

Modular Box Lubricators

312147B

For dispensing non-corrosive and non-abrasive oils and lubricants.

Model MBXXXX

See page 4 for model numbers and maximum working pressures.

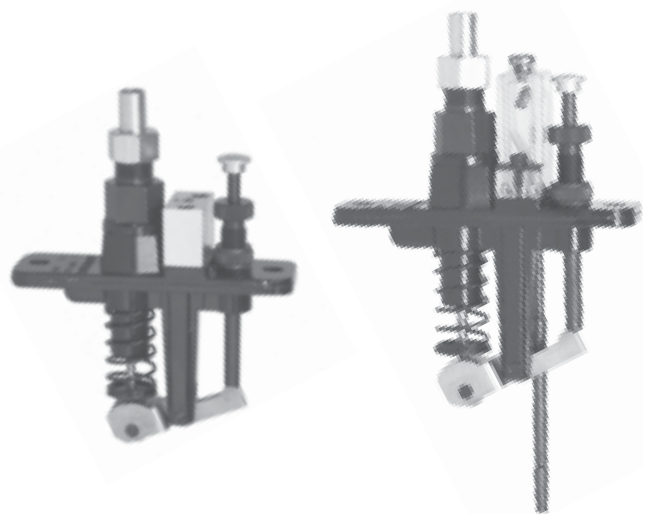


Important Safety Instructions

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

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Model 88 Pumps






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 symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.


 WARNING	
	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispense valve, 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.</p> <ul style="list-style-type: none"> • Do not point dispense valve at anyone or at any part of the body. • Do not put your hand over the end of the dispense nozzle. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow Pressure Relief Procedure in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.
	<p>FIRE AND EXPLOSION HAZARD</p> <p>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:</p> <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. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • 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 forms from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. • 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.

 WARNING	
	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure in this manual. Disconnect power or air supply.
	<p>PRESSURIZED ALUMINUM PARTS HAZARD</p> <p>Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in pressurized aluminum equipment. Such use can cause serious chemical reaction and equipment rupture, and result in death, serious injury, and property damage.</p>
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear • Clothing and respirator as recommended by the fluid and solvent manufacturer • Gloves • Hearing protection

Pressure Relief Procedure

						
<p>Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the Pressure Relief Procedure whenever you:</p> <ul style="list-style-type: none"> • are instructed to relieve the pressure, • check, clean, or service any system equipment, • or install or clean fluid nozzle. 						

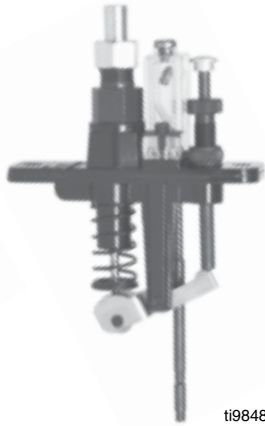
1. Turn off the power supply to the pump.
2. Open any fluid drain valves in the system.
3. Leave the drain valve open until you are ready to pressurize the system.

 If you suspect that pressure is not fully relieved after following the previous steps, using a rag **very slowly** loosen the hose end coupling or a fitting on the fluid line and allow pressure to be relieved gradually, then loosen the part completely and clear the clog.

Models



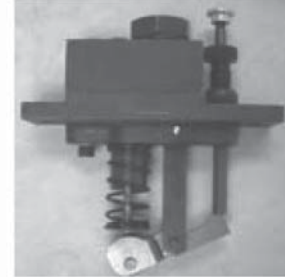
Model 88 Pumps



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Model 76 Pumps




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Part Number		Option	Piston Size (in.)	Maximum pressure	Drops per stroke		Cu. In. per stroke		Cm ³ per stroke		Strokes per minute	
Standard Pump	Pressurized Pump				Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
562953	562961	76B	3/16	7500 psi (52.5 MPa, 525 bar)	6	1	0.013	0.002	0.213	0.033	50	3
562955	562963	76C	1/4	6000 psi (42.5 MPa, 425 bar)	12	2	0.024	0.004	0.393	0.066	50	3
562957	562965	76E	3/8	2500 psi (17.5 MPa, 175 bar)	27	4	0.055	0.008	0.901	0.131	50	3
562954	562962	88B	3/16	7500 psi (52.5 MPa, 525 bar)	6	1	0.013	0.002	0.213	0.033	50	3
562956	562964	88C	1/4	6000 psi (42.5 MPa, 425 bar)	12	2	0.024	0.004	0.393	0.066	50	3
562958	562966	88E	3/8	2500 psi (17.5 MPa, 175 bar)	27	4	0.055	0.008	0.901	0.131	50	3

Installation

CAUTION
The installation and all work concerning assembly, maintenance, and repair must be completed by qualified personnel.

Mounting

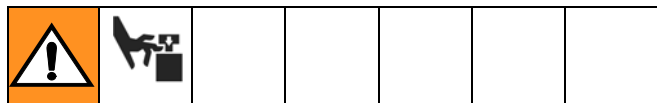
 When possible, mount the lubricator on a surface that experiences little to no vibration.

