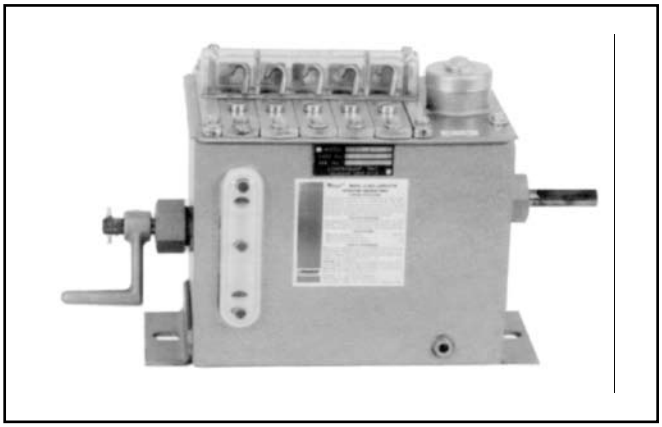
Manzel® Model 25 Lubricator

DESCRIPTION

Manzel Model 25 Force Feed Lubricators are economical, general-purpose units of double plunger design for precise metering of lubricants (either mineral oil base or synthetics). They provide lubrication to cylinder walls, bearings and other moving parts of equipment such as sugar mills, steam engines, presses and general machinery. They are furnished with Clear-Vue Pumping Units whose sight feeds, operating at atmospheric pressure, show the output of lubricant to individual points of lubrication. All working parts are totally enclosed—away from dust, water and impurities—and self-lubricated at all times by the lubricant in the reservoir. Standard Lubricators may be had in 1 to 20 feeds for feeding the same type of lubricant. A choice of Drives and Mounting Arrangements facilitates designing Lubricators into Original Equipment or installation on existing machinery. These can be driven from rotating or reciprocating parts of machines or engines or by independent motors.

