



This manual contains important warnings and information.  
**READ AND KEEP FOR REFERENCE.**

INSTRUCTIONS

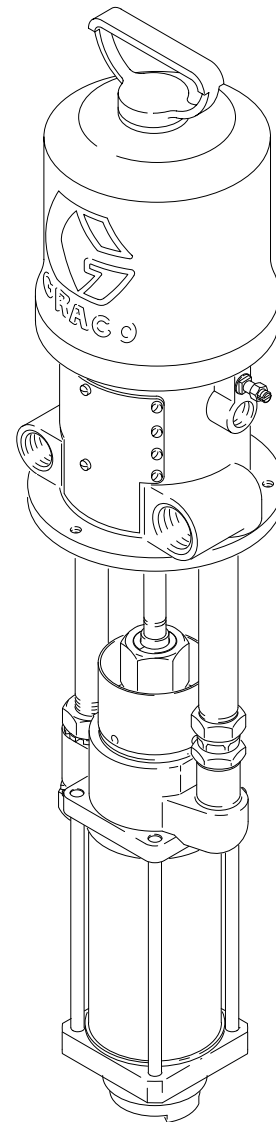
## STUBBY SIZE

# 4:1 Ratio President® Pump

*400 psi (28 bar) Maximum Fluid Working Pressure*  
*100 psi (7 bar) Maximum Air Input Pressure*

### Part No. 224-757, Series C

Carbon Steel, Leather Packed Pump  
For Use in Lubrication Systems



## Table of Contents

Warnings .....	2
Installation .....	5
Operation .....	8
Maintenance .....	10
Troubleshooting .....	11
Service .....	12
Parts .....	13
Dimensions .....	14
Mounting Hole Layout .....	14
Technical Data .....	15
Graco Warranty .....	16
Toll-Free Graco Phone Number .....	16

06112

# Symbols

## Warning Symbol



This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

## Caution Symbol



This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

## WARNING



INSTRUCTIONS

### EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are not sure, call your Graco distributor.
- Do not alter or modify this equipment.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. Refer to the **Technical Data** on page 15 for the maximum working pressure of this equipment.
- Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the **Technical Data** section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in aluminum equipment. Such use could result in a serious chemical reaction, with the possibility of explosion.
- Do not use hoses to pull equipment.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 82°C (180°F) or below -40°C (-40°F).
- Wear hearing protection when operating this equipment.
- Do not lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

# WARNING



## FIRE AND EXPLOSION HAZARD

Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.

- Ground the equipment and the object being lubricated. Refer to **Grounding** on page 5.
- If there is any static sparking or you feel an electric shock while using this equipment, **stop dispensing immediately**. Do not use the equipment until you identify and correct the problem.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being dispensed.
- Keep the dispense area free of debris, including solvent, rags, and gasoline.
- Electrically disconnect all equipment in the dispense area.
- Extinguish all open flames or pilot lights in the dispense area.
- Do not smoke in the dispense area.
- Do not turn on or off any light switch in the dispense area while operating or if fumes are present.
- Do not operate a gasoline engine in the dispense area.



## TOXIC FLUID HAZARD

Hazardous fluid or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- Know the specific hazards of the fluid you are using.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.



## MOVING PARTS HAZARD

Moving parts, such as the air motor piston, can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Before servicing the equipment, follow the **Pressure Relief Procedure** on page 8 to prevent the equipment from starting unexpectedly.



# Installation

## General Information

**NOTE:** Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawing.



**NOTE:** Always use Genuine Graco Parts and Accessories, available from your Graco distributor. If you supply your own accessories, be sure they are adequately sized and pressure rated for your system.

Fig. 2 is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to suit your particular needs.

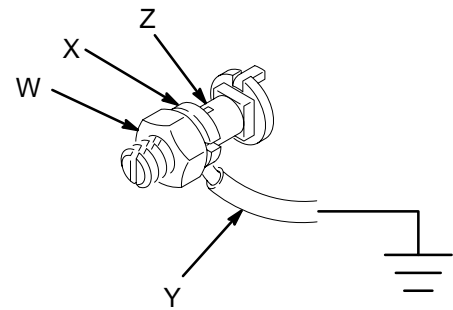
## Prepare the Operator

All persons who operate the equipment must be trained in the safe, efficient operation of all system components as well as the proper handling of all fluids. All operators must thoroughly read all instruction manuals, tags, and labels before operating the equipment.

## Grounding

 <b>WARNING</b>	
	<b>FIRE AND EXPLOSION HAZARD</b> Before operating the pump, ground the system as explained below. Also read the section <b>FIRE AND EXPLOSION HAZARD</b> on page 3.

