

No. 976 MORTISING ATTACHMENT For 14" Delta and 11" Homecraft Drill Presses

The Mortising Attachment is an accessory which converts 14" and 11" Drill Presses into accurate mortising machines. It is therefore a handy accessory for use in sash, cabinet and furniture factories, pattern shops and other woodworking plants.

Under the item No. 976 the customer receives the chisel holder, base, fence and holddown bracket shown mounted on a drill press in Fig. 1. Hollow chisels, bits and bushings are not included with the attachment; these tools are available in various sizes and must be ordered separately.

Refer to Fig. 2 and Table 1 to identify the parts mentioned in the following instructions.

TO BE USED WITH No. 974 SPINDLE

This mortising attachment is designed for use with the No. 974 spindle, which has a $\frac{1}{2}$ -inch hole to receive round shank bits. It is the spindle commonly used for router bits, and will fit the 11" as well as the 14" drill press. This spindle may be purchased as an alternate spindle for either of these machines.

INSTALLING SPINDLE IN 14" DRILL PRESS

To remove the spindle which is in the machine, move the table down to its lowest position or to one side. Run the quill down until the drive collar DP-250-S at the upper end of the quill is visible through the opening in the front of the head casting. Clamp the quill, release the hexagon socket set screw SP-201, and pull the spindle out of the quill.

Install the No. 974 spindle, pushing it up into the quill and through the bearing drive collar DP-250-S. Rotate the spindle to enter the splines into the pulley. Be sure that the drive pin in the collar at the lower end of the spindle engages the notches of the lower quill bearing. When the spindle has been pushed up as far as possible, press the drive collar DP-250-S down, similarly to engage the notches of the upper quill bearing, and tighten the set screw SP-201. Be careful to engage the set screw against the solid surface of the spindle, not into one of the spline grooves which would be damaged. Release the quill clamp and raise the quill to its usual top position.

INSTALLING SPINDLE IN 11" DRILL PRESS

To remove the spindle, run the quill down until the set collar HDP-107-S above the quill is accessible through the opening in the front of the head casting. Clamp the quill in this position. While holding the spindle to avoid dropping it, release the set screw SP-201 to loosen the set collar. Swing the table to one side and raise the quill to the top of its stroke; there will be plenty of clearance for lowering the spindle out of the bearings.

Reverse the above procedure when installing the No. 974 spindle, observing these precautions: Be sure that the spindle is passed through the fiber washer DSS-77 and the set collar HDP-107-S as the upper end comes through the quill. Rotate the spindle to enter the splines into the pulley. Tighten the set screw against the solid surface of the spindle, not into a spline groove, to avoid damage.

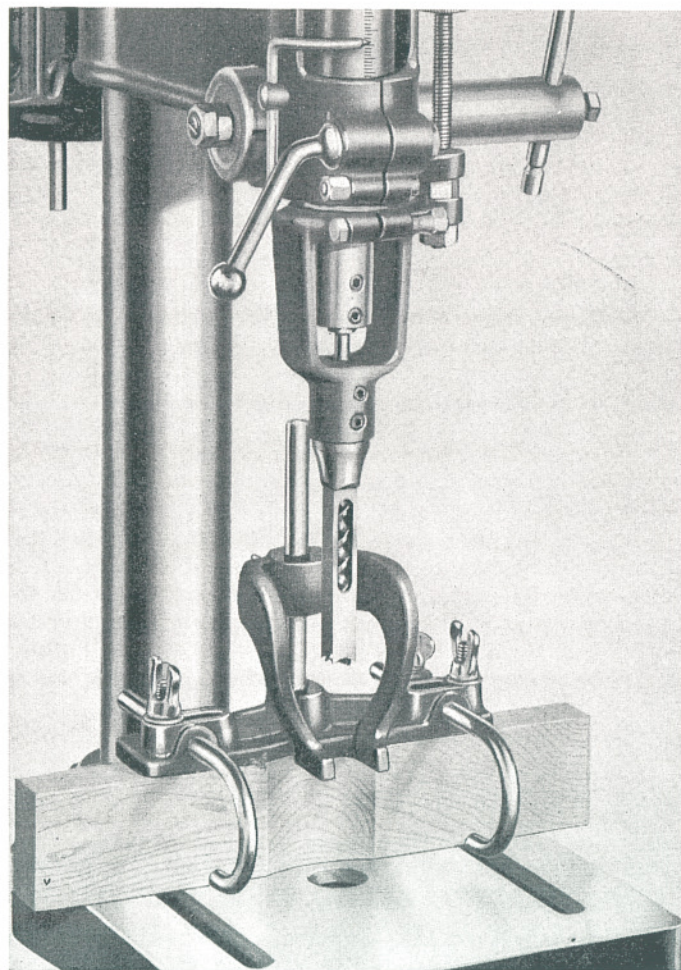


Fig. 1. Mortising Attachment No. 976 Mounted on Drill Press.

