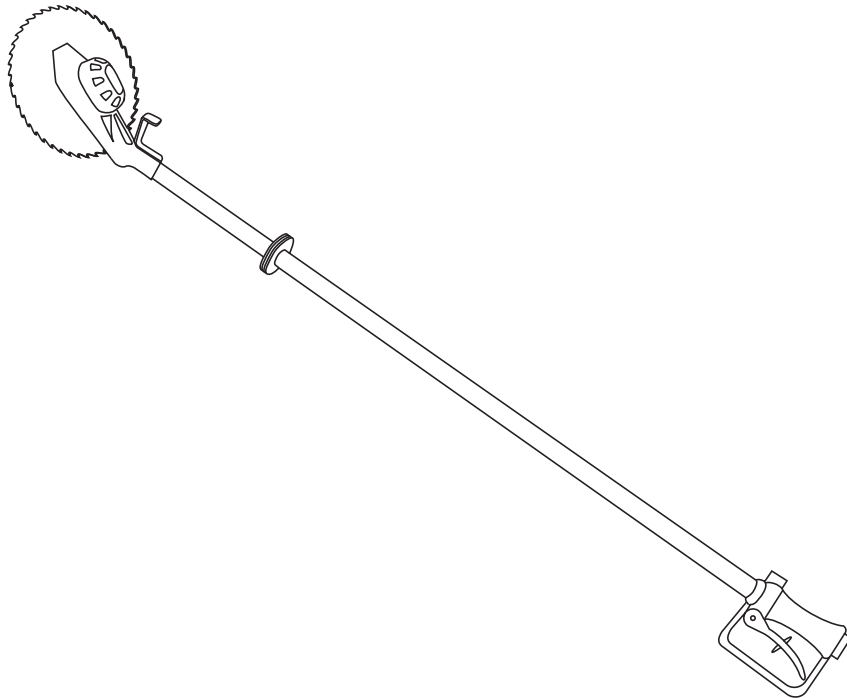


INSTRUCTION MANUAL



43180 Overhead Circular Saw



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

Register this product at www.greenlee.com

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Description

The Greenlee Utility 43180 Circular Saw is intended for general tree trimming from the ground or from an aerial device. A rugged, direct-drive motor provides enough power for the 9" diameter blade to cut branches up to 89 mm (3-1/2") in a single pass. The angled head allows flush cuts while directing saw chips away from the operator. The long-reach pole allows cutting in areas that shorter tools cannot reach.

⚠ WARNING

Flying debris hazard:

Do not use this saw for cutting or clearing at ground level. If the blade contacts the ground or other solid object, the operator can lose control of the saw and the blade can shatter. Operator can be injured by flying debris.

Failure to observe this warning could result in severe injury or death.

The patented Super Spool™ design allows the tool to be used with either open-center or closed-center hydraulic systems. The dielectric property of the fiber-glass pole reduces the chance of an electric shock when the saw is used near energized electrical line. Other features include a hand-stop safety collar, a safety trigger, and a trigger guard.

Safety

Safety is essential in the use and maintenance of Greenlee Utility tools and equipment. This manual and any markings on the tool provide information for avoiding hazards and unsafe practices related to the use of this tool. Observe all of the safety information provided.

Purpose of this Manual

This manual is intended to familiarize all personnel with the safe operation and maintenance procedures for the following Greenlee Utility tool:

43180 Overhead Circular Saw

Keep this manual available to all personnel.

Replacement manuals are available upon request at no charge at www.greenlee.com.

Other Publications

SAE Standard J1273 (Hose and Hose Assemblies):
 Publication 99930323

All specifications are nominal and may change as design improvements occur. Greenlee, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

Loctite is a registered trademark of Loctite Corporation.

KEEP THIS MANUAL

IMPORTANT SAFETY INFORMATION



**SAFETY
ALERT
SYMBOL**

This symbol is used to call your attention to hazards or unsafe practices which could result in an injury or property damage. The signal word, defined below, indicates the severity of the hazard. The message after the signal word provides information for preventing or avoiding the hazard.

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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



⚠ WARNING

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

Failure to observe this warning could result in severe injury or death.

⚠ WARNING



Electric shock hazard:

- This tool was tested to meet OSHA 1910.269 (dry test) when manufactured. It must be properly cleaned and maintained to ensure continued non-conductive properties. When using this unit near energized electrical lines, use only certified non-conductive hoses and proper personal protective equipment.
- Keep fiberglass extension clean and dry when working around energized electrical lines. Accumulated oil, dirt, and moisture increase the conductive properties of the tool.

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

⚠ WARNING



Skin injection hazard:

- Do not use hands to check for leaks.
- Do not hold hose or couplers while the hydraulic system is pressurized.
- Depressurize the hydraulic system before servicing.

Oil under pressure easily punctures skin, causing serious injury, gangrene, or death. If you are injured by escaping oil, seek medical attention immediately.

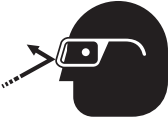
⚠ WARNING





Burn hazard:


Tool motor and blade may be hot during and after operation. Hot surfaces could cause serious burns.


IMPORTANT SAFETY INFORMATION

	⚠ WARNING
	<p>Wear eye protection when operating or servicing this tool.</p> <p>Failure to wear eye protection could result in serious eye injury from flying debris or hydraulic oil.</p>

	⚠ WARNING
	<p>Wear a hard hat when using this tool.</p> <p>Failure to observe this warning could result in severe injury or death.</p>

	⚠ WARNING
	<p>Wear hearing protection when using this tool.</p> <p>Long-term exposure to high noise levels could result in hearing loss.</p>

	⚠ WARNING
	<p>Wear foot protection when using this tool.</p> <p>Failure to observe this warning could result in serious injury.</p>

	⚠ WARNING
	<p>Some types of timber can produce hazardous dust when cut. Wear a dust mask to prevent breathing hazardous dust.</p> <p>Failure to observe this warning could result in temporary breathing difficulty or serious injury.</p>

⚠ WARNING
<p>Do not exceed the following hydraulic power source maximums:</p> <ul style="list-style-type: none"> • Hydraulic flow: 22.7 l/min (6 gpm) • Pressure relief: 138 bar (2000 psi) • Back pressure: 13.8 bar (200 psi) <p>Failure to observe this warning could result in severe injury or death.</p>

⚠ WARNING
<p>Burn hazard:</p> <p>Do not disconnect tool, hoses, or fittings while the power source is running or if the hydraulic fluid is hot. Hot hydraulic fluid could cause serious burns.</p>

⚠ WARNING
<p>Cutting hazard:</p> <p>The saw blade continues to rotate after the trigger is released. Do not retract or lay the saw down until blade stops moving.</p> <p>Failure to observe this warning could result in severe injury or death.</p>

⚠ WARNING
<p>Do not reverse hydraulic flow. Operation with hydraulic flow reversed can cause tool malfunction. Connect the pressure (supply) hose and tank (return) hose to the proper ports.</p> <p>Failure to observe this warning could result in severe injury or death.</p>

⚠ WARNING
<ul style="list-style-type: none"> • Do not change accessories, inspect, adjust, or clean tool when it is connected to a power source. Accidental start-up can result in serious injury. • Maintain a firm grip on tool, using both hands at all times. Serious injury can result if an operator does not control the tool. • Do not lock trigger in the Power-ON position. Operator cannot stop tool when trigger is locked. • Do not remove or modify tool's safety trigger. Accidental start-up can result in serious injury. • Always wear protective gloves when handling or adjusting the blade. The blade can cut even when stationary. <p>Failure to observe these warnings could result in severe injury or death.</p>

IMPORTANT SAFETY INFORMATION

⚠ WARNING

- Always use blades that meet applicable industrial safety code specifications.
- Always use blades rated for 5400 rpm or higher.
- Blade must be installed to rotate correctly. Refer to the Illustrations and Parts Lists and blade manufacturer's instructions. An improperly installed blade could result in injury.
- Inspect blades before installing and before operating. Do not use a damaged or worn blade. A damaged blade can break and injure nearby personnel. Destroy the blade if cracks, chips, gouges, or loose or missing teeth are evident.

