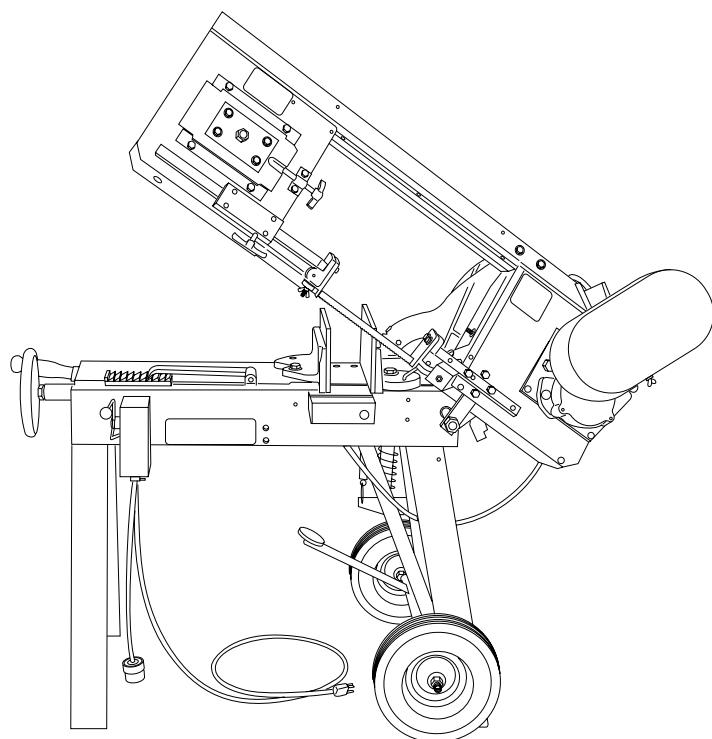


INSTRUCTION MANUAL



1399 and 1399-22 Band Saws



Read and understand all of the instructions and safety information in this manual before operating or servicing this tool.

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Description

The Greenlee 1399 and 1399-22 Band Saws are portable band saws intended to cut conduit, pipe and other materials. Optional accessories include the following:

- Vertical Work Table — Greenlee Part Number: 503 2237.0
see Appendix B in this manual
- Wet Cutting System — Greenlee Part Number: 503 2322.9
see Appendix C in this manual

Purpose

This instruction manual is intended to familiarize operators and maintenance personnel with the safe operation and maintenance procedures for the following Greenlee products:

- 1399 Serial Number VY... (115-Volt model)
- 1399-22 Serial Number ZF... (220-Volt model)

This manual should be kept available to all operating and maintenance personnel.

IMPORTANT SAFETY INSTRUCTIONS



SAFETY ALERT SYMBOL

The symbol above is used to call your attention to instructions concerning your personal safety. Watch for this symbol. It points out important safety precautions. It means **“ATTENTION! Become alert! Your personal safety is involved!”** Read the message that follows and be alert to the possibility of personal injury or death.

!DANGER

Immediate hazards which, if not avoided, **WILL** result in severe personal injury or death.

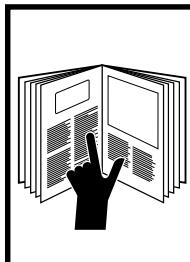
!WARNING

Hazards or unsafe practices which, if not avoided, **COULD** result in severe personal injury or death.

!CAUTION

Hazards or unsafe practices which, if not avoided, **COULD** result in minor personal injury or property damage.

Safety is a critical factor in the design of Greenlee equipment. The best program starts with a safety-conscious operator. The information highlighted in this bulletin describes operating practices for the benefit of the workers who will use our equipment in their daily jobs. Comments from users are appreciated.



!DANGER

A person who has not read and does not understand all operating instructions is not qualified to operate this tool. Failure to read and understand safety instructions could result in injury or death.

SAVE THESE INSTRUCTIONS

Additional copies of this manual are available upon request at no charge.

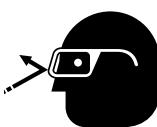
IMPORTANT SAFETY INSTRUCTIONS

! DANGER



Do not use near flammable or explosive liquids, gases or other materials. The electric motor in this unit will ignite flammable materials. Failure to observe this warning will result in severe injury or death.

! WARNING



Wear eye protection when operating this tool.

Failure to observe this warning can result in serious eye injury from flying debris.

! WARNING



Electric shock hazard:

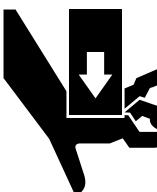
- Do not expose power tools to rain. Electric shock can result.
- Do not use power tools in damp or wet conditions. Electric shock can result.
- Disconnect from power supply before servicing. Electric shock can result.

Failure to observe these warnings can result in severe injury or death.

! WARNING

- Make sure the tool is OFF before connecting it to a power source. Accidental start-up can result in serious injury.
- Do not inspect, adjust, or service the tool while it is connected to a power source. Accidental start-up can result in serious injury.
- Disconnect from power source when not in use. Accidental start-up can result in injury.

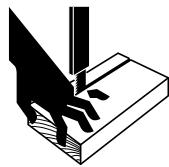
! WARNING



Pinch points.

The cutting head, blade wheels and drive belt can cause injury when making adjustments.

! WARNING



Keep hands away from the blade and cutting area during operation.

! WARNING

- Do not wear loose clothing when operating this tool. Loose clothing can get pulled into the tool.
- Do not operate this tool without the safety guards in place. Using this tool without the guards can result in severe injury.
- The blade is sharp and can cut even when stationary.

Failure to observe these warnings can result in severe injury or death.

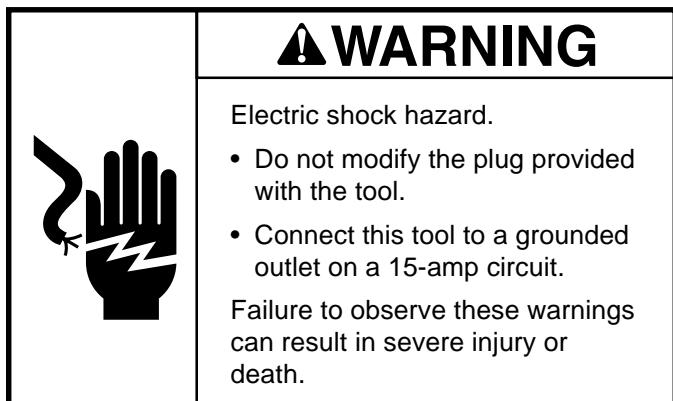
! CAUTION

- Inspect saw before operating. Replace any worn, damaged, or missing components with Greenlee replacement parts. A worn or damaged component can fail and strike nearby personnel.
- Stay clear of pieces that may fall when cut is complete. Falling workpieces may strike nearby personnel.
- Do not exceed the rated capacity of this tool. The operator may lose control of oversized workpieces.
- Use this tool for manufacturer's intended purpose only. Use other than that which is described in this manual can result in injury or property damage.

SAVE THESE INSTRUCTIONS

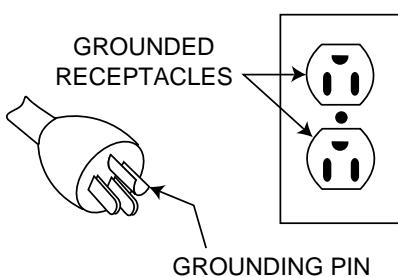
Additional copies of this manual are available upon request at no charge.

Grounding Instructions



This tool must be grounded. In the event of a malfunction or breakdown, an electrical ground provides a path of least resistance for the electric current. This path of least resistance is intended to reduce the risk of electric shock to the operator.

This tool's electric cord has a grounding conductor and a grounding plug like the plug illustrated below. Do not modify the plug. Connect the plug to a 15-amp grounded receptacle that is properly installed and grounded in accordance with all national and local codes and ordinances.

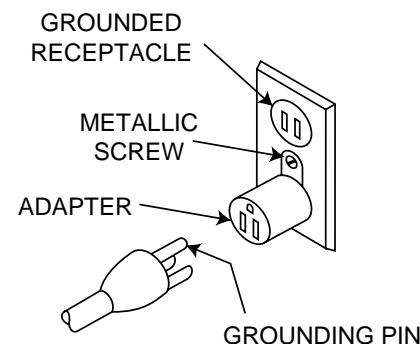


This tool is intended for use with a three-wire grounded circuit. A temporary adapter may be used to connect this tool to a two-pole circuit. See figure below. The green-colored ear or lug extending from the adapter must be connected to a permanent ground, such as a properly grounded receptacle box or water pipe. The grounding lug or wire must be held in place by a metallic screw or clamp. A temporary adapter should be used only until a properly grounded receptacle can be installed by a qualified electrician.

Important: The Canadian Electric Code does not permit the use of a temporary adapter.

If it is necessary to replace the cord, use the wiring diagram provided in the Maintenance and Service section of this manual. The wire functions and corresponding insulation colors are as follows:

