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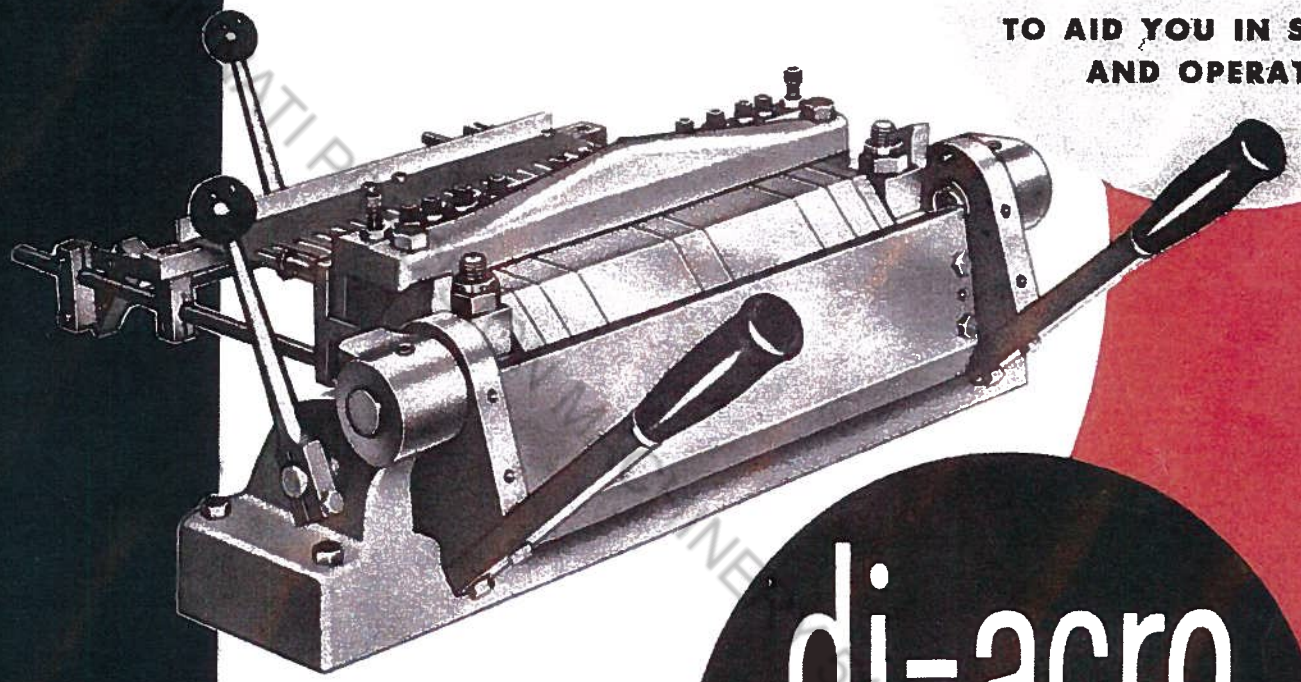
di-acro PRECISION METALWORKING MACHINES

IN GOD WE TRUST

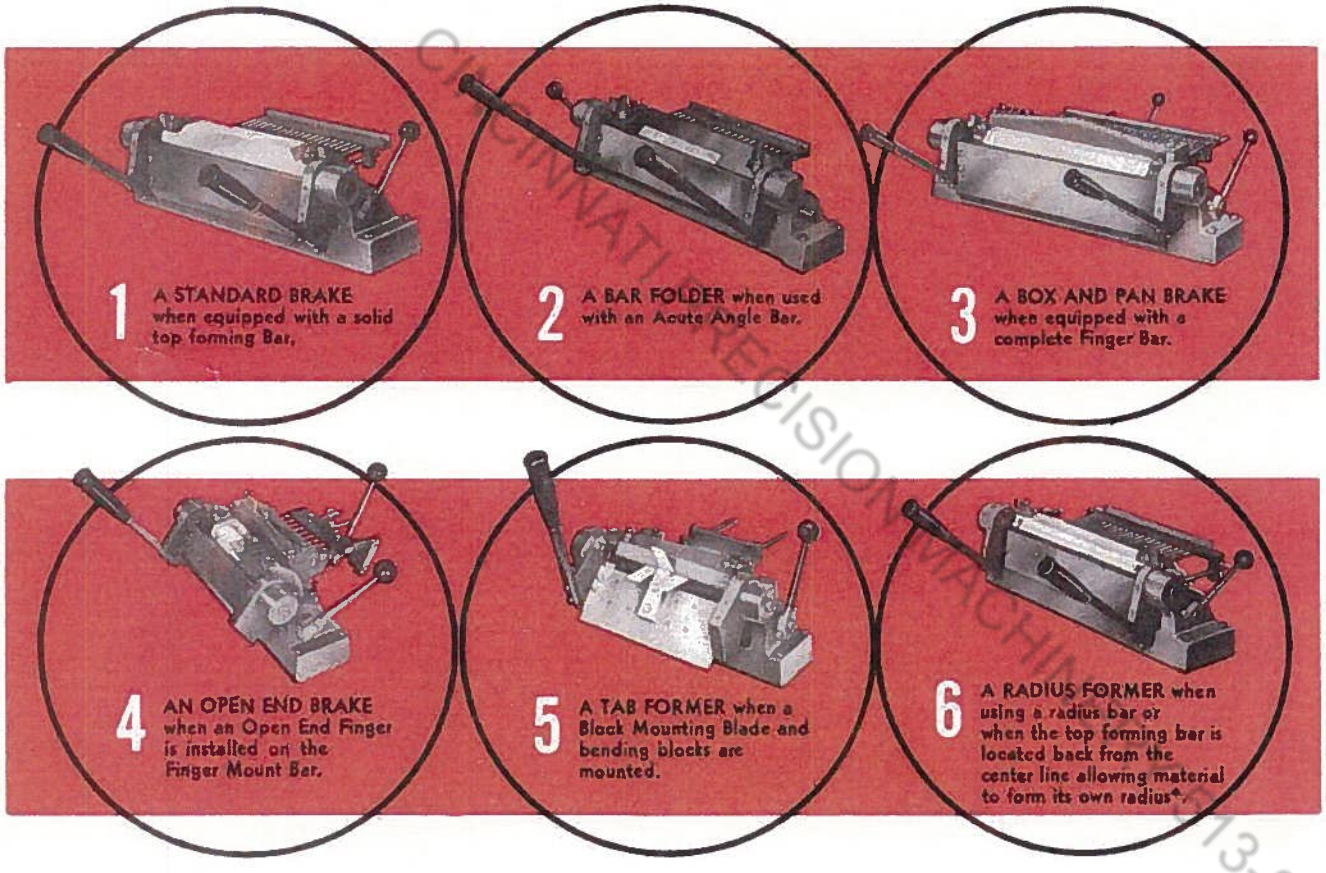
handy quide

TO AID YOU IN SELECTING AND OPERATING



di-acro brakes

DI-ACRO BRAKE IS . . .



