DELTA Machine Tools
MILWAUKEE

PM-1731
Date: 2-24-50
34-B: Circular Saw Instruction Manual
U.S. Patent No. 2,085,236

Nos. 1170 AND 1172 TENONING JIG
Operating and Maintenance Instructions

The Tenoning Jig is a useful accessory for making tenons or grooves easily, fast, safe and accurately on the circular saw. It is ruggedly designed for safe operation in furniture, sash and cabinet factories, carpenter, pattern and maintenance shops, schools and other woodworking shops and plants.

Under the item No. 1172, the customer receives a base plate, guide key, clamp body, guard body, adjustable bracket for the clamp screw, clamp screw with pad, wooden hand grip, ball crank with free turning hand grip and a ball-end adjustable clamp handle.

Additional accessories for making the required tenon or groove, available when ordered extra, are the ground spacing collars, paper washers and dado head.

Complete directions for adjusting the tenoning jig and performing all common tenoning and grooving operations are contained in these instructions. The accessories and their use are described briefly.

Refer to the photograph, drawing and Table I to identify the parts mentioned in the following instructions.

SETTING-UP TENONING JIG ON THE CIRCULAR SAW TABLE

The base plate key of the tenoning jig is placed in the left-hand table slot. This key slides in the table slot like a miter gage bar. The tenoning jig is used on different models of circular saws where the distance from the table slots to the cutter may vary. Additional holes are provided in the base plate so the key may be set over to fit any machine properly. The convenient wooden hand grip enables easily advancing the work clamped in the tenoning jig to the cutter.

The machined base plate has a slot at one end for a guide key to slide in which enables adjusting the clamp body to the left or right without losing positive alignment. Clamp this body in place with the ball-end adjustable clamp handle.

The adjustable stop at the rear of the clamp body limits it from being projected into the cutter. This stop is adjustable for each circular saw table it is used on.

The accurately machined surfaces of the clamp body and guard body are at 90 degrees to one another which means that the work is clamped accurately in a vertical and parallel plane to the cutter. The clamp body has four holes in it for attaching a face plate or fixture for special operations.

The adjustable bracket for the clamp screw can be adjusted so it clamps the work at about the center. Stock up to approximately 6 inches in width and 2⅞ inches in thickness can be conveniently clamped in the tenoning jig.

A ½ inch hole in the top of the clamp body is used for holding a stop rod of any desired height and insuring tenons or grooves of equal length to be cut in the stock. The stop rod is secured in position by tightening the hexagon socket set screw provided in the clamp body.

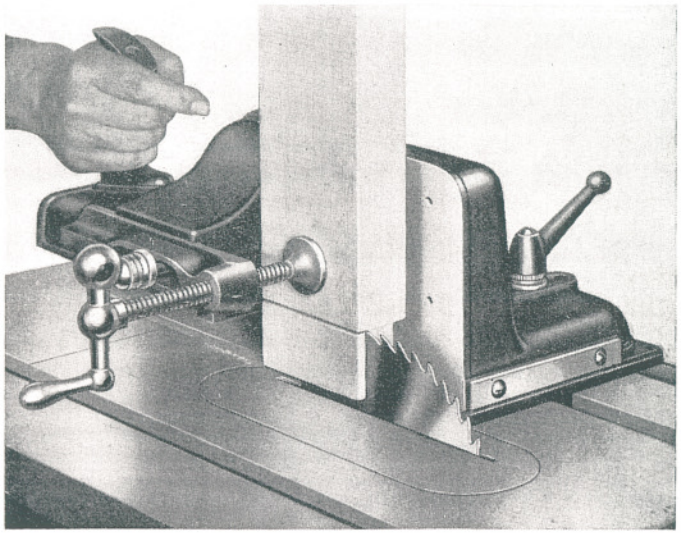

Fig. 1. Cutting a Tenon with the Tenoning Jig on a Circular Saw.

TENONING

The following instruction will give the inexperienced operator a start on how to cut tenons. Use scrap material for practice, getting the feel of the operation before attempting the job at hand.