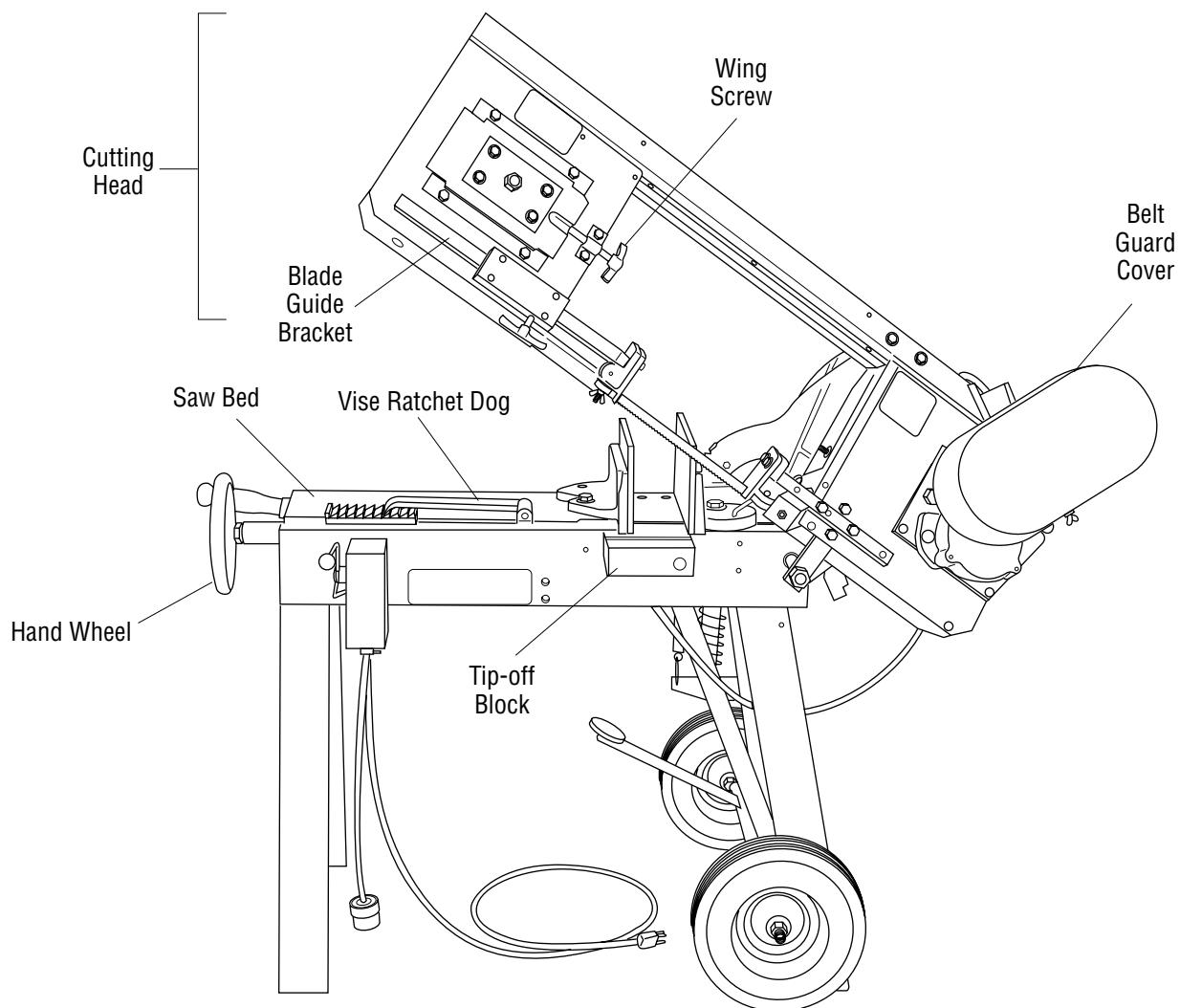
- hot – black
- neutral – white
- ground – green (or green with a yellow stripe)



Specifications

Power Supply	U/L-listed type SO cord
Motor: 1399: Input	115 VAC* Single Phase, 60 Hz
Power Output	1/2 Horsepower
RPM	1725
1399-22: Input	220 VAC* Single Phase, 50 Hz
Power Output	1/2 Horsepower
RPM	1425
 Cutting Speeds (feet per minute)	76, 141, 268
Blade Size	1/2" x 93" x .025" (12.7 mm x 236 cm x .064 mm)
Dimensions:	
Bed	12" x 30-1/2" (30.5 cm x 77.5 cm)
Floor to Top of Bed	22-1/4" (56.5 cm)
Floor Space Required	19" x 47" (48 cm x 120 cm)
Height (cutting head horizontal)	39" (99 cm)
Height (cutting head vertical)	52" (132 cm)
Horizontal Cutting Capacities:	
Rectangular @ 90°	9-1/2" x 11" (24 cm x 28 cm)
Round @ 90°	9-1/2" Diameter (24 cm diameter)
45° Angle	5-1/2" x 5-1/2" (14 cm x 14 cm)
Vertical Cutting Capacities:	
Work Table	7-5/8" x 10" (19 cm x 25.4 cm)
Throat Height	9-1/2" (24 cm)
Throat Depth	6-1/4" (15.75 cm)
Net Weight (approx)	220 lbs.

Identification



Setup

Transportation

The wheel axle is adjustable; the wheels may be lowered or raised. To transport the band saw to a new location:

1. Place one foot on the footpad of the axle. Press down on the footpad to lift the bandsaw onto the wheels. The latch will drop into place.
2. Pull outward on the handle. Use the handle to move the saw to its new location.
3. After arriving at the work location, lift up on the release latch on the back of the saw bed and push the handle back into the saw bed.

WARNING

Do not lift the cutting head while the wheels are lowered. The band saw can tip over. Failure to observe this warning can result in injury.

4. Press down on the footpad. Lift the latch away from the axle and let the saw down on its feet.

Speed Selection

The Greenlee 1399 and 1399-22 Band Saws can operate at three speeds: 76, 141, and 268 fpm (feet per minute). To determine the proper blade speed, see Appendix A—Blade Selection and Blade Speed Chart.

To change the speed of the blade:

1. Disconnect the saw from the power supply.
2. See the Exploded View—Wheel and Frame Details. Loosen the wing nut (27) on the belt guard (38). Lift the belt guard.
3. Loosen the motor support nut (25) to allow the motor support to pivot.
4. Move the belt to the desired set of pulleys. (Moving the belt to the lowest set of pulleys will produce the slowest speed).
5. Pivot the motor support so that the belt is taut; tighten the motor support nut.
6. Check the tension of the belt; it should move between 1/4" and 1/2".
7. Close the belt guard cover. Tighten the wing nut.

Vise Jaw Angle

The fixed vise jaw may be positioned for straight or angled cutting. To change the position of the vise jaw:

1. Disconnect the power supply and remove the safety hook from the shaft of the handwheel.
2. Raise the cutting head to the vertical position.
3. Loosen the two hex head cap screws on the fixed vise jaw. Remove the locating pins.
4. Position the vise jaw as desired and tighten the remaining cap screws.
5. Loosen the hex head cap screw on the movable vise jaw. Position the movable vise jaw so it is parallel to the fixed vise jaw. Tighten the cap screw.

Operation

1. Remove the safety hook from the shaft of the handwheel. Raise the cutting head and lock it in place.
2. Lift the vise ratchet dog and slide the movable vise jaw so that the vise jaws will accommodate the item. Place the material between the vise jaws and twist the handwheel to clamp the material into place.
3. Loosen the wing screw and adjust the guide bracket so that the adjustable roller support is as close as possible to the item to be cut.
Important: The blade guide assembly must be at least 5-3/4 inches from the tip-off block, or blade will not be able to cut completely through the item.
4. Plug saw into an appropriate power supply.
5. Press start switch. Slowly lower the head until the blade makes contact with the material. The saw will shut off automatically.
6. When the cut is complete, raise the cutting head and lock it in place. Open the vise and remove the item.

Cutting Suggestions

- Select the proper blade and blade speed for the material to be cut. See Blade Selection and Blade Speed Chart.
- Set the blade at the proper tension.
- Reduce the feeding pressure for the first two or three cuts with a new blade.
- Set the adjustable roller support so that it is as close as possible to the item to be cut.
- Lower the cutting head slowly so that the blade will begin cutting before the full amount of feed pressure is applied to the blade.

Replacing the Saw Blade

1. Disconnect the saw from the power supply.

Note: If the band saw is equipped with a Wet Cutting System, see the Exploded View—Switch and Dash Pot Details (and optional Wet Cutting System). Loosen two thumb screws (15) and remove the chip pan and splash guard assembly (1 & 2). Proceed to Step 2.

2. Remove the safety hook from the shaft of the handwheel. Raise the cutting head to the vertical position.
3. See the Exploded View—Blade Guides and Gear Box Details. Loosen the wing nut (48). Remove the blade guard (25).
4. See the Exploded View—Wheel and Frame Details. Loosen the thumb screw (33) on the idler wheel guard (31). Open the guard. Loosen wing nuts (27) and remove the drive wheel guard (37).
5. Twist the wing screw (10) to release blade tension.
6. Uncoil a new 1/2" x 93" blade. Viewing the saw from the operator's side, the teeth must point toward the motor end. If the teeth do not point in this direction, turn the blade inside out.
7. Install the blade:
 - a. Place the blade between the blade guide ball bearings and brushes.
 - b. Slide the blade onto the drive and idler wheels.
 - c. Twist the take-up screw until the blade is taut. When pressed, the blade should have approximately 1/4" of play.
8. Replace the blade guards and lower the cutting head. Connect the saw to the power supply. Start and stop the saw a few times.
9. Raise the cutting head to the vertical position and check the blade to see that it is riding correctly on the idler wheels. The blade should be within approximately .032" from the flange of the idler wheel. If it does not, see Wheel Pitch Adjustment in the Maintenance section of this manual.

Maintenance

Brushes

- Clean the brushes frequently in kerosene or a solvent.
- To use both rows of bristles, remove and install them on the opposite side of the blade.
- When replacing the brushes, attach them so the bristles are turned in the same direction that the blade travels.

Lubrication

Remove dust and dirt before lubricating.

- Use Marfak Grade "O" Grease or equivalent in the gear case.
- Use light or heavy grease on the vise adjusting screw.
- Lubricate the internal ring gear and pinion with a good quality, medium grade, fibrous type of grease.
- Lubricate the ball bearings with a good quality ball bearing grease.
- Lubricate the cutting head pivot bar periodically with a few drops of machine oil.
- Follow the motor manufacturer's instructions for motor lubrication.

Overload Shut-Off and Reset

The motor automatically shuts off if it is overloaded or overheated. If the motor shuts off:

1. Disconnect the saw from the power supply.
2. Raise the cutting head to the vertical position. Examine the saw and the item to determine the cause of the shut-off.
3. Check the saw blade for damage.
4. Lower the cutting head and allow the motor to cool.
5. See the reset instructions on the motor housing.
6. Reposition the item to begin a new cut. Tighten the vise.
7. Reconnect the saw to the power supply.

WARNING

The blade and other saw components may be hot. Contact with hot surfaces can cause severe burns. Failure to observe this warning can result in injury.

Dash Pot

The dash pot assembly slows the downward travel of the cutting head; this prevents the cutting head from falling.

The dash pot is hydraulic. See the Exploded View—Switch and Dash Pot Details. If it becomes necessary to add oil, disassemble the dash pot and add oil to within 1" of the top of the inside tube (46). Use Cities Service "Amplex 05" or equivalent.

Cutting Head Weight Adjustment

The cutting head should exert approximately 10 lbs. of force. To check the amount of force it exerts, disconnect the power supply and attach a hook-type scale to the handwheel. See the Exploded View—Switch and Dash Pot Details. Loosen the cap screw (20) and move the clamp (38) upward to increase the tension (or downward to decrease the tension). Tighten the cap screw.

Checking and Adjusting the Blade Guide Ball Bearings

See the Exploded View—Blade Guides and Gear Box Details. Six ball bearing blade guides (32) keep the blade aligned. Periodically remove the blade and check the condition of the ball bearings. Lubricate bearings that do not turn freely and replace bearings that show signs of wear or damage.

The bearings should be snug against the side of the blade. To check for proper adjustment:

1. Disconnect the saw from power supply.
2. Raise the cutting head to the vertical position.

WARNING

- The blade is sharp and can cut even when stationary. Failure to observe this warning can result in injury.
- The blade and other saw components may be hot. Contact with hot surfaces can cause severe burns. Failure to observe this warning can result in injury.

