

GBL 7500 Box Lubricator Pump GBL Shaft Rotation/Low Level Alarm Pump

3A2257B

EN

GBL 7500 Box Lubricator Pump: Fully enclosed, self-lubricating, precision, metering pump capable of pumping small flows of either mineral or synthetic oil to machinery injection points. For professional use only.

GBL Shaft Rotation/Low Level Alarm Pump: Fully enclosed, self-lubricating, precision, alarm pump capable of sensing shaft rotation and oil low level. For professional use only.

3/16" models: 7500 psi (51.7 MPa, 517 bar) Maximum Working Pressure

1/4" models: 6000 psi (41.4 MPa, 414 bar) Maximum Working Pressure

3/8" models: 3500 psi (24.1 MPa, 241 bar) Maximum Working Pressure

Alarm Pump: 200 psi (1.4 MPa, 14 bar) Maximum Working Pressure



Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.

Models:

Suction Models

- 24J391 - 3/16"
- 24J392 - 1/4"
- 24J393 - 3/8"

Gravity Models

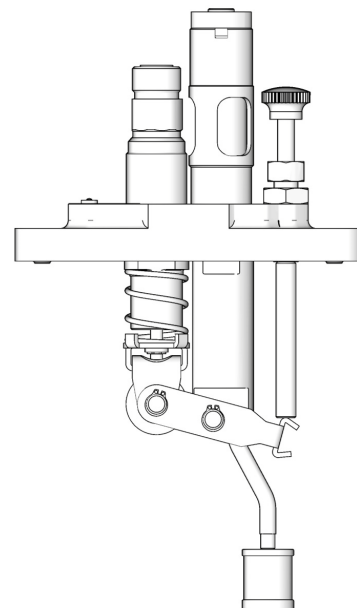
- 24J394 - 3/16"
- 24J395 - 1/4"
- 24J396 - 3/8"

Pressure Models

- 24J397 - 3/16"
- 24J398 - 1/4"
- 24J399 - 3/8"

Alarm Pump Model






- 24K466



Suction Model Shown

Warnings

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 symbols refer to procedure-specific risks. When these symbols appear in the body of this manual, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
 	SKIN INJECTION HAZARD High-pressure fluid from dispensing device, 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. Get immediate surgical treatment. <ul style="list-style-type: none"> • Do not point dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.
 	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: <ul style="list-style-type: none"> • 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. • Stop operation immediately if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.



WARNING



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 from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- 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.



PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

- Protective eye wear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop pumping and before cleaning, checking or servicing the equipment.

1. Stop lube pump.
2. If installed, close oil supply valve located upstream from pump.
3. If installed, open drain valve located downstream from the pump.
4. Slowly crack open fluid line fittings to relieve pressure.

Installing the Pump

Grounding



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

Ensure the reservoir is properly grounded as the pump is grounded through the mounting screws.

Mounting Pump

NOTE:

- Ensure box and lube system are sized appropriately for the selected pressure.
- Ensure an appropriate pressure relief device, suitable for your application, is installed in the system.
- Inspect your box lubricator and replace any damaged or worn components.

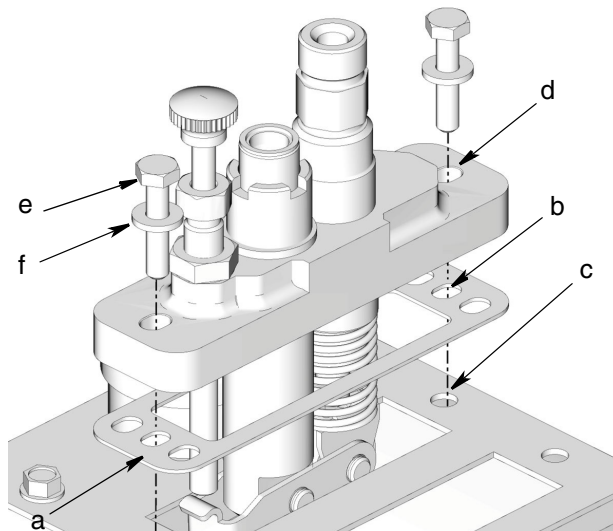


FIG. 1

1. Ensure the pump mounting surface on the reservoir cover is clean. Clean as needed.
2. Align gasket (a) with opening on the top of the reservoir cover making sure holes (b) on either end of the gasket match mounting holes (c) in reservoir cover (FIG. 1).

NOTE: Alarm Pumps Only - For optimum performance, mount alarm pump in location furthest from drive motor.

- **For Gravity and Pressure Fed pumps, skip Step 3 and continue installation with Step 4.**
 - **For Alarm pumps skip Step 3a and continue installation with Step 3b.**
 - **Pressure Fed pumps follow Step 3a and 3b.**
3. For Suction Fed Pumps install pump inlet strainer:
 - a. Check length of suction tube. If it is too long to fit in the reservoir, use a pliers to break off the lower section of the tube (a) (FIG. 2).

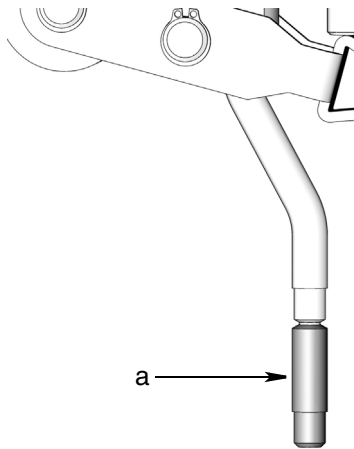


FIG. 2

- b. For all installations (whether the tube needs to be trimmed or can be used without trimming), press strainer onto end of the suction tube until it “bottoms” (FIG. 3).



