

20" WOOD CUTTING BAND SAW

Operating and Maintenance Instructions

The 20" Wood Cutting Band Saw is fully enclosed in a welded steel cabinet. It is a rugged, large capacity machine, equipped for accurate work in cabinet shops, furniture factories, pattern shops and other wood working plants. Use of correct blades also makes it an efficient unit for ripping, re-sawing, and for cutting plastics, aluminum, manganese and other non-ferrous metals.

Standard blade length of this band saw is 141 inches. Maximum blade width is 1 inch. All adjustments necessary for proper centering, guiding and tensioning of blades are provided. Blades of various widths from $\frac{3}{16}$ to 1 inch wide are available. The table tilts 45 degrees to the right and 12 degrees to the left.

Maximum height of cut is $13\frac{1}{4}$ inches with clearance of 5 inches between the blade and upper frame. The full throat width, however, is $19\frac{3}{4}$ inches for cuts up to a height capacity of $12\frac{1}{8}$ inches. These clearances, location of mounting holes and other dimensions are shown in Fig. 2.

The 20" Band Saw is shipped completely assembled as illustrated in Fig. 1, with motor pulley and two matched V-belts, less motor and switch. A $\frac{3}{8}$ -inch blade No. 28-877 is furnished with the machine. Table insert, alignment pin and three wrenches are inclosed in the packing envelope. The motor and switch must be ordered separately and should be selected to meet the available electric power characteristics and the customer's operating requirements.

Accessories which may be purchased as additional equipment are the miter gage and rip fence complete with guide rails.

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

CONSTRUCTION FEATURES

Use of the welded steel cabinet as a frame to carry the working parts of this band saw greatly reduces the weight required for rugged construction. At the same time, this design provides maximum safety for the operator and presents a machine of modern lines which is easily kept in neat condition. Details of the cabinet and the doors which give ready access to the wheels and drive are shown in Fig. 3.

The working parts are carried on structural reinforcements inside the cabinet and are fastened by a novel 3-point mounting feature which permits exact alignment. Each machine is carefully adjusted at the factory. The original accuracy can easily be restored

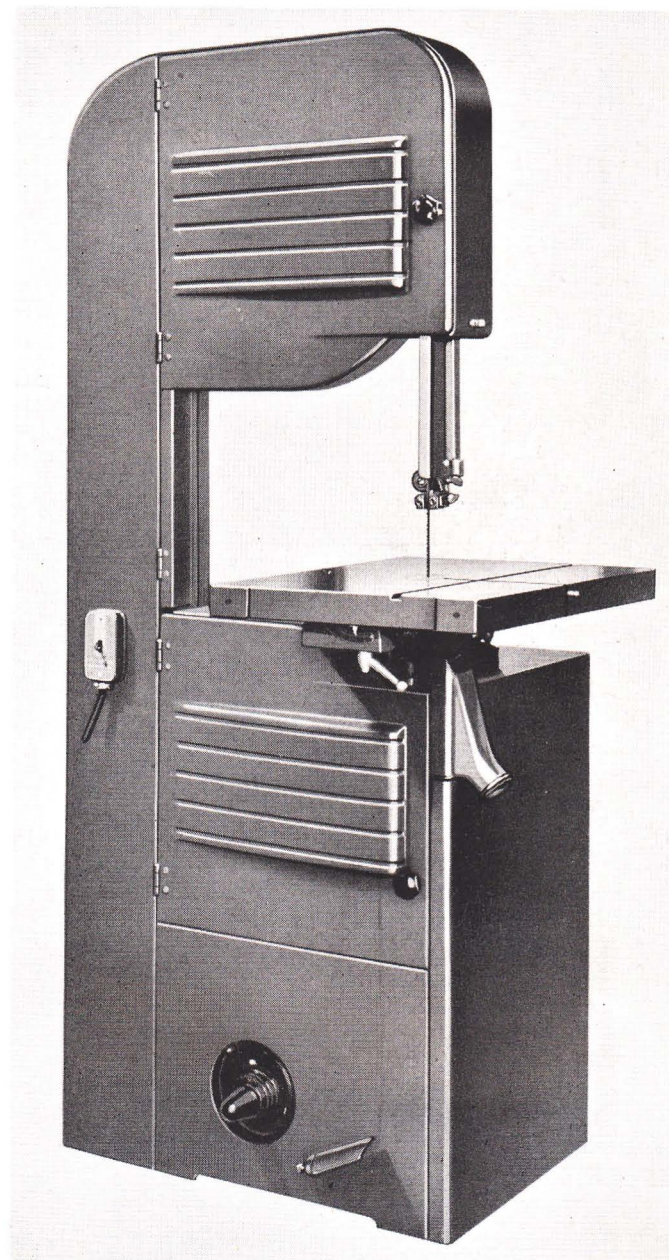


Fig. 1. 20" Wood Cutting Band Saw.

after new parts are installed or if the machine has been injured, thus greatly extending the life of the unit without extra expense.

On this machine the slot for removing the blade is at the side of the table. This patented feature permits the use of widely spaced trunnions for greater rigidity of the tilting table, and avoids interference with the

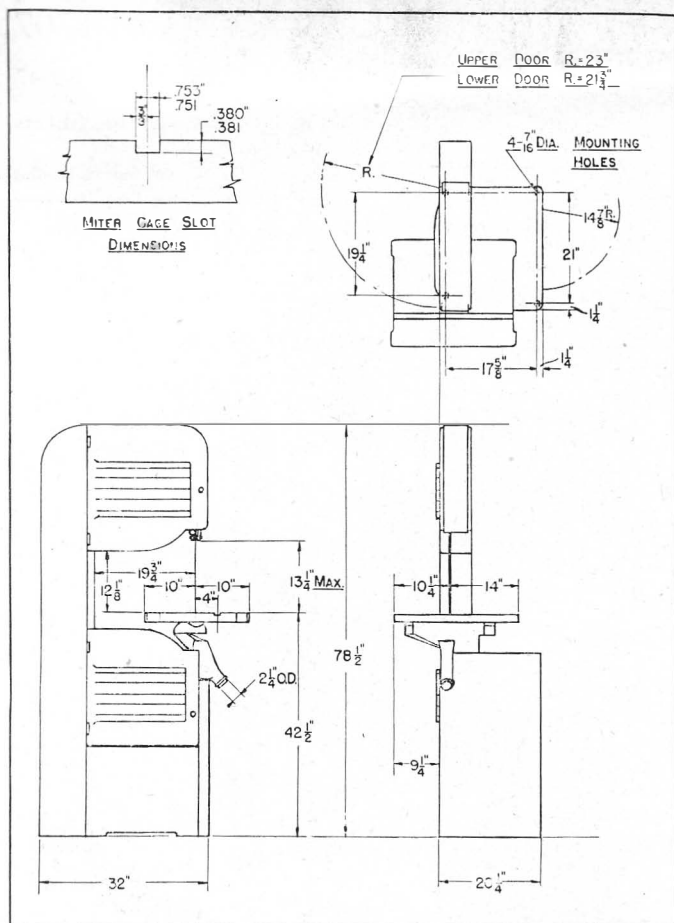


Fig 2. Dimensions of 20" Band Saw.

front rip fence bar, screw feed or other attachment which may be used. Other band saws for which this slot arrangement is not available must have the trunnions spaced to the rear of the blade, or have a slotted front trunnion, resulting in a less rigid table and unhandy blade removal.

The blade guides are fully and independently adjustable for blade width and thickness to permit the exact settings required for accurate work and long blade life. The lower guides are within 1 inch of the table surface. Thus the blade is supported close to the work, reducing blade breakage. Convenient adjusting screws permit each setting to be made separately. The front blade guard rides with the upper guides, protecting the operator in all cutting positions.

Other features presented in this band saw are the convenient blade tracking adjustment, blade tension control with indicator, aluminum wheels with tensioned removable rubber tires which have been ground to uniform thickness, the foot brake and dust spout. Sealed ball bearings are used for both wheel shafts and for supporting the blade, thus reducing lubrication requirements to a minimum.

POWER AND SPEED

Under average conditions a 1 hp motor will furnish ample power for this machine. When considerable heavy cutting is to be done, a 1 1/2 hp motor will be more effective. Use a constant speed motor.

The correct motor speed with 60-cycle or DC power is 1725 rpm, which will run the blade at 4500 feet per minute. With 50-cycle current a 1425 rpm motor should be used, making the blade speed 3800 feet per minute. These speeds, being suitable for most wood cutting operations, are obtained with the 3 1/2-inch motor pulley and 7-inch drive pulley furnished as standard equipment.

No other pulleys for this 2-belt drive are available. When some other drive ratio is desired, to change blade speed or accommodate a different motor, the customer should have a new pulley machined locally according to the standard belt groove dimensions.

The standard motor pulley CBS-140-S has a 3/4-inch bore and 3/16-inch keyway. It will fit any of the Delta motors recommended for this machine. Consult your Delta dealer for the correct motor to meet your needs.

SWITCHES AND ELECTRIC CONNECTIONS

The No. 49-314 switch box assembly may be used with single phase and DC motors. Convenient mounting of the "on-off" switch is provided on the band saw column to the left of the table, as shown in Fig 1. This switch assembly includes all parts needed for a permanent and safe connection and permits the machine to be operated from any convenient power outlet.

For three-phase motors use a manual or magnetic starter and the 3-wire armored cable No. 49-315. Starters of various voltages are listed in the catalog.

The 3-phase manual starter No. 1320 may also be used for single phase and DC motors, when overload protection is desired.

ASSEMBLY

Remove the crate and unbolt the base from the skid. Wipe the protective coating thoroughly from the working parts of the machine.

Install the blade, entering it through the table slot and running it loosely over the wheels. The blade is easily handled by holding it vertically in both hands, with approximately equal upper and lower loops similar to its operating position. Be sure that the teeth on the right point downward and are to the front. Raise the upper wheel by turning the hand knob at the rear of the upper frame until the blade has slight tension. Place the table insert CBS-138 into its seat, with the open end of the slot to the rear.

Enter the alignment pin LBS-55 into the tapered hole at the right end of the table slot and tap it lightly with a hammer. Do not drive the pin too far; excessive pressure might crack the table. The pin holds the ground surface of the table flush across the slot, as the tapered hole was reamed after grinding the table and before the slot was milled.

When the miter gage is used, the alignment pin should be tapped in just enough so that the gage bar slides freely in the table groove.

To remove the alignment pin, turn it either way by means of a wrench applied to the hexagon head.

