

# OPERATING INSTRUCTIONS AND PARTS LIST

Model 81—20" Band Saw

FOR SERIAL NUMBERS FROM 1,000 UP

**POWERMATIC**



**HOUDAILLE**

McMinnville, Tennessee 37110

## SAFETY RULES

1. When setting up the machine for any sawing job, rotate handwheel by hand to make certain saw blade tracks properly. Keep table free from tools and material except stick to be cut.
2. Always keep blade guard in place and upper and lower doors closed and locked during operation. Use a push stick or guide for cuts near saw blade.
3. Keep saw teeth sharp and properly set. Improper set in teeth will cause blade to "lead." This places tremendous strain on blade causing breakage.
4. Always disconnect power source when servicing machine.
5. Good housekeeping is one of the most important of all safety rules.
6. Do not look around or carry on a conversation when operating machine. Give it your undivided and uninterrupted attention.
7. Wear safety goggles for added eye protection.
8. Roll up your sleeves or wear a shop coat with tight fitting and rather short sleeves. Tuck in your necktie and do not wear gloves. Loose fitting, torn or ragged clothing is dangerous because it may be caught by the saw and the operator's hand pulled into the blade.
9. Base of machine should be grounded to water pipe or central grounding system.
10. Never clean blade area when machine is running.

## 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, positive electrical connections; worn or loose "V" belts and bearings heating or loose.

### 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 81 - 20" 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 the front of the saw. Lower wheel is equipped with a foot brake that is convenient to the operator. Sealed dust chute keeps motor and drive free from cuttings and dust.

**MOTOR AND WIRING:** Electric wiring is connected to 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.

**POWER DRIVE:** The saw is driven with a motor mounted in the base of the machine. A 1 HP motor is sufficient for light and medium work and a 1½ or 2 HP for heavy work and resawing. On the belt driven machine, the motor is mounted on an adjustable hinge base. Two A section belts drive the lower band wheel. The direct drive model features the motor mounted direct to the lower band wheel, turning 900 RPM.

**INSTALLING BLADE:** To install band saw blade, remove table insert (1) 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 the blade placed in the center of the band wheels, increase tension on upper wheel with tension screw (2) fig. 2, 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. For accurate work and maximum blade life it is important that the blade runs 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.

**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 counter-balanced bar (3) fig. 2 above the table. The purpose of the saw guide is to support the blade for cutting circles (See 2 & 3, fig. 1). It is very important that the guides be set in proper relation to the saw blade. To set the guides to saw blade, set tension on blade and start the saw to check tracking on band wheel. Set the side blocks or bearings (4) fig. 1 as close to the saw as possible without causing friction or binding. Guide blocks are held in place with socket head set screws (5) fig. 1. After blade clearance is set, the guide holder should be set so that edge of the guides are just behind saw teeth gullets. The back guide consists of a ball bearing mounted in an adjustable bar. The bearing is set 1/64" from the back edge of saw blade when blade is running not loaded. The back guide should be set at a slight angle to back of blade so that the edge of the blade will not cut a groove in back bearing guide. Back bearing is adjusted by turning knurled knob (6) fig. 1.

**BLADE TENSION:** Correct blade tension is very important for efficient operation. The wider and thicker blades require more tension than narrow blades. A tension indicator, graduated for different blade widths (1) fig. 2, is located inside the frame, behind upper wheel. Tension is regulated by a screw building pressure on tension spring. This spring is designed to give correct tension for standard gauge blades only. Tension may vary on heavier and/or thicker blades. Blade tension does not vary with different length blades.

**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 bearing locking bolts and adjusting with the two jack screws. Bearing bolts should be retightened after shaft is leveled.

**TABLE ADJUSTMENTS:** The table is mounted on an extremely heavy duty single action trunion that rests on trunion base (9) fig. 1. The table may be tilted to the right 45 degrees and to the left 15 degrees. Table is locked in position with trunion handwheel mounted on side of machine base (7) fig. 1. To level table with blade, raise counter-balanced arm to highest position and place machinist square against side of blade. Set table stop (8) fig. 1 on side of table by adjusting screw on top of the stop. Stop bar may 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.

