



# MBL Box Lubricators



**INTRODUCTION**

**MODULARITY**

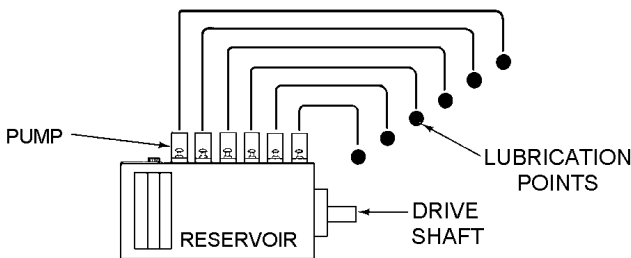
Force Feed Box Lubricators provide true modularity that permits customizing a pump-to-point lubrication system from off-shelf components. The modular variables consist of the following categories of components:

- Pumps
- Reservoir
- Reservoir Heaters
- Reservoir Oil Level Controls
- Drives
- Shaft Rotation Alarm
- Motor and Motor Mounting Bases

In addition to these Force Feed Box Lubricator components, Graco offers a complete line of auxiliary equipment. Also, MBL pumping packages can be used with divider valves in a series progressive installation. Graco’s performance-proven products that may be used with Modular Box Lubricators are listed on the next page along with the respective literature number.

**DESCRIPTION**

A basic pump-to-point system is shown in the illustration which depicts six pumps mounted on a common reservoir from which each pump is dispensing oil to a single lubrication point. These pumps are operated by individual cams on one common drive shaft.



**PUMP-TO-POINT SYSTEM**

**FEATURES/BENEFITS**

- Force Feed Box Lubricators provide a proven, cost-effective way to assemble customized oil systems that meet specific requirements by using standard modular components.
- Force Feed Box Lubricators increase opportunities to standardize lube system components and reduce lube maintenance and service costs.
- Force Feed Box Lubricators save you system design dollars and lead time.
- Force Feed Box Lubricators are dependable and backed by the industry’s most comprehensive international distributor network – with application expertise, parts stocks and factory-trained service nearby, wherever you are located.

**INTERCHANGEABILITY, CONVERSION AND RETROFITS**

Graco GBL 7500 Pumps have been designed to be easily interchangeable with other manufacturers’ pumps. For details contact your local Graco representative or call on us for system design and application assistance.

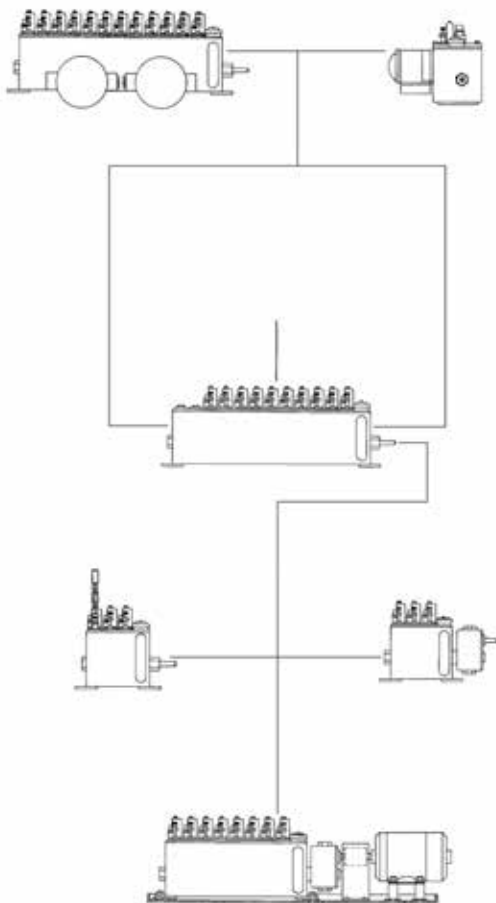
**APPLICATIONS AND INDUSTRIES**

All working parts of the Force Feed Systems are totally enclosed away from dirt, water and impurities. And, each moving part is self-lubricated at all times by the fluid in the reservoir. This and the wide range of options, high discharge pressure and rugged construction plus the many other features and benefits make Force Feed Systems ideally suited for these applications and industries:

<b>Application</b>	<b>Industry</b>	<b>Use</b>
Compressors	Petrochemical, Refineries, Gas Transmission, Injection and Storage, Cold Storage, General Manufacturing, Air Systems	Lubricate cylinder walls and piston shaft packing
Edgers, Planers, Band Saws	Lumber	Lubricate slides and ways. Blade coolant.
Mixers	Rubber	Used in the bleeding process and to lubricate dust stop seals
Can Lid Presses	Food Processing	Lubricate high-speed bearings
Band Saws	Lumber	Saw guides

**MBL FORCE FEED BOX LUBRICATOR = true modularity**

Wide choice of standard modular components helps you meet application requirements more exactly without the added costs of a custom system.



**PUMPS**

Now featuring Graco GBL 7500 pumps for pressures up to 7,500 psi.

**24J391** – GBL 7500 Suction Pump, 3/16 in

**24J392** – GBL 7500 Suction Pump, 1/4 in

**24J393** – GBL 7500 Suction Pump, 3/8 in

- Ideal for heavy duty applications
- Interchangeable with pumps from competitive lubricators
- Suction (vacuum feed) pumps are available installed
- Pressure feed and gravity feed pumps are sold separately
- See manual 3A2257 for more information

**ALARM PUMP**

Shaft Rotation/Low Level alarm based on GBL 7500 pump.

- Available as part number 24K466.
- Mounts in a pump slot
- Order separately for field installation.
- For details see page 13.

**RESERVOIRS AND MOUNTING BASES**

Eight reservoir capacities are available to hold from 4 to 40 pints and accommodate from 1 to 24 pumps.

- Blank cover assemblies included on unused pump stations.
- For details see page 4.

Eight sizes of motor mounting bases are available to accommodate the various reservoir sizes. For details see page 5.

**RESERVOIR ACCESSORIES**

Automatic fill, low level, and electric heater options. For details see pages 11 through 14.

**DRIVE OPTIONS**

Over twenty drive options are available from direct drive to a reduction ratio of 400:1. Options provide left- or right-hand end of reservoir mounting, end or rear rotary drives, end ratchet drives and gear reducers. For details, see pages 9 and 10. See literature 352389 for MB60 (60:1) and MB118 (118:1) specialty box lubricators. See manual 3A2953 for center rear drive options.

**MOTORS**

Single- and three-phase motors are available at ratings of 1/3, 1/4 and 1/2 HP, for 115/230 volt or 230/460 volt, in explosion-proof, TEFC or TENV configuration. Some motor configurations are available foot-mounted and/or face-mounted.

**“SMART” PART NUMBERS**

- Graco part numbers are 6-digits long
- MBL Smart Part Numbers start with “MB”
- The next four letters each specify one or more options:
  - **Option A:** Reservoir & Motor Mounting Base
  - **Option B:** Pump Style & Monitor
  - **Option C:** Pump Quantity
  - **Option D:** Drive
- MBabcd – replace lower case letters with selections offered in **Smart Menu Code** to form a **Smart Part Number**
- See pages 15 and 16 for more details and a complete list of selections for each option

**LITERATURE**

L54000	Lube Line Alert
L15831	Lube Sentry
L15825	Check Valves
L15200	In-Line Filters
L10103	MH Modular Divider Valves
3A2100	Modular Box Lubricator (MBL) manual
3A2257	GBL7500 pumps manual
352389	Manzel MB60 & MB118 flyer
3A2953	Center Drive Box Lubricator manual

**RESERVOIRS AND MOUNTING BASES –  
SMART MENU OPTION A, SELECTIONS A - S**

**DESCRIPTION**

Eight reservoir sizes are available for the MBL. Each is ruggedly built to reduce deflection and provide longer life. The end plates supporting the shaft main bearings are heavy gage steel welded to the main body.

Camshaft intermediate support bearings are bottom mounted to an inside channel to provide maximum rigidity without adding length.

Each reservoir is equipped with sufficient cams to handle the maximum number of pumps. Unused pump stations are covered with a gasket and blank cover assembly that can easily be removed to convert to an active pump station.

