The first step is to purchase the needed steel from your local steel distributor. It is important to use straight material.

Next you will need to cut all the pieces required before you begin assembly. Prepare the hinges needed before you start assembling the brake. With all the parts cut and ready you can finish building the brake in a couple of hours.

The hinges are made from 1” square solid stock and need to be drilled and machined before building your brake. The area of the hinge that requires milling can be done by any machine shop for a very small cost. If you can't get them machined at a machine shop you can use a grinder to finish out the hinges.

After you cut steel the next step is to mark and drill the necessary holes in each piece. The main base piece will need to be tapped to fit 3/8 20 round bolts. I use allen head cap bolts for ease of use with a allen wrench. The allen head bolts will last for years without wearing out the head.

Now that all pieces are cut, drilled and tapped you are ready to fit and assemble the main part of the brake.

First bolt the clamp bar to the main base and install bolts in all three holes. Tighten bolts down. This will help prevent warping during welding on the brake parts.

Next lay the bottom piece on its back on two or three bricks and lay the front bending bar on top of the front side of the base. Position this piece so that the top face is flush with the top face of the main base. Clamp the bending bar into place once it is positioned correctly.

On each end of the bottom piece you need to weld on the ends. This is the most critical step in building your new brake. The key point is to align the ends so that the pivot point is in the center. Use 90 degree magnet clamps to hold the ends in place to allow you to spot weld them to the base. Spot weld all pieces and recheck alignment before finish welding.

After the ends have been spot welded to the base we are ready to fit the bending bar with the hinges to the main base. Install the 1” steel dowels thru the hinges and then put the hinges on the ends by inserting the dowel in the hole at the pivot point on the ends. Position the hinges in line with the bending bar and tack weld both sides.

The final step is to weld on the top and bottom braces to reinforce the center of the brake.

Now that all pieces are spot welded together and everything looks good you can finish welding the pieces together. It is best to allow parts to cool during the welding process to prevent warping. The last step is to fit the mounting brackets with 3/8 bolts to allow the sheet metal brake to be bolted down to a table. With a little extra metal, legs can easily be made and attached to the sheet metal brake.

These instructions are a preliminary refresher on the basic construction and the rest of the book shows you step by step each part of construction.
PARTS LIST

Metal List:
- 15 feet 3” X 3” X 1/4” Angle Iron
- 7 feet 2 1/2” x 2 1/2” x 1/4” angle iron
- 14 feet 3/8” cold rolled steel
- 5 1/2 inches 1” x 1” solid steel square stock
- 30 inches 5/8” stress proof rolled steel
- 2 inches 1/2” solid round cold rolled

Fasteners:
- 3 - 3/8” 20 round Allen Cap Bolts
- 8 - 3/8” Course Thread Bolts with w/ 8 nuts and washers

Cut steel to these sizes:
END PIECES - TABLE MOUNTS - HINGES DRILL SPECS

The bottom side of each end piece needs to be drilled the same as the table mounts. Two holes 3/4" in from edges and 2 1/2 inches apart. The table mounts will bolt directly to the end pieces.

Both sides of the angle iron need to be drilled the same pattern. You will need four of these pieces to mount sheet metal brake to table. Be sure and drill same pattern on bottom of end pieces.
CLAMP & DRILL BOTTOM AND CLAMP BAR

First mark the center of the bottom piece. Center should be 38" from the ends. Sit the bottom piece on three bricks to support it level on table.

Next position top clamp piece on the bottom piece with equal amounts on each end and the front edge flush with the front edge of the bottom piece. Each end of the top clamp piece should be 1/2" shorter than the bottom piece on each end. If not split the difference. Clamp the two pieces together on each end with two C clamps or vise grips.

Mark the top piece in the center and each end to center punch and drill pilot holes.
DRILL PILOT HOLES THRU TOP CLAMP AND BOTTOM

Drill 1/8 pilot holes thru the top clamp and bottom piece in the center and on each end.

Remove the top piece and enlarge the holes with a 3/8" drill bit.

The top piece needs to be sanded on the bottom side to prevent burst.

Sheet metal when loading sheet metal in the brake to bend.
When all holes are drilled to final size and tapped, replace the top clamp piece together with the bottom piece and bolt together with the three 3/8" 20 round allen head cap bolts. (one on each end and one in the center) By bolting these two pieces together we will reduce the risk of warping the metal when we begin welding.
Lay main assembly on its back on bricks and position the bending bar with the ends as well as the front edge flush with the main bottom piece.

Position The End Pieces Centered

Position the end pieces square and centered to the 1/2” pivot hole drilled in the end pieces. This is the most important part to building a successful working sheet metal brake. By centering the ends as shown in the photo this will allow the bending bar to pivot evenly across the full length of the brake.

Use magnetic clamps to secure the ends in position to be spot welded.
SPOT WELD ENDS TO BOTTOM BASE

Lightly spot weld ends to base as shown in the photo.

Spot weld ends on the bottom side of the bottom piece.

Remove magnetic clamps and weld bottom to end pieces with a full bead on the underneath side.
INSTALL HINGES

Be sure and check the alignment of bending bar to base as clamped in step 4. The top surface of the bending bar must be level with the top surface of the bottom base. Add extra clamp to center to hold bending bar to prevent warping during welding. Fit 1" steel dowel pins made from 1/2" cold roll thru hinges and into 1/2 holes in the end pieces.

Align hinges with bending bar and spot weld top and bottom.

Finish welding hinges on top and bottom side.
ADD SUPPORT BRACES

Bend the two 75" pieces of 3/8" cold roll in the center slightly.

Spot weld the support brace to the bottom side of the bending bar with the 3" piece of 3/8" cold roll in the center.

Tack weld each end in the corners of the angle iron.

Attach the support brace to the top clamp bar as shown in the photos. When welding braces to top clamp bar be sure bolts are tightened down first. The photos above show the bolts loose. That is incorrect.

After support braces are fitted and spot welded go back and finish welding all spot weld areas.
ADD TABLE MOUNT BRACKETS

Your New Sheet metal Brake can now be bolted to a table and used.

Put sheet metal under top clamp and tighten down bolts to hold securely. Use only two of the bolt holes according to the length of your material.

Insert 5/8" handle in the hinge and lift upward to create bend.

Congratulations you have successfully built your own sheet metal brake.