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

⚠ CAUTION

Hydraulic oil can cause skin irritation.

- Handle the tool and hoses with care to prevent skin contact with hydraulic oil.
- In case of accidental skin contact with hydraulic oil, wash the affected area immediately to remove the oil.

Failure to observe these precautions may result in injury.

⚠ CAUTION

- Inspect tool before use. Replace any worn, damaged, or missing parts. A damaged or improperly assembled tool can malfunction, injuring nearby personnel.
- Inspect the hydraulic hoses and couplers every operating day. Repair or replace if leakage, cracking, wear, or damage is evident. Damaged hoses or couplers can fail, resulting in injury or property damage.
- 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.
- Make sure that all bystanders are clear of the work area when operating the tool. Nearby personnel can be injured by flying debris.

Failure to observe these precautions may result in injury.

IMPORTANT

Procedure for connecting or disconnecting hydraulic hoses, fittings, or components:

1. Move the flow lever on the hydraulic power source to the OFF position.
2. Stop the hydraulic power source.
3. Follow the sequence under "Hose Connections" to prevent pressure buildup. In case some pressure has built up, loosen hoses, fittings, or components slowly.

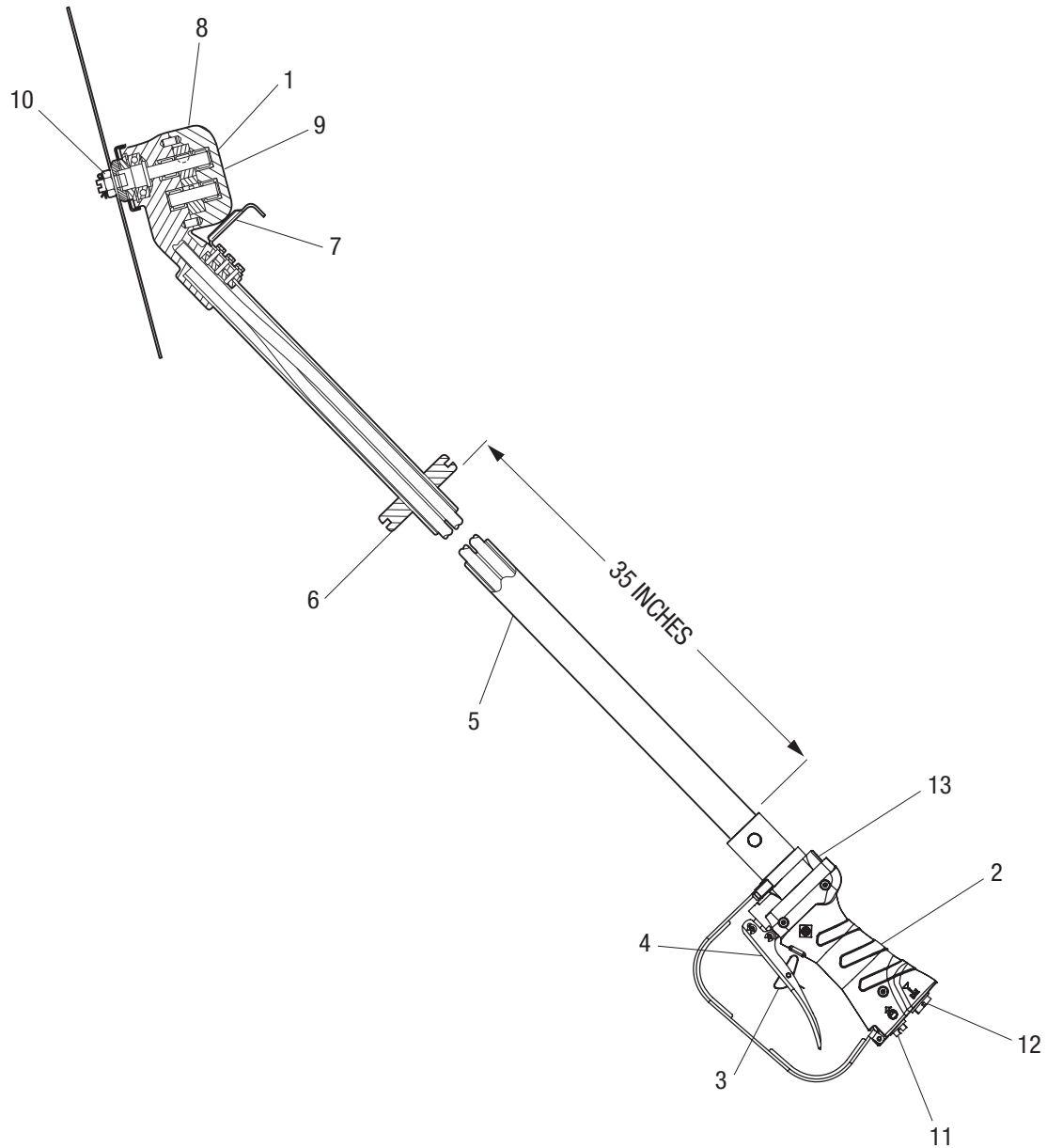
IMPORTANT

Emergency stop procedure:

1. Release the trigger.
2. Shut off the hydraulic power source.

Note: Keep all decals clean and legible, and replace when necessary.

Identification



Overhead Circular Saw

- | | |
|----------------------------|------------------------------|
| 1. Serial Number | 8. Saw Head |
| 2. Trigger Handle | 9. Hydraulic Gear Motor |
| 3. Trigger Interlock Latch | 10. Saw Blade |
| 4. Trigger | 11. Pressure Port P (Supply) |
| 5. Fiberglass Extension | 12. Tank Port T (Return) |
| 6. Rubber Hand Stop | 13. OC/CC Trigger Spool |
| 7. Hook | |

Specifications

Circular Saw

Type of Hydraulic System.....Open-center or closed-center

Hydraulic Ports

Pressure.....3/8 NPT

Return3/8 NPT

Mass/Weight (with 9" blade)..... 4 kg (8.8 lb)

Length (with 9" blade) 206 cm (81")

Width (with 9" blade) 22.9 cm (9")

Blade Diameter Capacity (maximum)..... 22.9 cm (9")

Cutting Depth (with 9" blade) 89 mm (3.5")

Revolutions per Minute

@ 15.1 l/min (4 gpm)3571

@ 18.9 l/min (5 gpm) 4464

@ 22.7 l/min (6 gpm)5357

Blades

⚠ WARNING

- Always use blades that meet applicable industrial safety code specifications.
- Always use blades rated for 5400 rpm or higher.
- Blade must be installed to rotate correctly. Refer to the Illustrations and Parts Lists and blade manufacturer's instructions. An improperly installed blade could result in injury.
- Inspect blades before installing and before operating. Do not use a damaged or worn blade. A damaged blade can break and injure nearby personnel. Destroy the blade if cracks, chips, gouges, or loose or missing teeth are evident.