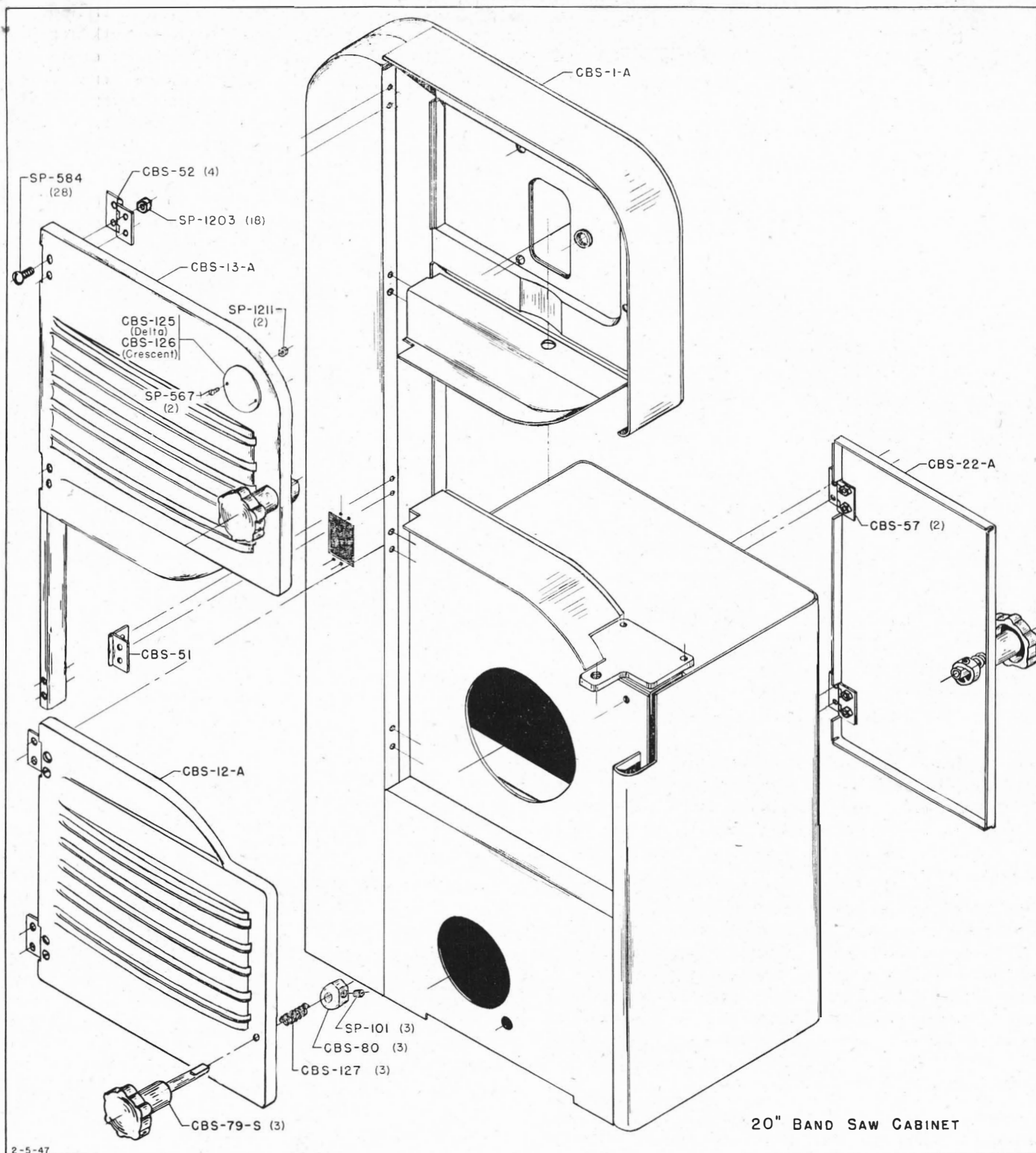


Fig. 3.

Holes inside the base of the band saw frame, spaced as shown in Fig. 2, provide for permanently mounting the machine on the shop floor. However, it is not necessary to bolt the machine down as the base is built to stand on any level surface.

MOUNTING THE MOTOR

Before installing the motor, be sure that it runs in the right direction. The correct rotation is counter-

clockwise when viewed from the rear of the machine, to drive the blade downward through the table. If the motor runs the wrong way, reverse it according to the manufacturer's directions.

The motor mounting plate CBS-31-A, shown in Fig. 4, has holes to receive Delta 8½-inch frame motors and NEMA frame motors. The required mounting holes can easily be drilled for any other motor.



Fig. 5. Installing the Motor.

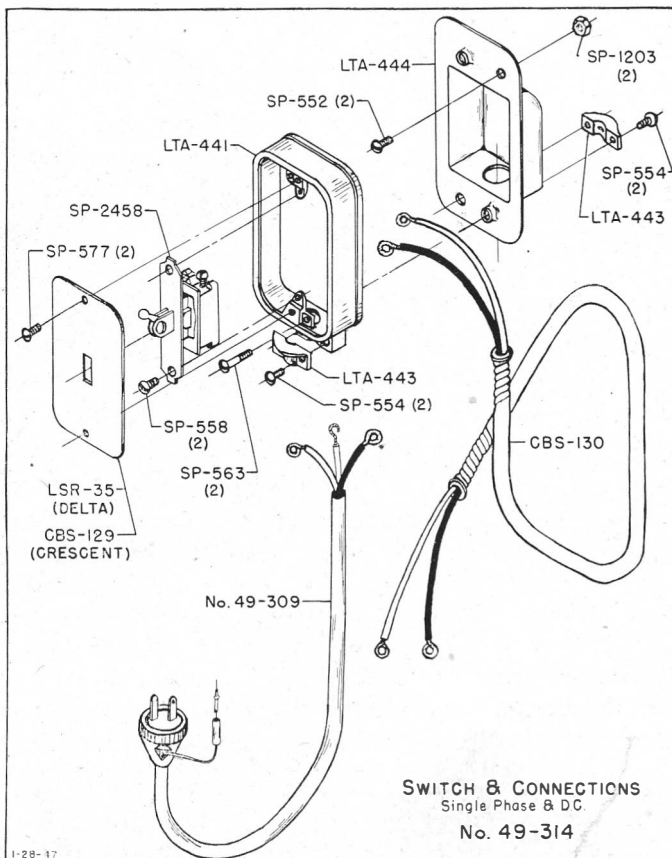


Fig. 7.

onto the pin in order to ground the machine, for protection of the operator.

Local ordinances generally require that 3-phase motors be connected by a licensed electrician. The manual or magnetic starter should be mounted on the column of the band saw over the switch box hole.

LUBRICATION

The upper and lower wheel shafts are supported in sealed ball bearings. The same type of bearing is used back of the band saw blade to take the thrust developed when cutting. These bearings need no lubrication throughout their life.

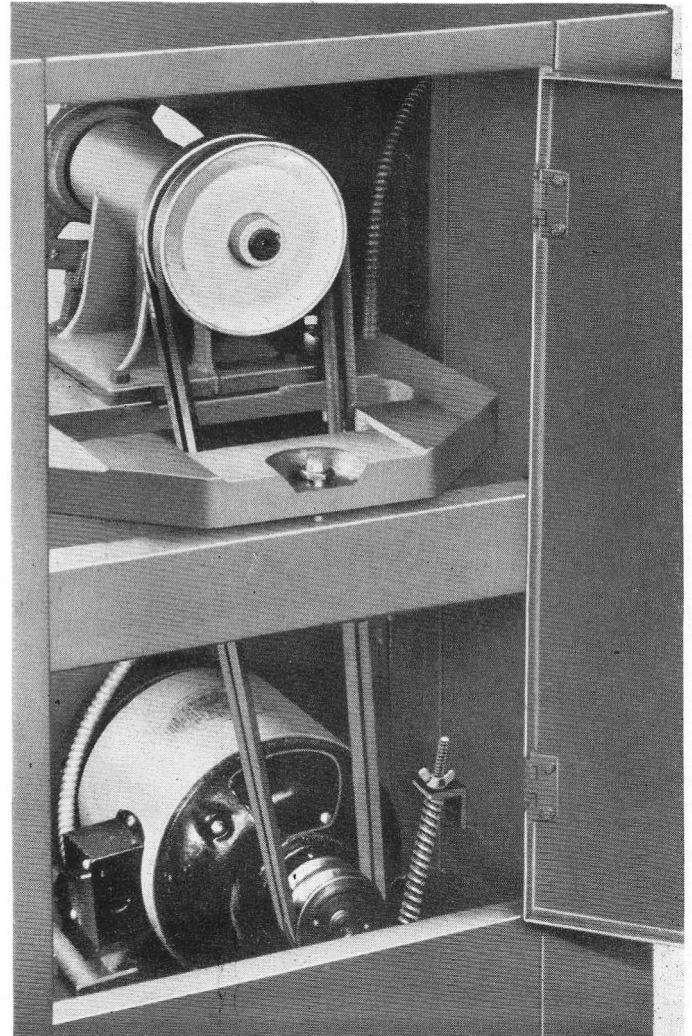


Fig. 6. V-Belt Drive.

Oil the sliding ways of the upper wheel bracket, the trunnions, the adjusting screws and other movable parts occasionally to keep them in free operating condition.

Do not lubricate the saw blade. Keep the blade contact surfaces of the guide blocks and the support bearings clean and free from oil.

OPERATING ADJUSTMENTS

The controls and adjustments described below are important for accuracy and convenience in various operations. Follow these directions for best results:

Blade Tension

Correct blade tension is necessary for efficient cutting. Wider and thicker blades require more tension than the narrow ones. A pointer CBS-86 indicates the

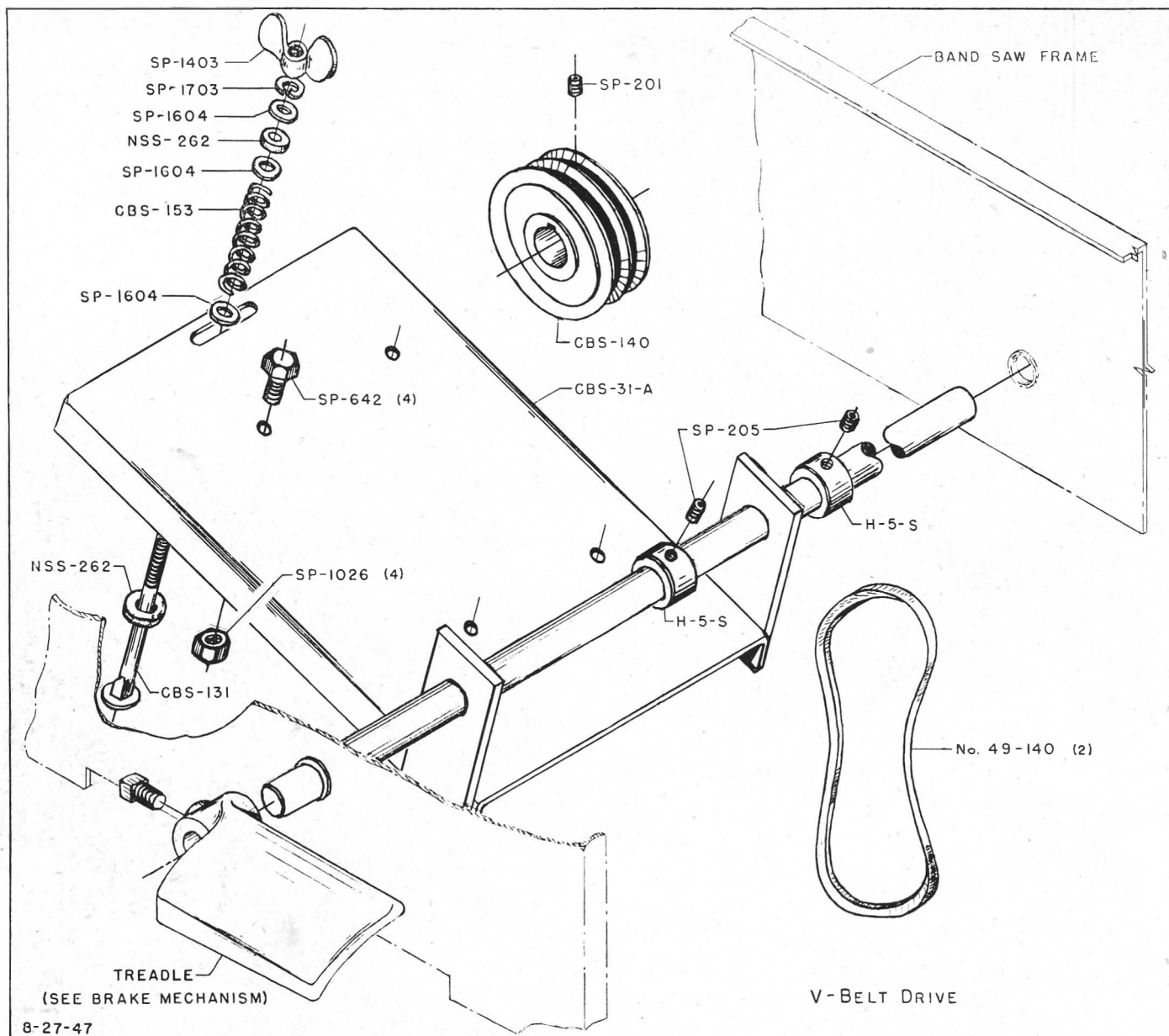


Fig. 4.