Tenons can be made easily by using the tenoning jig in conjunction with saw blades or a dado head. Before attempting to cut a tenon, make sure that the stock has first been cut to the required length, width and thickness.

When cutting tenons with a single circular saw blade, we recommend using a combination hollow-ground saw blade.

Lay out the length of the tenon with a combination square the required distance from the end of each piece. Also lay out the thickness of the tenon. When more than one tenon of the same size is to be cut, the length and thickness of only one tenon need be laid out.

Make the shoulder cuts with a miter gage first. Set the miter gage for a square cut, and the stop rods for the required length of the tenon. Raise the saw blade so it projects above the table surface a distance equal to the depth of the shoulder of the tenon. Hold a straight edge of the work against the face of the miter gage body. Cut the shoulders on all the pieces of stock having the same depth.

To make the cheek cuts place the tenoning jig on the circular saw table so the base plate key fits in the left-hand table slot. Clamp the work in the tenoning jig and align the first cheek cut with the saw blade.

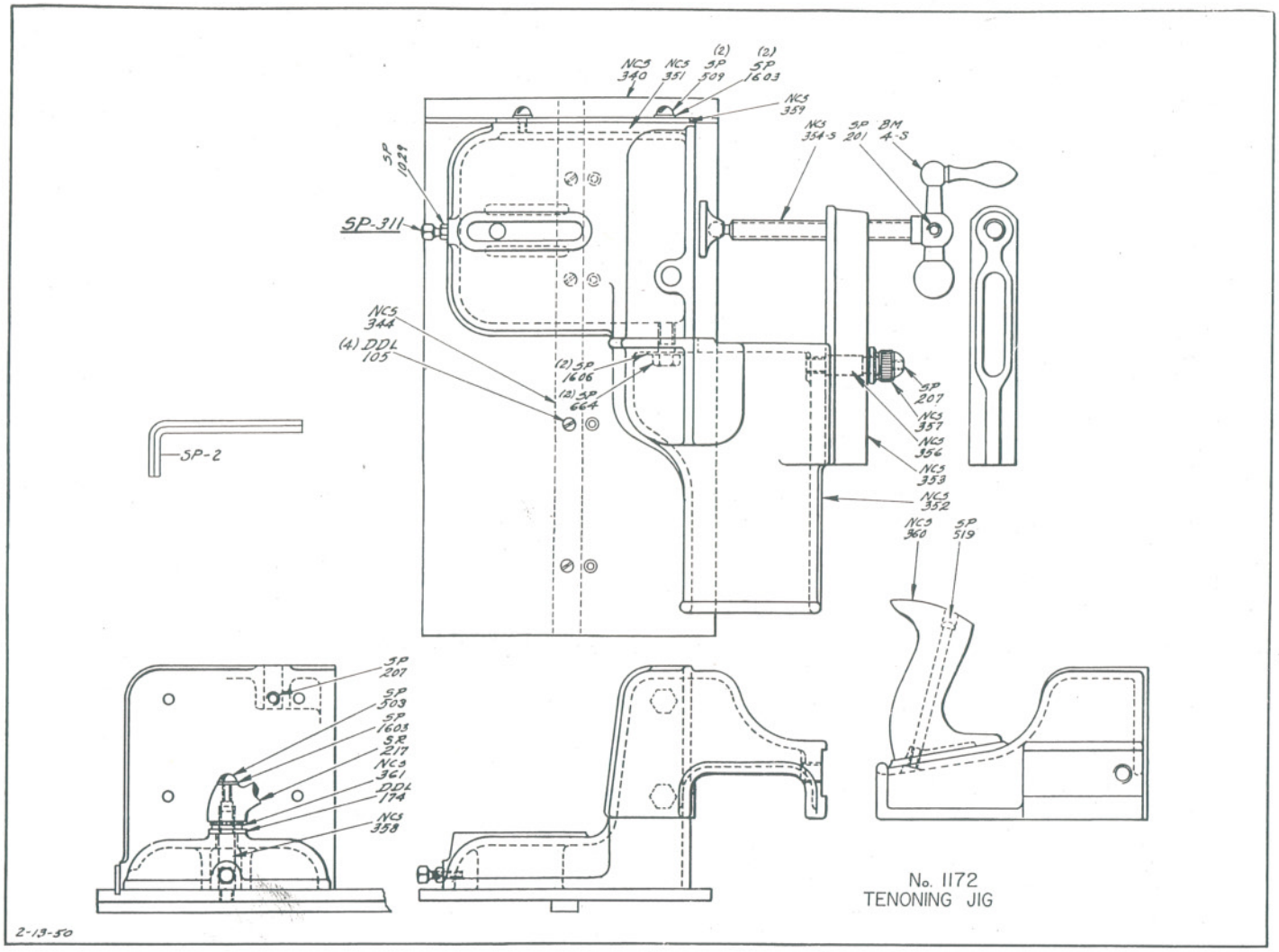

Fig. 2.

A portion of the end of the stock being cut should bear against the base plate when cutting a tenon. If the stock does not bear against the base plate, we suggest clamping a gauge block to the front right-hand portion of the circular saw table.

Oftentimes it is desirable to fasten a wood back block to the machined face of the clamp body with wood screws through the four holes provided. After making the first cheek cut, the clamp body of the tenoning jig is set over the required amount and the second cheek is cut without removing or turning the stock around in the tenoning jig. This is very desirable when tenons with unequal cheeks are to be cut.

To cut a tenon with a single pass of the work is easily accomplished when clamping the stock in the tenoning jig. Make all the shoulder cuts on the ends of the stock first. We suggest using two combination hollow-ground saw blades of the same diameter with the necessary spacing collars to cut the desired tenon. If the spacing collars are a fraction less than the desired tenon needed we suggest using paper washers for shimming to the correct width. Attach a wooden back block to the machined surface of the clamp block as previously described. Clamp the work in the tenoning jig and adjust it for the operation.

