P.M. No. 1601
DATE: 2-15-45
REPLACES: NONE
INDEX: 120-8-E

DELTA MILWAUKEE
THE DELTA MFG. CO., MILWAUKEE 1, WIS.

OPERATING AND MAINTENANCE INSTRUCTIONS
For No. 20-200 8" Circular Saw

General Packing

The No. 20 200 Circular Saw comes packed completely assembled. However, for convenience in packing the Miter Gage, Rip Gage and Guide Bars are packed separately in the same carton. All the necessary screws, nuts, etc., used for mounting these parts are furnished and care should be taken in unpacking the machine so that these small parts are not lost.

Adjusting Rip-Gage Guide Bars

To attach set the NCS-122 Shoulder Screws loosely into the tapped holes in the front and rear edges of the table. (Fig. 1). The front guide bar NCS-120 is placed on the front edge of the table with the teeth to the top. Slip the bars over the heads of the shoulder screws, then slide the bars to the right until the slots

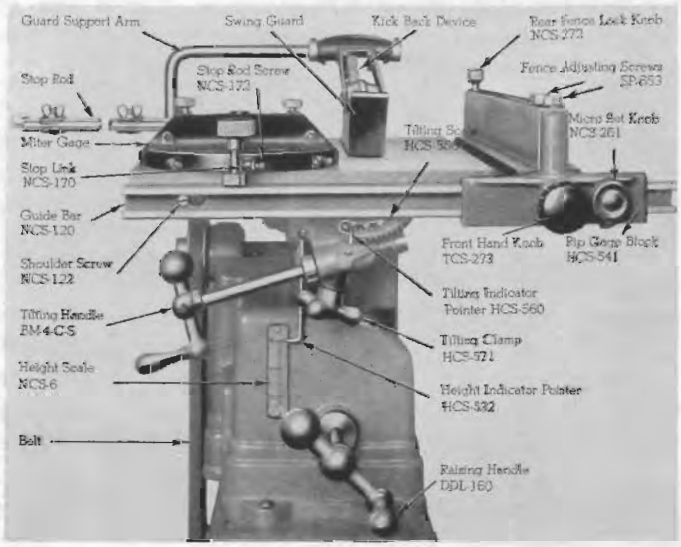

FIGURE 1

engage with screws, and tighten. The bars regularly furnished with the machine are 18 inches long. Extension Bars 32 inches long, which enable ripping to be done to the center of a four foot panel are furnished as part of Extension Attachment No. 20 825.

Power and Speed

An eight-inch circular saw requires a ¾ or 1 H. P. motor for medium duty and heavy-duty work. If only average stock is to be cut a ½ H. P. motor will be sufficiently powerful, but the stock should be fed slowly in this case. Since the circular saw is the most used tool in the shop, and is used for a large variety of work, it is quite important that it be fitted with a motor powerful enough to enable the user to realize the full capacity of the machine.

This saw is built to operate at a speed of 3400 r.p.m. which gives a cutting speed of 7100 feet per minute with an 8-inch saw blade. Our No. 5500 pulley, when used on a 1725 r.p.m. motor, will drive the saw at the correct speed. This speed is correct for all-around work in the small shop. Many factories use higher speeds than this, but only for production work and it should be borne in mind that the higher the speed the more power is required.

The saw blade should revolve toward the front of the machine, so if the motor turns the wrong way it should be turned around, or if this is impossible owing to location of switch, etc., it should be reversed in accordance with the maker's instructions. Do not twist the V-belt.

It is important that the saw blade be kept sharp at all times, as a dull blade requires from two to five times as much power as a sharp one.

Choice of Blades

The No. 325 blade furnished with the machine is a Combination blade, suitable for either ripping or cross-cutting and saves a great deal of time in the general shop, where the amount of ripping and crosscutting is about equal.

An 8-inch smooth cutting blade of the hollow-ground type No. 326 should be used only for fine, exact work in comparatively thin material. It is not suitable for rough cutting. When doing work using heavy material up to 2⅛ inches thick which is the full capacity of the 8-inch blade, the No. 325 combination blade furnished with the machine is recommended . . . or when the saw is used almost exclusively for either ripping or cross-cutting it is advisable to purchase a standard ripping blade No. 334 or a cross-cut blade No. 335.

