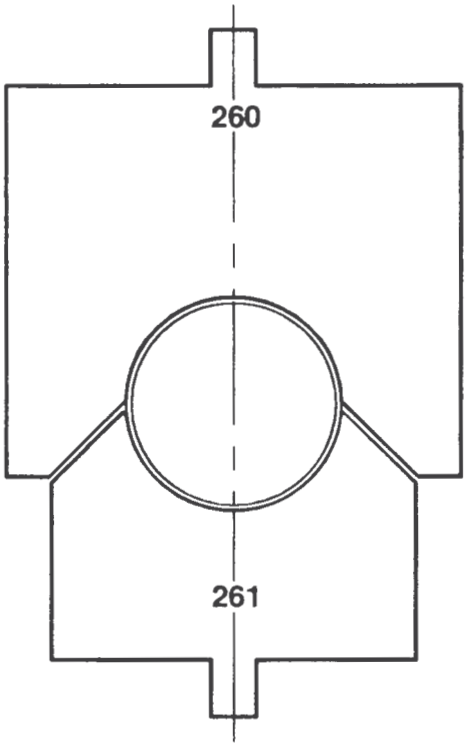
Die #'s 250-251 is suggested for small U channels. Rocker insert overbends shape to allow for spring back.



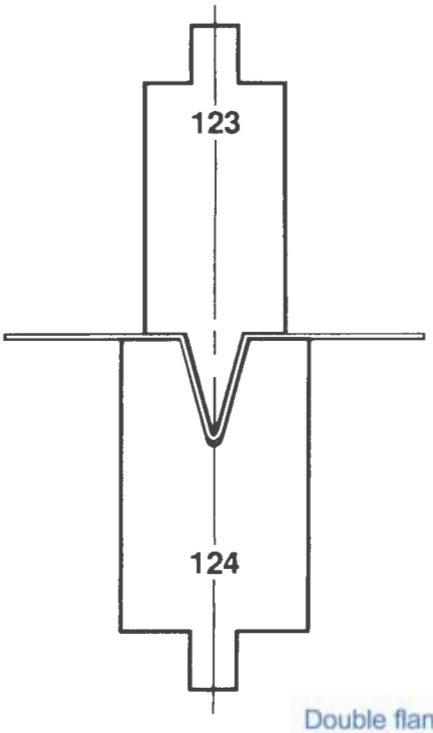


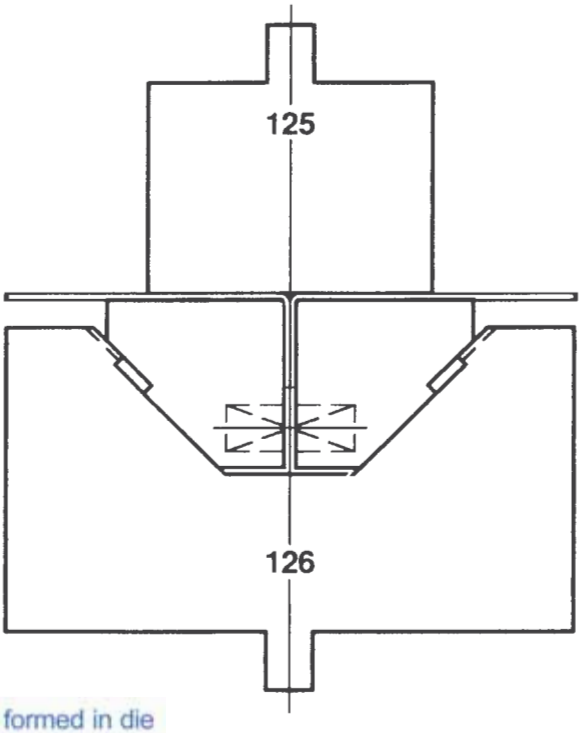
In making rectangular tubes, die sets #'s 187-188 and 189-190 are often used as a progressive combination.



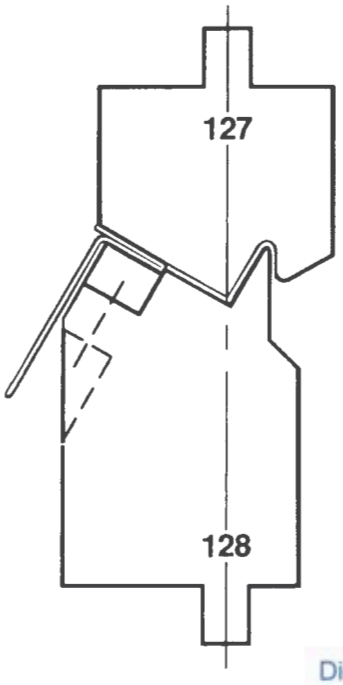


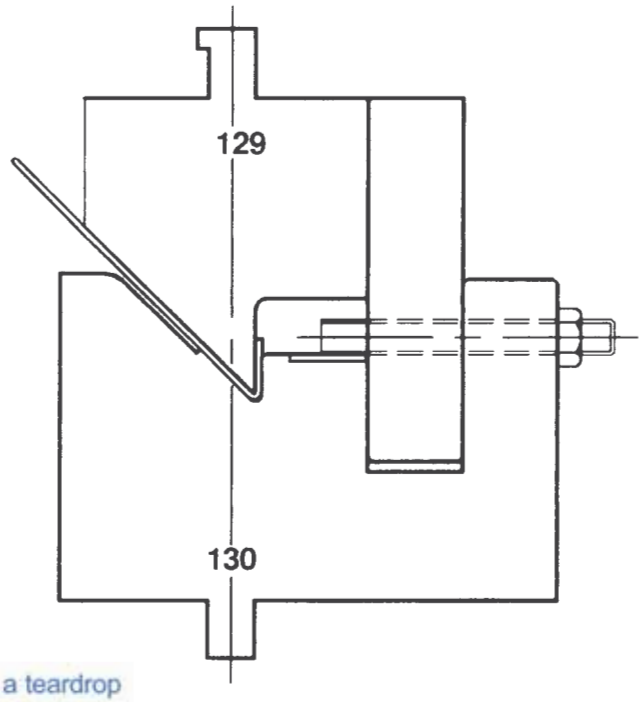
Designed for short stroke press brake operation four stroke complete tube recommended for all high tensile metals.



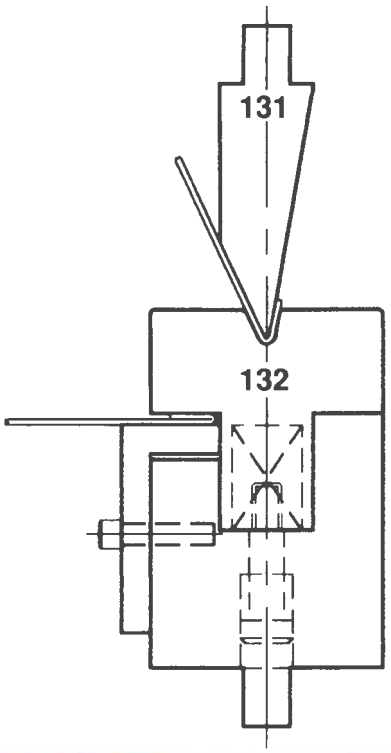


Double flange standing seams are formed in die sets #'s 123-124 and 125-126 in two operations.

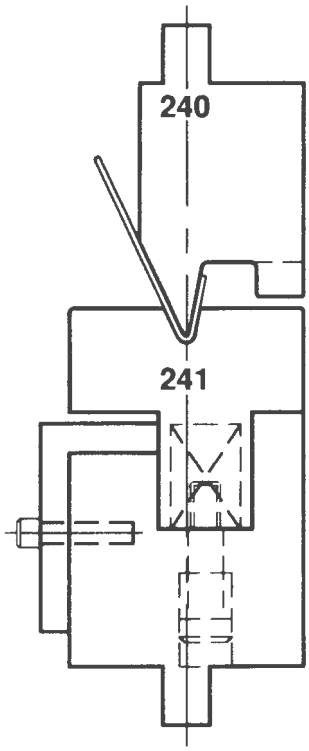




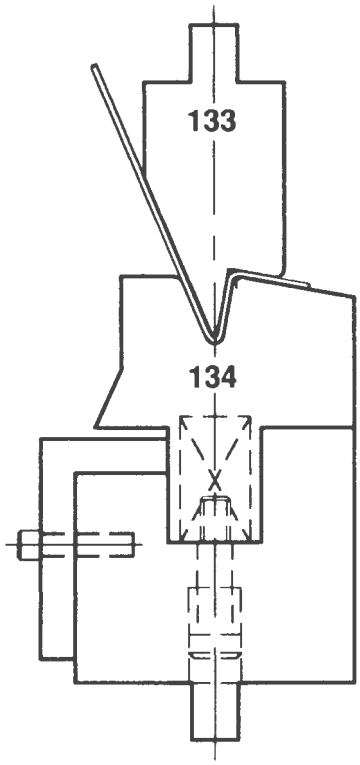
Die set #'s 127-128 and 129-130 forms a teardrop or an open hem in one handling. This type of die set is suitable for 14 ga. mild steel.



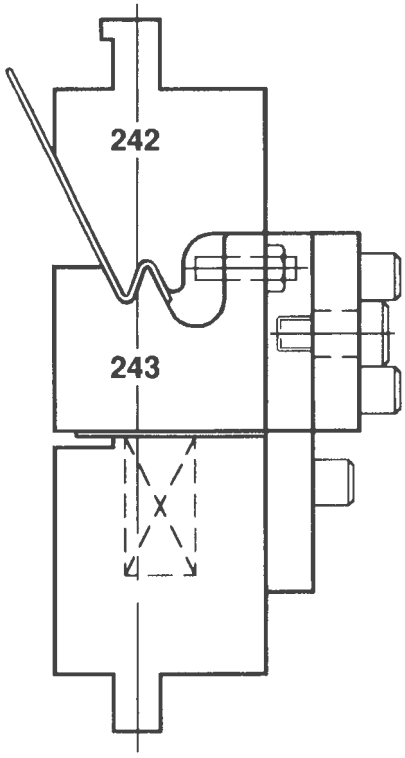
Die #'s 131-132 are a three high hemming die set recommended for 18 gauge and lighter mild steel.



