LUBRIQUIP
Centralized Lubrication Systems

Manzel
Model HP-15
High Pressure Lubricators
Product Service/Maintenance

Bulletin 40230

DESCRIPTION

The high pressure 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 "Manzel" terminal check valve 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
Maximum Operating Pressure	18,000 p.s.i.
Maximum Pumping Rate	.008 in³ (0.133 cc) per stroke Based on SAE 40 Oil — (approx. 4 drops)
Minimum Pump Rate	.001 in³ (.017 cc) at max. pressure
Reservoir Heating (optional)	Steam or Electric
Lubricant Viscosity	100 to 5000 SUS
Operating Temperature	-20°F to 120°F

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:

a. 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.

b. 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.

c. 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.

d. Readjust the pumping rate to the desired delivery.

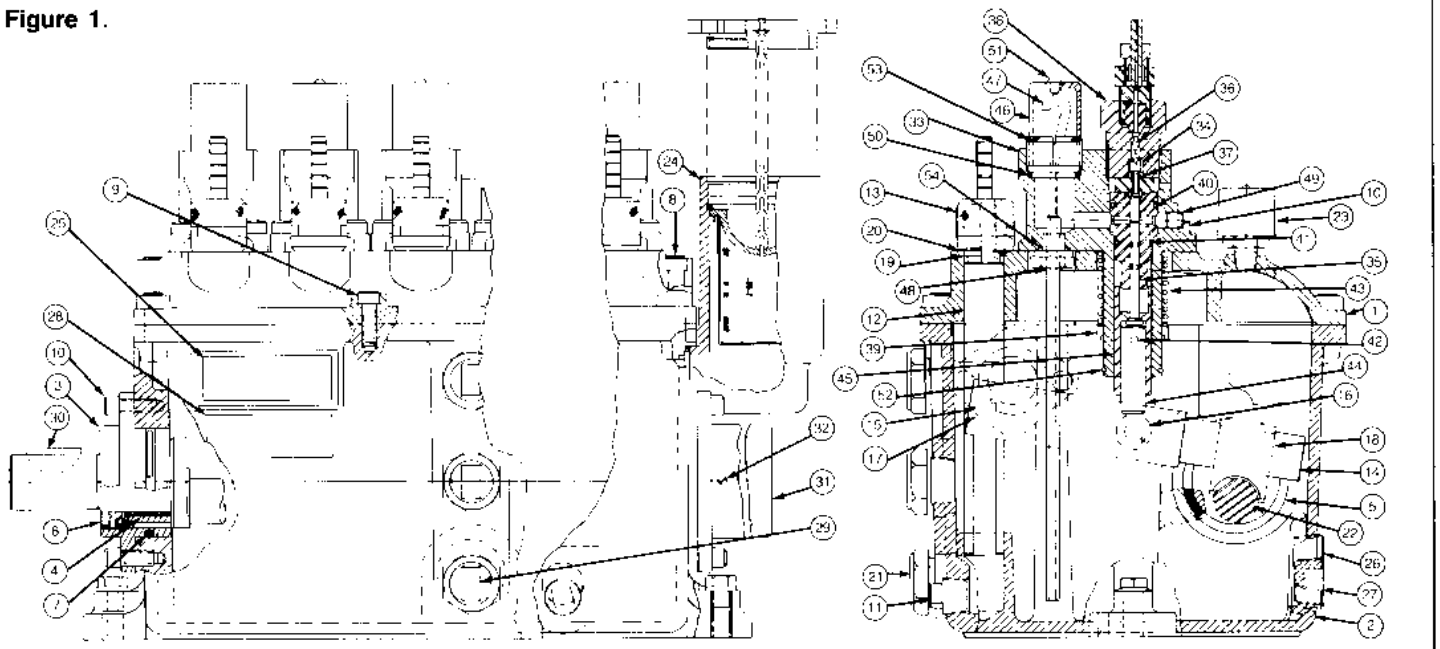
Pumping Rate —
The pumping rate is indicated at the drip tube inside the sight glass. During the pump suction stroke, fluid is drawn into the pump from the sight well. This creates a partial vacuum in the sight well, permitting atmospheric pressure in the lubricator reservoir to force an amount of oil 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, .001 in³ (.017 cc) per pump stroke.