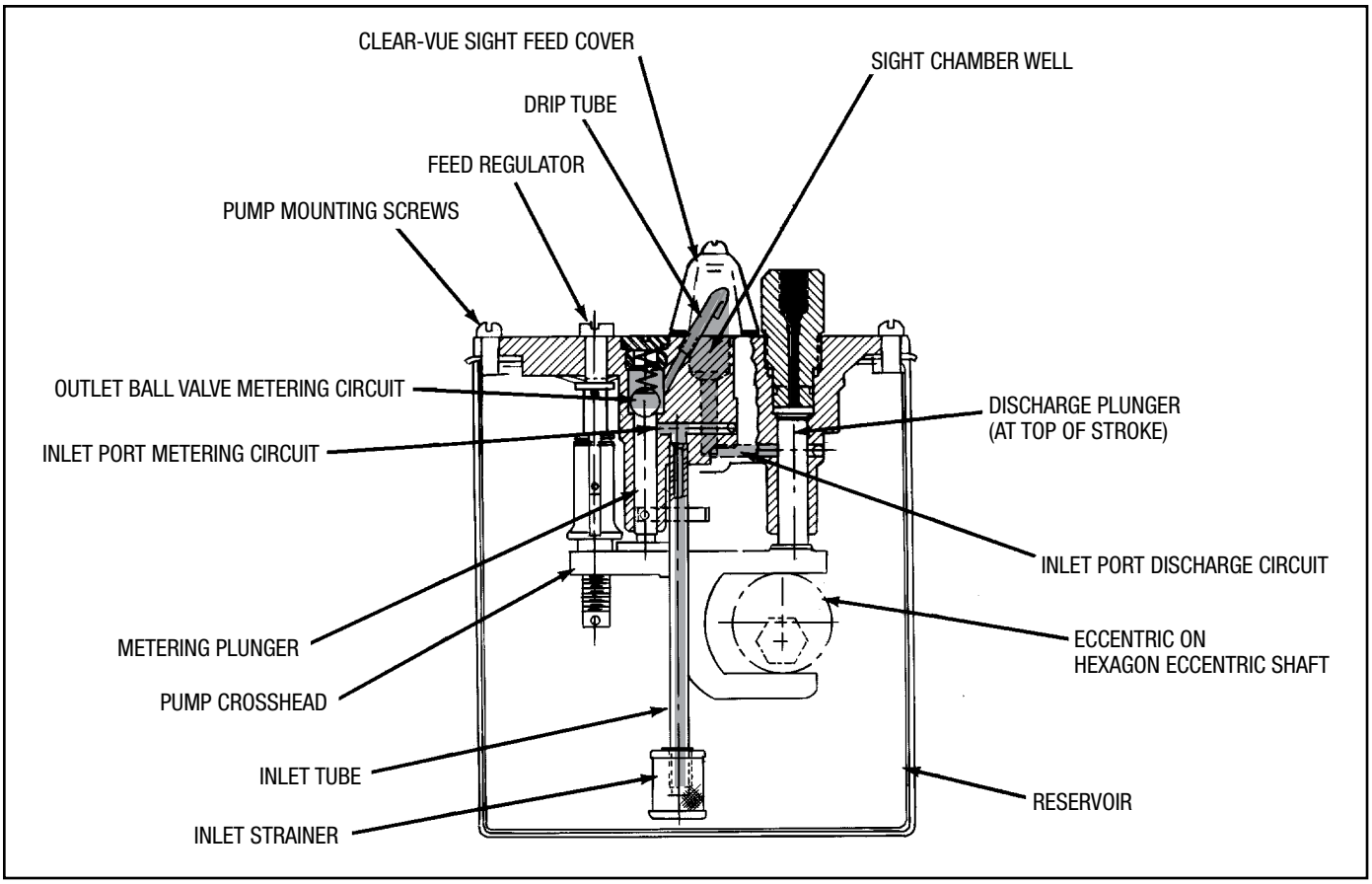


FEATURES/BENEFITS

- **General-Purpose Lubrication:** automatic, precision metering for all types of machinery.
- **Pressures:** Up to 1000 psi
- **Type Pumping Unit:** Clear-Vue. Sight Feed Chamber functions at atmospheric pressure. Shows amount of lubricant being pumped.
- **Unitized Construction:** Contains complete feed regulating mechanism. Equipped with inlet strainer.
- **Number of Feeds:** 1 to 20 per Lubricator, standard.
- **Displacement, Output:** 1/4 to 12 drops per stroke with 5/16 in plunger; 1/6 to 6 drops per stroke with 3/16 in plunger.
- **Available Drives:** Direct Rotary (1:1), Ratchet, 37.5:1 and 75:1 internal gear reductions.
- **Reservoirs:** Single Compartment, sheet metal construction.
- **Feed Regulator:** External screw-type precisely adjustable while idle or in operation.
- **Removable Pumping Unit:** Self contained. All units interchangeable - remove two pump screws and lift out.
- **Hand Crank:** Standard. Convenient for rapid priming of lines before start-up or for momentarily increasing supply of lubricant. Does not affect adjustment or individual pumping units. Replaces obsolete Kipp Model 50 Box Lubricators.

SPECIFICATIONS	
Reservoir	Heavy-gauge fabrication sheet steel
Cylinder	Cast iron
Plunger	416 hardened SS, precision-ground
Valve	Hardened stainless steel balls
Eccentrics	Sintered metal, single throw on hexagon eccentric shaft
Gaskets, Seals	Standard for mineral oil base lubricants. Special materials available for synthetics
Filler Cup	Round with vents and strainer
Discharge Check Valve	Double ball discharge check valve assembly with 1/4 in NPSF vertical outlet
Finish	All ferrous metal drive parts Parco-Lubrited. Reservoir exterior, cover and pumps painted with durable hammertone gray finish. Nickel plate, available.

ASSEMBLY



OPERATION

CLEAR-VUE PUMPING UNIT – Model 25 Lubricators operate on a double plunger pump principle with a metering and a discharge plunger actuated through a yoke by an eccentric on the eccentric shaft. The metering plunger controls the amount of lubricant fed to the discharge plunger. This metered amount is adjusted by means of an external Feed Regulator Screw, which adjusts the stroke length. The lowermost position of the plunger is varied by the Feed Regulator Screw, however the uppermost position to which the plunger rises remains constant.

On the downstroke, the metering plunger draws lubricant up through the inlet tube, over the inlet valves and into the metering pump cylinder. On the upstroke, the metering plunger seats its inlet valves and opens its spring-loaded outlet valve forcing the metered amount of lubricant, at low pressure, out the drip tube into the Sight Chamber Well at atmospheric pressure. On the same downstroke, the discharge plunger opens the cross port to the Well and draws the metered amount of lubricant into the discharge pump cylinder. This path is shown in light blue on the Assembly Drawing.

