Operation/Service/Parts

HP50 High Pressure Lubricators

For dispensing non-corrosive and non-abrasive oils and synthetic-based lubricants.

Models: page 2
50,000 psi (344 MPa, 3,447 bar) Maximum Working Pressure

Important Safety Instructions
Read all warnings and instructions in this manual. Save these instructions.
## Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>258262</td>
<td>HP-50 Lubricator with 4 pumps and low level</td>
</tr>
<tr>
<td>258263</td>
<td>HP-50 Lubricator with 4 pumps, provision for flange mounted auto fill and low level in fill plate and proximity switch shaft rotations indicator on right</td>
</tr>
<tr>
<td>562925†</td>
<td>HP-50 Lubricator with 4 pumps</td>
</tr>
<tr>
<td>562926†</td>
<td>HP-50 Lubricator with 2 pumps</td>
</tr>
<tr>
<td>562927†</td>
<td>HP-50 Lubricator with 4 pumps, provision for flange mounted auto fill and Nitrogen purge port</td>
</tr>
<tr>
<td>562928</td>
<td>HP-50 Lubricator with 4 pumps, low level and shaft rotation alarm</td>
</tr>
<tr>
<td>562929†</td>
<td>HP-50 Lubricator with 4 pumps, provision for flange mounted auto-fill and low level in fill plate</td>
</tr>
<tr>
<td>564276†</td>
<td>HP-50 Lubricator without pumps or options</td>
</tr>
<tr>
<td>564277</td>
<td>HP-50 Lubricator with 4 pumps and steam heater</td>
</tr>
<tr>
<td>564278</td>
<td>HP-50 Lubricator with 3 pumps and steam heater</td>
</tr>
<tr>
<td>564279</td>
<td>HP-50 Lubricator with 4 pumps, provision for flange mounted auto fill, Nitrogen purge and shaft rotation/low level alarm on right</td>
</tr>
<tr>
<td>564280</td>
<td>HP-50 Lubricator with 4 pumps, provision for flange mounted auto fill, Nitrogen purge and shaft rotation/low level alarm on right</td>
</tr>
<tr>
<td>564281</td>
<td>HP-50 Lubricator with 4 pumps, provision for flange mounted auto fill, and low level in fill plate</td>
</tr>
<tr>
<td>564282</td>
<td>HP-50 Lubricator with 4 pumps, shaft rotation alarm and low level alarm</td>
</tr>
<tr>
<td>564284</td>
<td>HP-50 Lubricator with 3 pumps, shaft rotation alarm, provision for flange mounted auto fill, and low level in fill plate</td>
</tr>
</tbody>
</table>

† Models with this symbol are CE and ATEX certified
The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

### FIRE AND EXPLOSION HAZARD

When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources, such as cigarettes and portable electric lamps.
- Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline.
- Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.
- Ground all equipment in the work area.
- Use only grounded hoses.
- If there is static sparking or you feel a shock, **stop operation immediately**. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

### EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS forms from distributor or retailer.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

### ELECTRIC SHOCK HAZARD

Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power at main switch before disconnecting any cables and before servicing equipment.
- Connect only to grounded power source.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.
<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SKIN INJECTION HAZARD</strong></td>
</tr>
<tr>
<td>High-pressure fluid from dispense valve, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <strong>Get immediate surgical treatment.</strong></td>
</tr>
<tr>
<td>- Do not point dispense valve at anyone or at any part of the body.</td>
</tr>
<tr>
<td>- Do not put your hand over the end of the dispense nozzle.</td>
</tr>
<tr>
<td>- Do not stop or deflect leaks with your hand, body, glove, or rag.</td>
</tr>
<tr>
<td>- Follow <strong>Pressure Relief Procedure</strong> in this manual, when you stop dispensing and before cleaning, checking, or servicing equipment.</td>
</tr>
<tr>
<td><strong>MOVING PARTS HAZARD</strong></td>
</tr>
<tr>
<td>Moving parts can pinch or amputate fingers and other body parts.</td>
</tr>
<tr>
<td>- Keep clear of moving parts.</td>
</tr>
<tr>
<td>- Do not operate equipment with protective guards or covers removed.</td>
</tr>
<tr>
<td>- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the <strong>Pressure Relief Procedure</strong> in this manual. Disconnect power or air supply.</td>
</tr>
<tr>
<td><strong>SUCTION HAZARD</strong></td>
</tr>
<tr>
<td>Never place hands near the pump fluid inlet when pump is operating or pressurized. Powerful suction could cause serious injury.</td>
</tr>
<tr>
<td><strong>BURN HAZARD</strong></td>
</tr>
<tr>
<td>Equipment surfaces and fluid that’s heated can become very hot during operation. To avoid severe burns, do not touch hot fluid or equipment. Wait until equipment/fluid has cooled completely.</td>
</tr>
<tr>
<td><strong>PERSONAL PROTECTIVE EQUIPMENT</strong></td>
</tr>
<tr>
<td>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</td>
</tr>
<tr>
<td>- Protective eyewear</td>
</tr>
<tr>
<td>- Clothing and respirator as recommended by the fluid and solvent manufacturer</td>
</tr>
<tr>
<td>- Gloves</td>
</tr>
<tr>
<td>- Hearing protection</td>
</tr>
</tbody>
</table>
Installation