Placing Blade on Arbor

To place the blade on the arbor, remove the table insert by pressing upward on the front of the insert from below. Remove the arbor nut NCS-97 and the washer LCS-8, (Fig. 2). then slip the blade into place, with the teeth pointing forward, and replace the washer and nut, being careful to place the hollow side of the washer toward

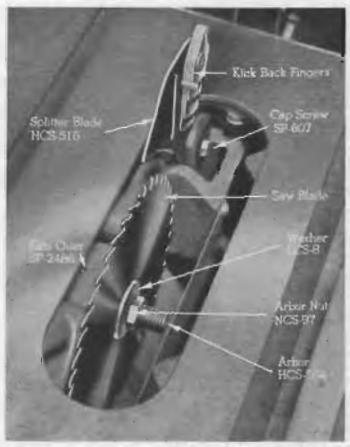

FIGURE 2

the blade. It is not necessary to raise the saw table to remove or replace a blade, as there is plenty of room to do so through the table opening.

Adjusting Table Insert

If the table insert is not exactly level with the saw table it can be adjusted by filing the bosses on the underside, a little at a time until the insert lies perfectly level with the table surface.

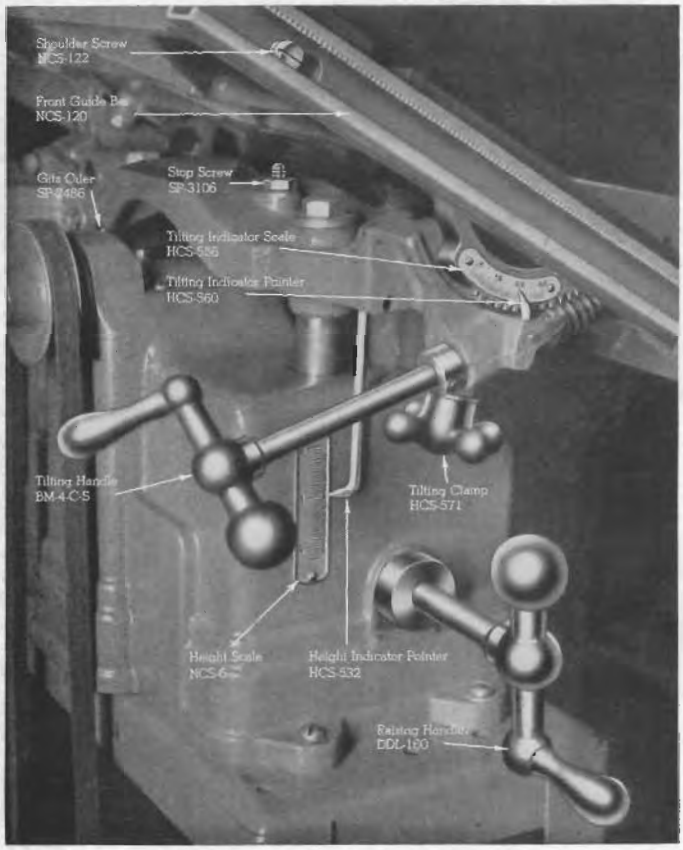

FIGURE 3

Adjusting Table Height

To raise or lower the table, turn the ball-crank handle DDL-160 (see Fig. 3). A clockwise rotation will raise the table, a counter-clockwise rotation will lower the table. Each turn of the ball crank handle raises or lowers the table exactly ⅛-inch. The table elevating mechanism is set at the factory so that table raises or lowers easily. If for some reason it does not adjust freely, loosen one of the set screws SP-231 (Fig. 6) and revolve the gears slightly to relieve any binding. Do not attempt to adjust elevating screws HCS-506.

The pointer HCS-532 should be set for each blade as soon as it has been placed on the arbor. Raise the table until the table top is exactly even with the top teeth of the blade, then set the pointer to the zero mark on the scale. Now, as the table is lowered, the pointer will indicate exactly how much the saw projects above the table.

Tilting the Table

By loosening the front trunnion-clamp star wheel HCS-571 and turning the ball crank handle BM-4-C-S, the table can be tilted to any angle up to 45 degrees. When the table is tilted to the required angle tighten the clamp star wheel again to lock the tilting adjustment.

To set the adjustable pointer on the tilting scale, set the table square with the blade by using an accurate square, then cut a trial piece of wood and check the setting. When the table has been set accurately square, adjust the pointer HCS-560 to the zero mark on the scale HCS-556 and tighten it firmly.

Set the stop screw SP-3106 at the same time, so as to bring the table to the level position automatically after tilting. Once this adjusting screw has been properly set and locked with the lock nut, the table remains square thereafter.