3. Twist the blade. The bearings should be snug enough to restrict the blade. If the blade twists between the bearings, rotate the eccentric roller axle (34) until the bearing is snug against the blade.

Maintenance (cont'd)

Wheel Pitch Adjustment

The blade should run within approximately .032" of the wheel flange. Use a feeler gauge to measure this distance. If it is more than .032", set the blade tension according to the instructions under Replacing the Saw Blade. If the distance is still more than .032", adjust the wheel pitch as follows:

1. Disconnect the saw from power supply.
2. See the Exploded View—Wheel and Frame Details. Twist the wing screw (10) to release blade tension.

WARNING

- The blade is sharp and can cut even when stationary. Failure to observe this warning can result in injury.
- The blade and other saw components may be hot. Contact with hot surfaces can cause severe burns. Failure to observe this warning can result in injury.

3. Raise the cutting head to the vertical position.
4. Loosen the thumb screw (33) on the hinged idler wheel guard assembly (31). Swing the wheel guard assembly away from the blade.
5. Loosen two cap screws (7) on the wheel adjusting block about 1/2 turn. Tighten the other two cap screws about 1/2 turn.
 - Loosen the two cap screws closest to the end of the saw to decrease the distance.
 - Loosen the two cap screws furthest from the end of the saw to increase the distance.
6. Twist the take-up screw to put tension on the blade.
7. Put the guard back in place and tighten the thumb screw. Lower the cutting head.
8. Connect the saw to the power supply and run the saw for a few moments. Disconnect from power and check the adjustment.

Troubleshooting

Improper blade selection and speed are the two most common causes for blade trouble. Verify that the blade and blade speed are appropriate for the material to be cut before proceeding with this troubleshooting guide.

PROBLEM	PROBABLE CAUSE	POSSIBLE REMEDY
Blade teeth dull quickly.	<p>Improper break-in of new blade.</p> <p>Chipped or broken tooth lodged in cut. Remove material from vise and begin a new cut.</p> <p>Feed rate is too fast, overheating the material and the saw teeth.</p> <p>(Wet Cutting Systems only): Coolant does not cover saw blade.</p> <p>Incorrect type of coolant, or incorrect coolant mixture.</p> <p>Coolant is dirty.</p>	<p>Break in a new blade properly by reducing the feed rate.</p> <p>Inspect blade. Replace if necessary.</p> <p>Reduce feed rate.</p> <p>Increase coolant flow.</p> <p>Use a water-based soluble or emulsifying oil type of coolant.</p> <p>Replace coolant.</p>
Blade teeth chip, rip out.	<p>Improper break-in of new blade.</p> <p>Material not firmly clamped in vise.</p> <p>New blade started in an unfinished cut.</p> <p>(For Wet Cutting Systems only): Coolant viscosity is too low.</p>	<p>Break in a new blade properly by reducing the feed rate.</p> <p>Stop saw. Twist the handwheel to tighten the vise.</p> <p>After installing a new blade, start a new cut.</p> <p>Use a higher viscosity coolant.</p>
Blade vibrates.	<p>Material not firmly clamped in vise.</p> <p>Blade tension is incorrect.</p> <p>Blade guide ball bearings are worn.</p> <p>Pitch is set incorrectly.</p> <p>Incorrect type of coolant, or incorrect coolant mixture.</p> <p>Coolant is dirty.</p>	<p>Stop saw. Twist the handwheel to tighten the vise.</p> <p>Twist the wing screw (10) to adjust the blade tension.</p> <p>Replace the ball bearings (32).</p> <p>See Wheel Pitch Adjustment in the Maintenance section of this manual.</p> <p>Use a water-based soluble or emulsifying oil type of coolant.</p> <p>Replace coolant.</p>

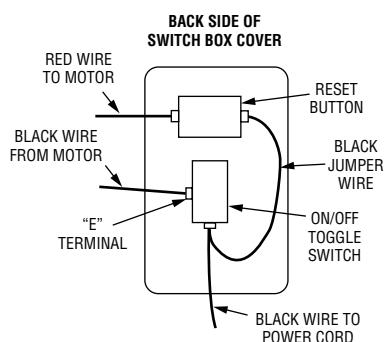
Troubleshooting (cont'd)

PROBLEM	PROBABLE CAUSE	POSSIBLE REMEDY
Blade squeals.	Feed rate too light.	Increase feed rate.
Blade runs low on the wheels, or blade slips off of the wheels.	Too little blade tension. Wheel pitch not set correctly. Blade guide ball bearings squeeze blade too tightly.	Twist the wing screw (10) to adjust the blade tension. See Wheel Pitch Adjustment. See Checking and Adjusting the Blade Guide Ball Bearings.
Blade scored.	Blade guide ball bearings squeeze too tightly. Blade guide ball bearings are out of alignment.	See Checking and Adjusting the Blade Guide Ball Bearings. See Checking and Adjusting the Blade Guide Ball Bearings
Blade stalls in material.	Not enough blade tension. Feed rate is too high.	Set the blade tension. Reduce the feed rate.
Premature blade breakage.	Blade guides misaligned. Too much blade tension. Blade runs against the wheel flanges.	See Checking and Adjust Blade Guide Ball Bearings. Twist the wing screw (10) to adjust the blade tension. See Wheel Pitch Adjustment in the Maintenance section of this manual.
Rough cut.	Coolant is dirty.	Replace the coolant.
Saw does not cut straight. Cut is inaccurate.	Blade guides are too far from the material.	Adjust blade guide.
Motor has stopped and will not restart.	Motor has overheated.	Allow motor to cool. See the Overload Shut-off and Reset in the instructions on the motor.

Wiring Diagrams

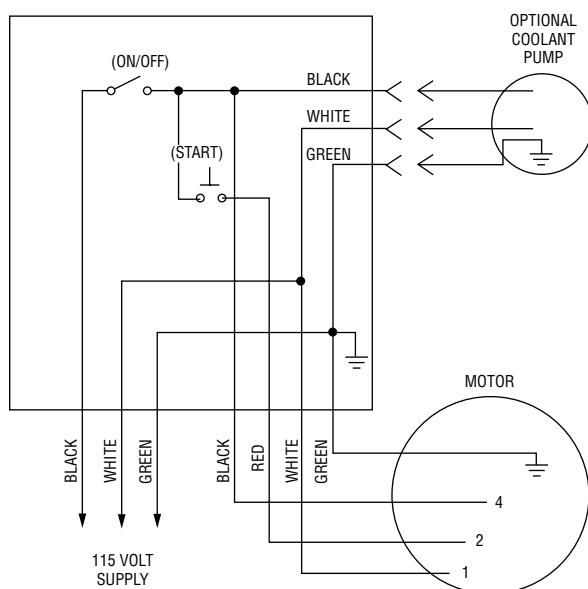
For 115-volt models preceding serial number 3500420:

1. Connect the white wire from the cord set to the white wires from the power cord and motor cord.
2. Connect the black wire to the ON/OFF toggle switch terminal "E".
3. Connect the green wire to the grounding screw in the back of the switch box.



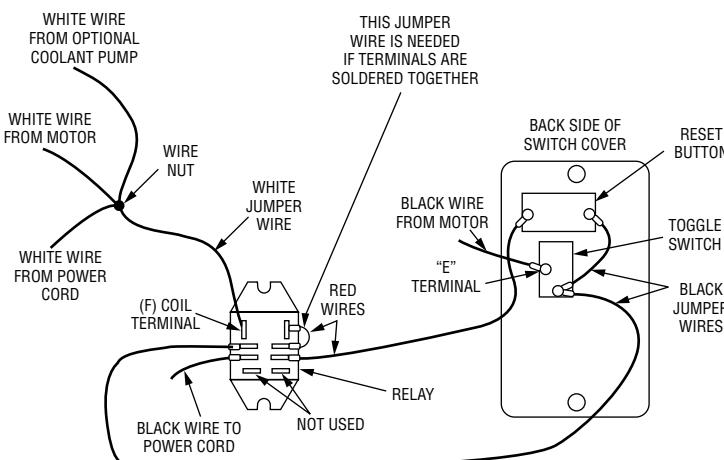
Note: When replacing the motor (part no. 503 2153.6) on a 115-volt unit with a serial number preceding 3500420, also install and connect a relay (part no. 918 6348.1) as shown.

SCHEMATIC

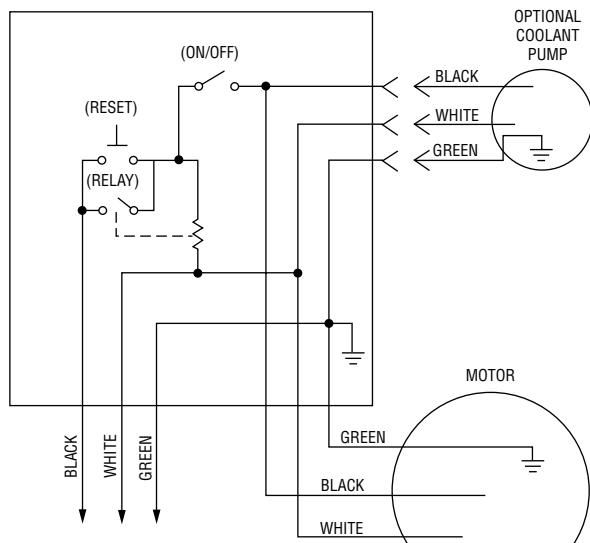


For 115-volt models beginning with serial number 3500420:

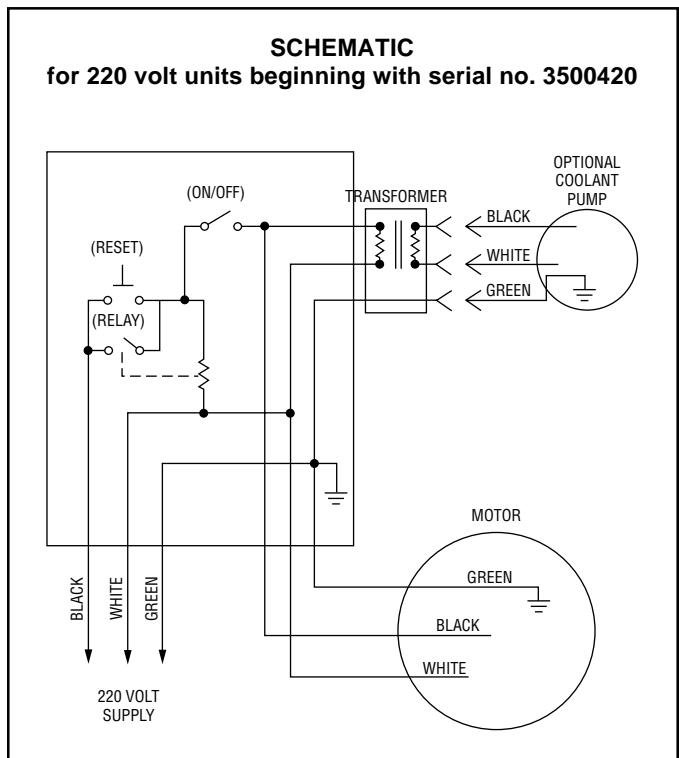
1. Connect the white wires from the cord set, motor, and coolant pump (optional) to relay coil terminal "F".
2. Connect the black wire from the motor to the ON/OFF toggle switch terminal "E".
3. Connect the green wire from the motor to the grounding screw in the back of the switch box.



