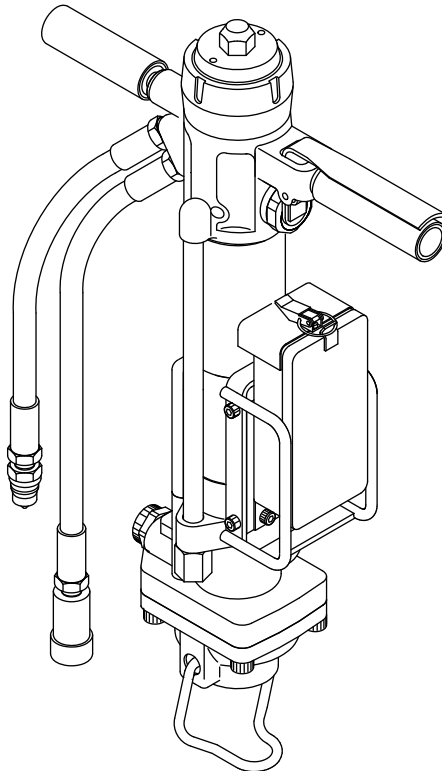


INSTRUCTION MANUAL



HRD44A Hydraulic Rotary Hammer



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

Table of Contents

Description	2
Safety	2
Purpose of this Manual	2
Other Publications	2
Important Safety Information	3-5
Identification	6
Specifications	7
Hoses and Fittings	8
Hose Connections	8
Typical Setup	8
Setup	9
Operation	9
Maintenance	10
Troubleshooting	11
Illustrations	12-13
Parts List	14
Accessories	15

Description

The HRD44A Rotary Hammer is intended to drill holes in rock or concrete. This heavy-duty tool is designed for use on open-center hydraulic systems. A built-in flushing valve, used to force air through the bit to clear debris from the hole while drilling, starts and stops the flow of air automatically.

The tool accepts standard breaker accessories for breaking or driving applications.

Safety

Safety is essential in the use and maintenance of Greenlee Utility tools and equipment. This instruction 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 personnel with the safe operation and maintenance procedures for the Greenlee Utility HRD44A Rotary Hammer.

Keep this manual available to all personnel.

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

Other Publications**Tool Owners/Users**

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

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

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



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

Do not exceed the following hydraulic power source maximums:

- Hydraulic flow: 25 l/min (7 gpm)
- Pressure relief: 207 bar (3000 psi)
- Back pressure: 13.8 bar (200 psi)

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

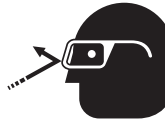


⚠ DANGER

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



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

⚠ WARNING



Wear eye protection when operating or servicing this tool.

Failure to wear eye protection could result in serious eye injury from flying debris or hydraulic oil.





⚠ DANGER

Do not drill near energized electrical lines or underground gas lines. Contact could cause electrocution or an explosion.

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


⚠ WARNING




Wear hearing protection when using this tool.

Failure to observe this warning could result in serious injury.

IMPORTANT SAFETY INFORMATION

	<p style="text-align: center;">⚠ WARNING</p> <p>Wear foot protection when using this tool.</p> <p>Failure to observe this warning could result in serious injury.</p>
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	<p style="text-align: center;">⚠ WARNING</p> <p>Tool body, bit, and other components may be hot during and after operation. Use care when handling these items.</p> <p>Failure to observe this warning could result in severe injury or death.</p>
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<p>⚠ WARNING</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>

<p>⚠ WARNING</p>
<p>Do not reverse hydraulic flow. Operation with hydraulic flow reversed can cause tool malfunction. Connect the supply (pressure) hose and return (tank) hose to the proper ports.</p>

<p>⚠ WARNING</p>
<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.</p> <p>Failure to observe this warning could result in severe injury or death.</p>

<p>⚠ WARNING</p>
<p>Serious injury can result if the operator does not maintain control of the tool.</p> <ul style="list-style-type: none"> • Wear slip-proof gloves when operating this tool. • Maintain a firm grip on the tool, using both hands at all times. • Do not lock the control lever in the power-ON position. Operator cannot stop tool when control lever is locked. • Use this tool in an upright orientation. Do not tilt the tool more than necessary when in operation. <p>Failure to observe these warnings could result in severe injury or death.</p>