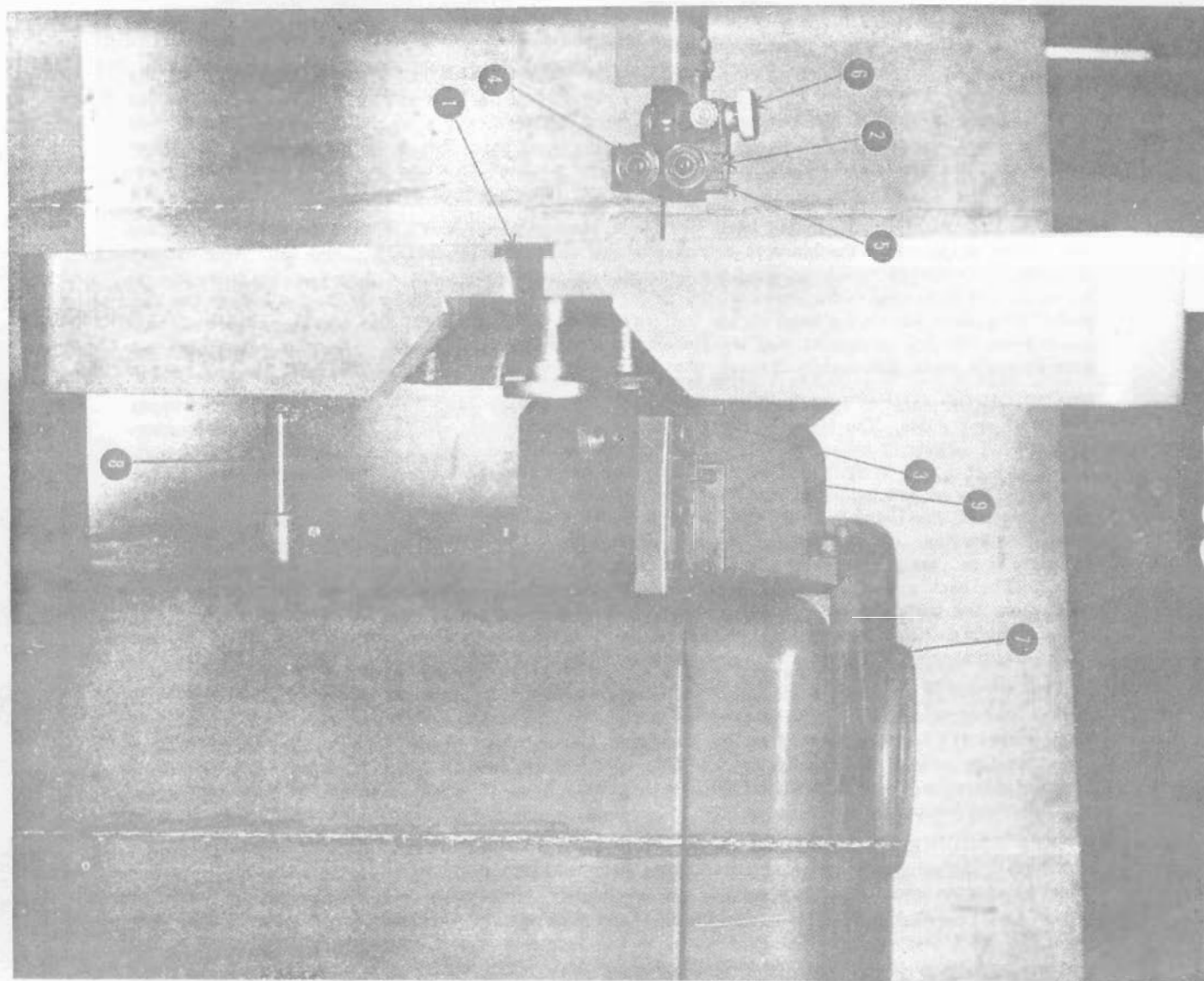


Fig. 1