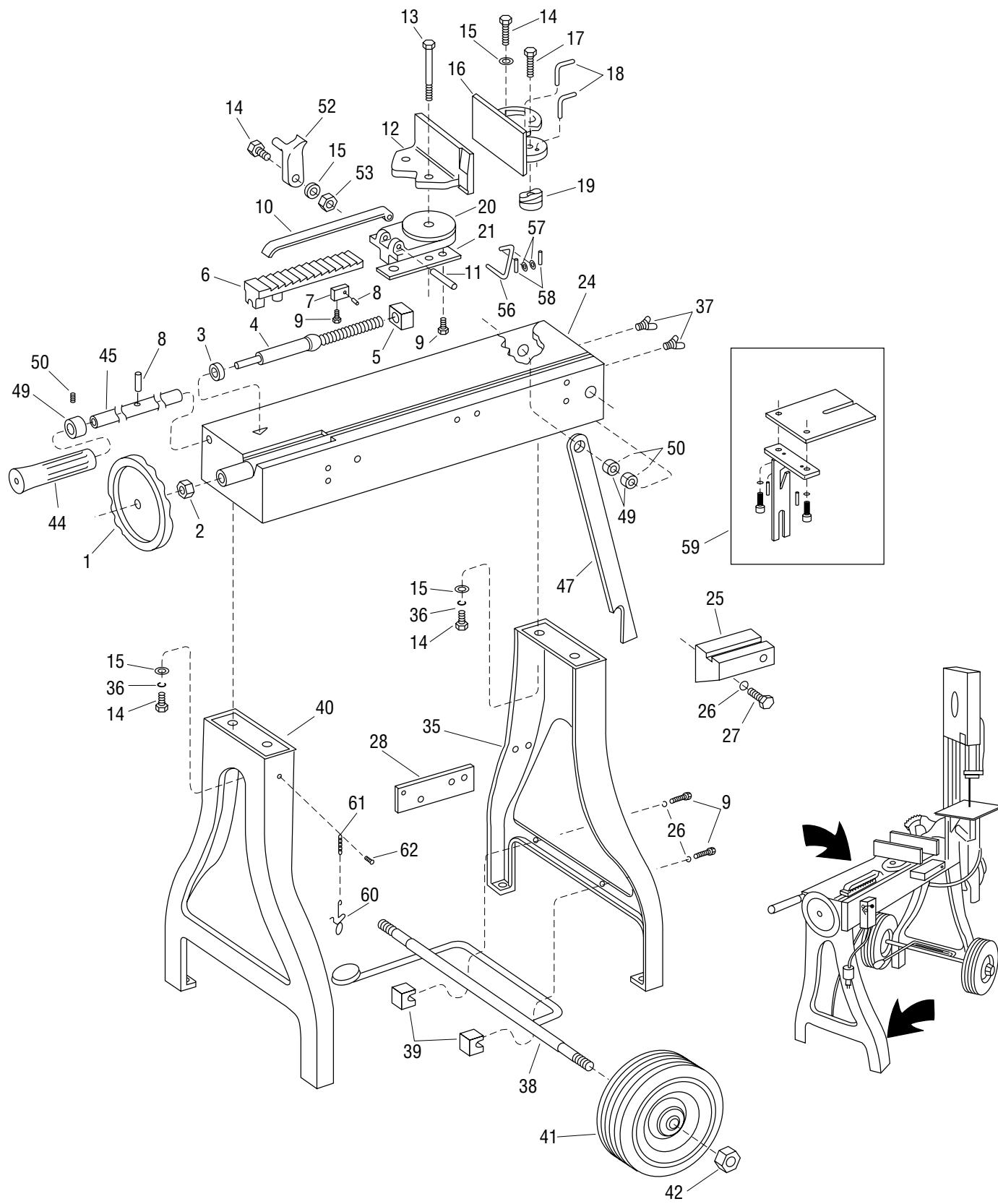
SCHEMATIC



Wiring Diagrams (cont'd)



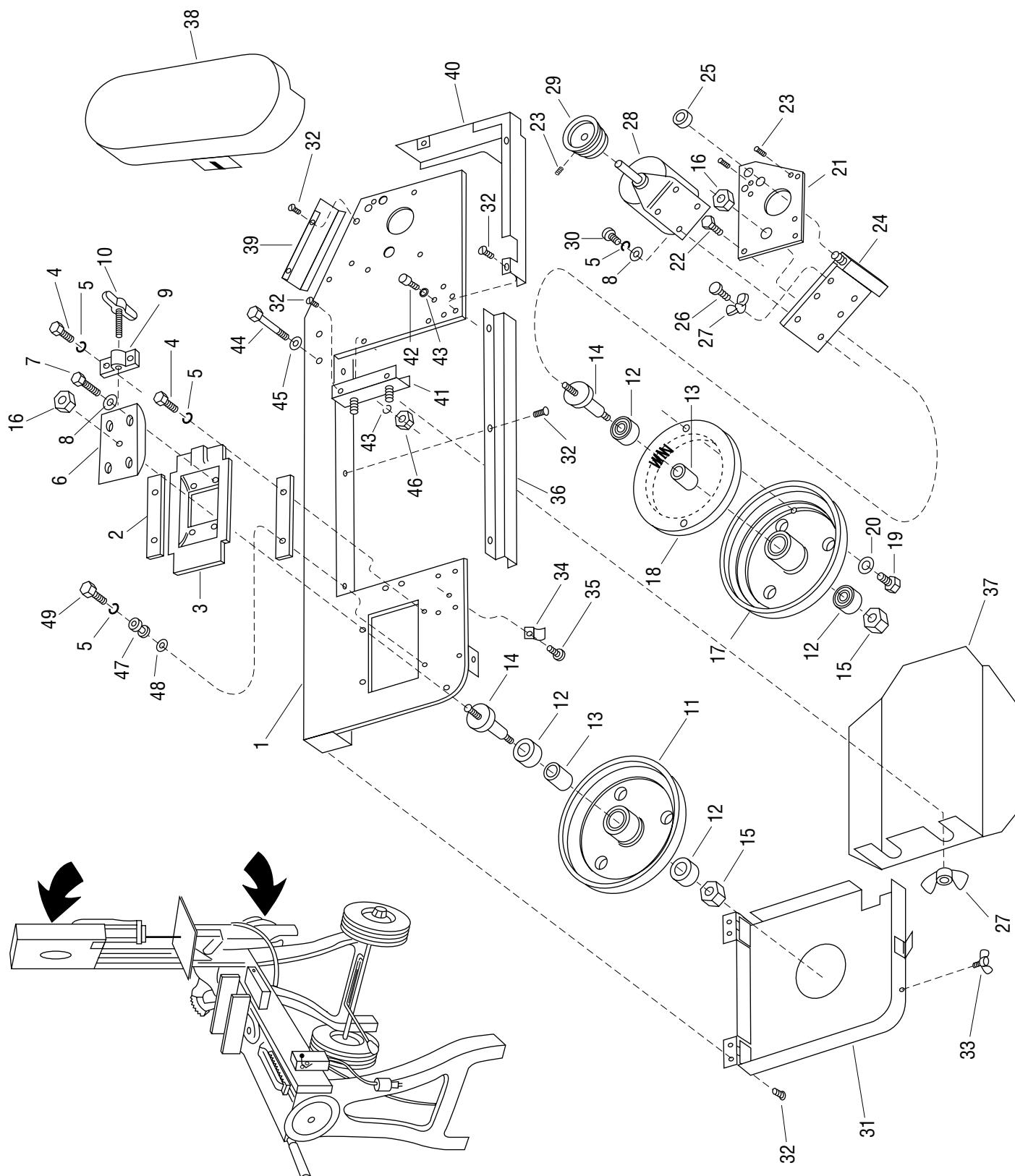
Parts List—Bed and Leg Details



Parts List—Bed and Leg Details

KEY	PART NO.	DESCRIPTION	QTY.
1	503 2213.3	Hand Wheel	1
2	905 3420.4	Nut, hex, 1 - 8, jam	1
3	503 2188.9	Thrust collar	1
4	503 2115.0	Vise screw	1
5	503 2214.1	Vise screw nut	1
6	503 2216.8	Vise ratchet	1
7	503 2217.6	Clamp block	1
8	905 0699.5	Pin, roll, .187 x 1.00	2
9	905 0523.9	Screw, cap, 5/16 - 18 x 1-1/4 hex head	4
10	503 2218.4	Ratchet dog, vise	1
11	905 3421.2	Pin, roll, .375 x 2.50	1
12	503 2219.2	Vise jaw, movable	1
13	905 0549.2	Screw, cap, 1/2 - 13 x 2-1/2 hex head	1
14	905 0544.1	Screw, cap, 1/2 - 13 x 1-1/2 hex head	6
15	905 1107.7	Washer, .500 x 1.25 x .084 flat	6
16	503 2220.6	Vise jaw, stationary	1
17	905 0547.6	Screw, cap, 1/2 - 13 x 2 hex head	1
18	503 2174.9	Pin, locating	2
19	503 2221.4	Nut, clamp	1
20	503 2222.2	Vise slide block	1
21	503 2223.0	Vise slide block guide	1
24	503 2224.9	Bed	1
25	503 2225.7	Tip-off block	1
26	905 0505.0	Washer, lock, .323 x .586 x .078 spring	4
27	905 0521.2	Screw, cap, 5/16 - 18 x 3/4 hex head	2
28	503 2371.7	Bracket, dash pot	1
35	503 2227.3	Leg, drive end	1
36	905 2793.3	Washer, lock, .516 x .873 x .125 spring	4
37	905 3169.8	Screw, thumb, 1/4 - 20 x 1/2	2
38	503 2228.1	Axle	1
39	503 2229.0	Mounting block	2
40	503 2230.3	Leg, idle end	1
41	503 2231.1	Wheel	2
42	905 2396.2	Nut, hex, 5/8 - 11 lock head	2
44	503 2232.0	Grip, handle	1
45	503 2233.8	Handle rod	1
47	503 2317.2	Latch	1
49	503 2234.6	Collar	3
50	905 1035.6	Screw, set, 1/4 - 20 x 3/16 flat point socket	3
52	503 2235.4	Ratchet dog	1
53	905 0647.2	Nut, hex, 1/2 - 13 jam	1
56	503 2236.2	Stop latch	1
57	905 3423.9	Washer, flat, .344 x .688 x .065	2
58	905 0654.5	Pin, cotter, .125 x 1.00	2
59	503 2237.0	Vertical Work Table, (optional)	1
60	503 2206.0	Hook, safety	1
61	503 2205.2	Chain	1
62	905 1267.7	Screw, self-tapping, #10 - 12 x 5/8 type A panhead	1
63	503 9919.5	Vise face plate, movable (older units only)	1
64	503 9920.9	Vise face plate, stationary (older units only)	1
Repair Kit:		Wheel and Handle Kit (includes 23, 26, 38, 39, 41, 42, 44-51, 56- 58)	
503 2239.7		Wheel and Handle Kit (includes 23, 26, 38, 39, 41, 42, 44-51, 56- 58)	