<p>⚠ CAUTION</p>
<p>Handle bits with care. Bits are sharp and can cut even when stationary.</p> <p>Failure to observe this warning may result in severe injury.</p>

<p>⚠ CAUTION</p>
<p>Dust, small rocks, and other debris may be thrown by the tool. Use proper personal protective equipment.</p> <p>Failure to observe this warning may result in severe injury.</p>

<p>⚠ CAUTION</p>
<p>Vibration hazard:</p> <p>Apply just enough pressure to do the work. Applying excess pressure to the tool can cause operator discomfort or temporary numbness.</p> <p>Failure to observe this precaution may result in injury.</p>

IMPORTANT SAFETY INFORMATION

⚠ CAUTION

- Do not operate the tool unless the bit is properly installed and placed against the work surface. Damage to the tool can result.
- Inspect the hydraulic hoses and couplings every operating day. Repair or replace if leakage, cracking, wear, or damage is evident. Damaged hoses or couplings 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. Do not use this tool to drive anything other than drill bits or standard breaker accessories.
- Make sure all bystanders are clear of the work area when handling, starting, and operating the tool. Nearby personnel can be injured by flying or falling debris or by flying parts in the event of a tool malfunction.

⚠ 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.

IMPORTANT

Emergency stop procedure:

1. Release the control lever.
2. Shut off the hydraulic power source.

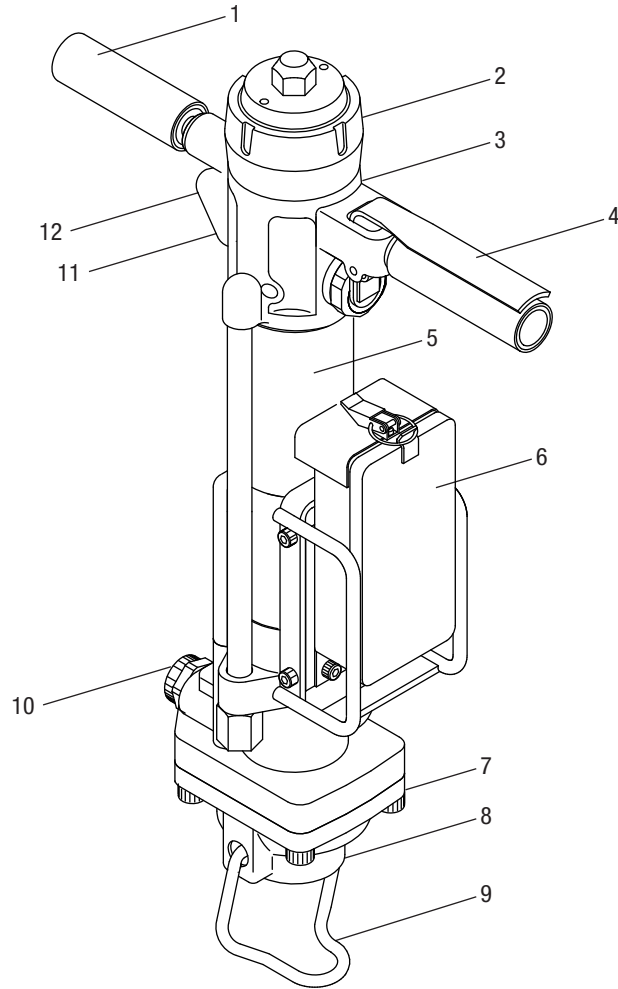
IMPORTANT

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.