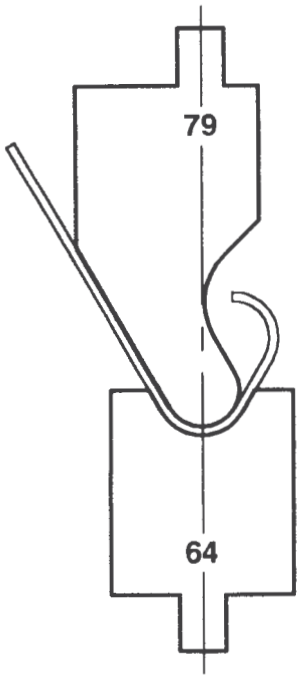
Die #'s 240-241 are a three high hemming die set shown with equalizing back heel for higher production and heavier material.

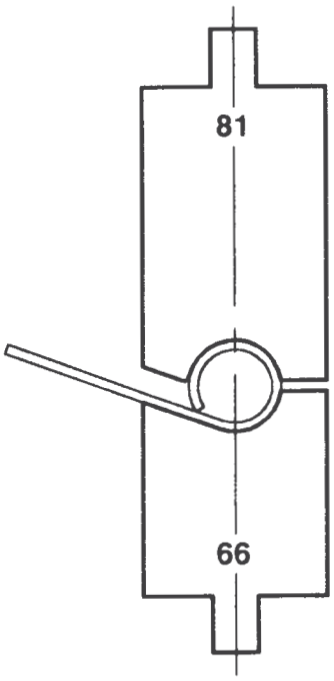


Die #'s 133-134 are used to form a standing seam in two operations.

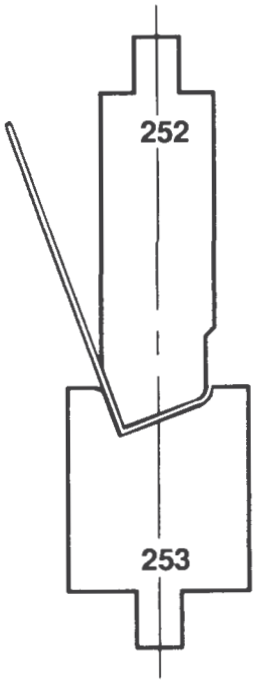


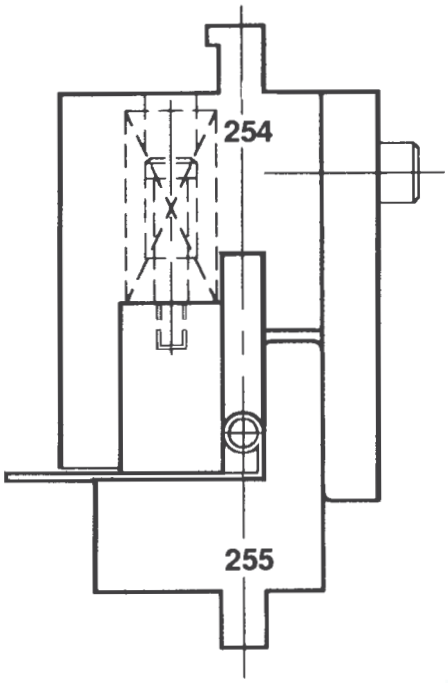
Die #'s 242-243 are used to produce lock seams in two operations in one handling.



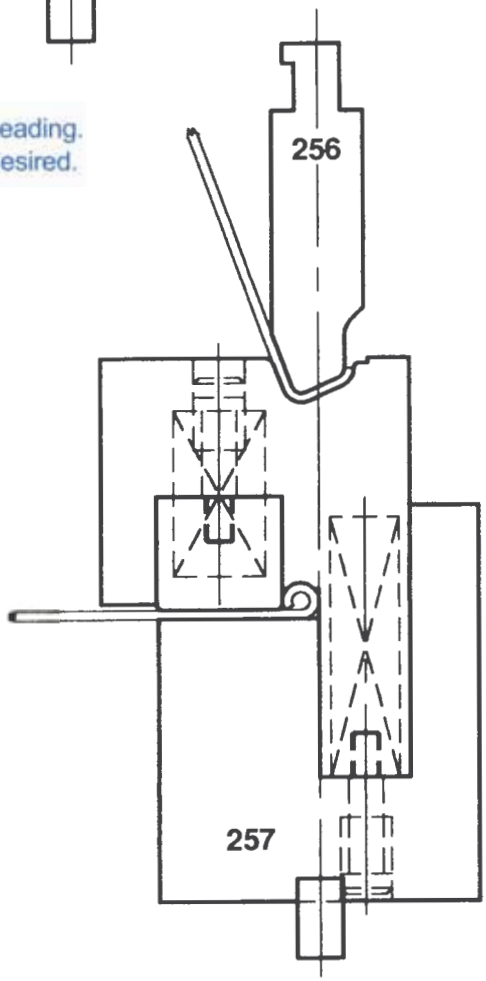


Standard curling die set for regular edge beading.
Available for any metal; specify diameter desired.

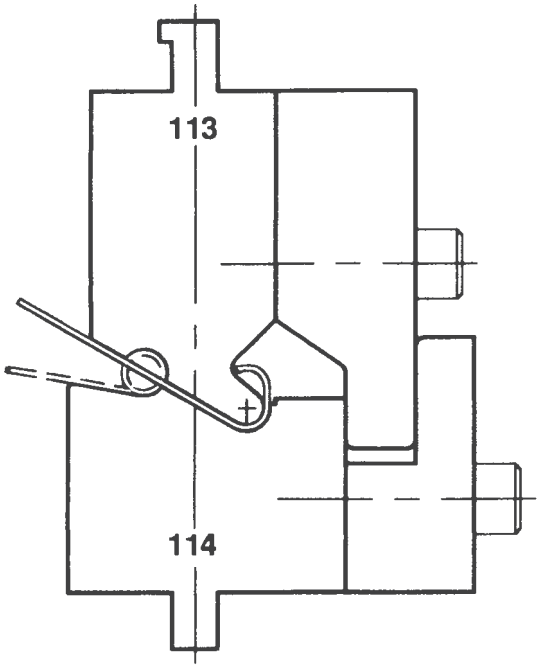




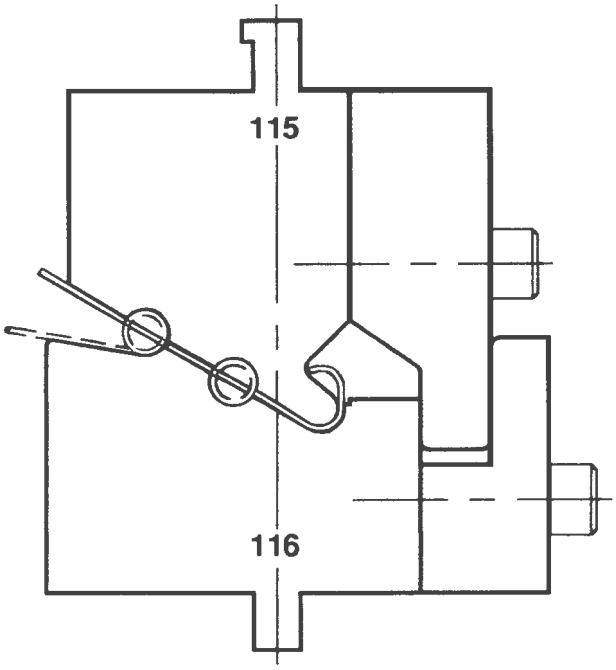
Die set #'s 252-253 & 254-255 produce a 90° bend
and a complete curl in two operations.



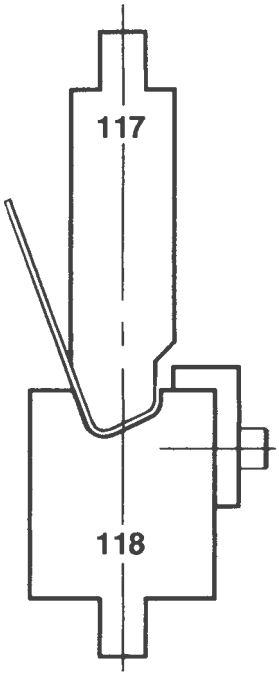
Die set #'s 256-257 are used to form a curl in two
operations. The top station preforms the curl,
and the lower level closes and finishes the curl.

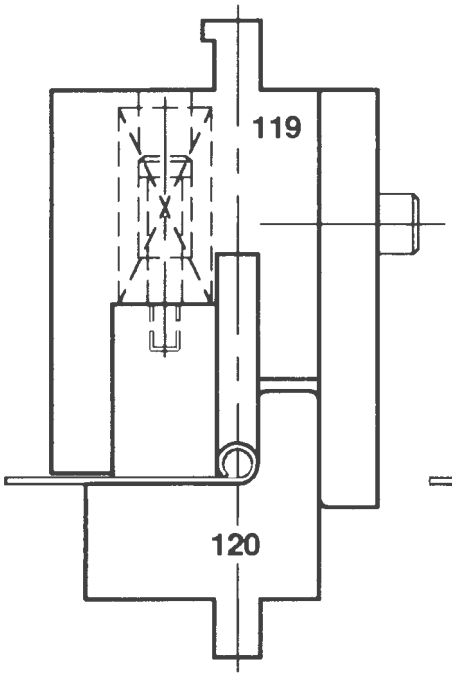


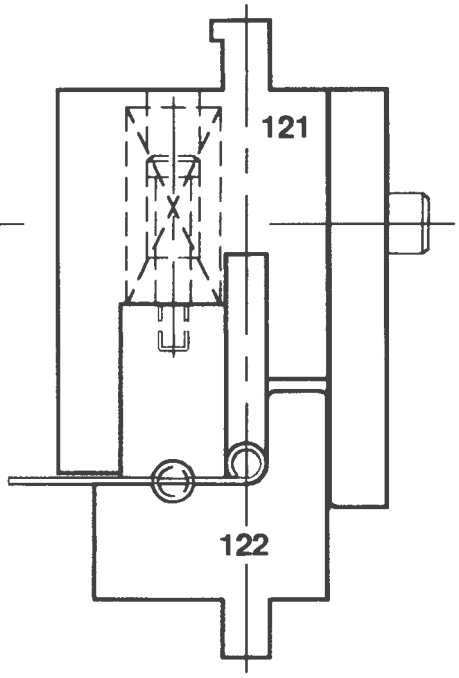
Die set #'s 113-114 produce an off-center curl, 1/4" to 3/4" diameter, in 16 gauge material, in three strokes.



