Beaver POWER TOOLS

ROCKWELL®

No. 6200 9" TILTING ARBOR SAW

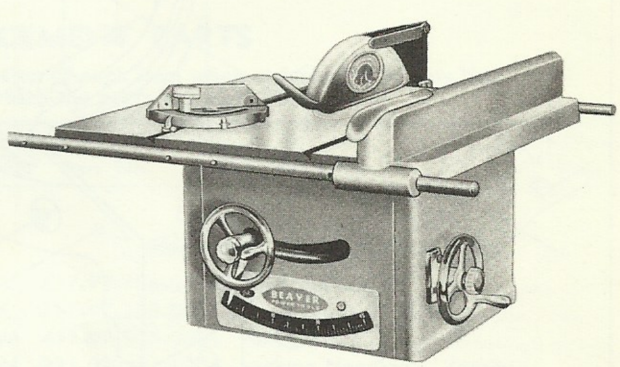
417-97-651-0001

Operating and Maintenance Instructions

Dated: 11-63

HELPFUL HINTS ON THE SET-UP AND OPERATION OF YOUR BEAVER

The Beaver 9" Bench Model Tilting Arbor Saw can perform all operations commonly done on larger and more expensive machines of its type. The working parts are enclosed in a welded steel cabinet. It is light in weight, has a large working capacity and is ruggedly designed. Cross cutting, ripping, mitering and bevelling operations can be easily accomplished. Accessories for dado and moulding operations may be purchased extra.



Maximum depth of cut is 2¾ inches. When the saw blade is tilted 45 degrees to the right, 1 7/8 inches depth of cut can be obtained. The "Auto-Set" miter gage is adjustable for cuts at any angle up to 60 degrees right or left. The rip fence can be clamped at any point along the entire width of the table including the side extensions when mounted.

The table height should be approximately 34½ inches above the floor when mounted. Its size is 24 inches wide by 22 inches deep; when both side extensions are mounted, its size is 49½ inches wide by 22 inches deep. The cabinet size is 16 inches wide, 14 inches deep by 11½ inches high.

Under the basic unit, No. 6200, the standard parts furnished with the machine are as follows:

9 inch combination saw blade. 2 inch arbor pulley, rip fence and guide rails, "Auto-Set" miter gage and 34-661 table insert for saw blade.

Accessories which may be purchased as additional equipment are the No. 9-32121-S guard and splitter attachment, combination saw blades, special table inserts, Nos. 34-663 and 34-662, for dado and moulding cutter head respectively, No. 4 moulding cutter head and knives, No. CS-3236 side table extension, No. MS-9-32-100 steel stand, No. 49-362 retractable caster set, No. 864 miter gage, No. 5225 2¼ inch motor pulley or No. 5450 4½ inch motor pulley.

Refer to the photographs, drawings and Table 1 to identify the parts mentioned in the following instructions.

CONSTRUCTION FEATURES

Use of a welded steel cabinet ruggedly constructed as a frame for mounting the table and carrying the working parts provides maximum safety for the operator and presents a machine of modern lines which can easily be kept in a neat condition. Details of the cabinet which allows ready access to the working parts of the machine are shown in Fig. 1.