To eliminate all end play in the spindle, clamp the table at suitable height and lower the spindle against it with moderate pressure while clamping the quill. Push the set collar down against the quill while tightening the set screw. This method removes slack between thrust collar, thrust bearing and quill.

MOUNTING CHISEL HOLDER ON QUILL

Quills of the 14" and 11" drill presses are of the same diameter and the mounting of the chisel holder is identical on the two machines.

Remove the stop collar DP-270 from the lower end of the quill and install the chisel holder DP-300-S in its place. Tighten the clamp nut DP-221 enough to hold the attachment from slipping. Transfer the stop rod from the regular stop collar to the similar mounting hole of the mortising chisel holder. Turn the stop rod so that it does not rub the sides of the slotted lug which projects from the head casting, and tighten the hexagon nut SP-1005.

MORTISING CHISEL AND BIT COMBINATIONS

Four sizes of mortising chisels and the corresponding bits are available for this attachment. Use only the correct combination of bit and chisel. Both of these tools must be sharp; if either one is dull there will be excessive friction with consequent heat, injuring the points.

Since the No. 974 spindle has a $\frac{1}{2}$ -inch hole and the mortising bits have various shank diameters, it is necessary to use a bushing in each case. Consult Table 1 for the list of bushings which are available for this purpose. These bushings are slotted to grip the shank of the bit and they have a flat on one side to receive the set screws.

For example, use the No. 514 mortising bit and No. 524 bushing in combination with the No. 504 hollow chisel; this will cut a mortise $\frac{1}{4}$ inch wide.

INSTALLING THE BIT AND CHISEL

Turn the spindle so that its set screws are to the front. Insert the bit through the chisel, slip the bushing with flange down onto the shank of the bit, and enter the combination up through the chisel holder. Clamp the chisel at such height that the upper face of its shoulder remains about $\frac{1}{32}$ inch below the holder, tightening one of the set screws lightly.

Turn the bit so that the flat of the bushing is in line with the set screws of the spindle, and push the bit up through the chisel as far as it will go. This will enter the bushing into the spindle. Slide the bushing upward until it shoulders against the spindle, prying it with a screw driver if necessary. Tighten first the lower and then the upper set screw to clamp the bit in the spindle.

Release the set screw in the chisel holder, and push the chisel upward to take up the $\frac{1}{32}$ inch space previously left; then tighten both set screws. This method assures having the proper clearance between the cutting lips of the bit and the points of the chisel.

ASSEMBLING BASE AND HOLDDOWNS

Set the steel pin DP-331 vertically into the base DP-330 and clamp it by tightening the square head set screw SP-301. Slip the holddown rods BM-14 through the base as shown in Fig. 2 and fasten them by tightening the thumb screws SP-1505. Mount the holddown arm DP-350 on the vertical pin, clamping it by means of the lock bolt BM-47-S.

MOUNTING ON DRILL PRESS TABLE

We recommend installing a $\frac{1}{2}$ -inch plywood panel on the drill press table; it can be held in place by

inserting it under the mortising fence. Drill the mounting holes in the plywood to match the slots in the table. The plywood panel prevents damage to the mortising chisel if it should strike the table by accident, and also is a simple method for increasing the size of the table.

The bolts furnished with this attachment are long enough to hold the plywood panel as well as the fence and base. Insert the carriage bolts SP-824 through the slots of the drill press table from below. Pass them through the plywood panel, fence and holddown base. Use washers BM-46 under the table and washers SP-1604 on top; fasten the assembly by tightening the wing nuts BM-20 on the carriage bolts.

OPERATING THE MORTISER

Place the work on the table and adjust the height so that the point of the chisel clears the work about $\frac{1}{2}$ inch. Run the chisel down along the side of the work to gage the depth of the mortise; set the knurled nuts on the stop rod against the lug of the drill press head to control this depth.