FIG. 3

4. Orient pump so the roller bearing on the bottom of the pump is aligned with the cam inside the reservoir.
5. Install pump on the reservoir by aligning the holes (d) on either end of the pump with the mounting holes (c) in the reservoir cover (FIG. 1).
6. Install washers (f) and bolts (e) and wrench tighten them securely. Torque bolts as recommended in your reservoir instruction manual.

Setup

NOTICE

Any pressure applied to the pump inlet has the potential to cause unrestricted flow from the pump outlet even in a pump that is at rest or adjusted for zero stroke. To prevent this from happening, install a check valve of a comparable pressure rating at the pump outlet.

NOTE: The internal “discharge check valve” does not have a spring and is rated at zero psi.



1. Expel all air from pump and **relieve pressure** (page 4).

NOTE:

- Do not connect the oil line to the pump outlet or lube point until all air has been expelled.
- Use filtered oil when priming the pump.
- Filter oil with minimum 25 micron strainer. Machine requirements may require a higher cleanliness level.
- Maximum allowable inlet pressure:
 - Pressure Fed Pump: 100 psi (0.69 MPa, 6.9 bar)
 - Gravity Fed Pump With Sight Glass: 10 psi (0.07 MPa, 0.7 bar)
- Minimum required inlet pressure for priming:
 - Pressure Fed Pump: 1 psi (0.007 MPa, 0.07 bar)
 - Gravity Fed Pump: N/A
 - Suction Fed Pump: N/A
 - Alarm Pump: N/A

2. Prime the pump using the procedure described in the following section that relates to your pump model.

Suction Fed Models (FIG. 4)

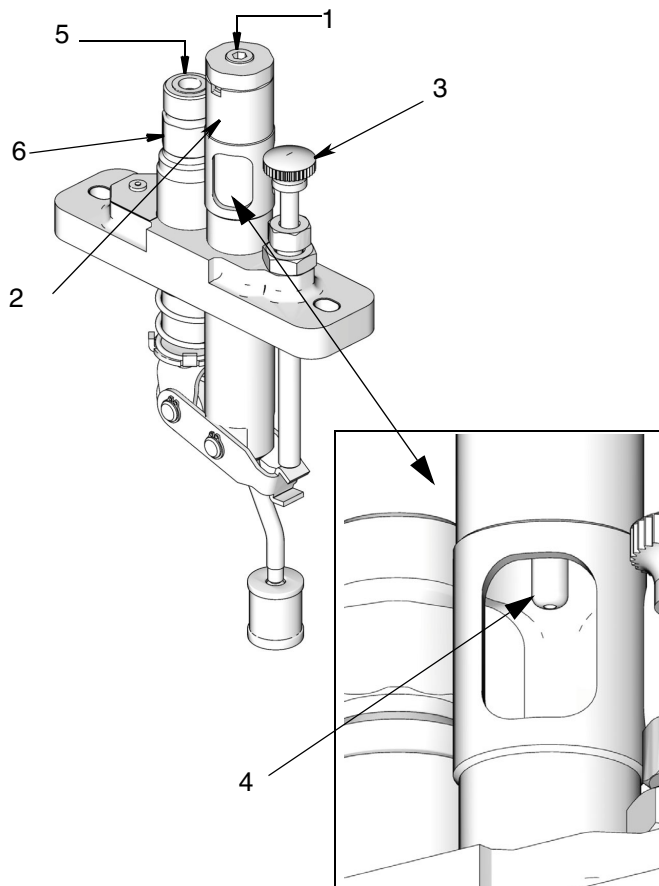


FIG. 4

1. Remove the sight well plug (1) and outlet plug (5). Discard outlet plug (5).
2. Fill the sight well (2) to the top with appropriately filtered oil.
3. Operate the hand priming assembly (3) until the oil level drops below the end of the drip tube (4) (FIG. 4).
4. Apply thread sealant (user supplied) to sight well plug (1).
5. Replace the sight well plug (1), taking care to not allow any thread sealant into the sight well (2).
6. Torque sight well plug (1) to 35 ± 5 in. lbs (3.95 ± 0.6 N.m).
7. Continue to hand prime until oil expelled from the outlet (6) is free of air.
8. If all oil is evacuated from sight well (2), repeat steps 2 - 7 as often as necessary, until all air has been expelled.

Gravity Fed Models (FIG. 5)

NOTE: In the following instructions, the fill line refers to the inlet line.

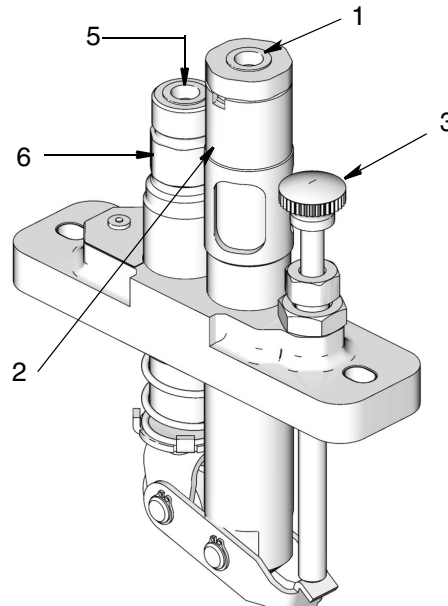


FIG. 5

1. Remove and discard the sight well plug (1) and outlet plug (5).
2. Fill the sight well (2) to the top with appropriately filtered oil.
3. Operate the hand priming assembly (3) until the oil level drops below the end of the drip tube (4) (FIG. 4).
4. Apply thread sealant (user supplied) to fill line fitting.
5. Connect fill line to sight well (2), taking care to not allow any thread sealant into the sight well.
6. Torque fill line fitting to 35 ± 5 in. lbs (3.95 ± 0.6 N.m).
7. If installed, open oil supply valve located upstream from the pump.
8. Continue to hand prime until oil expelled from outlet (6) is free of air.
9. If all oil is evacuated from sight well, repeat steps 2 - 8 as often as necessary, until all air has been expelled.