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

Identification



- | | |
|------------------|-------------------|
| 1. Handle | 7. Gear Housing |
| 2. Accumulator | 8. Front Head |
| 3. Valve Body | 9. Drill Stay |
| 4. Control Lever | 10. Control Knob |
| 5. Cylinder | 11. Return Port |
| 6. Air Cleaner | 12. Pressure Port |

Specifications

HRD44A Rotary Hammer

Type of Hydraulic System.....	Open-center
Hydraulic Pressure Port.....	3/8" NPTF
Hydraulic Return Port.....	3/8" NPTF
Mass/Weight.....	20 kg (44 lb)
Length	644.7 mm (25.4")
Width (across handles).....	412 mm (16")
Shank Size.....	7/8" x 4-1/4"

Hydraulic Power Source

⚠ WARNING

Do not exceed the following hydraulic power source maximums:

- Hydraulic flow: 25 l/min (7 gpm)
- Pressure relief: 207 bar (3000 psi)
- Back pressure: 13.8 bar (200 psi)

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

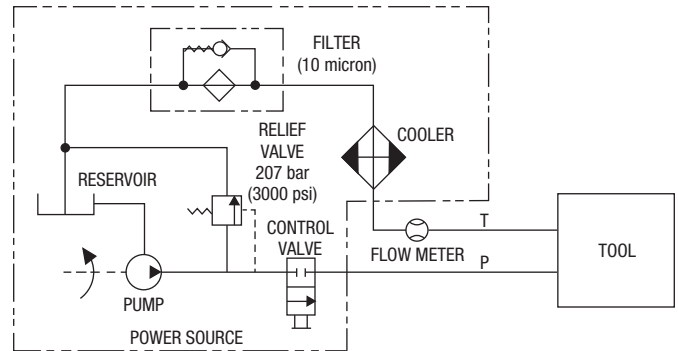
Type of Hydraulic System.....Open-center
Flow

Minimum	20 l/min (5 gpm)
Maximum	25 l/min (7 gpm)

Filtration.....	10 micron (nominal)
Pressure Relief Setting	207 bar (3000 psi)
Back Pressure (maximum).....	13.8 bar (200 psi)

- Maximum hydraulic fluid temperature must not exceed 60 °C (140 °F). A sufficient oil cooling capacity is needed to limit the hydraulic fluid temperature.
- Hydraulic flow must not exceed 25 l/min (7 gpm). Install a flow meter in the return line to measure the rate of hydraulic flow before using the tool.
- Pressure relief valve setting must not exceed 207 bar (3000 psi) at your tool's maximum flow. Locate the pressure relief valve in the supply circuit to limit excessive hydraulic pressure to the tool.

Hydraulic Schematic



Recommended Hydraulic Fluids

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

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

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.