Insert the motor into the lower chamber of the cabinet through the rear door, as shown in Fig. 5, and attach it to the mounting plate by means of the $\frac{3}{8}$ -inch hexagon head cap screws SP-642 and hexagon nuts SP-1026 which are furnished in the envelope. Install the motor pulley and V-belts.

The belts must run true to prevent excessive wear and loss of power. Place a straight edge across the faces of the pulleys and shift the motor pulley on its shaft until it is in line. Tighten the set screw in the motor pulley.

The spring at the end of the motor mounting plate, shown in Fig. 6, compresses when the belts are sprung over the pulleys. Adjust belt tension by turning the wing nut on the bolt CBS-131. The spring takes up starting torque. Use of a pivoted motor plate allows for varying belt lengths and pulley diameters.

CONNECTING MOTOR AND SWITCH

The switch and connections for single phase and DC motors are shown in Fig. 7. Parts of the unit, No. 49-314, are assembled ready for installation. Remove the cover plate from the switch box and take out the two mounting screws SP-552 from the pan. Insert the armored cable CBS-130 through the opening in the band saw column, run it down into the lower cabinet as in Fig. 6, and connect it to the motor terminals, discarding any cord which may be furnished with the motor. Install the switch box into the opening, threading the mounting screws through the pan LTA-444 into the tapped holes on the face of the column. Replace the switch name plate.

Thread the ground wire pin from the end of the green wire of the cord No. 49-309 into the receptacle, in place of one of the cover plate screws. When inserting the plug into the receptacle, push the green wire

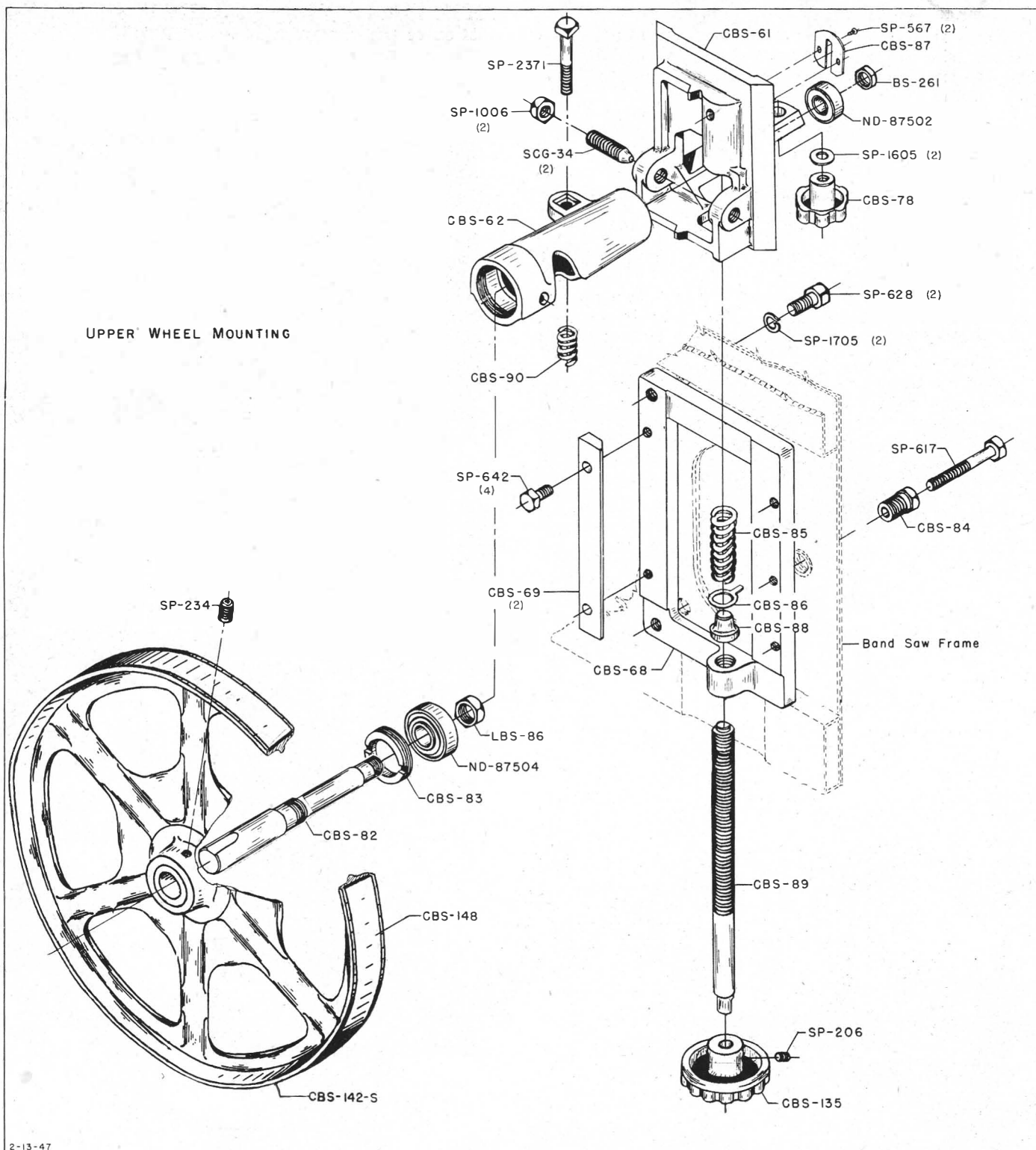


Fig. 8.

tension on a scale CBS-87, Fig. 8. This scale is above the upper wheel shaft on the rear of the cabinet, shown in Fig. 9.

Having centered the blade approximately on the wheels, turn the blade tension screw CBS-89 (lower knob in Fig. 9) upward until the pointer is on the scale mark equal to the blade width. The screw will first raise the sliding bracket CBS-61 to take up slack; when the blade has become snug on the wheels, additional tightening compresses the coil spring CBS-85

to develop the required tension. This coil spring also takes up shock loads which may come upon the blade while cutting.

The tension scale is correct for standard blades in average work. It is not affected by variations in actual blade length; it is therefore equally accurate when the blade has been shortened by welding or brazing.

Experienced operators may rely upon the feel or tone of the blade for adjusting tension, but we recommend use of the scale to avoid blade breakage which

is often caused by too much or too little tension.

For a blade which is thicker than standard, run the tension slightly higher than the scale mark. Back off the tension screw when the machine is not in use, to relieve the strain in the blade.

Blade Tracking

For accurate work and maximum blade life it is important that the blade be centered on the wheels. When the adjustment has been properly made, the blade will "track"; that is, it will run steadily in the same line. If the blade weaves across the crown of the wheels, cutting will not be uniform and blade breakage will be increased.

Both the upper and lower blade guides and the support bearings must be moved back to clear the blade entirely while the tracking adjustment is being made.

Alignment of the blade on the wheels is accomplished by tilting the upper wheel slightly with respect to the lower. The upper wheel shaft housing CBS-62 (Fig. 8) is pivoted on the sliding bracket CBS-61. Its direction is controlled by the hand knob CBS-78, which is the upper knob in Fig. 9.

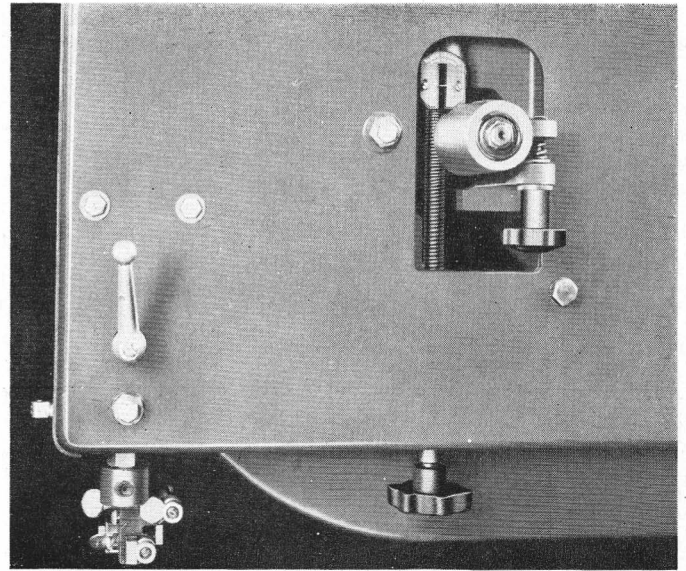


Fig. 9. Rear of Upper Cabinet, Showing Tension and Tracking Adjustments.

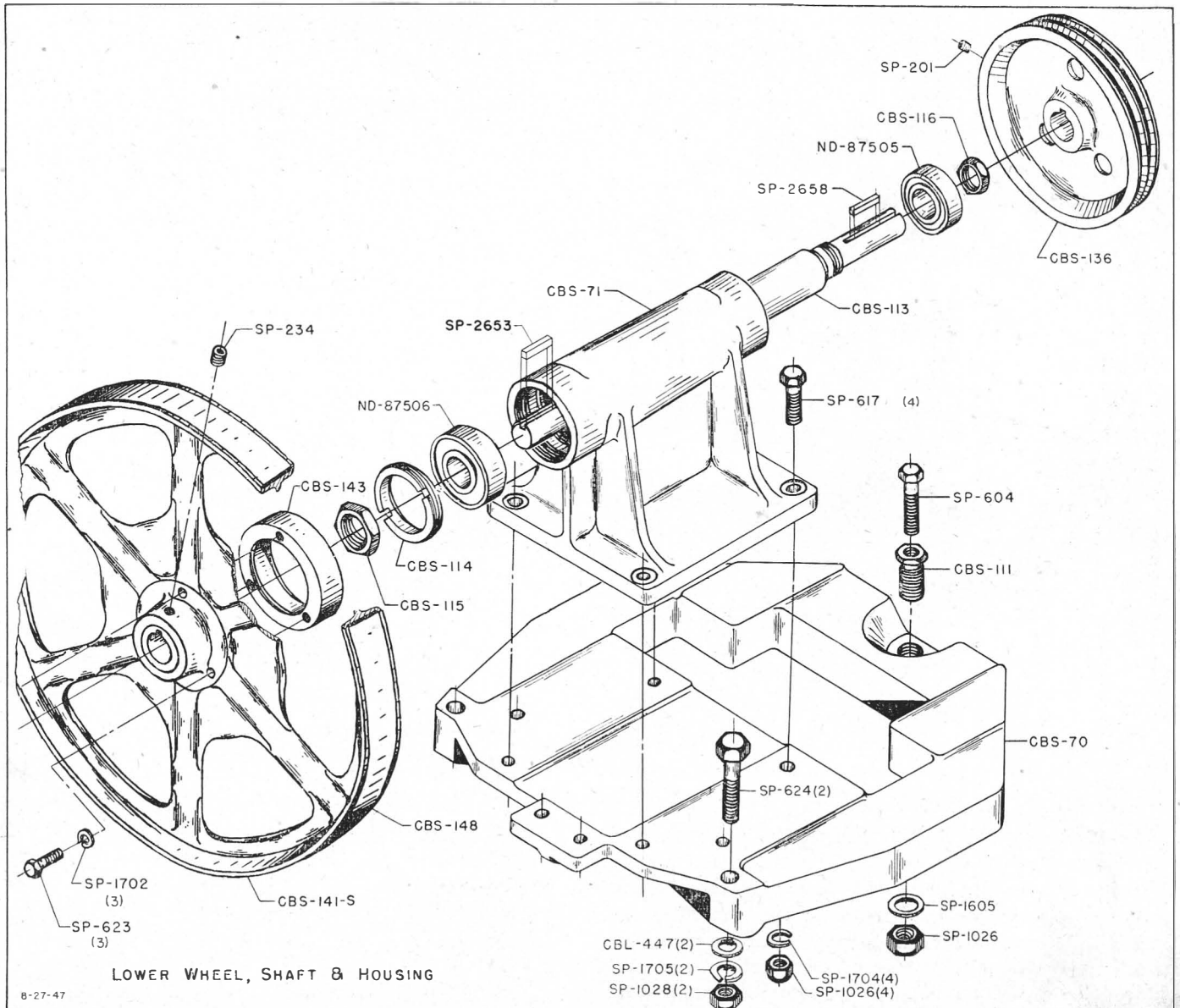


Fig. 10.