Pressure Fed Models (FIG. 6)

NOTE: In the following instructions, the fill line refers to the inlet line.

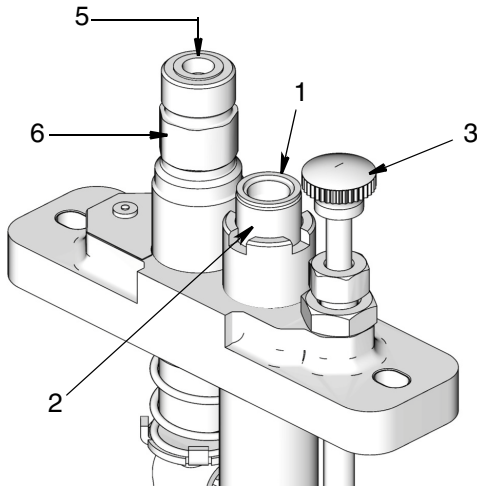


FIG. 6

1. Remove and discard the inlet plug (1) and outlet plug (5).
2. Apply thread sealant (user supplied) to fill line fitting.
3. Connect fill line to inlet (2).
4. Torque fill line fitting to 85 ± 10 in. lbs (9.60 ± 1.13 N.m).
5. If installed, open oil supply valve located upstream from the pump.
6. Operate the hand priming assembly (3) until the oil expelled from the outlet (6) if free of air.

Alarm Pump Models (FIG. 7)

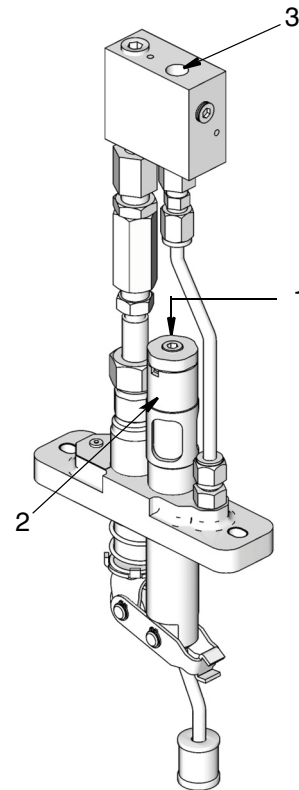


FIG. 7

1. Remove the sight well plug (1).
2. Fill the sight well (2) to the top with appropriately filtered oil.
3. Apply thread sealant (user supplied) to sight well plug (1).
4. Replace the sight well plug (1), taking care to not allow any thread sealant into the sight well (2).
5. Torque sight well plug (1) to 35 ± 5 in. lbs (3.95 ± 0.6 N.m).

Connecting Lube Lines to Pump: Suction, Gravity and Pressure Fed Pump Models Only

NOTE: The lube line refers to the outlet line supplying lubricant to the lubrication points.

1. Apply thread sealant (user supplied) to lube line fitting.
2. Connect lube line to pump outlet (6), (FIG. 8)(also see pages 15 and 16).
3. Torque lube line fitting to 50 ± 5 in. lbs (5.65 ± 0.6 N.m).

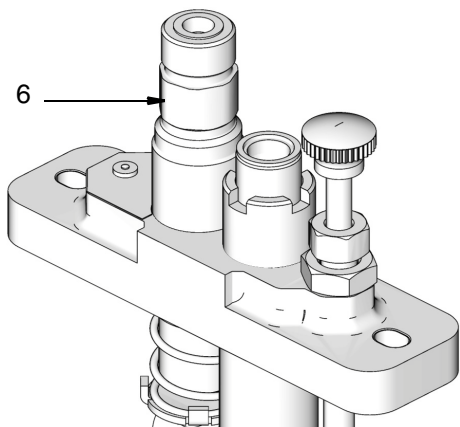


FIG. 8

4. If installed, close the drain valve, located downstream from the pump.
5. Hand prime the pump until clean, air-free oil is flowing through the lube line.
6. Connect the lube line to the lube point.
7. After startup, adjust individual pumps to meet required flow rates. See Adjusting the Pump, page 8.

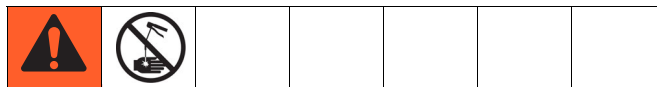
Alarm Models Only: Installing Pressure Sensor (see Alarm Pump, page 17)

1. Apply thread sealant (user supplied) to pressure sensor.
2. Install pressure sensor into sensor output (3) (FIG. 7).

NOTE: Sensor output will open at 100 - 200 psi (6.89 bar, 0.68 MPa).

3. After startup, ensure sensor is activating correctly.

Adjusting the Pump



Pump volume is controlled by an external adjusting screw (8) (FIG. 9). Turning the adjusting screw changes the length of the piston stroke which changes the pump discharge volume.

1. Loosen the adjusting screw locknut (9) (FIG. 9).

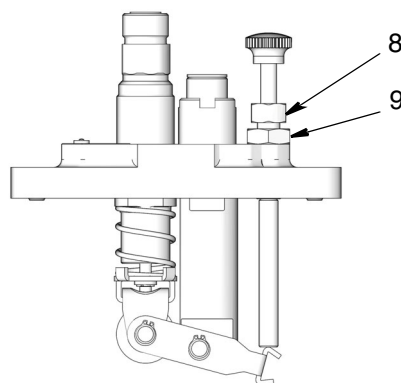


FIG. 9

2. Turn the adjusting screw (8) (FIG. 9):
 - Counterclockwise - increases discharge volume (drops per stroke)
 - Clockwise - decreases discharge volume (drops per stroke)

3. **For Suction Fed and Gravity Fed models only:** With the lubricator operating, count the drops from the drip tube (4) falling into the sight well (2) for one minute.