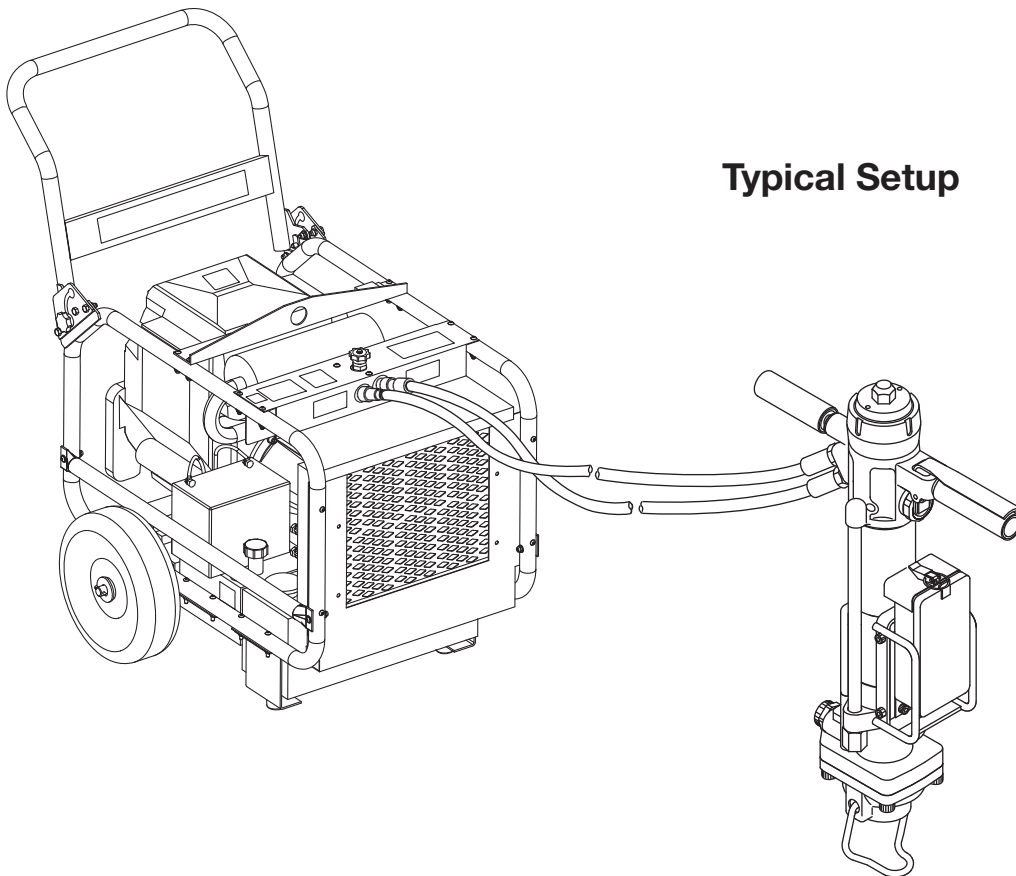
Hose Connections

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.



Typical Setup

Setup

WARNING

Inspect accessories before use. Discard accessories that have cracks, chips, or gouges.

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

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.

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

1. Stop the hydraulic power source.
2. Open the drill stay with a downward motion.
3. Insert the accessory into the front head.
4. Close the drill stay with an upward motion.
5. Connect the hydraulic hoses according to the instructions under "Hose Connections."

Operation

1. Start the hydraulic power source.
Note: Allow the hydraulic power source to run for a few minutes to warm the hydraulic fluid.
2. Use the control knob to adjust the rpm of the tool bit.
3. Position the bit against the surface (rock to be drilled, material to be broken, ground rod to be driven, etc.).
4. Grasp both handles firmly.
5. To start the tool, squeeze the control lever.
6. To stop the tool, release the control lever.

IMPORTANT

Allow the tool to come to a complete stop before changing the position of the control knob. Changing the position of the control knob while the tool is operating can cause internal damage to the tool.

7. When the tool is not in use, stop the hydraulic power source to reduce heat and wear on tool components.

IMPORTANT

Emergency stop procedure:

1. Release the control lever.
2. Shut off the hydraulic power source.

Maintenance

Schedule

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

Note: Keep all decals clean and legible. Replace decals when necessary.

Daily

1. Wipe all tool surfaces clean.
2. Inspect the hydraulic hoses and fittings for signs of leaks, cracks, wear, or damage. Replace if necessary.
3. Install dust caps over the hydraulic ports when the tool is disconnected.
4. Remove the element and sponge from the cleaner case and clean them.

Monthly

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

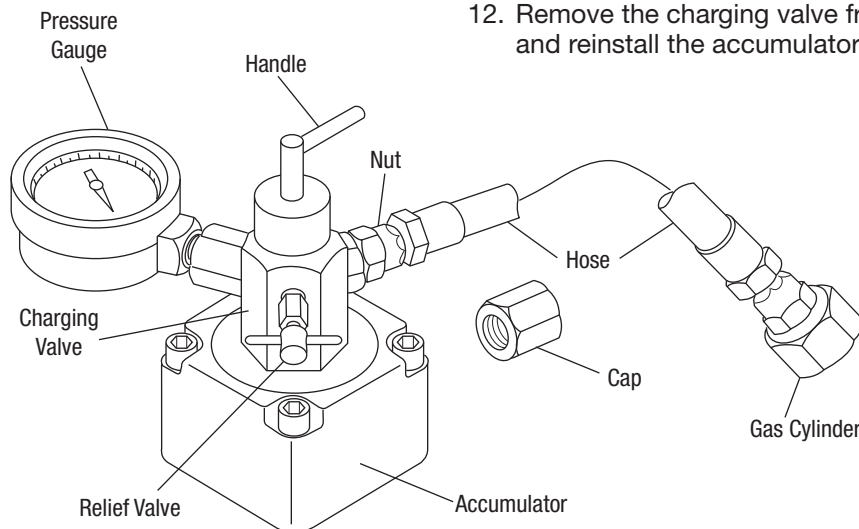
Annually

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

Accumulator Recharging Procedure

If the tool strike rate is normal, however the blow energy appears weak, the accumulator nitrogen pressure may be low. Check the nitrogen pressure according to the following procedure. Refer to figure below.