Off-center curls are performed in three strokes in die set #'s 115-116 and on-center curls in four strokes. Curls may range in size from 1/4" in diameter to 1/2" diameter in 16 gauge and lighter.

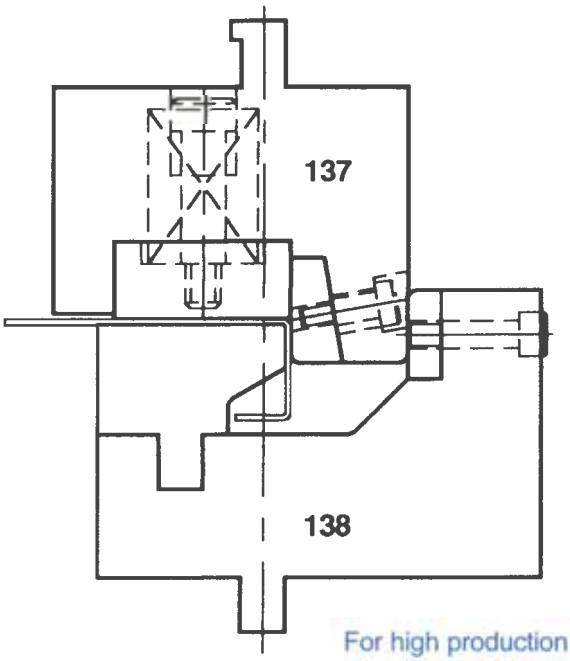


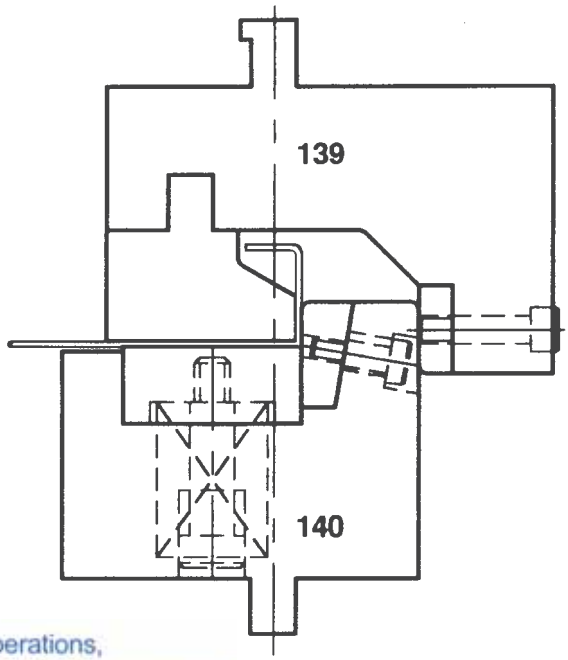




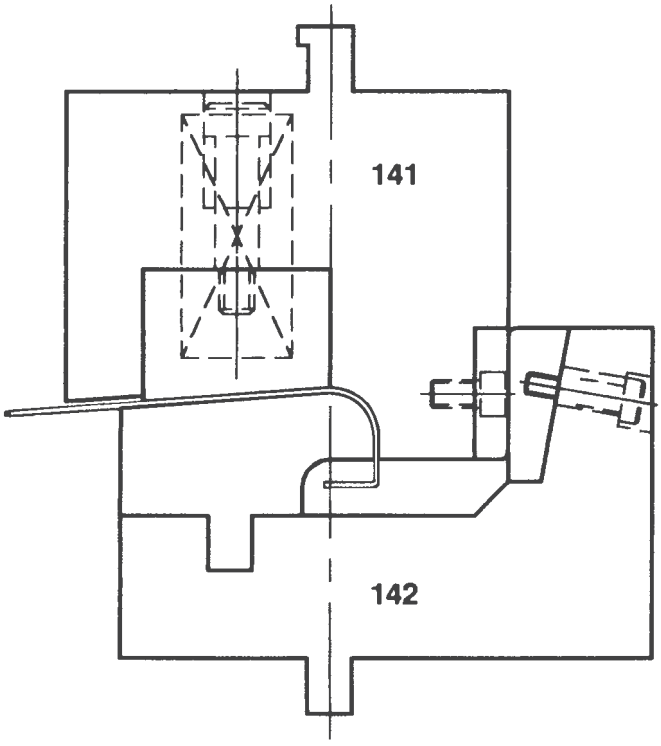
Die set #'s 117-118 and 119-120 produce the tightest and roundest curl that can be formed in two strokes. Dies can be mounted side by side for progressive forming if press has sufficient length.

Die set #'s 121-122 produces an on-center curl in an extra stroke.

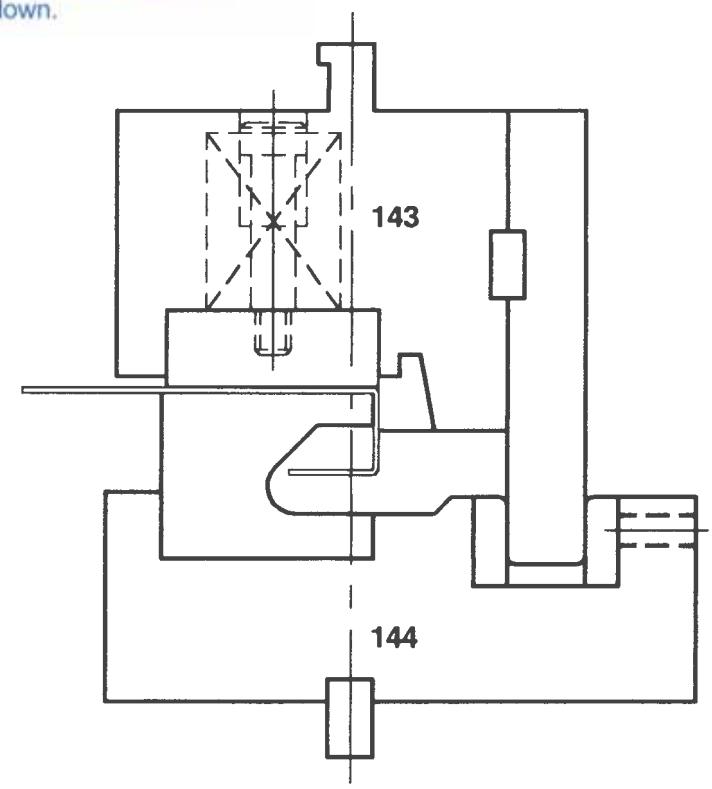




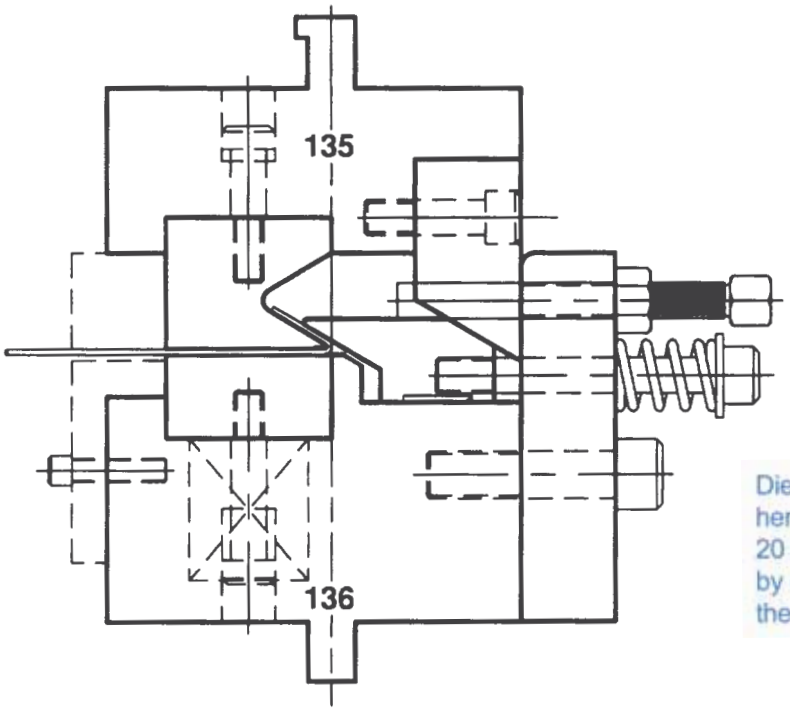
For high production flanging operations, die sets #'s 137-138 & 139-140 are recommended. These dies hold the sheet flat while wiping a 90° flange either up or down.



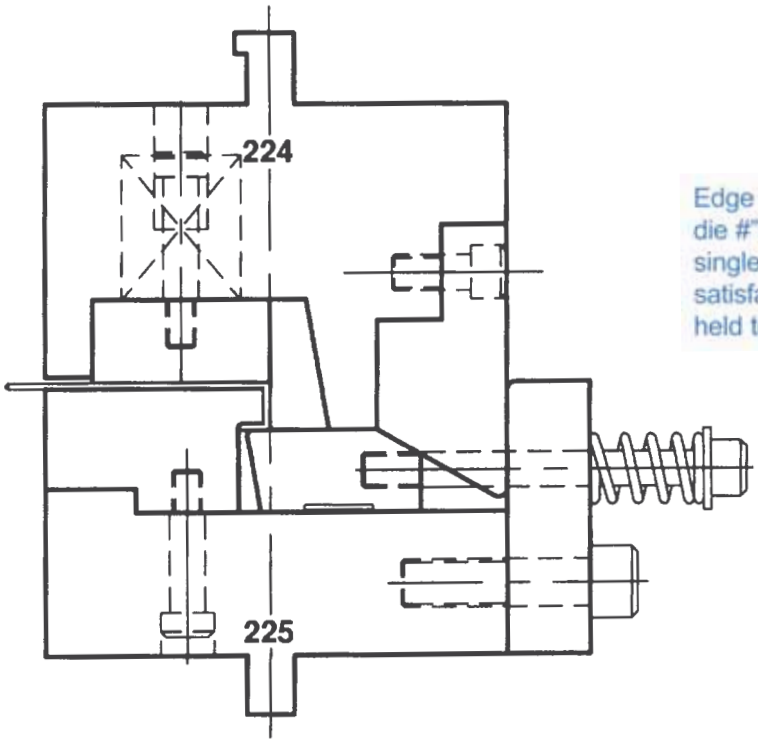
For wiping a radius on the edge of a sheet, die set #'s 141-142 is recommended. Overbend allowance is built into die set to compensate for spring-back. Maximum capacity for illustrated die set is 16 gauge.