Reservoirs have end mounting lugs as shown in outline drawings on page 9. Use all mount features provided to ensure the lubricator is rigidly fixed after installation.

Select a mounting location that will accomplish the following goals:

- Allow easy access to the lubricator for filling the reservoir and periodic maintenance.
- Provide a stable surface upon which the lubricator can operate.
- The lubricator must be connected to a ground source.

Drive Mechanism



A 5/8 in. diameter shaft is provided to connect the lubricator to a rotary power source. A number 5 woodruff key and key way on the shaft are provided to aid in connecting this source.

Install protective guards around all drive components upon installation.

CAUTION
The recommended speed of the mechanism driving the lubricator is 3 - 50 rpm. Do not exceed the maximum value of 50 rpm to avoid pump damage.

System Connections

It is recommended that each pumping unit be installed with a check valve in the discharge line so that the pump assembly may be removed from the reservoir without loss of lubricant in the discharge lines. The installation of a second check valve at the end of the discharge line will prevent line drainage and act as a positive means of avoiding feedback of system pressure to pump.

When using Model 88 pumps, torque the union fitting on the outlet check valve to 37- 42 ft-lb (50-57 N•m)

Lubricant Types and Viscosities


Graco Modular Box Lubricators are suitable for use with mineral oil or synthetic base lubricants with viscosities in the range of 100 to 5000 SUS under pumping conditions.

Operation

Oil Level

When necessary, completely fill the lubricator reservoir with clean filtered lubricant. A sight level gauge is provided on the reservoir to monitor the fluid level. Oil level should not be allowed to drop below the line indicating an empty reservoir.

During the initial filling, remove the vent plug from pumps using sight glasses prior to filling the reservoir. This allows lubricant to rise in the vacuum tube up to the level of lubricant in the reservoir and reduces the priming required at start up.

 If pressurized pumps are used, the reservoir should be filled with lubricant to extend the life of the internally moving components.

Pump Priming



If the sight well on the pump does not contain oil, the pump should be primed using the following procedure:


1. If using a vacuum type pump with a sight glass, remove the vent screw located on the top of the sight glass.
2. Adjust the pump stroke length to its maximum setting.
3. Depress the hand plunger assembly and release when the cap contacts the adjustment rod guide.
4. Repeat until an air free stream of fluid exits the pump outlet.
5. Replace the vent screw at the top of the sight glass.

Pumping Rate

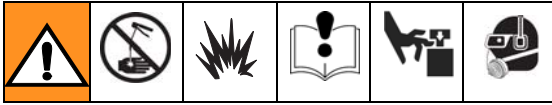
The amount of lubricant dispensed from each pump can be adjusted. The volume dispensed by each pump is indicated by the amount of lubricant dripping from the vacuum tube inside the sight glass.

The amount of dispensed volume can be adjusted by performing the following steps:

1. Loosen the adjustment rod lock nut.
2. Turn the adjustment rod guide clockwise to decrease the amount of lubricant dispensed, or counterclockwise to increase the amount of lubricant dispensed.
3. Once the desired settings have been achieved, tighten the adjustment rod lock nut by hand.

 The vacuum tube dispense rate is accurate after the pump has operated long enough to stabilize the pressure inside the sight glass. There is a time lag at start-up, low dispense rates, and during the adjustment of dispense rates. Allow sufficient time to ensure the proper amount of lubricant is dispensed.

Service



CAUTION

The installation and all work concerning assembly, maintenance, and repair **must** be completed by qualified personnel.

1. Follow the **Pressure Relief Procedure** on page 3.
2. Lubricator operation can be checked by observing the drip tube. If the correct pumping rate is maintained, no servicing is required other than periodic replenishment of the reservoir. If the sight glass well pumps dry or no flow is observed, check the following points until the cause is determined and corrected.
 - a. Check the vent plug for proper sealing. Any nicks or cracks will cause an air leak into the sight glass.
 - b. Check shaft rotation. If the lubricator shaft is not rotating, determine the cause and repair as necessary.
 - c. Check oil level and viscosity. Be sure the reservoir is filled with oil.
 - d. Check pump priming. If necessary, prime the pump in accordance with the "Operating Instructions".
 - e. Check the feed adjustment and readjust if the pumping rate is too low.
 - f. Check the actuating linkage for proper operation. If defective, isolate the broken part and repair or replace as required.
3. If none of the above steps isolate the malfunction, the cause is in the pump assembly. The following items should be checked before removing the pump assembly from the cover.
 - a. Check the sight for inward leakage due to a crack in the sight glass, improper sight glass seating, or a defective o-ring. Repair as required.
 - b. Check for an obstruction in the drip tube and remove if found.
4. If these steps do not isolate the malfunction, disconnect the discharge tubing and remove the pump assembly which is attached to the cover with two screws. It is not necessary to stop the equipment on which the lubricator is installed or to empty the reservoir. A spare pump should be on hand for use during emergencies when a pump is being repaired.
5. If the sight glass fills with lubricant proceed as follows:
 - a. Remove the vent plug and allow the lubricant to pump down to the proper level. Replace the vent plug. The pump should operate normally.
 - b. If the sight glass continues to fill with lubricant check all terminal check valves for proper operation. If the valves are operating properly, remove and clean the pump assembly, then reinstall the pump in the system and check operation.
6. If the sight glass still fills with lubricant it may be caused by temperature variation.
 - a. 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.
 - b. When the unit is operating, the sight level will vary depending on temperature variations. If the level falls to less than 1/4 inch above sight glass flange, add lubricant to the proper level (3/8 inch below the discharge of the drip tube) through the vent hole. If the level is too high, remove the vent plug and allow the unit to pump down before replacing the vent plug.