Finally, on the upstroke, the discharge plunger closes the cross port from the Sight Well and forces the metered amounts of lubricant over the discharge valves and into the line, as shown in solid blue on the Assembly Drawing.

CLEAR-VUE – Sight Feed Chamber contains no “sight feed fluid” and functions at atmospheric pressure. Molded glass sight cover and dust shield in various lengths for 1 to 8 pumping units. Drip tube for each line indicates amount of lubricant fed each point of lubrication.

NOTE: Due to design characteristics, the Model 25 pump can only be used in pump to point system. Components such as flow sensors and divider valves should not be used. Only check valves are permitted between the pump and the lube point.

OPERATING INSTRUCTIONS

LUBRICATOR INSTALLATION AND OPERATION – The Manzel Model 25 Lubricator consists of a metal reservoir which contains the drive mechanism, ratchet or rotary, the individual pump units and accessory equipment as ordered.

The Lubricator should be solidly mounted and aligned to connect the drive shaft to the proper stroking or rotary motion. This drive motion, through the Lubricator drive, should operate the Lubricator eccentric and hand crank shaft between 3 and 60 RPM. There is one pump stroke for every revolution of the hand crank shaft, which is an extension of the eccentric shaft. The proper eccentric shaft RPM should be determined from the required maximum and minimum pump feed rates. The RPM selected should be such that, when each pump is set at its required feed rate, the feed rate can still be increased or decreased by the feed regulator screw. In most cases, due to the wide adjustment of the pump units, there will be considerable allowance in the selection of the proper eccentric shaft speed.

> **Note:** this eccentric shaft speed will seldom be the same as the Input shaft speed, but will always be the same speed as the hand crank shaft extension.

The individual pumps operate on a double plunger principle with the metering and discharge plungers actuated through a yoke or crosshead by an eccentric on the eccentric shaft. The small or metering plunger draws a metered amount of oil from the reservoir over the inlet ball valves and forces it over the outlet ball valve through the drip tube and into the clear-vue sight well at atmospheric pressure. The discharge plunger draws the metered amount of oil along with air from the sight well over the inlet sleeve valve and forces this mixture over the ball discharge valves toward the point of lubrication. The stroke of the small metering plunger is varied to change the metered oil intake by means of the external feed regulator screw. The stroke of the discharge plunger is constant.

IMPORTANT–KEEP LUBRICATOR CLEAN – First, use only new or filtered lubricant. Periodic cleaning of the Lubricator is recommended, since lubricant is subject to fouling from atmospheric dusts and additives. To do this, remove all pumping units; clean them and the reservoir by dipping and brushing in a cleaning solvent. Clean all lubrication tubing and check valves thoroughly at the same time. Next, recharge Lubricator and bleed lubrication lines at terminal check valve to assure full lubrication before putting equipment back into operation.

STARTING INSTRUCTIONS – Fill Lubricator reservoir with new or filtered lubricant to top of reservoir gauge glass. For initial start-up, adjust pump for maximum delivery by turning feed regulator as indicated by directional arrow. Then, operate pumps at this setting and bleed lubrication lines at terminal check valve to assure full lubrication. The Lubricator is now ready for operation.

FEED RATE REGULATION – Each pumping unit is regulated independently by means of a feed regulator. To decrease the feed, turn the feed regulator clockwise. To increase the feed, turn counter-clockwise. (Follow directional arrow.)

HAND CRANK OPERATION – The hand crank on the end of the Lubricator is for use before starting or for momentarily increasing lubricant supply while the Lubricator is in operation. It operates all feeds at once, but does not affect feed regulation.

PUMP REMOVAL AND REPLACEMENT – To remove a pump, stop the Lubricator. Remove the discharge line connection and the pump mounting screws. Next, loosen the adjacent pump mounting screws. Lift out front end of pump (end with feed regulator screw) pulling it forward and upward at the same time. This will allow the yoke or crosshead to clear the eccentric and the pump can be lifted out. Before replacing a pump, position yoke down as far as possible and then reverse the above procedure.