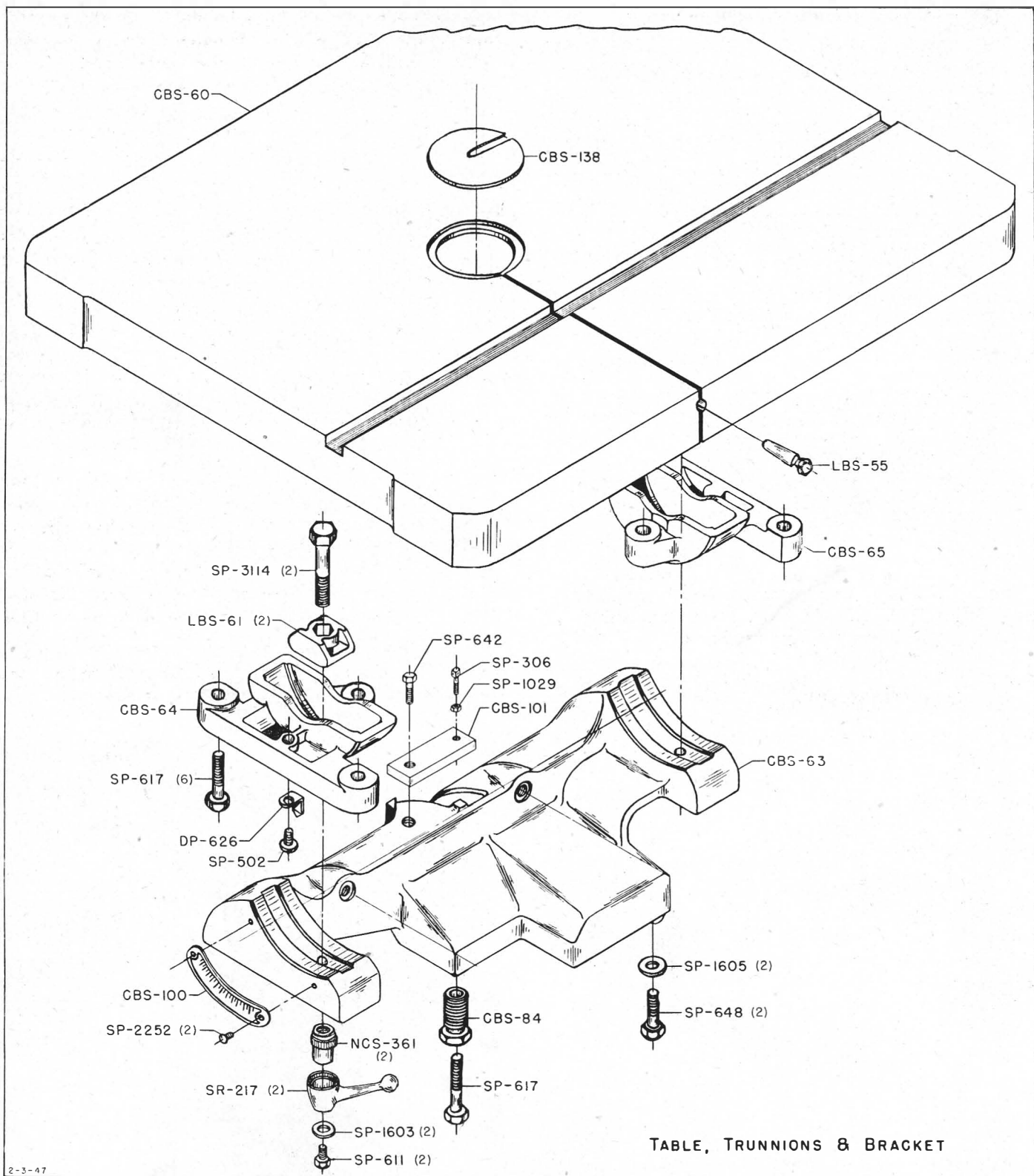


Fig. 11.

Having brought the blade to correct tension, turn the upper wheel clockwise by hand. If the blade creeps forward, tighten the knob CBS-78 slightly to tilt the wheel toward the rear, thus centering the blade. Loosen the knob if the blade creeps toward the rear. Spin the wheel and check again. When it is certain that the blade will not run off the wheels, start the motor and make any final minor adjustment which may be necessary at operating speed.

Never begin the tracking adjustment while the machine is running; at high speed the blade may run off almost instantly, injuring the blade or operator. Adjust the hand knob only a small fraction of a turn at a time, as very little tilt of the upper wheel is required to draw the blade across the rim of the wheel.

Each blade has its own tendencies, especially after welding or brazing. The blade centering adjustment must therefore be repeated whenever a new or repaired blade is installed, regardless of previous adjustments.

Wheel Mounting Adjustments

The upper and lower wheels are brought into the same plane when the machine is assembled at the factory. Any normal blade should therefore center easily under the above procedure. However, it is possible that the original setting may be lost during shipment, if the machine is injured, or when new parts are installed.

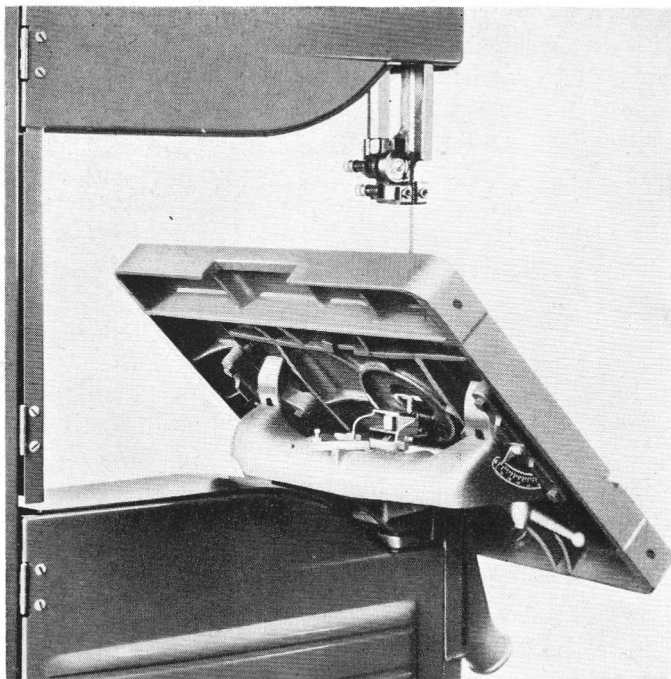


Fig. 12. Table Tilted to Right, Showing Trunnions and Stop Bar.

Use of the 3-point mounting feature previously mentioned provides a simple correction for such cases. Two hexagon head cap screws SP-628 fasten the left edge of the mounting plate CBS-68, Fig. 8, to the band saw frame. A third screw SP-617 passes through a steel bushing CBS-84. By releasing this screw and turning the bushing in the frame the mounting plate may be adjusted toward or away from the frame, thus shifting the upper wheel shaft through a small horizontal angle. The hexagon head cap screw SP-617 should be tightened when the wheels have been made parallel.

Similar adjustment for alignment of the lower wheel is provided by the bushing CBS-111 in the mounting plate CBS-70, Fig. 10. The lower wheel shaft may be shifted through a small vertical angle by turning this bushing.

If either wheel has been removed it must be brought into line with the other wheel when it is remounted, by locking it in proper position on the shaft. A straight-edge built to span the cabinet will be helpful for this.

Table Adjustments

Details of the table and its mounting are shown in Fig. 11. The trunnions, CBS-64 and 65, are bolted to the underside of the table and ride in grooved seats at the ends of the support bracket CBS-63. A shoe LBS-61 within each trunnion locks the table when the serrated nut NCS-361 is tightened on the cap screw SP-3114.

The handles SR-217 may be shifted on the serrated nuts so that they come to convenient locking positions. When adjusting or tilting the table, release these clamps only enough to permit movement with a slight drag, so that the trunnions remain properly seated. Tighten both clamps when locking the table, but avoid excessive pressure; the clamp shoes hold securely when moderately tight.

The table is mounted at right angles to the blade during assembly at the factory. Check the following adjustments to correct any disturbances which may have developed during shipment and repeat them if new parts have been installed:

With the blade under tension, place a mechanics' square against the flat side of the blade and clamp the table exactly at right angles. Set the pointer DP-626 to read zero on the tilt angle scale CBS-100. The scale will then indicate correctly any angle to which the table may be tilted.

Turn the square head set screw SP-306 in the stop bar CBS-101 until it touches the boss on the under side of the table and lock it with the hexagon nut SP-1029. Tilt the table to the right and bring it back against the stop; check the setting by means of the mechanics' square. When properly adjusted this stop will return the table square with the blade after tilting.

For tilting to the left, first tilt the table to the right as in Fig. 12, swing the stop bar CBS-101 to the rear for clearance, then tilt back to the desired angle.

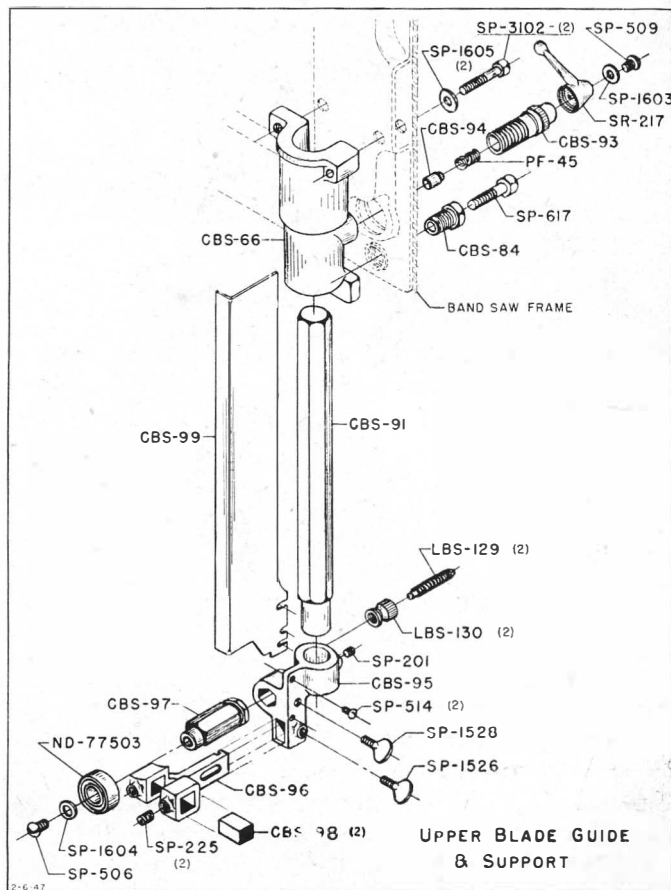


Fig. 13.