Exploded View—Wheel and Frame Details



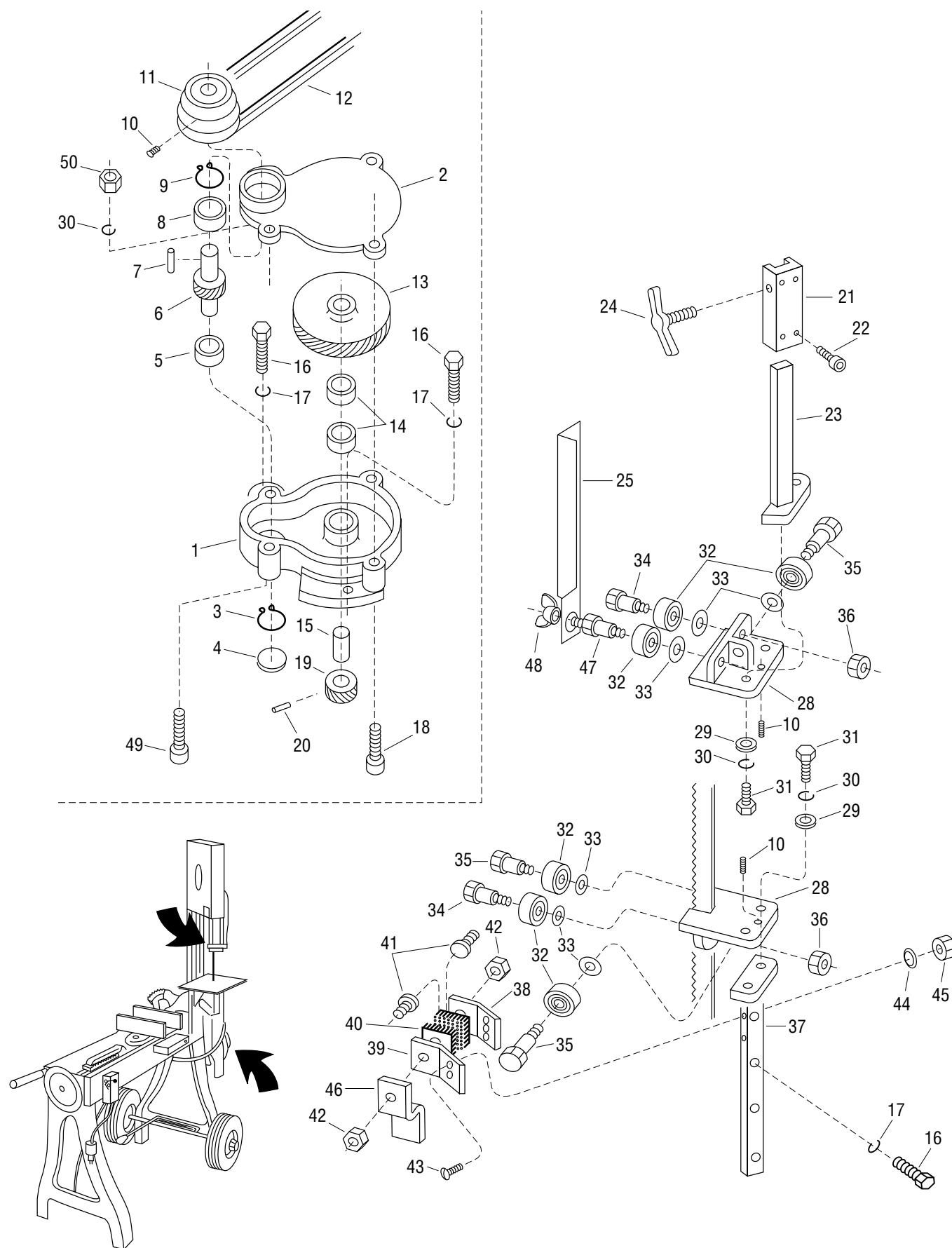
Parts List—Wheel and Frame Details

KEY	PART NO.	DESCRIPTION	QTY.
1	503 2240.0	Frame	1
2	503 2241.9	Guide wheel slide block	2
3	503 2242.7	Slide block	1
4	905 3404.2	Screw, cap, 5/16 - 18 x 5/8 hex head	6
5	905 0505.0	Washer, lock, .323 x .586 x .078 spring	8
6	503 2243.5	Block, wheel adjusting	1
7	905 0522.0	Screw, cap, 5/16 - 18 x 1 hex head	4
8	905 1364.9	Washer, flat, .375 x .875 x .062	8
9	503 2244.3	Block, wing screw	1
10	503 2245.1	Wing screw	1
11	503 2246.0	Band wheel (idle end)	1
12	905 3406.9	Ball bearing	4
13	503 2247.8	Spacer	1
14	503 2248.6	Axle	2
15	905 3425.5	Nut, hex, 5/8 - 18	2
16	905 2989.8	Nut, hex, 5/8 - 18 full	1
17	503 2249.4	Band wheel (drive end)	1
18	503 2250.8	Ring gear	1
19	905 0975.7	Screw, cap, 1/4 - 20 x 1 hex head	2
20	905 0504.2	Washer, lock, .259 x .489 x .062 spring (replaced by 905 1674.5)	2
21	503 2251.6	Wheel plate	1
22	905 0521.2	Screw, cap, 5/16 - 18 x 3/4 hex head	2
23	905 3405.0	Screw, set, 5/16 - 18 x 3/8 socket	3
24	503 2252.4	Motor support (115-volt model only)	1
	503 2366.0	Motor support (220-volt model only)	1
25	905 3409.3	Nut, lock, 5/8 - 11	1
26	905 3426.3	Screw, thumb, 1/4 - 20 x 1.25	1
27	905 3408.5	Nut, wing, 1/4 - 20	3
28	503 2153.6	Motor, 1/2 horsepower, 115-volt, single phase, 60 Hz, 1725 rpm	1
	503 2365.2	Motor, 1/2 horsepower, 220-volt, single phase, 50 Hz, 1425 rpm	1
29	503 2167.6	Pulley, motor (115-volt models)	1
	503 2367.9	Pulley, motor (220-volt models)	1
30	905 1500.5	Screw, cap, 5/16 - 18 x 1/2 hex head	4
31	503 2253.2	Wheel guard	1
32	905 1060.7	Screw, machine, #10 - 32 x .250 round head	14
33	905 3169.8	Screw, thumb, 1/4 - 20 x 1/2	1
34	503 2254.0	Clamp	1
35	905 1234.0	Screw, machine, 1/4 - 20 x 1/4 round head	1
36	503 2255.9	Blade guard	1
37	503 4303.3	Guard, drive wheel	1
38	503 2257.5	Guard, belt (115-volt model only)	1
	503 2369.5	Guard, belt (220-volt model only)	1

Parts List—Wheel and Frame Details (cont'd)

KEY	PART NO.	DESCRIPTION	QTY.
39	503 2258.3	Guard, angle wheel	1
40	503 2259.1	Guard, end	1
41	503 2260.5	Wheel guard, short	1
42	905 0863.7	Screw, cap, 3/8 - 16 x 7/8 hex head	1
43	905 0506.9	Washer, lock, .388 x .673 x .070 steel	2
44	905 0538.7	Screw, cap, 3/8 - 16 x 3 hex head	1
45	905 2553.1	Washer, flat, .375 ID x .030	1
46	905 1435.1	Nut, hex, 3/8 - 16	1
47	503 2132.3	Spacer	1
48	503 2256.7	Spacer	1
49	905 0523.9	Screw, 5/16 - 18 x 1-1/4 hex head	1
Repair Kit			
	503 2261.3	Idler Wheel Assembly, Complete (includes items 11 - 15)	
	503 2262.1	Drive Wheel Assembly, Complete (includes items 12 - 15 and 17 - 20)	

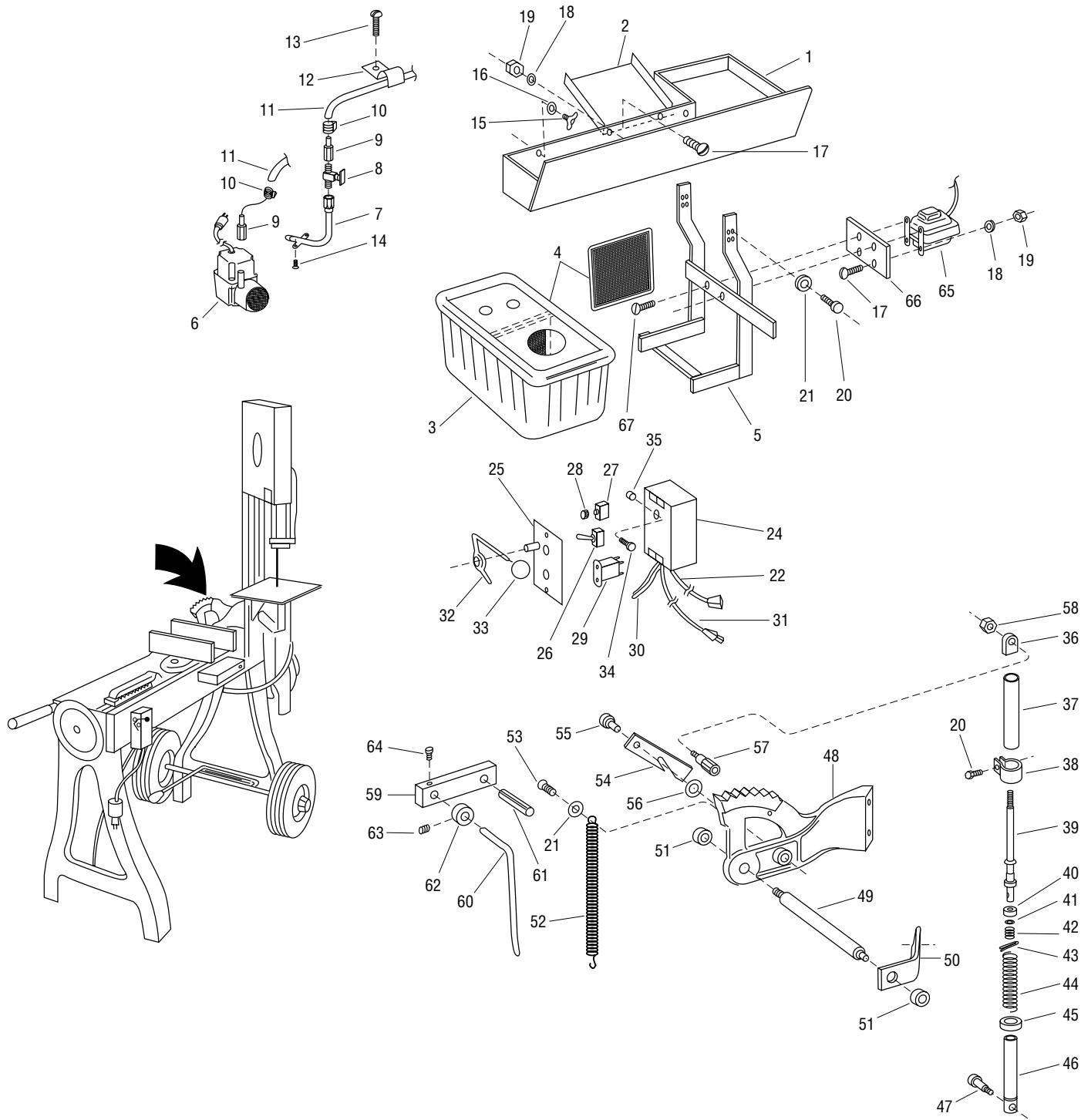
Exploded View—Blade Guides and Gear Box Details