1. Remove the accumulator cap.
2. Attach the charging valve (Accessory P/N 504 6251.2) to the accumulator surface and hand-tighten.
3. Cap the hose connection port of the charging valve. Close the relief valve on the charging valve.
4. Slowly turn the handle counterclockwise to open the accumulator valve until pressure is read on the pressure gauge. If the pressure gauge reads less than 32 kg/cm² (455 psi), then the pressure needs to be increased to 40 kg/cm² (569 psi).
5. If the pressure needs to be adjusted, turn the handle clockwise to close the accumulator valve. Open the relief valve to remove nitrogen from within the charging valve.
6. Remove the cap from the hose connection port and attach the supply hose from the nitrogen gas cylinder whose available pressure is at least 45 kg/cm² (640 psi).
7. Close the relief valve by turning it clockwise.
8. Open the nitrogen supply tank to provide 40 kg/cm² (569 psi) pressure.
9. Slowly turn the handle on top of charging valve counterclockwise to open the accumulator valve.
10. Once pressure has stabilized, turn the handle on top of the charging valve clockwise to close the accumulator valve.
11. Close the valve to the nitrogen gas cylinder. Open the relief valve to remove the pressure from within the charging valve.
12. Remove the charging valve from the accumulator and reinstall the accumulator cap.



Troubleshooting

Before troubleshooting, determine whether the problem is in the tool, the hoses, or the 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	Probable Remedy
Tool does not operate.	Improper power source.	Verify that the power source meets the specifications. Refer to the “Specifications” section.
	Hydraulic fluid level low.	Check the fluid level. Check system for leaks.
	Incorrect hydraulic fluid viscosity.	Use hydraulic fluid with the correct viscosity. Refer to the “Specifications” section.
Tool operates slowly or erratically.	Hydraulic fluid cold.	Allow fluid to warm to the operating temperature. Actuate the tool intermittently to reduce the warming time.
	Power source not adjusted correctly.	Refer to power source operator’s manual. Set the flow and pressure to correspond with the tool.
	Hydraulic fluid level low.	Check the fluid level. Check system for leaks.
	Air in the hydraulic system.	Refer to power source manufacturer’s instructions for removing air from the system.
	Incorrect hydraulic fluid viscosity.	Use hydraulic fluid with the correct viscosity. Refer to the “Specifications” section.
	Tool feels hot.	Hydraulic fluid level low.
Tool feels hot.	Incorrect hydraulic fluid viscosity.	Use hydraulic fluid with the correct viscosity. Refer to the “Specifications” section.
	Hydraulic fluid dirty.	Refer to the power source owner’s manual for procedure to replace hydraulic oil and filter.
	Strike rate is normal; blow energy is weak.	Low accumulator gas pressure.
Broken accumulator diaphragm.		Replace diaphragm and recharge to 40 kg/cm ² (569 psi).