TROUBLESHOOTING OVERFLOWING SIGHTWELL – If the pump sight well fills and overflows into adjacent sight wells, the cause is dirty or inoperative pump discharge valves. To correct:

1. Flush discharge check valves.
   a. Turn feed regulator to full open.
   b. Operate hand crank rapidly.
2. Remove discharge check valves if condition still exists.
   a. Shut down unit or turn feed regulator to full closed.
   b. Remove discharge line connections.
   c. Remove outlet connection from pump unit.
   d. Remove check valve. Clean and reseat, if necessary, (care must be exercised to prevent marking the bottom surfaces when reseating) or replace as conditions require.
   e. Check top and bottom surfaces of the check valve. These must be free from radial nicks and scratches, as these surfaces seal against the discharge pressure. Any leakage around the threads of the outlet connection can be traced back to dirty or marked check valve cage, outlet connection, or cylinder sealing surfaces.
   f. Install check in pump housing. Make sure the ball and spring side of the cage faces up.
   g. Replace outlet connection.
   h. Replace discharge line connection and put pump back in operation.

ERRATIC PERFORMANCE– Make sure the sight glass is open to atmospheric pressure through the felt gasket between the glass and reservoir. These pumps must be able to bring air into the sight chamber through this gasket. Make certain it is not contaminated with paint or dirt.

GAUGE GLASS LEAKAGE – Drain Lubricator, check for leaks, and replace level sight/gasket if necessary.

SYNTHETIC LUBRICANTS – In general, the use of synthetic lubricants will require that the standard neoprene and Buna-N gaskets and seals for petroleum base lubricants be replaced with Butyl rubber gaskets and seals, Refer to Parts List for the part numbers of the gaskets for use with synthetic lubricants.

MODEL 25 PUMP SPECIFICATIONS

NO. OF FIELDS ◪	PLUNGER	PUMPING UNITS	PUMPING UNIT CHARACTERISTICS ◉ OPERATIONAL											LUBRICANTS MINERAL OILS AND SYNTHETICS ◒	
RANGE: 1-MAX.	NOMINAL DIAMETER (inches)	TYPES AVAILABLE (See Legend Above)	MAX. OPERATING PRESSURE-PSI	DROPS/STROKE		CU. IN./STROKE		C.C./STROKE		DROPS/PINT	DROPS/CU. IN.	DROPS/C.C.	STROKES/MIN.	VISCOSITY (SSU @ 100ºF) ▣	
20	5/16	C	1000	12 MAX.	1/4 MIN	.0245 MAX.	.0005 MIN.	.399 MAX.	.008 MIN.	14.115	490	30	60 MAX.	3 MIN.	5000 MAX.	80 MIN.
	3/16	C	1000	6 MAX.	1/6 MIN.	.0122 MAX.	.0003 MIN.	.199 MAX.	.005 MIN.	14.115	490	30	60 MAX.	3 MIN.		

◪ Standard maximums regularly in production. Where additional feeds are required, contact factory.

◉ All displacements based on SAE30 Oil (SSU @ 100ºF) at room temperature.

▲ The capacities of reservoirs are originally determined by the number of feeds. Larger ones available on request.

◒ Special sight glass and gasket materials required. All surfaces in contact with lubricant must be free of paint.

▣ Approximate Viscosities--SAE 10 = 200 SSU @ 100ºF; 600W = 2000 SSU @ 100ºF

★ Manzel Lube Line Alert or Lube Sentry should not be used with the Model 25 Box Lubricator. Contact factory for complete details.

DRIVES

DIRECT ROTARY – (1:1) Shaft located either or both ends.

STANDARD RATCHET – (See Graph for drive ratio per degree stroke.) Two variations available: (a) Shaft located either end. The drive reduction ratio depends on the degree stroke taken on the input shaft from a minimum of 13° for a 37-1/2:1 ratio to a maximum of 90° for a 4-1/6:1 ratio. (b) Shaft located front or rear. The drive ratio depends on the degree stroke taken on the input shaft from a minimum of 13° for a 37-1/2:1 ratio to a maximum of 38° for a 9.4:1 ratio.

REDUCED ROTARY DRIVES – 37.5: 1 or 75: 1 internal geared reducers. Available in right or left hand end drive configurations with primer hand on opposite end to drives.