When returning the table to the level position after tilting, do not force the table against the stop, merely make certain that it is lightly against the stop screw. If the table is forced hard against the stop by turning on the ball crank handle after the stop has been reached, the trunnions may be raised from their seats, and thus throw the table out of alignment.

Adjusting the Table

The table of this saw is made so that it can be accurately aligned with the blade should it ever become out of adjustment.

To adjust the table, loosen the cap screws SP-678 and SP-612 on the underside of the table trunnions just enough so that the table can be moved to one side or the other by striking it lightly on the edge with a block or mallet. (See Fig. 4).

Cut a short length of ¼-inch or $\frac{5}{16}$-inch dowel and insert in the stop-rod hole in the miter gage. Run the miter gage up alongside of the edge of the saw blade, and adjust the dowel until its point just touches the point of a tooth which is set toward the gage. Now turn the saw blade backward until the SAME TOOTH comes to the rear of the table slot. Move the gage with the dowel back to the position shown by the dotted lines and see if the dowel point touches the tooth exactly as it did at the front. If it does not, adjust the table by tapping sidewise at the rear of the table and test with the gage until the dowel touches the tooth equally at front and rear of table slot. When adjusting watch that the saw blade stays central in the table slot.

Once adjusted, re-tighten the cap screws, and then set the rip gage.

Adjusting the Rip Gage

To place the rip gage in position first loosen the front hand knob TCS-273, and the knurled nut NCS-272 at the rear of the gage bar. (Fig. 1). See that the micrometer knob NCS-261 is pulled out so that the small pinion will be clear of the teeth on the rip-gage guide bar. Then slip the gage onto the bars with the

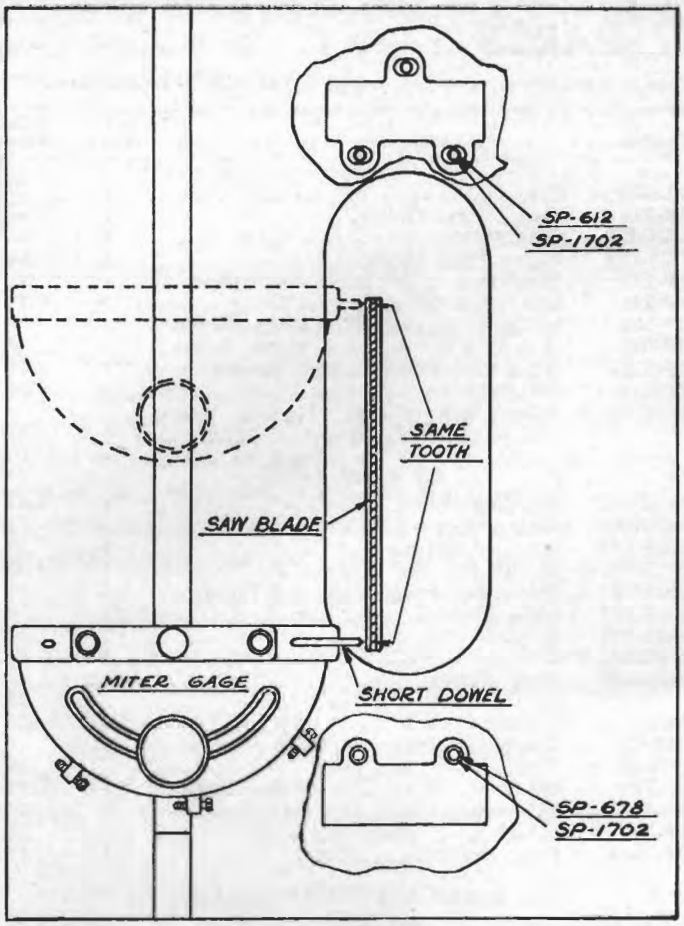

FIGURE 4

lock-plate NCS-252 just inside the front extension bar and the block HCS-541 over the bar.

The rear clamp NCS-287 hooks under the top edge of the rear guide bar. This clamp is used to give greater rigidity to the gage. When moving the rip gage, always loosen the rear clamp first, then loosen the front hand knob and slide the gage across the table to the desired position. The micrometer knob NCS-261 should be pulled out when moving the gage in this manner. Tighten the front of the gage first, then the rear. This is important since the bar is squared up with the saw before being clamped in position.

The rip gage is adjustable so that it can be aligned parallel with the blade should it accidentally become out of alignment. To re-align the gage, loosen the two cap screws SP-653 holding the bar to the rip gage block HCS-541, and see that the rear clamp is loose. Measure from a tooth on the front of the saw to the rip gage bar, and then, turning the saw backward, measure from the same tooth to the rip gage at the rear of the table slot. Move the rear end of the rip gage bar to one side or the other until the measurements are alike, then retighten the cap screws SP-653.

