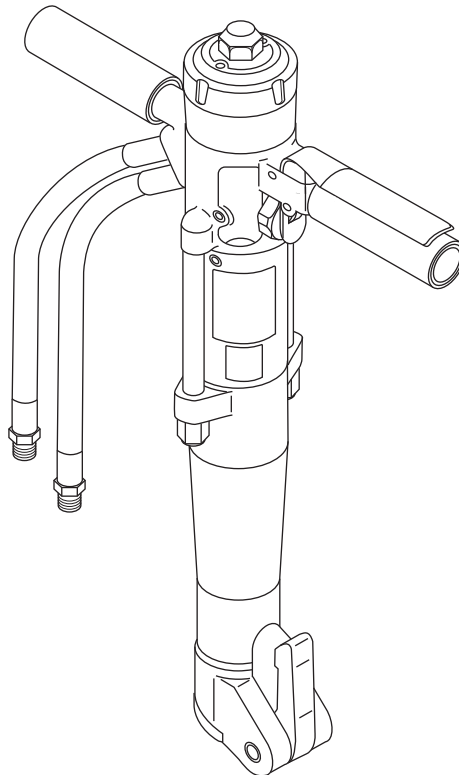


INSTRUCTION MANUAL



HPB35 Hydraulic Paving Breaker



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 HPB35 Paving Breaker is intended to break up asphalt, concrete, and hard clay.

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 all personnel with the safe operation and maintenance procedures for the following Greenlee Utility tool:

HPB35 Paving Breaker

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 Textron 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

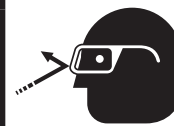
Hazards or unsafe practices which, if not avoided, **MAY** result in injury or property damage.

⚠ WARNING

Do not exceed the following hydraulic power source maximums:

- Hydraulic flow: 30.4 l/min (8 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.



⚠ 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.



⚠ WARNING

Wear hearing protection when using this tool.

Failure to observe this warning could result in serious injury.



⚠ 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

Wear foot protection when using this tool.

Failure to observe this warning could result in serious injury.



⚠ WARNING

Tool, bit, and other components may be hot during and after operation. Allow to cool before handling, or handle with heat-resistant gloves.

Failure to observe this warning 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

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

IMPORTANT SAFETY INFORMATION

⚠ WARNING

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.

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 these warnings could result in severe injury or death.

⚠ WARNING

Serious injury can result if the operator does not maintain control of the tool.

- 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.

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

⚠ CAUTION

Vibration hazard:

Apply just enough pressure to do the work. Applying excess pressure to the breaker can cause operator discomfort or temporary numbness.

Failure to observe this precaution may result in injury.

⚠ CAUTION

- Do not operate the breaker unless the bit is properly installed and placed against the work surface. Damage to the breaker 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.
- 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.