To cut a tenon on the end of the stock with one pass of the work without making the shoulder cuts first, we suggest using a dado head in conjunction with the tenoning jig. The dado head is placed on the saw arbor like a saw blade with the necessary spacing collars between for the desired width of tenon. When building up the width of the cheeks of the tenon on each side of the spacing collars, we suggest using the 1/16 inch inside cutters of the dado head to eliminate most of the fraying out at the end of the cut. Do not use the thicker inside cutters. Clamp the stock in the tenoning jig against a wooden back block attached to the clamp body and make all adjustments for the operation.

GROOVING

For all grooving operations on the end of the stock we suggest using the dado head in conjunction with the tenoning jig on the circular saw. Clamp the work in the tenoning jig with one end resting on the base plate at the rear edge against the vertical machined guide surface of the guard body so the work is in the correct position for the grooving operation.

By using the proper combination of cutters, grooves from ¼ inch to the desired dado width can be made increasing by 1/16 inch thicknesses.

For grooves ⅛ inch wide, use one of the outside cutters mounting it on the arbor of the saw exactly in the same manner as a saw blade.

For grooves ¼ inch wide, use both outside cutters. The fine teeth should never be placed on the saw arbor side by side so they face in the same direction.

Arrange the cutters so the raker on one is beside the cutting teeth on the other. This will make an easier running and smoother cutting head. Be sure to check the position of the cutters when they are tightened on the arbor.

For grooves 5/16 inch wide place the 1/16 inch inside cutter between two outside cutters, making sure that its two cutting edges come in line with the bottom of the spaces or gullets between the groups of teeth. This is necessary because the inside cutters are swaged thicker near their cutting edges, and this swaged part must enter the gullet before the dado head can be tightened on the saw arbor. It is very important to arrange them so their swaged portions cannot touch the outside cutters will result in oversize grooves and damaged cutters. The swaged portions of the inside cutters of our DADO HEADS are ground a few thousandths of an inch thinner than their nominal thickness. Thus, the 1/8 inch inside cutter is actually a few thousandths thinner than 1/8 inch. This is to afford the user an opportunity of adjusting the width of the groove to suit his needs.