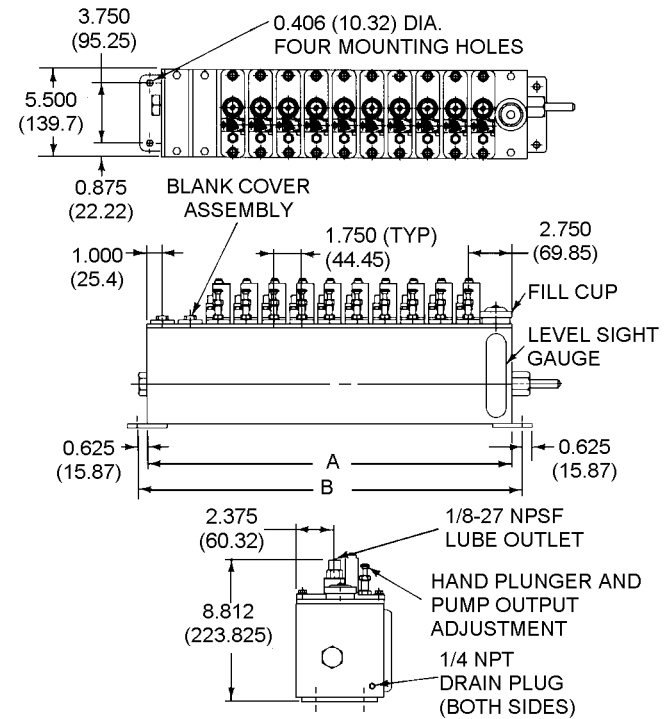
Additional pump stations are required for the following options:

- Automatic Fill Option – 559037
- Low Level Option – 563013 or 564015
- Alarm Pump – 24K466

**FEATURES/BENEFITS**

- Rugged construction for durability
- Complete assembly – includes level sight gauge, fill cup and drain plug
- Precise camshaft alignment insures proper lubrication by all pumps
- Included 1 inch NPT port(s) make electric heater installation quick and simple

**DIMENSIONS**



DIMENSIONS SHOWN ARE IN INCHES (MILLIMETERS)

**ORDERING INFORMATION**

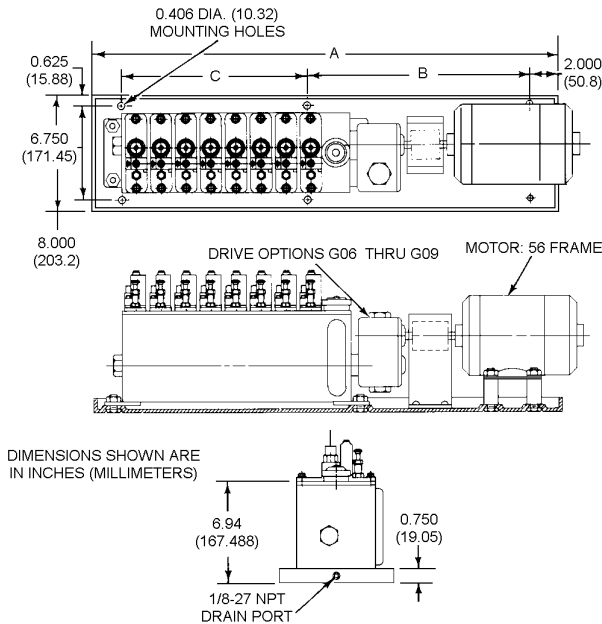
Replacement reservoirs are available only with drives. Order reservoir and drive combination as a smart part number. Omit all other options when ordering by entering the number 0 and the letter A for the pumps; order MBx0Ay, where “x” is the reservoir, and “y” is the drive. See page 15 for examples. See pages 9 and 10 for drive options.

Smart Menu Option “A” Selection Code*	Former Ordering Code	Maximum Pump Stations	Tank Capacity – pints (liters)	Dimensions – inches (mm)		Number of 1 inch NPT Heater Ports
				A	B	
A or J	T1	2	4 (1.89)	5.50 (139.70)	6.75 (171.45)	1
B or K	T2	3	6 (2.84)	7.25 (184.15)	8.50 (215.90)	1
C or L	T3	5	8 (3.79)	10.75 (273.05)	12.00 (304.80)	1
D or M	T4	8	12 (5.68)	16.00 (406.40)	17.25 (438.15)	1
E or N	T5	12	16 (7.57)	23.00 (584.20)	24.25 (615.95)	2
F or P	T6	16	24 (11.36)	30.00 (762.00)	31.25 (793.75)	2
G or R	T7	20	32 (15.14)	37.00 (939.80)	38.25 (971.55)	3
H or S	T8	24	40 (18.93)	44.00 (1,117.60)	45.25 (1,149.35)	3

\*Selections A - H are reservoir without bases; J - S are reservoirs with motor mounting bases.

**MOTOR MOUNTING BASES –  
OPTION A, SELECTIONS J - N**

A motor mounting base is included with Reservoir selections J through N. These options may be used only with Drive selections K (G06) through N (G09). Dimensional data for each base is shown below:

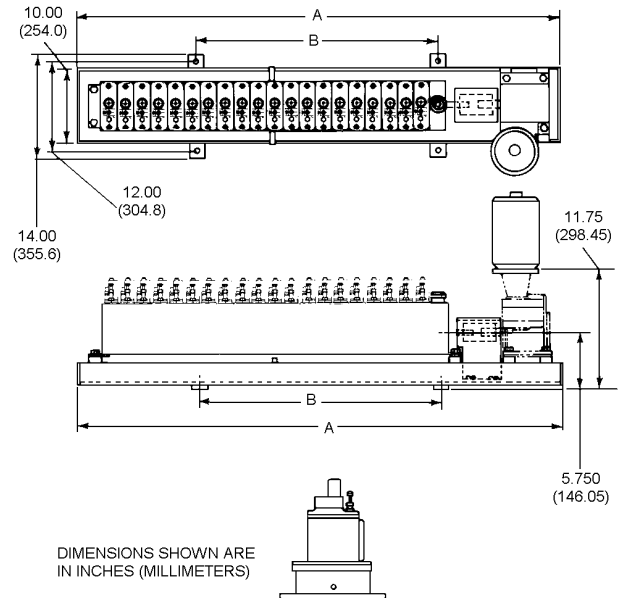


**SELECTIONS J - N**

Smart Menu Option "A" Selection Code	Former Ordering Code	Tank Capacity – pints (liters)	Dimensions – inches (mm)			Number of Mounting Holes
			A	B	C	
J	P1	4 (1.89)	24.50 (622.30)	20.50 (520.70)	–	4
K	P2	6 (2.84)	26.25 (666.75)	22.25 (565.15)	–	4
L	P3	8 (3.79)	29.75 (755.65)	25.76 (654.05)	–	4
M	P4	12 (5.68)	35.00 (889.00)	15.50 (393.70)	15.50 (393.70)	6
N	P5	16 (7.57)	42.00 (1,066.80)	19.00 (482.60)	19.00 (482.60)	6

**MOTOR MOUNTING BASES –  
OPTION A, SELECTIONS P - S**

A motor mounting base is included with Reservoir selections P through S. These options may be used only with Drive selections U (G14) through Y (G18). Dimensional data for each base is shown below:



**SELECTIONS P - S**

Smart Menu Option "A" Selection Code	Former Ordering Code	Tank Capacity – pints (liters)	Dimensions – inches (mm)		Number of Mounting Holes
			A	B	
P	P6	24 (11.36)	46.00 (1,168.40)	16.00 (406.40)	4
R	P7	32 (15.14)	53.00 (1,346.20)	23.00 (584.20)	4
S	P8	40 (18.93)	60.00 (1,524.00)	30.00 (762.00)	4

**GBL 7500 PUMPS – OPTION B,  
SELECTIONS 1 - 3**

**DESCRIPTION**

Force Feed Box Lubricators incorporate heavy-duty GBL 7500 precision metering pumps capable of accurately pumping small flows of either mineral or synthetic oil to machinery injection points. Individual piston pumps are mechanically driven from a common camshaft in the reservoir and are adjustable from 0 to 27 drops per stroke. The drive options, shown on pages 9 and 10, provide many more options to suit various applications.