Illustration

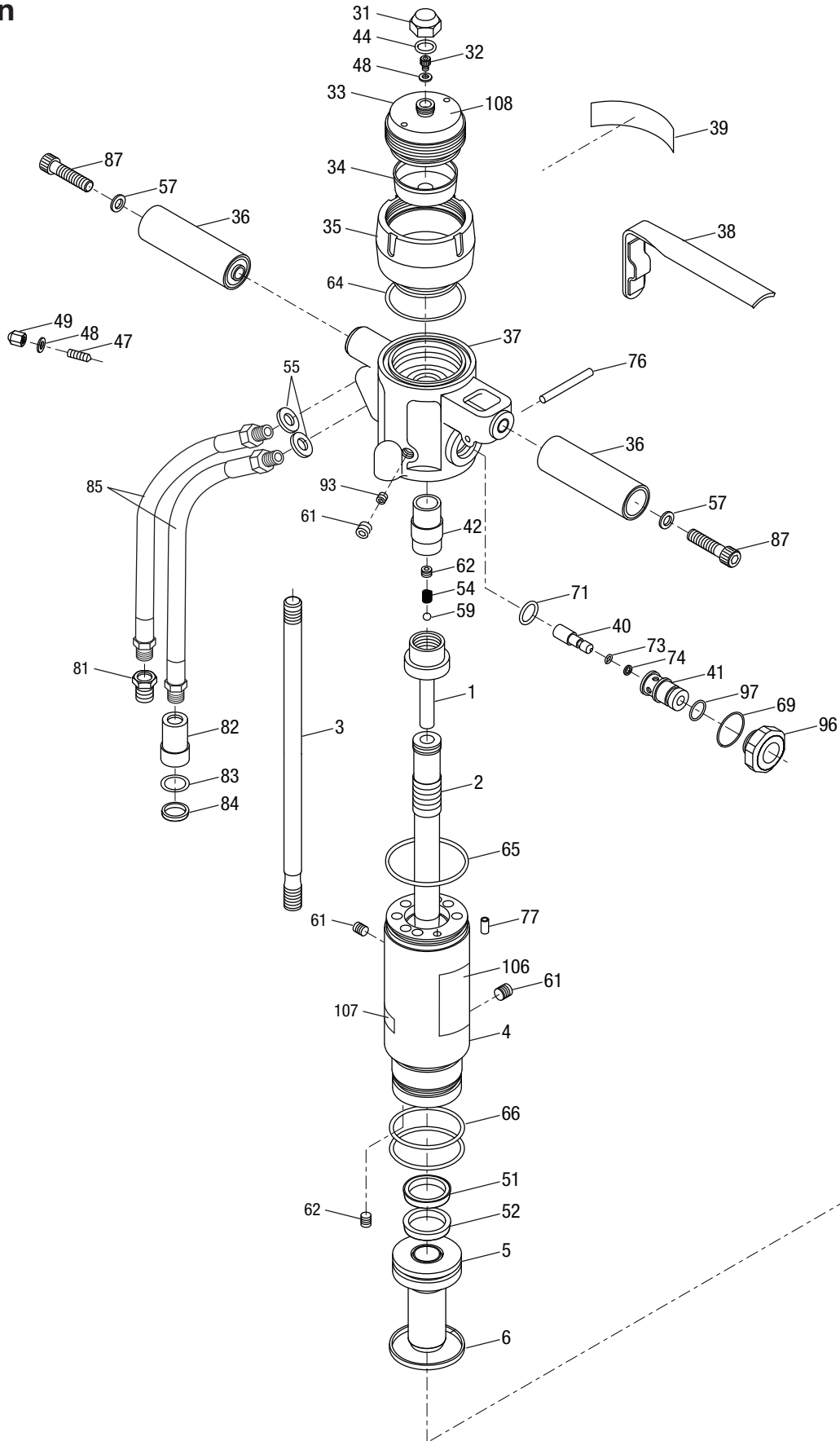