Using the Micro-Set Adjustment

See that the rip-gage clamps are both loosened sufficiently for free movement of the gage, then press in the "Micro-Set" knob to engage the pinion with the rack teeth. Turn the knob clockwise to move the bar to the left and counter-clockwise to move it to the right. Pull out the knob to disengage pinion when making quick adjustments of the gage.

Adjusting Rip Gage Pointer

Set and tighten the rip gage so that it just touches the right side of the blade. Then set the pointer to the zero mark and tighten it securely. It may be necessary to move guide bar right or left to satisfy the zero position and pointer.

The pointer should be checked every time a saw blade is changed, as variations in the thickness of the blades and in the amount of set will naturally affect the accuracy of the setting. If a board is screwed to the face of the gage an allowance for the thickness of the board must be made when using the ripping scale. For this reason it is well to make such board fences to an exact thickness.

Adjusting Miter Gage

The miter gage furnished with this saw is the most useful tool of its kind ever designed. The stop screws (see Fig. 5) should be adjusted very carefully the first time it is used, as upon the accuracy of this adjustment depends the usefulness of the gage. The stop screws are not accurately set when the gage is received.

Flip the stop link NCS-170 away from the 90-degree stop screw, and set the gage to 90 degrees. Make a trial cut on a piece of wood, check the cut with a square, and re-set the gage until the cut is accurate. Now turn the stop link up, and adjust the stop screw SP-728 against it, then lock the screw with the nut and make another trial cut to check the setting. If correct, set the pointer to the 90-degree mark by loosening the screw that locks it in the bar and moving the pointer, then tighten the screw again.

To adjust the 45-degree stops, proceed in the same manner. Make trial cuts and re-set the gage until the trial cuts are absolutely accurate, then set the stop screws, lock them, and check them by trial cuts.

The graduations are as accurate as it is possible to make them commercially, but no graduations can approach the accuracy it is possible to obtain by means of the stop screws and link.

Once made, the stop-screw settings are permanent, and need only be checked if the miter gage ever receives a severe jar.

The pivot screw (NCS-168) that holds the miter-gage head to the bar is adjustable to compensate for

wear, or to make the degree of looseness of the head to suit the user. To adjust this screw, loosen the headless setscrew (NCS-177) in the front face of the miter-gage body, which locks the pivot screw.

Stop Rods

The miter-gage stop rods are used to cut a number of pieces to any desired length. They may be used on either side of the miter gage.

Caution

When setting the stop rods, see that they do not come in contact with the blade when the gage is moved forward. This is a very common cause of damage to saw blades.

Lubricating

The Timken bearings carrying the arbor should be oiled from time to time. Two Gits oilers on the top of the base casting directly below the table afford an easy means of keeping these Timken bearings oiled, and the arbor running smoothly. Cover HCS-505 should be removed annually and excess oil cleaned out.

A drop of light oil occasionally applied to bearings like the bearing for the front ball-crank handle will keep these parts working freely and easily. A drop of oil should occasionally be placed on the rods in which the table is raised and lowered, on the spiral gears and on the tilting worm gear. Do not be alarmed if, on first operating the saw, some of the lubricant is thrown out. Wipe this excess lubricant from the arbor, etc., and run the saw until it ceases to throw. This merely means that there is a slight excess of lubricant in the housing.

Swing Guard

The No. 20 829 guard for the new 8-inch circular saw is a saw accessory, shipped in its own fiber box.

To assemble the guard to the saw first bolt the guard bracket HCS-555 to the trunnion yoke just below the rear trunnion. Two screws SP-608 are furnished with the guard for this purpose.

After attaching the guard bracket to the machine, loosen the collars on the guard arm, remove the end collar and slide the pivot of the basket assembly onto the arm, then place the end collar back on again. Adjust the guard basket so that it clears the left side of the saw blade by about 1/8 inch, and retighten the collars.

The basket of the guard can be swung back out of the way when it is not needed, or the arm can be swung back and down so that it will not interfere with handling large material on the table. The lock bolt NCS-143-S is tightened to hold the bracket arm securely when the guard is in position on the machine.

Splitter and Anti-Kick Back Device

The No. 20 830 Splitter and Anti-Kick Back Device, also an accessory, consists of four kick back fingers mounted on a splitter blade.