1. *Pump:* order Part No. 237–569 Ground Wire and Clamp. See Fig. 1. Loosen the grounding lug locknut (W) and washer (X). Insert one end of the ground wire (Y) into the slot in lug (Z) and tighten the locknut securely. Connect the other end of the wire to a true earth ground.



0864

**Fig. 1**

2. *Air and fluid hoses:* use only electrically conductive hoses.
3. *Air compressor:* follow manufacturer's recommendations.
4. *Dispensing valve:* ground through connection to a properly grounded fluid hose and pump.
5. *Fluid supply container:* follow your local code.
6. *Object being lubricated:* follow your local code.
7. *Solvent pails used when flushing:* follow your local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts the grounding continuity.
8. *To maintain grounding continuity when flushing or relieving pressure,* hold a metal part of the dispensing valve firmly to the side of a grounded metal pail, then trigger the valve.

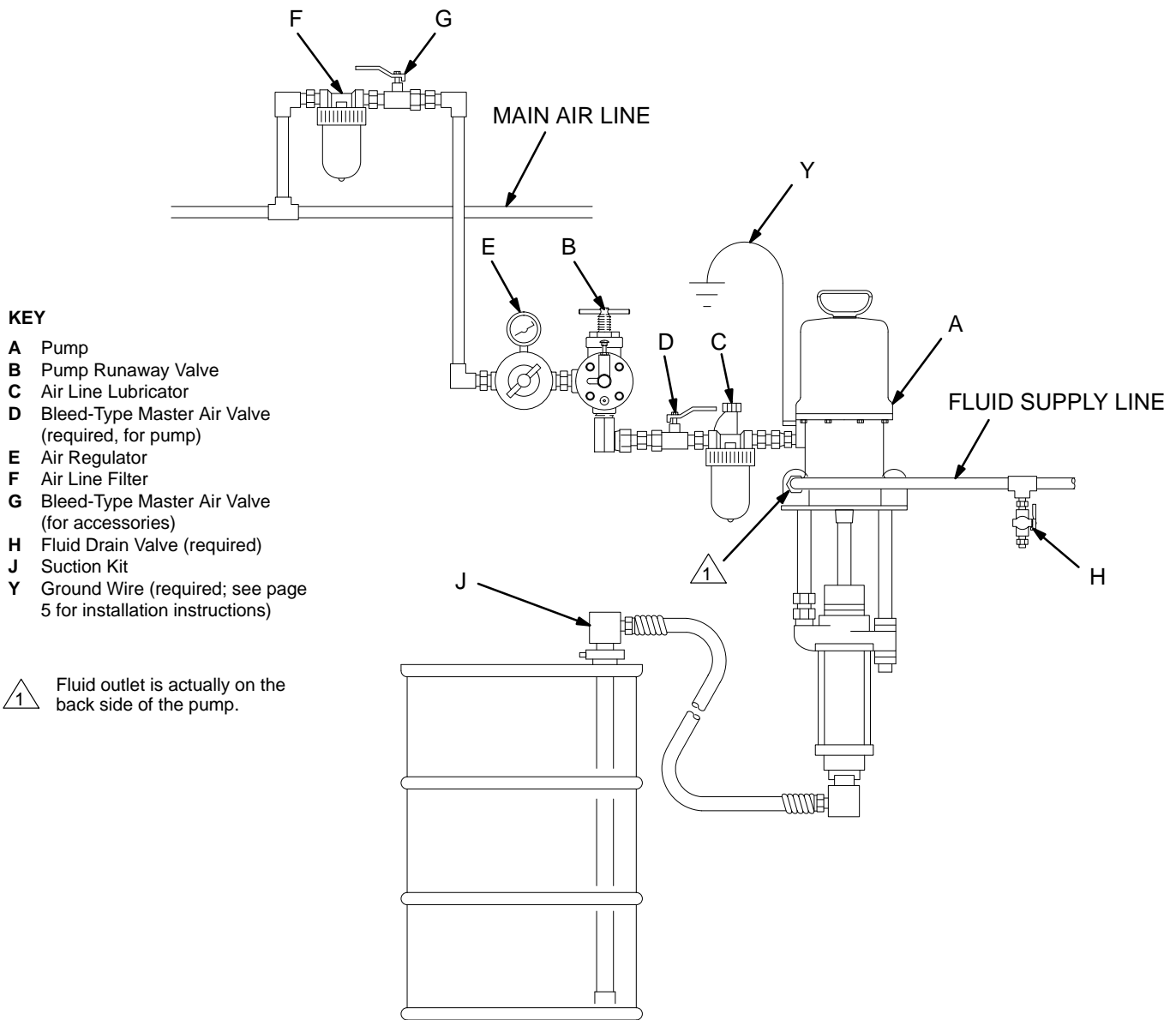
## Mounting the Pump

Mount the pump to suit the type of installation planned. The pump dimensions and mounting hole layout are shown on page 14.