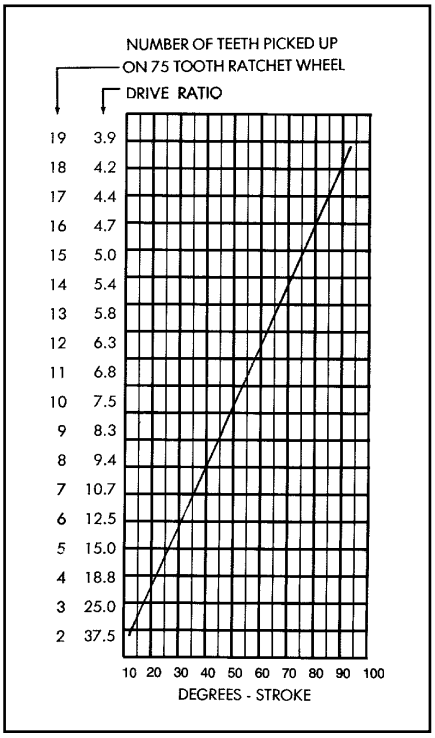


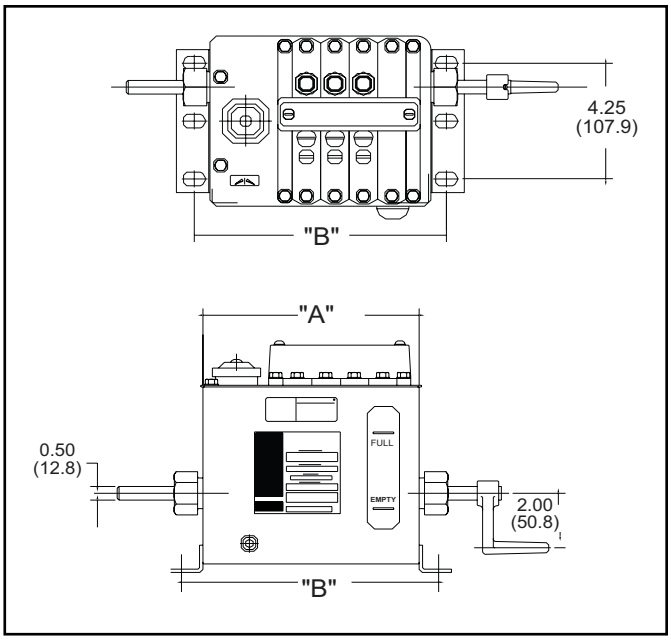
CHART: DRIVE RATIO PER DEGREE STROKE

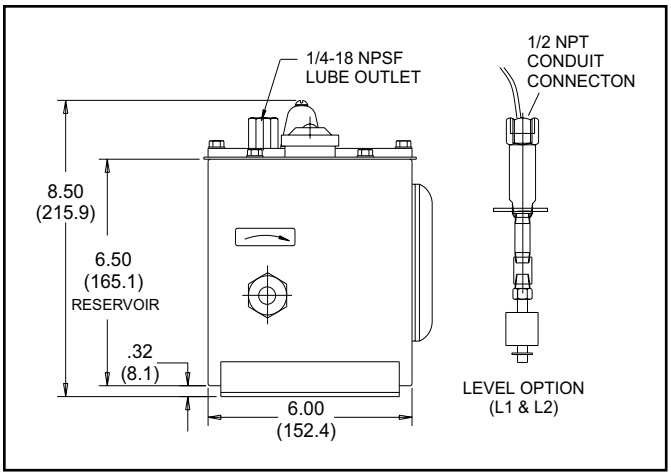
DIMENSIONS

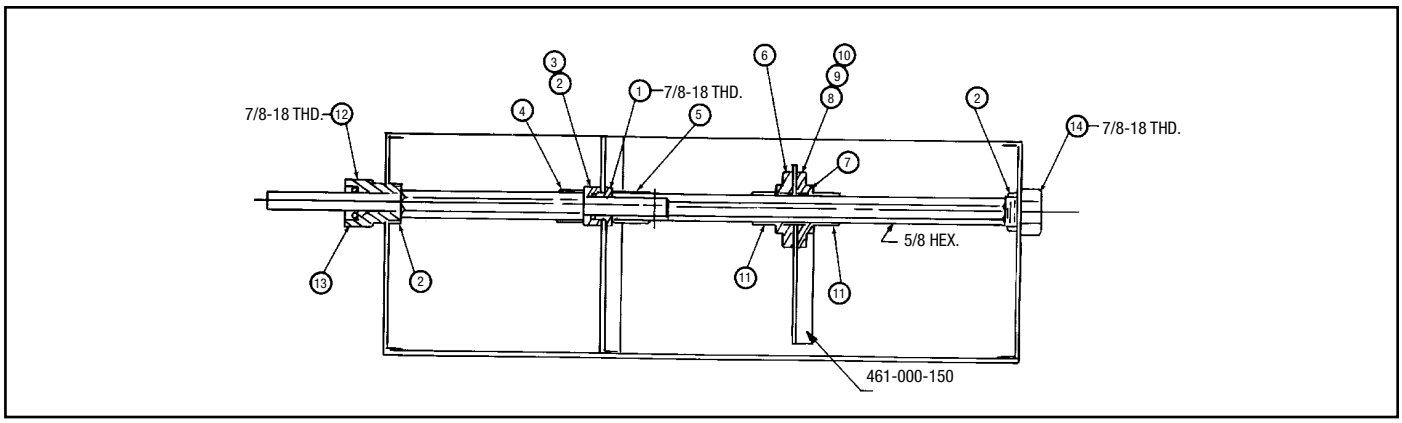
To establish installation requirements, determine the desired number of feeds, the corresponding reservoir length, the capacity, the center-to-center distance of mounting holes, and the drive shaft location.