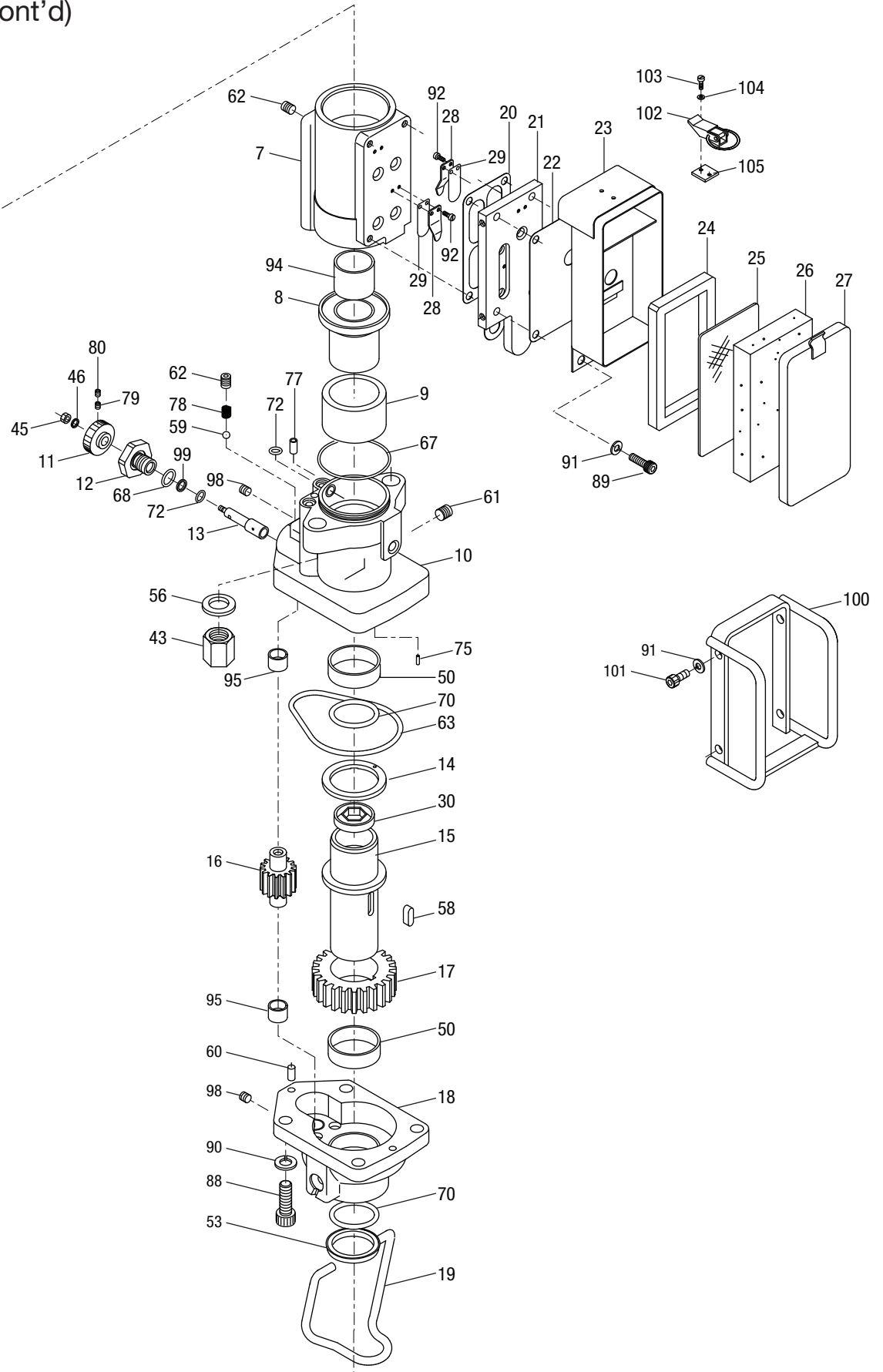