**FEATURES/BENEFITS**

- Rugged construction for high performance and durability
- Easy serviceability - pumps can be added or replaced quickly
- Pump output is easily adjustable

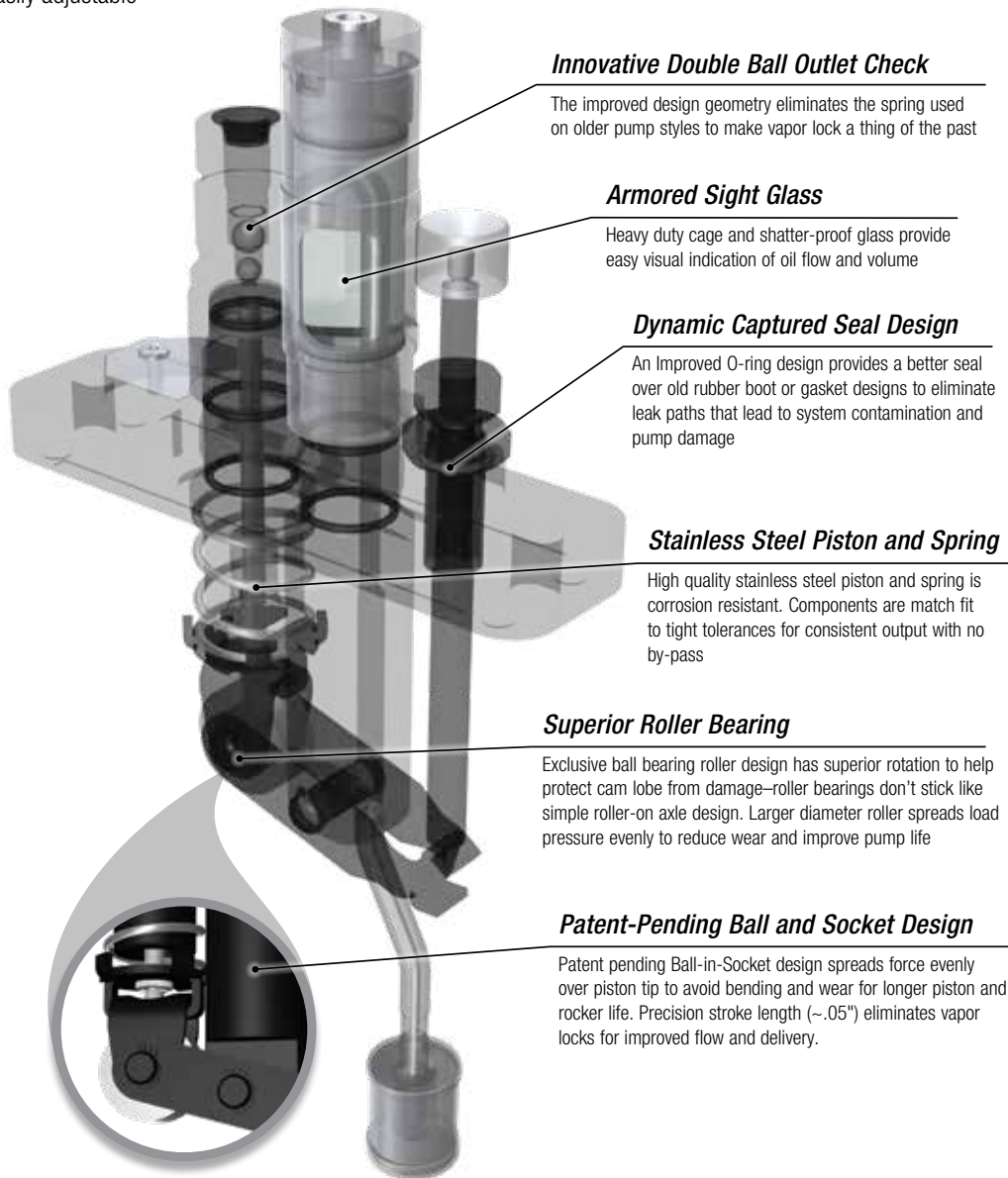
**A BETTER DESIGN FOR BETTER PERFORMANCE**

The new Graco Manzel GBL 7500 has been engineered to deliver reliability in harsh environments. The improved design reduces vapor lock, piston tip wear and roller and cam damage. The result means fewer service calls to save you time and money.

Manufactured to maintain the highest industry standards for applications that require continuous-duty operation, GBL 7500 pumps supersede Model 76 and Model 88 pumps, and are interchangeable with competitive models.

**BUILT TO LAST**

Graco offers three vigorously-tested feed versions engineered for long life and reliability. Each version has patent pending, innovative designs to perform in best-practice applications for a durable solution that is hard to beat.



***Innovative Double Ball Outlet Check***

The improved design geometry eliminates the spring used on older pump styles to make vapor lock a thing of the past

***Armored Sight Glass***

Heavy duty cage and shatter-proof glass provide easy visual indication of oil flow and volume

***Dynamic Captured Seal Design***

An Improved O-ring design provides a better seal over old rubber boot or gasket designs to eliminate leak paths that lead to system contamination and pump damage

***Stainless Steel Piston and Spring***

High quality stainless steel piston and spring is corrosion resistant. Components are match fit to tight tolerances for consistent output with no by-pass

***Superior Roller Bearing***

Exclusive ball bearing roller design has superior rotation to help protect cam lobe from damage—roller bearings don't stick like simple roller-on axle design. Larger diameter roller spreads load pressure evenly to reduce wear and improve pump life

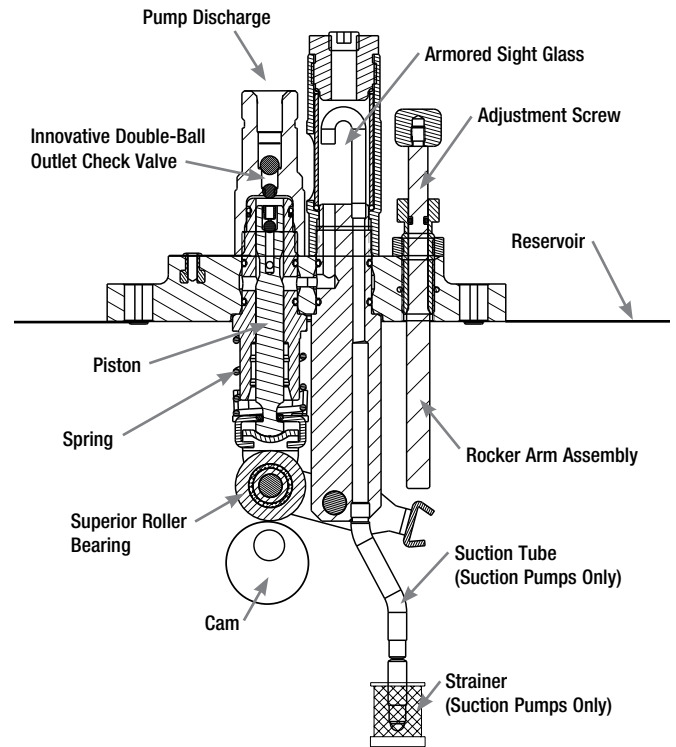
***Patent-Pending Ball and Socket Design***

Patent pending Ball-in-Socket design spreads force evenly over piston tip to avoid bending and wear for longer piston and rocker life. Precision stroke length (~.05") eliminates vapor locks for improved flow and delivery.