When wider grooves are desired, requiring more inside cutters, make sure that the cutters are evenly spaced around the circumference aligning their swaged cutting edges in line with the gullets of the outside cutters. The swaged edges of the inside cutters should never be permitted to come together since this prevents proper operation.

With all Delta dado heads, all that is necessary to increase the width of the groove slightly are a few thin paper washers between the outside and inside cutters.

We suggest when grooving across the ends of stock using the tenoning jig, build up the width of the groove needed using the 1/16 inch inside cutters, and this will eliminate most of the fraying out at the end of the cut. Do not use the thicker inside cutters.

Operate the dado head in exactly the same manner as your circular saw blade, but do not feed the work too rapidly. The wider and deeper the groove being cut the slower should be the feed.

Table 1. REPLACEMENT PARTS

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

Part Number	Description	Number Required
	NO. 1172 TENONING JIG	
BM-4-S	Ball Crank, 7/16" Hole, with Free Turning Hand Grip and Set Screw	1
DDL-105	Special #10-32 x 7/16" Fillister Head Cap Screw	4
DDL-174	Special 29/64" Steel Washer, 1" O.D. x 1/8" Thick	1
NCS-340	Base Plate, 5/16 x 8 x 14 3/8", Cast Iron	1
NCS-340-A	Base Plate, with Key, Assembled	1
NCS-344	Base Plate Key, 3/8 x 3/4 x 14 3/8", Tapped #10-32	1
NCS-351	Clamp Body	1
NCS-352	Guard Body	1
NCS-353	Adjustable Bracket for Clamp Screw, Tapped 1/2"-13	1
NCS-354-S	Clamp Screw, 1/2"-13 Thread, with Pad, Assembled	1
NCS-356	Stud, 7/16-20 x 2 3/16", Threaded Both Ends	1
NCS-357	Special 7/16"-20 Hexagon Cap Nut, 1" High, 7/8" Across Flats, Knurled, 5/16"-18 Tapped Head	1
NCS-357-S	Special 7/16"-20 Hexagon Cap Nut, with Set Screw	1
NCS-358	Stud, 2 1/8" Long, 7/16"-14 and 5/16"-24 Threaded Ends	1
NCS-359	Guide Key, 1/8 x 3/4 x 5 1/4", 17/64" Mounting Holes	1
NCS-360	Wooden Hand Grip	1
NCS-361	7/16"-14 Serrated Nut, 1/4"-20 Tapped Head	1
SR-217	Ball-End Adjustable Clamp Handle, Serrated Bore	1
SP-2	5/32" Hexagon Wrench for Socket Screws	1

Part Number	Description	Number Required
SP-201	5/16-18 x 5/16" Hexagon Socket Set Screw, Flat Point	1
SP-207	5/16-18 x 1/2" Hexagon Socket Set Screw, Flat Point	2
SP-311	1/4-20 x 1 1/2" Square Head Set Screw, Cup Point	1
SP-503	1/4-20 x 5/8" Round Head Machine Screw	1
SP-509	1/4-20 x 1/2" Round Head Machine Screw	2
SP-519	1/4-20 x 3 3/4" Round Head Machine Screw	1
SP-664	7/16-20 x 1" Hexagon Head Cap Screw	2
SP-1029	1/4"-20 Hexagon Nut	1
SP-1603	1/4" Steel Washer	3
SP-1606	7/16" Steel Washer	2
	ACCESSORIES	
	No. 333 Dado Head	
LTA-555	6" Outside Saw, 5/8" Hole, 1/8" Thick	2
LTA-556	6" Inside Cutter, 5/8" Hole, 1/4" Thick	1
LTA-557	6" Inside Cutter, 5/8" Hole, 1/8" Thick	2
LTA-558	6" Inside Cutter, 5/8" Hole, 1/16" Thick	1
	No. 1171 Spacing Collar Set	
LTA-476	Spacing Collar, 5/8" I.D. x 2 1/2" O.D., Ground 1/4" Th.	1
LTA-477	Spacing Collar, 5/8" I.D. x 2 1/2" O.D., Ground 3/8" Th.	1
NCS-370	5/8" Paper Washer, 2 1/4" O.D. x .005" Thick	12

CONSULT YOUR DELTA DEALER FOR PRICES OF REPLACEMENT PARTS, ACCESSORIES AND TOOLS TO FACILITATE HANDLING WE SUGGEST ORDERING ALL PARTS THROUGH YOUR DELTA DEALER.

