

Manzel® Model HP-15 High Pressure Lubricators



ORDERING INFORMATION

562918	HP-15 six-feed gear box, no pumps installed
562919	HP-15 six-feed gear box with six HP-15 pumps
564272	HP-15 six-feed gear box with six HP-15 pumps, 230V heater
562951	HP-15 pump assembly
564151	HP-15 sight glass kit - includes o-ring and rubber plug
557207	115 V electric heater, Hazardous Area, Class 1, Group B
557208	230 V electric heater, Hazardous Area, Class 1, Group B

DESCRIPTION

The HP-15 lubricator comprises one to six integral sight and pump assemblies in a cast iron reservoir. The unit is designed for direct connection to an electric motor/speed reducer power source. A terminal check valve such as part number 564336 is recommended in the lubrication system. When required to maintain proper oil viscosity, the reservoir can be fitted with an optional steam or electric heater.

SPECIFICATIONS

Plunger Diameter	1/4 inch (6.35 mm)
Max Operating Pressure	18,000 psi (1241 bar)
Maximum Pumping Rate	0.008 in ³ (0.133 cc, approx 4 drops) per stroke based on SAE 40 Oil
Lubricant Viscosity	100 – 5000 SUS
Operating Temperature	-20°F to 120°F (-29°C to 49°C)

OPERATION

Oil Level –

When necessary, completely fill the lubricator reservoir with clean filtered lubricant. Three sight glasses, provided in the reservoir at various levels, permit observation of fluid level. Oil level should not be allowed to drop below the bottom sight glass. During the initial filling, the vent plugs at the top of the pump sight glasses should be removed. This allows lubricant to rise in the drip tube up to the level of the oil in the reservoir and reduces the priming required at start up.

Pump Priming –

If the sight well on the pump does not contain oil, the pump should be primed. Pumps may be primed while the lubricator shaft is rotating as follows:

- Adjust the pumping rate to the maximum setting by turning the adjustment nut on the indicator stem as far as possible in a clockwise direction.
- Remove the vent plug 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.
- Replace the vent plug. Check the sight glass to insure that it is properly seated against the O-ring to prevent air leakage into the sight well.
- Readjust the pumping rate to the desired delivery.

Pumping Rate –

The pumping rate is indicated at the drip tube inside the sight glass. During the pump suction stroke, fluid is drawn into the pump from the sight well. This creates a partial vacuum in the sight well, permitting atmospheric pressure in the lubricator reservoir to force an amount of oil equal to the pump displacement through the drip tube into the sight well. The rate is adjustable for each pump assembly by means of the pump regulator which varies the stroke of the positive displacement, reciprocating pump assembly.