Figure 1.



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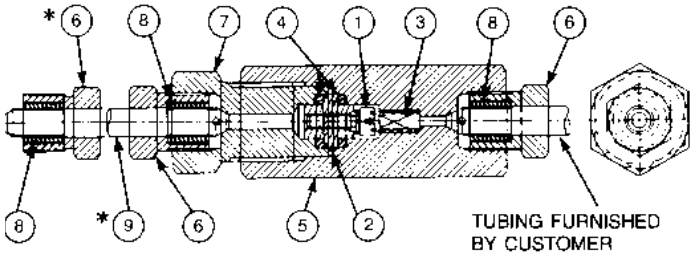
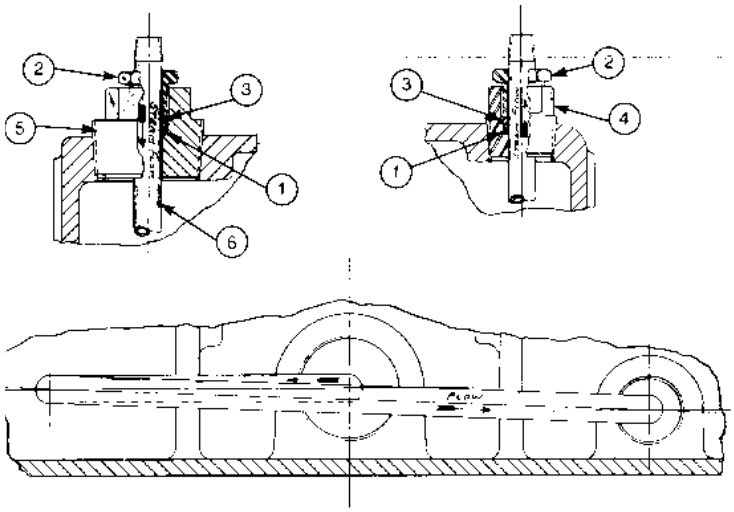


SUPPLIED WITH DISCHARGE
HECK VALVE ONLY. NOT
UPPLIED WITH TERMINAL
HECK VALVES

gure 3.



Check Valve Parts List

Figure & Index No.	Part Number	Description	Quantity Required	Usage Code
2-	463-280-001	LINE CHECK VALVE ASSEMBLY, 3/8" O.D. Tube	1	D
2-	463-280-011	DISCHARGE CHECK VALVE ASSEMBLY, 3/8" Tube	1	E
-1	463-920-000	VALVE, Check	1	
-2	463-910-000	SEAT, Check valve	1	
-3	458-005-130	SPRING, Check valve	1	
-4	439-007-010	GASKET, Check Valve	2	
-5	463-860-880	BODY, Check Valve	1	
-6	446-010-010	NUT, Check valve	2	D
-6	446-010-010	NUT, Check valve	3	E
-7	463-860-870	BODY, Check valve inlet	1	
-8	446-000-010	COLLAR, Check valve	2	D
-8	446-000-010	COLLAR, Check valve	3	E
-9	446-055-000	NIPPLE, Check valve	1	E

Note: This check valve for 3/8" tube. Other sizes available. Refer to factory for parts list details.

Steam Heater Components

Figure & Index No.	Part Number	Description	Quantity Required
3-1	422-050-120	"O" RING SEAL	2
-2	410-701-860	SEAL NUT	2
-3	439-079-030	SEAL GLAND	2
-4	437-700-380	PLUG, 3/4" open	1
-5	437-700-390	PLUG, 1-1/4" open	1
-6	433-700-500	STEAM HEATER TUBE	1

Note: Steam and electric heaters available for all lubricators. Refer to factory for detail parts other than those shown above.