Other servicing that may be required is listed below:

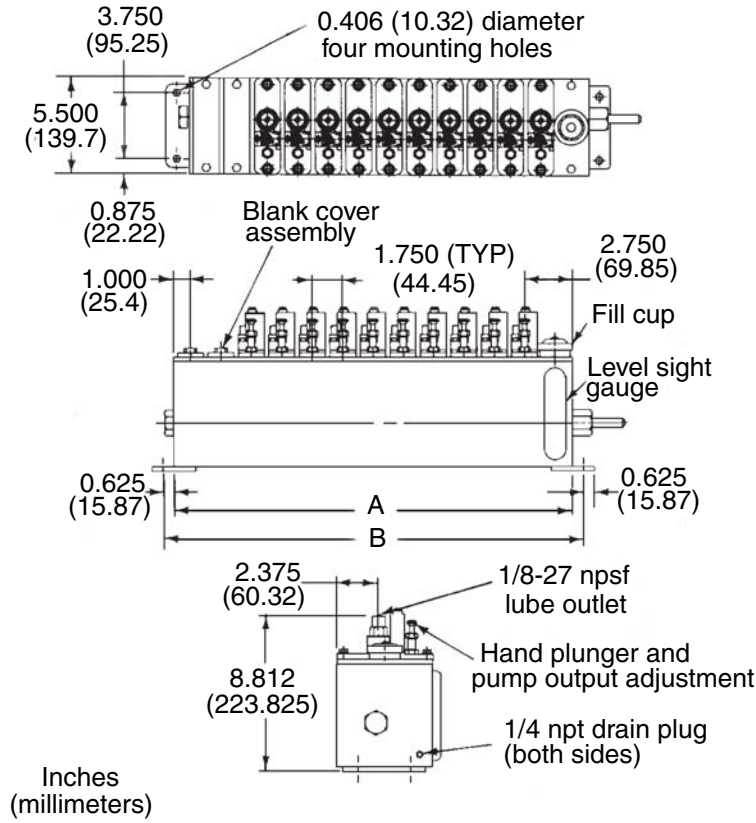
- Periodic cleaning of the lubricator is desirable to eliminate contamination that may have occurred in the oil. To accomplish this, remove all pumping units and clean the pumps and reservoir by brushing loose all foreign matter, dipping in solvent and blowing dry with compressed air.
- If external leakage is observed, determine the cause (loose bolts, defective gaskets, or seals) and repair as required.

Technical Data

Plunger diameter	3/16 in. (4.8 mm) for Models 76B and 88B 3/8 in. (9.5 mm) for Models 76E and 88E 1/4 in. (6.4 mm) for Models 76C and 88C
Maximum Working Pressure*	2500-7500 psi (17.5-52.5 MPa; 175-525 bar)
Minimum Pump Dispensing Rate*	0.002 - 0.008 cu. in.
Maximum Pump Dispensing Rate*	0.013 - 0.055 cu. in.
Operating Temperature Range	-20°F to 140°F (-29°C to 60°C)
Dispensing Fluid Viscosity	100 - 5000 SUS
Wetted Materials	music wire, carbon steel, nylon, aluminum, nitrile rubber

*Varies with pump selection, see Models chart on page 4.

Dimensions



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Options	Size		Dimensions - inches (millimeters)	
	Pints	Liters	A	B
T1	4	1.9	5.50 (139.70)	6.75 (171.45)
T2	6	2.8	7.25 (184.15)	8.50 (215.90)
T3	8	3.8	10.75 (273.05)	12.00 (304.80)
T4	12	5.7	16.00 (406.40)	17.25 (438.15)
T5	16	7.6	23.00 (584.20)	24.25 (615.95)
T6	24	11.3	30.00 (762.00)	31.25 (793.75)
T7	32	15.1	37.00 (939.80)	38.25 (971.55)
T8	40	18.9	44.00 (1117.60)	45.25 (1149.35)

Note: A blank cover assembly will be provided for all unused pump stations.

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.

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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.*

This manual contains English. MM 312147

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