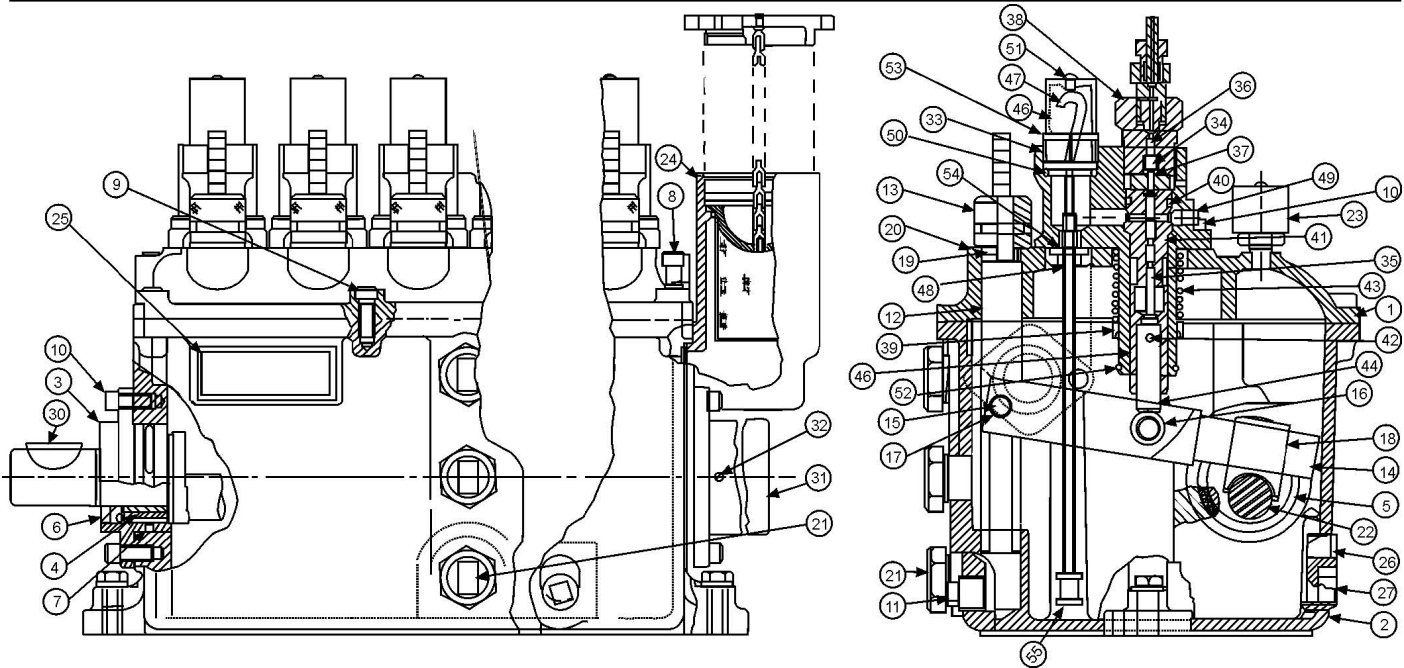
Caution –

The drip tube flow rate is accurate after the pump has operated long enough to stabilize the pressure inside the sight well. There is a time lag at start-up, low pumping rates, and during pump rate changes. Allow sufficient time to insure an accurate rate indication.

Regulating Pump Rate –

The pumping rate can be varied infinitely within the range of minimum to maximum by means of the graduated pump regulators which project through the reservoir cover. The regulators are easily adjusted by hand during the pump suction stroke. Maximum pumping rate is achieved when the adjustment nut on the sight indicator stem is turned in a clockwise direction as far as it can go. In this position the sight indicator stem projects the maximum distance indicating maximum pumping stroke. When the adjusting nut is turned in a counter-clockwise direction, delivery reduces, because of a reduction in pump stroke, until minimum delivery is obtained.

Note: To retain the hydraulic seal between the plunger and the cylinder walls, minimum delivery must not go below 1/2 drop, .001in³ (0.017 cc) per pump stroke.



HP-15 LUBRICATOR PARTS LIST

Ref. No.	Description	Qty. Req.	Part No.	Old Part No.
1	Cover, Reservoir	1	-	-
2	Body, Reservoir	1	-	-
3	Bearing, Shaft	2	560134	402-040-120
4	Bushing, Bearing	2	560149	402-114-320
5	Bushing, Reservoir	2	560150	402-114-330
6	Seal, Shaft	2	556574	423-010-160
7	O-Ring Bearing	2	555663	422-012-270
8	Screw, Cover End	4	555598	419-150-090
9	Screw, Cover Side	32	555595	419-150-060
10	Screw, Bearing	4	558673	419-150-040
11	Plug, Drain, 1/2-14 NPTF	1	124489	-
12	Rod, Feed Adjusting	6	560283	453-030-130
13	Nut, Feed Adjusting	6	560159	410-700-730
14	Lever, Actuating	6	560285	453-040-050
15	Pin, Lever	12	560176	411-700-270
16	Roller, Pin	6	560152	402-172-040
17	Ring, Pin	24	555548	418-010-140
18	Shoe, Lever	6	560484	484-110-020
-19	Retainer, Washer	6	555567	418-090-230
-20	Washer, Friction	6	556748	439-077-110
21	Sight Glass, Reservoir	3	127152	-
22	Crankshaft	1	557063	465-920-030
23	Breather	1	557860	542-847-000
24	Filler Assembly	1	563104	473-040-131
25	Nameplate	1	-	457-008-321
26	Plug, 1-1/4 NPTF Heater Port	1	575001	-
27	Plug, SST, 3/4-14 NPTF	1	111384	-