Adjust the holddown rods to hold the work against the fence, tilting them if necessary. Lower the holddown arm DP-350 against the top of the work. These contacts must hold the work in line with light pressure which will permit sliding the piece across the table. They are independently adjustable to the height and thickness of the work. Tighten all thumb screws and lock bolts when the holddowns have been adjusted.

Release the wing nuts which hold the mortising attachment base to the drill press table, and shift the fence forward or toward the column as permitted by the table slots to bring the work piece into the desired position under the mortising chisel.

Slide the work piece along the fence to make sure that the cut will be along the required line. Turn the chisel in the holder, if necessary, to make its faces square with the cut. If the fence and chisel are not exactly square the cuts will become staggered. Having completed these adjustments, tighten the wing nuts on the base and continue with the work.

The first cut requires more pressure than the following cuts, since all four sides of the chisel are cutting. Feed rapidly for each cut and pause briefly between operations to allow the points to cool. Successive cuts must overlap slightly to clean out the hole.

Do not attempt to mortise deeper than the maximum depth listed for each chisel in Table 1. Beyond these limits the wood chips will not clear through the hole in the chisel and the tools will be damaged.

It is good practice to make a trial cut on scrap material, to check the set-up, before mortising the work at hand.

SPINDLE SPEEDS

The correct spindle speed depends upon the size of the bit and the hardness of the wood. Best results will be obtained in the range from 680 to 2400 rpm. Use the slower speeds for the larger bit diameters and the harder woods.

SHARPENING HOLLOW CHISELS

The hand filing method for sharpening hollow chisels is recommended. To do the work properly, use 4-inch half-round and square files, No. 0 or No. 1 cut. Examine a new tool for guidance. Be sure to maintain the curved cutting edges and preserve the inner double

angle of the edges. Use the half-round file for shaping the curved edge, and the square file for forming the double inner angle and to groove the four corners. Do not sharpen the outside of the chisel.

Cone grinding stones are not suitable for sharpening tools of this kind, as they leave thin single edges which do not have sufficient body of metal to give proper service. Improperly sharpened hollow chisels easily split in operation, resulting in total loss. Sharpening these chisels requires considerable skill and it is generally cheapest to have the work done by an expert.

SHARPENING MORTISING BITS

The bit does most of the work in mortising. For best results this tool must be in first class condition.

Cutting edges must be sharp and shaped properly. Only the hand filing method can be recommended. Use half-round or taper warding files No. 0 or No. 1 cut, 4 or 5 inches long.

Sharpen the cutting edges with the flat side of the file, stroking through the throat. File the spurs on the inside only, with the taper warding pattern. Use a new tool as a guide; keep the spurs of equal height and evenly lined up with the cutting edges.

A new bit will overcut the hollow chisel to a certain extent. After repeated sharpening the diameter of the bit is decreased due to its taper, and it will no longer do its share of the work. Excessive strain is then carried by the hollow chisel, often resulting in breakage. Since the hollow chisel is by far the more expensive of these tools, it is best to discard the old bit and use a new one.

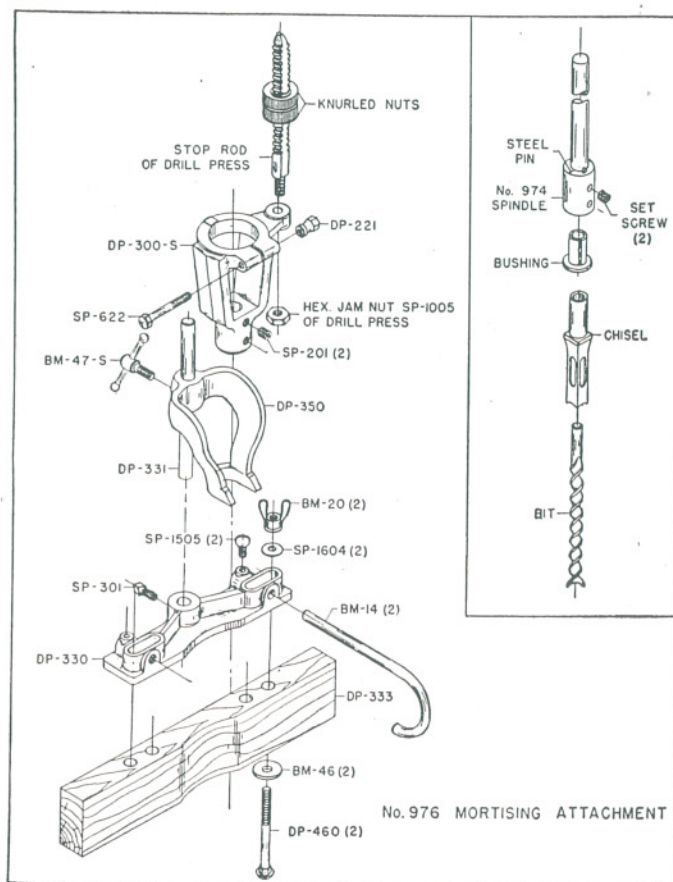


Fig. 2.