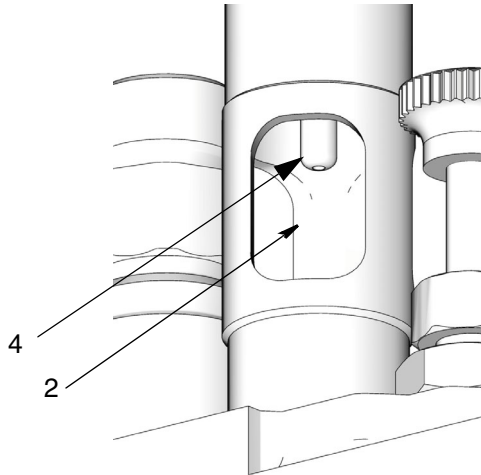


FIG. 10

The number of drops seen falling in the sight well equals the amount of oil discharged by the pump. See Specifications, page 10 for additional information on converting drops to volumetric output.

For Pressure Fed models only: Measure the output volume at the lube point.

4. If any further adjustment is necessary, repeat Steps 2 and 3.
5. Once the pump is adjusted to the proper specification, tighten the adjusting screw locknut (9) (FIG. 9).

NOTE: Piston stroke length set near zero may cause an inconsistent flow.

Calculating Output Capacity

The number of drops observed falling in the sight well equals the amount of oil discharged by the pump. The pump volume can be adjusted using the adjusting screw (8) (FIG. 9) to change the piston stroke. (See Adjusting the Pump.)

Calculating Pints per Day

$$\frac{\text{Number of drops/Minute} \times 1440 \text{ (min./day)}}{14438 \text{ (Number of Drops in a Pint)}} = \text{Pints Per Day}$$

Calculating Minimum or Maximum Pump Output Capacity in Pints per Day

$$\frac{\frac{\text{Input Speed}}{\text{Gear Ratio}} \times \text{Pump Output (Min. or Max drops/stroke*)} \times 1440 \text{ (min./day)}}{14438 \text{ (Number of Drops in a Pint)}} = \text{Min. or Max. Pump Output (Pints Per Day)}$$

* Minimum and Maximum drops per stroke listed in Specifications, page 10.

Example:

The following example calculates the maximum and minimum flow for a 1/4 inch pump model with an electric motor and 300:1 gear ratio.

To calculate the **Maximum Flow:**

$$\frac{\frac{1725 \text{ RPM}}{300:1 \text{ Gear Ratio}} \times \text{Max 12 drops per stroke} \times 1440 \text{ min.}}{14438 \text{ (Number of Drops in a Pint)}} = \text{Max 6.88 Pints/day}$$

To calculate the **Minimum Flow:**

Replace the maximum 12 drops per stroke (used in the equation above) with the minimum 2 drops per stroke = 1.17 minimum pints per day.

Specifications

Table 1

Drops per Stroke Table Section of Table Applies to Suction and Gravity Fed Models Only

Piston Diameter		Max Outlet Pressure†			Drops/Stroke ^{1, 2}		Cubic Inch/Stroke		Cubic cm/Stroke	
inches	mm	psi	MPa	bar	Min*	Max	Min*	Max	Min*	Max
3/16	4.76	7500	51.7	517	0	7	0	0.014	0	0.229
1/4	6.35	6000	41.4	414	0	12	0	0.024	0	0.393
3/8	9.53	3500	24.1	241	0	27	0	0.054	0	0.885
					* Pump adjusted to zero stroke					

- Allowable viscosity range independent of temperature: 80-5000 SUS.
- Strokes/Minute - Maximum - 50; Minimum - 3
- Stroke Length - Maximum 1/2 inch (12.7 mm)

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

¹ Based on 500 SUS oil at 70°F ambient. Heavier oil will produce fewer but larger drops.

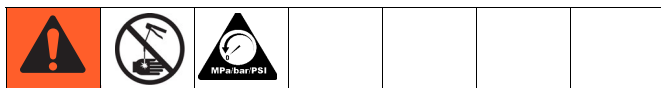
²When approaching maximum outputs, some oils will stream rather than form drops in sight glass.

Table 2

Fluid Measurement Conversion Data

Fluid Measurement Conversion Data (NOTE: All measurements are approximate values only)		
# of Drops	US Measurement	Metric Measurement
1 drop	0.002 cubic inch	0.033 cubic centimeter (cc)
14,438 drops	1 pint	0.47 Liter (l)
28.875 cu. inch	1 pint	0.47 Liter (l)
500 drops	1 cubic inch	16.39 cubic centimeter (cc)
10 drops/minute	1 pint/24 hours	0.47 Liter (l)/24 hours
30 drops	0.061 cubic inch	1 cubic centimeter (cc)

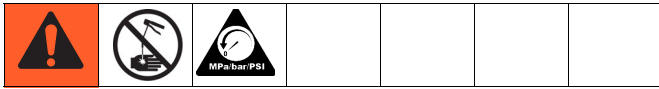
Troubleshooting



Problem	Cause	Solution
Pump does not flow	Pump stroke is adjusted to zero.	Adjust pump stroke for desired output. See page 8.
	Pump outlet is plugged.	Clean/flush pump outlet.
	Outlet check valve damaged.	Replace pump.
	Pump inlet check ball and/or seat is damaged or worn.	
Pump has low flow	Pump stroke is adjusted to minimal travel.	Adjust pump stroke for desired output. See page 8.
	Pump inlet check ball and/or seat is damaged or worn.	Replace pump.
	Outlet check valve damaged.	
Pump has low discharge pressure	Piston and bore are worn.	Replace pump.
	Pump inlet check valve and/or seat are damaged or worn.	
Fluid flow from pump outlet when pump is not running	Inlet pressure exceeds outlet check pressure.	Reduce inlet pressure to below outlet check pressure.
	Pump outlet check ball and/or seat is damaged or worn.	Replace pump.
Sight well fills with oil*	Possible debris in inlet check	Perform Maintenance, page 12.
	Pump inlet check ball and/or seat is damaged or worn	Replace pump.
	Piston and bore are worn	
Sight well runs dry*	Restriction in Drip or Suction tube	Perform Maintenance, page 12.
	Air leak in sight well	Replace pump.
Sight well remains constant and no lubricant drips from tube	Pump air bound	Follow Setup section appropriate for your pump model, pages 5-8.
	Pump regulation set too low	Increase pump regulation.
	Camshaft speed too slow	Increase camshaft speed (see Table 1, page 10.