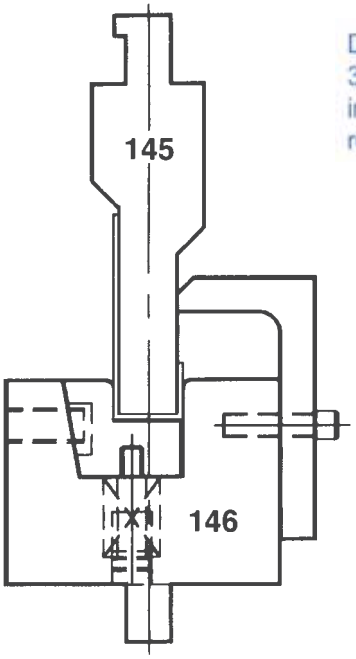
For forming closed flanged forms, die set #'s 143-144 is used.



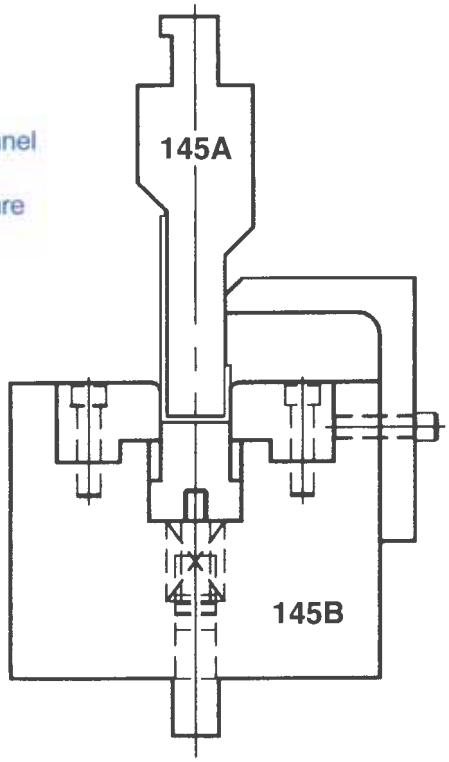
Die set #'s 135-136 is used for high production in hemming wide sheets. This die set is recommended for 20 ga. and lighter. Capacity can be increased to 18 ga. by extending the anvil and adding adjustable angle to the lower section.

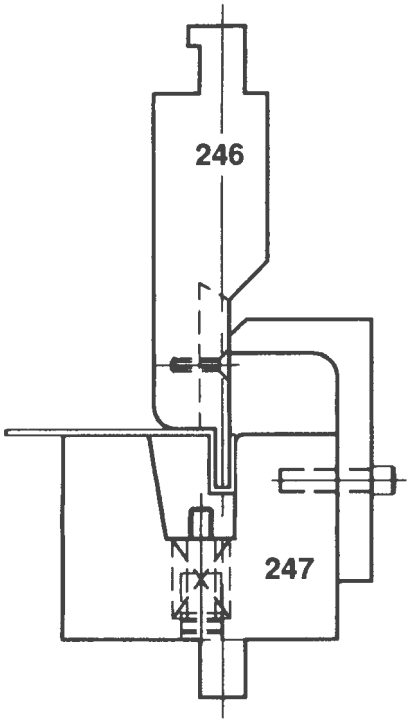


Edge and return bends can be made in one operation with die #'s 224-225. This die permits return bend forms with a single press stroke, without flip up of the sheet. To insure satisfactory operation, return flange dimension must be held to a minimum.

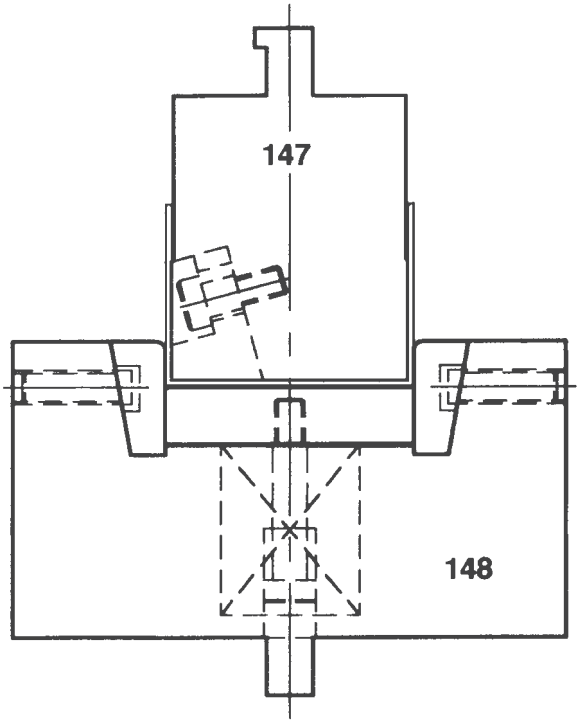


Die #'s 145-146 will form a channel 3/4" wide or less. If flatness is important, die #'s 145A - 145B are recommended.

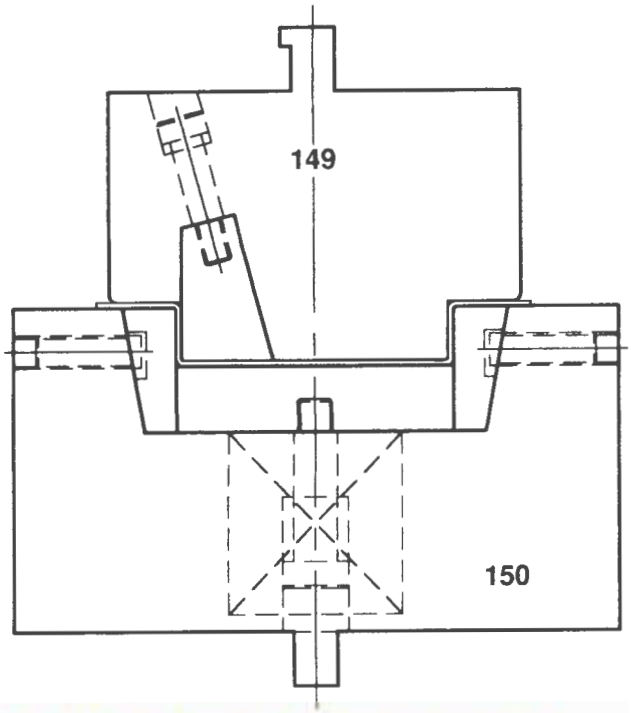




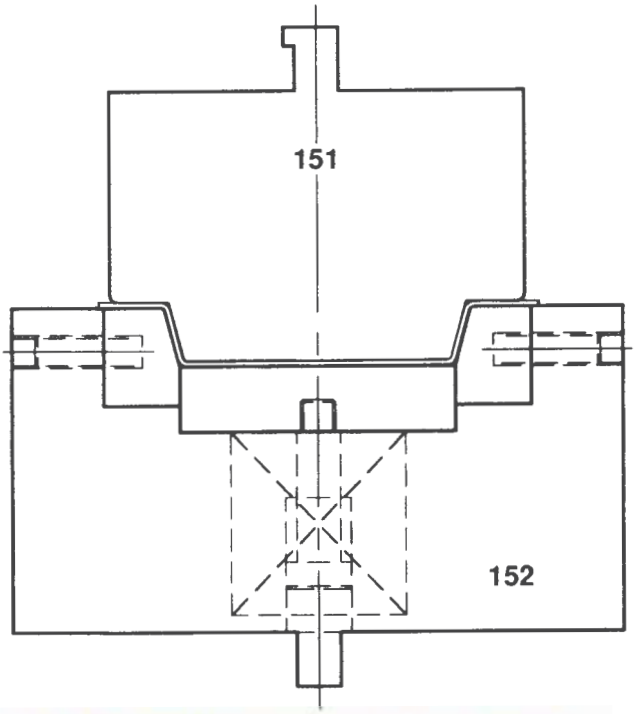
Die #'s 246-247 can be used to form a channel & 90° angle. Removal of part from punch and die is assured with stripper and release wedge.



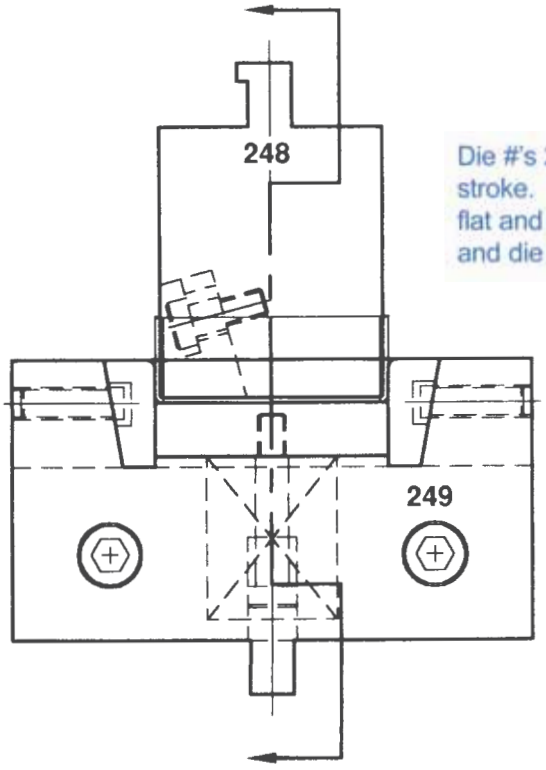
For channels over 3/4" wide, die #'s 147-148 are recommended. Both punch and die have release wedges for quick removal of part.