The 3-point mounting feature is used in attaching the trunnion bracket CBS-63 to the top plate of the lower cabinet. Adjustment of the table through a small vertical angle in the direction of the trunnions may be made by means of the bushing CBS-84 and cap screw SP-617. Use the mechanics' square against the back edge of the saw blade to check this adjustment.

Blade Guide and Support Adjustments

Principles and methods for adjusting the upper and lower blade guides and supports are identical, although the details of the individual parts and adjusting screws differ as shown in Fig. 13 and 15. The main adjusting nuts LBS-130 of the upper guides and supports are to

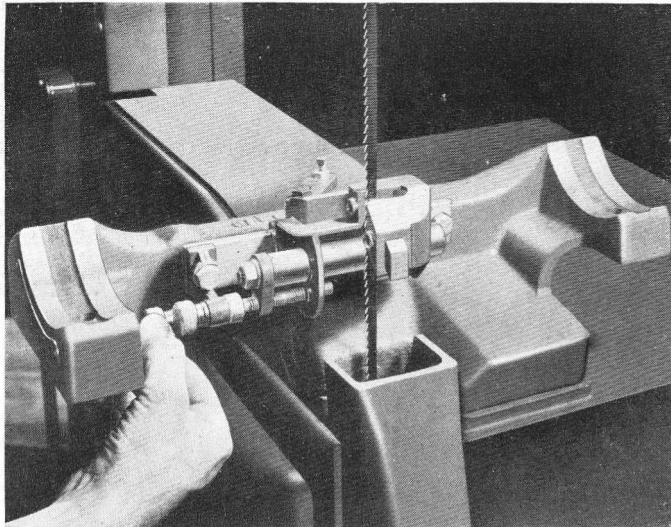


Fig. 14. Trunnions, with Table Removed to Show Lower Guide Adjustments.

the rear of the hexagon post, visible in Fig. 9. Adjusting screws CBS-107-S and CBS-137-S, below the table, perform the same functions for the lower guides, as shown in Fig. 14.

Position of the guides and support bearings with respect to the blade is important for accurate work and blade life. The following adjustments must therefore be repeated whenever the blade is changed, and especially for each different width and thickness of blade.

First move the support bearings and guide blocks back to give full clearance, and complete the blade tension and tracking adjustments as outlined above.

Move the brackets which carry the guide blocks forward until the front edges of the guide blocks are just behind the gullets of the saw teeth. If the guides are too far forward, the teeth will be damaged; if they are too far back, the blade will not be fully supported for curve cutting.

Set the guide blocks inward until they are as close as possible to the blade, but without binding it. Hexagon socket set screws SP-225 hold the guide blocks in their brackets, CBS-96 in Fig. 13 and CBS-102 in Fig. 15. Be careful not to force the blade out of its

normal vertical line when setting the blocks, and tighten the four set screws firmly when correctly placed.

Move the support bearings forward until they are about 1/64-inch back of the blade. Allow this clearance so that the blade will not bear against the supports when running free; continuous contact will case-harden the back edge of the blade, causing early breakage. The blade should bear against the supports only when actually cutting.

Tighten the thumb screws in the upper blade guide support bracket CBS-95 when the adjustments have been completed.

After considerable use in cutting curves, the front edges of the guide blocks will become worn, causing a tendency to bind at the rear edge of the blade. Reverse them to use the opposite ends for original accuracy. Install new guides when both ends have become worn.

The right guide block, CBS-105, of the lower support is mounted at 45 degrees to give clearance for tilting the table. Its surface in contact with the blade is parallel to the end of the square block and of equal area.

Use of the 3-point mounting in attaching the bracket CBS-66, Fig. 13, to the upper frame provides adjustment for making the hexagon guide post CBS-91 parallel to the rear edge of the saw blade. If the guide blocks and upper support bearing do not maintain their correct relation to the blade when lowered toward the

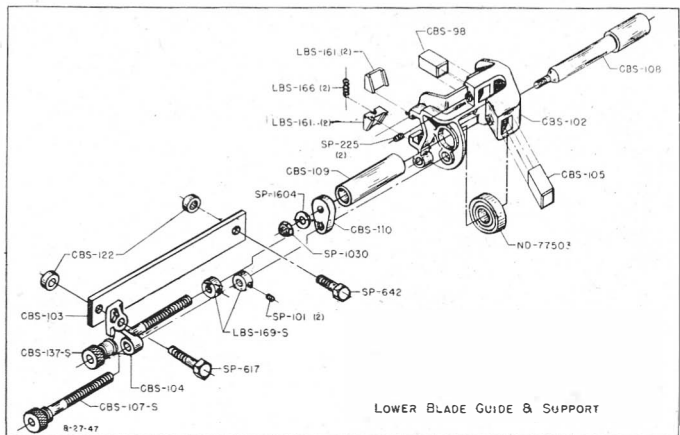


Fig. 15.

table, the correction is easily made by means of the bushing CBS-84. No such adjustment is needed for the lower guides and support, as they are attached to the trunnion support and maintain their position with respect to the table.

BLADES

Band saw blades are subjected to heavy strains when cutting. Long service can be obtained only by selecting the correct blade for the work, and by carefully adjusting and operating the machine. Blades should be of the correct thickness and temper for use on 20-inch wheels.

Blades of various widths, welded, set and sharpened ready for use, are carried in stock as listed in Table 1. The standard wood cutting blades are con-

ventional blades which may be filed and re-set. The skip tooth blades have a hard edge with regular set to insure long life. They cannot be filed, but may be ground to sharpen them, at approximately half the cost of a new blade.

Skip tooth blades are suitable for work requiring extra gullet space; they may be used on plastics, aluminum, magnesium and other non-ferrous metals, as well as for heavy cutting in wood.

A sharp blade will cut effectively under moderate pressure and uniform feed. When excessive pressure is required, the blade should be sharpened, as continued use is harmful to the blade in addition to taking extra time. Sharpening and setting a saw blade requires skill; those who lack equipment and experience should send the blades to a competent sawyer for sharpening. Consult your Delta dealer for such service.

Broken blades may be welded or brazed. Care should be taken to preserve tooth spacing, to keep the blade straight, and to remove welding flash at the joint. It is not economical to weld a blade which has become case-hardened, as it will soon break elsewhere.

Standard blades furnished for this machine are 141 inches long. The adjustment of the upper wheel bracket will accommodate blades up to a maximum length of 142½ inches and to a minimum length

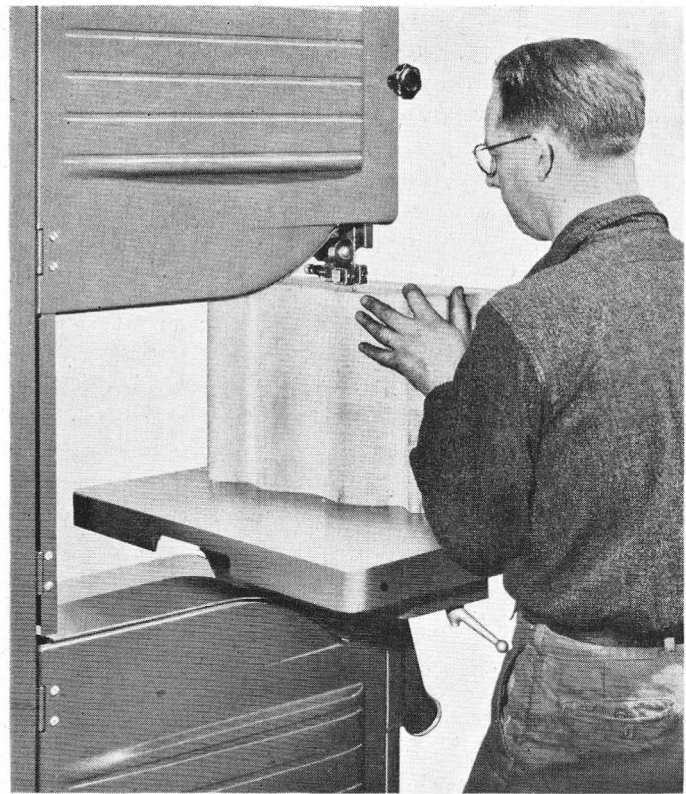


Fig. 17. Cutting to a Curved Pattern.

of 139 inches. Thus standard blades may be shortened 2 inches by successive repair.

BAND SAW OPERATIONS

Before starting the machine, see that all adjustments have been properly made. Turn the wheels by hand as a final check. Close the cabinet doors before starting the motor.

Keep the upper blade guides and guard down as close to the work as possible, for maximum protection to the operator as well as best support for the blade.

Move the stock steadily against the blade and no faster than required for easy cutting. Do not force the work; light contact will permit closely following the cutting line and prevents excessive friction, heating and case hardening of the blade at its back edge.

A sharp blade of the correct type for the work will cut easily without much pressure.

Use the foot brake to stop the wheels after shutting off the power. This is a safety precaution which will prevent injury to the operator and others who might not notice the blade running idle after work has been completed. It is also useful if the work becomes jammed and when a blade breaks. Details of the brake mechanism are shown in Fig. 16.

Straight Cuts

Use the widest blade available for straight cuts, in order to have the greatest possible support for the teeth which do the work. Keep the blades which have closer tooth spacing for fine work, always using the coarse blades for resawing and other rough cuts.

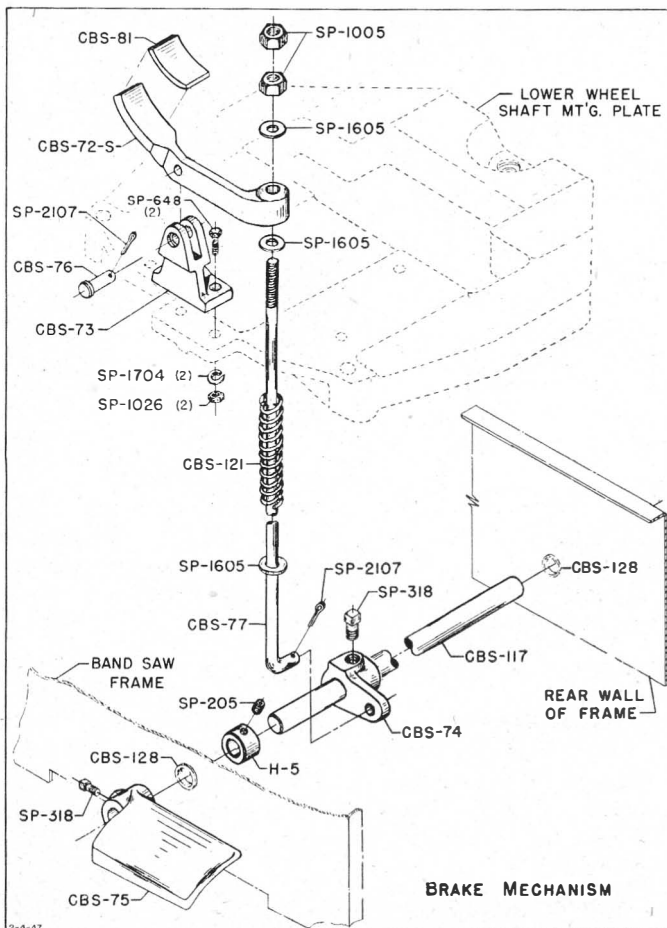


Fig. 16.

Cutting Curves

When cutting curves, turn the stock carefully so that the blade may follow the line without being twisted. Clearance for the blade in the saw kerf is provided by the set of the teeth. Wider tooth set and less blade width permits the cutting of sharper curves. The narrow blades should therefore be reserved for curve cutting. Minimum cutting radius for blades with standard tooth set is shown in Table 1.

