INSTRUCTIONS–PARTS LIST

308948

Rev. C

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

INSTRUCTIONS

GRACO

First choice when quality counts.™

3:1 RATIO, DOUBLE ACTING

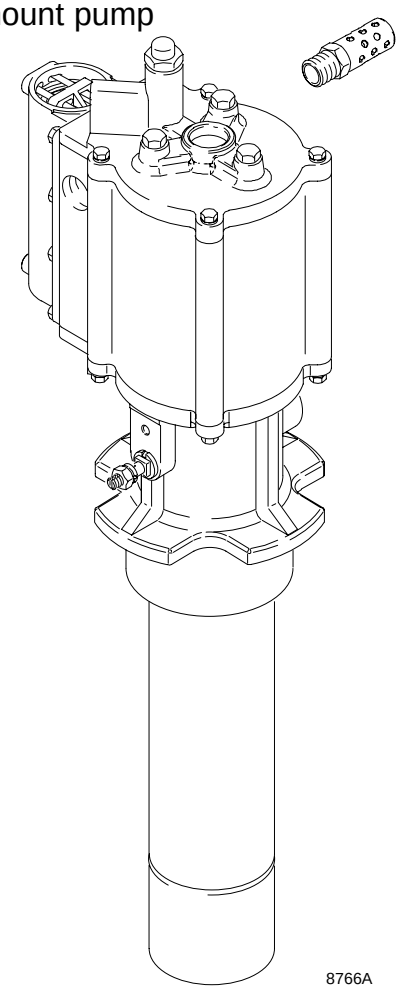
Eagle™ Oil Pumps

FOR LUBRICATING PRODUCTS ONLY

540 psi (37 bar, 3.7 MPa) Maximum Fluid Working Pressure
150 psi (10 bar, 1.0 MPa) Maximum Air Input Pressure

Model No. 241341, Series A, Universal pump
Model No. 241342, Series A, 16-gallon (60 liter) cover-mount pump
Model No. 241343, Series A, 55-gallon (208 liter) bung-mount pump
Model No. 241344, Series A, 55-gallon (208 liter) cover-mount pump
Model No. 241345, Series A, 275-gallon (1,040 liter) bung-mount pump

U.S. Patent No. D372,034



8766A

⚠ WARNING

This pump is designed to be used only in pumping non-corrosive and non-abrasive oils and lubricants. Any other use of the pump can cause unsafe operating conditions and component rupture, which can result in fluid injection or other serious injury, or fire or explosion.

Table of Contents

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440–1441

Symbols

Warning Symbol

⚠ WARNING

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

Caution Symbol

⚠ CAUTION

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

⚠ WARNING

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. Use only genuine Graco parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure stated on the equipment or in the **Technical Data** for your equipment. Do not exceed the maximum working pressure of the lowest rated component in your system.
- Use fluids and solvents that 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.
- Handle hoses carefully. Do not pull on hoses to move equipment.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 66°C (150°F) or below –40°C (–40°F).
- Wear hearing protection when operating this equipment.
- Do not move or lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.
- Never use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in this equipment. Such use could result in a serious chemical reaction, with the possibility of explosion, which could cause death, serious injury and/or substantial property damage.

⚠ WARNING

INJECTION HAZARD

Fluid from the valve, leaks, or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Fluid splashed in the eyes or on the skin can also cause serious injury.

- Fluid injected into the skin is a serious injury. The injury may look like just a cut, but it is a serious injury. Get immediate medical attention.
- Do not point the valve at anyone or at any part of the body.
- Do not put your hand or fingers over the valve tip.
- Do not stop or deflect leaks with your hand, body, glove or rag.
- Do not “blow back” fluid; this is not an air spray system.
- Follow the **Pressure Relief Procedure** on page 10 before you clean, check, or service the equipment.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose.

MOVING PARTS HAZARD

Moving parts can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Before checking or servicing the equipment, follow the **Pressure Relief Procedure** on page 10 to prevent the equipment from starting unexpectedly.

⚠ 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 dispensed to. Refer to **Grounding** on page 6.
- 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 dispensing area free of debris, including solvent, rags, and gasoline.
- Do not smoke in the dispensing 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.
- The air motor exhausts any fluids added to the input air, such as oil or antifreeze.
- Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

Introduction

⚠ WARNING

These pumps are designed to be used only in pumping non-corrosive and non-abrasive oils and lubricants. Any other use of the pump can cause unsafe operating conditions and component rupture, which can result in fluid injection or other serious injury, or fire or explosion.

NOTE: Be sure that all operators read and understand this entire manual and any separate manuals supplied with components and accessories before using this equipment.