Parts List—Blade Guides and Gear Box Details

KEY	PART NO.	DESCRIPTION	QTY.
1	503 2263.0	Gear case	1
2	503 2158.7	Cover, gear case	1
3	905 3427.1	Retaining ring	1
4	503 2155.2	Plug, expansion	1
5	905 3429.8	Ball bearing	1
6	503 2156.0	Shaft, pulley	1
7	503 2157.9	Key	1
8	905 3406.9	Ball bearing	1
9	905 3432.8	Retaining ring	1
10	905 0610.3	Screw, set, 5/16 - 18 x 3/8 socket	3
11	503 2165.0	Pulley	1
12	503 2166.8	"V" belt (115-volt models)	1
	503 2368.7	"V" belt (220-volt models)	1
13	503 2161.7	Gear, driven	1
14	905 3433.6	Ball bearing	2
15	503 2264.8	Drive shaft	1
16	905 3434.4	Screw, cap, 5/16 - 18 x 7/8 hex head	3
17	905 0505.0	Washer, lock, .323 x .586 x .078 spring	3
18	905 1918.3	Screw, cap, 1/4 - 20 x 1-1/2 socket head	2
19	503 2265.6	Drive pinion	1
20	905 0699.5	Pin, roll, .187 x 1	1
21	503 2138.2	Slide block	1
22	905 1265.0	Screw, cap, 1/4 - 20 x 3/4 socket head	4
23	503 2266.4	Guide bracket, idle end	1
24	503 2139.0	Wing screw	1
25	503 3886.2	Blade guard	1
28	503 2140.4	Roller support	2
29	905 2125.0	Washer, flat, .281 x .625 x .065	4
30	905 1674.5	Washer, lock, .259 x .489 x .062 spring	4
31	905 0520.4	Screw, cap, 1/4 - 20 x 3/4 hex head	4
32	905 3435.2	Ball bearing	6
33	905 3423.9	Washer, flat, .344 x .688 x .065	6
34	503 2143.9	Axle, eccentric roller	2
35	503 2141.2	Roller axle	3
36	503 2144.7	Nut, eccentric axle	2
37	503 2269.9	Guide bracket, drive end	1
38	503 2270.2	Blade brush angle (long)	1
39	503 2271.0	Blade brush angle (short)	1
40	503 2272.9	Blade brush	2
41	503 2273.7	Weld bolt	2
42	905 3436.0	Nut, hex, 1/4 - 20	2
43	905 3437.9	Screw, machine, #10 - 32 x 1-1/8 round head	4
44	905 0178.0	Washer, lock, .198 x .320 x .040 spring	4
45	905 1686.9	Nut, hex, #10 - 32	4
46	503 2274.5	Blade guard, stationary	1
47	503 2142.0	Axle, roller	1
48	905 3408.5	Nut, wing, 1/4 - 20	1
49	905 3495.6	Screw, cap, 1/4 - 20 x 2.00 socket head	2
50	905 0637.5	Nut, hex, 1/4 - 20	2

Exploded View—Switch and Dash Pot Details (and optional Wet Cutting System)



Parts List—Switch and Dash Pot Details (and optional Wet Cutting System)

KEY	PART NO.	DESCRIPTION	QTY.
	503 2322.9	Wet Cutting System (includes items 1 - 22 for 115-volt systems; 220-volt systems also include items 65 - 67)	1
1	503 2280.0	Chip pan (includes item 2)	1
2	503 2284.2	Splash guard	1
3	503 2282.6	Coolant tank (includes cover)	1
4	503 2283.4	Screen	1
5	503 4304.1	Mounting bracket	1
6	503 2287.7	Coolant pump	1
7	503 2292.3	Coolant nozzle	1
8	503 2290.7	Needle valve	1
9	503 2288.5	Adapter	2
10	503 2291.5	Hose clamp	2
11	503 2289.3	Coolant hose	1
12	905 3589.5	Hose strap	3
13	905 1185.9	Screw, machine, 1/4 - 20 x 1/2 round head	2
14	905 0704.5	Screw, machine, #10 - 32 x 3/8 round head	2
15	905 1369.8	Screw, thumb, 1/4 - 20 x 1/2	2
16	905 2707.0	Washer, .281 x .625 x .062	4
17	905 2626.0	Screw, machine, #10 - 32 x 1/2 round head	4
18	905 0178.0	Washer, lock, .198 x .320 x .040 spring	6
19	905 1686.9	Nut, hex, #10 - 32.....	6
20	905 0521.2	Screw, cap 5/16 - 18 x 3/4 hex head	5
21	905 0505.0	Washer, lock, .323 x .586 x .078 spring	5
22	918 6347.3	Cord set, 115-volt	1
24	503 2293.1	Switch box	1
25	503 2295.8	Cover, switch box	1
26	503 2191.9	Switch, toggle	1
27	503 2192.7	Switch, push-button (thermal)	1
28	503 2195.1	Guard, push-button switch	1
29	918 6348.1	Relay	1
30	503 2196.0	Cord and terminal assembly	1
31	503 2197.8	Cord and plug, 115-volt	1
32	503 2193.5	Lever, shut-off	1
33	503 2194.3	Knob, control	1
34	905 0629.4	Screw, cap, 1/4 - 20 x 7/8 hex head	2
35	905 3440.9	Nut	2
36	503 2307.5	Piston rod end	1
37	503 2308.3	Outside tube	1
38	503 2309.1	Clamp	1
39	503 2310.5	Piston rod	1
40	503 2311.3	Cup, leather	1
41	503 2312.1	Washer, cup	1
42	503 2313.0	Spring	1

Parts List—Switch and Dash Pot Details (and optional Wet Cutting System) (cont'd)

43	905 0852.1	Pin, cotter, .093 x .750	1
44	503 2314.8	Spring	1
45	905 3430.1	Washer	1
46	503 2315.6	Inside tube	1
47	503 2316.4	Stud, dash pot lower	1
48	503 2299.0	Frame ratchet	1
49	503 2300.8	Pivot bar	1
50	503 2302.4	Frame pivot bracket	1
51	905 2402.0	Nut, hex 5/8 - 11	1
52	503 3887.0	Spring	1
53	503 2355.5	Screw, frame spring anchor	1
54	503 4307.6	Latch	1
55	503 2305.9	Stud	1
56	905 2335.0	Washer, flat, .344 x .688 x .065	1
57	503 2306.7	Stud, dash pot upper	1
58	905 1435.1	Nut, hex, 3/8 - 16	1
59	503 4305.0	Stop block	1
60	503 4306.8	Lever, release	1
61	905 3860.9	Pin, roll, .375 x 1.50	1
62	905 2550.7	Collar (includes item 63)	1
63	905 3861.7	Screw, set, #10 - 24 x 1/4 socket head	1
64	905 3862.5	Screw, set, 1/4 - 20 x 3/8 socket head	1
65	503 2285.0	Transformer (220-volt model only)	1
66	503 4308.4	Mounting bracket (220-volt only)	1
67	905 1294.4	Screw, machine, #10 - 32 x 3/4 flat head (220-volt model only)	2
Repair Kits			
	503 2319.9	Switch box assembly (includes items 24 - 35)	
	503 2320.2	Dash Pot Assembly (includes items 36, 37, 39 - 43, and 46)	
	503 2321.0	Piston Rod Assembly (includes items 39 - 43)	

Appendix A - Blade Selection and Blade Speed Chart

FPM - blade speed in Feet Per Minute

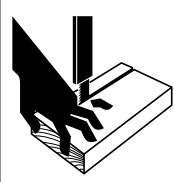
T - blade type in Teeth Per Inch

F - feeding pressure: light (L), medium (M), heavy (H)