Ref. No.	Description	Qty. Req.	Part No.	Old Part No.
30	Key, Woodruff	1	555379	409-010-290
31	Cover, Shaft End	1	557122	471-680-090
32	Screw, Shaft End Cover	1	101855	-
33	Pump, HP-15	1	562951	362-390-325
34	Valve Assembly	1	563063	463-160-071
35	Cylinder Assembly	1	563113	477-020-511
36	Spring, Pump Valve	1	556936	458-005-140
37	Gasket, Valve	2	556555	422-040-120
38	Nut, Housing	1	560161	410-700-750
39	Retainer, Spring	1	560491	484-170-020
40	O-Ring, Cylinder	1	555693	422-042-120
41	O-Ring, Cylinder	1	555684	422-040-180
42	Pin, Spring Retainer	1	560175	411-700-260
43	Spring, Plunger	1	556938	458-005-200
44	Pusher, Plunger	1	560424	475-070-010
45	Sleeve, Pusher	1	560462	484-010-110
46	Sight, Vacuum	1	17U990	-
47	Tube, Oil Drip	1	560235	433-700-020
48	Tube Assembly, Suction	1	562992	433-701-153
49	Plug, SST	1	110208	-
50	O-Ring, Vacuum Sight	1	556563	422-042-130
51	Plug, Vent	1	555733	437-700-770
52	Retainer, Housing	1	555557	418-010-360
53	Nut, Hold Down	1	-	410-701-840
54	O-Ring, Suction Tube	1	555687	422-041-120
55	Suction Strainer	1	557155	473-020-471

SERVICE

Lubricator operation can be checked by observing the drip tube. If the correct pumping rate is maintained, no servicing is required other than periodic replenishment of the reservoir. If the sight glass well pumps dry or no flow is observed, check the following points until the cause is determined and corrected.

- a. Check the vent plug for proper sealing. Any nicks or cracks in the rubber plug will cause an air leak into the sight glass.
- b. Check shaft rotation. If the lubricator shaft is not rotating, determine the cause and repair as necessary.
- c. 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.
- d. Check pump priming. If necessary, prime the pump in accordance with the "Operating Instructions".
- e. Check the feed adjustment and readjust if the pumping rate is too low.
- f. Check the actuating linkage for proper operation. If defective, isolate the broken part and repair or replace as required.

If none of the above steps isolate the malfunction, the cause is in the pump assembly. The following items should be checked before removing the pump assembly from the cover.

- a. Check the sight for inward leakage due to a crack in the sight glass, improper sight glass seating, or a defective O-ring. Repair as required.
- b. Check for an obstruction in the drip tube and remove if found.

If the above steps do not isolate the malfunction, disconnect the discharge tubing and remove the pump assembly which is attached to the cover with four screws.

Caution –

Exercise extreme care if equipment is operating. Rotating equipment can cause serious injury. Faulty pumps should be returned to the factory for repair as they contain a selectively fitted cylinder and plunger. A spare pump should be on hand for use during emergencies when a pump is being repaired.

If the sight glass fills with lubricant proceed as follows:

- a. Remove the vent plug and allow the lubricant to pump down to the proper level. Replace the vent plug. The pump should operate normally.
- b. If the sight glass continues to fill with lubricant check all terminal check valves for proper operation. If the valves are operating properly, remove and clean the pump assembly, then reinstall the pump in the system and check operation.
- c. If the sight glass still fills with lubricant it may be caused by temperature variation.
 1. When the unit is not operating, remove the vent plug and allow the lubricant to pump down to the proper level. Replace the 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.
 2. When the unit is operating, the sight level will vary depending on temperature variations. If the level falls to less than 1/4 inch above sight glass flange, add lubricant to the proper level (3/8 inch below the discharge of the drip tube) through the vent hole. 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:

- a. Periodic cleaning of the lubricator is desirable 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 thoroughly drying.
- b. If external leakage is observed, determine the cause (loose bolts, defective gaskets, or seals) and repair as required.

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