

OPERATING INSTRUCTIONS AND PARTS LISTS

Model 87-20" Metal Cutting Band Saw



For Serial Numbers From 2-2000 Up



POWERMATIC INC.

McMinnville, Tennessee

I. MACHINE DESCRIPTION & SPECIFICATIONS

FRAME:	Heavy, re-inforced steel plate, braced to give maximum rigidity.																								
TABLE:	3" x 24" x 24"; made of finest grey iron castings, machine ground to precision tolerance. Mounted on heavy duty trunnion to tilt 45° to right, 15° to left. Front edge machined and drilled for ripfence.																								
WHEELS:	Made of finest machine castings, dynamically balanced and fitted with easy-change rubber tires. Upper and lower wheels run in lubricated-for-life ball bearings.																								
GUARDS:	All moving parts are completely enclosed. Only the operating part of the blade is exposed.																								
DRIVE:	Available in belted drive model and powered by an 1800 RPM motor mounted on adjustable base.																								
SAW BLADE ADJUSTMENT:	The blade tension is adjusted with conveniently located handwheel for blade tension adjustment. Spring mechanism absorbs shock and maintains uniform tension on the blade.																								
SAW GUIDES:	Top and bottom saw guides are either ball bearing, or solid, to assure minimum friction and increased blade life.																								
SPECIFICATION:	<table> <tr> <td>Table size</td><td>3" x 24" x 24"</td></tr> <tr> <td>Blade-to-column distance</td><td>19½"</td></tr> <tr> <td>Maximum depth of cut under guide</td><td>12½"</td></tr> <tr> <td>Wheel size</td><td>20" x 1¼"</td></tr> <tr> <td>Table height (from floor)</td><td>41½"</td></tr> <tr> <td>Table tilt, right</td><td>45°</td></tr> <tr> <td>Table tilt, left</td><td>15°</td></tr> <tr> <td>Blade width (usable maximum 1"; minimum 1/16")</td><td>¾"</td></tr> <tr> <td>Blade length</td><td>12' 7"</td></tr> <tr> <td>Blade speed, SFM</td><td>40 to 4600</td></tr> <tr> <td>Overall height</td><td>76½"</td></tr> <tr> <td>Floor space required</td><td>39" x 27"</td></tr> </table>	Table size	3" x 24" x 24"	Blade-to-column distance	19½"	Maximum depth of cut under guide	12½"	Wheel size	20" x 1¼"	Table height (from floor)	41½"	Table tilt, right	45°	Table tilt, left	15°	Blade width (usable maximum 1"; minimum 1/16")	¾"	Blade length	12' 7"	Blade speed, SFM	40 to 4600	Overall height	76½"	Floor space required	39" x 27"
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II. GENERAL SET-UP AND ALIGNMENT

1. RECEIVING

Uncrate and check for shipping damage. Clean all coated and greased surfaces. Read instructions thoroughly. Locate all lubrication points; adjustments; methods of drive.

2. MOUNTING

Mount machine securely to solid foundation; concrete base mounting preferred. Locate in clean, dry and well ventilated building if possible. Motor and electrical connections should be protected when not in operation or if exposed to weather elements.

3. INSPECTION

The above machine requires the minimum amount of attention in service. Periodic or regular inspections are recommended to insure machine is in proper adjustment and with positive electrical connections; also, to correct worn or loose "V" belts and loose or heating bearings.

4. BEFORE OPERATING

Check motor nameplate data or wiring diagram of motor and switch for proper voltage connection before wiring into line. Run motor without load to check the connections and direction of rotation. Always refer to motor nameplate for rotation connections.

OPERATING INSTRUCTIONS

The Powermatic Model 87-20" Metal Cutting Band Saw is constructed of steel plate, braced to give maximum rigidity. Streamlined in appearance, all moving parts are completely guarded for safe operation. The top and bottom band wheels are easily accessible through large hinged doors on front of the saw. Sealed dust chute keeps motor and drive free from cuttings and dust.

MOTOR AND WIRING: Electric wiring is connected to a motor wiring in conduit box mounted on the side of the column. Motor should be inspected and checked for rotation before operating machine. Operate lower unit and check rotation before installing blade. Frame of machine should ALWAYS be grounded.