If the pump is immersed, be sure the pump intake is 1/2 in. (13 mm) off the bottom of the fluid container.

If the pump is mounted on the wall or on a stand, connect a suction line to the pump's 1–1/2" npt(f) fluid inlet and place the other end of the line in the fluid container.

# Installation



06113

Fig. 2

# Installation

## Available Accessories (must be purchased separately)

### Air Line Accessories

#### **WARNING**

A bleed-type master air valve (D) is required in your system to help reduce the risk of serious injury, including splashing of fluid in the eyes or on the skin, and injury from moving parts if you are adjusting or repairing the pump.

The bleed-type master air valve relieves air trapped between this valve and the pump after the air is shut off. Trapped air can cause the pump to cycle unexpectedly. Locate the valve close to the pump.

- **The bleed-type master air valve (D)** is required in your system to relieve air trapped between it and the air motor when the valve is closed (see the **WARNING** above). Be sure the bleed valve is easily accessible from the pump, and is located **downstream** from the air regulator (E). Order Part No. 113–269 Bleed Valve.
- **The air regulator (E)** controls pump speed and outlet pressure by adjusting the air pressure to the pump. Locate the pump air regulator **upstream** from the pump's bleed-type master air valve (D).
- **The air filter (F)** removes harmful dirt and moisture from the compressed air supply.

- **A pump runaway valve (B)** automatically shuts off the pump if it starts running too fast. A pump which runs too fast can be seriously damaged.
- **An air line lubricator (C)** provides automatic air motor lubrication. Install downstream from the pump air regulator (E).
- **Install a second air bleed valve (G)** upstream from all other air line accessories, to isolate the accessories for servicing.

### Fluid Line Accessories

#### **WARNING**

A fluid drain valve (H) is required in your system to help reduce the risk of serious injury, including splashing of fluid in the eyes or on the skin.

The fluid drain valve assists in relieving fluid pressure in the displacement pump, hose, and dispense valve. Triggering the valve to relieve pressure may not be sufficient.

- **The fluid drain valve (H)** is required in your system to relieve fluid pressure in the hose and dispense valve (see the **WARNING** above).
- Connect a **suction tube kit (J)** to the pump's 1–1/2" npt(f) fluid inlet.

# Operation

## Pressure Relief Procedure

### **⚠ WARNING**

#### **PRESSURIZED EQUIPMENT HAZARD**

The system pressure must be manually relieved to prevent the system from starting or dispensing accidentally. To reduce the risk of an injury from accidental spray from the dispense valve, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

- are instructed to relieve the pressure,
- stop dispensing,
- check or service any of the system equipment,
- or install or clean the nozzle.

1. Shut off the air supply to the pump.
2. Close the bleed-type master air valve (D, required in your system).
3. Hold a metal part of the dispensing valve (if used) firmly to the side of a grounded metal pail, and trigger the valve to relieve pressure.
4. Open the drain valve (H, required in your system), having a container ready to catch the drainage.
5. Leave the drain valve open until you are ready to spray again.

*If you suspect that the spray nozzle or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, **very slowly** loosen the hose end coupling and relieve pressure gradually, then loosen completely. Now clear the nozzle or hose.*

## Packing Nut

### **⚠ WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** above.

Check the tightness of the packing nut/wet-cup (U) periodically. The nut should be tight enough to prevent leakage. Torque the nut to 20–24 ft-lb (27–33 N.m); do not overtighten or you may damage the packings. **Relieve pressure** before adjusting the nut. See Fig. 3.

If the pump is not immersed, fill the packing nut/wet-cup 1/2 full with a compatible solvent. Keep the cup filled at all times to help prevent the fluid you are pumping from drying on the exposed displacement rod and damaging the throat packings.

## Flush the Pump Before First Use

The pump is tested with lightweight oil, which is left in to protect the pump parts. If the fluid you are using may be contaminated by the oil, flush it out with a compatible solvent. See **Flushing** on page 10.