To assemble the No. 20 830 to the saw, (Fig. 2) remove the table insert and tilt the table a little to the right. Now loosen the SP-607 cap screw holding the splitter blade to the splitter bracket. Insert the splitter bracket into the opening on the trunnion yoke just in front of the rear trunnion and lock from below with the SP-302 set screw. Be sure to insert splitter bracket with the flat side down so that when the set screw is tightened it locks the splitter bracket securely.

Reassemble the splitter blade to the splitter bracket and tighten in place with the cap screw SP-607.

Loosen the set screw SP-302, adjust the splitter attachment so that it lines up with the saw blade and retighten the set screw locking the splitter attachment in place.

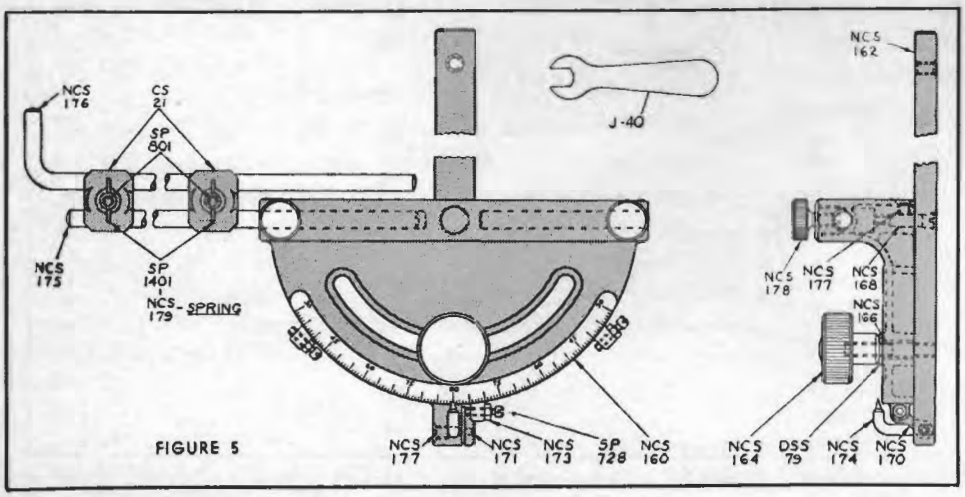

FIGURE 5

MITER-GAGE PARTS

Part No.		No. Req.	Each
CS-21-S	Stop rod clamp, complete with bolt and wing nut...	2	$ .10
DSS-79	Fiber washer	1	.10
J-40	5/16" Open end wrench....	1	.10
NCS-160-A	Miter-gage body with stop screws, etc.	1	2.20
NCS-162	Miter-gage bar only (3/16x3/4)	1	.75
NCS-162-S	Miter-gage bar complete with pointer and link	1	1.00
NCS-164	Knurled lock knob.....	1	.20
NCS-166	Lock-knob stud	1	.10
NCS-168	Tapered pivot screw.....	1	.10
NCS-170	Stop link	1	.10
NCS-171	Stop-link pin	1	.10
NCS-173	Stop-screw lock nut.....	3	.10
NCS-174	Pointer	1	.10
NCS-175	Plain stop rod	1	.10
NCS-176	Bent stop rod	1	.15
NCS-177	Headless Setscrew(1/4-28x1/4)	2	.10
NCS-178	Knurled thumbscrew	2	.10
NCS-179	Stop rod clamp spring.....	2	.10
SP-728	#8-32x3/4" Fil. Hd. Screw..	3	.10
SP-801	Carriage bolt	2	.10
SP-1401	3/8" Wing nut	2	.10