POWER DRIVE: The saw is driven with a motor fastened on an adjustable hinge base mounted in the base of the machine. A motor from 1½HP, single or 3-phase is available; 1½ HP for light work and 1½ HP to 3 HP for medium to heavy work is recommended. Two A section belts drive the lower band wheel.

INSTALLING BLADE: To install band saw blade: remove table insert (19) Fig. 1, from table; open top and bottom doors. Take the blade in both hands and slide through table slot and over band wheels. With blade placed in the center of the band wheels, increase tension on upper wheel with tension screw (16) Fig. 5, located under upper wheel. Set upper and lower saw guides so they will clear the saw blade. Turn band wheels by hand to see that saw blade tracks properly. It is important that the blade runs centered on the wheels for accurate work and maximum blade life. When the adjustment has been properly made, the blade will track; that is, it will run steadily in the same line.

BLADE TENSION: Correct blade tension is very important for efficient operation. The wider and thicker blades require more tension than narrow blades. A graduated tension indicator for different blade widths (17) Fig. 5, is located inside the frame and behind upper wheel. Tension is regulated by screw (16) Fig. 5, maintaining pressure on tension spring. The spring is designed to give correct tension only for standard gauge blades. Tension may vary for heavier and/or thicker blades. Blade tension does not vary with length of blade.

WHEEL ALIGNMENT: Band wheels are properly aligned at the factory and should operate correctly. However, in shipping, the original adjustments may have moved, necessitating realignment. The lower wheel housing is mounted on jack screws, two in the rear and two in the front. The shaft may be leveled by loosening the two bearings locking bolts and adjusting the two jack screws. Bearing bolts should be retightened after shaft is leveled.

BLADE GUIDE ADJUSTMENT: For proper operation, the saw blade must be supported by an upper and lower saw guide. The lower guide is mounted under the table and the upper guide on a counterbalanced bar above the table (18) Fig. 5. The purpose of the saw guides is to support the blade for cutting curve surfaces. It is very IMPORTANT for the guides to be adjusted in proper relation to saw blades. Before adjusting guides, adjust tension on blade, start motor and check tracking on band wheels. **Stop Motor**—take no chances. Adjust the side blocks or bearings (both upper and lower) to saw blades, leaving a little clearance on each side. The thickness of a piece of paper is a good clearance gauge (20) Fig. 2. Guide blocks or bearings are held in place with socket head set screws (9) Fig. 2 and can easily be adjusted. After blade clearance is set, the back guide holder should be adjusted with the knurled knob (8) Fig. 4 so the edge of the side guides is just behind saw teeth gullets (21) Fig. 4. The back guide consists of a ball bearing mounted on an adjustable bar (22) Fig. 4 and should be set 1/64", or thickness of a piece of paper, from back edge of the blade. The back guide is set at a slight angle to back of blade so the edge of the blade will not cut a groove in back bearing guide. For best operation, the LOWER saw guide (7) Fig. 1 should be set as CLOSE as possible to bottom of table. To adjust the lower guides, loosen guide bolts (6) Fig. 1 and raise the guide as close as possible to bottom of table. Tighten guide bolt.

TABLE ADJUSTMENTS: The table is mounted on an extremely heavy duty single action trunnion that rests on trunnion base (23) Fig. 1. The table may be tilted to the right 45 degrees and to the left 15 degrees. Table is locked in position with trunnion handwheel mounted on side of machine base (5) Fig. 1. To tilt table, turn handwheel to left about ½ turn, and tilt the table to the desired angle—tighten trunnion. To level table with blade, raise counterbalanced arm to highest position and place machinist square against side of blade. Set table stop (24) Fig. 6, on side of table by adjusting screw on top of the stop. Stop bar should be removed for tilting table to the left.

LUBRICATION: The bearings on top and bottom shaft are sealed for life, requiring no lubrication. The slides and adjusting screws should be lubricated at regular intervals to insure proper operation. Variable speed transmission is filled with 3½ quarts of 40 or 50 weight motor oil—DO NOT use transmission grease—keep oil to top of elbow on oil filler pipe.