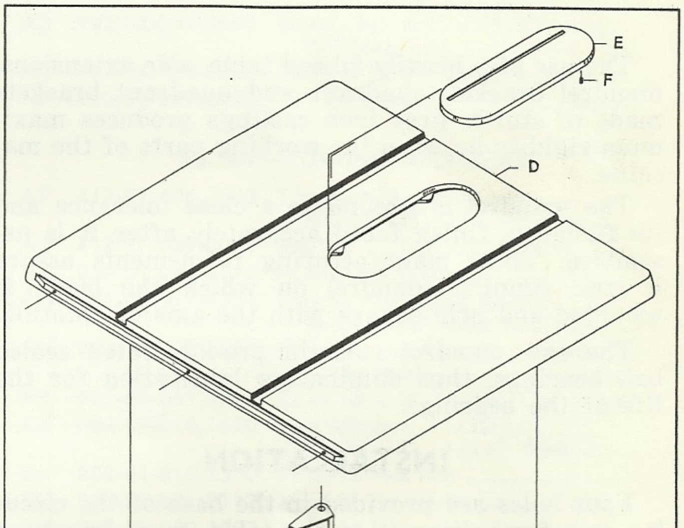


FIG. 1

TABLE AND BASE

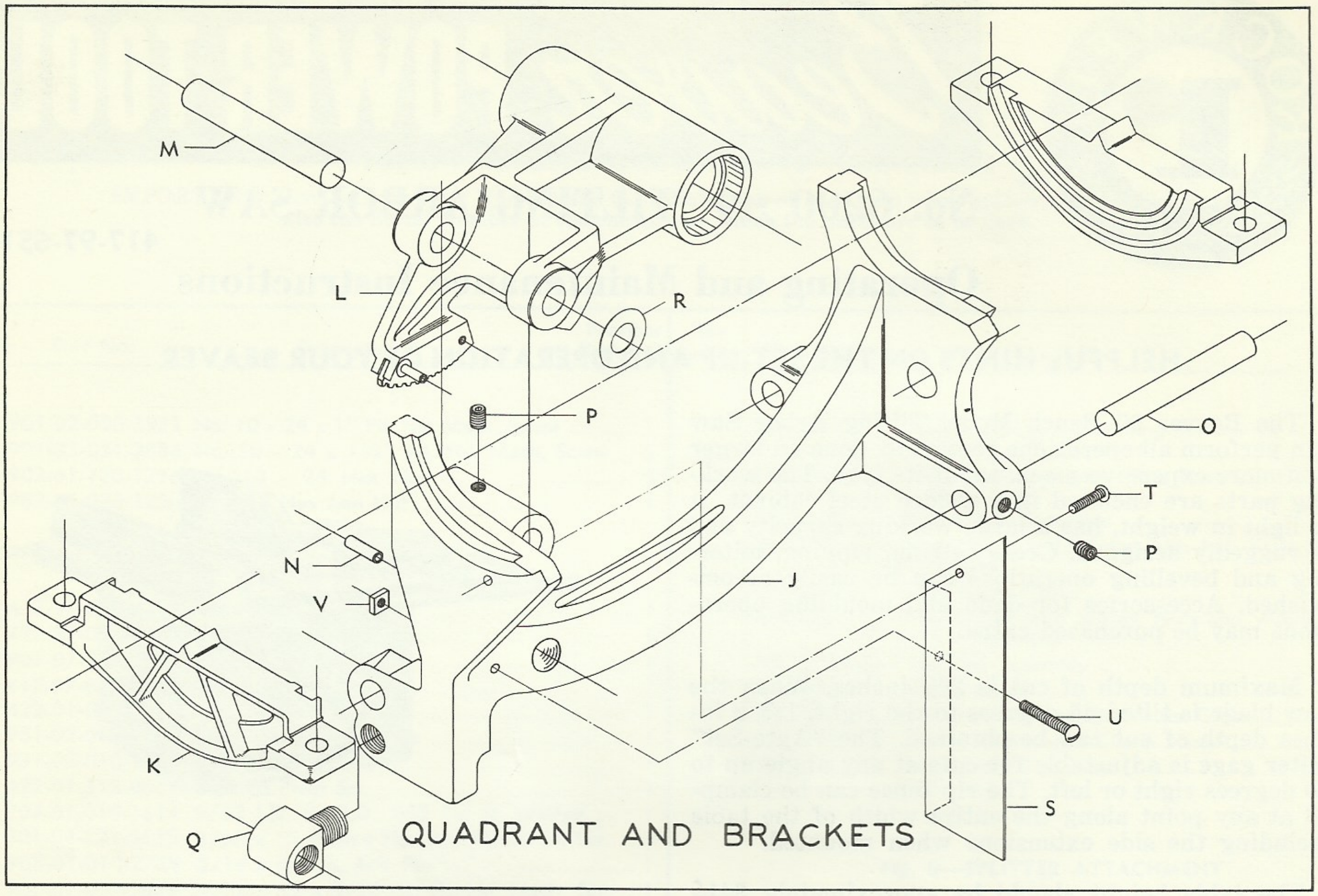


FIG. 2

The use of a heavily ribbed table, side extensions, mandrel bracket, quadrant and quadrant brackets made of sturdy grey iron castings produces maximum rigidity between the working parts of the machine.