**1** ⚠ Torque to 20–24 ft-lb (27–33 N.m).

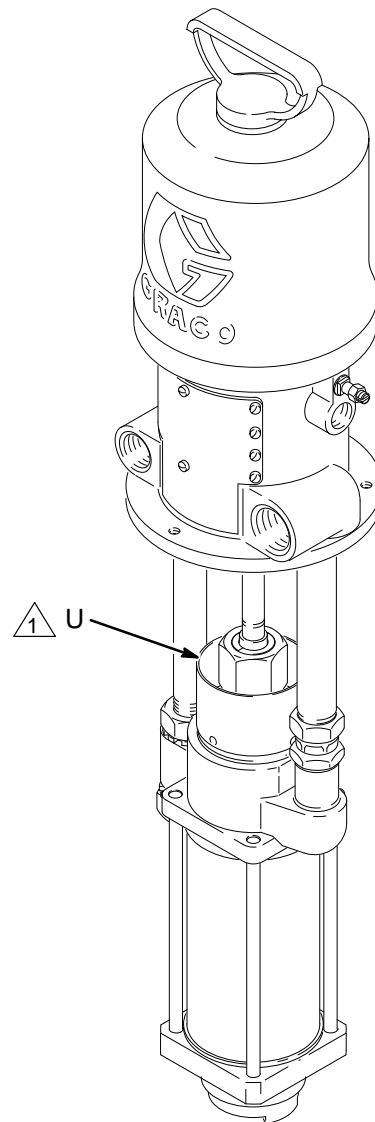


Fig. 3

06112



# Operation

## Prime the Pump

1. See Fig. 2. Close all bleed-type air valves (D, G).
2. Close the pump air regulator (E).
3. Close the fluid drain valve (H).
4. Check that all fittings throughout the system are tightened securely.
5. Connect the air supply line to the pump air inlet.
6. Open the bleed-type air valves (D, G).
7. Hold a metal part of the dispense valve (if used) firmly to the side of a grounded metal pail and hold the trigger open.
8. Open the air regulator (E) until the pump starts. Run the pump slowly until all air is pushed out and the system is fully primed. Always use the lowest pressure necessary to get the desired results. Higher pressures cause premature pump wear.
9. Release the dispense valve trigger and lock the trigger safety.

### WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

10. **Relieve the pressure.** Install the nozzle in the dispense valve, as explained in the dispense valve manual.

### WARNING

#### COMPONENT RUPTURE HAZARD



To reduce the risk of overpressurizing your system, which could cause component rupture and serious injury, **never** exceed 100 psi (7 bar) air supply pressure to the pump.

11. Use the air regulator (E) to control pump outlet pressure and pump speed. Always use the lowest pressure necessary to get the desired results. Higher pressure causes premature pump wear.

### CAUTION

Do not allow the pump to run dry. It will quickly accelerate to a high speed, causing damage. If your pump is running too fast, stop it immediately and check the fluid supply. If the container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines, or flush and leave it filled with a compatible solvent. Eliminate all air from the fluid system.

# Maintenance

## Shutdown and Care of the Pump

### **WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

For overnight shutdown, stop the pump at the bottom of its stroke to prevent fluid from drying on the exposed displacement rod and damaging the throat packings. **Relieve the pressure.**

Always flush the pump before the fluid dries on the displacement rod. See **Flushing** below.

## Flushing

### **WARNING**



#### **FIRE AND EXPLOSION HAZARD**

Before flushing, read the section **FIRE AND EXPLOSION HAZARD** on page 3. Be sure the entire system and flushing pails are properly grounded. Refer to **Grounding** on page 5.

Flush the pump:

- Before the first use
- When changing fluids
- Before storing the pump.

Flush with a fluid that is compatible with the fluid you are pumping and with the wetted parts in your system. Check with your fluid manufacturer or supplier for recommended flushing fluids and flushing frequency.

### **CAUTION**

Never leave water or water-base fluid in the pump overnight. If you are pumping water-base fluid, flush with water first, then with a rust inhibitor such as mineral spirits. Relieve the pressure, but leave the rust inhibitor in the pump to protect the parts from corrosion.

### **WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

1. **Relieve the pressure.**
2. Hold a metal part of the dispense valve firmly to the side of a grounded *metal* pail.
3. Start the pump. Always use the lowest possible fluid pressure when flushing.
4. Trigger the dispense valve.
5. Flush the system until clear solvent flows from the dispense valve.
6. **Relieve the pressure.**

## Corrosion Protection for Carbon Steel Pumps

### **CAUTION**

Water, or even moist air, can cause your pump to corrode. To help prevent corrosion, **never** leave the pump filled with water or air. Follow the instructions under **Flushing**, at left.

## Fluid Piston and Intake Valve Adjustment

The fluid piston and intake valves are factory set for pumping medium viscosity fluids. See the separate displacement pump manual, 307–983, for adjustment procedures to pump lighter or heavier viscosity fluids.

# Troubleshooting

## **WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

1. **Relieve the pressure.**
2. Check all possible problems and solutions before disassembling pump.