If the curve is so abrupt that it is necessary to back up and cut a new kerf, a narrower blade or one with wider tooth set should be used. However, the cut is usually rougher when the teeth are set wider.

When backing out of the work in order to change the cut, or for any other reason, be careful to avoid pulling the blade off of the wheels. It is generally

easier and safer to turn the stock and saw out through the waste material, rather than try to withdraw the stock from the blade.

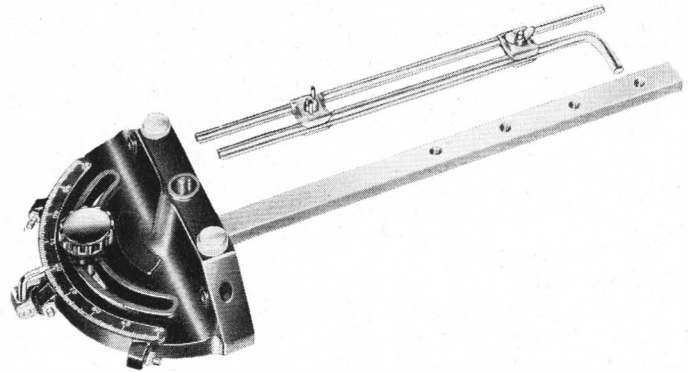


Fig. 18. Auto-Set Miter Gage.

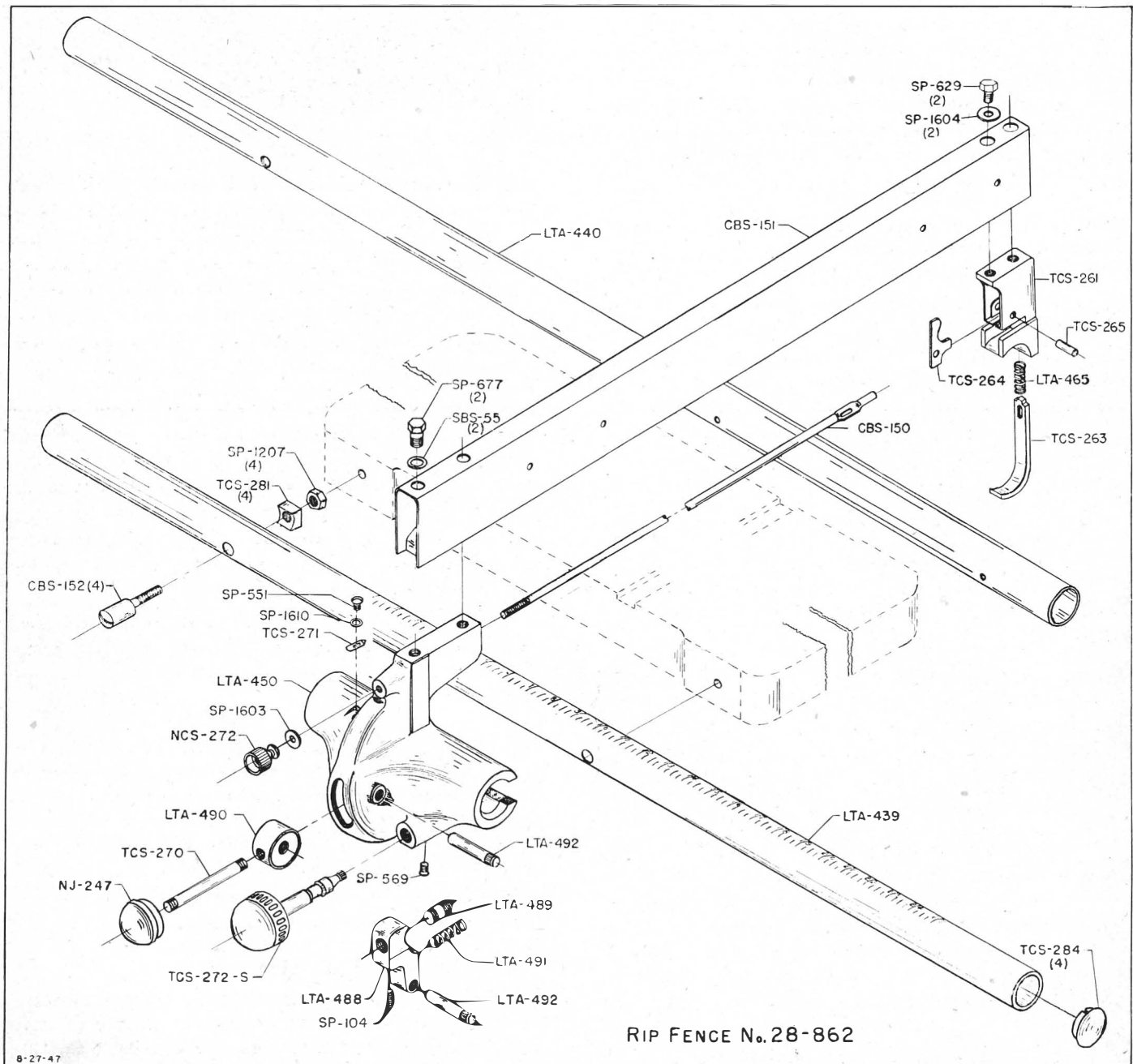


Fig. 19.

Cutting to a curved pattern at full height capacity is illustrated in Fig. 17. Various methods are used to cut accurate curved shapes, the most common being by following the line drawn on the stock. However, there are many opportunities to use templates, guides, jigs, center pins for circular arcs or wheels, and other devices. The table of this band saw has ample capacity for attaching any fixtures which may be needed.

ACCESSORIES

The auto-set miter gage and rip fence with guide rails are accessories which may be used to considerable advantage in many band saw operations.

Use of Miter Gage

The No. 864 miter gage, Fig. 18, has a 7-inch face and $\frac{3}{8} \times \frac{3}{4}$ -inch bar which fits the groove of the band saw table. It may 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. Stop rods which may be set for successive cuts to uniform lengths are included. If desired, a wooden face plate may easily be attached to the miter gage body.

Use of the miter gage is a great help in making straight cuts. When the work is firmly held against the face and advanced by sliding the bar in the table groove, the relation of the stock to the blade is constant and the resulting cut will be smooth. True square and miter cuts are easily made with the table in the horizontal position; bevel cuts with the miter gage square and the table tilted. Compound miters may be cut by setting one angle on the miter gage and the other on the tilting table.

Rip Fence Attachment

When considerable ripping is to be done, the No. 28-862 rip fence attachment is an efficient addition to the tilting table. Parts of this attachment are shown in Fig. 19.

Mount the guide rails LTA-439 and 440 on the front and rear edges of the table, using the saddle blocks TCS-281 as spacers. Insert the special screws CBS-152 through the rails and blocks into the holes provided in the table edge, and tighten with the hexagon nuts SP-1207 behind the apron.

Slide the fence onto the rails to complete the assembly as shown in Fig. 20. To adjust the fence, move it next to the miter gage groove of the table and lock the front clamp block LTA-450 on the rail by pushing down on the handle ball NJ-247. If the fence body is not parallel to the groove, release the cap screws SP-677, shift to the correct position, and tighten the screws permanently.

Release the front clamp, slide the fence against the band saw blade, and tighten the clamp. With the fence

just touching the saw blade, set the pointer TCS-271 to read zero on the scale of the guide rail. The scale will then read correctly the width of any cut being made in contact with the fence to the right of the blade.

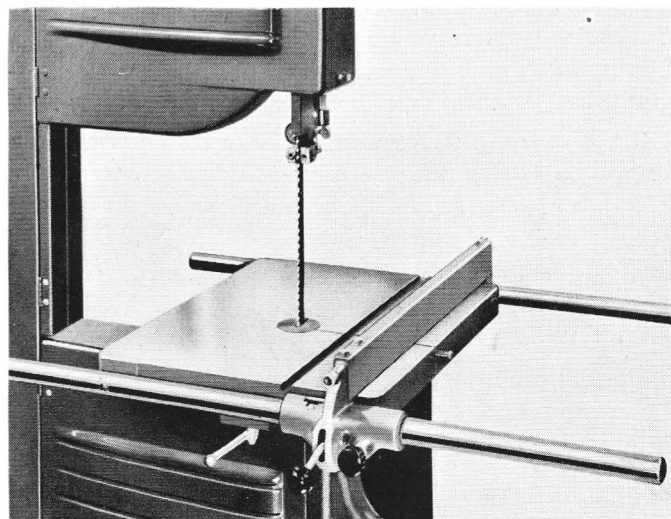


Fig. 20. Rip Fence Mounted on Table.

When setting the fence, first clamp the front end, then turn the knob NCS-272 to lock the rear clamp. The pinion shaft TCS-272-S is convenient for shifting the fence slightly right or left to make an exact setting on the scale; it should be pushed in to engage the rack teeth on the under side of the front guide rail while being used, and pulled out to disengage when sliding the fence across the table.

Beyond its use in ripping and other long straight cuts, this fence is handy as a support for the work when the table is tilted for bevel ripping and other angle cuts. The fence may be used to the left of the blade as well as to the right. Tilt the table about 25 degrees to the right for clearance under the upper wheel housing when sliding the fence onto the left ends of the guide rails.

Maximum capacity for ripping with this attachment is $25\frac{1}{4}$ inches to the right of the blade and $15\frac{1}{2}$ inches to the left.

DUST CONTROL

The dust spout, parts of which are shown in Fig. 21, is attached directly below the table at a point where it will intercept most of the particles which are ripped out by the saw blade before they can be spread by the whirling action of the lower wheel. The spout will take a suction line of $2\frac{1}{4}$ -inch inside diameter.

Where a master dust collection system has been installed, connection should be made directly to this point. Suction should be sufficient to draw the loose material away from the blade.

Individual dust collectors of the recirculating type are often used where the number of dust producing machines is insufficient to justify a general collecting system. Consult your dealer for information about such unit.

BLADE BREAKAGE

Excessive blade breakage may be due to a number of causes. In some cases it is unavoidable because of

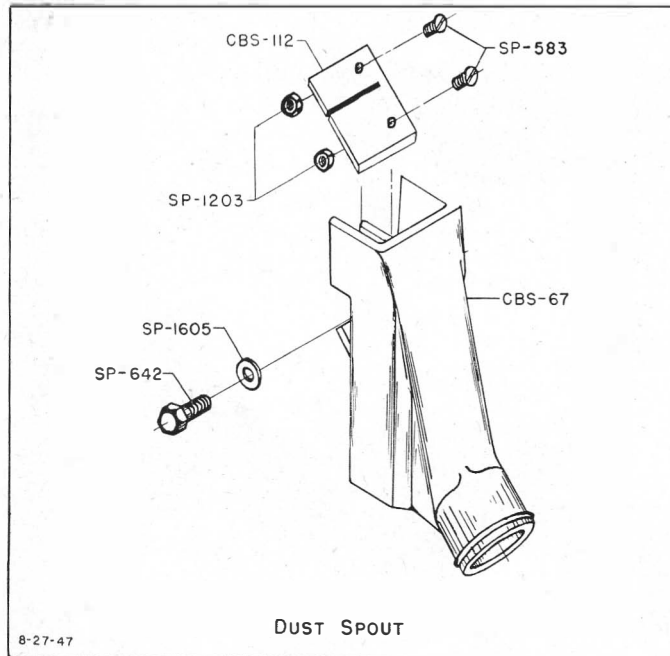


Fig. 21.

stresses which come upon the blade in the work. More generally, it is due to lack of care or judgment on the part of the operator in making the adjustments. Common causes of blade breakage are:

1. Faulty alignment or adjustment of guides.
2. Forcing or twisting the blade around a curve or very short radius.
3. Feeding too fast.
4. Insufficient tooth set or dull teeth.
5. Excessive blade tension.
6. Upper guide set too high above the work.
7. Improperly finished or lumpy braze or weld.
8. Wrong blade for the work being done.