**OPERATION**

**PUMPS WITH SIGHT GLASS (SUCTION AND GRAVITY FEED)**

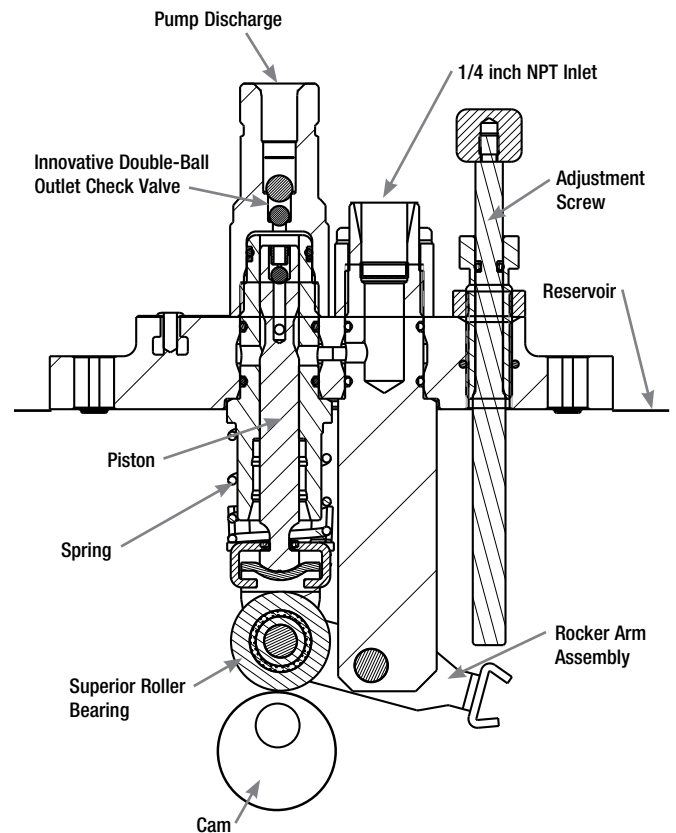
Rotation of the lubricator cam actuates the pump rocker arm assembly to operate the pump piston. On the piston down-stroke, spring pressure is exerted on the piston causing it to follow the cam. As it moves down, a void (negative pressure) is created between the piston and the check valve and the valve closes. The supply inlet shut-off ball is then unseated and lubricant is drawn into the piston cylinder from the sight well. This creates a void (negative pressure) in the air-tight sight well that causes lubricant from the reservoir to be drawn into the well until pressure is equalized. On the piston up-stroke, the oil in the cylinder is injected out through the discharge check valve to the machine injection point. The number of drops seen falling in the sight well is the amount of oil discharged by the pump. Each pump can be adjusted by means of an external screw. This changes the length of the pump stroke which changes the pump discharge volume.



**PUMPS WITH PRESSURIZED SUPPLIES (BLIND SIGHT)**

GBL 7500 Pressure Feed pumps feature a larger 1/4 inch NPT inlet size to improve flow in high viscosity, cold weather applications and allow greater oil volume at higher pressures.

Rotation of the lubricator cam actuates the pump rocker arm assembly to operate the pump piston. On the piston down-stroke, spring pressure is exerted on the piston causing it to follow the cam. As it moves down, a void (negative pressure) is created between the piston and the discharge check valve and the valve closes. This allows the pressurized supply to unseat the supply inlet shut-off ball and pressurize the piston bore with lubricant. On the piston up-stroke, the piston forces the supply inlet shut-off ball to seat and shut off the pressurized supply. Lubricant in the piston cylinder is forced out through the discharge check valve to the machine injection point. Each pump can be adjusted by means of an external screw. This changes the length of the pump stroke which changes the pump discharge volume.



**ADJUSTMENT**

See manual 3A2257 for adjustment instructions.

**ORDERING INFORMATION**

Use the following part numbers if you are ordering a pump assembly separately from a Modular Box Lubricator. Use the Smart Menu Selections when ordering an MBL assembly with Suction pumps installed.

Description	Piston Diameter (in)	GBL 7500 Part Number	Smart Menu Option "B" Selection Code	Former Ordering Code	Obsolete Model 76	Obsolete Model 88
Suction (Vacuum) Feed	3/16	24J391	1	76B/88B	562953 (376-000-000)	562954 (376-000-001)
	1/4	24J392	2	76C/88C	562955 (376-000-010)	562956 (376-000-011)
	3/8	24J393	3	76E/88E	562957 (376-000-030)	562958 (376-000-031)
Pressurized (Blind Sight) Feed	3/16	24J397	n/a	76F/88F	562961 (376-000-120)	562962 (376-000-121)
	1/4	27J398	n/a	76G/88G	562963 (376-000-130)	562964 (376-000-131)
	3/8	24J399	n/a	76H/88H	562965 (376-000-150)	562966 (376-000-151)
Gravity Feed	3/16	24J394	n/a	76J/88J	–	564011 (376-000-530)
	1/4	24J395	n/a	76K/88K	–	562967 (376-000-540)
	3/8	24J396	n/a	76L/88L	–	562968 (376-000-560)

**PUMP SPECIFICATIONS**

- Drops per Stroke Table Section of table applies to suction and gravity-fed models only.
- Allowable viscosity range independent of temperature: 80-5000 SUS.
- Strokes/Minute – Maximum - 50; Minimum - 3
- Stroke Length – Maximum - 1/2 inch (12.7 mm)

Piston Diameter inches (mm)	Maximum Outlet Pressure psi (bar)*	Drops/Stroke**		in <sup>3</sup> /Stroke		cm <sup>3</sup> /Stroke	
		Min <sup>†</sup>	Max	Min <sup>†</sup>	Max	Min <sup>†</sup>	Max
3/16 (4.76)	7,500 (517)	0	7	0	0.014	0	0.229
1/4 (6.35)	6,000 (414)	0	12	0	0.024	0	0.393
3/8 (9.53)	2,500 (241)	0	27	0	0.054	0	0.885

\*Refer to your manufacturer's specific instruction manuals to ensure your box and lubrication system are rated for the selected pressure.

\*\*Based on 500 SUS oil at 70°F ambient. Heavier oil will produce fewer but larger drops. When approaching maximum outputs, some oils will stream rather than form drops in sight glass.

†Pump adjusted to zero stroke. Minimum usable output is approximately 1/6 of maximum output.

**PUMP SIGHT GLASS REPAIR KITS**

Sight Glass Repair Kits are available for the Manzel Model 76 and 88 Pumps, and for GBL 7500 Pumps. Sight Glass Kits are independent of pump sizes.

Pump Model	Sight Glass Kit Number
Model 76	563967 (562-000-200)
Model 88	564437 (560-001-860)
GBL 7500	24T306





**DRIVES –  
OPTION D, SELECTIONS A – Z**

**DESCRIPTION**

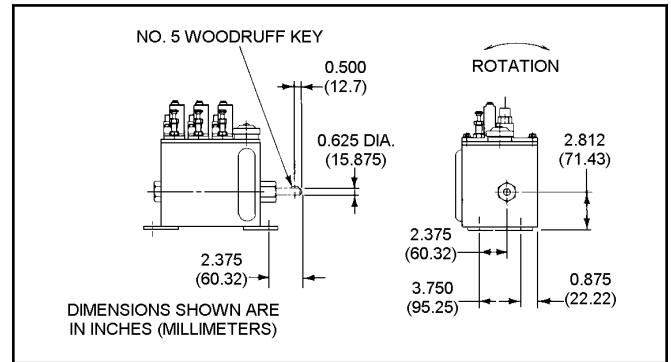
Six drive configurations, some with several variations, provide a total of 23 options. These configurations are listed below in conjunction with pertinent technical data and a detailed dimensional drawing.

**DIRECT END ROTARY –**

**Option D, Selections A and E (Formerly Option G01)**

1:1 ratio; camshaft and driveshaft connect directly with no reduction. Maximum input speed 50 rpm; minimum input speed 3 rpm. Shown in the right-hand location (Selection A).

Smart Menu Option "D" Selection Code	Former Ordering Code	Drive Description
A	G01R	Direct End Rotary, 1:1, Right Hand
E	G01L	Direct End Rotary, 1:1, Left Hand



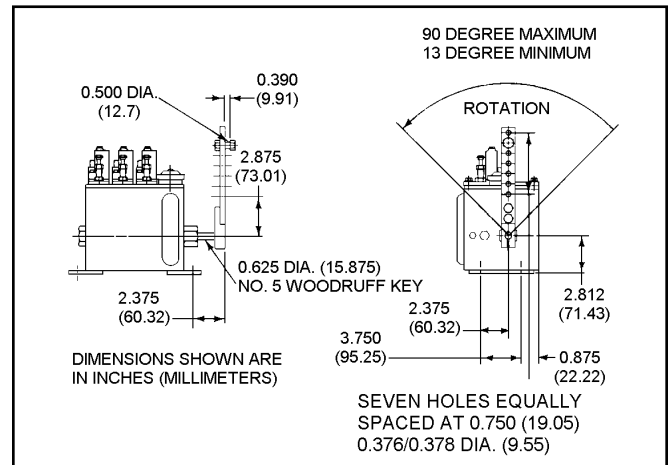
Option D, Selection A

**END RATCHET –**

**Option D, Selections B and F (Formerly Option G02)**

Shown in the right-hand location (Selection B). Not available with the motor option because it is driven by mechanical power via the ratchet arm. Arm not included. Order ratchet arm separately as part number 563005 (453-004-603).