Problem	Cause	Solution
Pump fails to operate.	Restricted line or inadequate air supply.	Clear; increase air supply.
	Dirty or damaged air motor.	Service air motor (see 306–982).
	Clogged fluid hose, valve, or nozzle.	Clear.*
Pump operates but output is low on both strokes.	Restricted line or inadequate air supply.	Clear; increase air supply.
	Exhausted fluid supply.	Refill; reprime or flush.
	Clogged fluid hose, valve, or nozzle.	Clear.*
	Loose packing nut or worn throat packings.	Tighten packing nut (see page 8); replace throat packings.
	Piston and intake valves need adjustment.	Adjust; see manual 307–983.
Pump operates but output is low on downstroke.	Held open or worn intake valve.	Clear; service. See manual 307–983.
Pump operates but output is low on upstroke.	Held open or worn fluid piston valve or packings.	Clear; service. See manual 307–983.
Erratic or accelerated operation.	Exhausted fluid supply.	Refill; reprime or flush.
	Piston and intake valves need adjustment.	Adjust; see manual 307–983.
	Held open or worn intake valve.	Clear; service. See manual 307–983.
	Held open or worn fluid piston valve or packings.	Clear; service. See manual 307–983.

\* To determine if the fluid hose or gun is obstructed, follow the **Pressure Relief Procedure** on page 8. Disconnect the fluid hose and place a container at the pump fluid outlet to catch any fluid. Turn on the air just enough to start the pump (about 20–40 psi [1.4–2.8 bar]). If the pump starts when the air is turned on, the obstruction is in the fluid hose or dispense valve.

# Service

## Disconnecting the Displacement Pump

**NOTE:** For displacement pump repair instructions, refer to the separate displacement pump manual 307–983, supplied.

### **⚠ WARNING**

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 8.

1. Flush the pump if possible. Stop the pump at the bottom of its stroke. **Relieve the pressure.**
2. Disconnect all hoses and remove the pump from its mounting.
3. Unscrew the coupling nut (17) from the displacement rod (R). Remove the coupling collars (18). See Fig. 4.
4. Unscrew the lower locknut (14) and lockwasher (13) from the return mounting tube (11).
5. Unscrew the swivel union (S) from the supply mounting tube (12).




### **⚠ CAUTION**

If you are removing the mounting tubes, wrench the tubes close to the motor base to prevent thread damage in the base. Use thread sealant on the male threads when reinstalling.

## Reconnecting the Displacement Pump

1. Position the displacement pump on the mounting tubes (11, 12). Thread the upper locknut (14) onto the return mounting tube (11) a couple of turns. Tighten the swivel union (S) securely onto the supply mounting tube (12). See Fig. 4.
2. Butt the connecting rod (2) and displacement rod (R) together; if necessary, adjust the locknuts (14) on the return mounting tube (11) to align the rods.
3. Position the coupling collars (18) so they engage with the connecting rod (2) and displacement rod (R). Lower the coupling nut (17) over the coupling collars and screw it securely onto the displacement rod.
4. Tighten the locknuts (14) securely.
5. Remount the pump and connect all hoses.

6. Turn on the air to the motor and run the pump slowly. Adjust the locknuts (14) on the return mounting tube (11) as necessary until the pump operates smoothly at minimum air pressure to the motor. Tighten the locknuts securely.
7. Reconnect the ground wire if it was disconnected during repair.
8. If the pump is not immersed, fill the packing nut/wet-cup 1/2 full of compatible solvent.

- 1  Torque to 65–75 ft-lb (88–102 N.m).
- 2  Use thread sealant when reinstalling.
- 3  Lubricate.