No. of Feeds	Reservoir Length (A)	C to C or End Lugs (B)	Approx Capacity Pints
1 - 4	7-9/32 in	8-27/32 in	6-1/4
5 - 8	11-19/32 in	12-27/32 in	9-1/4
9 - 12	16-19/32 in	17-27/32 in	13
13 - 16	20-19/32 in	21-27/32 in	16
17 - 20	25-19/32 in	26-27/32 in	19-3/4

Table makes dimensional allowance of 1 in for each Center Bearing, evenly spaced between pumping unit groups of 8.







SEALED COMPT. OPTION		
Description	**Part No.**	**Old Part No.**
(1) Bearing	560146	402-080-020
(2) Nut	560155	410-700-050
(3) Packing	556752	439-079-230
(4) Spacer	560229	424-050-180
(5) Spacer	–	424-050-200

BEARING SUPPORT OPTION		
Description	**Part No.**	**Old Part No.**
(6) Bearing	560142	402-060-000
(7) Bushing	560143	402-060-010
(8) Bearing	560144	402-060-070
(9) Screw	558647	415-020-020
(10) L'Washer	558685	421-060-080
(11) Spacer	560229	424-050-180

END BEARING		
Description	**Part No.**	**Old Part No.**
(12) Bearing	560133	402-040-000
(13) Oil Seal	556575	423-010-180
(14) Bearing	560128	402-000-040

MODEL 25 BOX LUBRICATOR
PART NUMBER CONVERSION CHART

ORDERING INFORMATION		
Description	**Part No.**	**Old Part No.**
5/16 in Complete Pump	562950	321-410-015
3/16 in Complete Pump	562949	321-210-015
Friction Plug Spring Assembly	–	428-165-021
Discharge Valve Assembly (Cage)	563081	463-920-580
Regulating Fork Ring	556492	418-700-240
Regulating Fork Screw	556790	453-030-010
Regulating Stem	–	435-030-020
Regulating Stem Washer	556524	421-700-230
Regulating Stem Spring	557006	458-165-030
Vertical Outlet 1/8 in NPTF	–	480-000-180
Spring, Outlet Valve	556942	458-005-310
Cylinder Plug	560260	437-700-400
Cylinder Plug Washer	556730	439-075-190
Suction Valve Assembly	–	463-920-091
Strainer	563101	473-020-091
3/16 in dia Ball	–	410-010-030
9/32 in dia Ball	–	401-010-060
Drip Tube	560241	433-700-520
3/8 in dia Ball, Outlet Valve	–	401-010-090
Groove Pin Regulating Fork	–	411-030-400
Flareless 1/8 NPTF 1/4 in O.D. Straight	556627	435-090-040
Flareless 1/8 NPTF 5/16 in O.D. Straight	–	435-090-070
Flareless 1/8 NPTF 3/16 in O.D. Straight	–	435-090-030
Flareless 1/8 NPTF 3/8 in O.D. Straight	–	435-090-090
Flareless 1/8 NPTF 1/4 in O.D. Elbow	556630	435-130-040
Flareless 1/8 NPTF 5/16 in O.D. Elbow	–	435-130-060
Flareless 1/8 NPTF 3/16 in O.D. Elbow	–	435-130-030
Flareless 1/8 NPTF 3/8 on O.D. Elbow	–	435-130-080
Oil Seal Bearing Assembly	562979	402-040-271
Oil Seal Bearing	560133	402-040-000
Oil Seal	556576	423-010-210
Jam Nut	560154	410-700-040
Oil Seal (Synthetic Use)	556575	423-010-180
Eccentric	556792	454-006-000
Bearing	560146	402-080-020
Nut	560155	410-700-050
Packing	545752	439-079-230
Packing	–	439-079-040
Gasket, for Sight Feed Glass 556687	556721	439-071-020
Gasket, for Sight Feed Glass 556688	556722	439-071-030
Gasket, for Sight Feed Glass 556689	555741	439-071-040
Gasket, for Sight Feed Glass 556690	556723	439-071-050

