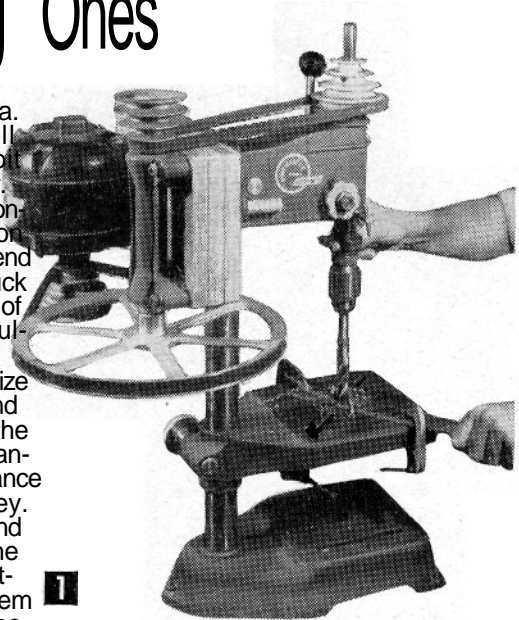


How to Bore the Big Ones

THERE'S a secret to boring up to 1-in. dia. holes through steel with a 1/2-in. capacity drill press. You reduce the speed of the drill bit and increase the torque with a speed-reducer.

The speed-reducer is simply a jack-shaft consisting of a mandrel with a 4-step cone pulley on one end and a 12-in. pulley on the other end as in Fig. 1. This reduces the drill press chuck speed to a low of about 125 rpm and a high of about 600 rpm, depending on how the cone pulleys are belted.

Cut the mounting board and spacers to size as given in Fig. 2 and the Materials List, and bolt the assembled mandrel and pulleys to the mounting board with the spacers under the mandrel. The spacers are needed to provide clearance between the drill press post and the 12-in. pulley. Then remove the motor from the drill press and temporarily fasten the mounting board to the motor bracket with c-clamps. Hold a straight-edge across the two cone pulleys and align them by repositioning the mounting board so that the V-belt will run true. Mark the location of the



1 Drill bits having 1/2-in. shanks for chucking are available for boring 9/16 to 1-in. dia. holes.

MATERIALS LIST—DRILL SPEED-REDUCER

No. Req.	Size and Description	Use
1	3/4 x 6 1/2 x 17" plywood	mounting board
2	3/4 x 4 1/4 x 6 1/2" plywood	spacers
1	1/2 x 37" V-belt	drill press pulley
1	1/2 x 46" V-belt	motor pulley
4	5/16 x 4" carriage bolts	mandrel
4	5/16 x 1 1/2" fh bolts	mounting board
4	1/4 x 1 1/2" fh bolts	motor
(the following parts made by Chicago Die Casting, available from your local hardware store)		
1	#1560, 5/8" shaft dia. ball bearing mandrel	
1	#140, 4-step, V-grooved, 5/8" bore step pulley	
1	#1200A 5/8" bore x 12" dia. V-grooved pulley	

slotted bolt holes in the motor bracket on the mounting board, remove the board and drill the 11/32-in. holes, countersinking them on the side the mandrel is fastened.

Now, place the motor on the board so that the 46-in. long V-belt will go around the 12-in. pulley and the smallest pulley on the motor cone pulley. Align the pulleys, and mark and drill the board for motor mounting bolts. Countersink these holes and bolt the motor to the board.

Since the motor must be turned upside down from its normal operating position, it will have to be reversed. Remove the plate covering the electrical connections and change the wiring as noted on the diagram on the back of the cover plate.

If your drill press motor has a double ended shaft, it will not have to be reversed. Simply use it in its normal position and place a 2-in. pulley on the lower end of the motor shaft to drive the 12-in. pulley.

When boring a hole, start with a 3/8-in. drill bit and enlarge the hole with 1/8-in. larger drill bits until the required size is reached.—ART YOUNGQUIST.