Table 1. REPLACEMENT PARTS

IMPORTANT: Give both the Part Number and the Description of each item when ordering from this list.

Part No.	Description	Number Required	Part No.	Description	Number Required
BASE AND FENCE			HOLLOW CHISELS ($\frac{5}{8} \times 1\frac{1}{2}$ " Shank)		
BM-14	Curved Holddown Rod.....	2	No. 504	$\frac{1}{4} \times \frac{1}{4}$ " Hollow Chisel, $1\frac{7}{8}$ " Max. Depth.....	1
BM-20	Special $\frac{5}{16}$ "-18 Wing Nut.....	2	No. 505	$\frac{5}{16} \times \frac{5}{16}$ " Hollow Chisel, $1\frac{7}{8}$ " Max. Depth.....	1
BM-46	Special $\frac{25}{64}$ " Steel Washer, $\frac{15}{16}$ " O.D. x $\frac{1}{8}$ " Thick....	2	No. 506	$\frac{3}{8} \times \frac{3}{8}$ " Hollow Chisel, $2\frac{3}{4}$ " Max. Depth.....	1
DP-330	Rod Bracket.....	1	No. 508	$\frac{1}{2} \times \frac{1}{2}$ " Hollow Chisel, $3\frac{1}{4}$ " Max. Depth.....	1
DP-333	Wooden Fence, $1\frac{1}{8} \times 2\frac{1}{4} \times 12$ ".....	1	MORTISING BITS		
DP-460	$\frac{5}{16}$ "-18 x $4\frac{1}{4}$ " Carriage Bolt.....	2	No. 514	$\frac{1}{4}$ " Mortising Bit, $\frac{3}{16} \times 1\frac{3}{8}$ " Shank.....	1
SP-301	$\frac{1}{4}$ "-20 x $\frac{1}{2}$ " Square Head Set Screw, Cup Point.....	1	No. 515	$\frac{5}{16}$ " Mortising Bit, $\frac{1}{4} \times 1\frac{3}{8}$ " Shank.....	1
SP-1505	$\frac{1}{4}$ "-20 x $\frac{1}{2}$ " Thumb Screw, Flat Point.....	2	No. 516	$\frac{3}{8}$ " Mortising Bit, $\frac{19}{64} \times 1\frac{3}{8}$ " Shank.....	1
SP-1604	$\frac{5}{16}$ " Steel Washer, $\frac{3}{4}$ " O.D. x $\frac{1}{16}$ " Thick.....	2	No. 518	$\frac{1}{2}$ " Mortising Bit, $\frac{19}{64} \times 1\frac{3}{8}$ " Shank.....	1
HOLDDOWN BRACKET			BUSHINGS		
BM-47-S	Lock Bolt, $\frac{5}{16}$ "-18 x $\frac{3}{4}$ ", with Ball-End Handle.....	1	No. 524	Bushing, $\frac{1}{2}$ " O.D. x $1\frac{1}{4}$ " Long, Flanged, $\frac{3}{16}$ " Hole....	1
DP-331	Steel Pin, $\frac{1}{2} \times 6\frac{3}{16}$ ".....	1	No. 525	Bushing, $\frac{1}{2}$ " O.D. x $1\frac{1}{4}$ " Long, Flanged, $\frac{1}{4}$ " Hole....	1
DP-350	Holddown Arm.....	1	No. 526	Bushing, $\frac{1}{2}$ " O.D. x $1\frac{1}{4}$ " Long, Flanged, $\frac{19}{64}$ " Hole....	1
CHISEL HOLDER			MISCELLANEOUS		
DP-221	Special $\frac{1}{4}$ "-20 Hexagon Clamp Nut.....	1	No. 974	Spindle with $\frac{1}{2}$ " Hole, for Round Shank Bits.....	1
DP-300	Mortising Chisel Holder.....	1	SP-2	$\frac{5}{32}$ " Hexagon Wrench for Socket Screws.....	1
DP-300-S	Mortising Chisel Holder, Complete with Clamp.....	1	SP-201	$\frac{5}{16}$ "-18 x $\frac{5}{16}$ " Hexagon Socket Set Screw, Flat Point....	2
SP-201	$\frac{5}{16}$ "-18 x $\frac{5}{16}$ " Hexagon Socket Set Screw, Flat Point....	2			
SP-662	$\frac{1}{4}$ "-28 x $\frac{9}{8}$ " Hexagon Head Cap Screw.....	1			