* Oil level in sight well will rise and fall during normal operation. If condition persists refer to Cause/Solution sections.

Maintenance



5. Torque sight well plug (1) to 35 ± 5 in. lbs (3.95 ± 0.6 N.m).

Sight Well Runs Dry

Should the oil level in the sight well (2) fall below the pump body surface:

1. Remove the sight well plug (1).
2. Allow the pump to continue to operate and manually fill the sight well (2) with filtered oil to below the end of the drip tube (4).
3. Replace the sight well plug (1).
4. Torque sight well plug (1) to 35 ± 5 in. lbs (3.95 ± 0.6 N.m).

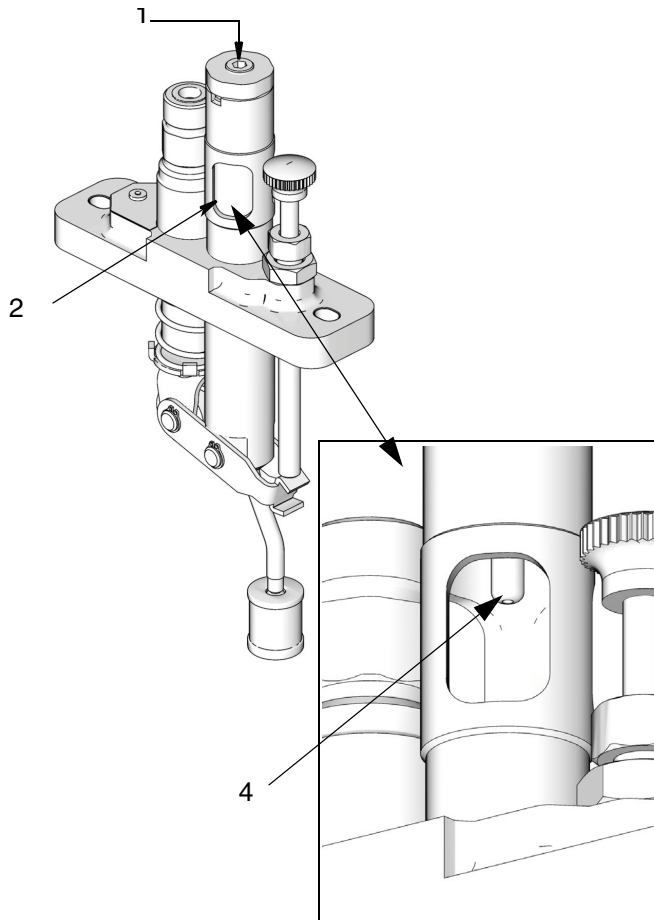


FIG. 11

Sight Well Fills With Oil

The oil level in the sight well (2) will rise and fall slightly during pump operation. Should the oil level in the sight well rise above the drip tube (4):

1. Remove the sight well plug (1).
2. Allow the pump to continue to operate until the oil level has dropped below the drip tube (4).
3. Clean sight well plug threads (1). Apply thread sealant (user supplied) to sight well plug.
4. Replace the sight well plug (1), taking care to not allow any thread sealant into the sight well (2).