**NOTICE**
All installation, maintenance, and repair work must be completed by qualified personnel.

Grounding

- The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides and escape wire for the electric current.

System Connections

- Install each pumping unit with a high pressure check valve in the discharge line adjacent to the pump discharge connection so that pump assembly may be removed from reservoir without loss of lubricant in lines (Fig. 1).
- Install a second of these valves at the point of lubrication to prevent line drainage and feedback of system pressure to pump (Fig. 1).

Drive Mechanism

- A 1-1/4 inch diameter shaft is provided to connect the lubricator to a rotary power source. A woodruff key and key way on the shaft are provided to aid in connecting this source.

- Install protective guards around all drive components.

**NOTICE**
The recommended speed of the box lubricator drive shaft is 3-36 rpm. Do not exceed the maximum value of 36 rpm to avoid pump damage.

Operation

Oil Level

- Remove vent plugs (A) located on the top of the pump sight glasses to allow lubricant to rise in the drip tube to the level of the oil in the reservoir and reduce the priming required at start up (Fig. 2).

- Completely fill the lubricator reservoir with clean filtered lubricant.
NOTE:

- Three sight glasses (B) are provided in the reservoir at various levels to permit observation of fluid level (Fig. 3).
- Oil level should not be allowed to drop below the bottom sight glass.

Pump Priming

To prime the pump:

1. Turn the feed adjustment nut (C) on indicator stem as far as possible in a clockwise direction (Fig. 4).
2. Remove the vent plug (A) on top of the sight glass and fill the housing sight well with oil to 3/8-inch below the discharge of the drip tube (Fig. 5).
3. Replace the vent plug (A). Check the sight glass to insure that it is properly seated against the o-ring (D) to prevent air leakage into the sight well (Fig. 6).
4. Adjust the pumping rate to the desired delivery.
**Pumping Rate**

During the pump suction stroke an amount of oil equal to the pump displacement is drawn through the drip tube into the sight well. The amount of fluid in the sight tube indicates the pumping rate.

**NOTE:** Allow sufficient time to ensure an accurate rate indication. The drip tube flow rate is only accurate after the pump has operated long enough to stabilize the pressure inside the sight well.

There is a time lag at start-up, during low pumping rates, and during pump rate changes.

**Regulating Pump Rate**

The pumping rate is adjusted by hand during the pump suction stroke.

- Turn feed adjustment nut (C) clockwise as far as it can go to achieve maximum pumping rate (Fig. 7).

- Turn the feed adjustment nut (C) counter-clockwise to reduce the pump stroke and delivery (Fig. 8).
Service

Pressure Relief Procedure

The equipment stays pressurized until pressure is relieved. To reduce the risk of serious injury from pressurized fluid, accidental spray from the dispenser, or splashing fluid, follow this Pressure Relief Procedure whenever you:

- Check, clean or service any system equipment.
- Install or clean fluid nozzles.

1. Disconnect power supply.
2. Open any bleed-type master air valves and fluid drain valves in the system.
3. Leave drain valves open until you have completed repairs and are ready to pressurize system.

NOTICE

- All installation, maintenance, and repair work must be completed by qualified personnel.
- If the correct pumping rate is maintained, no service is required other than periodic replenishment of the reservoir.