versatile di-acro brakes

SIX-IN-ONE FORMING TOOLS

Simply Change the Forming Bar to Meet the Application

*When true centerline radius forming is required, a Di-Acro Radius Brake must be used

OBSOLETE MACHINE

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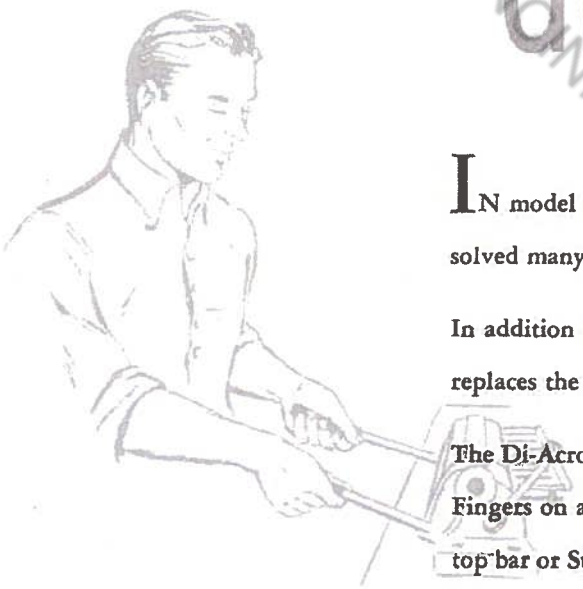
FAST, ACCURATE FORMING WITH . . .

di-acro brakes



IN model shops, experimental laboratories and on production lines a Di-Acro leaf type bending brake has solved many a forming problem . . . perhaps it can do the same for you.

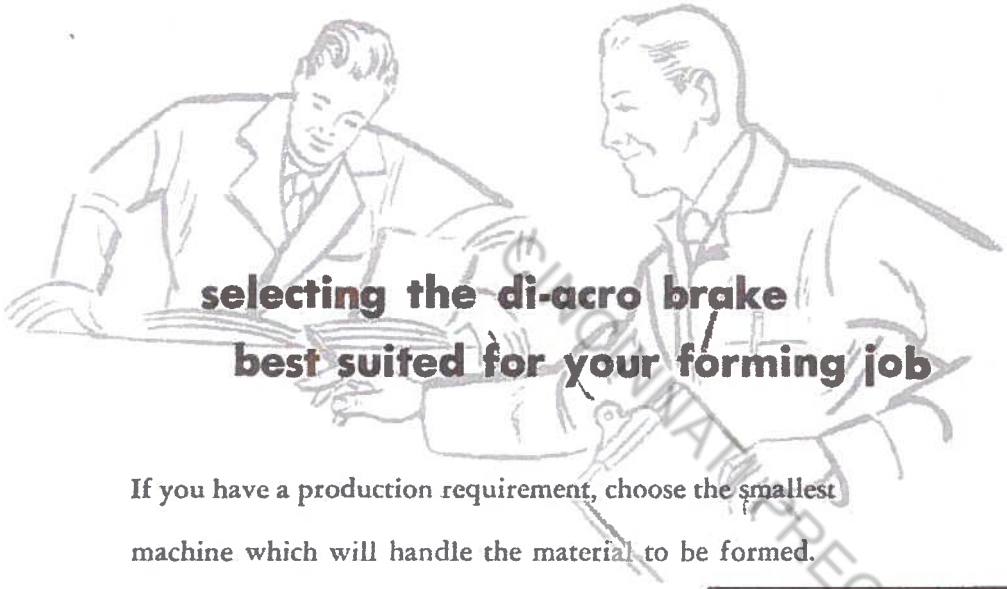
In addition to its versatility and ease of operation, the Di-Acro Brake is a precisely built machine tool which replaces the need for expensive dies and costly short run production on large power machines.

The Di-Acro Standard and Finger Brakes are basically the same. By placing a Finger Mount Bar and a set of Box Fingers on a Standard Brake, you transform it into a Finger Brake, and conversely, by mounting a solid top bar or Standard Bar on a Box Finger Brake it becomes a Standard Brake.

The Di-Acro Radius Brake differs from the Finger and Standard models in that it was designed to form radius bends (with a true center line radius) in material of low ductility. Radius bends can be formed with the Finger and Standard Brakes but not to a true centerline radius. Where and when it is important to the design of a product or part to form radius bends to a true center line, the Di-Acro Radius Brake should be used.

Ten models of the Di-Acro leaf type brake are available. Four Standard Brakes, four Finger Brakes and two Radius Brakes.

Specifications and capacities are listed for each brake on the following pages.



selecting the di-acro brake best suited for your forming job

If you have a production requirement, choose the smallest machine which will handle the material to be formed. You'll get faster production that way.

If you require a brake for use in the Model Shop, as well as for short run production, it would be well to choose a machine which gives you maximum forming capacity.

Select your Di-Acro Brake on the basis of the maximum number of jobs which you can perform with it now.

Don't base your selection on the exceptional jobs which may never materialize.

REMOVABLE HANDLES can be mounted in three different positions for maximum ease of operation and highest rate of production.

THESE CONSTRUCTION FEATURES ASSURE TROUBLE FREE PERFORMANCE—LONG

TOP FORMING BAR AND FINGERS are made of cold rolled steel, hardened and precision ground.

All Di-Acro Brakes are basically the same in construction and operating characteristics. Additional strength is built into each successively larger unit to adequately cover its greater forming range.