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

Terms

WARNING alerts the user to avoid or correct conditions that could cause serious injury.

CAUTION alerts the user to avoid or correct conditions that could cause damage to or destroy equipment.

NOTE identifies helpful procedures and information.

DISPENSE VALVE: Any fluid dispensing device that can be triggered on and off.

Component Description

This equipment consists of two major components: the air motor (M) and the displacement pump (P). See Fig. 1. The pump is an in-line design, which means that the displacement pump screws directly into the motor, without the use of tie rods or connecting rods. The displacement pump can be placed directly in the fluid being pumped.

Air enters the air motor through the 3/8 npt(f) air inlet (L) and exhausts from the 1/4 npt(f) exhaust port (N).

Make sure the muffler is securely installed in the exhaust port (N) before you operate the pump. See Fig. 1.

⚠ CAUTION

Never run the pump without the muffler installed.

Fluid enters the pump through the 1–1/2 npt(f) intake valve (R) and exits from the 1/2 npt(f) fluid outlet (S).

Pump Model 241341 is the basic pump. Other pump models are available which are designed for use with various size containers. See page 24. To convert Model 241341 to fit various size supply containers, order the appropriate suction tube separately.

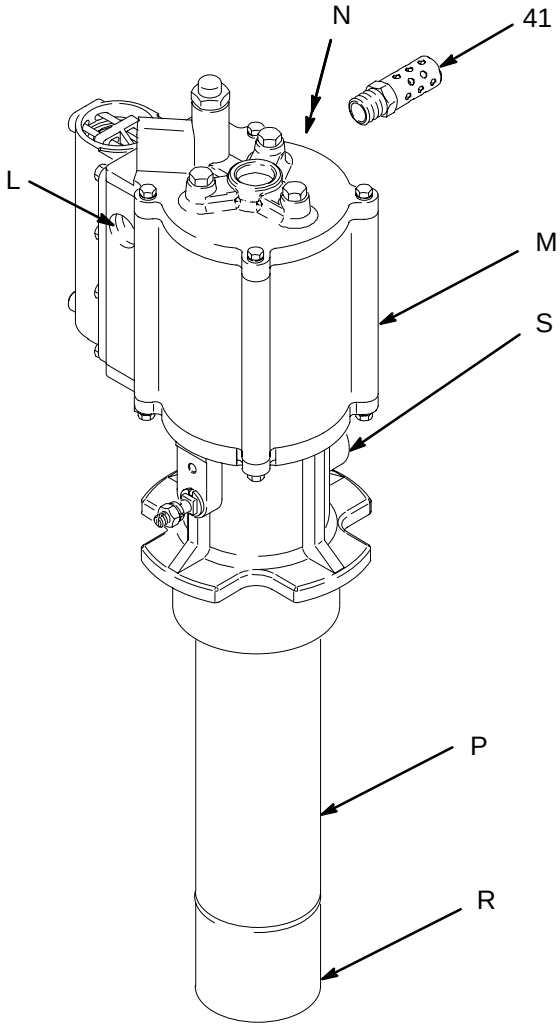


Fig. 1

Installation

Grounding

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Before operating the pump, ground the system as explained below. Also read the section **FIRE OR EXPLOSION HAZARD** on page 4.

To reduce the risk of static sparking, ground the pump. Check your local electrical code for detailed grounding instructions for your area and type of equipment.

Ground all of this equipment:

- *Pump:* Loosen the grounding lug locknut (W) and washer (X). Insert one end of a 12 ga (1.5 mm^2) minimum ground wire (Y) into the slot in lug (Z) and tighten the locknut securely. Connect the other end of the ground wire to a true earth ground. See Fig 2. *To order a ground wire and clamp, order Part No. 222011.*
- *Fluid hoses:* Use only grounded fluid hoses.
- *Air hoses:* Use only grounded air hoses.
- *Dispensing valve:* Obtain grounding through connection to a properly grounded fluid hose and pump.
- *Fluid supply container:* Follow local code.
- *Air compressor:* Follow local code.
- *To maintain grounding continuity when flushing or relieving pressure,* always hold a metal part of the dispense valve firmly to the side of a grounded metal pail, then trigger the valve.

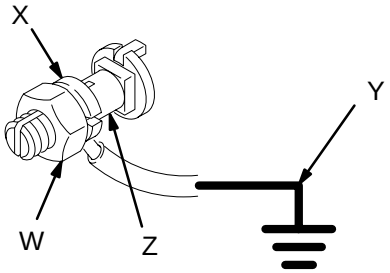


Fig. 2

Typical Installation

The Typical Installations shown in Figs. 3 and 4 are only guides for selecting and installing system components and accessories. Contact your Graco representative for assistance in designing a system to suit your particular needs.