Consult the technical service representative of the saw blade manufacturer for advice regarding special band saw cutting problems.

REPLACEMENT PARTS

Most of the parts are easily installed according to the drawings. New tires may be stretched onto the wheels when needed. When bearings wear out the customer may find it desirable to install a complete new upper wheel shaft with bearings and housing, CBS-62-S, or the corresponding lower wheel shaft and housing, CBS-71-S, instead of attempting to replace the bearings individually.

Table 1. 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.

Part No.	Description	Number Required	Part No.	Description	Number Required
CABINET					
CBS-1-A	Frame, Cabinet Type, Welded.....	1	NCS-361	7/16"-14 Serrated Nut, 1/4"-20 Tapped Head.....	2
CBS-12-A	Cabinet Door, Front Lower, with Welded Bracket.....	1	SR-217	Ball-End Adjustable Clamp Handle, Serrated Bore....	2
CBS-12-S	Cabinet Door, Front Lower, with Welded Bracket, Hinges and Knob, Assembled.....	1	SP-306	1/4-20 x 3/4" Square Head Set Screw, Cup Point.....	1
CBS-13-A	Cabinet Door, Front Upper, w/Bracket & Blade Guard	1	SP-502	1/4-20 x 1/4" Round Head Machine Screw.....	1
CBS-13-S	Cabinet Door, Front Upper, with Welded Bracket and Rear Blade Guard, Hinges and Knob, Assembled..	1	SP-611	1/4-20 x 1/2" Hexagon Head Cap Screw.....	2
CBS-22-A	Cabinet Door, Rear, with Welded Bracket.....	1	SP-617	3/8-16 x 1 1/2" Hexagon Head Cap Screw.....	7
CBS-22-S	Cabinet Door, Rear, with Bracket, Hinges and Knob..	1	SP-642	3/8-16 x 1" Hexagon Head Cap Screw.....	1
CBS-51	1 25/32 x 2" Fast Pin Reversed Butt Hinge.....	1	SP-648	3/8-16 x 1 1/4" Hexagon Head Cap Screw.....	2
CBS-52	2 x 2" Fast Pin Reversed Butt Hinge.....	4	SP-1029	1/4"-20 Hexagon Nut.....	1
CBS-57	1 3/16 x 2" Fast Pin Reversed Butt Hinge.....	2	SP-1603	1/4" Steel Washer.....	2
CBS-79-S	Hand Knob, with Lock Pin, Assembled.....	3	SP-1605	3/8" Steel Washer.....	2
CBS-80-S	Cam, with Set Screw, for Door Lock.....	3	SP-2252	#2 x 3/16" Drive Screw.....	2
CBS-125	Name Plate, 3 3/4" Diameter.....	1	SP-3114	7/16-14 x 2 1/2" Hexagon Head Cap Screw.....	2
CBS-127	Coil Spring, 3/8" I.D., 5/8" Free Length, Flat Ends...	3	LOWER WHEEL, SHAFT AND MOUNTING PLATE		
SP-101	1/4-20 x 1/4" Headless Set Screw, Cup Point.....	3	CBS-70	Mounting Plate.....	1
SP-567	#6-32 x 1/4" Round Head Machine Screw.....	2	CBS-71	Housing for Lower Wheel Shaft and Bearings.....	1
SP-584	#10-32 x 3/8" Oval Head Binding Screw.....	28	CBS-71-S	Lower Wheel Shaft, Bearings & Housing, Assembled	1
SP-1203	#10-32 Hexagon Nut.....	18	CBS-111	Steel Bushing, 1/16" I.D., 3/4"-16 Thread, Hex. Head..	1
SP-1211	#6-32 Hexagon Nut, Brass.....	2	CBS-113	Drive Shaft, 1 25/64 x 15 7/16.....	1
TABLE, TRUNNIONS AND BRACKET			CBS-114	Spanner Nut, 2 1/16" I.D., 2 1/2" O.D.-20 Thread.....	1
CBS-60	Tilting Table, 24 1/4 x 20".....	1	CBS-115	Special 1.191"-28 Hexagon Jam Nut, Left Hand Thd..	1
CBS-60-S	Tilting Table, with Trunnions and Clamps, Assembled	1	CBS-116	Special .994"-28 Hexagon Jam Nut, 3/16" Thick.....	1
CBS-63	Trunnion Support Bracket.....	1	CBS-136-S	7" 2-Belt Drive Shaft Pulley, 1 5/16" Bore, w/Set Screw	1
CBS-64	Front Trunnion.....	1	CBS-141-S	Lower Wheel, 1" Bore, Aluminum, with Brake Drum, Rubber Tire and Set Screw.....	1
CBS-65	Rear Trunnion.....	1	CBS-143	Brake Drum, 4" Diameter, 1" Wide, Cast Iron.....	1
CBS-84	Steel Bushing, 1/2" I.D., 3/4"-16 Thread, Hex. Head...	1	CBS-148	Rubber Tire for 20" Wheel.....	1
CBS-100	Tilt Angle Scale, 5/8 x 3 3/4".....	1	CBL-447	Special 3/64" Steel Washer, 7/8" O.D. x 1/16" Thick...	2
CBS-101	Stop Bar, 3/8 x 3/4 x 2 11/16", 25/64" Hole, Tapped 1/4"-20..	1	ND-87505	New Departure Ball Bearing.....	1
CBS-138	Table Insert, 3" Aluminum Disk, 3/32" Thick, 1/4" Slot..	1	ND-87506	New Departure Ball Bearing.....	1
DP-626	Pointer, 1/2 x 5/8", Bent.....	1	SP-201	3/8-18 x 3/16" Hexagon Socket Set Screw, Flat Point...	1
LBS-55	Table Alignment Pin, Tapered, Hexagon Head.....	1	SP-234	1/2-20 x 3/4" Hexagon Socket Set Screw, Cup Point...	1
LBS-61	Trunnion Clamp Shoe.....	2	SP-604	3/8-16 x 2 1/4" Hexagon Head Cap Screw.....	1
			SP-617	3/8-16 x 1 1/2" Hexagon Head Cap Screw.....	4
			SP-623	1/4-20 x 1" Hexagon Head Cap Screw.....	3

(Continued on next page)

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.