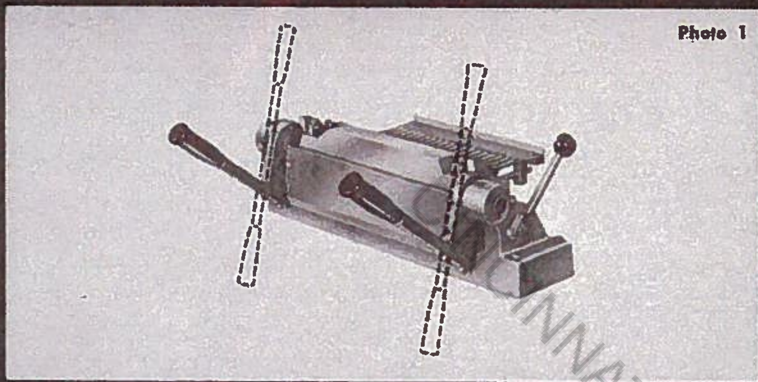


Photo 1


Photo 2

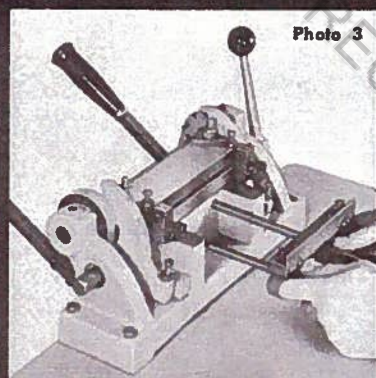


Photo 3

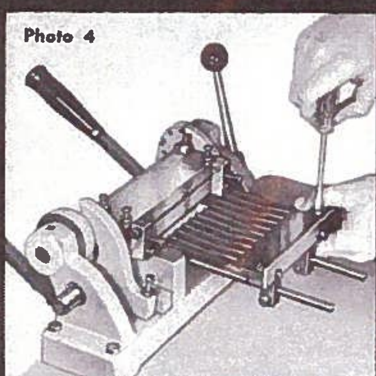


Photo 4

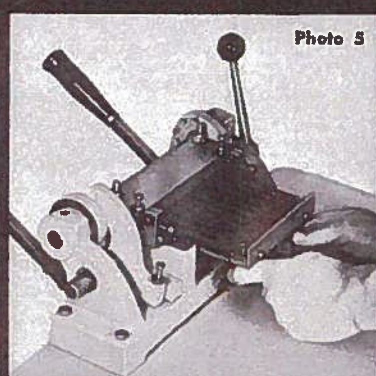


Photo 5

OPERATING INSTRUCTIONS FOR
DI-ACRO STANDARD AND FINGER BRAKE

All Di-Acro Brakes are shipped partially knocked down. To set up for operation, the following procedure is suggested:

SETUP INSTRUCTIONS:

1. Attach handles to right and left brake arms. Three mounting positions are available (photo 1). When 20 gauge material (or lighter) is being formed, it is suggested that the handles be placed at an angular position or vertical with handle grips up. For heavier material, handles should be placed in a vertical position with the handle grips pointing downward. Either of the handles may be removed if material can be formed by the pressure exerted on just one handle.

2. On Di-Acro Standard Brake No. 1 *only*, the adjustable back gauge is also shipped knocked down. To mount, follow this simple procedure:

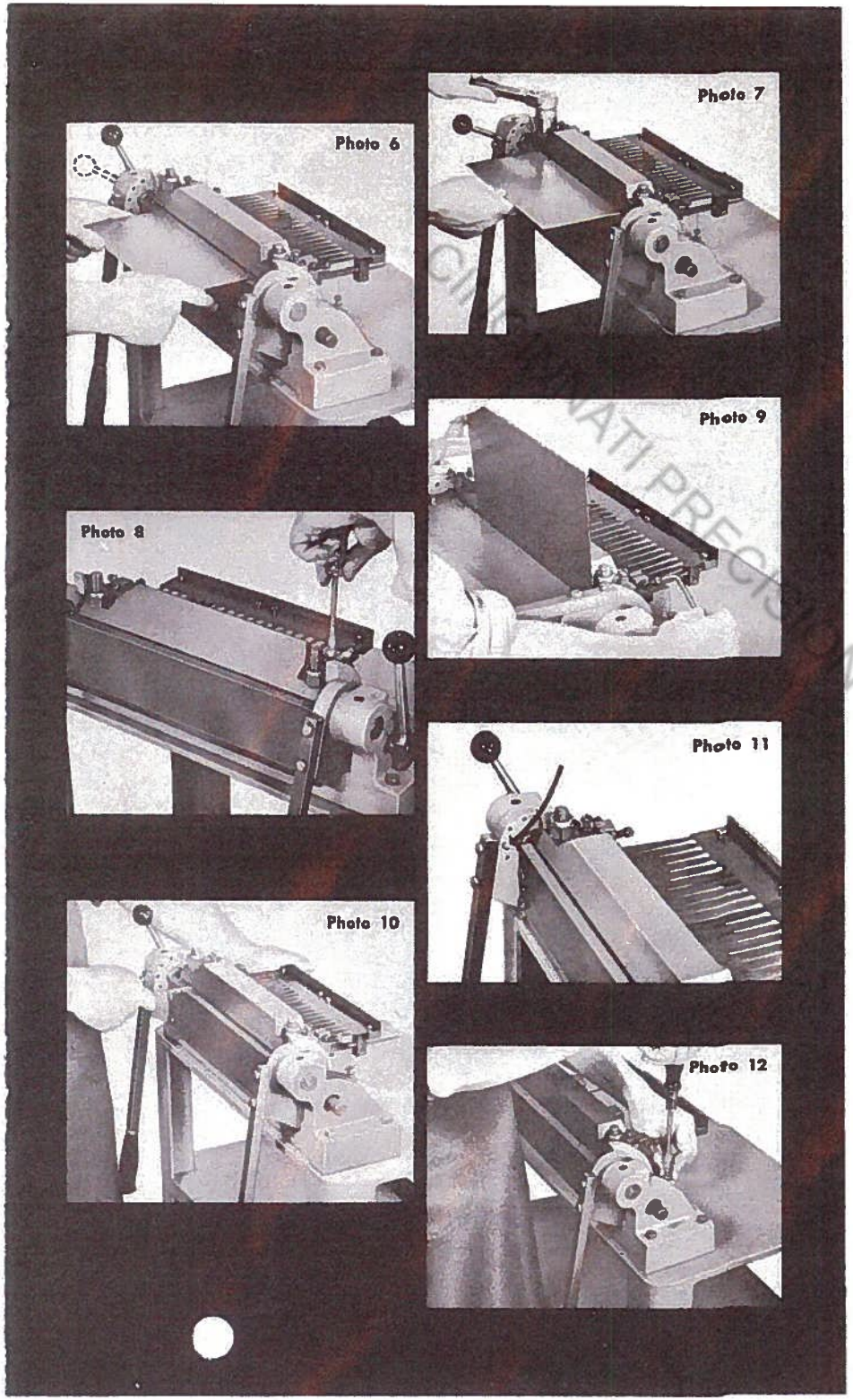
A. Mount gauge rods in rear of brake base (photo 2)

B. Mount Material Gauge on gauge rods (photo 3)

C. Mount Finger Gauge on Material Gauge Bar and lock in place with the two screws provided (photo 4)

D. Slide unit forward until Finger Gauge is between forming Bar and Bottom Plate. Adjust to desired position and lock in place (photo 5)

3. For most efficient operation, bolt the Di-Acro Brake to flat surface such as a rigid bench or stand. Shim if necessary to assure level mounting. The Brake should be positioned as close to the edge of the bench as possible so that the Folding Blade will overhang and allow close reverse bends to be formed in long lengths of material without interference from the bench.