If you supply your own accessories, be sure they are adequately sized and pressure-rated to meet the system requirements.

Mounting the Pump

- Select a convenient location for the equipment to ensure easy operator access to the pump air controls, sufficient room to change supply containers, and a secure mounting platform.
- If you are mounting the pump directly on the supply tank, position the pump so its intake valve is no more than 1 in. (25 mm) from the bottom of the container. Mount the pump to the cover or other suitable mounting device.

⚠ WARNING

Mount the pump securely so that it cannot move around during operation. Failure to do so could result in personal injury or equipment damage.

Install a Thermal Relief Kit in Hard-Plumbed Systems (see Fig. 3)

⚠ WARNING

Thermal expansion of fluid in the outlet line can cause overpressurization, This can occur when using hard-plumbed fluid lines exposed to sunlight or ambient heat, or when pumping from a cool to a warm area (for example, from an underground tank through fluid lines near the ceiling).

If thermal expansion could occur in your system, you must install a 235998 Thermal Relief Kit (J) at the pump outlet to prevent overpressurization and rupture of the pump or hose.

Installation

System Accessories

⚠ WARNING

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

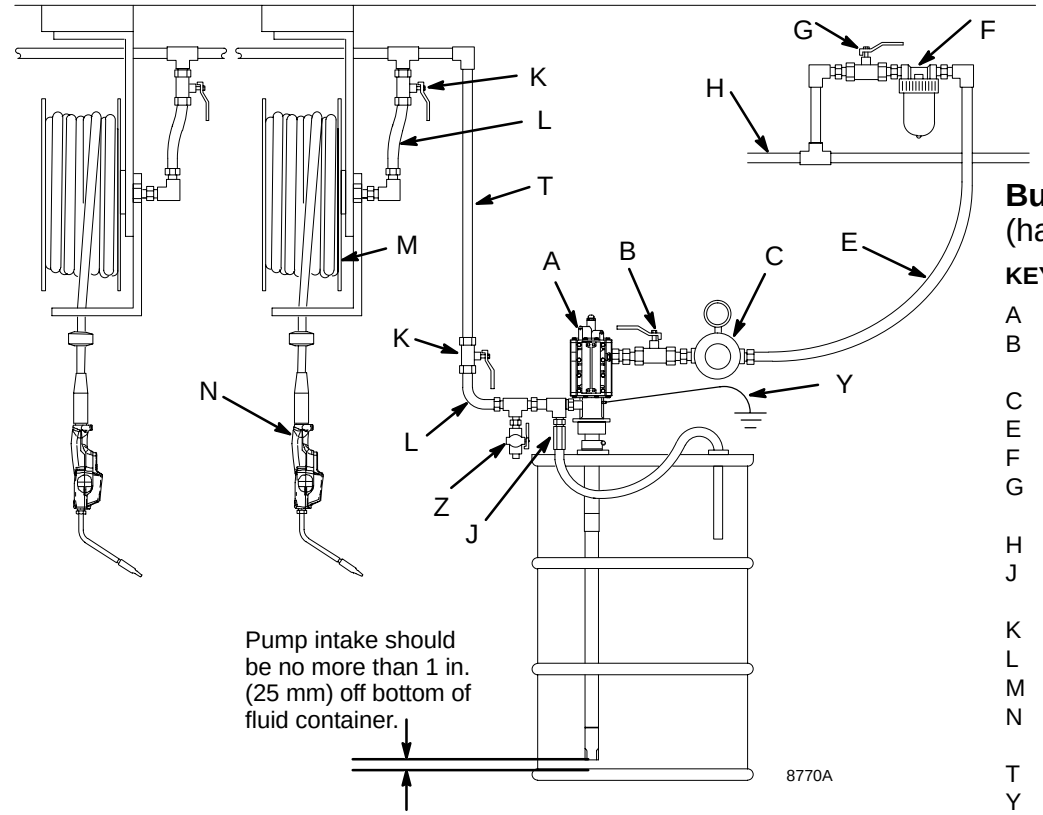
The bleed-type master air valve relieves air trapped between this valve and the pump after the air is shut off. Trapped air can cause the pump to cycle unexpectedly. Locate the valve close to the pump.

Order Part No. 110224.