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

A 9" blade, rated at 7500 rpm, is furnished with the tool. Replacement blades are available from Greenlee Utility as repair parts. Contact an authorized Greenlee Utility distributor. Any blade used with this tool must meet the following requirements:

Blade Diameter (maximum) 22.9 cm (9")

Blade Thickness 1.6 mm (1/16")
(nominal)

Arbor Hole Diameter..... 16.1 mm x 22.3 mm
(0.635" x 0.878")

Rated Operating rpm (minimum)5400

Specifications (cont'd)

Hydraulic Power Source

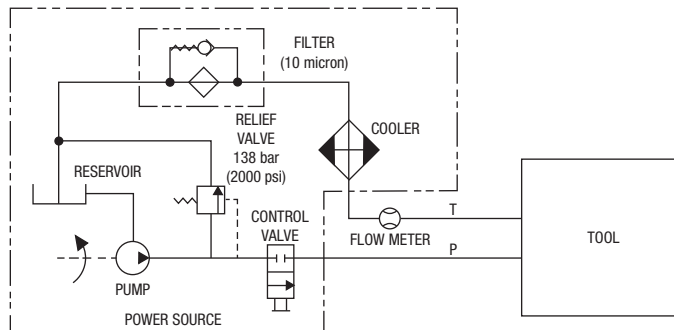
⚠ WARNING

Do not exceed the following hydraulic power source maximums:

- Hydraulic flow: 22.7 l/min (6 gpm)
- Pressure relief: 138 bar (2000 psi)
- Back pressure: 13.8 bar (200 psi)

Failure to observe this warning could result in severe injury or death.

Hydraulic Schematic



Type of Hydraulic System..... Open-center or closed-center

Flow

- Minimum 15.1 l/min (4 gpm)
- Recommended 18.9 l/min (5 gpm)
- Maximum 22.7 l/min (6 gpm)

Filtration..... 10 micron (nominal)

Operating Pressure

- Minimum 121 bar (1750 psi)
- Maximum 138 bar (2000 psi)

Pressure Relief Setting 138 bar (2000 psi)

Back Pressure (maximum)* 13.8 bar (200 psi)

* 13.8 bar (200 psi) is the maximum agreed standard back pressure for the HTMA (Hydraulic Tool Manufacturers Association). Greenlee Utility tools will operate satisfactorily at this standard.

1. Maximum hydraulic fluid temperature must not exceed 60 °C (140 °F). A sufficient oil cooling capacity is needed to limit the hydraulic fluid temperature.
2. Hydraulic flow must not exceed 22.7 l/min (6 gpm). Install a flow meter in the return line to measure the rate of hydraulic flow before using the tool.
3. Pressure relief valve setting must not exceed 138 bar (2000 psi) at the tool's maximum flow. Locate the pressure relief valve in the supply circuit to limit excessive hydraulic pressure to the tool.

Recommended Hydraulic Fluids

⚠ WARNING



Electric shock hazard:

When using this tool near energized electrical lines, select and maintain the hydraulic fluid to meet the minimum dielectric standards required by your safety department.

Failure to observe this warning could result in severe injury or death.

Use any non-detergent, petroleum-based hydraulic fluid which meets the following specifications or HTMA specifications.

S.U.S. @

38 °C (100 °F) 140 to 225

99 °C (210 °F) 40 minimum

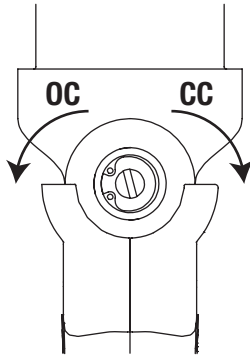
Flash Point..... 170 °C (340 °F) minimum

Pour Point..... -34 °C (-30 °F) minimum

Setting the Super Spool™

The Super Spool allows the tool to be used with either open-center or closed-center hydraulic systems.

1. Insert a screwdriver into the spool recess.
2. If using:
 - Open-center hydraulic system, turn the Super Spool counterclockwise until it stops.
 - Closed-center hydraulic system, turn the Super Spool clockwise until it stops.



Hoses and Fittings

Installation and Maintenance

Refer to publication 99930323, SAE J1273 (Hose and Hose Assemblies).

Replacement

Refer to a Greenlee Utility catalog or publication 99910322, Low Pressure Quick Couplers, Adapters, and Hoses.

⚠ WARNING

Burn hazard:

Do not disconnect tool, hoses, or fittings while the power source is running or if the hydraulic fluid is hot. Hot hydraulic fluid could cause serious burns.

Hose Connections

Connecting Hoses

1. Move the flow lever on the hydraulic power source to the OFF position.
2. Stop the hydraulic power source.
3. Connect the return hose to the return port on the hydraulic power source, and then to the return port on the tool.
4. Connect the pressure hose to the pressure port on the tool, and then to the pressure port on the hydraulic power source.

Disconnecting Hoses

1. Move the flow lever on the hydraulic power source to the OFF position.
2. Stop the hydraulic power source.
3. Disconnect the pressure hose from the hydraulic power source, and then from the tool.
4. Disconnect the return hose from the tool, and then from the hydraulic power source.
5. Install dust caps over the ports to prevent contamination.

Blade Removal/Installation

⚠ WARNING

- Do not change accessories, inspect, adjust, or clean tool when it is connected to a power source. Accidental start-up can result in serious injury.
- Always wear protective gloves when handling or adjusting the blade. The blade can cut even when stationary.

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



⚠ WARNING

Tool motor and blade may be hot during and after operation. Hot surfaces could cause serious burns.

⚠ WARNING

The saw blade continues to rotate after the trigger is released. Do not retract or lay the saw down until blade stops moving.

Failure to observe this warning could result in severe injury or death.

⚠ WARNING

- Always use blades that meet applicable industrial safety code specifications.
- Always use blades rated for 5400 rpm or higher.
- Blade must be installed to rotate correctly. Refer to the Illustrations and Parts Lists and blade manufacturer's instructions. An improperly installed blade could result in injury.
- Inspect blades before installing and before operating. Do not use a damaged or worn blade. A damaged blade can break and injure nearby personnel. Destroy the blade if cracks, chips, gouges, or loose or missing teeth are evident.

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

Removing the Blade

Refer to the Illustrations and Parts Lists.


1. Stop power source. Disconnect hydraulic hoses from power source to tool.
2. Remove cotter key (21).
3. Loosen and remove arbor nut (20). A flat blade screwdriver may be inserted in arbor shaft (6) end slot to hold shaft when loosening nut. Arbor nut has left-hand threads. Turn nut clockwise to loosen and remove.
4. Remove outer flange (19) and blade (18) from arbor shaft (6).
5. Remove guard (17) and inner flange (16) from arbor shaft (6).

Installing the Blade

Refer to the Illustrations and Parts Lists.