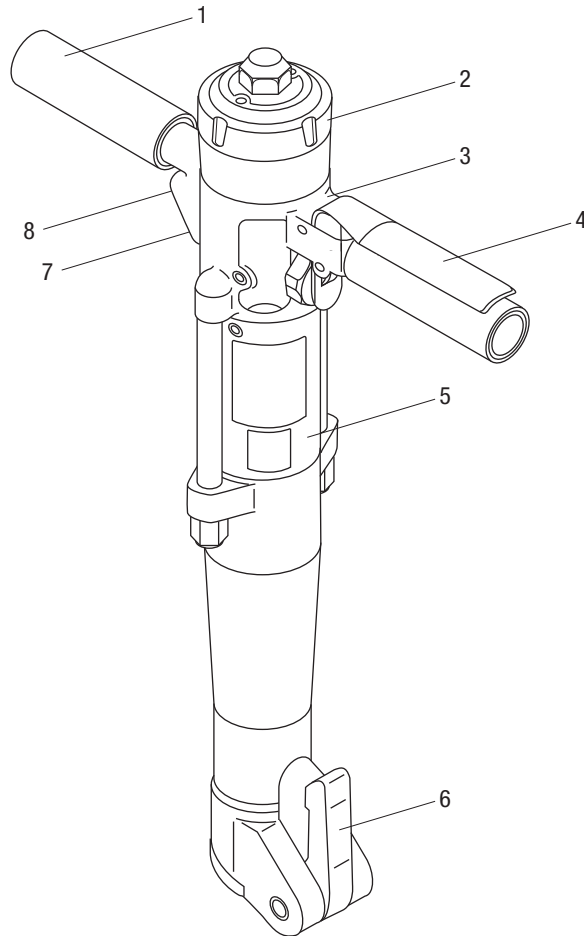
IMPORTANT

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 | 5. Cylinder |
| 2. Accumulator | 6. Latch |
| 3. Valve Body | 7. Return Port |
| 4. Control Lever | 8. Pressure Port |

Specifications

HPB35 Paving Breaker

Type of Hydraulic System.....	Open-center
Hydraulic Pressure Port.....	3/8" NPTF
Hydraulic Return Port.....	3/8" NPTF
Blows per Minute @ 30.4 l/min (8 gpm).....	2000
Mass/Weight.....	16 kg (35 lb)
Length	604 mm (24")
Width	412 mm (16")
Shank Size.....	1" x 4-1/4"

Hydraulic Power Source

WARNING

Do not exceed the following hydraulic power source maximums:

- Hydraulic flow: 30.4 l/min 8 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 19 l/min (5 gpm)

Maximum 30.4 l/min (8 gpm)

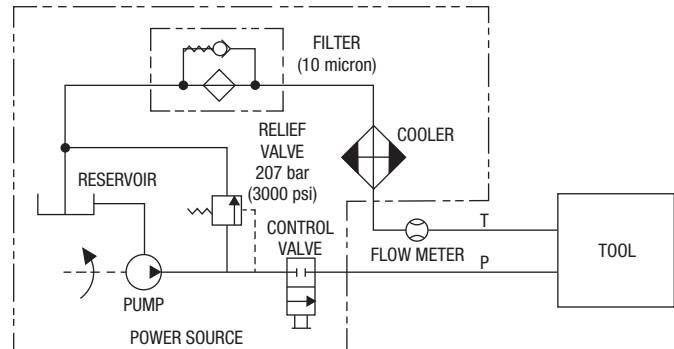
Filtration..... 10 micron (nominal)

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 30.4 l/min (8 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 can cause serious burns.