The mandrel is ground to a close tolerance and its flange is finish faced accurately after it is assembled. These manufacturing refinements assure a true running mandrel on which the blade is mounted and held square with the axis of rotation.

The saw mandrel runs in pre-lubricated sealed ball bearings, thus eliminating lubrication for the life of the bearings.

INSTALLATION

Four holes are provided in the base of the circular saw for bolting it to the table, work bench or BEAVER machine stand. It is sometimes convenient to locate the saw on the same bench as the jointer, as the operations performed on these two machines are frequently correlated. Provision should be made under the supporting bench or table for a sawdust drawer or box.

When the saw has been bolted down it is advisable to make a few checks for saw and fence alignment to ensure accurate work. The most important adjustments concern the parallelity of the saw blades, ripping fence and miter gage slots. The saw blade must be parallel to the miter fence slots. This adjustment is taken care of before the BEAVER saw leaves the factory. If, however, after the saw has been in operation for a while, a re-alignment is necessary, it may be accomplished by a slight movement of the trunnion supports where they fasten to the underside of the table.

The fence adjustment is described later under the heading the Ripping Fence.

POWER REQUIREMENTS

For average conditions, a 3/4 hp motor will furnish ample power for this machine. A 4 1/2 inch motor pulley is recommended for use with a 60 cycle 1725 rpm motor to obtain a mandrel speed of 3450 rpm. A 2 1/4 inch motor pulley should be used with a 60 cycle 3450 rpm motor.

Before installing the motor make sure it rotates in the right direction. To run the blade forward through the table, the correct rotation of the motor is clockwise when viewed from the left side of the machine. If the motor runs the wrong way, reverse it according to the manufacturer's directions.

Before connecting the motor to the power line, be sure the electric current is of the same characteristics as stamped on the motor name plate.

Do not connect the motor to a circuit which will be overloaded. If an extension cord is used, it must have adequate capacity. All line connections should make good contact. Running on low voltage will injure the motor.

Fasten the motor to the motor plate, X, Fig. 4, with suitable carriage bolts, fastening them loosely so the motor can be shifted to line up the motor pulley with the mandrel pulley. It is important that the motor shaft and the mandrel shaft be parallel.

Slip the motor pulley on the motor shaft with its hub extending away from the motor and tighten it in place. To prevent excess wear and loss of power, the V-belt must run true. Place a straight edge across the faces of the pulleys—working through the opening in the rear of the cabinet—and shift the motor pulley on its shaft until it is in line and tighten its set screw. Refer to Fig. 4.

All adjustments for pulley line-up must be made on the motor pulley. Do not move the arbor pulley, as it also acts as a bearing retainer.

Place the V-belt over the arbor pulley, then lift the motor plate slightly to stretch the V-belt over the motor pulley. The weight of the motor will give the V-belt the correct tension.

RAISING MECHANISM

The saw blade is raised by turning the handwheel to the right and lowered by turning it in the opposite direction. The pitch of the raising worm and spacing of the teeth on which it rides are such that one complete turn of the hand-wheel moves the blade approximately 5/16 of an inch.