1. Inspect inner flange (16) and guard (17) for gouges, hairline cracks, and wear. If defective, replace component. After inspection, install inner flange and guard on arbor shaft (6).
2. Inspect blade that is to be installed. **Destroy blade if cracks, chips, gouges, or loose or missing tips are evident.**
3. Install blade (18) on arbor shaft (6). Make sure a directional blade is installed correctly to rotation of saw blade. **Blade rotation is counterclockwise as viewed from motor side of saw.**
4. Inspect outer flange (19) for gouges, hairline cracks, and wear. If defective, replace component. Install flange on arbor shaft (6).
5. Thread arbor nut (20) on arbor shaft (6). Tighten nut securely. A flat blade screwdriver may be inserted in arbor shaft end slot to hold shaft when tightening nut. Arbor nut has left-hand threads. Turn nut counterclockwise to tighten. Be sure flanges are tightened securely but not too tight to spring flanges and change pressure area. Install cotter pin (21).

Operation

	<h3>⚠ WARNING</h3>
	<p>Electric shock hazard:</p> <ul style="list-style-type: none"> This tool was tested to meet OSHA 1910.269 (dry test) when manufactured. It must be properly cleaned and maintained to ensure continued non-conductive properties. When using this unit near energized electrical lines, use only certified non-conductive hoses and proper personal protective equipment. Keep fiberglass extension clean and dry when working around energized electrical lines. Accumulated oil, dirt, and moisture increase the conductive properties of the tool. <p>Failure to observe these warnings could result in severe injury or death.</p>

<h3>⚠ WARNING</h3>
<p>Do not disconnect tool, hoses, or fittings while the power source is running or if the hydraulic fluid is hot. Hot hydraulic fluid could cause serious burns.</p>

<h3>⚠ WARNING</h3>
<p>Do not change accessories, inspect, adjust, or clean tool when it is connected to a power source. Accidental start-up can result in serious injury. Failure to observe this warning could result in severe injury or death.</p>

<h3>⚠ WARNING</h3>
<p>The saw blade continues to rotate after the trigger is released. Do not retract or lay the saw down until blade stops moving. Failure to observe this warning could result in severe injury or death.</p>

<h3>⚠ WARNING</h3>
<p>Do not use this saw for cutting or clearing at ground level. If the blade contacts the ground or other solid object, the operator can lose control of the saw and the blade can shatter. Operator can be injured by flying debris. Failure to observe this warning could result in severe injury or death.</p>

<h3>IMPORTANT</h3>
<p>Emergency stop procedure:</p> <ol style="list-style-type: none"> Release the control lever. Shut off the hydraulic power source.

Pre-Operation

Refer to the “Identification” section.


- Stop power source.
- Hand stop (6) must be positioned between saw head (8) and your hand on fiberglass extension (5), preferably located 35" from trigger handle (2).**
- Connect hydraulic hoses from power source to tool. Start power source.
- It is recommended that power source be allowed to run (idle) for a few minutes to warm hydraulic reservoir fluid. Actuating tool intermittently will reduce time required to warm fluid to an efficient operating temperature.
- Always operate newly mounted blades on saw for one minute to ensure proper blade application before cutting any material.**

Operation

Refer to the “Identification” section.

- Grasp fiberglass extension (5) with one hand and trigger handle (2) with your opposite hand.
- Position saw in approximate area to make the desired cut.
- To start saw, move trigger interlock latch (3) and press (squeeze) trigger (4).
- Feed rotating blade into work using a straight, steady, constant pressure. **Do not “bump”, jam, or force blade into work, or twist blade in saw cut.**
- Feed blade through work as fast as possible without slowing blade in cut. Blades operated at speeds significantly below efficient speed or if fed through cut too slowly will generate excessive heat, resulting in rapid blade wear and/or blade breakage.
- To stop saw, release trigger (4).
- After blade has stopped rotating**, lay saw on a flat surface or hang up saw using hook (7).
- Hook (7) may be used to assist in clearing cut branches **only if blade is not rotating.**

Maintenance

	⚠ WARNING
	<p>Wear eye protection when operating or servicing this tool.</p> <p>Failure to wear eye protection could result in serious eye injury from flying debris or hydraulic oil.</p>

⚠ WARNING
<ul style="list-style-type: none"> • Do not change accessories, inspect, adjust, or clean tool when it is connected to a power source. Accidental start-up can result in serious injury. • Inspect blades before installing and before operating. Do not use a damaged or worn blade. A damaged blade can break and injure nearby personnel. Destroy the blade if cracks, chips, gouges, or loose or missing teeth are evident. • Blade must be installed to rotate correctly. Refer to the Illustrations and Parts Lists and blade manufacturer's instructions. An improperly installed blade can result in injury. • Always wear protective gloves when handling or adjusting the blade. The blade can cut even when stationary. <p>Failure to observe these warnings could result in severe injury or death.</p>

Use this maintenance schedule to maximize the tool's service life.

Notes: Keep all decals clean and legible, and replace when necessary.

When disposing of any components (hydraulic hoses, hydraulic fluid, worn parts, etc.), do so in accordance with federal, state, and local laws or ordinances.

Daily

1. Wipe all tool surfaces clean, especially fiberglass extension.
2. Inspect blade mounted on saw. **Remove and destroy blade if cracks, chips, gouges, or loose or missing tips are evident.**
3. Inspect the hydraulic hoses and fittings for signs of leaks, cracks, wear, or damage. Replace if necessary.
4. Install dust caps over the hydraulic ports when the tool is disconnected.

Monthly

Perform a thorough inspection of the hydraulic hoses and fittings as described in publication 99930323, SAE J1273 (Hose and Hose Assemblies).

Annually

Some organizations require an annual inspection. Have the tool inspected by a Greenlee Utility Authorized Service Center.

Troubleshooting

Before troubleshooting, determine whether the problem is in the tool, hoses, or power source. Substitute a tool, hoses, or power source known to be in good working order to identify the item that is not operating.

If the problem is in the tool, refer to the troubleshooting table below. If the problem is in the power source, refer to the troubleshooting section of the power source instruction manual.

Problem	Probable Cause	Possible Remedy
Tool inoperative.	Tool connected to improper power source hydraulic system.	Refer to “Specifications” for type of hydraulic system required. Verify power source hydraulic system.
	No hydraulic fluid in system or fluid level low.	Check fluid level. Fill to FULL mark. Check system for leaks.
	Incorrect hydraulic fluid viscosity.	Use fluid viscosity recommended. Refer to “Recommended Hydraulic Fluids” under “Specifications.”
	Tool components loose.	Tighten component hardware.
	Dirt, contaminants, etc., in tool components.	Disassemble tool and clean components.
Tool operates erratically.	Tool components worn or damaged.	Disassemble tool. Replace worn or damaged components.
	Hydraulic fluid cold.	Viscosity of fluid may be too high at start of tool operation. Allow fluid to warm to operating temperature. Actuating tool intermittently will reduce time required to warm fluid to an efficient operating temperature.
	Air in system.	Check pump suction line for damage or loose clamps. Tighten clamps or replace components if necessary. Fill reservoir.
	Tool components sticking or binding.	Check for dirt or gummy deposits. Clean components. Check for worn or damaged components. Replace components.
Tool operates slowly.	Dirt, contaminants, etc., in tool components.	Disassemble tool. Clean components.
	Power source components not adjusted correctly.	Refer to power source operator’s manual for recommended speed, flow, and pressure settings.
	Hydraulic fluid cold.	Viscosity of fluid may be too high at start of tool operation. Allow fluid to warm to operating temperature. Actuating tool intermittently will reduce time required to warm fluid to an efficient operating temperature.