ORDERING INFORMATION		
Description	**Part No.**	**Old Part No.**
Gasket, for Sight Feed Glass 556691	555742	439-071-060
Gasket, for Sight Feed Glass 556692	556724	439-071-070
Gasket, for Sight Feed Glass 556693	555743	439-071-080
Gasket, for Sight Feed Glass 556694	556725	439-071-090
Sight Feed Glass	556687	438-028-070
Sight Feed Glass	556688	438-028-080
Sight Feed Glass	556689	438-028-090
Sight Feed Glass	556690	438-028-100
Sight Feed Glass	556691	438-028-110
Sight Feed Glass	556692	438-028-120
Sight Feed Glass	556693	438-028-130
Sight Feed Glass	556694	438-028-140
Sight Glass Fastening Strip	557035	461-000-110
Pump Blank Off Plate	557036	461-000-130
Center Sight Glass Fastening Strip	557037	461-000-140
Gauge Glass Assembly	564316	438-028-171
Gauge Glass	558817	438-028-020
Plug	561334	437-700-030
Cap Plug	–	437-700-100
Washer	558702	439-060-020
Washer Guide	–	484-040-000
Gauge Glass Assembly (Synthetics Use)	–	438-028-181
Washer (Synthetics Use)	–	439-060-050
Filling Cup & Cover Assembly	–	473-040-091
Filling Cup Cover	–	471-680-020
Filling Cup Pin	–	411-700-100
Filling Cup Strainer, 1-3/4 in deep	–	473-020-061
Filling Cup Strainer, 3/4 in deep	–	473-020-041
Hand Crank Assembly	562988	426-011-191
Spring	556941	458-005-300
Groove Pin	556381	411-030-440
Spacer Between Feeds	560227	424-050-150
Spacer Between Center Bearing & Feeds	561342	424-050-190
Pump Fastening Screw	556458	415-640-040
Center Bearing Assembly	560144	402-060-070
Washer, Sight Feed Glass	555744	439-075-170
Drain Plug, 1/4 in NPTF	–	412-130-140
Screw, Cover 10-32 x 5/16 in Round	–	416-470-030
Scr., Sight Gl. Fast. Strip 10-32 x 1/2 in	–	416-470-060
Scr., Sight Feed Glass 10-32 x 1-1/2 in	555513	416-470-130
Scr., Pump 1/4-28 x 3/4 in Lg, Fillister	–	416-501-230
Jam Nut	560154	410-700-040

MODEL 25 BOX LUBRICATOR
PART NUMBER CONVERSION CHART (CONTINUED)