Hose Connections

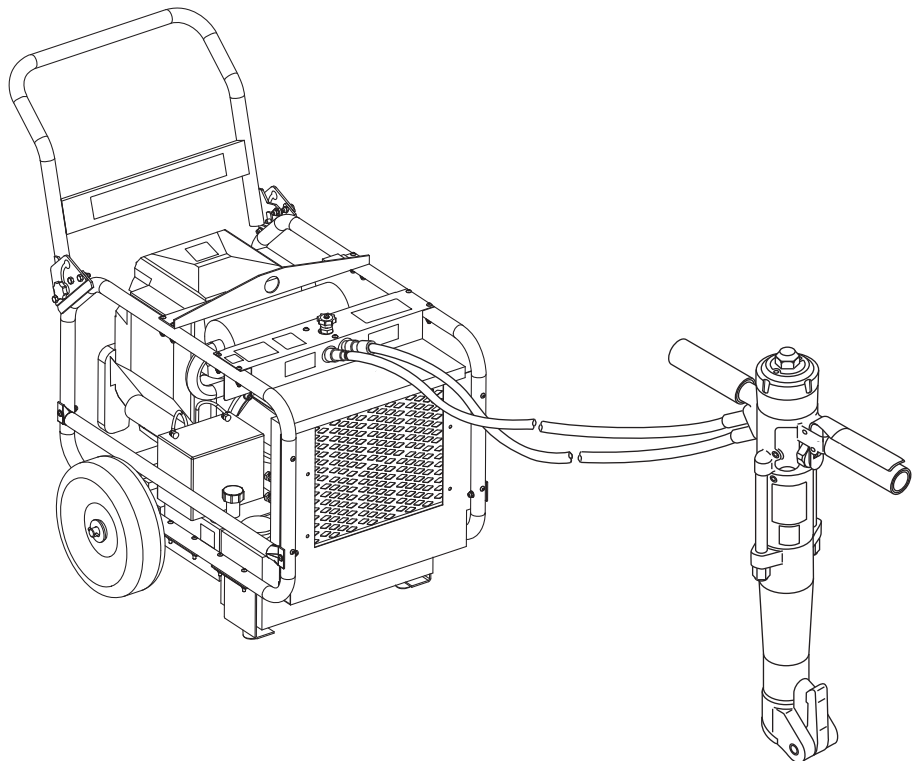
Connecting Hoses

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, then to the return port on the tool.
4. Connect the pressure hose to the pressure port on the tool, 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, then from the tool.
4. Disconnect the return hose from the tool, 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. Unlock the latch with a downward motion.
3. Insert the accessory into the front head.
4. Lock the latch 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. Position the bit against the surface (material to be broken, ground rod to be driven, etc.).
3. Grasp handle firmly.
4. To start the tool, squeeze the control lever.
5. To stop the tool, release the control lever.
6. 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

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.

Monthly

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

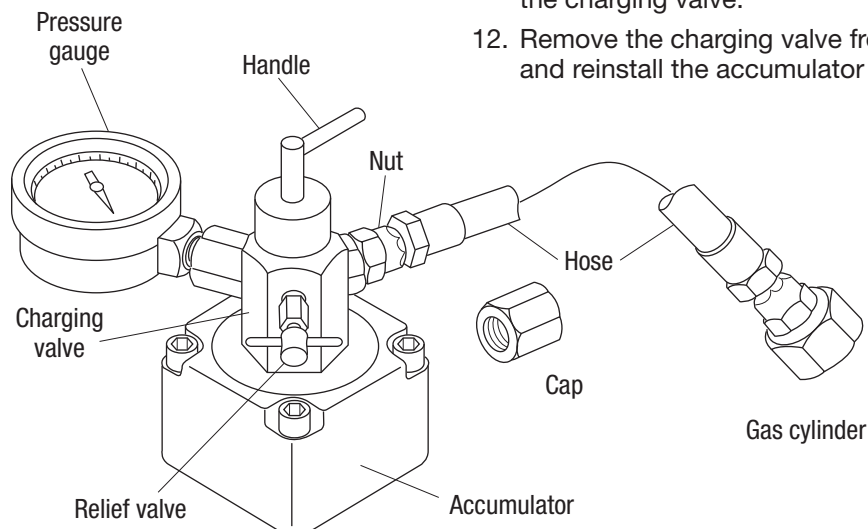
Annually

If required by your organization, 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 50462512) 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.