Service Instructions

1. Check lubricator operation by observing the drip tube. If the sight glass well pumps dry or no flow is observed, check the following points until the cause is determined and corrected:
   - Check the vent plug (A) for proper sealing. Any knicks or cracks in the rubber plug will cause an air leak into the sight glass (Fig. 9).

   ![Fig. 9]

   A

- Check shaft rotation. If the lubricator shaft is not rotating, determine the cause and repair as necessary.
- Check oil level and viscosity. Be sure the reservoir is filled with oil, and if necessary heat the reservoir to maintain viscosity at the correct level for the desired flow.
- Check pump priming. If necessary, prime the pump in accordance with the operating instructions, page 6.
- Check the feed adjustment (C, Fig. 7 and Fig. 8, page 7) and adjust if the pumping rate is too low.
- Check the actuating linkage for proper operation. If defective, isolate the broken part and repair or replace as required.
2. If items listed in step 1 are not the cause, check the pump assembly. The following items should be checked before removing the pump assembly from the cover.

- Check the sight glass for inward leakage due to a crack in the sight glass, improper sight glass seating, or a defective o-ring. Repair as required (Fig. 6, page 6).

- Check for an obstruction in the drip tube and remove if found.

**NOTE:**
- Keep a spare pump on hand for use during emergencies and when the pump is being repaired.
- If a spare pump is available, it will not be necessary to stop the equipment the lubricator is installed on or to empty the reservoir.

**Fig. 10**

- If these steps do not isolate the malfunction:


  b. Disconnect the discharge tubing (E) (Fig. 10).

  c. Remove 4 screws (F) holding pump to cover (Fig. 10).

  d. Remove the pump assembly (G) (Fig. 10).

  *If the sight glass fills with lubricant proceed as follows:*

  a. **Remove system pressure**, page 8.

  b. Remove vent plug (A) (Fig. 11).

  c. Allow the lubricant to pump down to the proper level.

  d. Replace vent plug (A).

  The pump should operate normally.
• If the sight glass continues to fill with lubricant:
  a. Check all terminal check valves for proper operation.

  b. **Relieve system pressure**, page 8.

  c. If valves are operating properly, disconnect the discharge tubing (E) (Fig. 10)

  d. Remove 4 screws holding pump to cover (Fig. 10, page 9).

  e. Remove pump assembly.

  f. Clean pump assembly.

  g. Reinstall pump assembly to cover and check operation.

3. If the sight glass still fills with lubricant it may be caused by temperature variation.

  • When the unit is not operating:


  b. Remove vent plug (Fig. 11, page 9).

  c. Allow lubricant to pump down to the proper level.

  d. Replace vent plug.

  The pump will now function properly. The sight glass may fill with fluid without affecting the operation of the lubricator as long as the drip tube remains above the lubricant level to show the rate of pumping.

• When the unit is operating the sight level will vary depending on temperature variations.

  a. If the level falls to less than 1/4 inch above the sight glass flange, add lubricant to the proper level (3/8 inch below the discharge of the drip tube) through the vent hole.

  b. If the level is too high, remove the vent plug and allow the unit to pump down before replacing the vent plug.

**Other servicing that may be required is listed below:**

• Clean lubricator periodically to eliminate contamination that may have occurred in the oil. To accomplish this, remove all pumping units and clean the pumps and reservoir by brushing loose all foreign matter, dipping in solvent and blowing dry with compressed air.

• If external leakage is observed, determine the cause (loose bolts, defective gaskets, or seals) and repair as required.
### High Pressure Lubricator Parts