TRANSMISSION OPERATION: To change speed range of transmission, turn variable speed hand wheel (15) Fig. 6 to slow speed. Pull the lock pin shifting handle (13) Fig. 6 to the right for slow speed, left for high speed and center for neutral. To obtain maximum variable speed range, the variable sheaves must be properly adjusted. To adjust belt, set hand wheel (15) Fig. 6 to slow range and remove bolt (1) Fig. 3. Turn turnbuckle (2) Fig. 3 to right to raise belt in upper variable speed pulley and to left to lower. When belt is properly adjusted, it will ride flush with the top of the upper pulley in the slow speed range and flush with the top of the lower pulley in the high speed range.

POWER FEED OPERATION: To operate power feed, push foot pedal down until latched. Place material to be cut against feed block and push up to blade. The material does not have to be "squared" in relation to material guide. Fasten the chain hook, Part 87-615, to the chain 87-616, place chain in chain segments 87-609. The cables and chain can be adjusted for various sizes by adjusting the power feed wheels (10) Fig. 7 either in or out. The two power feed wheels can be adjusted independently. To change feed rate, move weight toward linkage to increase feed rate, toward hinge pin to decrease feed rate. Start the saw and release the latch on foot pedal.

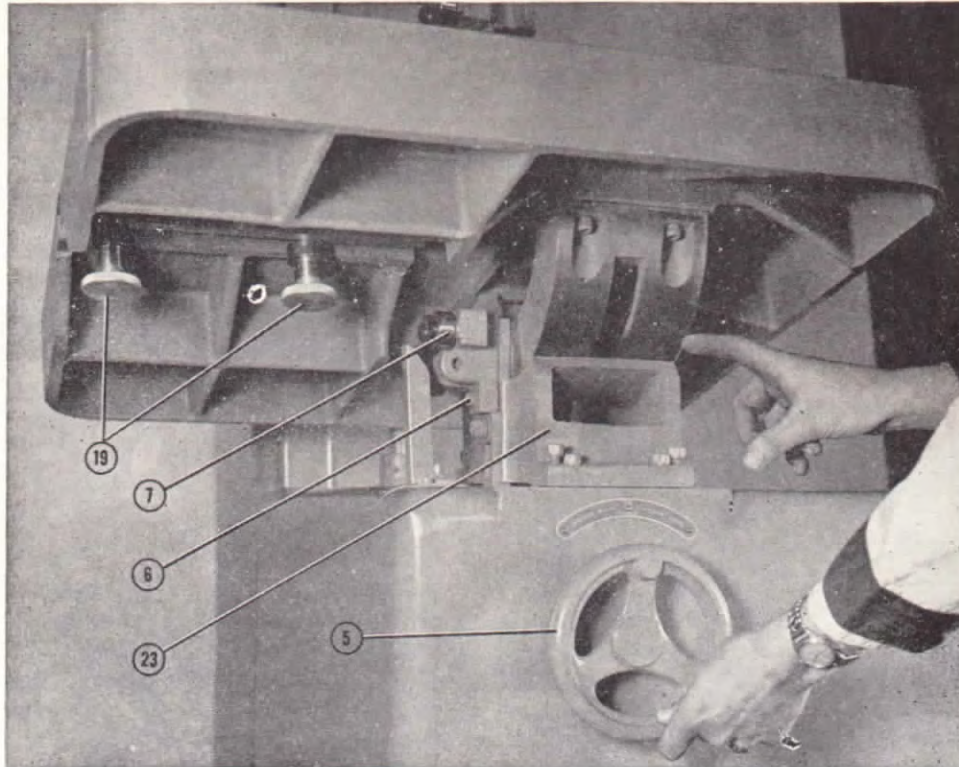


Fig. 1

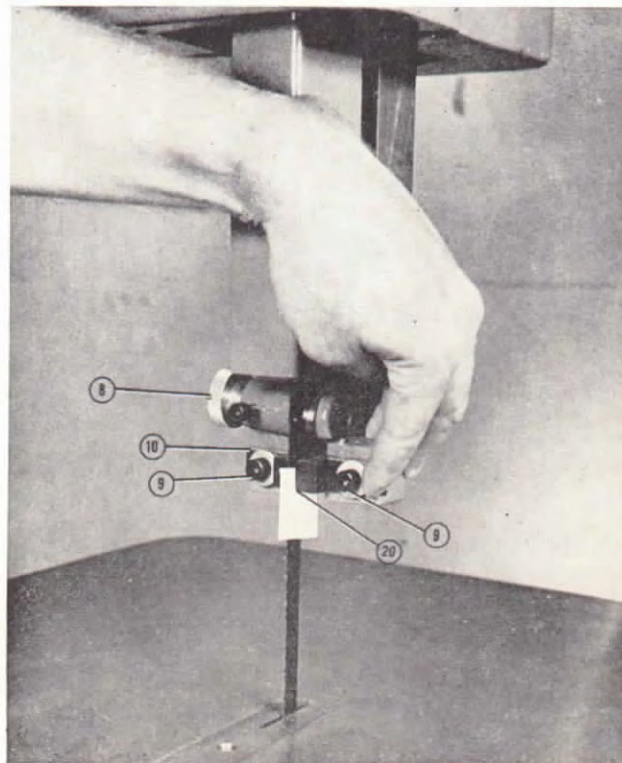


Fig. 2

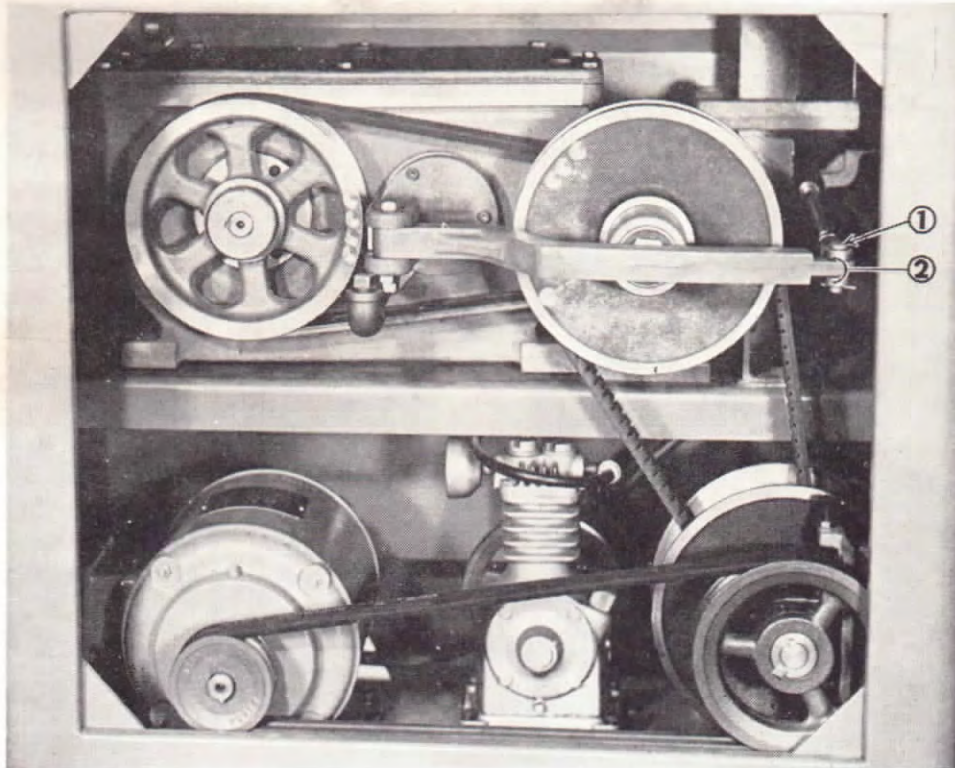


Fig. 3

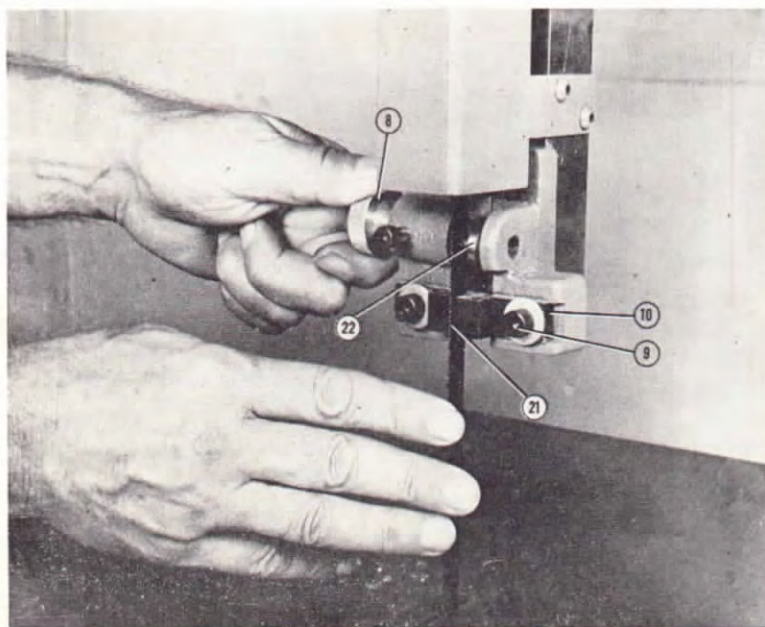


Fig. 4

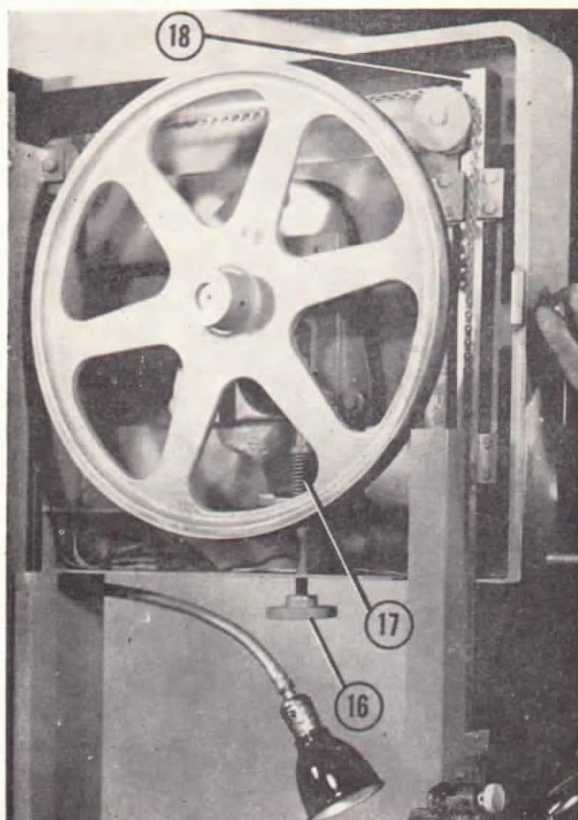


Fig. 5

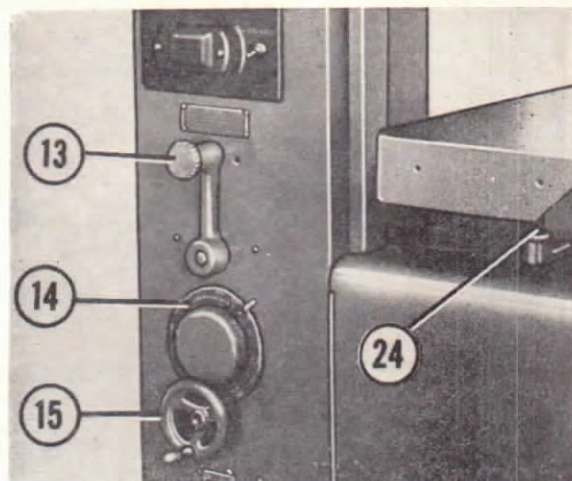


Fig. 6

To shift transmission from low to high or high to low speeds, turn variable speed handwheel to slow speed. Pull the lock pin shifting handle to the right for high speed and to the left for slow speed. Center position of lock pin shifting handle is Neutral.