Troubleshooting (cont'd)

Problem	Probable Cause	Possible Remedy
Tool operates slowly (cont'd).	Hydraulic fluid level low.	Check fluid level. Fill to FULL mark. Check system for leaks.
	Hydraulic fluid viscosity too heavy.	Use fluid viscosity recommended. Refer to "Recommended Hydraulic Fluids" under "Specifications."
	Tool components loose.	Tighten component hardware.
	Dirt, contaminants, etc., in tool components.	Disassemble tool. Clean components.
	Tool components worn or damaged.	Disassemble tool. Replace worn or damaged components.
Tool operates too fast.	Power source components not adjusted correctly.	Refer to power source operator's manual for recommended speed, flow, and pressure settings.
Tool feels too hot.	Hydraulic fluid level low.	Check fluid level. Fill to FULL mark. Check system for leaks.
	Hydraulic fluid viscosity too light.	Use fluid viscosity recommended. Refer to "Recommended Hydraulic Fluids" under "Specifications."
	Hydraulic fluid dirty.	Drain reservoir, flush and fill with clean fluid.
	Tool control valve stuck in partial or open position.	Free spool so it returns to neutral position.
	Power source components not adjusted correctly.	Refer to power source operator's manual for proper adjustment of components (flow).
	Dirt, contaminants, etc., in tool components.	Disassemble tool. Clean components.
	Worn or damaged O-rings or gaskets.	Replace worn or damaged O-rings or gaskets.
	Tool components worn or damaged.	Disassemble tool. Replace worn or damaged components.
Tool leaks hydraulic fluid.	Tool components loose.	Tighten component hardware.
	Worn or damaged O-rings or gaskets.	Replace worn or damaged O-rings or gaskets.
	Tool components worn or damaged.	Disassemble tool. Replace worn or damaged components.

Troubleshooting (cont'd)

Problem	Probable Cause	Possible Remedy
Tool control valve sticks or works hard.	Check for dirt or gummy deposits.	Clean components.
	Misalignment or binding of control linkage.	Correct alignment. Lubricate linkage joints. Replace damaged components.
	Valve components worn or damaged.	Disassemble valve and replace worn or damaged components.
Tool operates backwards.	Hydraulic flow reversed to tool.	Reverse flow to tool. Check for valve in system that has reversed flow. Check hoses for proper flow.
	Hydraulic pressure and return lines connected to opposite tool ports.	Disconnect hoses. Reverse couplers. Reconnect hoses to proper tool ports.
	Tool components assembled incorrectly.	Disassemble tool. Reassemble correctly.
Tool operates, but blade does not cut.	Blade loose, spinning on arbor shaft.	Remove blade. Inspect arbor hole. Replace blade if necessary. Tighten arbor nut securely. Refer to "Blade Removal/Installation."
	Blade installed opposite to manufacturer's cutting rotation.	Check for correct cutting rotation of blade. If installed incorrectly, remove and install correctly.
	Blade dull.	Remove blade and sharpen, or install a sharp, new blade.
Power source operates but tool lacks power.	Valve components worn or damaged, leaking fluid internally (control spool, O-rings, etc.).	Disassemble tool valve. Replace worn or damaged valve components.
	Motor components worn or damaged, leaking fluid internally (bearings, gears, shafts, keys, O-rings, gasket, etc.).	Disassemble tool motor. Replace worn or damaged motor components.

Disassembly

Refer to the Illustrations and Parts Lists.

Complete disassembly of the tool is not recommended. If a complete overhaul is necessary, return the tool to your nearest Greenlee Utility Authorized Service Center.

The disassembly procedure is divided into sections of the tool. Disassemble only the section(s) necessary to complete the repair.

Note: Remove blade before attempting to disassemble any components of tool. Refer to "Blade Removal/Installation."

Disassemble the tool on a flat, clean surface. Take care not to lose or damage any parts that may fall free during disassembly.

Inspect all parts as they are disassembled and mating parts in tool that are not removed for signs of damage, wear, cracks, etc. Replace any parts which appear to be damaged.

When removing O-rings which must slide over sharp surfaces, be careful not to damage the O-rings. Use a rolling motion, and apply hydraulic fluid to ease removal of O-rings if necessary.

Inner and Outer Tubes

1. Remove cap screw (9A) and lock washer (8) which secure outer tube (7). Remove handle assembly (1) from outer tube (7). Nut carrier (11) may fall free. Remove inner tubes (4, 5) from ports of handle assembly (1).
2. Remove three hex head cap screws (15) and lock washers (14) from motor body (12). The tool hook (13) can be removed.
3. Pull fiberglass outer tube (7) and two inner tubes (4, 5) out of motor body (12), if not removed previously. Nut carrier (11) may fall free. Remove rubber hand stop safety collar (10), if necessary.
4. Pull two inner tubes (4, 5) out of fiberglass outer tube (7).
5. Remove three O-rings (6) twisted in figure eight to separate the two inner tubes.

Handle Assembly

1. Remove two round machine screws (13) from guard (12). Remove guard from handle (1).
2. Remove retaining ring (20) and trigger pivot (19), which secures trigger (15).
3. Remove retaining ring (23) to remove spool assembly (9, 10, 2-4) from handle (1).
4. Remove internal retaining ring (4) from spool (9) to remove Super Spool (2).

Motor

1. Scribe a line across motor cap (11) and motor body (1) to align parts correctly during reassembly.
2. Remove eight socket head cap screws (12). Pull motor cap (11) off motor body (1). Remove gasket (9).
3. Pull two dowel pins (10) out of motor body, only if necessary.
4. Pull idler shaft (4) with gear (8) out of motor body. Remove gear (8) from idler shaft (4). Remove drive pin (5) from idler shaft.
5. Remove gear (8) and Woodruff key (7) from drive shaft (6).
6. Remove the internal snap ring (14). Drive shaft (6) and bearing (13) may be driven out of saw head assembly, threaded end first, using a rubber mallet. Remove bearing (13) from drive shaft (6), only if necessary.
7. O-ring (2) in motor body may be removed with needle bearing in place using an O-ring tool.
8. If fiberglass outer tube and two inner tubes have been removed, remove the two O-rings (15) from ports in motor body (1).

Needle Bearing Removal

Note: If needle bearings (3) in motor cap (11) or motor body (1) are damaged or worn, Greenlee Utility recommends replacing the component as an assembly with bearings already pressed in.

1. Do not remove needle bearings (3) unless they are damaged or worn. Bearings will be ruined when they are removed.
2. A blind-hole bearing puller is required to remove bearings from motor cap or motor body.

Inspection

Refer to the Illustrations and Parts Lists.

Clean all parts with an appropriate cleaning solution and dry them thoroughly. Inspect each component as described in this section. Replace any component that shows wear or damage.

1. Bearing (13): Hold center hub of bearing between your thumb and index finger. Roll outer surface against palm of your other hand. Motion should be smooth with no rough spots. If not, replace bearing.
2. Needle Bearings (3): Hold motor cap or motor body in one hand, or place on a flat surface. Insert drive shaft or idler shaft in bearing. Spin shaft. Shaft and bearing should turn smoothly. If not, Greenlee Utility recommends replacing motor body or motor cap as an assembly with bearing already pressed in.
3. Motor Body (1) and Motor Cap (11): Mating surfaces, gear cavities, oil passageways, etc., in components must be smooth and free of grooves or nicks. If not, replace component as an assembly with bearings already pressed in.
4. Drive Shaft (6) and Idler Shaft (4): All surfaces must be smooth and free of grooves or nicks. If not, replace component.
5. Spool (9) and Sleeve (2): All surfaces must be smooth and free of grooves or nicks. If not, replace component.
6. O-rings: Always replace O-rings in components that have been disassembled with new O-rings during assembly. A packing kit is available that includes all O-rings and gasket.
7. Gasket (9): Always replace gasket when motor cap is removed from motor body.