<table>
<thead>
<tr>
<th>Ref</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty</th>
<th>Ref</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>556340</td>
<td>BEARING, ecc shaft</td>
<td>2</td>
<td>23</td>
<td>556836</td>
<td>LABEL, operating instructions</td>
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<td>2</td>
<td>556343</td>
<td>BEARING, slv, bronze</td>
<td>2</td>
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<td>556872</td>
<td>LABEL, identification</td>
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<tr>
<td>3</td>
<td>560148</td>
<td>BUSHING, reservoir</td>
<td>2</td>
<td>25</td>
<td>557062</td>
<td>SHAFT, crank</td>
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<td>560157</td>
<td>NUT, fluid adjustment</td>
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<td>26</td>
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<td>RESERVOIR</td>
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<td>560169</td>
<td>PIN, lever</td>
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<td>COVER, reservoir</td>
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<td>560171</td>
<td>PIN, adjustment rod</td>
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<td>560483</td>
<td>LEVER, shoe</td>
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<td>7</td>
<td>555444</td>
<td>PLUG, 3/8” pipe square head</td>
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<td>PUMP (page 12)</td>
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<td>8</td>
<td>555450</td>
<td>PLUG, 3/4” pipe hex soc</td>
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<td>KEY</td>
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<td>555450</td>
<td>PLUG, hex-sckt 1 1/4 npt</td>
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<td>110208</td>
<td>PLUG, pipe, headless</td>
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<td>15W154</td>
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<td>15W154</td>
<td>WASHER</td>
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<td>12</td>
<td>555603</td>
<td>SCREW, 3/8-16 X .75 soc hd cap</td>
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<td>555451</td>
<td>PLUG, steel</td>
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<td>13</td>
<td>555605</td>
<td>SCREW, 3/8-16 X 1.25 soc hd cap</td>
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<td>563024</td>
<td>SWITCH, low level exp proof (not shown)</td>
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<td>14</td>
<td>555606</td>
<td>SCREW, 3/8-16 X 3.50 soc hd cap</td>
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<td>38</td>
<td>557122</td>
<td>COVER, shaft end</td>
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<tr>
<td>15</td>
<td>556523</td>
<td>WASHER, copper 1.0 id</td>
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<td>555483</td>
<td>SCREW, #4 X .187 pan head self tap</td>
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<td>16</td>
<td>555664</td>
<td>O-RING .228 buna-n 70 duro</td>
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<td>40</td>
<td>556745</td>
<td>GASKET</td>
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<tr>
<td>17</td>
<td>556579</td>
<td>SEAL,LIP 1.25 ID 2.00 OD .25 W</td>
<td>2</td>
<td>41</td>
<td>563090</td>
<td>PLATE, filler</td>
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<tr>
<td>18</td>
<td>127153</td>
<td>SIGHTGLASS</td>
<td>3</td>
<td>42</td>
<td>557149</td>
<td>STRAINER, filter</td>
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<td>19</td>
<td>560281</td>
<td>ROD, fluid adjusment</td>
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<td>20</td>
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<td>LEVER, pump</td>
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<td></td>
</tr>
</tbody>
</table>
High Pressure Lubricator Parts

Ref | Part No. | Description | Qty
---|---------|-------------|---
43  | 557171  | COVER, oil hole | 1
44  | 557391  | PLUG, dryseal, 1/4 nptf | 1
45  | 555451  | PLUG, pipe | 1
46  | 556517  | SCREW, socket head 3/8 x 15 x 0.875 | 1
47  | 555424  | PIN, 0.312 Diameter groove type 2A | 2

Pump Parts

Ref | Part No. | Description | Qty
---|---------|-------------|---
101 | 560162  | NUT | 1
102 | 560172  | PIN, collar | 1
103 | 555564  | RING, retainer | 1
104 | 560195  | RING, retaining spring | 1
105 | 556522  | DISK, thrust | 1
106 | 555691  | O-RING, -127 | 1
107 | 555694  | O-RING, -217 | 1
108 | 560233  | SPACER, .995 id x .500 long | 1
109 | 560235  | TUBE, drip | 1
110 | 562989  | TUBE, suction | 1
111 | 555724  | PLUG, #4 SAE | 1
112 | 564151  | KIT, sight glass | 1
113 | 556746  | GASKET, suction tube nut | 1
114 | 556747  | O-RING | 2
115 | 555746  | SEAL, wire lead .437 diameter | 1
116 | 556936  | SPRING, check valve | 1
117 | 556937  | SPRING, plunger | 1
118 | 560340  | SEAT, valve | 1
119 | 560344  | VALVE, | 1
120 | 557155  | STRAINER, suction | 1
122 | 560425  | PLUNGER, pusher | 1
123 | 563111  | VALVE, plunger | 1
124 | 560443  | HOUSING, pump | 1
125 | 557191  | COLLAR, piston | 1
126 | 560492  | COLLAR | 1
Check Valve Parts Drawing and Parts List

564335 - Discharge check valve
564336 - Terminal check valve

*Supplied with Discharge Check Valve 564335 only.
Not supplied with Terminal Check Valves.