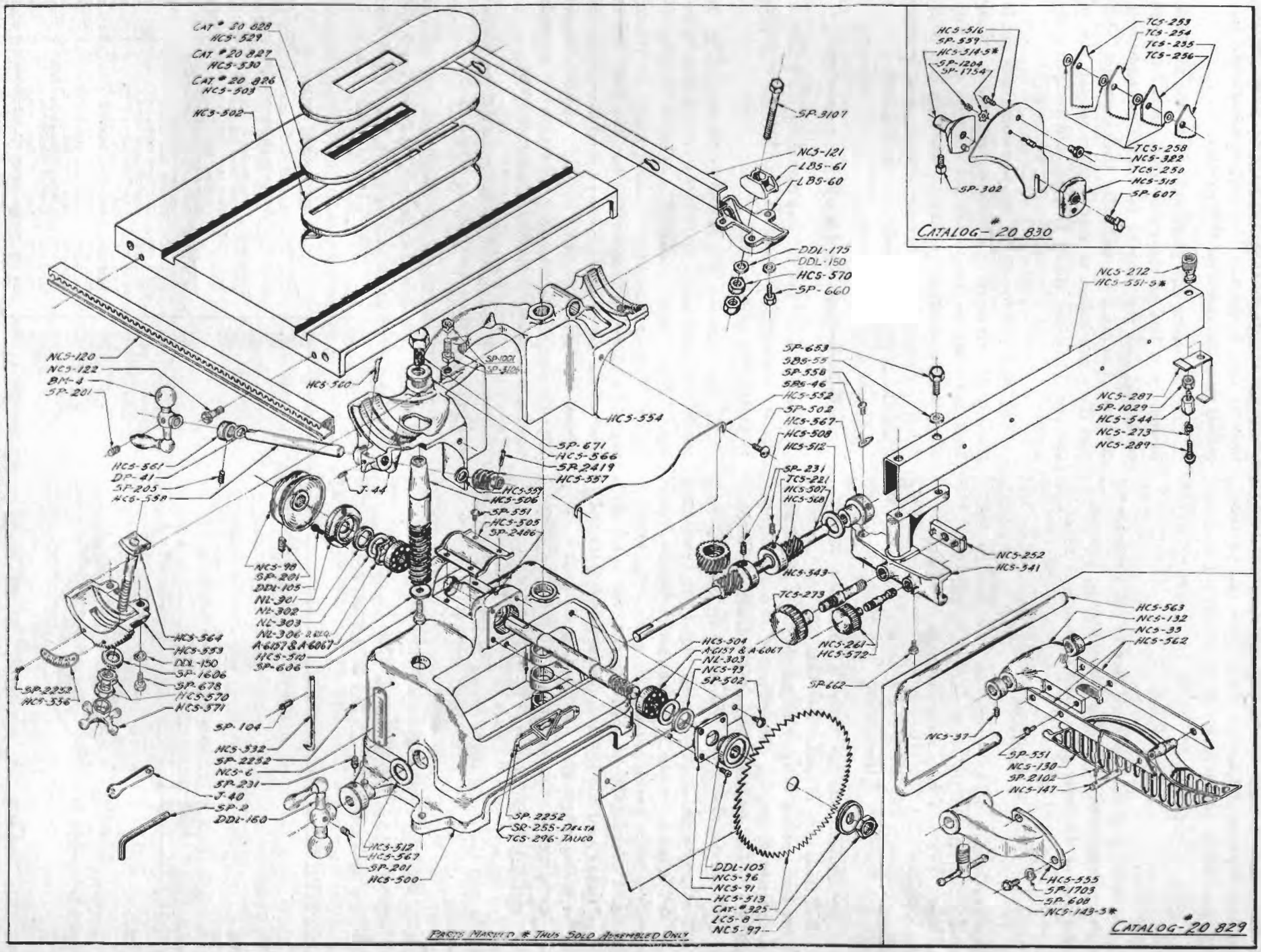
CAT # 20 828
HCS-529
CAT # 20 827
HCS-530
CAT # 20 826
HCS-503
HCS-502
SP-3107
NCS-121
LBS-61
LBS-60
DDL-175
DDL-150
HCS-570
SP-660
NCS-120
NCS-122
BM-4
SP-201
HCS-560
SP-1001
SP-3106
HCS-554
HCS-561
DP-41
SP-205
HCS-558
J-44
SP-671
HCS-566
SP-2419
HCS-557
HCS-557
HCS-506
SP-551
HCS-505
SP-2486
NCS-98
SP-201
DDL-105
NL-301
NL-302
NL-303
NL-306 2 REQ.
A-6037 & A-6067
HCS-510
SP-606
HCS-564
HCS-553
DDL-150
SP-1606
SP-678
HCS-570
NCS-571
SP-2253
HCS-556
SP-104
HCS-532
SP-2252
NCS-6
SP-231
J-40
SP-2
DDL-160
HCS-512
HCS-567
SP-201
HCS-500
SP-2252
SR-255-DELTA
TCS-296-TAUCO
HCS-504
A-6037 & A-6067
NL-303
NCS-93
SP-502
DDL-103
NCS-96
NCS-91
HCS-513
CAT-#925
LCS-8
NCS-97
SP-653
SBS-55
SP-558
SBS-46
HCS-552
SP-502
HCS-567
HCS-508
HCS-512
SP-231
TCS-221
HCS-507
HCS-568
HCS-343
TCS-273
NCS-261
HCS-572
SP-662
NCS-252
HCS-341
NCS-272
HCS-551-5*
NCS-287
SP-1029
HCS-544
NCS-273
NCS-289
HCS-516
SP-559
HCS-514-5*
SP-1204
SP-1754
SP-302
TCS-253
TCS-254
TCS-255
TCS-256
TCS-258
NCS-382
TCS-250
HCS-515
SP-607
CATALOG-#20 830
HCS-563
NCS-132
NCS-93
HCS-562
NCS-37
SP-551
NCS-130
SP-2102
NCS-147
HCS-555
SP-1703
SP-608
NCS-143-3*
CATALOG-#20 829
PARTS MARKED * THUS SOLD ASSEMBLED ONLY