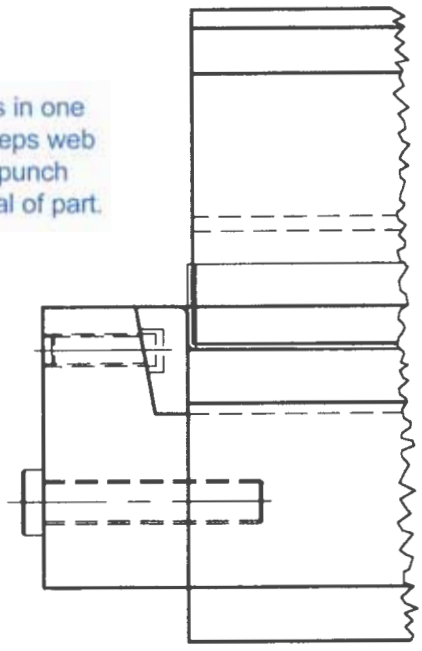
Die #'s 149-150 form a hat channel in one stroke. Spring pad in die keeps web flat and releases wedges in punch and die permits easy removal of part.

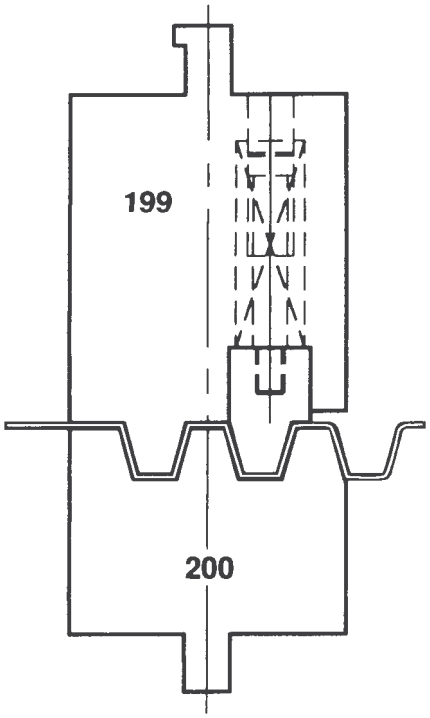


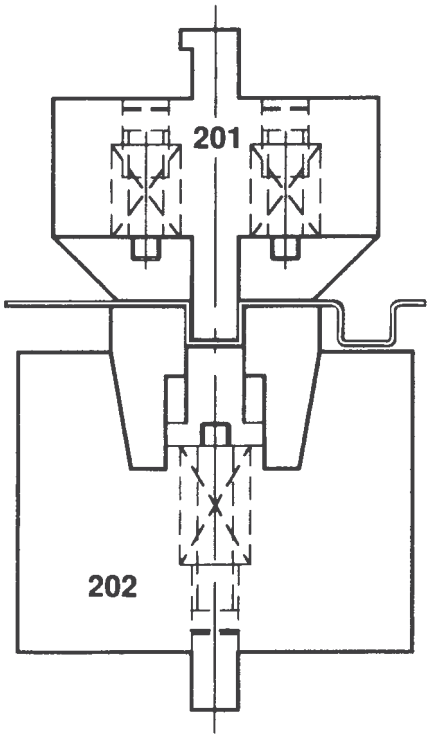
Die #'s 151-152 by tapering side of hat channel, pressure is greatly reduced. Pressure pad assures greater accuracy and also serves to eject the part.

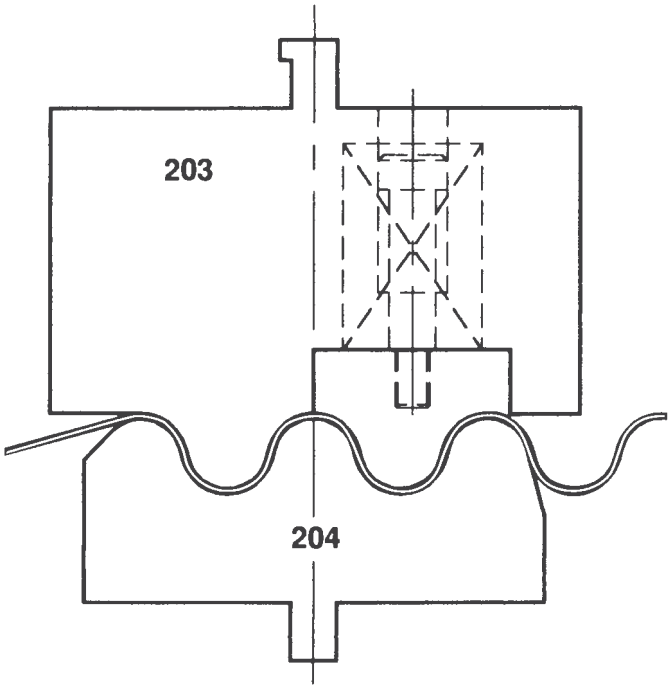


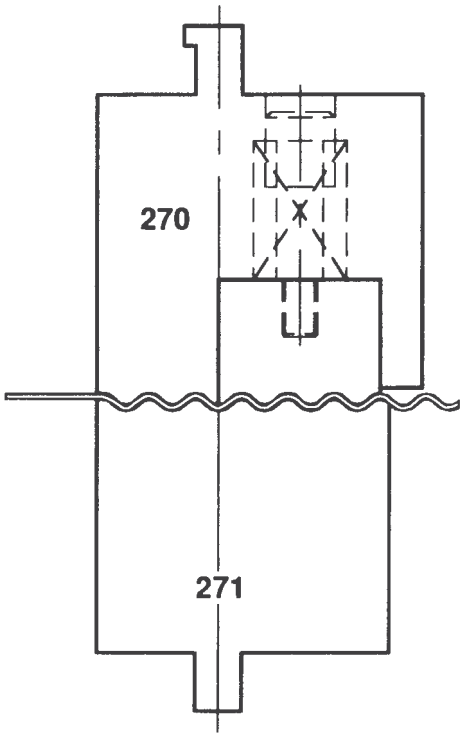
Die #'s 248-249 form 4 sides in one stroke. Spring pad in die keeps web flat and releases wedges in punch and die permits easy removal of part.