564335 Discharge Check Valve - 3/8” OD Tube

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>556783</td>
<td>NUT, Gland</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>556781</td>
<td>COLLAR</td>
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<td>4</td>
<td>556936</td>
<td>SPRING, Valve</td>
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<tr>
<td>5</td>
<td>560343</td>
<td>VALVE</td>
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<td>6</td>
<td>560339</td>
<td>SEAT, Valve</td>
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<td>556747</td>
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<tr>
<td>8</td>
<td>15D289</td>
<td>BODY, Check Valve</td>
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<tr>
<td>9</td>
<td>558823</td>
<td>NIPPLE, Check Valve</td>
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<tr>
<td>10</td>
<td>560161</td>
<td>NUT</td>
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</tbody>
</table>

564336 Terminal Check Valve

<table>
<thead>
<tr>
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<th>Part No.</th>
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<td>556783</td>
<td>NUT, Gland</td>
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<td>VALVE</td>
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<td>6</td>
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<td>556747</td>
<td>O-RING</td>
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<td>15D289</td>
<td>BODY, Check Valve</td>
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<td>10</td>
<td>560161</td>
<td>NUT</td>
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</tbody>
</table>

Steam Heater Parts Drawing and Parts List

<table>
<thead>
<tr>
<th>Ref.</th>
<th>Part No.</th>
<th>Description</th>
<th>Qty.</th>
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<tbody>
<tr>
<td>1</td>
<td>558792</td>
<td>ELBOW, 1/4 NPT Steam Pipe</td>
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<td>561335</td>
<td>SEAL PLUG, Steam Pipe</td>
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<tr>
<td>4</td>
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</table>
Technical Data

Plunger Diameter 1/4 in. (0.64 cm)
HP-50 Maximum Operating Pressure 50,000 psi (344 MPa, 3,447 bar)
Reservoir Capacity 9 quarts (8.5 liters) from centerline of top gauge glass to centerline of bottom gauge glass

Maximum Pumping Rate based on SAE 40 oil — (approx. 4 drops) 0.008 in³ (0.133 cc) per stroke
Minimum Pump Rate 0.001 in³ (0.017 cc) at max. pressure
Operating Speed 3 to 36 rpm
Reservoir Heating (optional) Steam or Electric
Lubricant Viscosity 100 to 5000 SUS
Operating Temperature -20°F to 120°F (-29°C to 49°C)

Construction Materials

Reservoir and Cover - Heavily ribbed cast iron.

Cylinder - Hardened alloy steel, precision-honed.

Plunger - Hardened alloy steel, precision-ground and fitted.

Valves - Poppet type, flat face, hardened and ground alloy steel.

Valve Seats - Hardened and ground alloy steel.

Driveshaft - Integral crankshaft type, hardened, ground and polished alloy steel, machined from solid bar.

Bearings - Bronze bushed, high load capacity, long-life, self-lubricating type.

Regulating Lever - Forged steel.

LUBRICATOR CHARACTERISTICS

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of Feeds</th>
<th>Maximum Operating Pressure</th>
<th>Reservoir Capacity (Quarts)†</th>
<th>Plunger Diameter (Inches)</th>
<th>Drops / Stroke</th>
<th>cu. in. / Stroke</th>
<th>cc / Stroke</th>
<th>Strokes / min.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP-50</td>
<td>1 to 4</td>
<td>50,000</td>
<td>9</td>
<td>1/4</td>
<td>4</td>
<td>1</td>
<td>0.008</td>
<td>0.033</td>
</tr>
</tbody>
</table>

† Usable reservoir capacity, as measured from centerline of top gauge glass to centerline of bottom gauge glass (see page 11).

‡ All displacements are based on SAE 30 oil (500 S.U.S. at 100°F.) at room temperature. Volumetric equivalents of drops are: 14,115 drops equal 1 pint, 490 drops equal 1 cu. in., 30 drops equal 1 cc.
Dimensions

- 3.125 in. (7.93 cm)
- 2.75 in. (6.98 cm)
- 11.75 in. (29.84 cm)
- 7.68 in (19.5 cm)
- 4.125 in. (10.4 cm)
- 16.625 in. (42.22 cm)
- 14.765 in (37.5 cm)
- 11.56 in (29.36 cm)
- 13.5 in. (34.29 cm)
Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco’s written recommendations.

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