Type of Material	Thickness of Material														
	Under 1/4"			1/4" - 3/4"			3/4" - 2"			2" - 4"			4" and over		
	T	FPM	F	T	FPM	F	T	FPM	F	T	FPM	F	T	FPM	F
Aluminum															
Castings	18	800	L	10	800	L	8	600	L	6	300	M	6	300	H
Solid Shapes	18	1000	L	10	1000	L	8	800	M	6	800	M	4	600	H
Tubing	18	1000	L	10	1000	L	8	800	M	6	800	M	6	600	H
Brass															
Castings	18	500	L	14	300	L	12	275	M	10	200	M	8	175	H
Tubing (thinwall)	24	300	L	14	275	L	24	250	L	14	200	M	14	175	M
Bronze															
Castings	18	275	L	14	200	L	10	175	M	8	100	M	6	50	H
Aluminum	18	300	L	14	275	L	10	200	M	8	175	M	6	100	H
Manganese	18	300	L	14	275	L	10	250	M	8	200	M	6	175	H
Copper															
Beryllium	18	300	L	14	275	L	10	275	L	8	200	M	6	175	H
Drawn	18	500	L	10	300	L	8	300	M	8	275	M	6	200	H
Iron															
Gray, cast	18	200	M	14	175	M	10	150	H	8	100	H	6	100	H
Kirksite (zinc based)	18	300	L	10	275	L	8	200	M	6	200	H	6	175	H
Lead															
	14	1000	L	10	1000	L	8	1000	L	6	1000	L	4	600	M
Magnesium															
	14	1000	L	10	1000	L	8	800	L	6	800	M	4	600	M
Nickel															
	14	175	M	10	175	M	10	150	H	8	100	H	8	50	H
Silver															
	14	275	L	10	200	L	10	175	M	8	125	M	8	100	H
Steels - S.A.E.															
Carbon #1006 - #1095	18	200	M	14	200	M	10	175	M	8	100	H	6	100	H
Carbon #1112 - #1120	18	275	M	14	200	M	10	175	M	8	100	H	6	100	H
Chrom #5120 - #52100	18	175	M	14	100	M	10	100	H	8	50	H	6	50	H
Chrom. #51200 - #51710	18	100	M	14	100	M	10	50	M	8	50	M	6	50	H
Chrom. Vanadium #6130 - #6150	18	100	M	14	100	M	10	50	H	8	50	H	6	50	H
Manganese #1330 - #1350	18	275	M	14	200	M	10	175	H	8	100	H	6	100	H
Manganese #X1330 - #X1340	18	275	M	14	200	M	10	175	H	8	100	H	6	100	H
Molybdenum #4023 - #4130	14	175	M	12	100	M	10	100	H	8	50	H	6	50	H
Molybdenum #4140 - #4820	14	175	M	12	100	M	10	100	H	8	50	H	6	50	H
Nickel #2135 - #2515	18	175	M	14	100	M	10	100	H	8	50	H	6	50	H
Ni. Chrom. #3115 - #3250	18	175	M	14	100	M	10	100	H	8	50	H	6	50	H
Stainless #302 - #416	18	100	H	14	50	H	10	50	H	8	50	H	6	50	H
Steels - Misc.															
Armor Plate	14	175	M	14	100	M	10	100	H	8	50	H	6	50	H
High speed	18	175	M	14	100	M	10	100	H	8	50	H	6	50	H
Machinery	14	275	M	14	200	M	10	175	H	8	100	H	6	100	H
Cold Rolled	14	275	M	14	200	M	10	175	H	8	100	H	6	100	H
Die Blocks															
	14	275	L	14	275	L	12	175	M	10	175	M	10	175	M
Pipe	14	275	L	14	275	L	12	175	M	10	175	M	10	175	M
Structural	18	275	L	14	275	L	12	175	M	10	175	M	10	175	M
Tubing (thinwall)	24	300	L	18	275	L	18	250	L	14	200	L	12	175	L
Misc. Non-Metals															
Carbon	14	600	L	10	600	L	8	300	L	6	300	M	6	275	M
Fibre	14	1000	L	10	1000	L	8	600	M	6	600	M	6	300	M
Plastics	14	1000	L	12	1000	L	10	600	M	8	600	M	6	300	H
Rubber, hardened	14	2000	L	10	2000	L	8	1000	L	6	1000	M	6	600	H
Transite	14	275	L	10	175	L	8	50	M	6	50	M	6	50	M

Appendix B - Vertical Work Table (optional)

⚠ WARNING

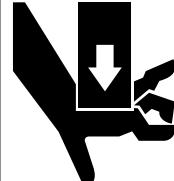


Keep hands away from the blade and cutting area during operation.

⚠ WARNING

Do not inspect, adjust, or service the tool or raise the cutting head while it is connected to a power source. Accidental starting can result in injury.

⚠ WARNING



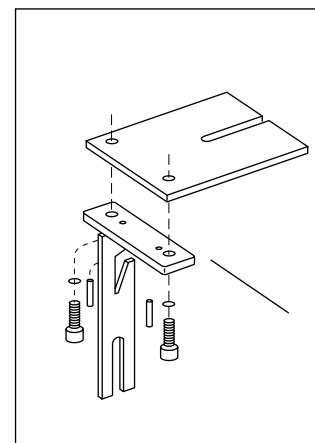
Pinch points.

The cutting head, blade wheels and drive belt can cause injury when making adjustments.

Failure to observe this warning can cause severe injury or death.

Assembly

1. Disconnect the saw from the power supply.
2. Raise the cutting head.
3. Remove the Caution decal.
4. Position the support as shown. Attach the support to the saw bed with two 5/16 - 18 x 1" cap screws.
5. Attach the table to the support with the bolts, washers, and nuts provided.
6. Adjust the set screws to level the table.



Appendix C - Wet Cutting System

Assembly

Assembly of the Wet Cutting System will require the following:

- hammer
- slotted screwdriver
- ruler
- adjustable wrench
- portable electric drill
- .104 dia. (#37) drill bit
- .159 dia. (#21) drill bit
- .201 dia. (#7) drill bit
- .375 dia. (3/8") drill bit
- 1/4 - 20 UNC tap
- #10 - 32 UNF tap

1. Install the cord and strain relief:

- a. Disconnect the saw from the power supply.
- b. See the Exploded View—Switch and Dash Pot Details. Remove the switch box cover. Remove the knock-out from the bottom of the switch box.
- c. See Wiring Diagrams. Install the strain relief and cord set.

Note: On 220-volt models, install the cord from the transformer.

- d. Replace the switch box cover.

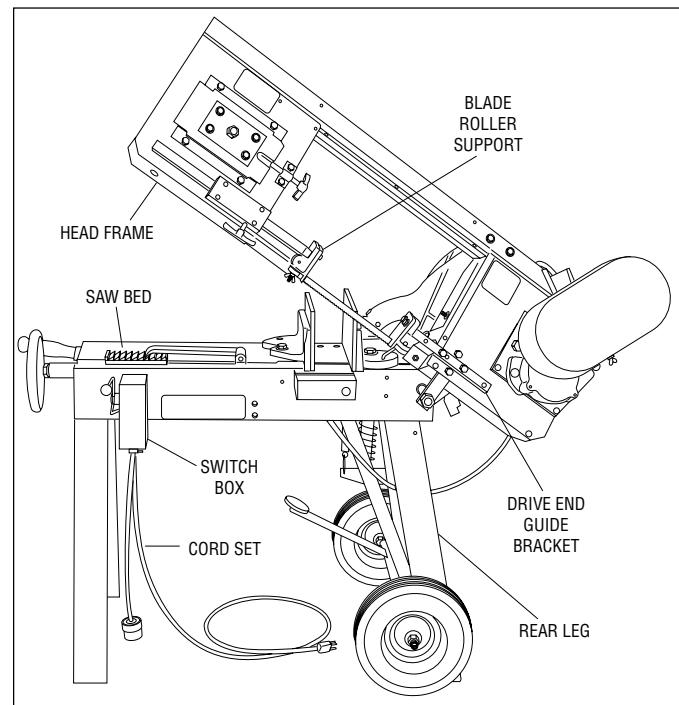


Figure 1

2. See Figures 2 & 3. Locate and drill:

- a. Three .201 dia. (#7) holes (labeled "A"). Thread these holes with the 1/4 - 20 UNC tap.
- b. Two .104 dia. (#37) holes (labeled "B").
- c. Two .159 dia. (#21) holes in the blade roller support. Thread these holes with the #10 - 32 UNF tap.
- d. On units preceding serial no. VY - 3500357: drill four .375 (3/8") holes in the saw bed (two on each side).

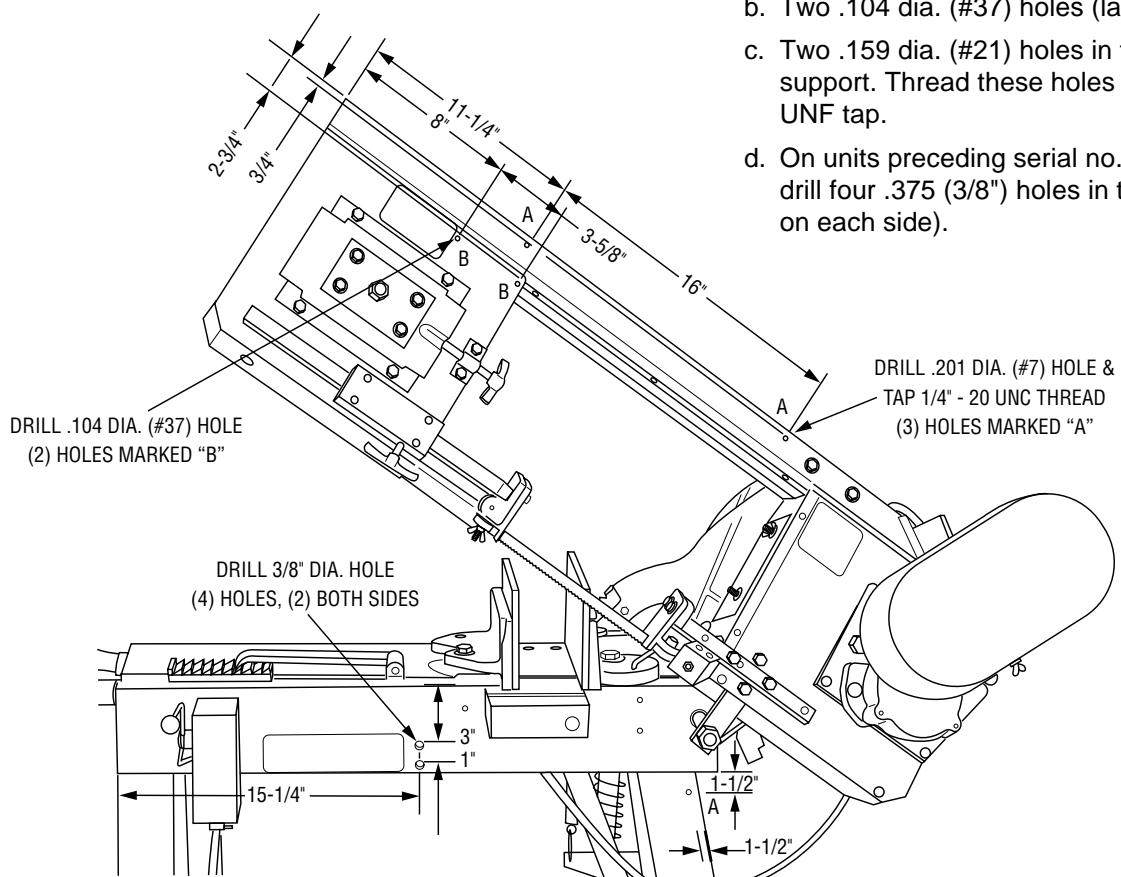


Figure 2

Wet Cutting System (cont'd)