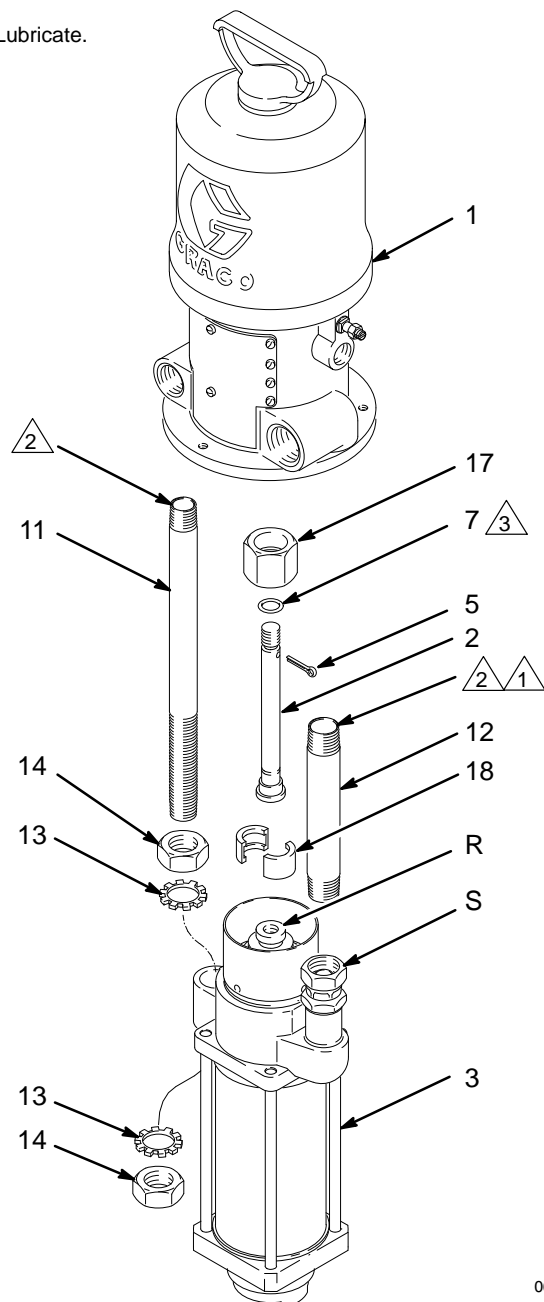


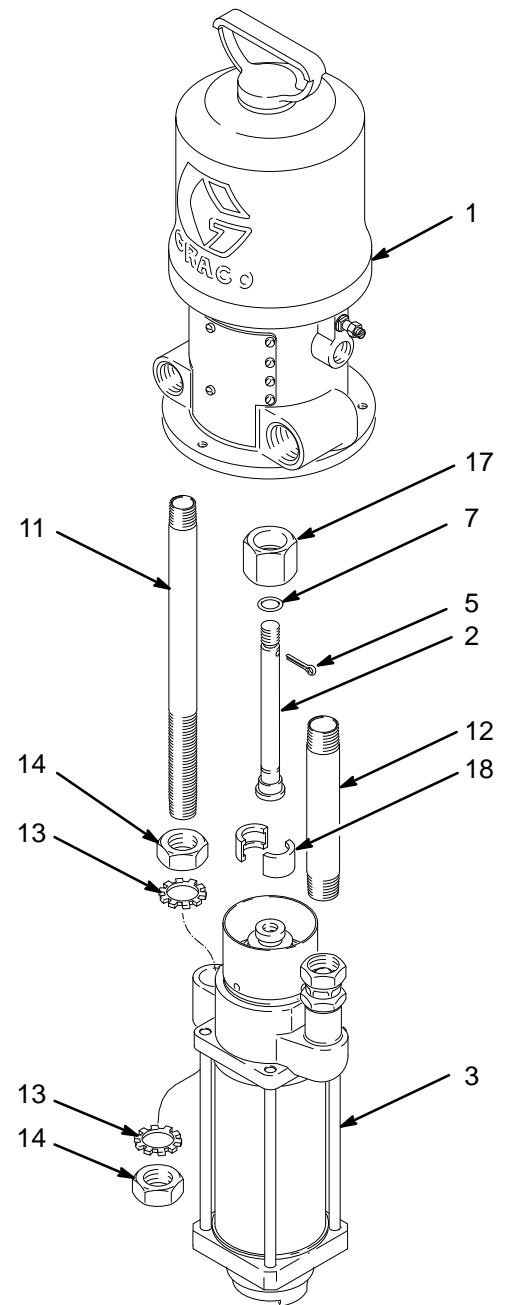
Fig. 4

06111

# Parts

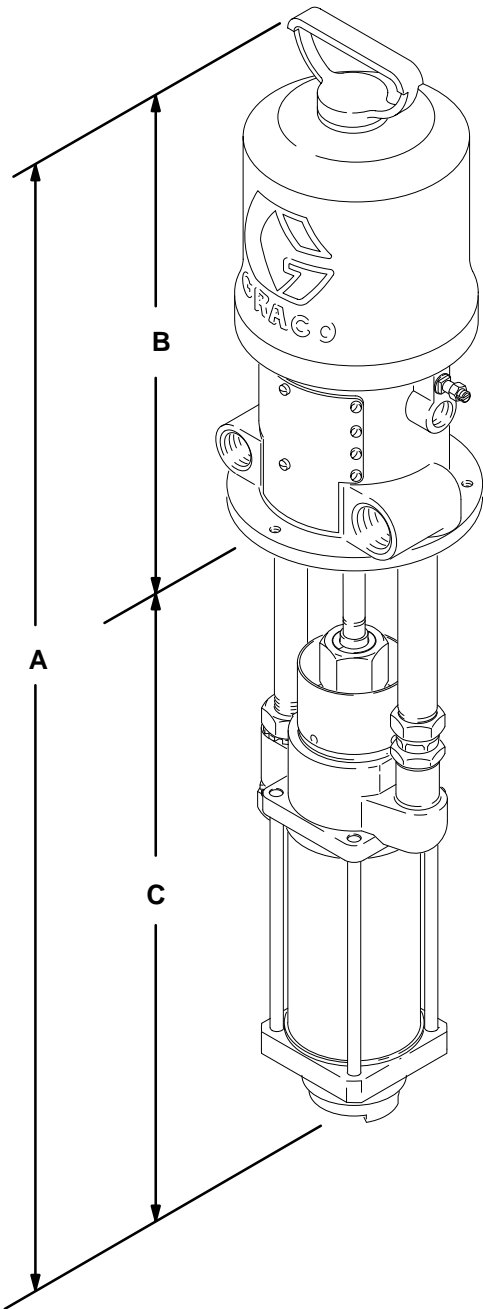
## Model 224-757, Series C 4:1 Ratio President Pump, Stubby Size Includes items 1-18