Assembly

Refer to the Illustrations and Parts Lists for the correct orientation and placement of parts.

Replace any O-rings, V-rings, seals, and gaskets on parts that have been disassembled. Apply hydraulic fluid or O-ring lubricant to all O-rings and all metal surfaces which they must slide over. When installing an O-ring which must slide over sharp surfaces, use a rolling motion and be careful not to damage the O-ring.

Wherever the assembly results in metal-to-metal contact, coat the surfaces with hydraulic fluid or O-ring lubricant.

Needle Bearing Installation

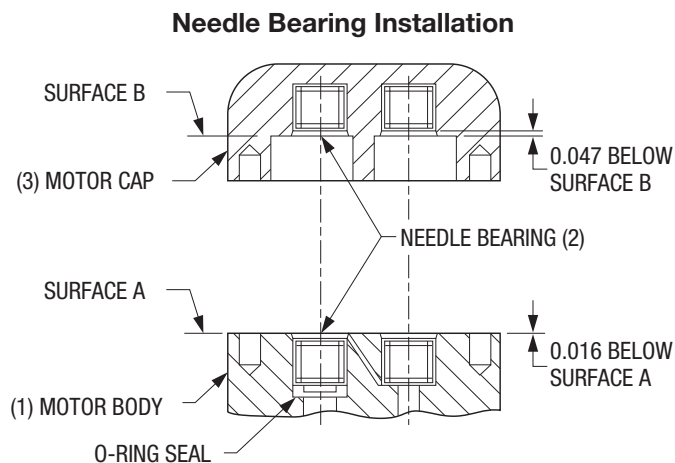
Refer to the figure below.

Motor Body:

1. Install a new bearing (2) with identification mark facing up (readable from Surface A) into motor body (1).
2. Press bearing into motor body until bearing cage is 0.016" below Surface A.
3. Repeat procedure for the other bearing if it was removed.

Motor Cap:

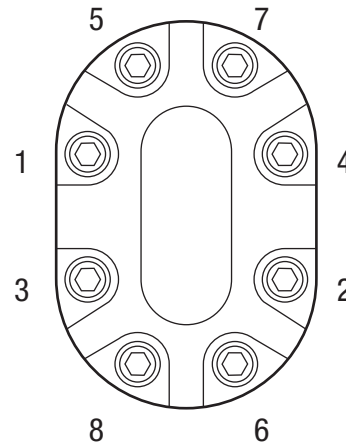
1. Install a new bearing (2) with identification mark facing up (readable from Surface B) into motor cap (3).
2. Press bearing into motor cap until bearing cage is 0.047" below Surface B.
3. Repeat procedure for the other bearing if it was removed.



Motor

1. Install new O-ring (2) in motor body drive shaft opening using an O-ring tool. Be careful not to damage O-ring during installation.
2. Install two new O-rings (15) in ports of motor body (1).
3. Press bearing (13) on drive shaft (6). Generously lubricate drive shaft. Install drive shaft with bearing in motor body. Press bearing into place. Secure with a 1-3/8" internal snap ring (14).
4. Install Woodruff key (7) and one gear (8) on drive shaft (6).
5. Install drive pin (5) in idler shaft (4). Slide one gear (8) on idler shaft (4). Install idler shaft with gear in motor body.
6. Install two dowel pins (10) in motor body, if they were removed. Install gasket (9).
7. Install motor cap (11) on motor body (1), aligning the scribe marks that were made during disassembly.
8. Secure motor cap using eight socket head cap screws (12). Torque cap screws to 80 in-lb. Refer to the figure below for the correct torque sequence.

Torque Sequence



Assembly (cont'd)

Handle Assembly

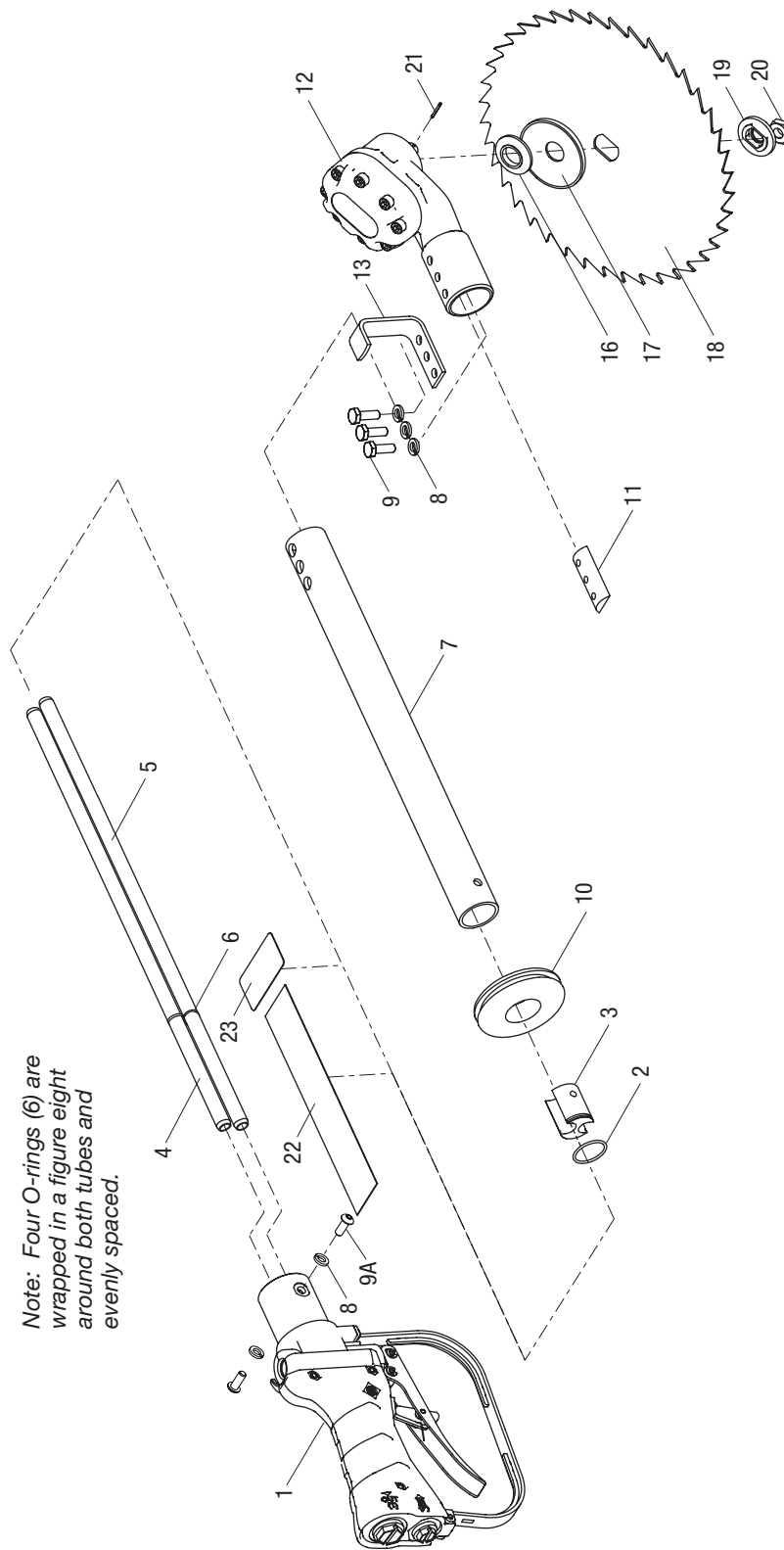
1. Install O-ring (3) on the Super Spool (2).
2. Install Super Spool (2) into spool (9) and retain with retaining ring (4).
3. Install O-ring (8) and ring (6) in handle body (1).
4. Install O-ring (10) onto spool (9).
5. Install spool (9), washer (5), and spring (7) into handle body (1).
6. Position trigger (15) onto handle (1), slide trigger pivot (19) through holes, and secure with retaining rings (20).
7. Position guard (12) onto handle assembly. Secure with roll pin (25) and round head machine screws (13).
8. Secure grips (11, 24) to handle using nut and bolt (14, 22).
9. Position trigger pin (18) through trigger (15), safety latch (16), and torsion spring (17). Secure with retaining rings (20).