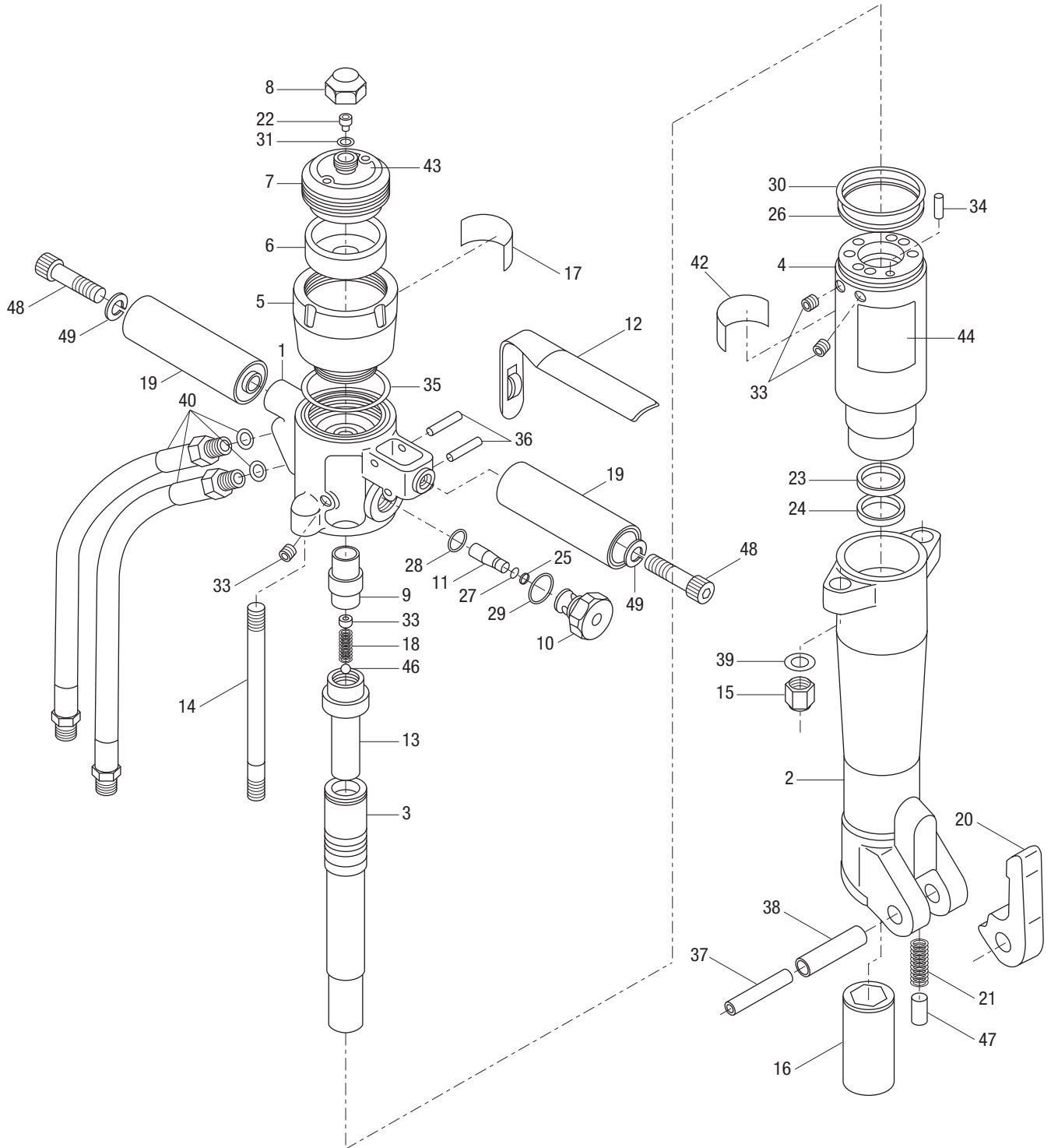
Troubleshooting

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 eliminate the item that is not operating.

If the problem is in the tool, see the troubleshooting table in this manual. If the problem is in the power source, see 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.
	Hydraulic fluid level low.	Check the fluid level. Check system for leaks.
	Incorrect hydraulic fluid viscosity.	Use hydraulic fluid with the correct viscosity.
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 the 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 the power source manufacturer's instructions for removing air from the system.
	Incorrect hydraulic fluid viscosity.	Use hydraulic fluid with the correct viscosity.
Tool feels hot.	Hydraulic fluid level low.	Check the fluid level. Check for leaks.
	Incorrect hydraulic fluid viscosity.	Use hydraulic fluid with the correct viscosity.
	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.	Adjust nitrogen pressure in accumulator to 40 kg/cm ² (569 psi).
	Broken accumulator diaphragm.	Replace diaphragm and recharge to 40 kg/cm ² (569 psi).