Part No.	Description	Number Required	Part No.	Description	Number Required
SP-624	1/2-13 x 2 3/4" Hexagon Head Cap Screw	2	LOWER BLADE GUIDE		
SP-1026	3/8"-16 Hexagon Nut	5	CBS-98	Blade Guide Block, 5/8 x 5/8 x 1"	1
SP-1028	1/2"-13 Hexagon Nut	2	CBS-102	Support Bracket	1
SP-1605	3/8" Steel Washer	1	CBS-102-S	Support Bracket, with Rail, Blade Support Bearing, Guide Blocks and Adjusting Screws	1
SP-1702	1/4" Split Lockwasher	3	CBS-103	Steel Rail, 1/4 x 1 1/4 x 7 7/8"	1
SP-1704	3/8" Split Lockwasher	4	CBS-104	Bracket for Lower Blade Guide Adjusting Screws	1
SP-1705	1/2" Split Lockwasher	2	CBS-105	Blade Guide Block, 1/2 x 5/8 x 2 1/8", 45° Ends	1
SP-2653	1/4 x 1/4 x 1 15/16" Straight Key	1	CBS-107-S	Adjusting Screw, 3/8"-16 Thread, with Hand Knob	1
SP-2658	1/4 x 1/4 x 1 1/4" Straight Key	1	CBS-108	Steel Shaft, 7/8 x 5 7/8", Threaded 3/16"-18 One End	1
UPPER WHEEL, SHAFT AND BRACKET			CBS-109	Spacing Sleeve, 5/8" I.D., 7/8" O.D. x 2 7/8" Long	1
CBS-61	Sliding Bracket for Upper Wheel	1	CBS-110	Adjusting Link, Tapped 3/8"-16	1
CBS-61-S	Sliding Bracket, with Mounting Plate, Upper Wheel Shaft, Bearings and Housing	1	CBS-122	Spacing Collar, 25/64" I.D., 3/4" O.D. x 1 1/16" Thick	2
CBS-62	Housing for Upper Wheel Shaft and Bearings	1	CBS-137-S	Adjusting Screw, 3/8"-16 Thread, with Hand Knob	1
CBS-62-S	Upper Wheel Shaft, Bearings & Housing, Assembled	1	LBS-161	Wedge for Lower Blade Guide Support Bracket	4
CBS-68	Mounting Plate	1	LBS-166	Coil Spring, 5/32" Diameter, 3/16" Free Length, Flat Ends	2
CBS-69	Gib, 1/2 x 3 1/32 x 8", for Sliding Bracket	2	LBS-169-S	Set Collar, 3/8" I.D., with Set Screw	2
CBS-78	Hand Knob, 2" Diameter, 1 5/8" Long, 3/8"-16 Thread	1	ND-77503	New Departure Ball Bearing	1
CBS-82	Upper Wheel Shaft, 1 x 9 5/8", with Flat	1	SP-101	1/4-20 x 1 1/4" Headless Set Screw, Cup Point	2
CBS-83	Spanner Nut, 1 1/16" I.D., 1.905" O.D.-20 Thread	1	SP-225	3/16-18 x 1 1/4" Hexagon Socket Set Screw, Flat Point	2
CBS-84	Steel Bushing, 1/2" I.D., 3/4"-16 Thread, Hex. Head	1	SP-617	3/8-16 x 1 1/2" Hexagon Head Cap Screw	1
CBS-85	Coil Spring, 1 1/8" Diam., 2 1/2" Free Length, Flat Ends	1	SP-642	3/8-16 x 1" Hexagon Head Cap Screw	1
CBS-86	Pointer, 3/4" Hole, for Blade Tension Scale	1	SP-1030	3/16"-18 Hexagon Nut	1
CBS-87	Blade Tension Scale, 1 3/8 x 1 11/16", Slotted	1	SP-1604	5/16" Steel Washer	1
CBS-88	Spring Cap, 1 1/8" Diameter, 3/4" Long, 5/8" Shank	1	V-BELT DRIVE		
CBS-89	Blade Tension Screw, 3/4"-10 Thread, 12 1/16" Long	1	CBS-31-A	Motor Mounting Plate, 8 1/2 x 14 5/8", Pressed Steel	1
CBS-90	Coil Spring, 1/16" I.D., 1" Free Length, Flat Ends	1	CBS-131	Special 5/16-18 x 6" Carriage Bolt, Threaded 3 1/2"	1
CBS-135	Hand Knob, 2 7/8" Diameter, 1/2" Bore, Tapped 5/16"-18	1	CBS-140-S	3 1/2" 2-Belt Motor Pulley, 3/4" Bore, with Set Screw	1
CBS-142-S	Upper Wheel, 1" Bore, Aluminum, with Rubber Tire and Set Screw	1	CBS-153	Coil Spring, 5/8" Diameter, 5" Free Length, Flat Ends	1
CBS-148	Rubber Tire for 20" Wheel	1	H-5-S	Set Collar, 3/4" I.D., with Set Screw	2
BS-261	Special .596"-24 Hexagon Jam Nut, 1 1/64" Thick	1	NSS-262	Special 1/16" Rubber Washer, 29/32" O.D. x 5/32" Thick	2
LBS-86	Special .802"-28 Hexagon Jam Nut, 3/8" Thick	1	SP-201	5/16-18 x 5/16" Hexagon Socket Set Screw, Flat Point	1
SCG-34	Special 1/2-13 x 1 15/16" Hexagon Socket Set Screw	2	SP-205	5/16-18 x 1/4" Hexagon Socket Set Screw, Cup Point	2
ND-87502	New Departure Ball Bearing	1	SP-642	3/8-16 x 1" Hexagon Head Cap Screw	4
ND-87504	New Departure Ball Bearing	1	SP-1026	3/8"-16 Hexagon Nut	4
SP-206	5/16-18 x 5/16" Hexagon Socket Set Screw, Cup Point	1	SP-1403	5/16"-18 Wing Nut	1
SP-234	1/2-20 x 3/4" Hexagon Socket Set Screw, Cup Point	1	SP-1604	5/16" Steel Washer	3
SP-567	#6-32 x 1/4" Round Head Machine Screw	2	SP-1703	5/16" Split Lockwasher	1
SP-617	3/8-16 x 1 1/2" Hexagon Head Cap Screw	1	No. 49-140	V-Belts, Set of 2, Matched, 39 1/2" Outside Cir.	1
SP-628	1/2-13 x 1" Hexagon Head Cap Screw	2	BRAKE MECHANISM		
SP-642	3/8-16 x 1" Hexagon Head Cap Screw	4	CBS-72-S	Brake Shoe, with Lining, Assembled	1
SP-1006	1/2"-13 Hexagon Jam Nut	2	CBS-73	Bracket, for Brake Shoe, 3/8" Hole	1
SP-1605	3/8" Steel Washer	2	CBS-74	Lever for Brake Rod, Tapped 1/2"-13	1
SP-1705	1/2" Split Lockwasher	2	CBS-75	Brake Treadle, Tapped 1/2"-13	1
SP-2371	3/8-16 x 2 1/2" Square Head Machine Bolt	1	CBS-76	Steel Pin, 3/8 x 1 1/2", Flanged Head	1
UPPER BLADE GUIDE AND GUARD			CBS-77	Connecting Rod, 3/8-16 x 24", Threaded One End, Bent	1
CBS-66	Bracket for Hexagon Guide Post	1	CBS-81	Brake Lining, 3/16 x 1 x 2"	1
CBS-84	Steel Bushing, 1/2" I.D., 3/4"-16 Thread, Hex. Head	1	CBS-117	Steel Shaft, 3/4 x 21 5/8"	1
CBS-91	Hexagon Guide Post, 1" Across Flats x 18 5/16" Long	1	CBS-121	Coil Spring, 1/2" I.D., 6" Free Length, Flat Ends	1
CBS-93	Clamp Screw, 3/4"-10 Thread, Serrated Head	1	CBS-128	Brass Bushing, 3/4" I.D., 7/8" O.D. x 1/4", Flanged	2
CBS-94	Brass Plug, 1/16" Diameter, 5/8" Long, 9/32" Stub	1	H-5-S	Set Collar, 3/4" I.D., with Set Screw	1
CBS-95	Support Bracket	1	SP-205	5/16-18 x 1/4" Hexagon Socket Set Screw, Cup Point	1
CBS-95-S	Support Bracket, Blade Support Bearing, Guide Blocks and Adjusting Screws	1	SP-318	1/2-13 x 5/8" Square Head Set Screw, Flat Point	2
CBS-96	Bracket for Upper Blade Guide Blocks	1	SP-648	3/8-16 x 1 1/4" Hexagon Head Cap Screw	2
CBS-97	Hexagon Shaft, 3/4 x 21 3/32", Tapped 5/16"-18	1	SP-1005	3/8"-16 Hexagon Jam Nut	2
CBS-98	Blade Guide Block, 5/8 x 5/8 x 1"	2	SP-1026	3/8"-16 Hexagon Nut	2
CBS-99	Sliding Blade Guard	1	SP-1605	3/8" Steel Washer	3
LBS-129	Special 3/16-24 x 1 1/4" Headless Set Screw, Dog Point	2	SP-1704	3/8" Split Lockwasher	2
LBS-130	Knurled Adjusting Nut, 3/16"-24 Thread, Grooved	2	SP-2107	1/8 x 3/4" Cotter Pin	2
PF-45	Coil Spring, 1/16" Diameter, 1" Free Length, Flat Ends	1	DUST SPOUT		
SR-217	Ball-End Adjustable Clamp Handle, Serrated Bore	1	CBS-67	Dust Spout	1
ND-77503	New Departure Ball Bearing	1	CBS-67-S	Dust Spout, with Deflector Plate, Assembled	1
SP-201	5/16-18 x 5/16" Hexagon Socket Set Screw, Flat Point	1	CBS-112	Dust Deflector Plate, 3/2 x 2 1/16 x 3 3/16", Aluminum	1
SP-225	5/16-18 x 1/4" Hexagon Socket Set Screw, Flat Point	2	SP-583	#10-32 x 1 1/2" Round Head Machine Screw	2
SP-506	5/16-18 x 5/8" Round Head Machine Screw	1	SP-642	3/8-16 x 1" Hexagon Head Cap Screw	1
SP-509	1/4-20 x 1 1/2" Round Head Machine Screw	1	SP-1203	#10-32 Hexagon Nut	2
SP-514	1/4-20 x 3/8" Round Head Machine Screw	2	SP-1605	3/8" Steel Washer	1
SP-617	3/8-16 x 1 1/2" Hexagon Head Cap Screw	1	RIP FENCE No. 28-862		
SP-1526	5/16-18 x 9/16" Thumb Screw, Flat Point	1	CBS-150	Rear Clamp Rod, 1/4-20 x 29 1/2", with Slot for Lever	1
SP-1528	5/16-18 x 1" Thumb Screw, Flat Point	1	CBS-151	Rip Fence Body, 1 x 2 1/2 x 27 3/16", Drilled for Clamps	1
SP-1603	1/4" Steel Washer	1	CBS-151-S	Rip Fence, 26 3/16" Long, with Clamps, Assembled	1
SP-1604	5/16" Steel Washer	1	CBS-152	Special 3/8-24 x 1 17/32" Fillister Head Cap Screw	4
SP-1605	3/8" Steel Washer	2			
SP-3102	3/8-16 x 1 3/4" Hexagon Head Cap Screw	2			

(Continued on next page)

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.

Part No.	Description	Number Required	Part No.	Description	Number Required
LTA-439	Front Guide Rail, 1 3/8 x 44" Steel Tube, with Fence	1	SP-558	#8-32 x 1/4" Round Head Machine Screw	2
LTA-440	Adjusting Rack and Scale Divisions	1	SP-563	#8-32 x 3/4" Round Head Machine Screw	2
LTA-450	Rear Guide Rail, 1 3/8 x 44" Steel Tube	1	SP-577	#10-32 x 3/16" Round Head Machine Screw	2
LTA-465	Front Clamp Block	1	SP-1203	#10-32 Hexagon Nut	2
LTA-488	Coil Spring, 3/8" Diameter, 1" Free Length, Flat Ends	1	SP-2458	2-Pole Toggle Switch, 1 HP, AC-DC, 125-250 V, with	
LTA-489	Front Clamp Shoe	1		Mounting Plate and Lock Feature, Ball-End Lever	1
LTA-490	Special 9/16-27 x 1 3/16" Headless Set Screw, 1/2" Body	1	No. 49-309	8' Power Cord and Plug, #14. Gage Wires, with Ground	1
LTA-491	Eccentric Collar, 3/8" I.D., 1 3/8" O.D., Tapped 3/8"-24	1	No. 49-314	Switch Box Assembly, with Cord, Plug and Cable	1
LTA-492	Coil Spring, 1/16" Diam., 1 3/8" Free Length, Flat Ends	1			
NCS-272	Steel Pin, 3/8 x 1 15/16", Knurled One End	2	ELECTRIC CONNECTION No. 49-315 (For 3-Phase Motors)		
NJ-247	Knurled Hand Knob, 3/4" Diameter, 1/4"-20 Thread	1	(May also be used for 1-Phase and D.C.)		
SBS-55	Handle Ball, 1 1/2" Diameter, with 3/8"-24 Tapped Hole	2	CBS-147	Armored Cable, 58" Lg., w/Grommets, Three #14 Wires	1
TCS-261	Special 25/64" Steel Washer, 1 1/16" O.D. x 1 1/16" Thick	1	SP-2457	90° Angle Connector, with 1/2" Pipe Thread	1
TCS-263	Rear Clamp Block	1	SP-2480	Cord Connector, 1/2" Pipe Thread, with Clamp	1
TCS-264	Hook for Rear Rip Fence Clamp	1	No. 49-315	Armored Cable, with Grommets and Connectors	1
TCS-265	Lever for Rear Rip Fence Clamp	1			
TCS-270	Steel Pin, 1/4 x 5 1/64"	1	BAND SAW BLADES (141" Long)		
TCS-271	Stud, 3/8-24 x 3 1/16", Threaded Both Ends	1	Standard Wood Cutting Blades		
TCS-272-S	Pointer, 7/16 x 7/8", 13/64 x 9/32" Hole, Bent	1	No. 28-875	3/16" Wide, .022" Thick, 5 Teeth/In., 1/2" Min. Radius	1
TCS-281	Pinion Shaft, with Hand Knob, for Fence Adjustment	1	No. 28-876	1/4" Wide, .022" Thick, 5 Teeth/In., 3/4" Min. Radius	1
TCS-284	Saddle Block for Guide Rail	4	No. 28-877	3/8" Wide, .022" Thick, 5 Teeth/In., 1" Min. Radius	1
SP-104	End Plug for Guide Rail	4	No. 28-878	1/2" Wide, .022" Thick, 4 Teeth/In., 1 1/2" Min. Radius	1
SP-551	1/4-20 x 1/2" Headless Set Screw, Cup Point	1	No. 28-879	3/4" Wide, .022" Thick, 4 Teeth/In., 2" Min. Radius	1
SP-569	#10-32 x 1/4" Round Head Machine Screw	1	No. 28-880	1" Wide, .022" Thick, 4 Teeth/In., 4" Min. Radius	1
SP-629	#8-32 x 3/16" Round Head Machine Screw	1	No. 28-881	3/4" Wide, .022" Thick, 3 Teeth/In., For Resawing	1
SP-677	3/16-18 x 3/8" Hexagon Head Cap Screw	2	No. 28-882	1" Wide, .022" Thick, 2 Teeth/In., For Resawing	1
SP-1207	3/8-24 x 1/2" Hexagon Head Cap Screw	2			
SP-1603	3/8"-24 Hexagon Nut	4	Skip Tooth Hard Edge Blades		
SP-1604	1/4" Steel Washer	1	No. 28-890	1/4" Wide, .025" Thick, 4 Teeth/In., 3/4" Min. Radius	1
SP-1610	3/16" Steel Washer	2	No. 28-892	1/2" Wide, .025" Thick, 4 Teeth/In., 1 1/2" Min. Radius	1
	13/64" Steel Washer	1	No. 28-894	3/4" Wide, .032" Thick, 3 Teeth/In., 2" Min. Radius	1
		1	No. 28-896	1" Wide, .035" Thick, 2 Teeth/In., For Resawing	1
SWITCH AND CONNECTIONS (For 1-Phase and D.C. Motors)			ACCESSORIES		
CBS-130	Armored Cable, 50" Long, Two #14 Wires	1	No. 864	Auto-Set Miter Gage, 7" Face, 3/8 x 3/4 x 18" Bar	1
LSR-35	Switch Name Plate, 2 19/32 x 4 23/32", Vertical	1	No. 882	Lamp Attachment	1
LTA-441	Switch Box Cover Frame	1	No. 28-862	Rip Fence, with Guide Rails, Complete	1
LTA-441-S	Switch Box, Complete with Toggle Switch, Assembled	1			
LTA-443	Clamp for Power Cord	2			
LTA-444	Switch Box Pan	1			
SP-552	#10-32 x 3/16" Round Head Machine Screw	2			
SP-554	#8-32 x 1/2" Round Head Machine Screw	4			

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