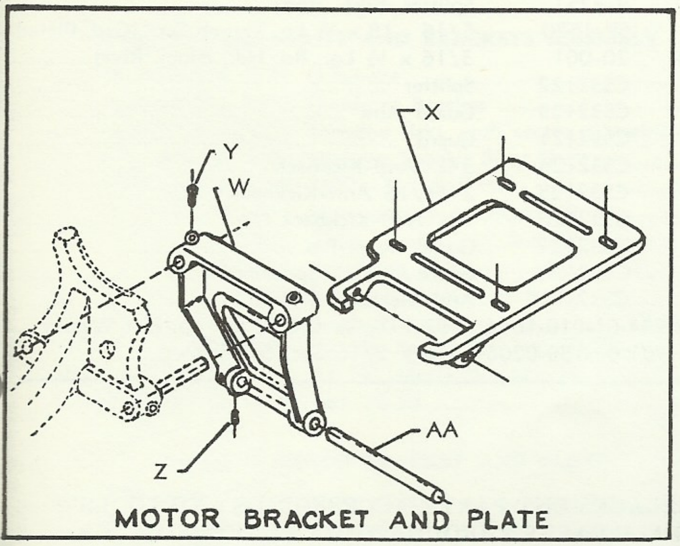


FIG. 4

The hand knob, AN, which extends from the centre of the hand-wheel assembly, screws onto the sheel shaft, AK, and locks the saw blade at the desired height by tightening it moderately, any additional force merely places unnecessary strain upon the raising mechanism. When making an adjustment for depth of cut always raise the saw blade to the proper height, then lock it in position to avoid a slight change in height which might occur. Refer to Fig. 6.

To prevent the mandrel from raising too high, a steel pin has been placed in the mandrel bracket assembly. This pin strikes against another steel pin, N, projecting from a boss on the quadrant. Refer to Fig. 2.

Undue looseness between worm, AQ and sector in arbor bracket will cause vibration. Sleeve, AL, is eccentric and by loosening set screw in quadrant, the sleeve may be rotated until a good mesh is obtained. Then lock set screw to sleeve.

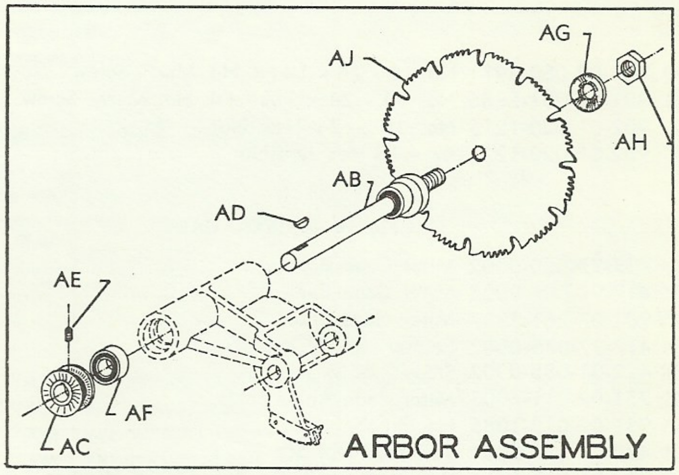


FIG. 5

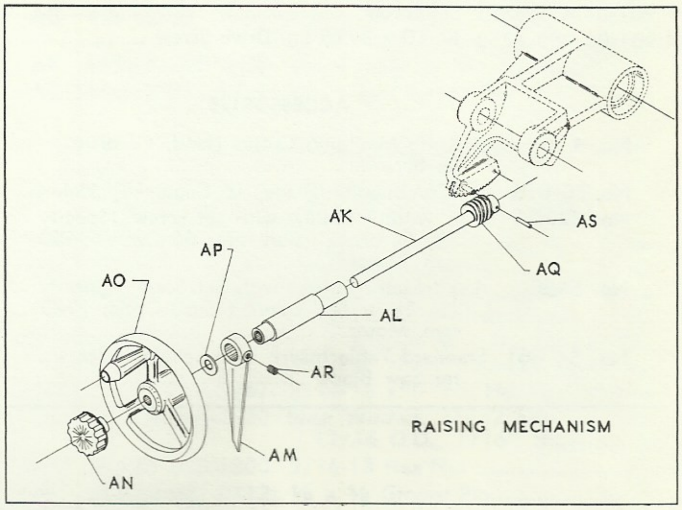
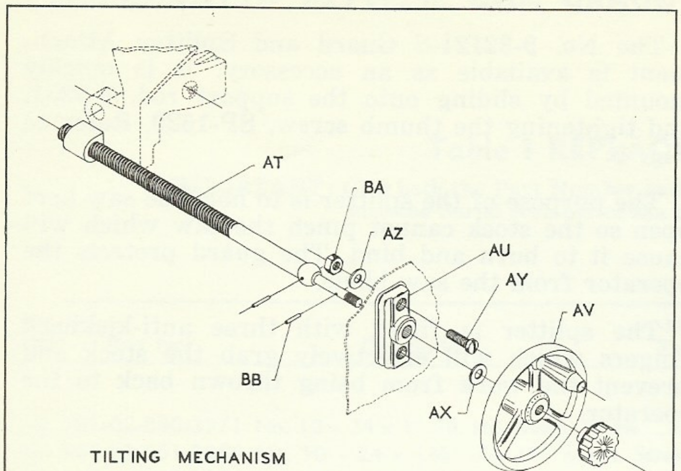


FIG. 6

TILTING MECHANISM

The saw blade is tilted by turning the hand-wheel on the right side of the cabinet. Each complete turn of the hand-wheel gives approximately eight-tenths of one degree of tilt.