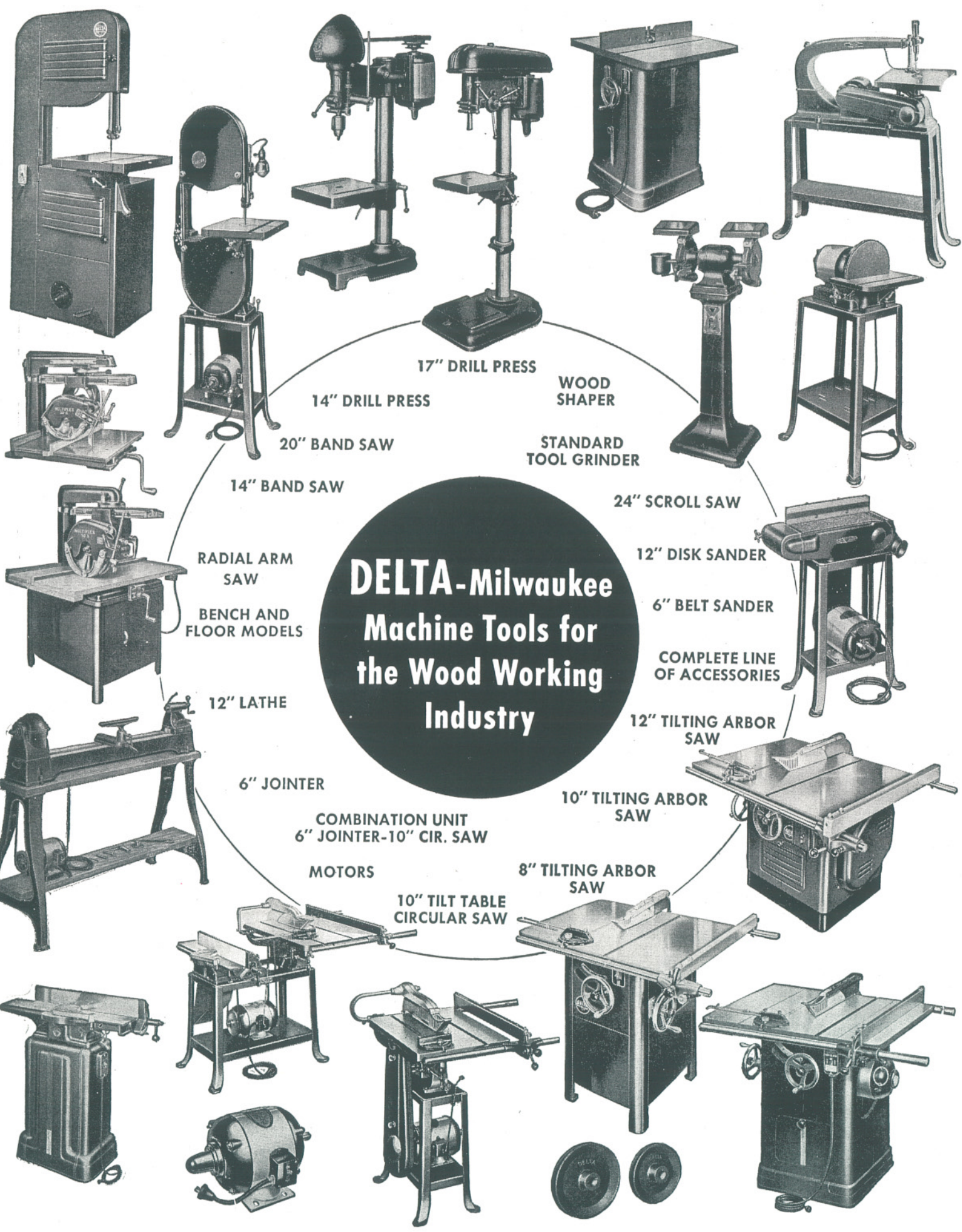
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