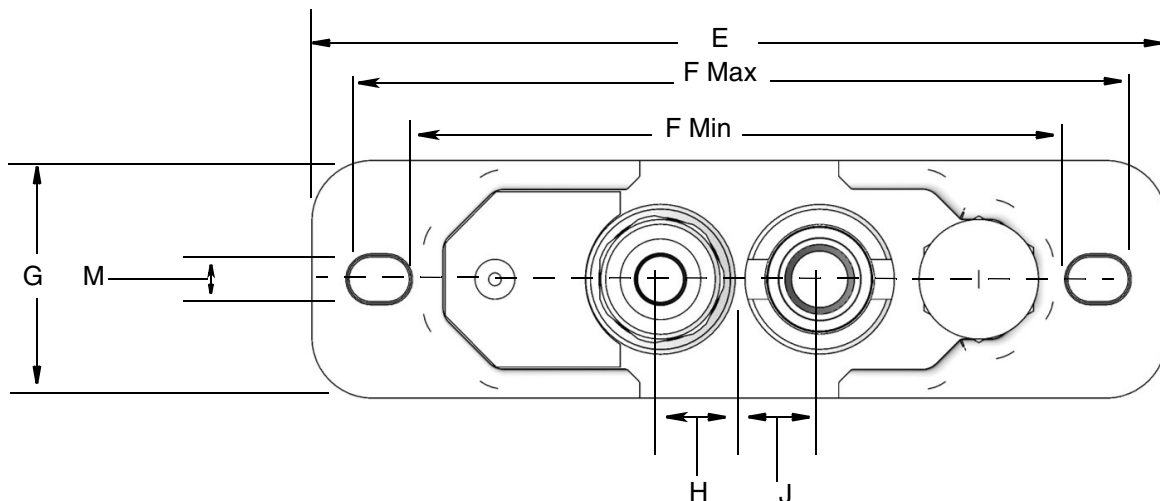
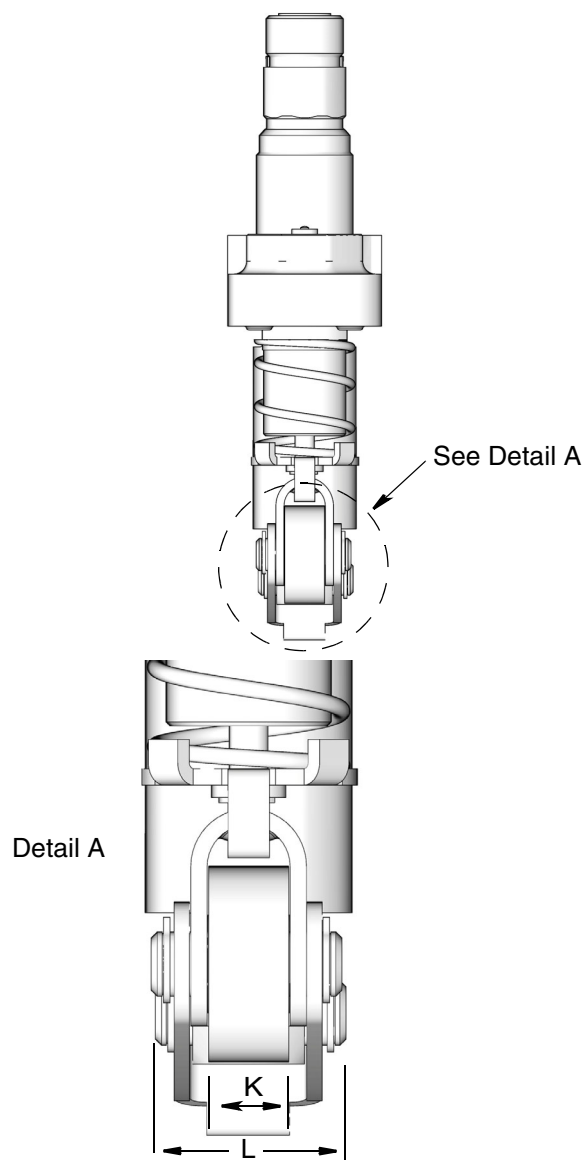
Technical Data

Suction, Gravity Pressure Fed Box Lubricator Pump or Shaft Rotation Alarm Pump		
Maximum Working Pressure	US	Metric
All 3/16" Piston Models	7500 psi	51.7 MPa, 517 bar
All 1/4" Piston Models	6000 psi	41.4 MPa, 414 bar
All 3/8" Piston Models	3500 psi	24.1 MPa, 241 bar
Alarm Pump*	200	1.4 PMa, 14 bar
Inlet Size		
Gravity Fed Models	1/8" - 27 NPTF	
Pressure Fed Models	1/4" - 18 NPTF	
Outlet Size (Suction, Gravity, Pressure Fed Models)	1/8" - 27 NPTF	
Dimensions	page 14	
Weight		
Suction Models	2.6 lbs	1.18 kg
Gravity Models	2.7 lbs	1.22 kg
Pressure Models	2.7 lbs	1.22 kg
Alarm Pump	4.8 lbs	2.18 kg
Temperature Rating	-20°F to 140F°	-29°C to 60°C
Wetted Parts	carbon steel, stainless steel, aluminum, PTFE, Fluoro-elastomer, pyrex	

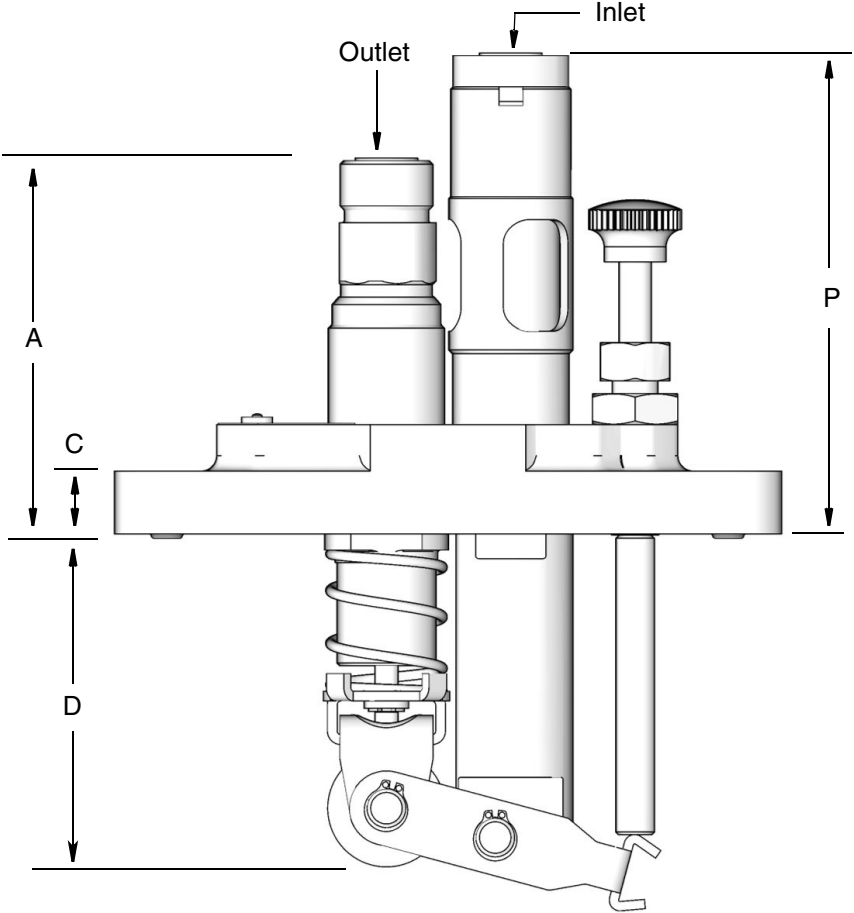
* Sensor output will open at 100-200 psi (0.68 MPa, 6.89 bar).