FIGURE 6

REPLACEMENT PARTS

IMPORTANT: To avoid possible errors, be sure to include the serial number of the machine when ordering parts for repair or replacement.

Number	Name of Part	No. Req.	Price Each
	TABLE PARTS		
HCS-502	Table	1	$8.60
NCS-120	Guide Bar (Front)	1	1.15
NCS-121	Guide Bar (Rear)	1	.55
NCS-122	Special Shoulder Screw	4	.10
#20 826	Saw Table Insert	1	
	TRUNNION BRACKET PARTS		
HCS-506	Raising Screw	2	2.85
HCS-510	Stop Washer	1	.15
HCS-532	Height Indicator Pointer	1	.15
HCS-552	Guard Plate	1	.15
HCS-553	Trunnion (Cast Iron)	1	1.90
HCS-554	Trunnion Yoke	1	4.30
HCS-556	Tilt Indicator Scale	2	.10
HCS-557	Worm	1	1.00
HCS-558	Worm Shaft	1	.15
HCS-559	Special Bearing Washer	1	.10
HCS-560	Pointer	1	.10
HCS-561	Stop Collar	1	.20
HCS-564	Clamp Bolt (Long)	1	.30
HCS-565	Clamp Bolt (Short)	1	.25
HCS-566	Washer	2	.10
HCS-570	Spec. Hex. Nut	4	.25
HCS-571	Star Wheel	1	.30
BM-4-C-S	Ball Crank and Set Screw	1	.70
DDL-150	Spec. Washer	5	.10
DDL-175	Special Washer	1	.10
DP-41	Fiber Washer	1	.10
J-44	#8-32 x 5/16" Headless Set Screw	1	.10
LBS-60	Trunnion	1	.40
LBS-61	Clamp Shoe	1	.20
SP-104	1/4"-20 x 1/2" Cup Pt. Headless Set Screw	1	.10
SP-201	5/16"-18 x 5/16" Flat Pt. Allen Set Screw	1	.10
SP-205	5/16"-18 x 1/4" Cup Point Allen Set Screw	1	.10
SP-502	1/4"-20 x 1/4" Rd. Hd. Mach. Screw	2	.10
SP-606	5/16"-18 x 5/8" Hex. Hd. Cap. Screw	1	.10
SP-660	5/16"-24 x 5/8" Hex. Hd. Cap. Screw	3	.10
SP-671	1/2"-20 x 1" Hex. Hd. Cap. Screw	2	.10
SP-678	5/16"-24 x 7/8" Hex. Hd. Cap Screw	2	.10
SP-1001	5/16"-18 Hex. Jam Nut	1	.10
SP-1606	Washer	1	.10
SP-2252	#2 x 3/16 Drive Screw	2	.10
SP-2419	1/8 x 5/8 Groove Pin	1	.10
SP-3106	Sq. Hd. Set Screw	1	.10
	BASE PARTS		
HCS-500	Base	1	8.80
HCS-505	Saw Arbor Cover Plate	1	.75
HCS-507	Pinion Shaft	1	.25
HCS-508	Spiral Gear	2	2.60
HCS-512	Fiber Washer	2	.10
HCS-513	Baffle Plate	1	.30
HCS-567	Shoulder Bushing	2	1.05
HCS-568	Pinion	2	2.30
A-6067	Bearing Cone	2	.85
A-6157	Bearing Cup	2	.40
DDL-105	#10-32 x 7/16" Fill. Hd. Cap Screw	8	.10
DDL-169	Ball Crank	1	.75
LCS-8	Arbor Washer	1	.10
NCS-6	Height Scale	1	.10
NCS-91	Bearing Cap	1	.30
NCS-93	Felt Washer	1	.10
NCS-97	Arbor Nut	1	.10
NCS-98	3" Pulley	1	.55
NL-301	Bearing Cap	1	.25
NL-302	Felt Washer	1	.10
NL-303	Steel Washer	2	.10
NL-306	Bearing Spring	1	.10
SR-255	Name Plate (Delta)	1	.10
TCS-221	Collar	2	.15
TCS-296	Name Plate (Tauco)	1	.10
SP-201	5/16"-18 x 5/16" Allen Set Screw	4	.10