Smart Menu Option "D" Selection Code	Former Ordering Code	Drive Description
B	G02R	End Ratchet, Right Hand
F	G02L	End Ratchet, Left Hand



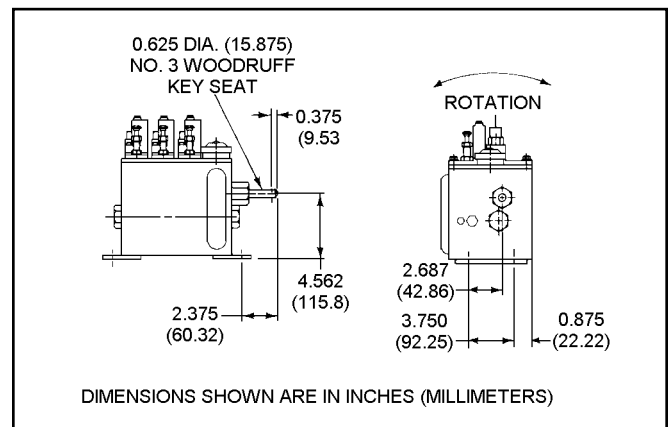
Option D, Selection B

**END ROTARY RATCHET –**

**Option D, Selections C and D, G and H (Formerly Options G03 AND G04)**

Shown in the right-hand location (Selection C). A 75-tooth ratchet wheel on the camshaft is advanced one or two teeth for every rotation of the drive shaft. Not available with the motor option. Specifications are as follows:

Smart Menu Option "D" Selection Code	Former Ordering Code	Drive Ratio	Orientation	Maximum Input Speed
C	G03R	37.5:1	Right Hand	800 rpm
D	G04R	75:1	Right Hand	800 rpm
G	G03L	37.5:1	Left Hand	800 rpm
H	G04L	75:1	Left Hand	800 rpm



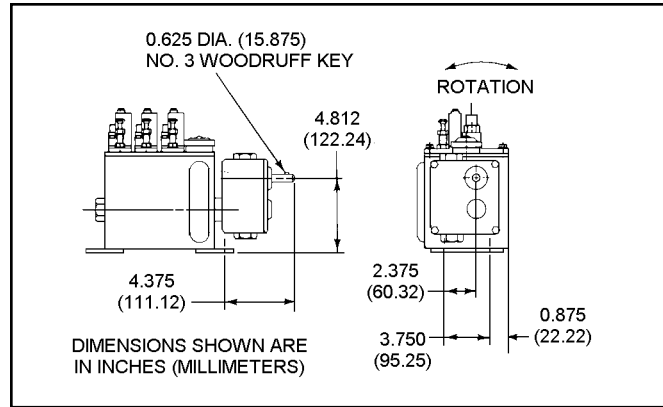
Option D, Selection C

**DOUBLE REDUCTION END ROTARY –  
Option D, Selections J through N  
(Formerly Options G05 through G09)**

These drive options are available in right-hand configurations only; can be used with or without electric motor. (If motor is used, it must be 56F or 56C with feet.) Offered in five ratios as follows:

Smart Menu Option "D" Selection Code	Former Ordering Code	Drive Ratio	Spare Part Number	Old Part Number	Compatible with Reservoir/Base J - N?
J	G05R	25:1	564055	481-760-012	No*
K	G06R	50:1	564054	481-760-009	Yes
L	G07R	100:1	563121	481-760-010	Yes
M	G08R	200:1	563122	481-760-011	Yes
N	G09R	400:1	563120	481-760-004	Yes

\*25:1 ratio is too low for use with 1,725 rpm motor.



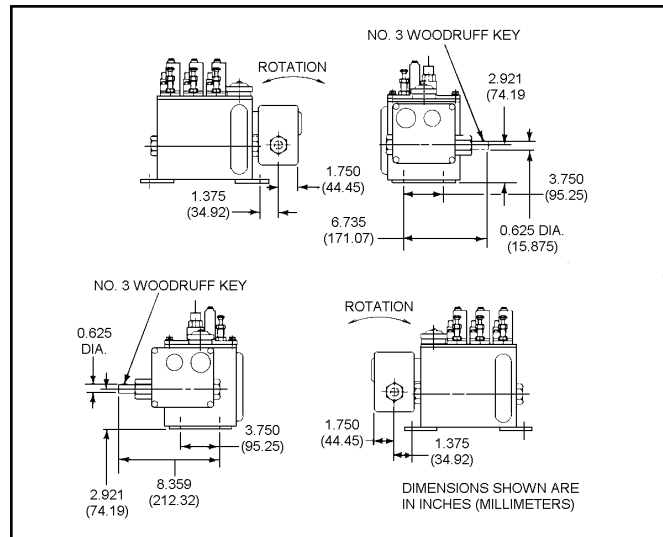
**Option D, Selections J-N**

**RIGHT ANGLE ROTARY DRIVE –  
Option D, Selections P through T, and Z  
(Formerly Options G10 through G13)**

These drive options are available for right-hand drives only, with the exception of the 188:1 ratio. These drives are not available with the motor option. They are compatible with Reservoir Selections A through E only. These drives are not available as a separate, spare part; they must be ordered with a reservoir. Ratios for each drive option are listed below:

Smart Menu Option "D" Selection Code	Former Ordering Code	Drive Ratio	Orientation
P	G10R	25:1	Right Hand
R	G11R	50:1	Right Hand
S	G12R	188:1	Right Hand
T	G13R	375:1	Right Hand
Z	G12L	188:1	Left Hand

**NOTE:** May be reconfigured in the field as top, bottom, or front drive locations.

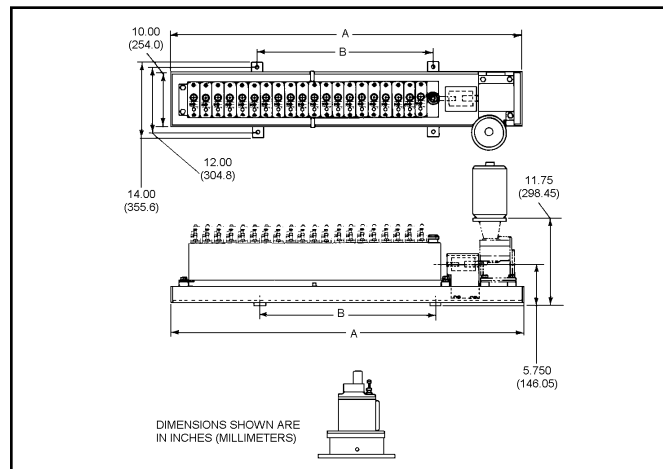


**Option D, Selections P-T**

**GEAR REDUCER –  
Option D, Selections U through Y  
(Formerly Options G14 through G18)**

Heavy duty gear reducers require Reservoir/Base Option P, R, or S. 56C motor required. Gear reducers are also available as spare parts.

Smart Menu Option "D" Selection Code	Former Ordering Code	Drive Ratio	Spare Part Number	Old Part Number
U	G14R	100:1	558282	481-010-260
V	G15R	150:1	558284	481-010-261
W	G16R	200:1	558281	481-010-217
X	G17R	300:1	558283	481-010-262
Y	G18R	400:1	557162	481-010-243



**Option D, Selections U-Y**

**ACCESSORIES**

**MOTORS**

Nine motor options are available to meet the needs of the application. All motors operate at 1,725 rpm. Motors are sold separately and installed in the field.