Pump Dimensions

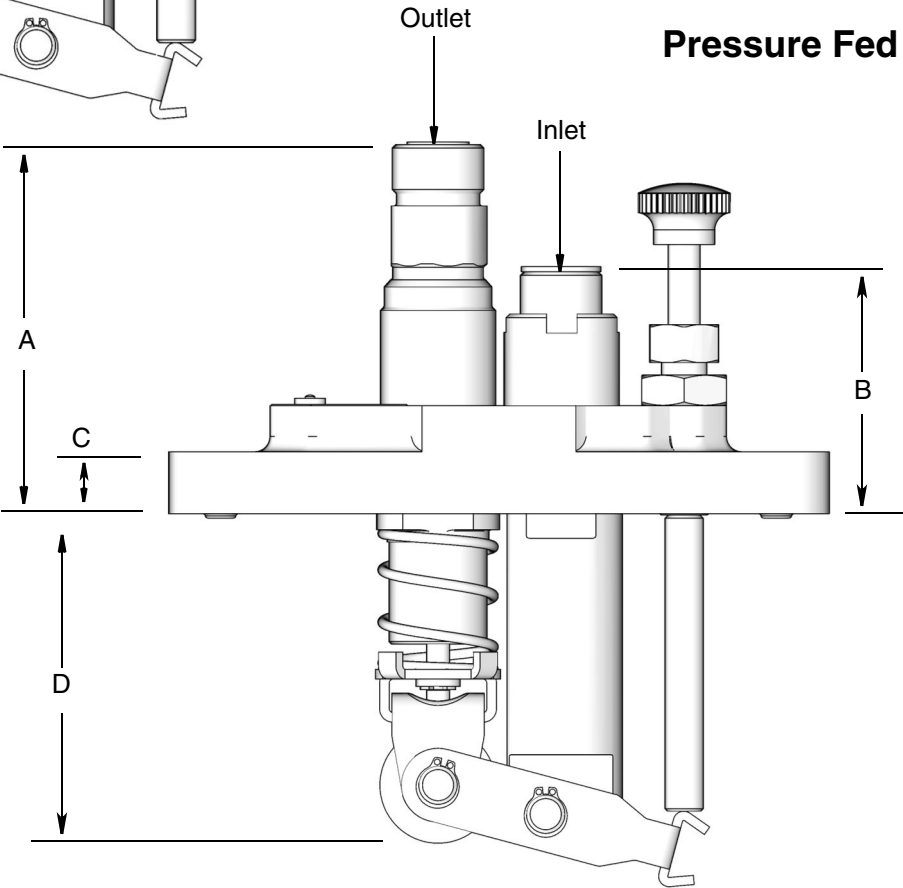
Dimension	Inches	mm
A	3.10	76.20
B	1.97	50.04
C	0.50	12.70
D	Pump Min. 2.58 Pump Max. 3.18	Pump Min. 65.53 Pump Max. 78.23
E	5.37	136.40
F	Min. 4.14 Max 4.90	Min. 105.20 Max 124.50
G	1.50	38.10
H	0.50	12.70
J	0.50	12.70
K	0.39	9.90
L	0.92	23.37
M	0.28	7.11
N	5.40	137.20
P	3.85	97.79
R	10.13	257.18