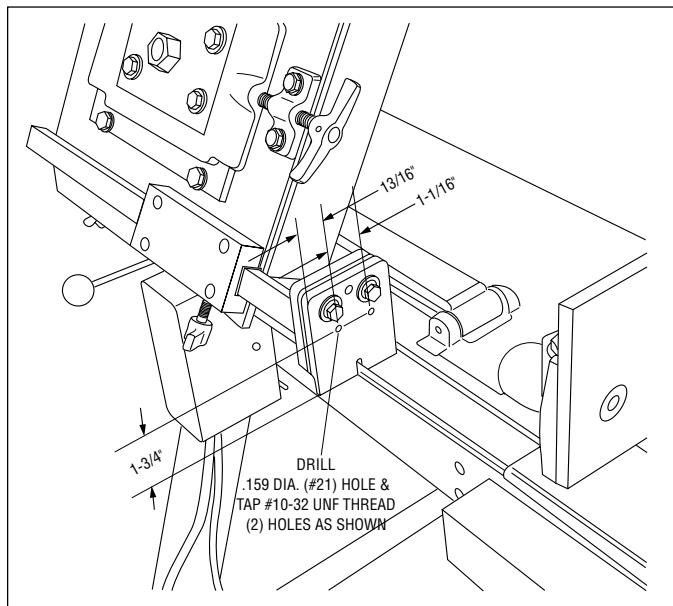


Figure 3

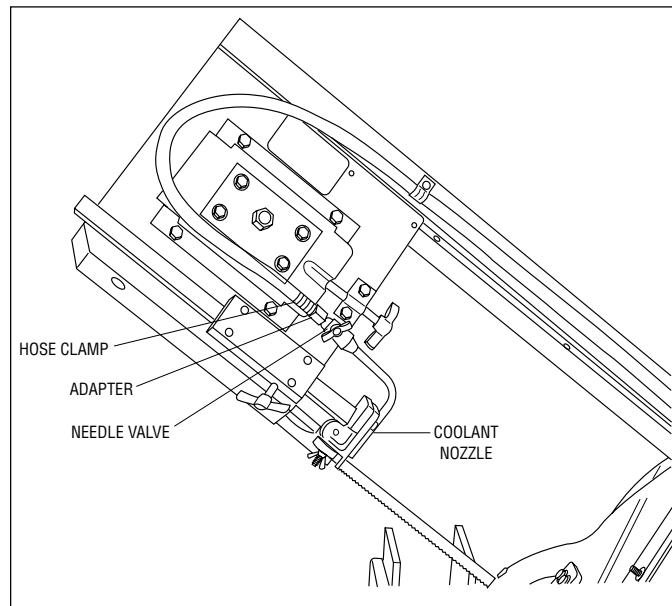


Figure 4

3. See Figure 4. Attach the mounting bracket to the saw bed with four 5/16 - 18 x 3/4 hex head cap screws (20) and lockwashers (21). Use the mounting holes made in Step 4d.

Note: See the Exploded View: on 220-volt models, assemble the transformer and mounting bracket to the coolant tank mounting bracket prior to attaching to the saw bed.

4. See Figure 5. Assemble the coolant nozzle, needle valve, and adapter. Attach coolant hose to the adapter and secure the hose with the hose clamp.
5. See Figure 6. Attach the coolant nozzle to the blade roller support with two #10 - 32 x 3/8 round head machine screws (14). Secure the coolant hose with three hose straps. Attach two of the hose straps with two 1/4 - 20 x 1/2 round head machine screws (13); attach the third hose strap screw on the drive and guide bracket, as shown.

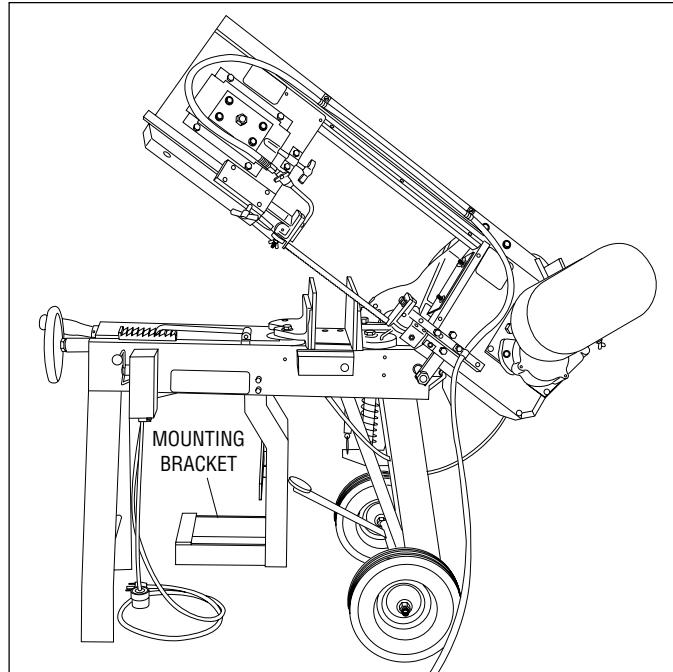


Figure 5

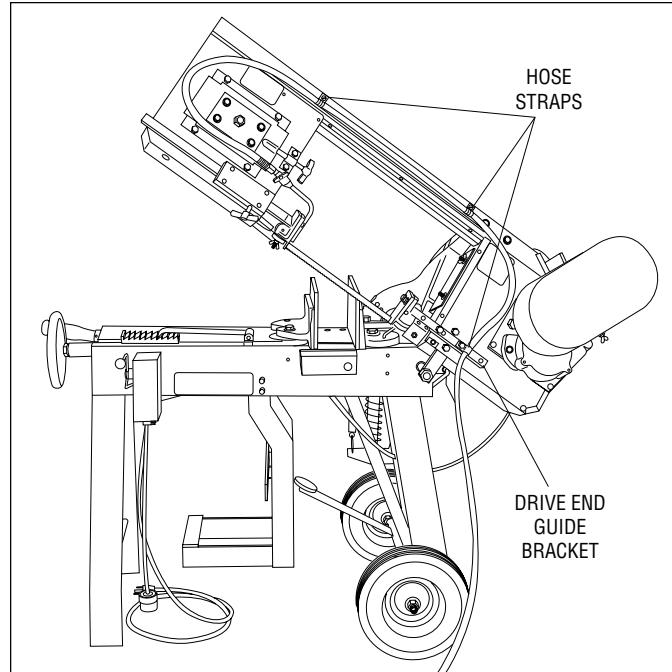


Figure 6

Wet Cutting System (cont'd)

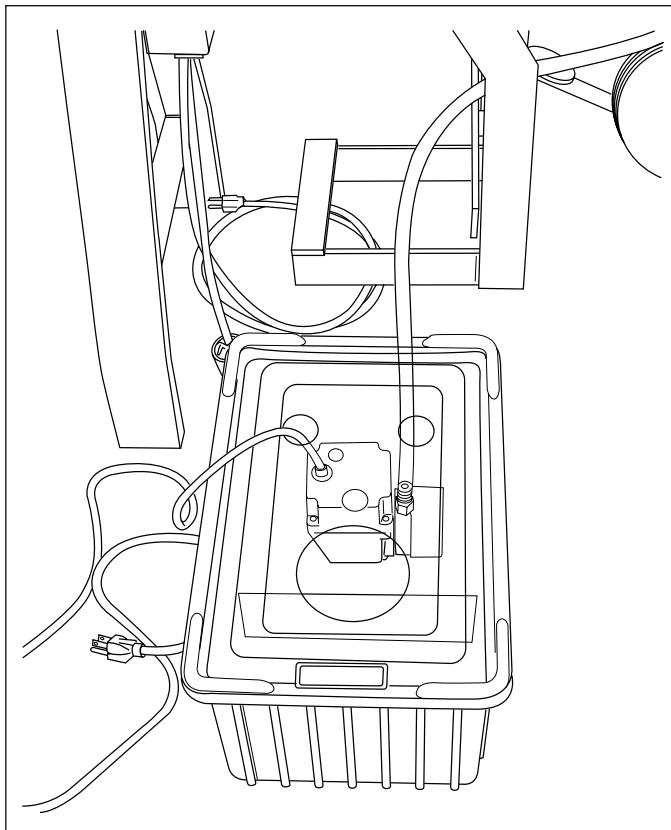


Figure 7

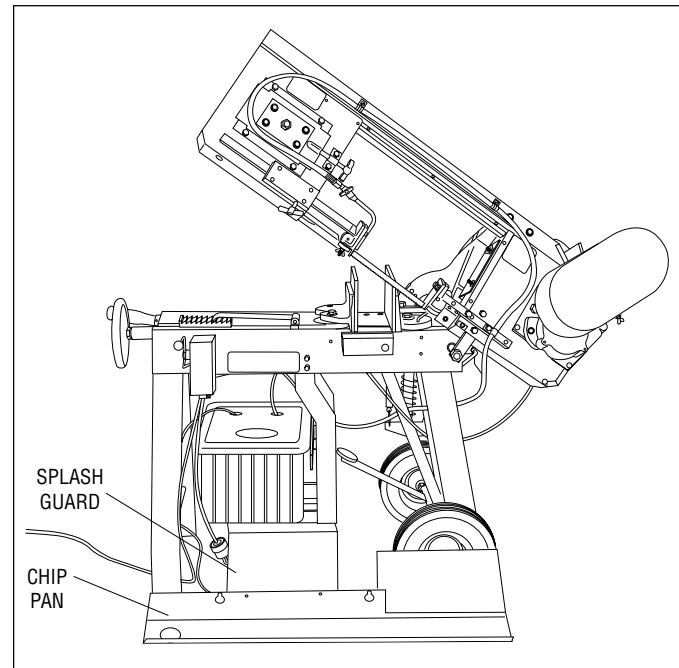


Figure 8

7. See Figure 7. Route the coolant hose between the rear legs and through the coolant tank cover. Attach the hose to the coolant pump and secure it with a hose clamp.
8. Add approximately 3 gallons of a water-based soluble or emulsifying oil type of coolant to the tank and place the coolant tank in the mounting bracket.
9. Attach the splash guard to the chip pan with two #10 - 32 x 1/2 round head machine screws (17), lockwashers (18), and hex nuts (19).
10. See Figure 8. Attach the chip pan and splash guard assembly to the saw with two 1/4 - 20 x 1/2 thumb screws (15) and washers (16). Attach one thumb screw at the tank mounting bracket and the other at the hole drilled in Step 4A.
11. Attach the warning plate to the head frame with two drive screws.
12. Connect the coolant pump to the cord set receptacle (installed in Step 3c). Connect the saw to the power supply.
13. Connect the coolant pump to the band saw switch (and relay) according to the wiring diagram in the Maintenance section of this manual.

GREENLEE TEXTRON

Greenlee Textron / Subsidiary of Textron Inc.

4455 Boeing Drive, Rockford, IL 61109-2988 USA

Customer Service (International): 815/397-7070 • Fax: 815/397-9247

Customer Service (North America): 800/435-0786 • Fax: 800/451-2632, 815/397-1865

Canada Fax: 800/524-2853

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