Inner and Outer Tubes

Note: Inner pressure tube (5) is marked with dye on both ends for identification during assembly. This inner pressure tube must be installed in "P" port of both motor body and valve body. Improper installation of inner tubes will cause tool to run backwards.

1. Hold the two inner tubes (4, 5) together. Slide one O-ring (6) over tubes until approximately halfway. Turn one of the tubes end for end, so that O-ring forms a figure eight around tubes. Twist one O-ring (6) in a figure eight and slide over one end of tubes, locating twisted O-ring approximately 6" from end of tubes. Repeat twisted O-ring (6) installation for opposite ends of inner tubes.
2. Lubricate one end of both inner tubes with clean hydraulic oil to facilitate assembly. Push pressure inner tube (5) into right pressure port (marked "P") of motor body (12). Push return inner tube (4) into left return port (no mark) of motor body (12).
3. Slide rubber hand stop safety collar (10) on fiberglass outer tube (7), if removed. Press the nut carrier (11) into the holes on upper end of fiberglass outer tube (7). The nut carrier may be glued to fiberglass outer tube to hold it in place during assembly. Slide fiberglass outer tube over both inner tubes. Push fiberglass outer tube into motor body, aligning nut carrier inside fiberglass tube with the holes in motor body. Apply a drop of Loctite EV sealant, or equivalent, to three hex head cap screws (15). Follow manufacturer's recommendations for curing. Install tool hook (13) to nut carrier inside fiberglass outer tube and motor body using three cap screws (15) and lock washers (14).
4. For proper tool operation, the same inner tube (5) which was installed in the pressure port of the motor assembly (12) **must** be installed in the pressure port of the handle assembly (1). Lubricate tips of inner tubes with hydraulic oil to ease assembly. Press inner tube (5) into the top (return) port of handle assembly (1). Press inner tube (4) into the lower (pressure) port, which is marked "P".
5. Insert plug (3) and O-ring (2) in outer tube (7) and install in valve handle (1). Secure with cap screw (9A) and washer (8).

Illustration—43180 Circular Saw



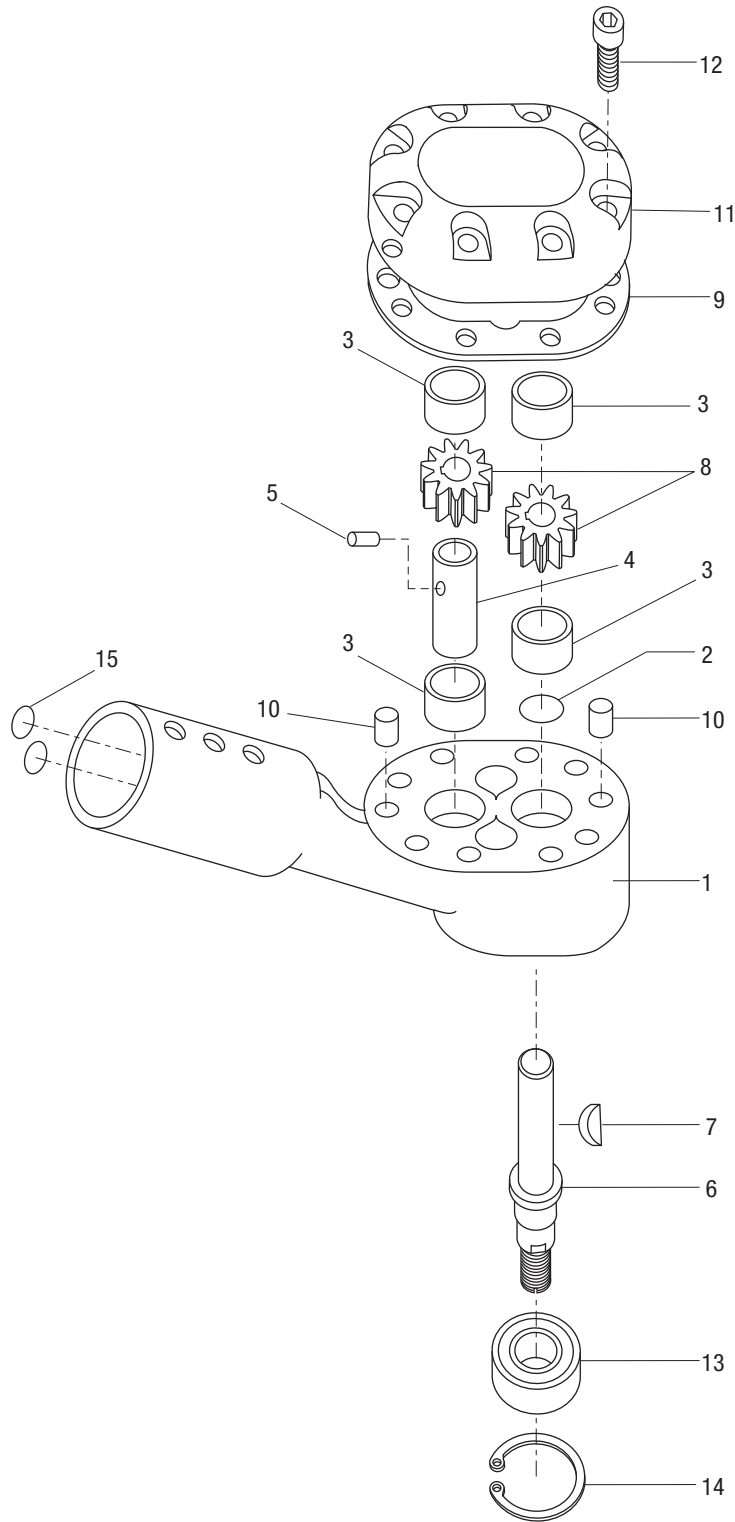
Note: Four O-rings (6) are wrapped in a figure eight around both tubes and evenly spaced.