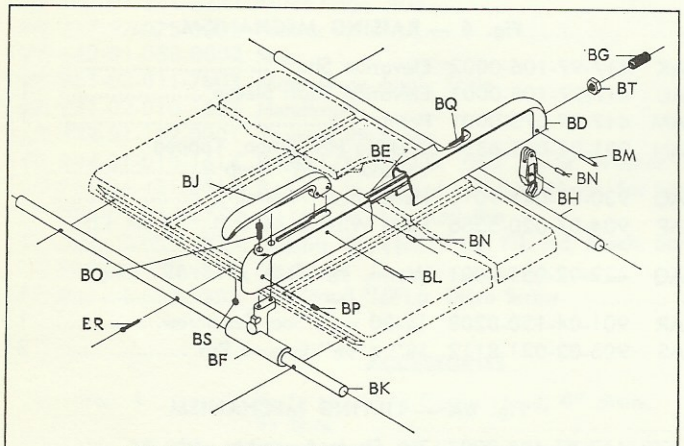
The hand knob, AW, which extends from the center of the hand-wheel assembly, screws onto the steel shaft, AT, and locks the saw blade at the desired angular position by tightening it moderately; any additional force merely places unnecessary strain upon the tilting mechanism. Refer to Fig. 6A.



TILTING MECHANISM

FIG. 6A

Place the saw blade at right angles to the table and check its squareness by using a combination square then set the pointer, AM, to the zero point.



RIP FENCE AND GUIDE RAILS

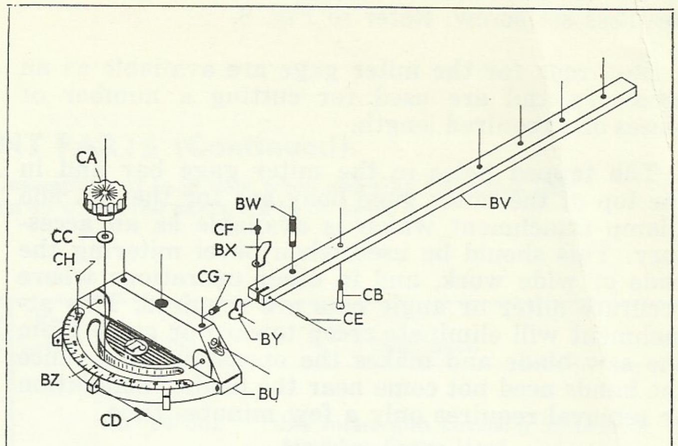
FIG. 7

A position stop is provided on the end of tilt shaft, AT, to stop the blade at the 0° position. Place the saw blade at right angles to the table and check its squareness by using a combination square. Set pointer, AM, to the zero on the scale. Loosen jam on shaft, AT, and move adjusting nut till it contacts tilt shaft nut, Q. Then tighten lock nut.

THE RIPPING FENCE

Of cast construction, is ground on both sides for use on either side of the saw blade and slides smoothly on the support rails. It is readily clamped in position by means of a level arm on one end which actuates a link-clamping bar, thereby locking both ends simultaneously. The fence is used for cutting lumber lengthwise with the grain. This operation is known as ripping or rip sawing. Refer to Fig. 7.

The fence must be parallel to the miter gage slots. If adjustment is required, loosen the clamp handle and holding the guide at mandrel end of fence against the guide rails, loosen socket head screws in top of fence and adjust by means of set screws in the side, until the fence is correctly lined up with the slot in table top. Tighten top screws.