Graco Part Number	Old Part Number	Former Ordering Code	Horsepower	AC Voltage	Phase	Duty Type*	Mounting
558289	492-440-190	M2	1/4	115/230	1	A	56F (foot-mounted)
558293	492-600-090	M3	1/3	115/230	1	B	56F (foot-mounted)
558290	492-440-360	M5	1/4	230/460	3	A	56F (foot-mounted)
558292	492-600-020	M6	1/3	230/460	3	B	56F (foot-mounted)
558294	492-620-060	M7	1/2	115/230	1	C	56C with feet
558295	492-620-070	M8	1/2	230/460	3	C	56C with feet
558291	492-540-310	M10	1/2	230/460	3	B	56C with feet
557271	492-380-040	M11	1/2	115/230	1	D	56C (no feet)
557270	492-380-030	M12	1/2	230/460	3	D	56C (no feet)

**\*Duty Type:**  
 A – Totally-enclosed, non-ventilated (TENV)  
 B – Hazardous Area, Class 1, Group D  
 C – Hazardous Area, severe duty, Class 1, Group C, tropical insulation  
 D – Totally-enclosed, fan-cooled (TEFC)

**AUTOMATIC FILL OPTIONS**

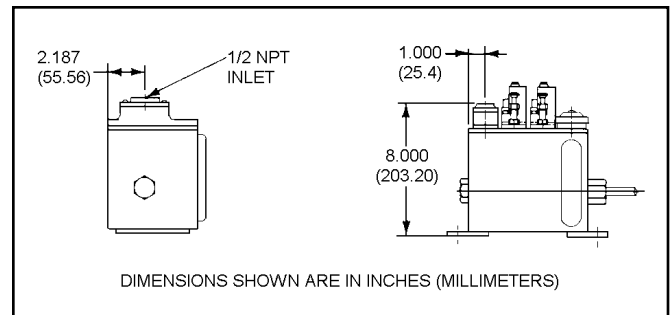
**GRAVITY SUPPLY – 559037 (456-030-031)  
(Formerly Option F1)**

This option is mounted in the last pump station at the end opposite the drive. The only exception is when either a shaft rotation alarm or one of the low level options is specified. Then this option is mounted in the second to the last pump station.

Pertinent dimensional data is provided in the illustration.

**Sold separately as part number 559037 and installed in the field; mounts in a pump station, so reduce maximum pump quantity by 1 when using part number 559037.**

NOTE: Inlet oil pressure range is 2 to 5 feet of head.



**559037**

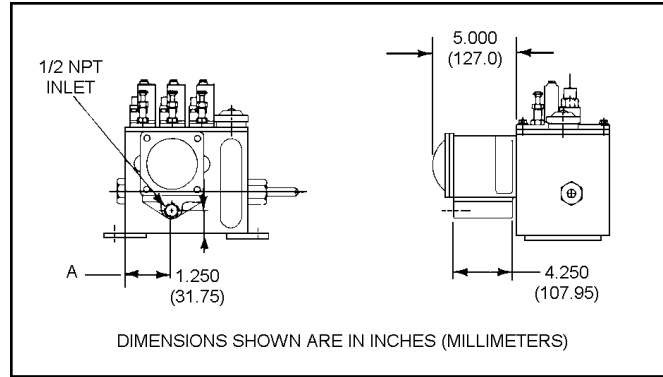
**OIL LEVEL CONTROLLERS**

**RENS –  
OPTION B, SELECTIONS 4 - 6 (FORMERLY OPTION F3)**

This factory-installed automatic-fill option does not require a pump station for mounting. It is mounted only on the front of the reservoir and requires a maximum inlet pressure of 5 psi. Includes 1/2 in NPTF inlet port.

Smart Part Number incorporates the RENS controller with pump options 4 through 6. Select 4, 5, or 6 based on piston size of suction feed pump(s) required. If no pumps are required, enter the number 4 and the letter A for the pumps; order MBx4Ay, where “x” is the reservoir, and “y” is the drive.

Spare level controller available as part number 556808.



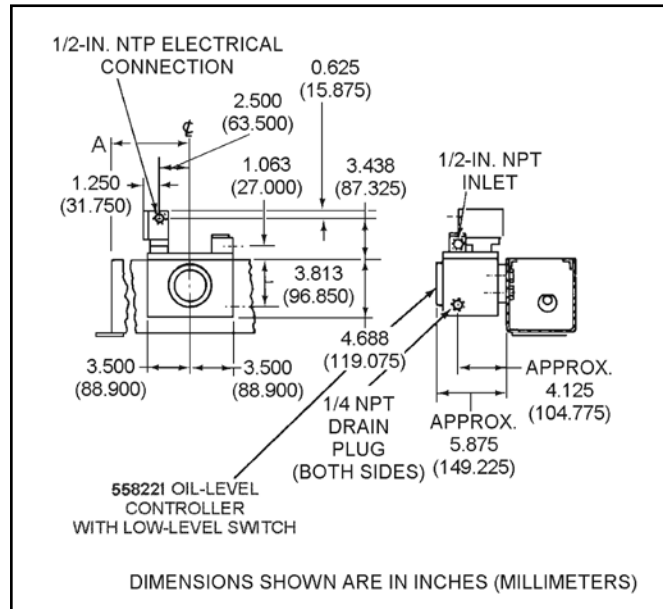
**556808**

**GARZO –  
OPTION B, SELECTIONS 7 - 9 (FORMERLY OPTION F4)**

This factory-installed automatic-fill option does not require a pump station for mounting. It is mounted only on the front of the reservoir and requires a maximum inlet pressure of 70 psi. The switch actuates when 1/2 to 3/4 loss of oil level occurs in the controller. Includes 1/2 in NPT oil inlet port, and built-in low level switch with 1/2 in NPT thread for electrical connection.

Smart Part Number incorporates the GARZO controller with pump options 7 through 9. Select 7, 8, or 9 based on piston size of suction feed pump(s) required. If no pumps are required, enter the number 7 and the letter A for the pumps; order MBx7Ay, where “x” is the reservoir, and “y” is the drive.

Spare level controller available as part number 558221.



**558221**

**ELECTRICAL DATA:**

- Contacts: Single-Pole, Double-Throw
- Contact Rating: 15 amps at 115/230 or 480 VAC
- 0.5 amps at 125 VDC
- 0.25 amps at 250 VDC
- Switch Rating: Class 1, Groups C and D, Division I

Reservoir Size Pints (Liters)	Dimension A Inches (mm)
4 (1.89)	1.00 (25.40)
6 (2.84)	2.75 (69.85)
8 (3.79)	3.63 (92.08)
12 (5.68)	3.63 (92.08)
16 (7.57)	11.50 (292.10)
24 (11.36)	15.00 (381.00)
32 (15.14)	12.38 (314.33)
40 (18.93)	14.13 (358.78)

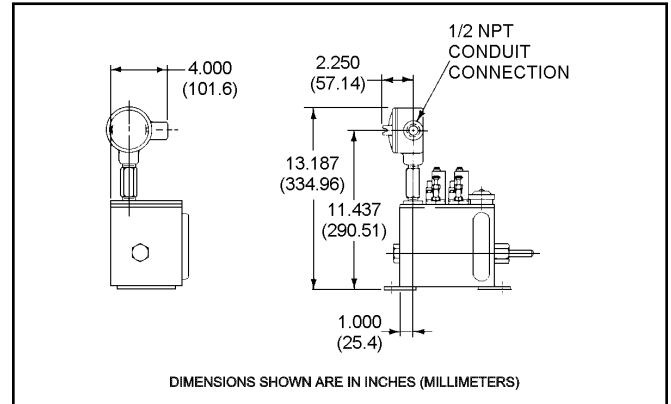
**LOW LEVEL SWITCHES  
(FORMERLY OPTIONS L1 AND L2)**

**NOTE:** 563013 and 564015 are each sold separately and installed in the field; each mount in a pump station, so reduce maximum pump quantity by 1 when using either accessory.

**563013 (456-010-164)  
(FORMERLY OPTION L1) – CLASS 1, GROUP C AND D**

The low level switch is single-pole, double-throw and meets the explosion-proof requirements of Class 1, Groups C and D, as well as Class 2, Groups E, F, and G. This option is mounted in the last pump station opposite the drive end. The only exception is when a shaft rotation alarm option is specified, then it is mounted in the third to the last pump station. Dimensional data and electrical ratings are shown on the following illustration.