Ref No.	Part No.	Description	Qty
1	205-038	AIR MOTOR, President See 306-982 for parts	1
2	190-069	ROD, connecting; 5.69" (144.5 mm) long	1
3	224-756	PUMP, displacement See 307-983 for parts	1
5	100-579	PIN, cotter	1
7	156-082	O-RING; nitrile rubber	1
11	181-120	TUBE, return; 12.812" (325.4 mm) long	1
12	190-178	TUBE, supply; 6.75" (171.5 mm) long	1
13	162-648	LOCKWASHER, ext shakeproof	2
14	160-026	NUT, special lock; 3/4 garden hose thread	2
17	190-065	NUT, coupling	1
18	190-066	COLLAR, coupling	2



06111

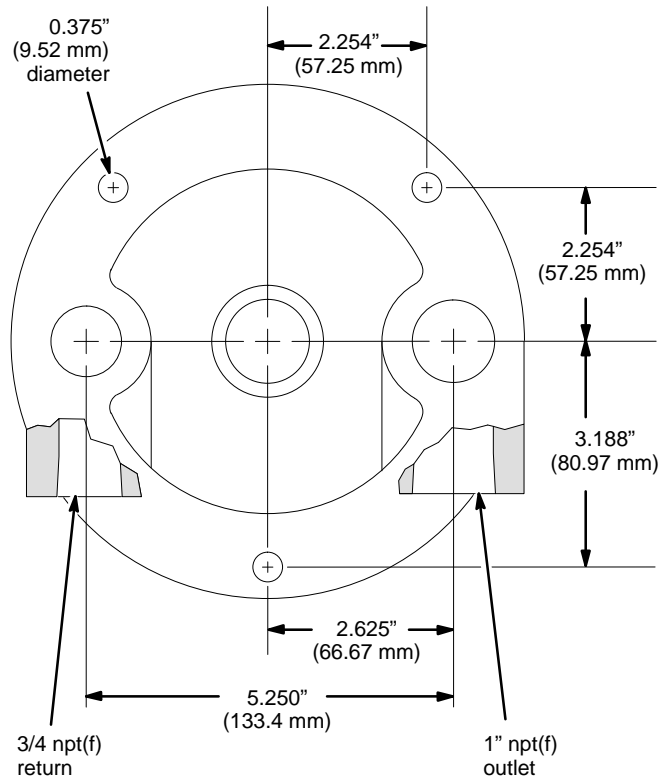
# Dimensions



06112

Model No.	A	B	C
224-757	36.5 in. (927 mm)	16.5 in. (419 mm)	20 in. (508 mm)

# Mounting Hole Layout



**NOTE:** Use mounting gasket 161-322.

06088

# Manual Change Summary

Assembly Changed	Part Status	Ref. No.	Part No.	Name
Model 224-757, to Series C	Added	17	190-065	Coupling Nut
	Added	18	190-066	Collars
	Old	2	219-071	Conn. Rod
	New	2	190-069	Conn. Rod
	Old	12	181-121	Supply Tube
	New	12	190-178	Supply Tube