OPERATING INSTRUCTIONS

1. Insert material to be formed between Forming Bar and Bottom Plate and lock material in position by pulling forward on Clamp Handle (photo 6).

Adjust for material thickness by tightening Stop Nuts on top of Forming Bar so that Forming Bar exerts even pressure across the entire width of the inserted material (photo 7).

Enough pressure should be applied by the Forming Bar to securely hold the material during forming. However, the pressure should not be so great that it is difficult to clamp the material in place.

NOTE: The heel of the Forming Bar has an adjustable bolt on each end to provide proper support to the back edge of the Forming Bar. Bolts should be adjusted to allow the material to easily pass below the Forming Bar when the Material Clamp is disengaged. An extremely sharp bend can be obtained by adjusting these bolts so that the heel of the Forming Bar is raised causing greater pressure to be exerted on the material at the forming edge (photo 8).

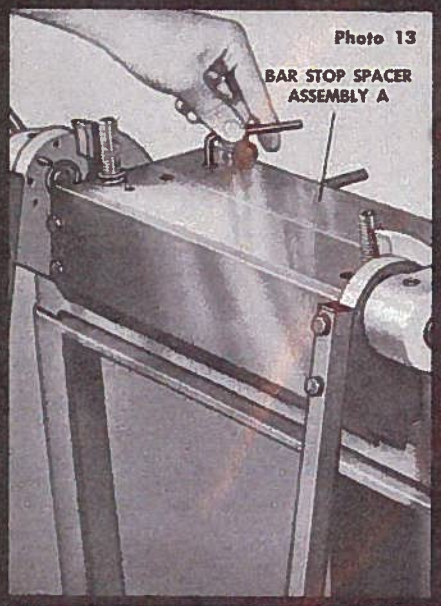
2. Adjust the Forming Bar so that the material being formed will fit snugly between the front edges of the Forming Bar and Folding Blade. To make this adjustment, raise the Folding Blade so that it is in the same plane as the Forming Bar. Adjust bolts on right and left Bar Stops (photo 9) and lock in place. To assure a sharp, even bend along the entire width of material, it is important that the front edge of the Forming Bar be exactly parallel with the forming edge of the Folding Blade.

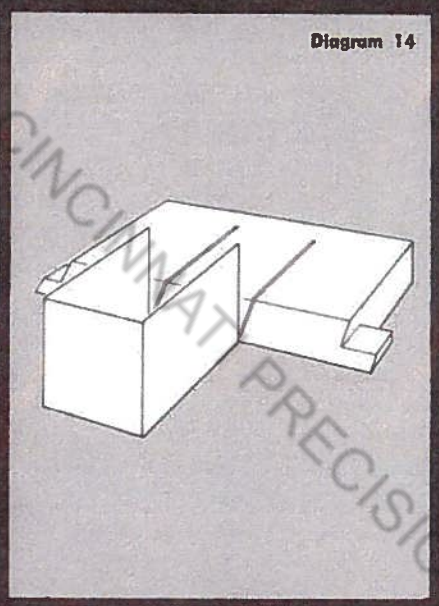
3. Adjust Finger Gauge to properly locate bend in material (photo 10).

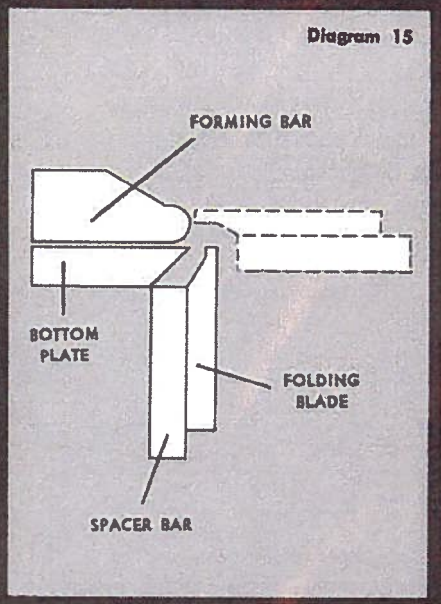
When forming material longer than the depth of the Forming Bar, remove the Finger Gauge and use the Material Gauge to accurately gauge bends.

4. To adjust brake to form the correct degree of bend, first place the dowel pins in the holes provided on both right and left hand Brake Arms. That will give a degree of bend close to that which is desired (photo 11). Fine adjustment can now be made by adjusting the right and left Blade Stops to the required degree of bend (photo 12).

IMPORTANT—If you wish to duplicate a quantity of parts having several bends, the best rate of production can usually be obtained by forming the first bend in all parts before adjusting the brake for the next bend.







TOOLING DI-ACRO BRAKES

All Di-Acro Brakes as mentioned previously can be converted into a Standard Brake, Box and Pan Brake, Bar Folder, Open End Brake, Radius Brake and Tab Forming Brake by simply mounting the proper Forming Bar on the Brake. For example, to convert a Di-Acro Standard Brake into a Box and Pan Brake—

1. Remove the Standard Forming Bar, Material Gauge and Bar Stops.
2. Mount Bar Stop Spacer Assembly A (photo 13) and replace Bar Stops using longer Block Mounting Bolts supplied with Spacer Assembly. Mount twist finger gauges on Material Support Bar.
3. Mount the Box Finger Bar.

Forming Bars for special forming operations can also be mounted on a Di-Acro Brake. They can be purchased from the factory or can be made in your own shop.

FORMING LARGE BOXES

When forming a box with dimensions greater than the capacity of a Di-Acro Finger Brake, a special forming bar with the required dimension can be made and mounted in place of the Box Finger Bar. The bar can be slotted to the required depth (diagram 14).

When forming operations require that a part of the Standard or Special Forming Bar be cut away to relieve interference, it can be done provided the remaining portion of the bar has sufficient strength to withstand the bending pressure of the material to be formed. The bottom side of the Forming Bar can also be slotted or undercut to accept previously formed edges or projections.