Illustration



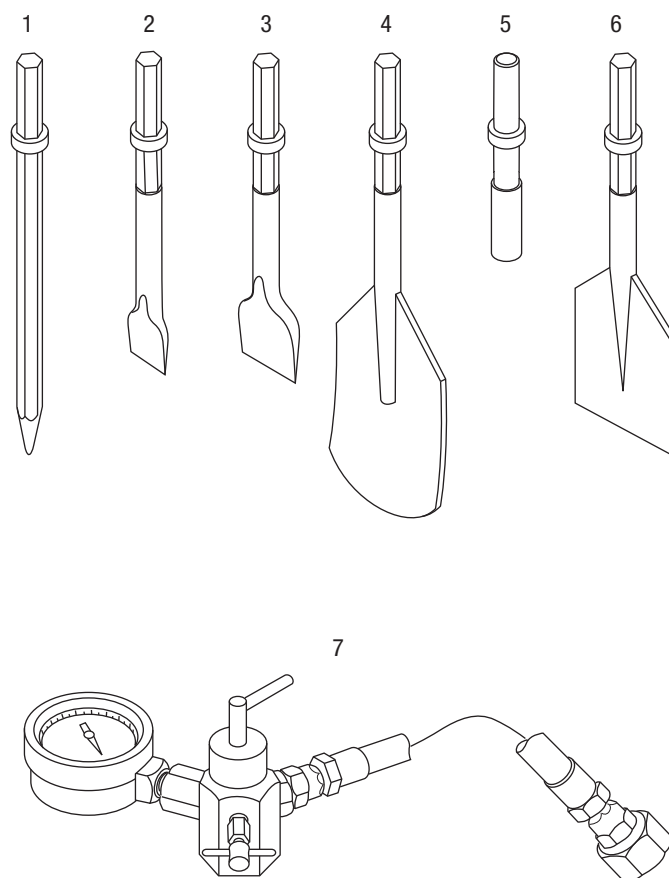
Parts List

Key	UPC No. 78-3310-	Part No.	Description	Qty
1			Valve body	1
2			Front end.....	1
3	45995	50459953	Piston.....	1
4			Cylinder.....	1
5			Shell	1
6	45955	50459554	Diaphragm	1
7			Lid	1
8			Cap	1
9			Control valve.....	1
10			Valve guide.....	1
11	45956	50459562	Valve rod	1
12	46005	50460056	Control lever.....	1
13			Inner tube.....	1
14			Draw bolt	2
15			Nut	2
16			Chisel bushing	1
17		50017470	Decal, identification	1
18*			Spring	1
19	46012	50460129	Handle grip	2
20	46013	50460137	Latch (1").....	1
21	45958	50459589	Lock spring	1
22	45954	50459546	Cap bolt	1
23*			U-cup packing	1
24*			Dust seal	1
25*			Backup ring, P5	1
26*			Backup ring, G60.....	1
27*			O-ring, P5	1
28*			O-ring, P14	1
29*			O-ring, CO0621	1
30*			O-ring, G60	1
31*			Seal washer, W6S1	1
33	46015	50460153	Plug.....	8
34	45978	50459783	Spring pin, Ø6 x 20.....	1
35*			O-ring, G65	1
36	46017	50460170	Spring pin, Ø5 x 36.....	2
37	46018	50460188	Spring pin, Ø10 x 50.....	1
38	46019	50460196	Spring pin, Ø16 x 60.....	1
39			Spring washer.....	2
40	52183	52049243	Hydraulic hose set	1
42	45899	50458990	Decal, pressure/flow/weight	1
43	46197	50461974	Decal, caution.....	1
44	49009	50490095	Decal, warning	1
46*			Steel ball	1
47	45979	50459791	Needle roller.....	1
48			Bolt hex socket, M12 x 50.....	2
49			Lock washer, M12.....	2

Kits

*	46297	50462970	Seal kit (includes items marked with an asterisk)
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Accessories



Key	UPC No. 78-3310-	Part No.	Description
1	49138	50491385	Moil point, 14"
2	46218	50462180	Chisel bit, 1-3/8" x 14"
3	46219	50462199	Chisel bit, 3" x 14"
4	46220	50462202	Clay spade
5	41070	50410703	Rod driver (for 5/8" maximum diameter ground rod)
	40349	50403492	Rod driver (for 1" maximum diameter ground rod)
6	46221	50462210	Asphalt cutter
7	46251	50462512	Accumulator charging valve



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