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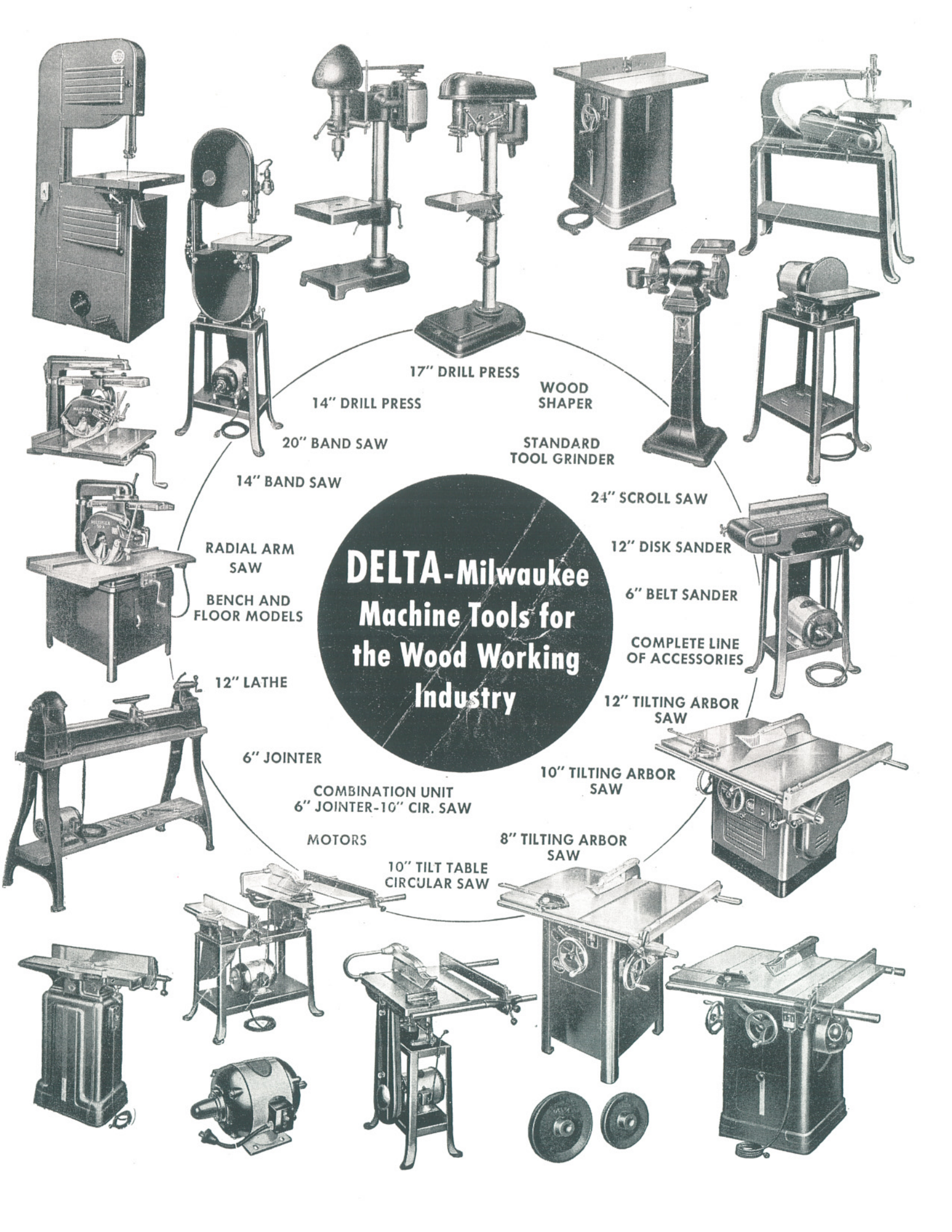
Printed in the United States of America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