RADIUS FORMING

Radius bends can be formed on a Standard or Finger Brake in two ways:

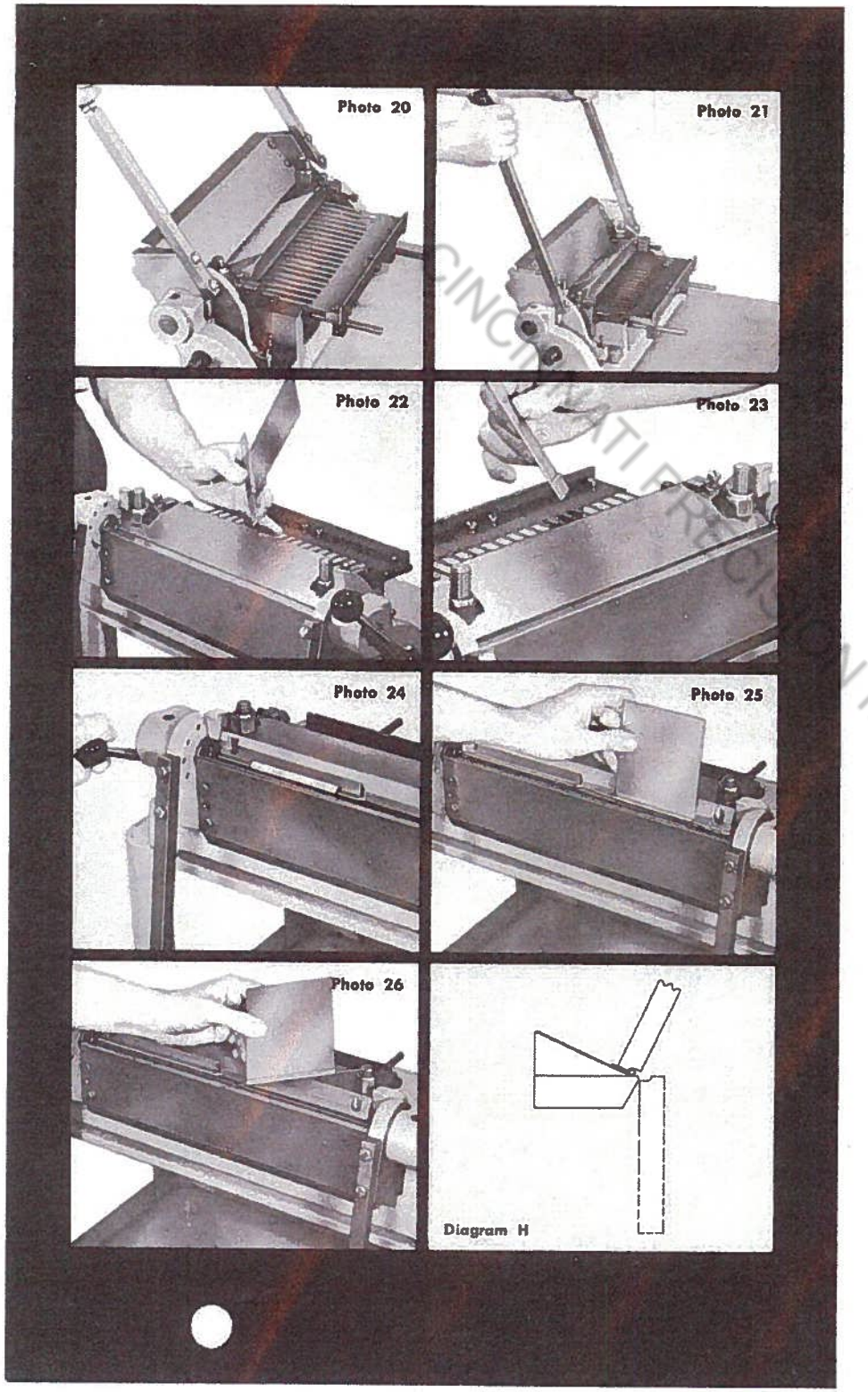
1. By moving the forming bar back from the center line which will allow material to form its own natural radius.
2. By replacing the forming bar with a Radius Bar.

To form a radius bend of 90° or less, mount the desired Radius Bar and reverse the Folding Blade so that its narrow edge faces upward and outward (diagram 15). When forming radius bends greater than 90°, use additional spacers so that the Folding Blade is positioned further out from forming center line allowing it to swing in an arc slightly greater than that of Radius Bar.

The Radius Bars listed for Di-Acro Brakes on page 12 are also available for Di-Acro Standard and Finger Brake No. 2 and 4.

FORMING BENDS GREATER THAN 125°

The Di-Acro Standard and Box Finger Bars are designed to form bends up to 125°. Using an Acute Angle Bar makes it possible to form bends up to 150° (photo 16). These bars are available from stock. Special Bars having greater angularity than 150° can be made on special order by the factory or in your own shop. Sufficient strength must always be retained in the forming edge to withstand the bending pressure



FORMING SINGLE HEMS

Single hems can be formed with a Di-Acro Brake in just two operations. Form an acute angle in the first operation (photo 20). Flatten the material in the second (photo 21). All light material can be formed in this manner with a Standard Forming Bar.

When forming a hem in heavier material, it is suggested that an Acute Angle Bar be used to form a bend greater than the 125° obtained with a Standard Forming Bar—the greater angle eases the flattening operation.

NOTE: When performing the flattening operation, move the Forming Bar back from the center line of forming approximately twice the thickness of the material. This provides a space for the material between the Forming Bar and the edge of the Folding Blade as it is being flattened.

When flattening heavy material, it is sometimes necessary to use a Standard Forming Bar rather than an Acute Angle Bar because the angle of the Standard Bar provides a greater space for flattening of the heavier material. *When flattening, the Forming Bar should always be locked against the Bottom Plate.*

If an open hem is desired for insertion of flat material (photo 22), follow the same procedure except insert a piece of spacer material in the angle formed by the first bend. Remove spacer material after the flattening operation.