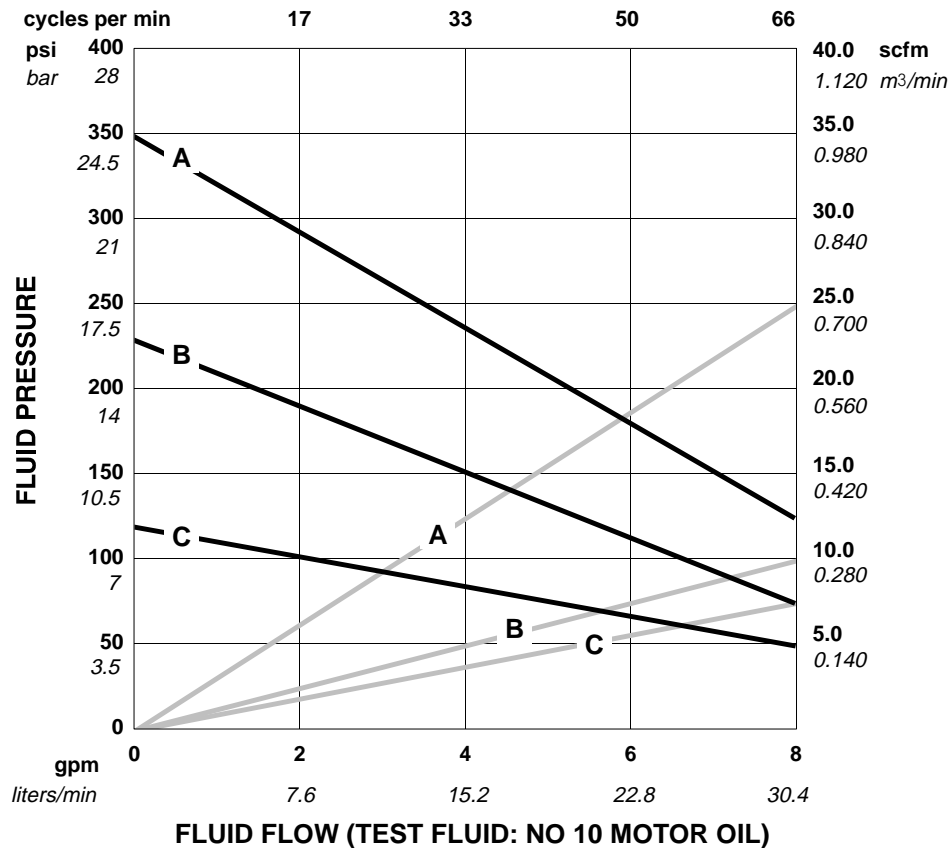
# Technical Data

Category	Data
Ratio	4:1
Maximum fluid working pressure	400 psi (28 bar)
Maximum air input pressure	100 psi (7 bar)
Pump cycles per 1 gallon (3.8 liters)	8.25
Fluid flow at 60 cycles per minute	8 gpm (30 liters/min)
Fluid inlet size	1-1/2 npt(f)
Fluid outlet size	1 in. npt(f)
Air inlet size	1/2 npt(f)
Weight	47 lb (21.32 kg)
Maximum pump operating temperature	180°F (82°C)
* Sound level at 100 psi, 60 cycles per minute	94 dBa
* Sound power level at 100 psi, 60 cycles per minute	109 dBa
Wetted parts	<i>Supply and Return Tubes: Nickel-plated carbon steel Air Motor Base: Aluminum Displacement Pump: Refer to manual 307-983</i>

\* Tested in accordance with ISO 3744.

**KEY:** Fluid Outlet Pressure – Black Curves  
Air Consumption – Gray Curves

**A** 100 psi (7 bar) air pressure  
**B** 70 psi (4.9 bar) air pressure  
**C** 40 psi (2.8 bar) air pressure



**To find Fluid Outlet Pressure (bar/psi)** at a specific fluid flow (lpm/gpm) and operating air pressure (bar/psi):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve (black). Follow left to scale and read fluid outlet pressure.

**To find Pump Air Consumption (m³/min or scfm)** at a specific fluid flow (lpm/gpm) and operating air pressure (bar/psi):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected air consumption curve (gray). Follow right to scale and read air consumption.

# Graco Warranty and Limitation of Liability

## WARRANTY

Graco warrants all equipment listed in this manual which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. 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.

### For Sales to Canadian Customers:

Except as expressly stated herein, Graco makes no representations, warranties or conditions, express, implied or collateral, concerning any goods or services sold, and **GRACO SHALL NOT BE LIABLE IN ANY MANNER FOR** any other representation, warranty or condition of any kind, whether arising by operation of law or otherwise, including but not limited to, **WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

## LIMITATION OF LIABILITY

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or for 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.

# Graco Phone Number

**TO PLACE AN ORDER**, contact your Graco distributor, or call this number to identify the distributor closest to you:  
**1-800-367-4023 Toll Free**

**Sales Offices:** Atlanta, Chicago, Detroit, Los Angeles  
**Foreign Offices:** Belgium, Canada, England, Korea, Switzerland, France, Germany, Hong Kong, Japan

**GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1441**

PRINTED IN U.S.A. 308-159 January 1992 Revised April 1996