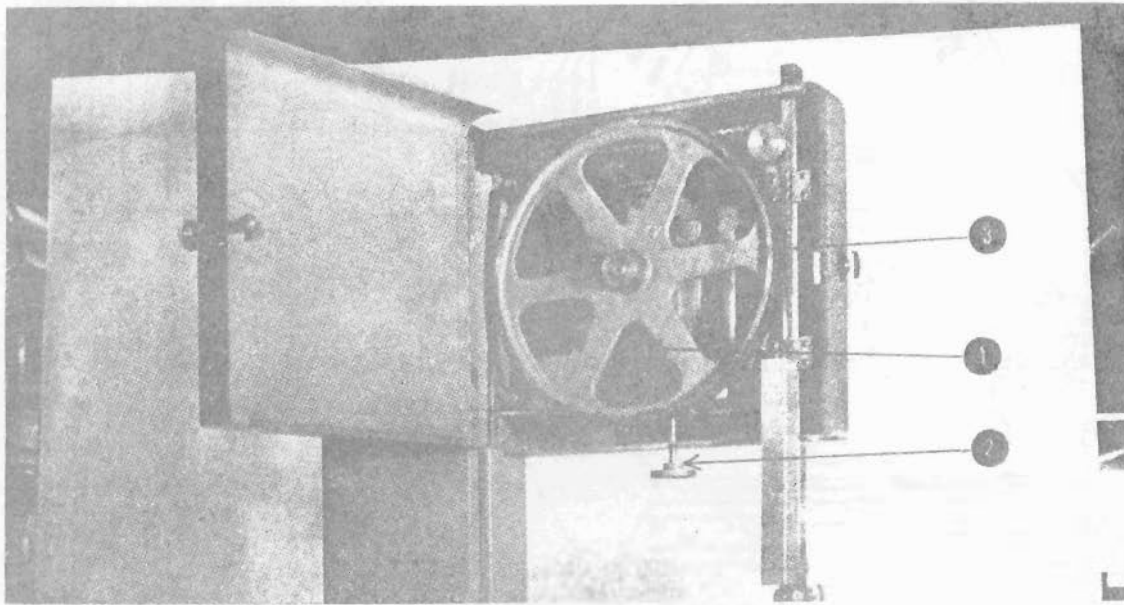
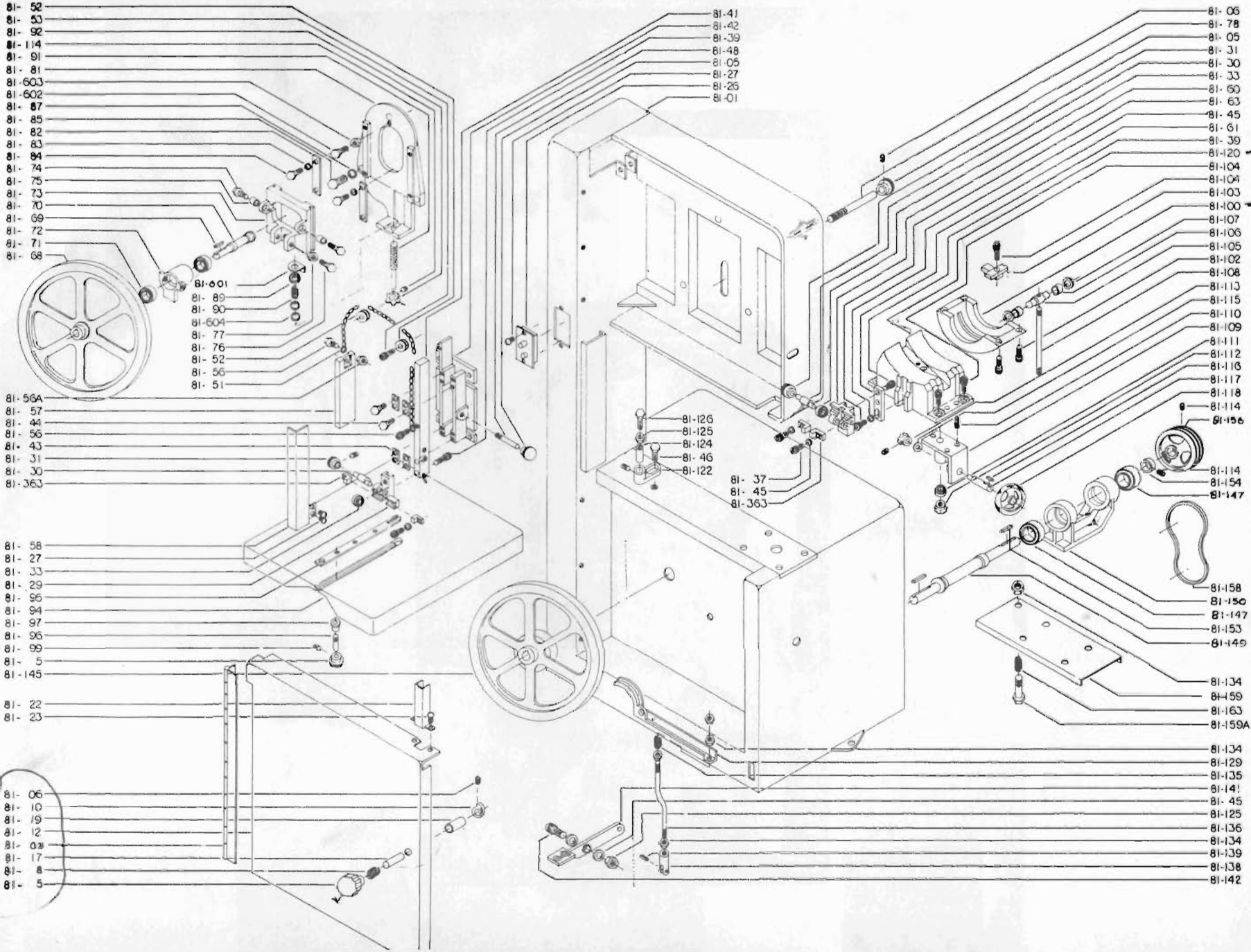