Parts List—43180 Circular Saw

Key	UPC No. 78-3310-	Part No.	Description	Qty
1	48818	50488180	Handle assembly—Model Code FRN (refer to separate breakdown)	1
2*			O-ring, 15/16" x 1-1/16" x 1/16"	1
3	41121	50411214	Tube plug	1
4	43394	50433946	Inner tube	1
5	43395	52015053	Pressure tube	1
6*			O-ring, 7/8" x 1" x 1/16"	4
7	48264	50482645	Outer tube assembly (includes item 22)	1
8			Lock washer, 1/4"	5
9			Hex head cap screw, 1/4-20 x 3/4", Grade 5	3
9A			Button cap screw, 1/4-20 x 5/8"	2
10	42015	50420154	Grommet	1
11	40118	50401184	Nut carrier	1
12	41076	50410762	Motor assembly (refer to separate breakdown)	1
13	40120	50401205	Hook	1
16	41192	50411922	Hub washer	1
17	40127	50401273	Guard	1
18	42853	50428530	Saw blade—5/8" arbor	1
†18A	48511	50485113	Saw blade—5/8" arbor and adapter (includes items 18 and 19)	1
19	41164	50411642	Adapter	1
20	43396	50433962	Hex nut, M10 x 1.5" LH	1
21			Cotter pin, 1/16" x 1/2"	1
22	46294	52081518	Decal	1
23	41547	50415471	Decal	1
*	40788	50407881	Packing kit (includes items marked with an asterisk)	
	41077	50410772	Spacer washer (used with old blade UPC # 40129)	
	43973	50439731	Chain blade	

†Order saw blade (18) if you now have adapter (19).

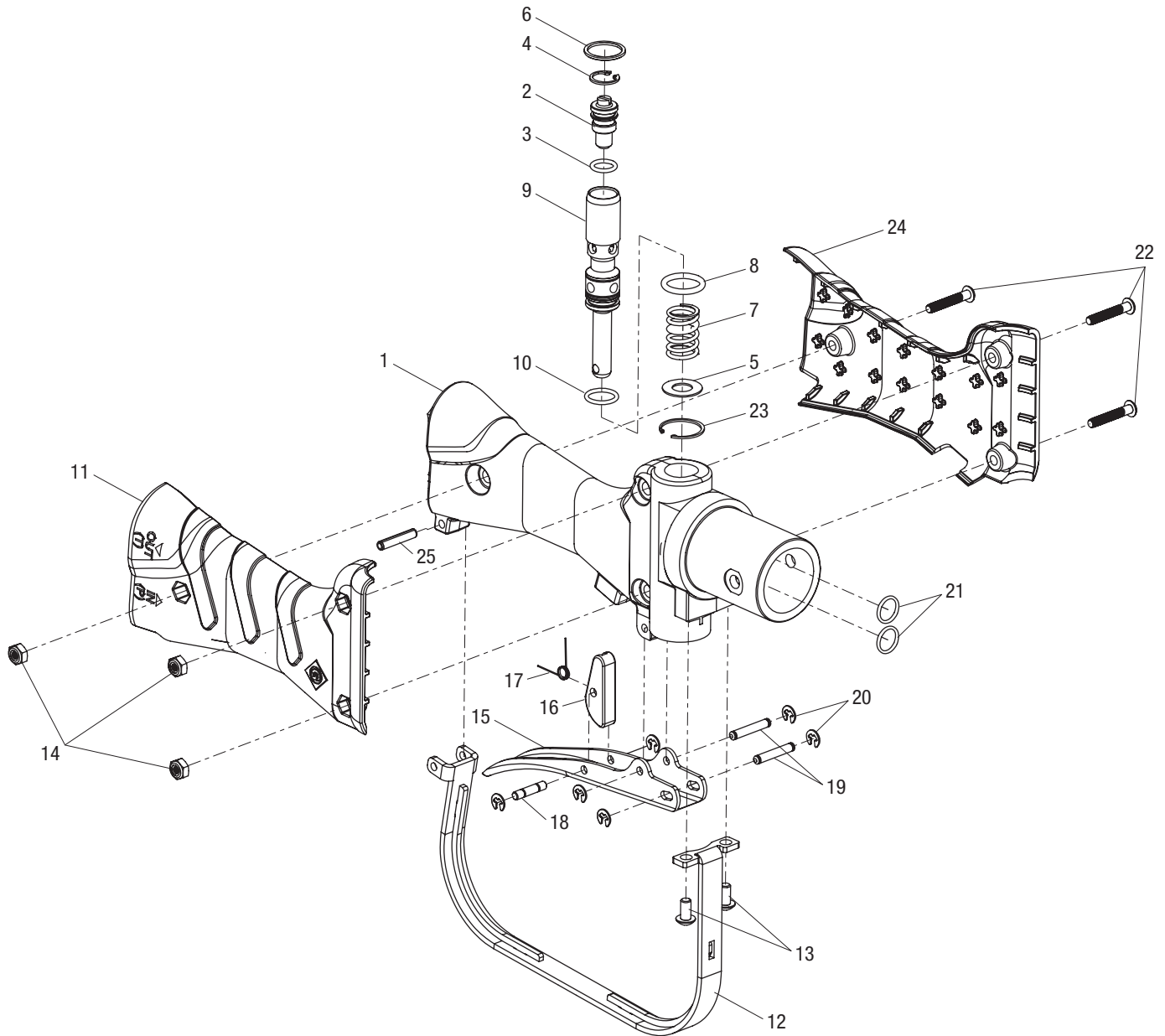
Illustration—Motor Assembly



Parts List—Motor Assembly

Key	UPC No. 78-3310-	Part No.	Description	Qty
	41076	50410762	Motor assembly (includes items 1–15).....	1
1	43403	50434039	Body assembly (includes items 2 and 3).....	1
2*			O-ring	1
3			Bearing	4
4	40168	50401682	Idler shaft.....	1
5	41593	50415930	Drive pin	1
6	41078	50410782	Shaft	1
7	41592	50415921	Key	1
8	41630	50416302	11-tooth gear.....	2
9*			Gasket	1
10	41596	50415960	Dowel pin.....	2
11	40412	50404124	Motor cap (includes item 3).....	1
12			Socket head cap screw, #10–32 x 3/8"	8
13	41598	50415981	Ball bearing.....	1
14	41482	50414821	Retaining ring	1
15*			O-ring	2
*	40788	50407881	Packing kit (includes items marked with an asterisk)	

Illustration—Handle Assembly, Model Code FRN



Parts List—Handle Assembly, Model Code FRN

Key	UPC No. 78-3310-	Part No.	Description	Qty
1	03542	52065777	Handle	1
2	00917	52063610	Super Spool.....	1
3*			O-ring, .375 x .500.....	1
4	48540	50485407	Retaining ring	1
5	48310	50483102	Washer, .76 x .734	1
6*			Ring	1
7	00399	52060673	Trigger spring.....	1
8*			O-ring, .612 x .818.....	1
9	00380	52060643	Spool	2
10*			O-ring, 1/2 x 5/8	1
11	03545	52065776	Right handle grip	1
12	00377	52060656	Trigger guard	2
13	61500	90527917	Screw, #10-32 x .375 button head	2
14	00396	52060670	Lock nut, 8-32	3
15	03546	52065774	Trigger.....	1
16	04798	50047981	Safety latch.....	1
17	04799	50047990	Torsion spring	1
18	04800	50048007	Pin	1
19	42547	50425471	Trigger pivot.....	2
20	42827	50428270	Retaining ring	6
21*			O-ring urethane	4
22	00397	52060671	Screw, 8-32 X 1.00 button cap.....	3
23	41648	50416480	Internal retaining ring, .750 X .035.....	1
24	03547	52065775	Left handle grip	1
25	48542	50485423	Roll pin.....	1
*	40788	50407881	Packing kit (includes items marked with an asterisk)	



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