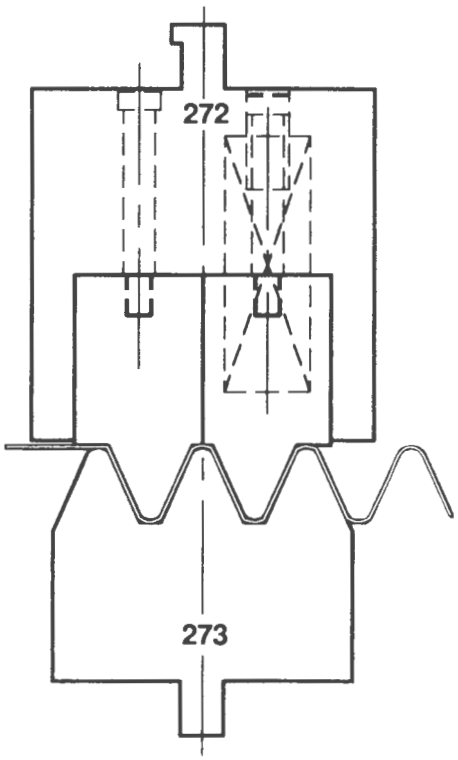


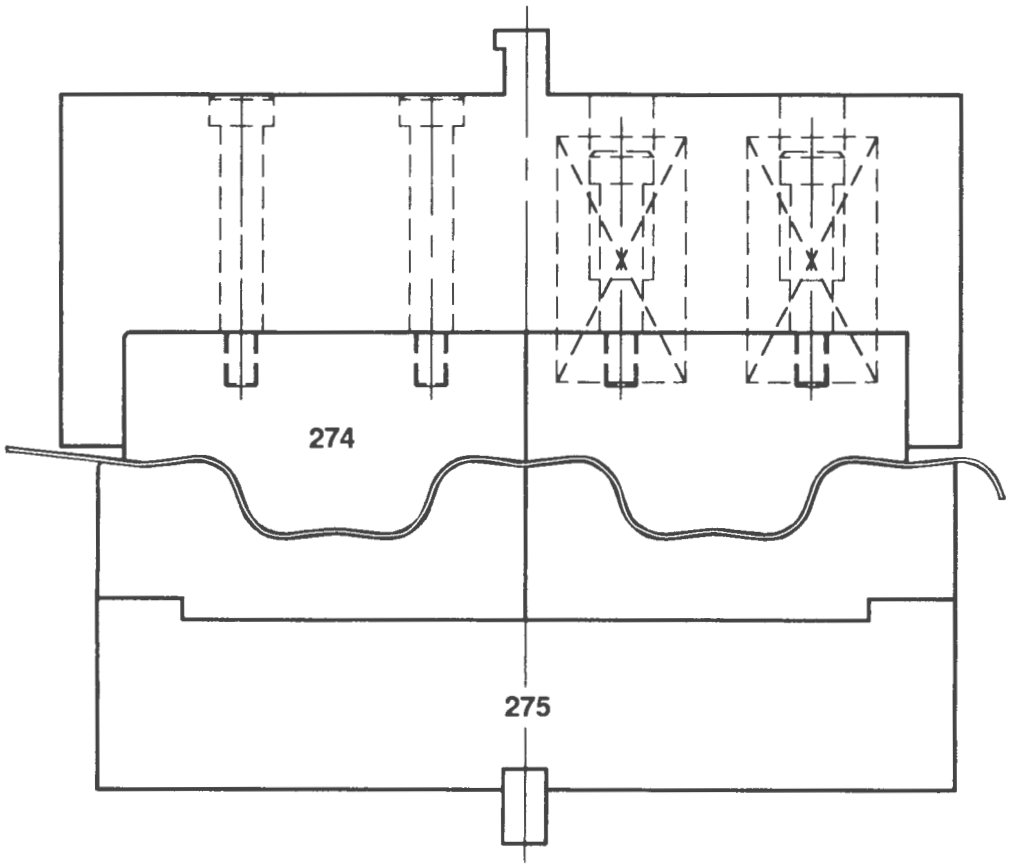

199
200

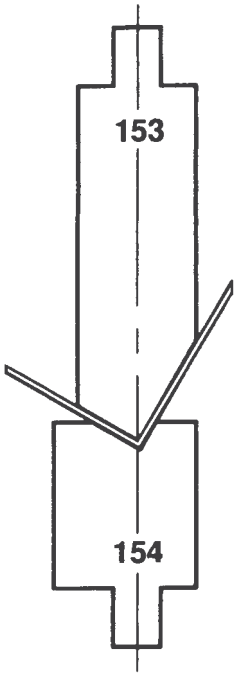

201
202


203
204

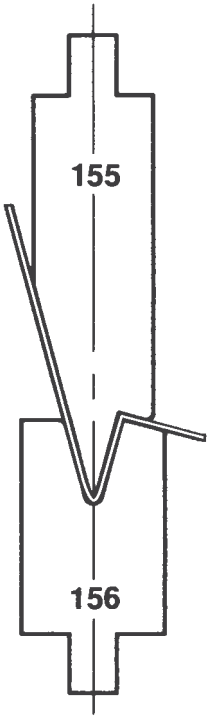

270
271


272
273

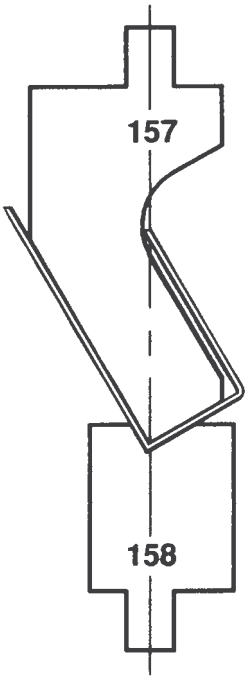

274
275



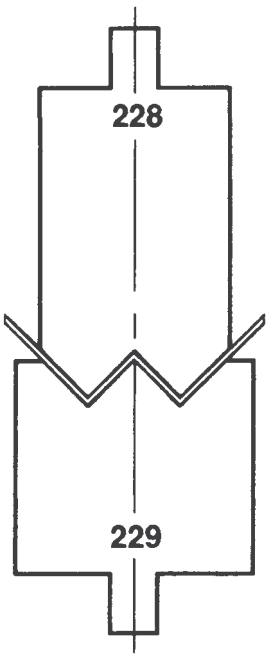
Die set #'s 153-154 has a tipped forming angle to minimize sheet whip up and provide ram clearance.



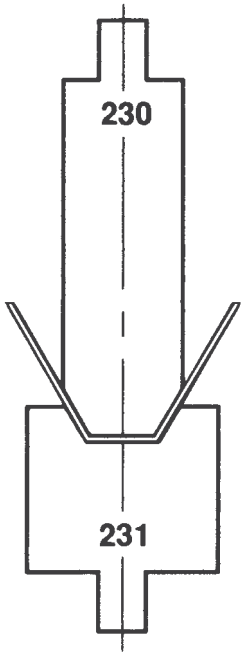
A standing rib can be made with die #'s 155-156. The acute angle is subsequently flattened in another die and operation.



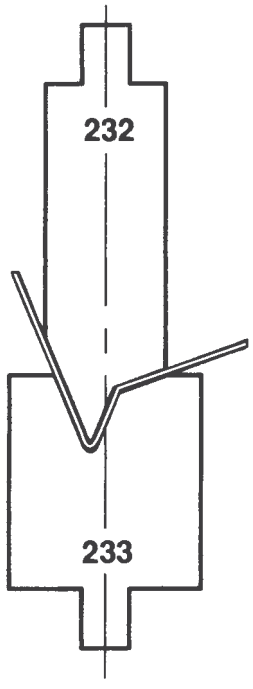
Die set #'s 157-158 has tipped forming angle for deep return flange.



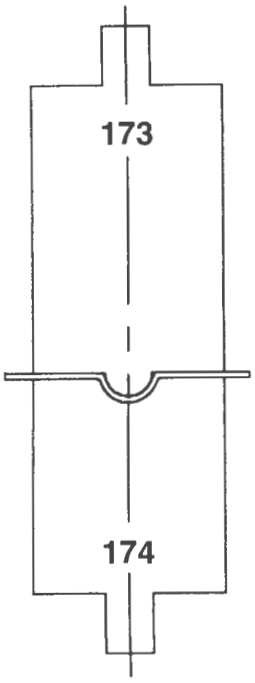
Die set #'s 228-229 forms three bends in one stroke.



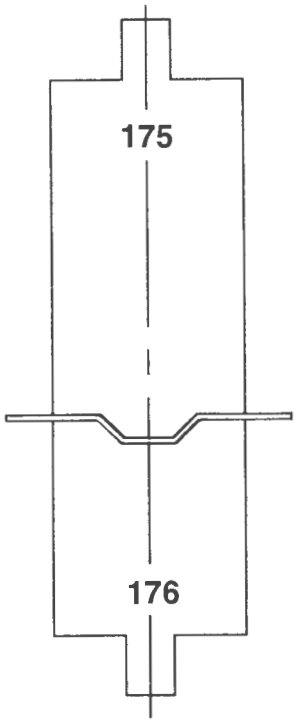
Die set #'s 230-231 forms an open channel in one stroke.



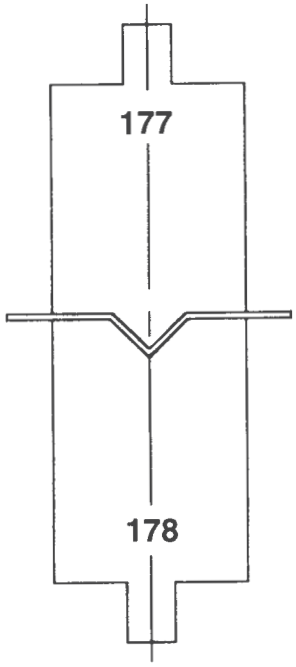
Die set #'s 232-233 forms two bends in one stroke.



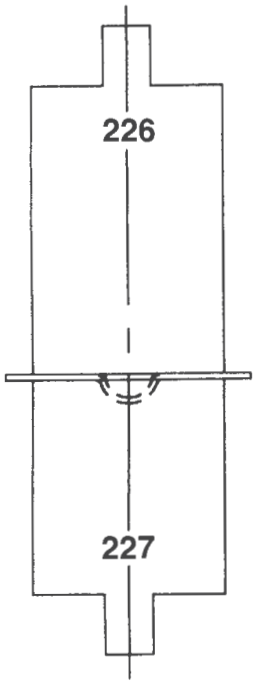
To produce a radius rib, die set #'s 173-174 are very popular.



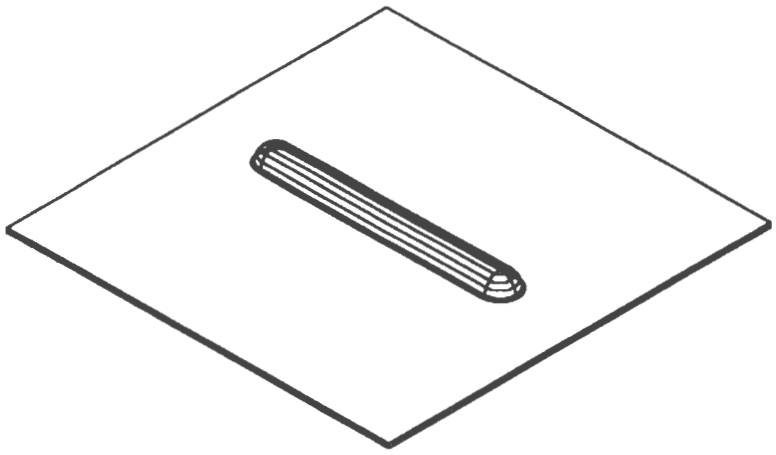
Small open hat channels can be produced in die set #'s 175-176.

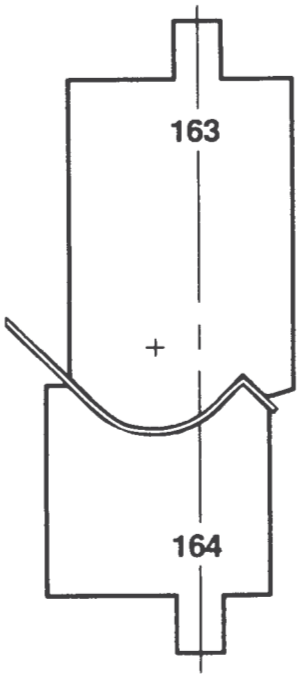


Die set #'s 177-178 produces a vee rib in one stroke.

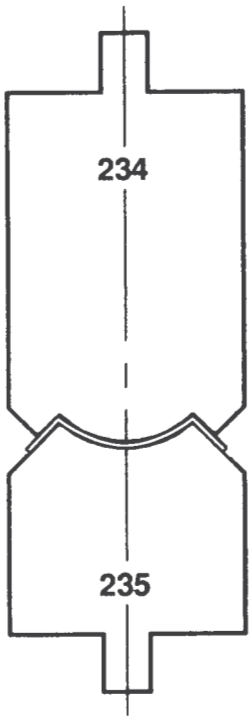


Die set #'s 226-227 forms a rib in the center of the part, as shown in picture.

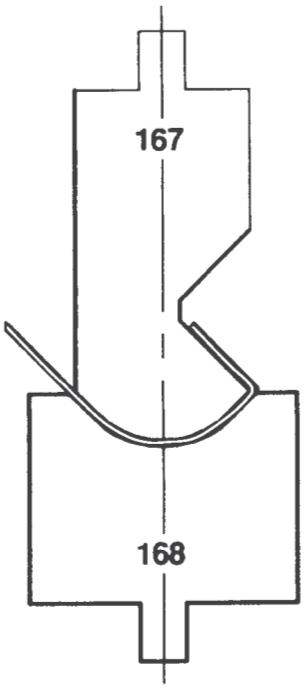


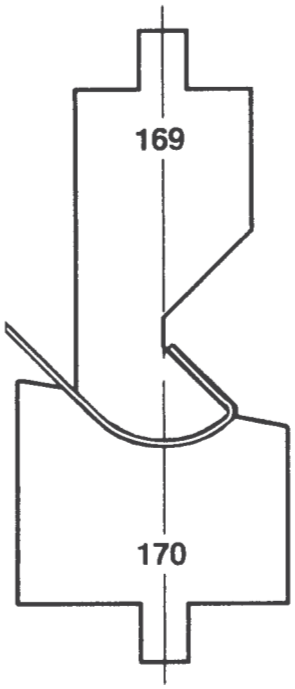


Outside flange on a radius bend can be formed in one stroke.