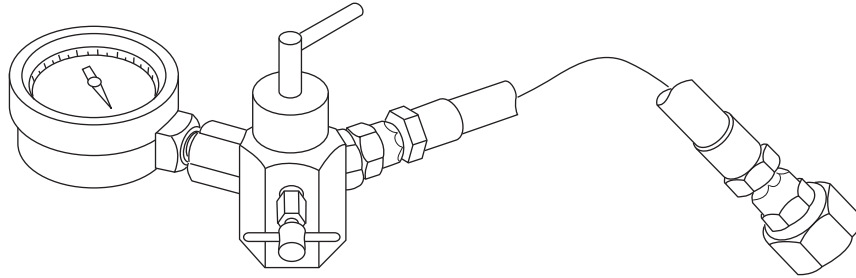
Illustration (cont'd)



Parts List

Key	Part No.	Description	Qty	Key	Part No.	Description	Qty
1	52046167	Inner tube	1	64*		O-ring G65.....	1
2	52046168	Piston	1	65*		O-ring G60.....	1
3	50460323	Bolt	2	66*		O-ring	2
4	52046169	Cylinder	1	67*		O-ring	1
5	52046170	Hammer piston.....	1	68*		O-ring	1
6*		Piston ring	1	69*		O-ring CO0621	1
7	50460366	Compression cylinder	1	70*		O-ring	2
8	52046171	Bush	1	71*		O-ring	1
9	52046172	Collar	1	72*		O-ring	3
10		Motor block	1	73*		O-ring P5.....	1
11		Dial knob	1	74*		Backup ring P5.....	1
12		Valve guide	1	75*		Pin	1
13		Selector valve.....	1	76	50460170	Pin Ø5 x 36.....	1
14	50460447	Washer	1	77	50459783	Pin Ø6 x 20.....	2
15	50460455	Internal shaft.....	1	78*		Spring	1
16	50460463	Idle gear.....	1	79		Screw	1
17	50460471	Drive gear.....	1	80		Screw (flat).....	1
18		Gear housing (A).....	1	81	50461249	Coupler (male)	1
19	52046177	Drill stay (A)	1	82	50461257	Coupler (female)	1
20		Seat packing	1	83	52046195	O-ring	1
21		Valve seat	1	84	50461273	Backup ring.....	1
22		Packing (B).....	1	85	52046196	Hydraulic hose	1
23		Cleaner case	1	87		Bolt, hex socket M12 x 50	2
24	50460579	Packing	1	88	50461303	Bolt	4
25	50460587	Element	1	89	50461311	Bolt	4
26	50460595	Cleaner sponge.....	1	90	50461320	Washer	4
27		Cleaner cover	1	91	50461338	Washer	4
28		Retainer (B).....	4	92		Screw	8
29		Lead valve	4	93*		M6 orifice (2.8).....	1
30	50460641	Air seal.....	1	94	52046198	Oiles Drymet LF bushing.....	1
31		Nut.....	1	95*		DU bush	2
32		Cap bolt.....	1	96	52046200	Bush	1
33		Lid.....	1	97*		O-ring	1
34	50460692	Diaphragm.....	1	98*		Kenick expander	3
35		Shell.....	1	99*		Backup ring	1
36		Handle grip.....	2	100	52046204	Guard.....	1
37		Valve body.....	1	101	52046205	Bolt	4
38	50460730	Control lever	1	102		Patent fastener	1
39		Decal, identification.....	1	103		Screw	4
40	50460757	Valve rod.....	1	104		Washer	4
41	52046182	Valve guide	1	105		Nut.....	4
42	50460773	Control valve	1	106		Decal, warning, eye.....	1
43	52046232	Nut.....	2	107		Decal, pressure/flow/weight.....	1
44*		O-ring	1	108		Decal, caution	1
45		Nut.....	1				
46		Washer	1				
47	52046186	Screw, cone point.....	1	Kits			
48*		Seal washer	1	*	52046211	Repair kit (includes items marked with an asterisk)	
49	52046188	Cap nut.....	1		52046303	Decal kit (includes items 39, 106–108)	
50	52046189	Bush (A).....	2		52046304	Accumulator kit (includes items 31–35, 44, 48, 64)	
51*		U-cup packing.....	1		52046305	Plug kit (includes items 31, 32, 44, 48)	
52*		Dust seal.....	1		52046306	Valve body assembly (includes items 37, 61, 93)	
53*		Dust seal.....	1		52046307	Motor block assembly (includes items 10, 50, 61, 75, 95, 98)	
54*		Compression spring	1		52046308	Gear housing assembly (includes items 18, 50, 95, 98)	
55*		Seal washer	2		52046309	Selector valve assembly (includes items 11–13, 45, 46, 68, 72, 79, 80, 99)	
56	50460854	Washer	2		52046310	Handle kit (includes two each of items 36, 57, 87)	
57		Washer	2		52046311	Compressor kit (includes items 20–29, 92, 102–105)	
58	52046192	Key	1		52046312	Latch kit (includes items 102–105)	
59*		Steel ball.....	1				
60	52046236	Roller, 6x12.....	2				
61	50459830	Plug	7				
62	50460897	Plug	5				
63*		O-ring	1				

Accessories



UPC No.	Part No.	Description
78-3310-46251	50462512	Accumulator charging valve



USA	800-435-0786	Fax:	800-451-2632
	815-397-7070	Fax:	815-397-1865
Canada	800-435-0786	Fax:	800-524-2853
International	+1-815-397-7070	Fax:	+1-815-397-9247

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