No. 864 MITER GAGE

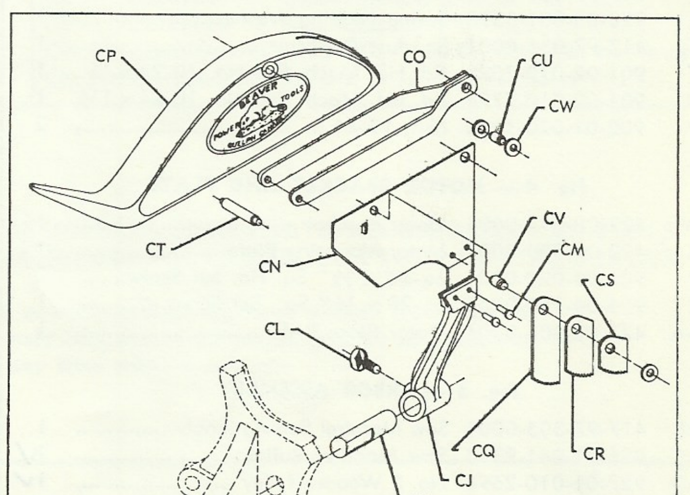
FIG. 8

MITER GAGE

The No. 864 Miter Gage, Fig 8, has a 7 inch face and 3/8 x ¾ x 18 inch bar which fits the table slot. It can be set at any angle up to 60 degrees right or left, and has adjustable stops for instantaneous settings at zero and 45 degrees right or left.

To adjust this unit, flip the stop link, BY, away from the stop screw at the 90 degree mark. Take a piece of scrap wood and make a trial cut, check the cut with a combination square resetting the gage until the cut is square. Lift the stop link and adjust the special Nylok stop screw, CD, bringing it against the link. Take another trial cut to recheck the setting. The right and left 45 degree stops should be adjusted in the same manner as described above. From time to time, check the accuracy of the cut by using a combination square.

The tapered pivot screw, CB, holds the miter gage head so the bar can be adjusted to compensate for wear or loosening the head to suit the operator. To do this, loosen the headless set screw CG, in the face of the miter gage and adjust the tapered pivot



SPLITTER ATTACHMENT

FIG. 9

screw to the required tension. Then tighten the headless set screw. Refer to Fig. 8.

Stop rods for the miter gage are available as an accessory and are used for cutting a number of pieces of a required length.

The tapped holes in the miter gage bar and in the top of the miter gage body are for the No. 865 Clamp attachment which is available as an accessory. This should be used when bevel mitering the ends of wide work, and in other operations where accurate miter or angle cuts are required. This attachment will eliminate creep toward or away from the saw blade and makes the operation safe, since the hands need not come near the blade. Installation or removal requires only a few minutes time.

GUARD AND SPLITTER ATTACHMENT

The No. 9-32121-S Guard and Splitter Attachment is available as an accessory. It is quickly mounted by sliding onto the support rod, 9-3251, and tightening the thumb screw, SP-1520. Refer to Fig. 9.

The purpose of the splitter is to hold the saw kerf open so the stock cannot pinch the saw which will cause it to burn and bind. The guard protects the operator from the saw blade.

The splitter is fitted with three anti-kickback fingers which will effectively grab the stock and prevent the work from being thrown back to the operator.

Table 1. 6200 REPLACEMENT PARTS

IMPORTANT: Give both the Part Number and the Description of each item when ordering from this list; also the Serial Number of the machine on which the parts are to be used.