Fig. 2





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## 81 BAND SAW PARTS LIST

Part No.	Description	No. Required
81-1	Body, Bandsaw	1
81-2	Door, Upper	1
81-3	Hinge, Upper and Lower Door	2
81-4	H.H.C.S., 5/16—18 x 5/8	6
81-4A	Washer, Flat	10
81-5	Knob, 3/8 Bore	7
81-5A	Knob, 1/2 Bore	1
81-6	S.S.S., 1/4—20 x 1/4	12
81-7	Shaft, Upper Door Locking	1
81-8	Spring, Door Locking Shaft, AS18325	2
81-9	Spacer, Upper Door Latch	1
8-10	Latch, Door, B-12	2
81-12	Door, Lower	1
81-17	Shaft, Lower Door Locking, Int. W/87-817 and 90-190A	1
81-19	Spacer, Lower Door Shaft, 700-65A	1
81-20	Saw Guard, Lower Door	1
81-23	B.H.C.S., #10—24 x 3/8	2
81-24	Door, Motor Drive (Not Pictured)	1
81-26	Switch Box and Cover	1
81-27	B.H.C.S., 1/4—20 x 3/8	1
81-29	Guide Casting, Upper	1
81-30	Shaft, Back Saw Guide, Bearing	2
81-31	Knob, Saw Guide Bearing Shaft, 1-10	2
81-31A	B.H.C.S., 3/8—24 x 3/8	4
81-33	Bearing, Back Saw Guide, Fafnir, 37PP3	2
81-34	Plate, Saw Guide Bearing Mtg.	4
81-35	Bearing, Saw Guide, Fafnir, 200PP	4
81-37	H.H.C.S., 5/16—18 x 3/8	4
81-38	B.H.C.S., 3/8—24 x 1	4
81-39	S.H.C.S., 5/16—18 x 1 1/2	6
81-39A	B.H.C.S., 5/16—18 x 3/4	2
81-40	Thumb Screw, 1/4—20 x 1/2	2
81-41	Guide Bar	1
81-42	Holder Guide Bar, B-35	1
81-43	Plate, Guide Bar Holder	4
81-44	Hex Head Nyloc Screw, 1/4—20 x 5/8	8
81-45	Washer, Flat, 3/8	13
81-46	S.H.C.S., 3/8—16 x 1 1/2	5
81-47	Split Pin, 1/4 x 1 1/4	2
81-48	Screw, Guide Bar Locking	1
81-49	S.S.S., 3/8—16 x 3/4	8
81-51	Chain, Guide and Balance Bar #40 Sash Chain	1
81-52	Balance Wheel	2
81-53	H.H.C.S. Balance Wheel, 5/16—18 x 1 1/4	2
81-56	S.H.C.S., 1/4 2—20 x 3/8	1
81-56A	Filister Head Screw, #6—32 x 3/4	1
81-56B	Hex Nut, #6—32	1
81-57	Bar, Balance, B-84	1
81-58	Guard, Bar	1
81-60	Guide, Casting, Lower	1
81-61	Bar, Lower Guide Mtg	1
81-63	S.H.C.S., 3/8—16 x 1	1
81-63A	Lock Washer, 3/8	9
81-68	Wheel, Upper Bandsaw, B-3	1
81-69	Key, Upper Wheel Shaft, 1/4 x 1/4 x 2	1
81-70	Shaft, Upper Wheel	1
81-71	Bearing, Upper and Lower Wheel Shaft, Fafnir, 206PP	4
81-72	Bearing Housing, Upper Shaft, B-8	1
81-73	Bracket, Upper Bearing Hsg., B-7	1
81-74	Pivot Screw, Upper Bearing Hsg., 3/8—16 x 3/4	6
81-75	Bushing, Pivot Screw, 700-65A	2
81-76	Guide Screw, Square Head, 3/8—16 x 1 1/2	3
81-77	Hex Nut, 3/8—16	4
81-78	Screw, Upper Wheel Aligning	1
81-80	Set Screw, Bandsaw Wheel, 3/8—16 x 3/8	2
81-81	Mounting Bracket, Upper Bearing Slide, B-6	1
81-82	Slide Shim, Upper Bearing Hsg. Bracket	2
81-83	Washer, Flat, 3/8	4
81-84	H.H.C.S., 3/8—16 x 3/4	4
81-85	H.H.C.S., 3/8—16 x 2.0	3
81-87	Washer, Flat, 3/8	3
81-89	Bearing, Tension Adj. Screw, NICE 6031/4	1
81-90	Spring, Tension Adj. Screw, 16136	1
81-91	Screw, Blade Tension	1
81-92	Knob, Tension Adj. Screw	1