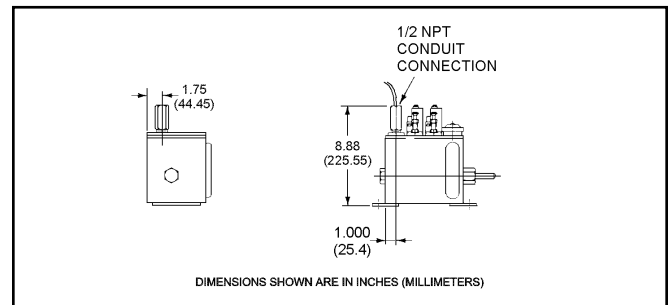
Electrical Data: 15 amps at 115/230 or 480 VAC  
0.5 amps at 125 VDC  
0.25 amps at 250 VDC



**563013**

**564015 (456-010-190)  
(FORMERLY OPTION L2)**

The low level switch is single pole-single throw, normally closed (may be changed in the field). Electrical rating is 10 watts @120 VAC (minimum). This option is mounted in the last pump station opposite the drive end. The only exception is when a shaft rotation alarm option is specified, then it is mounted in the third to the last pump station. Dimensional data and electrical ratings are shown on the following illustration.



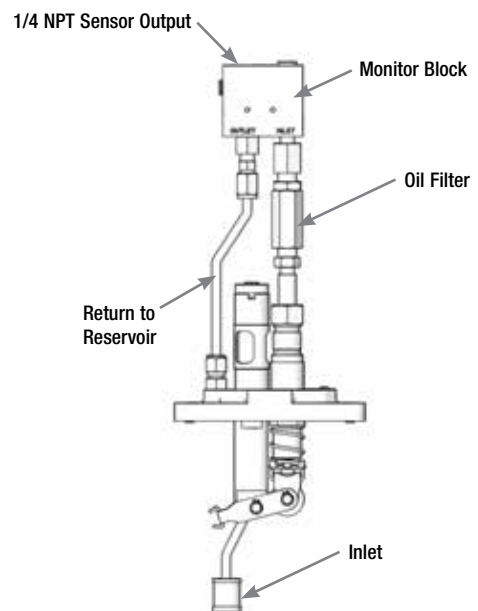
**564015**

**SHAFT ROTATION ALARM**

**ALARM PUMP 24K466 OPERATION**

When the GBL pump is in its up-stroke the oil is fed into the monitor block. The monitor block will maintain pressure at 100-110 psi (7.0 to 7.7 kg/cm<sup>2</sup>) as long as pumping continues. When the pump stops the pressure will start to bleed down to 50 psi (3.5 kg/cm<sup>2</sup>) within 45 seconds; after that time the pressure will continue to bleed down to 0 psi. The alarm pressure switch (user supplied) installed in the sensor output port should be set at 50 psi (3.5 kg/cm<sup>2</sup>) falling to signal the flow has stopped due to low lube level or the shaft has stopped rotating to generate pump strokes. The monitor block is non-adjustable.

Sold separately as part number 24K466 and installed in the field; mounts in a pump station, so reduce maximum pump quantity by 1 when using part number 24K466. It is always mounted in the last pump station at the end of the reservoir opposite the drive end.



**24K466**

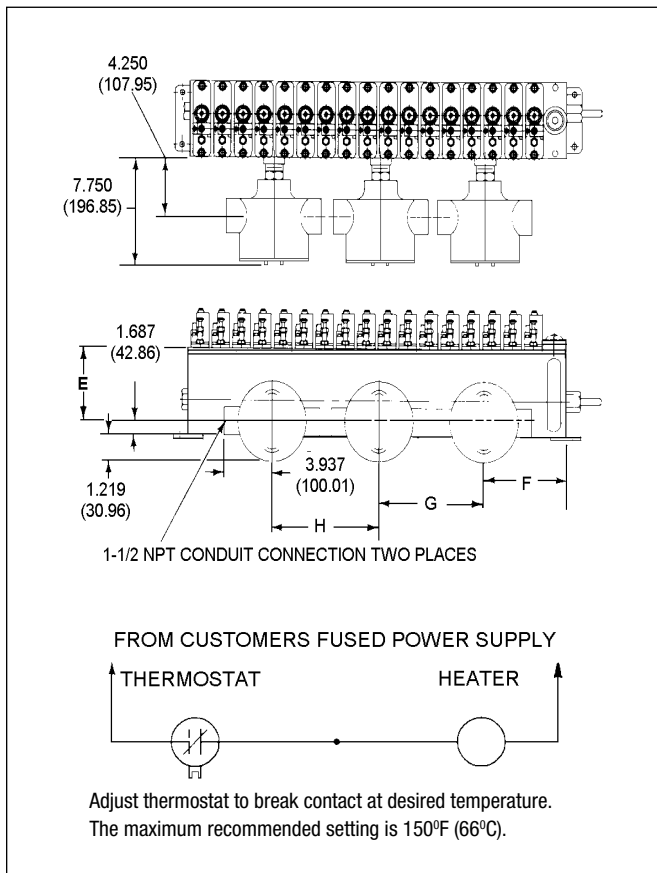
**ELECTRIC HEATERS**

Electric heater options are not available for the 4 pint reservoir size. Specifications for these heaters are provided in the following tables and the dimensional data is shown in the illustrations.

**Use 1 heater for reservoirs from 6 to 12 pints. Use 2 heaters for 16 and 24 pint reservoirs. Use 3 heaters for 32 and 40 pint reservoirs.**

**CAUTION:** Heater elements must be completely submerged in oil at all times.

Graco Part Number	Old Part Number	Heater Voltage (Single Ø)	Thermostat Voltage	Wattage	Wattage Density	Temperature Range	Hazardous Area Rating
557207	492-041-734	120 VAC	120 VAC	200 W	23 W/in <sup>2</sup>	60°F to 240°F (16°C to 116°C)	Class I, Group B
557208	492-041-735	240 VAC	240 VAC	252 W	30 W/in <sup>2</sup>	60°F to 250°F (16°C to 121°C)	Class I, Group B




Reservoir Capacity	Dimensions – in (mm)			
	E	F	G	H
6 pt (2.84 liter)	4.50 (114.30)	1.875 (47.625)	–	–
8 pt (3.79 liter)	4.50 (114.30)	5.375 (136.53)	–	–
12 pt (5.68 liter)	4.50 (114.30)	5.375 (136.53)	–	–
16 pt (7.57 liter)	4.50 (114.30)	7.125 (180.98)	8.75 (222.25)	–
24 pt (11.36 liter)	4.50 (114.30)	8.875 (225.43)	12.25 (311.15)	–
32 pt (15.14 liter)	4.50 (114.30)	7.125 (180.98)	10.50 (266.70)	12.25 (311.15)
40 pt (18.93 liter)	4.50 (114.30)	7.125 (180.98)	15.75 (400.05)	14.00 (355.60)

**WIRING SCHEMATIC FOR HEATER OPTIONS**

**MBL Pump/Reservoir Combinations**

**NOTE:** LH option currently available only on MBL-G01, G02, G03, G04, and G12 drives. All part numbers on the chart below use "OA" to indicate assemblies with NO pumps. Refer to back page for Smart Code ordering details.