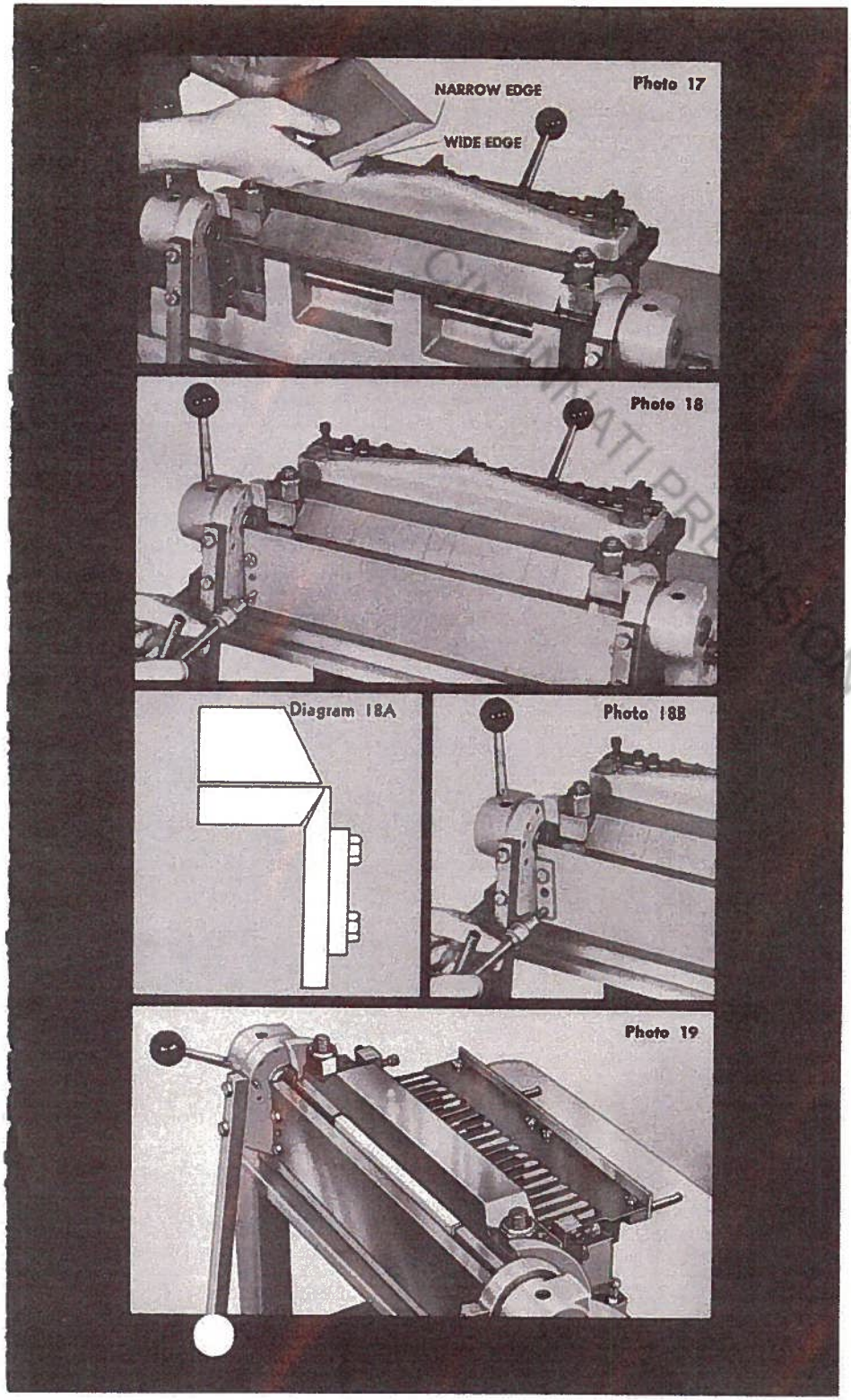
FORMING DOUBLE HEMS

To form a double hem (photo 23,) first form a single hem as described in the preceding operation and then duplicate the operation. It is especially important that sufficient material clearance (3-4 times the thickness of material) be provided between the edges of the Forming Bar and the Folding Blade.

FORMING MATERIAL WITH A WIRE EDGE

Forming material around a length of wire can be done in just two operations by using a Folding Blade with a radius groove cut along its inner edge and a special Radius Bar that has a flat forming edge on one end for the flattening operation. First form a radius bend on the Radius Side of the Forming Bar (photo 24). Then insert the wire in the radius bend and close by placing the material against the flat edge of the Forming Bar and flattening (photo 25, 26).

The groove in the Folding Blade provides clearance for the wire and allows the material to be closed around the wire during the flattening operation (diagram H). The Folding Blade must be grooved the diameter of the wire and twice the thickness of the material.



FORMING CLOSE REVERSE BENDS

All Di-Acro Standard and Finger Brakes are equipped with a special Folding Blade having a wide edge and a narrow edge (photo 17). The wide edge is used for the majority of the forming operations. However, when it is desirable to form close reverse bends in material it is necessary to use the narrow edge.

To set up the Folding Blade for close reverse bends, remove the bolts on the right and left side of blade (photo 18), also the spacers located between the Folding Blade and the Brake Arms. Then reverse the Folding Blade so that the beveled side butts up against the beveled side of the Bottom Plate (diagram 18A). The narrow edge of the Folding Blade is then at the center line of forming.

Both spacers should be placed on the outside of the Folding Blade so that the same bolts may be used for holding the Folding Blade in place (photo 18B).

When forming sharp angles in heavy material, first form a 125° bend with a Standard Forming Bar, then complete the bend with a special Forming Bar having the required angle. This procedure will prevent distortion to the thin edge of the special Forming Bar.

RELIEVING INTERFERENCE FROM THE BOTTOM PLATE

The Bottom Plate on a Di-Acro Brake is bolted to the Base Casting and acts as a material rest. It also makes for rigidity and accuracy during the forming operation.

If you find that this plate interferes with the forming of a part having edges protruding downward, the interference can usually be overcome by grooving or cutting away a portion of the Bottom Plate.

FORMING NARROW CHANNELS

Bending operations such as the forming of extremely narrow channels can be easily done on a Di-Acro Brake by machining a Forming Bar so that the edge will not interfere with the part to be formed (photo 19). As mentioned previously, sufficient strength must be retained in the Forming Bar to withstand bending pressure.