SP-231	5/16"-18 x 3/8" Allen Set Screw	2	.10
SP-502	1/4"-20 x 1/4" Rd. Hd. Mach. Screw	3	.10
SP-551	#10-32 x 1/4" Rd. Hd. Mach. Screw	4	.10
SP-2252	#2 x 3/16 Parker Kalon Screws	2	.10
SP-2486	Gits Oiler	2	.10
HCS-504-S	Arbor with flange, Timken Bearing Complete, Washers, and Square Cap	1	2.75
	RIP GAGE PARTS		
HCS-541	Rip Gage Block	1	1.48
HCS-543	Clamp Screw	1	.25
HCS-544	Support Button	1	.25
HCS-551-S	Rip Fence, Bar Only	1	1.25
HCS-572-S	Micro Adjusting Knob and Pinion	1	.60
NCS-252	Lock Plate	1	.15
NCS-272	Knurled Nut	1	.10
NCS-273	Coil Spring	1	.10
NCS-287	Rear Clamp	1	.10
NCS-289	Special Screw	1	.10
SBS-46	Pointer	1	.10
SBS-55	Special Washer	2	.10
TCS-272-S	Hand Knob and Pinion	1	.55
SP-558	#8-32 x 1/4" Rd. Hd. Mach. Screw	1	.10
SP-653	3/8"-24 x 5/8" Hex. Hd. Cap. Screw	2	.10
SP-662	1/4"-28 x 5/8" Hex. Hd. Cap. Screw	1	.10
SP-1029	Hex. Nut	1	.10
	GUARD AND SPLITTER PARTS		
HCS-514-S	Splitter Bracket and Pin	1	.75
HCS-515	Clamp Plate	1	.10
HCS-516	Splitter Blade	1	.55
HCS-555	Guard Bracket	1	.80
HCS-562	Guard Pivot Bar	2	.25
HCS-563	Swing Guard Arm	1	1.45
NCS-35	Set Collar	2	.15
NCS-37	5/16"-18 Allen Set Screw	2	.10
NCS-130	Guard Basket	1	2.00
NCS-132	Swing Guard Pivot	1	.45
NCS-143-S	Lock Bolt Assembly	1	.25
NCS-147	Guard Pivot Pin	1	.10
NCS-322	Spacer	1	.10
TCS-250	Pin	1	.10
TCS-253	Kick Back Finger	1	.10
TCS-254	Kick Back Finger	1	.10
TCS-255	Kick Back Finger	1	.10
TCS-256	Kick Back Finger	1	.10
TCS-258	Spec. Washer	4	.10
SP-302	5/16"-18 x 1/2" Sq. Hd. Set Screw	1	.10
SP-551	#10-32 x 1/4" Rd. Hd. Mach. Screw	4	.10
SP-559	#10-32 x 1/2" Rd. Hd. Mach. Screw	1	.10
SP-607	5/16"-18 x 1/4" Hex. Hd. Cap Screw	1	.10
SP-608	5/16"-18 x 7/8" Hex. Hd. Cap. Screw	2	.10
SP-1204	#8-32 Hex. Nut	1	.10
SP-1703	5/16" Lock Washer	2	.10
SP-1754	Shakeproof Washer	2	.10
SP-2102	Cotter Pin	2	.10
	MISCELLANEOUS		
#194	5/16" Allen Wrench (old SP-2)	1	
#325	8" Saw Blade	1	
#1522	Wrench	1	
#5500	5" Dia. Pulley	1	
#20 827	Dado Head Table Insert	1	
#20 828	Moulding Cutter Head Table Insert	1	
#20 829	Swing Back Guard	1	
#20 830	Splitter and Kickback Finger Attach.	1	

NOTE: Prices in this list apply only to parts ordered for repair or replacement. They cannot be used for computing allowance values if a machine is ordered "less" certain parts.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

THE DELTA MANUFACTURING CO. DELTA MILWAUKEE **600-634 E. Vienna Ave., Milwaukee, Wis.**