Key Letter	Part No.	Description	Number Required
		Fig. 1 — BASE AND TABLE ASSEMBLY	
A	417-97-331-0001	Base Sub-Assembly	1
B	960-02-011-8348	Tilt Scale and Name Plate	1
C	901-06-450-2252	No. 2 x 3/16 long drive screws	4
D	417-97-091-0002	Table	1
E	422-02-363-0009	Insert with screws	1
F	901-04-150-1186	No. 10-32 x ¼" Set Screw, cup pt.	4
G	901-01-061-8367	5/16-18 x 1" Hex. Hd. Cap Screw	4
H	904-01-010-1620	5/16" Steel Washer	4
		Fig. 2 — QUADRANT AND BRACKETS ASSEMBLY	
J	417-97-095-0001	Quadrant	1
K	422-08-014-0004	Quadrant Bracket	2
L	417-97-314-0001	Mandrel Brkt. with sector assembled	1
M	417-97-106-0001	Mandrel Bracket Pivot Shaft	1
N	905-01-010-5075	½" x ¾" Roll Pin	1
O	417-97-108-0001	Motor Mounting Bracket Rod	2
P	901-04-150-0206	5/16-18 x 5/16" Soc. Set Screw	3
Q	417-97-090-0001	Tilt Shaft Nut	1
R	928-05-001-3398	Spring Loading Washer	1
S	417-97-036-0001	Sawdust Deflector	1
T	901-02-010-7595	Rd. Hd. Mach. Scr. No. 10-24 x ¾	1
U	901-02-010-7794	Rd. Hd. Mach. Scr. No. 10-24 x 1¼	1
V	902-01-020-1216	Nut, 10-24	2
		Fig. 4 — MOTOR BRACKET AND PLATE	
W	422-08-014-0001	Motor Bracket	1
X	422-09-089-0002	Motor Mounting Plate	1
Y	901-04-020-0301	¼-20 x ½" Sq. Hd. Set Screw	2
Z	904-04-150-0208	¼-20 x ¼" Soc. Set Screw	1
AA	422-08-108-0001	Motor Plate Rod	1
		Fig. 5 — ARBOR ASSEMBLY	
AB	417-97-303-0001	Saw Mandrel Sub-Assembly	1
AC	926-01-041-9353	Saw Mandrel Pulley	1
AD	927-01-010-2694	No. 5 Woodruff Key	1
AE	901-04-150-1185	¼-20 x 5/16" Soc. Set Screw	1
AF	920-04-020-5335	Saw Mandrel Bearing	1
AG	422-04-103-5009	Saw Mandrel Loose Collar	1
AH	902-01-820-1226	⅝-18 Hex. Jam Nut	1
AJ	424-01-903-3224	9" Comb. Blade, 16 gage ⅝" Hole	1

Key Letter	Part No.	Description	Number Required
		Fig. 6 — RAISING MECHANISM	
AK	417-97-106-0002	Elevation Shaft	1
AL	417-97-105-0001	Elevation Shaft Sleeve	1
AM	417-97-075-0001	Pointer	1
AN	931-02-011-6354	Locking Handknob, Tapped ⅜-24 x ¾" deep	1
AO	930-01-041-9010	Handwheel Assembly	1
AP	904-07-020-5556	Fibre Washer ¾ O.D., 25/64 I.D., 1/16" thick	1
AQ	422-02-051-0001	Worm, ⅞" O.D. x 13/32" long, ⅜" bore, L.H.	1
AR	901-04-150-0208	¼-20 x ¼ Soc. Set Screw	1
AS	905-02-021-8112	⅛" x ⅝" Groove Pin	2
		Fig. 6A — TILTING MECHANISM	
AT	417-97-406-0003	Tilt Shaft Assembly with 905-02-021-8112, Roll Pin	1
AU	417-97-089-0001	Bearing	1
AV	930-01-041-9010	Handwheel Assembly	1
AW	931-02-011-6354	Locking Handknob, tapped ⅜-24 x ¾" deep	1
AX	904-07-020-5556	Fibre Washer ¾ O.D., 25/64 I.D., 1/16" thick	1
AY	901-01-061-8367	5/16-18 x 1" Fil. Hd. Cap Screw	2
AZ	904-01-010-1620	Steel Washer, 11/32 I.D., 11/16 O.D., 1/16" thick	2
BA	902-01-010-1300	5/16-18 Hex Nut	2
BB	905-02-021-8112	⅛ x ⅝ Groove Pin	1
BC	902-01-100-1002	7/16-14 Heavy Hex Jam	2
		Fig. 7 — RIP FENCE AND GUIDE RAILS	
BD	417-97-043-0001	Rip Fence Body	1
BE	417-97-004-0003	Rip Fence Bar	1
BF	419-98-055-0004	Rip Fence Front Slide	1
BG	417-97-112-0001	Clamp Pivot Screw	1
BH	417-97-027-0001	Rip Fence Clamp	1
BJ	417-97-067-0001	Rip Fence Lever	1
BK	417-97-004-0001	Guide Rail	2
BL	905-01-010-6738	¼" x 1⅜" Roll Pin	1
BM	905-01-010-2712	¼" x 1¼" Roll Pin	1
BN	905-01-010-2702	¼" x ⅝" Roll Pin	2
BO	901-03-010-0757	5/16 - 18 x ¾" Soc. Hd. Cap Scr.	2
BP	901-04-150-6202	5/16 - 18 x ⅜" Soc. Set Screw	2

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Table 1 REPLACEMENT PARTS (Continued)

IMPORTANT: Give both the Part Number and the Description of each item when ordering from this list; also the Serial Number of the machine on which the parts are to be used.