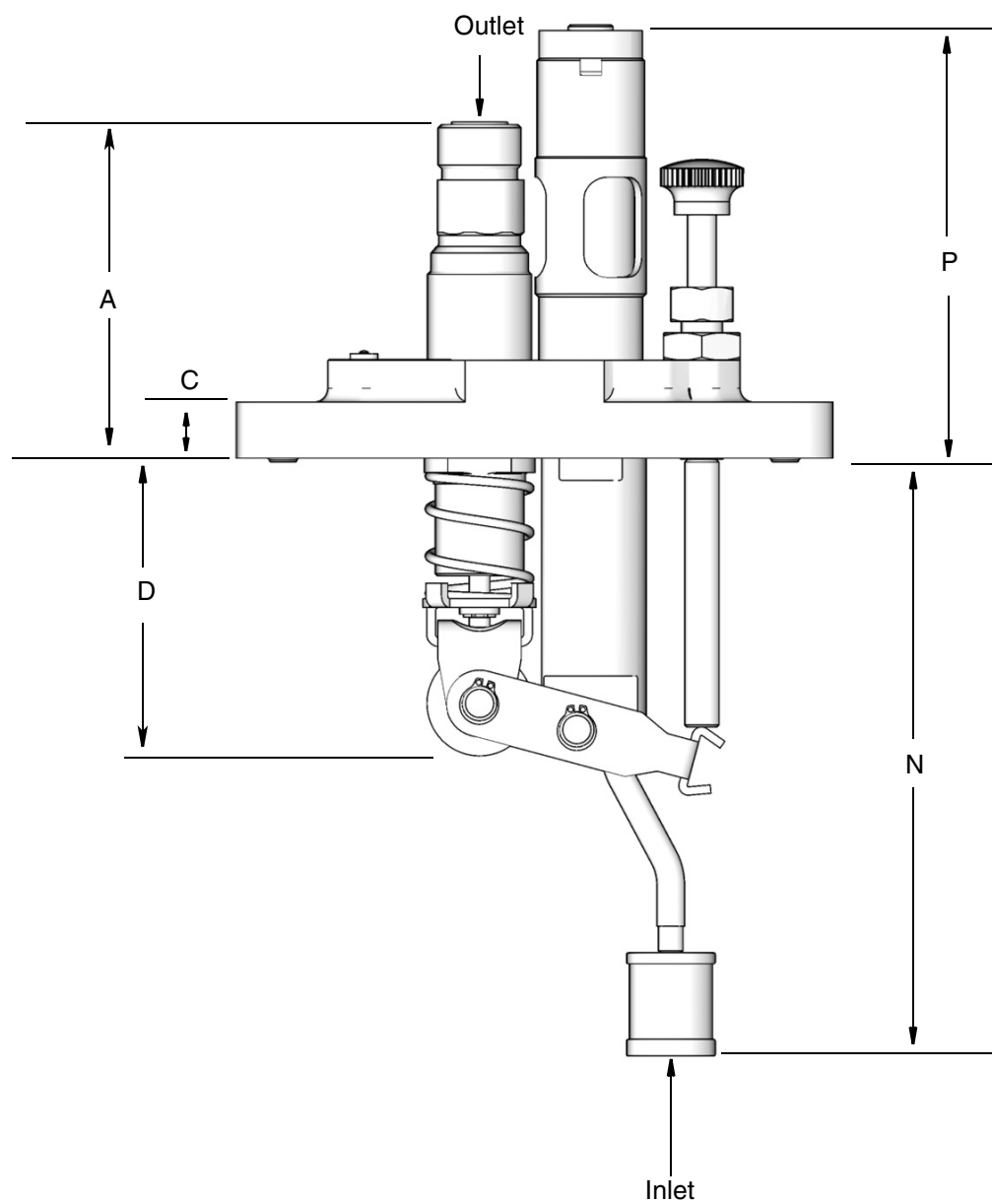
Gravity Fed



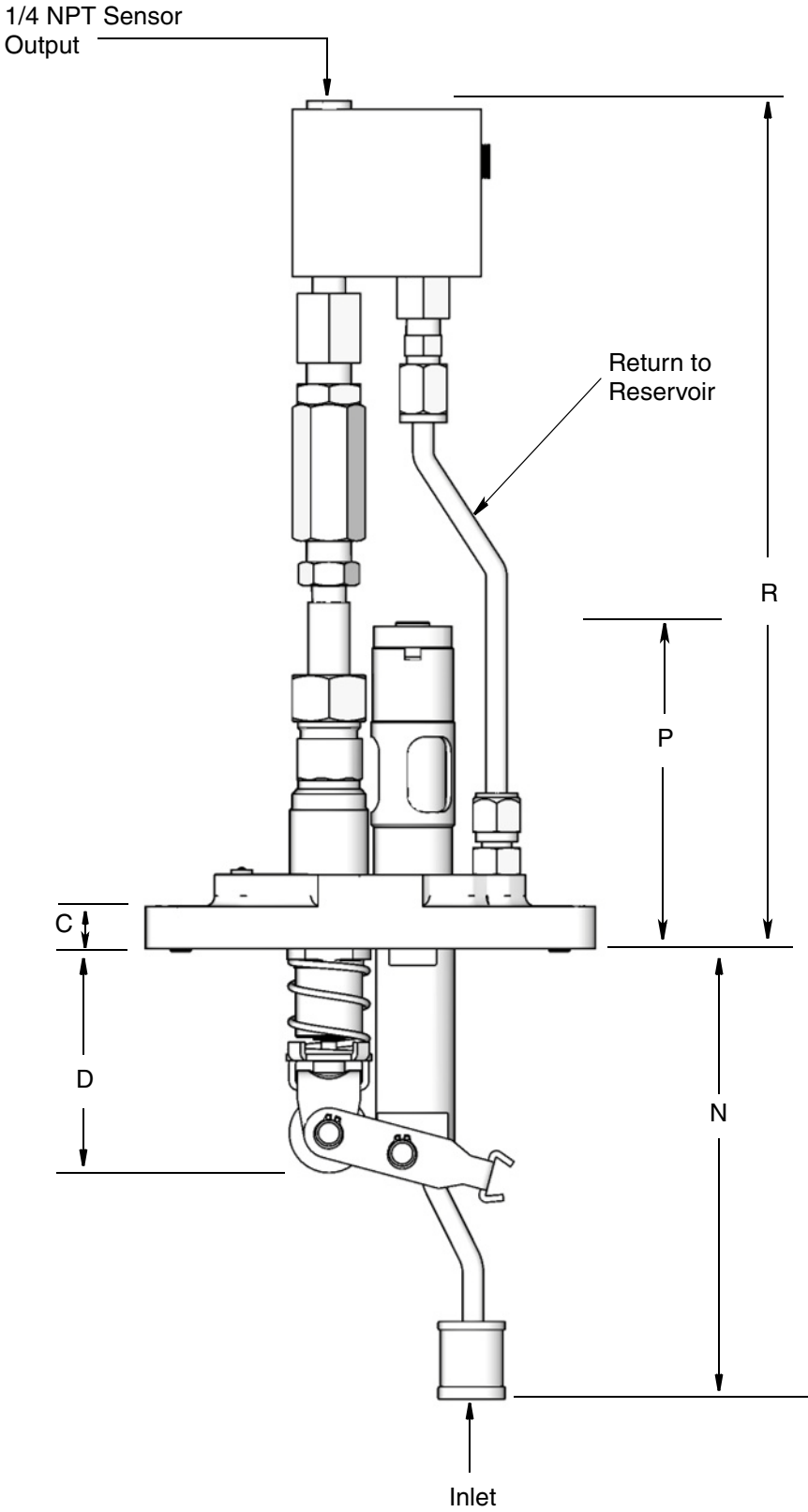
Pressure Fed



Suction Fed



Alarm Pump



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.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.

Phone: 612-623-6928 or **Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.*

For patent information, see www.graco.com/patents.

Original instructions. This manual contains English. MM 3A2257

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

Copyright 2012, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.

www.graco.com
Revised August 2012