 = Not compatible

		Reservoirs Without Motor Mounting Bases								Reservoirs Combined With Motor Mounting Bases							
		T1	T2	T3	T4	T5	T6	T7	T8	T1 + P1	T2 + P2	T3 + P3	T4 + P4	T5 + P5	T6 + P6	T7 + P7	T8 + P8
		4 pint / 2 feed	6 pint / 3 feed	8 pint / 5 feed	12 pint / 8 feed	16 pint / 12 feed	24 pint / 16 feed	32 pint / 20 feed	40 pint / 24 feed	4 pint / 2 feed	6 pint / 3 feed	8 pint / 5 feed	12 pint / 8 feed	16 pint / 12 feed	24 pint / 16 feed	32 pint / 20 feed	40 pint / 24 feed
G01R	Direct, 1:1	MBA0AA	MBB0AA	MBC0AA	MBD0AA	MBE0AA	MBF0AA	MBG0AA	MBH0AA								
G02R	End Ratchet	MBA0AB	MBB0AB	MBC0AB	MBD0AB	MBE0AB	MBF0AB	MBG0AB	MBH0AB								
G03R	37.5:1 Ratchet	MBA0AC	MBB0AC	MBC0AC	MBD0AC	MBE0AC	MBF0AC	MBG0AC	MBH0AC								
G04R	75:1 Ratchet	MBA0AD	MBB0AD	MBC0AD	MBD0AD	MBE0AD	MBF0AD	MBG0AD	MBH0AD								
G01L	Direct, 1:1	MBA0AE	MBB0AE	MBC0AE	MBD0AE	MBE0AE	MBF0AE	MBG0AE	MBH0AE								
G02L	End Ratchet	MBA0AF	MBB0AF	MBC0AF	MBD0AF	MBE0AF	MBF0AF	MBG0AF	MBH0AF								
G03L	37.5:1 Ratchet	MBA0AG	MBB0AG	MBC0AG	MBD0AG	MBE0AG	MBF0AG	MBG0AG	MBH0AG								
G04L	75:1 Ratchet	MBA0AH	MBB0AH	MBC0AH	MBD0AH	MBE0AH	MBF0AH	MBG0AH	MBH0AH								
G05R	25:1 End Rotary	MBA0AJ	MBB0AJ	MBC0AJ	MBD0AJ	MBE0AJ				MBJOAJ	MBKOAJ	MBLOAJ	MBMOAJ	MBNOAJ			
G06R	50:1 End Rotary	MBA0AK	MBB0AK	MBC0AK	MBD0AK	MBE0AK				MBJOAK	MBKOAK	MBLOAK	MBMOAK	MBNOAK			
G07R	100:1 End Rotary	MBA0AL	MBB0AL	MBC0AL	MBD0AL	MBE0AL				MBJOAL	MBKOAL	MBLOAL	MBMOAL	MBNOAL			
G08R	200:1 End Rotary	MBA0AM	MBB0AM	MBC0AM	MBD0AM	MBE0AM				MBJOAM	MBKOAM	MBLOAM	MBMOAM	MBNOAM			
G09R	400:1 End Rotary	MBA0AN	MBB0AN	MBC0AN	MBD0AN	MBE0AN				MBJOAN	MBKOAN	MBLOAN	MBMOAN	MBNOAN			
G10R	25:1 Right Angle	MBA0AP	MBB0AP	MBC0AP	MBD0AP	MBE0AP											
G11R	50:1 Right Angle	MBA0AR	MBB0AR	MBC0AR	MBD0AR	MBE0AR											
G12R	188:1 Right Angle	MBA0AS	MBB0AS	MBC0AS	MBD0AS	MBE0AS											
G13R	375:1 Right Angle	MBA0AT	MBB0AT	MBC0AT	MBD0AT	MBE0AT											
G14R	100:1 Heavy Duty														MBPOAU	MBROAU	MBSOAU
G15R	150:1 Heavy Duty														MBPOAV	MBROAV	MBSOAV
G16R	200:1 Heavy Duty														MBPOAW	MBROAW	MBSOAW
G17R	300:1 Heavy Duty														MBPOAX	MBROAX	MBSOAX
G18R	400:1 Heavy Duty														MBPOAY	MBROAY	MBSOAY
G12L	188:1 Right Angle	MBA0AZ	MBB0AZ	MBC0AZ	MBD0AZ	MBE0AZ											
G05L	25:1 End Rotary																
G06L	50:1 End Rotary																
G07L	100:1 End Rotary																
G08L	200:1 End Rotary																
G09L	400:1 End Rotary																
G10L	25:1 Right Angle																
G11L	50:1 Right Angle																
G14L	100:1 Heavy Duty																
G15L	150:1 Heavy Duty																
G16L	200:1 Heavy Duty																
G17L	300:1 Heavy Duty																
G18L	400:1 Heavy Duty																

# MBL Smart Code Ordering Menu

MB - X - X - X - X

## Reservoir (Smart Code Option A)

Code	Former Code(s)	Description	Code	Former Code(s)	Description
A	T1	4 pt, 2 pump stations max	J	T1 and P1	4 pt, 2 pump stations max, motor mount base
B	T2	6 pt, 3 pump stations max	K	T2 and P2	6 pt, 3 pump stations max, motor mount base
C	T3	8 pt, 5 pump stations max	L	T3 and P3	8 pt, 5 pump stations max, motor mount base
D	T4	12 pt, 8 pump stations max	M	T4 and P4	12 pt, 8 pump stations max, motor mount base
E	T5	16 pt, 12 pump stations max	N	T5 and P5	16 pt, 12 pump stations max, motor mount base
F	T6	24 pt, 16 pump stations max	P	T6 and P6	24 pt, 16 pump stations max, motor mount base*
G	T7	32 pt, 20 pump stations max	R	T7 and P7	32 pt, 20 pump stations max, motor mount base*
H	T8	40 pt, 24 pump stations max	S	T8 and P8	40 pt, 24 pump stations max, motor mount base*

\*Cannot use double reduction or right angle drives.

## Pump Size – GBL 7500 Suction Pumps (Smart Code Option B)

Code	Former Code(s)	Description
0	00	No pumps
1	76/88B	3/16 in Suction Pump 24J391
2	76/88C	1/4 in Suction Pump 24J392
3	76/88E	3/8 in Suction Pump 24J393
4	76/88B and F3	3/16 in Suction Pump plus RENS Level Controller
5	76/88C and F3	1/4 in Suction Pump plus RENS Level Controller
6	76/88E and F3	3/8 in Suction Pump plus RENS Level Controller
7	76/88B and F4	3/16 in Suction Pump plus GARZO Level Controller
8	76/88C and F4	1/4 in Suction Pump plus GARZO Level Controller
9	76/88E and F4	3/8 in Suction Pump plus GARZO Level Controller

### NOTES:

1. When pump quantity is less than maximum pump stations of specified reservoir, a blank cover assembly is installed at Graco.
2. When low level is specified, deduct one pump for each option.
3. When ordering a gear drive option, one of code A picks J - S must be used.
4. When ordering a ratchet drive, the maximum number of pumps allowable is 20.

## Pump Quantity (Smart Code Option C)

Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty	Code	Qty
A	0	E	4	J	8	N	12	T	16	X	20
B	1	F	5	K	9	P	13	U	17	Y	21
C	2	G	6	L	10	R	14	V	18	Z	22
D	3	H	7	M	11	S	15	W	19		

## Drive Options (Smart Code Option D)

Code	Former Code	Description	Code	Former Code	Description	Code	Former Code	Description
A	G01R	Direct End Rotary (50 rpm max)	J	G05R	Double Reduction End Rotary 25:1	T	G13R	RT Angle Rotary 375:1
B	G02R	End Ratchet (without drive arm 563005)	K	G06R	Double Reduction End Rotary 50:1	U	G14R	100:1 Ratio Gear Reducer**
C	G03R	End Rotary Ratchet 37-1/2:1 – max input of 800 RPM	L	G07R	Double Reduction End Rotary 100:1	V	G15R	150:1 Ratio Gear Reducer**
D	G04R	End Rotary Ratchet 75:1 – max input of 800 RPM	M	G08R	Double Reduction End Rotary 200:1	W	G16R	200:1 Ratio Gear Reducer**
E	G01L	Direct End Rotary	N	G09R	Double Reduction End Rotary 400:1	X	G17R	300:1 Ratio Gear Reducer**
F	G02L	End Ratchet (without drive arm 563005)	P	G10R	RT Angle Rotary 25:1	Y	G18R	400:1 Ratio Gear Reducer**
G	G03L	End Rotary Ratchet 37-1/2:1 – max input of 800 RPM	R	G11R	RT Angle Rotary 50:1	Z	G12L	Left Angle Rotary 188:1
H	G04L	End Rotary Ratchet 75:1 – max input of 800 RPM	S	G12R	RT Angle Rotary 188:1			

\*\*U (G14) through Y (G18) require motor mounting base; can only be used with reservoir options P, R, and S.

**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](http://www.graco.com).

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