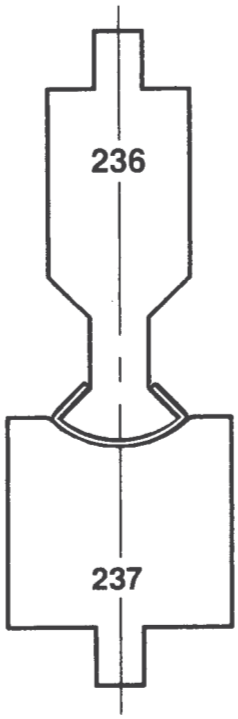


Die #'s 234-235 form two outside flanges with the radius bend.

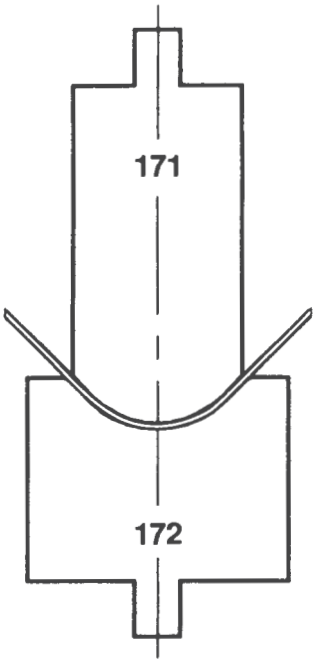




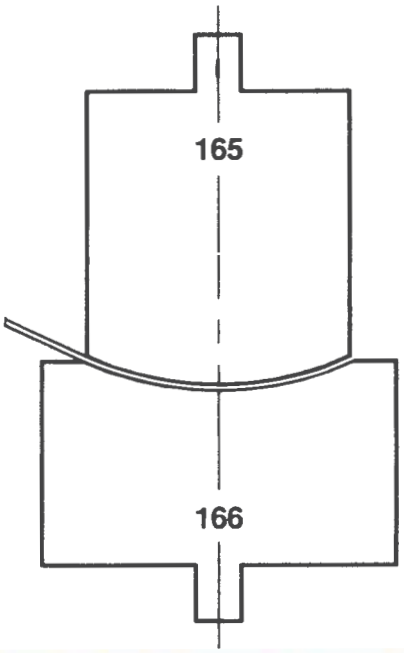
Forming a radius on a sheet having a preformed return flange is accomplished by die set #'s 167-168 & 169-170.



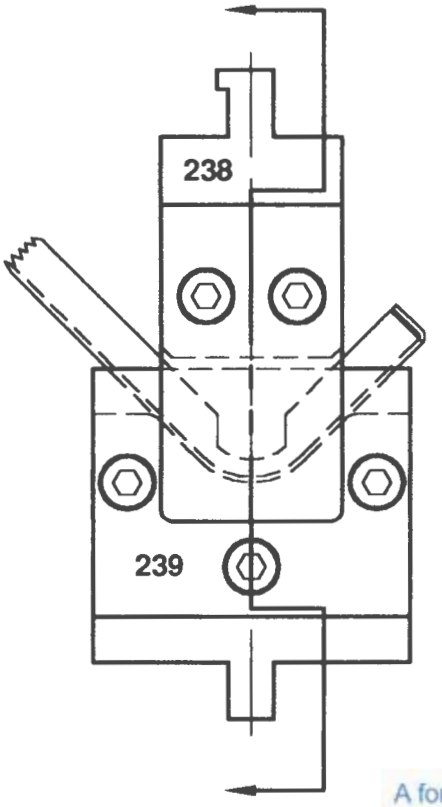
Die #'s 236-237 are used to form a radius with two preformed flanges.

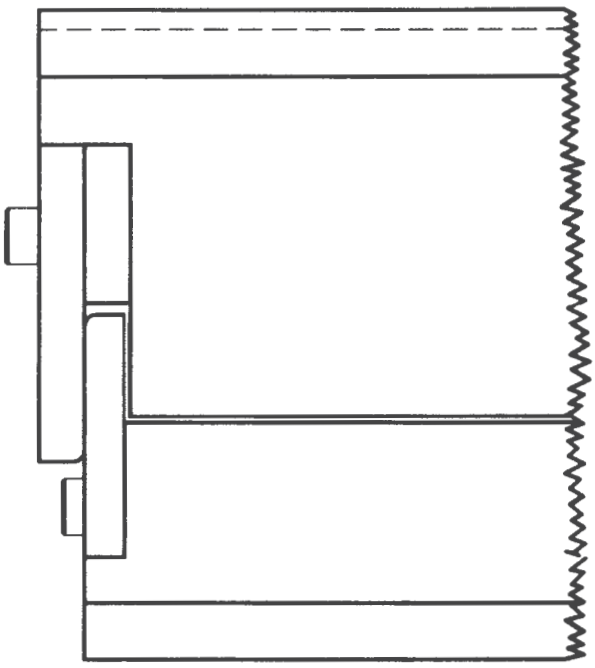


Die #'s 171-172 are a form fitting radius die set with springback allowance built in.



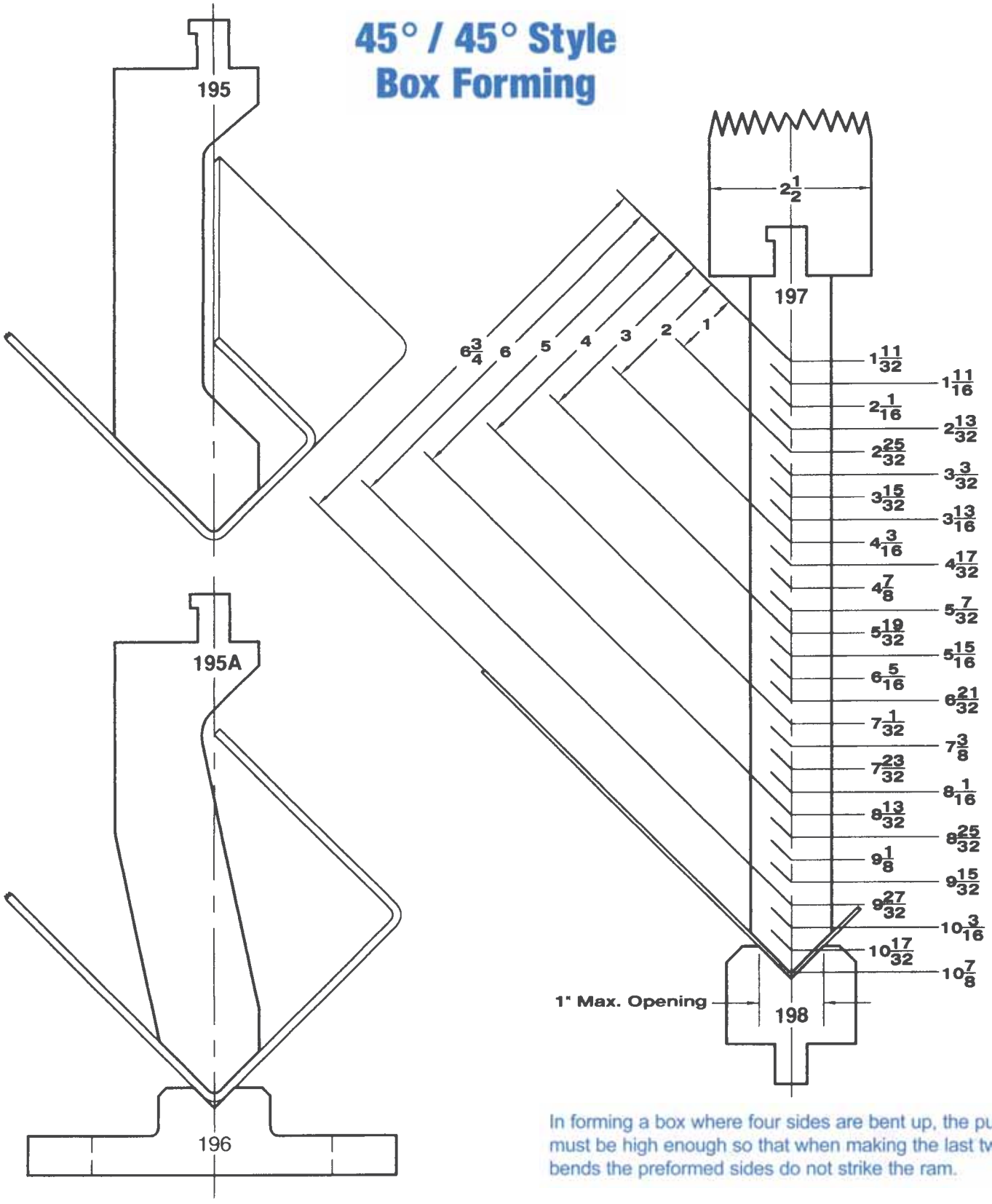
Die set #'s 165-166 is used to radius the edge of a sheet prior to a rolling operation.