HP-15 Lubricator Assembly Parts List

FIGURE & INDEX NO.	PART NUMBER	DESCRIPTION	QUANTITY REQUIRED
1-	469-838-091	**RESERVOIR ASSEMBLY**	REF.
-1	471-638-030	COVER, Reservoir	1
-2	469-838-030	BODY, Reservoir	1
-3	402-040-120	BEARING, Shaft	2
-4	402-114-320	BUSHING, Bearing	2
-5	402-114-330	BUSHING, Reservoir	2
-6	423-010-160	SEAL, Shaft	2
-7	422-012-270	"O" Ring Bearing	2
-8	419-150-090	SCREW, Cover end	4
-9	419-150-060	SCREW, Cover side	8
-10	419-150-040	SCREW, Bearing	4
-11	412-130-160	PLUG, Drain hole	1
-12	453-030-130	ROD, Feed adjusting	6
-13	410-700-730	NUT, Feed adjusting	6
-14	453-040-050	LEVER, Actuating	6
-15	411-700-270	PIN, Lever	12
-16	402-172-040	ROLLER, Pin	6
-17	418-010-140	RING, Pin	24
-18	484-110-020	SHOE, Lever	6
-19	418-090-230	RETAINER, Washer	6
-20	439-077-110	WASHER, Friction	6
-21	438-010-030	SIGHT GLASS, Reservoir	3
-22	465-920-030	CRANKSHAFT	1
-23	542-847-000	BREATHER	1
-24	473-040-131	FILLER ASSEMBLY	1
-25	457-008-321	NAMEPLATE	1
-26	412-140-060	PLUG, 1-1/4" Heater opening	1
-27	412-140-040	PLUG, 3/4" Heater opeing	1
-28	457-002-232	PLATE, Operating instructions	1
-29	438-028-060	REFLECTOR, Gauge glass	3
-30	409-010-290	KEY, Woodruff	1
-31	471-680-090	COVER, Shaft end	1
-32	415-110-060	SCREW, Shaft end cover	1
1-	362-390-325	**PUMP UNIT, HP-15**	6
-33	477-140-100	HOUSING, Pump	1
-34	463-160-071	VALVE ASSEMBLY	1
-35	477-020-511	CYLINDER ASSEMBLY	1
-36	458-005-140	SPRING, Pump valve	1
-37	422-040-120	GASKET, Valve	2
-38	410-700-750	NUT, Housing	1
-39	484-170-020	RETAINER, Spring	1
-40	422-042-120	"O" RING, Cylinder	1
-41	422-040-180	"O" RING, Cylinder	1
-42	411-700-260	PIN, Spring retainer	1
-43	458-005-200	SPRING, Plunger	1
-44	475-070-010	PUSHER, Plunger	1
-45	484-010-110	SLEEVE, Pusher	1
-46	438-036-070	SIGHT, Vacuum	1
-47	433-700-020	TUBE, Oil drip	1
-48	433-701-153	TUBE ASSEMBLY, Suction	1
-49	503-485-000	PLUG	1
-50	422-042-130	"O" RING, Vacuum sight	1
-51	437-700-770	PLUG, Vent	1
-52	418-010-360	RETAINER, Housing	1
-53	401-701-840	NUT, Hold down	1
-54	422-041-120	"O" RING, Suction Tube	1

ERVICE

ubricator operation can be checked by observing the rip tube. If the correct pumping rate is maintained, o servicing is required other than periodic replenish- ient of the reservoir. If the sight glass well pumps ry or no flow is observed, check the following points ntil the cause is determined and corrected.

. Check the vent plug for proper sealing. Any nicks or cracks in the rubber plug will cause an air leak into the sight glass.

. 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".

. Check the feed adjustment and readjust 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.

none of the above steps isolate the malfunction, the ause is in the pump assembly. The following items hould be checked before removing the pump ssembly from the cover.

. 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.

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

the above steps do not isolate the malfunction, isconnect the discharge tubing and remove the ump assembly which is attached to the cover with our screws.

aution —

xercise extreme care if equipment is operating. otating equipment can cause serious injury.

aulty pumps should be returned to the factory for epair as they contain a selectively fitted cylinder and lunger. A spare pump should be on hand for use uring 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 re-install 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 as 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, dripping 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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