Key Letter	Part No.	Description	Number Required
BQ	901-02-050-3971	No. 10 - 24 x 1" Fil. Hd. Mach. Screw	1
BR	901-02-051-2886	No. 10 - 24 x 1¼" Fil. Hd. Mach. Screw	5
BS	902-01-120-1216	No. 10 - 24 Hex Nut	5
BT	902-01-020-1226	⅝ - 18 Hex Jam Nut	1
		Fig. 8—MITER GAGE	
BU	417-97-050-0002	Miter Gage Body	1
BV	417-97-004-0002	Miter Gage Bar	1
BW	901-07-261-3237	Miter Gage Stud	1
BX	417-97-075-0002	Pointer	1
BY	422-01-088-0002	Stop	1
BZ	951-02-011-7003	Miter Gage Angle Scale	1
CA	931-02-010-1085	Handknob	1
CB	422-01-112-0001	Tapered Pivot Scr.	1
CC	904-01-010-1614	9/32 I.D. ⅝ O.D. .065 Th. St. Washer	1
CD	901-04-121-3615	8/32 x ½ Slotted Headless Nylok Set Scr.	3
CE	905-01-010-2729	3/16 x ½ Lg. Roll Pin	1
CF	901-02-051-2879	No. 6 - 32 x 3/16 Lg. Fil. Hd. Mach. Scr.	1
CG	901-04-410-4561	Set Screw	1
CH	901-06-450-2253	No. 0 x 3/16 Lg. Drive Screw	4
		ACCESSORIES	
	No. 4	3-Knife Moulding Cutter Head, 4" diam. ⅝ bore	1
	No. 36-014	9" Combination Blade, 16 Gage, ⅝" Hole	1
	No. 5225	2¼" Motor Pulley, with set screw (Specify ½, ⅝ or ¾" Bore) for 60 Cycle, 3450 rpm Motor	1
	No. 5450	4½" Motor Pulley, with Set Screw (Specify ½, ⅝ or ¾" Bore) for 60 Cycle, 1725 rpm Motor	1

Key Letter	Part No.	Description	Number Required
	No. 34-662	Table Insert with Levelling Screws, for Moulding Cutter Head	1
	No. 34-663	Table Insert, with Levelling Screws, for Dade Head	1
	CS-3236	Side Table Extension	1
	9-32121-S	Blade Guard and Splitter, with Anti-Kickback Fingers	[illegible]
	CS-3238	Long Guide Rails	2
	MS-9-32-100	Steel Stand, with Screws, Nuts and Washers for Assembly	1
	CS-32157-S	Trammel Assembly	1
	No. 864	Miter Gage	1
	No. 865	Clamp Attachment for Miter Gage	1
	No. 873	Sliding Clamp with Clamp Screw	1
	No. 49-362	Retractable Caster Set	1
		Fig. 9—SPLITTER ATTACHMENT	
CJ	9-3250	Splitter Brkt.	[illegible]
CK	9-3251	Splitter Brkt. Rod	[illegible]
CL	SP-1520	5/16 - 18 x ½ Lg. Thumb Scr. (Cad. Plated)	1
CM	20-001	3/16 x ½ Lg., Rd. Hd., Alum. Rivet	2
CN	CS32122	Splitter	1
CO	CS32123	Guard Arm	2
CP	CS32121	Guard	1
CQ	CS32124	3¾ Anti-Kickback	1
CR	CS32125	2 11/16 Anti-Kickback	1
CS	CS32126	1¾ Anti-Kickback	1
CT	CS32127	Guard Hinge Pin	1
CU	CS32128	Guard Arm and Spreader Pin	1