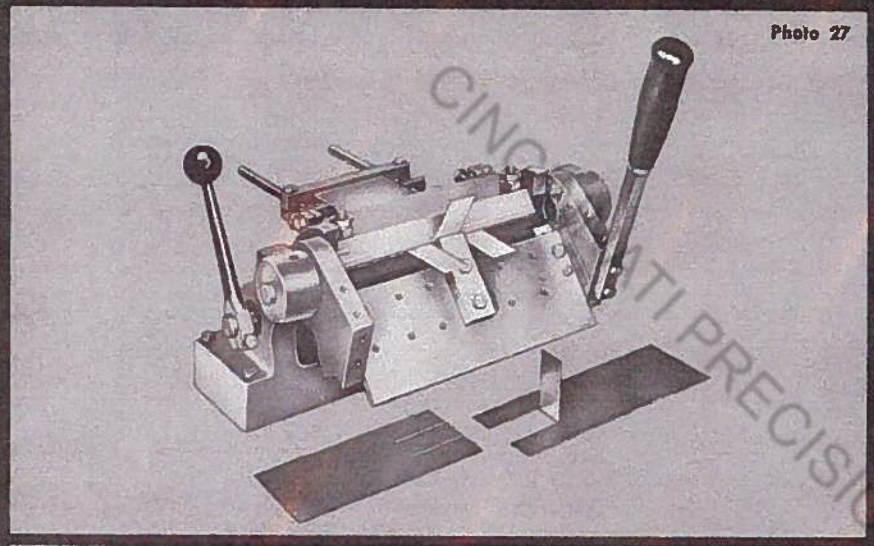


Photo 27

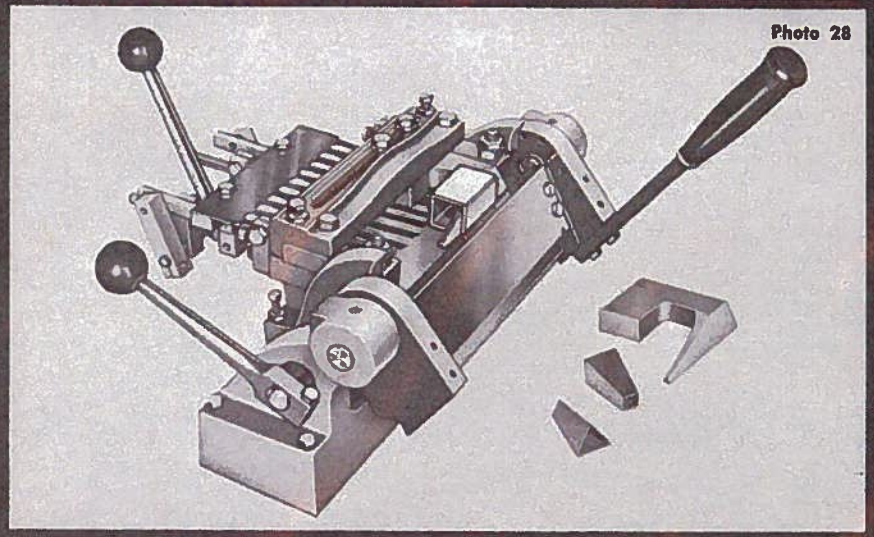


Photo 28

TAB FORMING

Tab Forming—forming a center section of a part without disturbing the flat material on either side of it—is easily performed on a Di-Acro Brake with a Block Mounting Blade (photo 27). Numerous tapped holes in the Block Mounting Blade allow one or a series of bending blocks to be mounted for the production of special parts.

Brakes No. 1 and 2 use a $\frac{3}{8}$" thick Block Mounting Blade, and the No. 3 and 4 models use a $\frac{1}{2}$" thick Blade. The Block Mounting Blade is positioned approximately $\frac{3}{4}$" below the Bottom Plate.

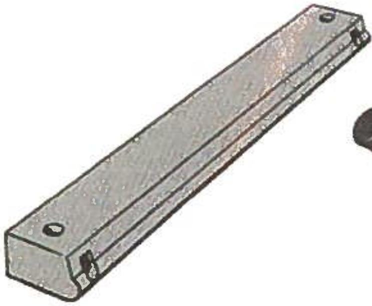
Proper size bending blocks can be made to your specification or are easily prepared in your own plant.

FORMING RECTANGULAR, SQUARE AND TAPERED SHAPES WITH THE OPEN END FINGER

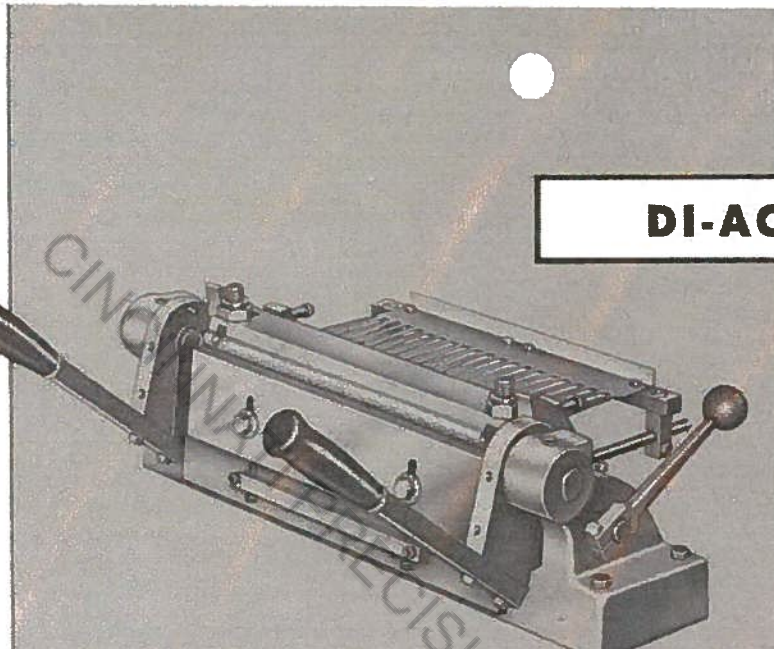
The Open End Finger (photo 28) makes it possible to form triangular, square and rectangular tubes as well as other parts that entirely enclose the Forming Bar. The formed part is easily slipped off the open end of the Finger. The Open End Finger is mounted on the Finger Mount Bar used with the Box Finger Brake setup.

DI-ACRO BRAKE	No. 1	No. 2	No. 3	No. 4
Open End Finger *	¾" x 3"	1½" x 6"	1½" x 6"	1½" x 9"
Maximum Capacity— Sheet Steel	18 gauge	18 gauge	18 gauge	18 gauge
Net Weight	2 lbs.	6 lbs.	6 lbs.	9 lbs.

*The tapered shape of the Open End Finger allows forming parts of smaller dimensions when the length of the part is less than the dimension shown here.



A complete range of radius bars from 1/16" to ½" can be quickly mounted on this brake to provide the exact radius for bending various gauges of alloy materials.



Di-Acro Radius Brake No. 2

Di-Acro Radius Brake No. 4

DI-ACRO RADIUS BRAKES

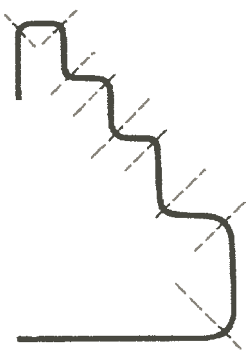
Primarily designed for use by the Aircraft Industry, the Di-Acro Radius Brake forms radius bends in materials of low ductility—without fracture—to standards recommended by the Air Force for Aircraft Construction.

The possibility of fracturing low ductile material has been eliminated because the Folding Blade swings a true arc around the edge of the Radius Bar, thus positively controlling the material during the forming operation.

Also, the crystalization of material during center line radius forming has been reduced because the bending stress on the material is distributed evenly over the entire forming area.

Equipment supplied with the Di-Acro Radius Brake includes a Standard Forming Bar (installed at factory) for sharp "no radius" bends and a choice of ONE of the Radius Bars listed below. Each Radius Bar contains two radius edges. Additional Radius Bars are available on special quotation.

All accessories for use with Di-Acro Standard and Finger Brakes can be mounted on Di-Acro Radius Brake. Two models of the Radius Brake are available.