## 81 BAND SAW PARTS LIST

Part No.	Description	No. Required
81-94	Table, Bandsaw, B-2-A	1
81-95	Insert, Saw Table	1
81-96	Screw, Insert Locking	2
81-97	Spacer, Insert, 87-97	2
81-99	S.S.S., ¼—20 x ¼	1
81-100	Trunion, Table Tilt, MB-2	1
81-102	S.H.C.S., ⅜—16 x 1¾	4
81-103	Guide, Table Tilting Trunion	1
81-104	S.H.C.S., 5/16—18 x 1½	4
81-104A	S.H.C.S., ⅜—16 x 1	5
81-105	Holder, Trunion Lock Roller	1
81-106	Roller, Trunion Lock	2
81-107	Flat Washer, ½	5
81-108	Lock Screw, Trunion	1
81-109	Bracket Trunion Lockscrew and Gear, B-36	1
81-110	H.H.C.S., 5/16—18 x ¾	7
81-111	Thrust Bearing, Trunion Lockscrew, NICE 605	1
81-112	Bevel Gear	1
81-113	Bevel Gear, Lock Screw	1
81-114	S.S.S., 5/16—18 x 5/16	4
81-115	Flat Washer, ⅝	1
81-116	Key, Trunion Lock, 3/16 x 3/16 x 1	1/16
81-117	Shaft, Trunion Lock Screw	1
81-118	Handwheel, 12-0	1
81-119	Dial, Trunion Tilt	1
81-119A	Pointer	1
81-119B	Drive Screw, #4 x 3/16	3
81-120	Bracket, Trunion, MB-3	1
81-122	Bracket, Table Stop, 12-13	1
81-124	Pin, Table Stop Bracket	1
81-129	Brake Shoe, B-15	1
81-130	Lining, Brake Shoe, ¼ x 1	1
81-131	H.H.C.S. Brake Pivot, ½—13 x 2½	1
81-133	Plate Pivot Screw	1
81-134	Hex Nut, ½—13	5
81-135	Spring Brake Rod, LP-75	1
81-136	Brake Rod	1
81-137	Nut, Hex Yoke, ½—20	1
81-138	Yoke, Brake Rod, #6	1
81-139	Yoke Pin	1
81-140	Cotter Key	1
81-141	Pedal, Brake, B-14	1
81-142	S.H.C.S. Pedal Pivot, ⅜—16 x 1¾	1
81-145	Wheel, Lower, B-3 W/Hub	1
81-147	Bearings, See 81-71	2
81-148	Key, Lower Bandsaw Wheel, ¼ x ¼ x 2	1
81-149	Shaft, Lower Drive	1
81-150	Bearing Hsg. Lower Drive Shaft, B-50	1
81-150B	S.S.S., 5/16—18 x ⅝	4
81-153	Key, Lower Drive Sheave, 3/16 x 3/16 x 1½	1
81-154	Lower Shaft, Collar	1
81-156	Sheave, Drive Shaft, 1 HP, AK-64; 1½ HP or Over D26-50	1
81-158	Belt, 1 HP 4L430, 1½ HP 4L420	1
81-159	Base, Motor	1
81-159A	H.H.C.S., ½—13 x 1½	5
81-160	Rod, Motor Base	1
81-161	Cotter Key, Motor Base, ⅝ x 1	2
81-162	Carriage Bolt, Motor Base, ⅜—16 x 3	1
81-162A	Square, Nut, ⅜—16	1
81-163	Spring, Motor Base Bolt, 12103	1
81-363	"L" Block Guides	4
81-602	H.H.C.S. Upper Bearing Hsg. Stop, ½—13 x ½	1
81-603	Hex Nut, ½—13	1
87-8410	Drive Screw, #4 x 3/16 (not pictured)	2
87-8410A	Screw, Pointer Mtg. (not pictured)	1
87-8600B	Scale, Blade Tension (not pictured)	1
87-8601	Bracket, Tension Screw	1