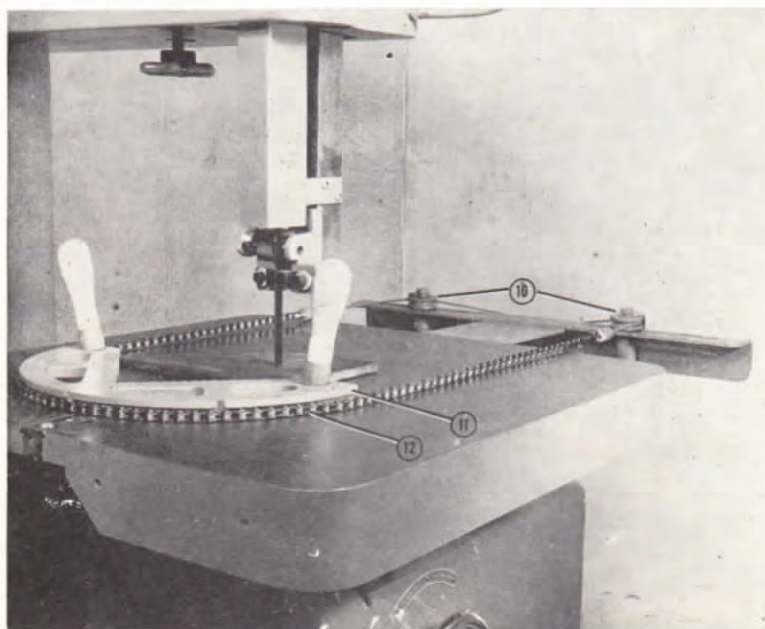


Fig. 7

To operate power feed, push pedal down until latched. Place material against feed block and push against saw blade. Fasten chain hook to chain, place in chain segments and adjust to the material with the adjusting feed wheels. Start saw and release the latch on foot pedal.

To Disassemble Transmission

First—Remove set screws from lower Band Wheel (868), and remove wheel. Remove (3) hex head bolts behind lower wheel, releasing front of transmission box from Band Saw frame. From rear of machine, remove variable speed arm bolt (8134). Swing variable speed arm (8266) out of way. Remove (4) cap screws from base of transmission box. Remove all drive belts. Remove set screws holding variable speed pulley (8903) to shaft (8216). Remove variable speed pulley (8903). Remove set screw (8212) from clutch shift arm (8215) and disengage clutch shift arm from clutch shift shaft (8230). Remove Transmission box from cabinet.

To remove clutch or wheel shaft, first remove top of Transmission box, (8252) and pour out oil. Loosen set screw (8475) and remove clutch shift shaft (8230) and clutch shift fork (8232). Remove bearing cap (8187) and bearing cap gasket (8480.) Remove cap screws (8468) and remove variable speed arm bracket (8263). Put sliding clutch in neutral position and with screwdriver or punch remove wheel shaft lock ring (8457). Lock ring is located between clutch (8197) and high speed clutch assembly (8901). Shaft cannot be removed without removal of this lock ring. Remove wheel shaft from Transmission box by tapping with a wooden block. Shaft is driven out from rear of transmission toward front.

Reverse above procedure for re-assembly.

To remove main shaft (8171), first remove solid bearing cap (8173 and bearing cap gasket (8480). Remove bearing cap (8187) and bearing cap gasket (8480). Loosen allen screws from high speed main shaft sprocket (8174) and low speed main shaft sprocket (8900). With wood block drive main shaft (8171) out from rear of transmission box toward front.

Reverse above procedure for re-assembly.

Drive chains may be removed or replaced in transmission box without removing any shaft or sprocket. To remove chain, rotate sprockets until master link appears. Remove master link locking clip. Chain will come apart readily. Transmission box uses 4 drive chains, 3 #40ASA chains 33 links or 66 pitch long and one (1) short chain #40ASA 26 links or 52 pitches long.

When replacing transmission, transmission box must be leveled to assure proper alignment of drive on lower wheel. Transmission Box feet are equipped with leveling screws for easy adjustment . . .

Disassembly Of Speed Adjusting Mechanism

In sequence remove 8414, 8413, 8415, 8418, 8409, 8280, 8401, 8400, 8409, 8404, 8242, 8429, 8444. Remove 8490, 8489 and 8430, disengage 8236 from 8235. Remove (4) bolts and take out. Lift assembly out through electric welder access hole.