The Di-Acro Radius Brake forms a true center line radius in sheet materials.

STANDARD EQUIPMENT INCLUDES:

Standard Forming Bar
Choice of ONE Radius Bar
Standard Gauge

AVAILABLE ACCESSORIES ARE:

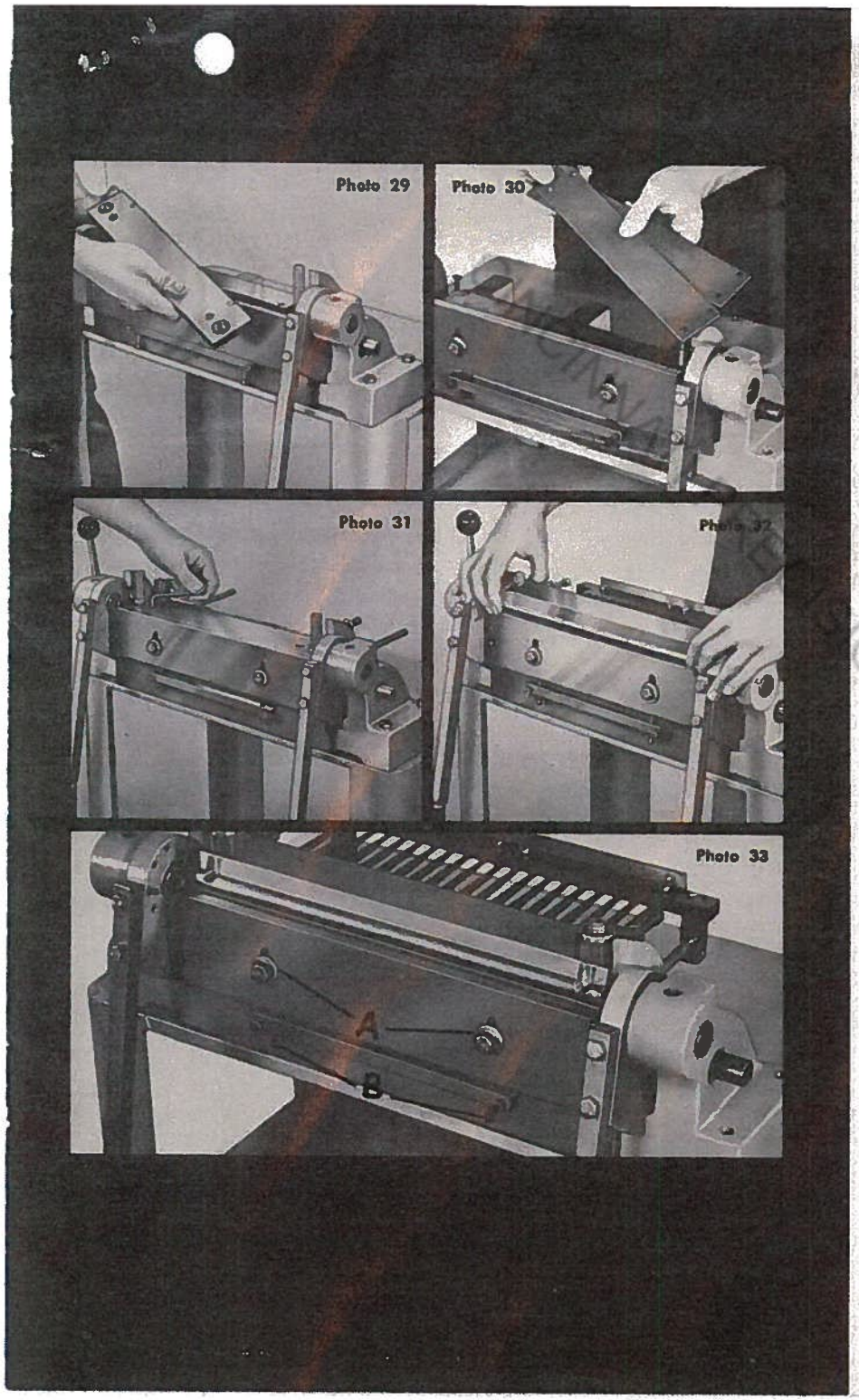
Radius Bars (as described in table)
Acute Angle Bar
Finger Mount Bar Complete with set of Box Fingers
Open End Finger
Block Mounting Blade
Adjustomatic Gauge
Brake Stand

SPECIFICATIONS AND CAPACITIES

DI-ACRO RADIUS BRAKE with Standard Gauge	No. 2	No. 4
Maximum Forming Width	12"	24"
Material Capacity—Sheet Steel	16 gauge	16 gauge
Maximum Bend—Radius Bar	125°	125°
Net Weight	110 lbs.	290 lbs.

Radius Bars Available—Both Models

Radius Bar	A	1/16" R and 3/32" R
Radius Bar	B	1/8" R and 5/32" R
Radius Bar	C	3/16" R and 7/32" R
Radius Bar	D	1/4" R and 5/16" R
Radius Bar	E	3/8" R and 1/2" R



OPERATING INSTRUCTONS FOR DI-ACRO RADIUS BRAKE

To operate a Radius Brake, follow the same general setup procedure as given for the Di-Acro Standard and Finger Brake described on pages 6-7. Vertical adjustment of the Folding Blade is described in the section on FORMING TRUE RADIUS BENDS.

FORMING SHARP "NO RADIUS" BENDS

When it leaves the factory, the Di-Acro Radius Brake is pre-set with a Standard Top Forming Bar to form sharp "no radius" bends. Seven removable spacers (two 1/32", two 1/16" and three 1/8" thick) are positioned below the Bottom Plate. The purpose of these spacers is to bring the top surface of the Bottom Plate to the center line of forming. When forming sharp "no radius" bends, all spacers are in place so that the top edge of the Folding Blade is exactly level with the top surface of the Bottom Plate.

FORMING TRUE RADIUS BENDS

The Di-Acro Radius Brake can be set up for forming any radius to 1/2" simply by removing the proper number of spacers and installing the required Radius Bar. The number of spacers which are removed must equal the thickness of the material to be used plus the radius to be formed. For example, to form a 1/8" radius bend in material 1/16" thick—

1. Remove the Bottom Plate (photo 29)
2. Remove 1/8" and one 1/16" spacer to lower the Bottom Plate the required distance to 3/16" (photo 30)
3. Replace the Bottom Plate (photo 31)
4. Mount a 1/8" Radius Bar on the Brake (photo 32)
5. Adjust Folding Blade to exact level of Bottom Plate. Vertical positioning is made by loosening two hexagon bolts A in Folding Blade and adjusting set screws B (photo 33). See point No. 2 on page 7 for information on horizontal adjustment of Radius Bar.