ORDERING INFORMATION		
Description	**Part No.**	**Old Part No.**
Bearing	560128	402-000-040
Ratchet, 75 teeth	–	458-158-070
Brake Assembly	563000	453-000-021
Brake Assembly	563001	453-000-031
Rocker Arm Assembly	563011	453-020-150
Pawl Pin	560185	415-700-050
Pawl	557024	459-218-010
Torsion Spring	557007	458-185-020
Spring Pin	560174	411-700-120
Rocker Arm	560280	453-020-031
Pawl Pin Nut, 5/16-18	555384	410-020-020
Bearing	556341	402-020-050
Drive Shaft Assembly, for 37.5:1	563083	465-020-061
Cam	560286	454-006-020
Grove Pin	–	411-040-290
Drive Shaft Assembly, for 25:1	–	465-020-321
Cam	–	454-006-180
Drive Shaft Assembly, for 18.75:1	–	465-002-010
Cam	–	454-006-150
Spacer, Drive Shaft	560204	421-700-250
Cap Screw, 5/16-18 x 1/2 in Lg	558646	415-020-010
Felt Slug, 1/2 O.D. x 5/16 in Lg	556720	439-071-000
Ratchet Wheel, 75 teeth	557022	459-158-070
Torsion Spring	–	411-700-701
Brake	556298	400-295-200
Rocker Arm Assembly	563002	453-004-151
Rocker Arm Assembly	563003	453-004-161
Spring Pin	–	411-700-520
Rocker Arm	560277	453-004-140
Screw, 5/16-18 x 1-1/2 in Fillister	–	416-110-430
Locker Waster, 5/16 in	558676	421-010-020
Ratchet Shaft	560353	465-001-830
#3 Woodruff Key	555377	409-010-090
Rocker Arm Assembly	564317	453-004-111
Outside Rocker Arm	560445	480-000-020
Adjustable Connection Assembly	564346	480-000-031
Engine Connection	560444	480-000-000
Adjustable Connection	561376	480-000-010
Pin	560184	415-700-000
Set Screw, 5/16-18 x 1/2 in Cup Point	558654	415-490-030
Strainer Assembly	563101	473-020-091
3/8 in Rod, 6 in Lg	561346	453-004-000

ORDERING INFORMATION		
Description	**Part No.**	**Old Part No.**
Cap Screw, 3/8-16 x 1 in Lg	555479	415-030-050
Set Screw, 5/16-18 x 5/8 in Lg Cup Point	555490	415-490-020
Drain Cock	–	405-010-020
Ratchet Cam	–	454-000-240
Ratchet Drive Shaft	–	465-020-071
Ratchet Washer	556720	439-071-000
Ratchet Rocker Arm	560277	453-004-140

ORDERING INFORMATION

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RESERVOIR

R1 – 1-4 Pump Station Reservoir
R2 – 5-8 Pump Station Reservoir
R3 – 9-12 Pump Station Reservoir
R4 – 13-16 Pump Station Reservoir
R5 – 17-20 Pump Station Reservoir

PUMP SIZE

P0 – No Pump
P1 – 3/16 in dia. Plunger, 1000 psi max Operating Pressure
P2 – 5/16 in dia. Plunger, 1000 psi max Operating Pressure

PUMP QUANTITY

0-20 Pumps

DRIVE OPTIONS

D1 – Direct Ratio (1:1)
D2 – Standard Ratchet (Less Ratchet Arm)
D3 – 37.5:1 Ratio
D4 – 75:1 Ratio

DRIVE LOCATIONS

L – Left Hand End
R – Right Hand End

LEVEL OPTIONS

L0 – None
L1 – Low Level Switch (SPST Reed Type), 10 W @ 115VAC, Requires 1 Pump Station per Switch
L2 – High Level Switch (SPST Reed Type), 10 W @ 115VAC, Requires 1 Pump Station per Switch

NOTE: Additional Model 25 Lubricators may be available upon request. Please supply serial number, complete application information and number of units required when requesting quotation.

MODEL 25 SIGHT GLASS ORDERING

Description	Part No.	Old Part No.
Sight Glass, 1 Feed	556687	438-028-070
Sight Glass, 2 Feeds	556688	438-028-080
Sight Glass, 3 Feeds	556689	438-028-090
Sight Glass, 4 Feeds	556690	438-028-100
Sight Glass, 5 Feeds	556691	438-028-110
Sight Glass, 6 Feeds	556692	438-028-120
Sight Glass, 7 Feeds	556693	438-028-130
Sight Glass, 8 Feeds	556694	438-028-140

MODEL 25 GASKET ORDERING

Description	Part No.	Old Part No.
Gasket, 1 Feed	556721	439-071-020
Gasket, 2 Feeds	556722	439-071-030
Gasket, 3 Feeds	555741	439-071-040
Gasket, 4 Feeds	556723	439-071-050
Gasket, 5 Feeds	555742	439-071-060
Gasket, 6 Feeds	556724	439-071-070
Gasket, 7 Feeds	555743	439-071-080
Gasket, 8 Feeds	556725	439-071-090

MODEL 25 COMPONENTS ORDERING

Description	Part No.	Old Part No.
3/16 in Replacement Pump	562949	321-210-015
5/16 in Replacement Pump	562950	321-410-015
Ratchet Arm Assembly	564317	453-004-111

Contact us today!

To receive product information or talk with a Graco representative, call **800-533-9655** or visit us online at **www.graco.com.**