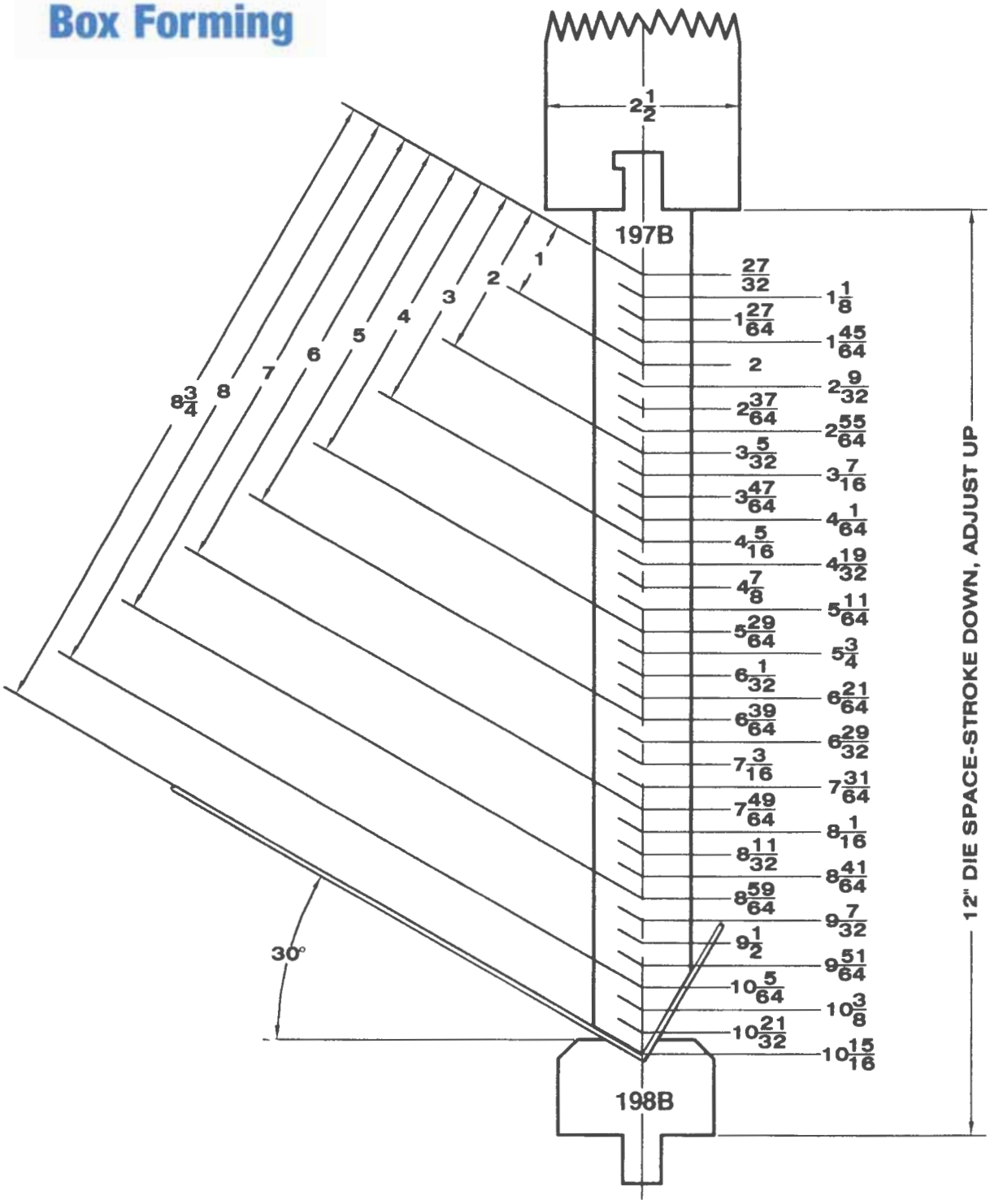
A form fitting die set like #'s 238-239 is necessary when forming a radius with flanges at edges of the radius.

45° / 45° Style Box Forming



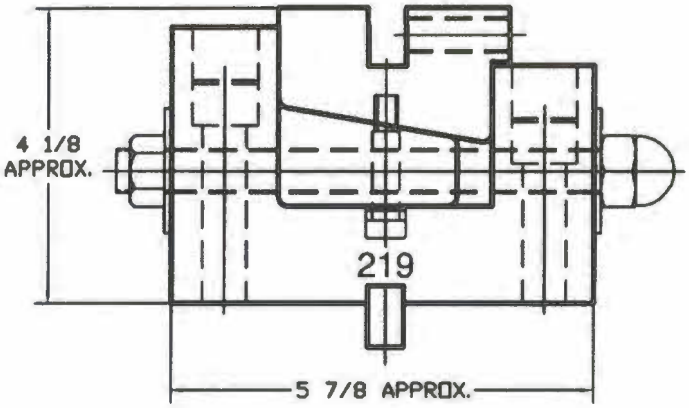
In forming a box where four sides are bent up, the punch must be high enough so that when making the last two bends the preformed sides do not strike the ram.

30° / 60° Style Box Forming



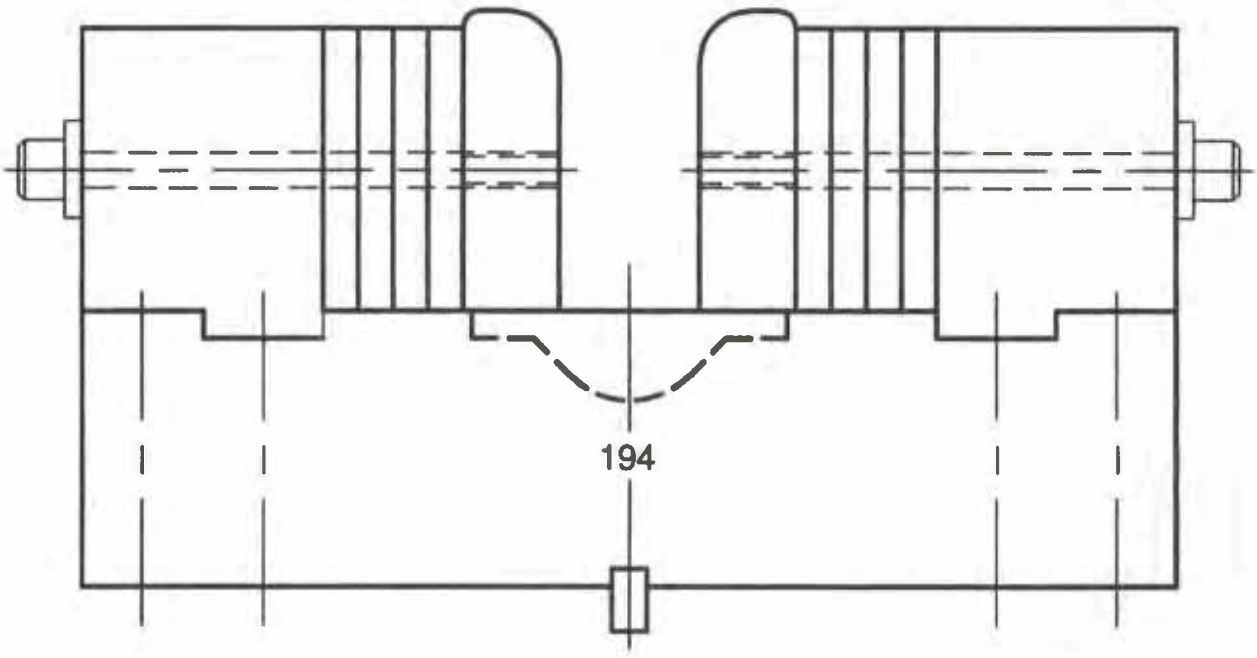
A 30° / 60° type die set has a tipped forming angle to minimize sheet whip up and provide ram clearance on deep box forming operations.

Compensating Die Holder



The Compensating Die Holder eliminates the need to shim dies in order to obtain a true bend for the full length of the brake. Tapered wedges as seen in the above side view are in 6" lengths with an adjusting screw for each section. A full turn of the adjusting screw will raise the floating die holder in that area of the wedge by .010. Therefore it is possible to adjust in the area of the greatest deflection (usually the center of the bed) and then taper out the amount of each wedge adjustment from the center to the ends of the die holder.

Adjustable Female Die



Die #194 could be considered to be one of the most versatile additions to a Press Brake. With this type of tool, openings can be changed from 1/4" to 15". Spacers are provided to produce the opening desired.

Forming Chart

Approximate Pressure in tons per linear foot required to make 90 degree air bend in mild steel.

THICKNESS OF METAL		WIDTH OF FEMALE DIE OPENING																				
GAGE	DEC.	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	**2.2**	1.6	1.2	1.0																	
18	.048		3.5	**2.8**	2.1	1.7	1.3																
16	.060			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

Highlighted figures represent ideal conditions for right angle bending; punch with radius equal to metal thickness and die opening approximately 8 times the metal thickness. Resulting bend has inside radius approximately equal to metal thickness. If stock exceeds 1/2 inch in thickness it is good practice to increase dies opening to at least 10 times the metal thickness. Bending pressures required for other metals as compared to 60,000 P.S.I. tensile mild steel on chart.

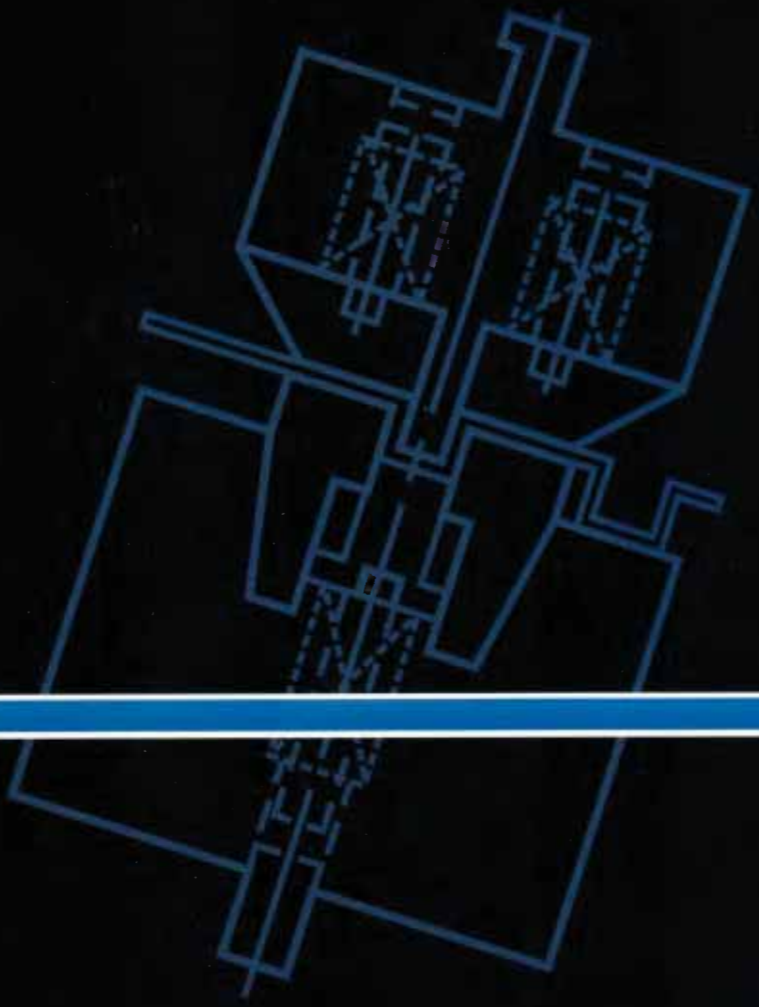
Soft Brass .....50% of pressure listed

Soft Aluminum .....50% of pressure listed

Aluminum Alloy (heat treated) .....Same as steel

Stainless Steel .....50% more than steel

Chrome Molybdenum.....100% more than steel



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