- Install a bleed-type master air valve (B), to relieve air trapped between the valve and the motor (see the **WARNING** at left).
- Install an air regulator (C), to control pump speed and pressure.
- Install an air line filter (F) to remove harmful dirt and moisture from the compressed air supply.
- Install a second bleed-type master air valve (G) upstream from all other accessories to isolate the accessories for servicing.
- Connect the fluid hose (L) to the dispense valve (N). Use a fluid meter (P) to record amounts dispensed.
- Connect the air (D) and fluid hoses (L) to the pump (A). Use only grounded fluid and air hoses. Be sure all hoses are properly sized and pressure-rated for your system.

NOTE: Additional air line lubrication is not required to extend the Eagle™ oil pump motor life. The air motor is prelubed at the factory and should not require additional lubrication between maintenance schedules. No accessory air line lubricator should be installed.

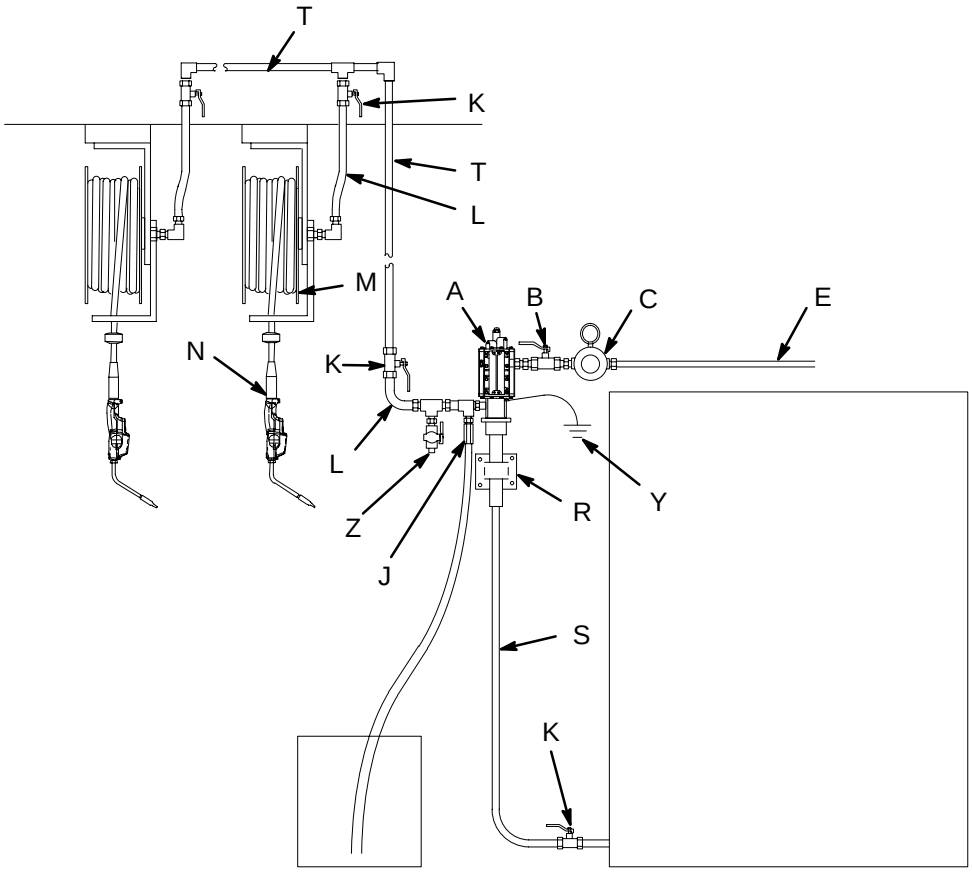
Installation



Bung Drum Installation (hard-plumbed)

KEY

A Pump
B Bleed-type master air valve (required, Part No. 110224)
C Air regulator
E Air hose
F Air Line filter
G Bleed-type master air valve (for accessories)
H Main air line
J Thermal relief kit (required, Part No. 235998)
K Fluid shutoff valve
L Fluid line (hard plumbing)
M Hose reel
N Electronic, metered dispense valve
T Hard plumbing
Y Ground wire (required; see page 6 for installation instructions)
Z Drain valve (required, Part No. 210658)



Wall-Mount Installation (hard-plumbed)

KEY

A Pump
B Bleed-type master air valve (required, Part No. 110224)
C Air regulator
E Air hose
J Thermal relief kit (required, Part No. 235998)
K Fluid shutoff valve
L Fluid hose
M Hose reel
N Electronic, metered dispense valve
R Wall mounting bracket
S Suction hose
T Hard plumbing
Y Ground wire (required; see page 6 for installation instructions)
Z Drain valve (required, Part No. 210658)

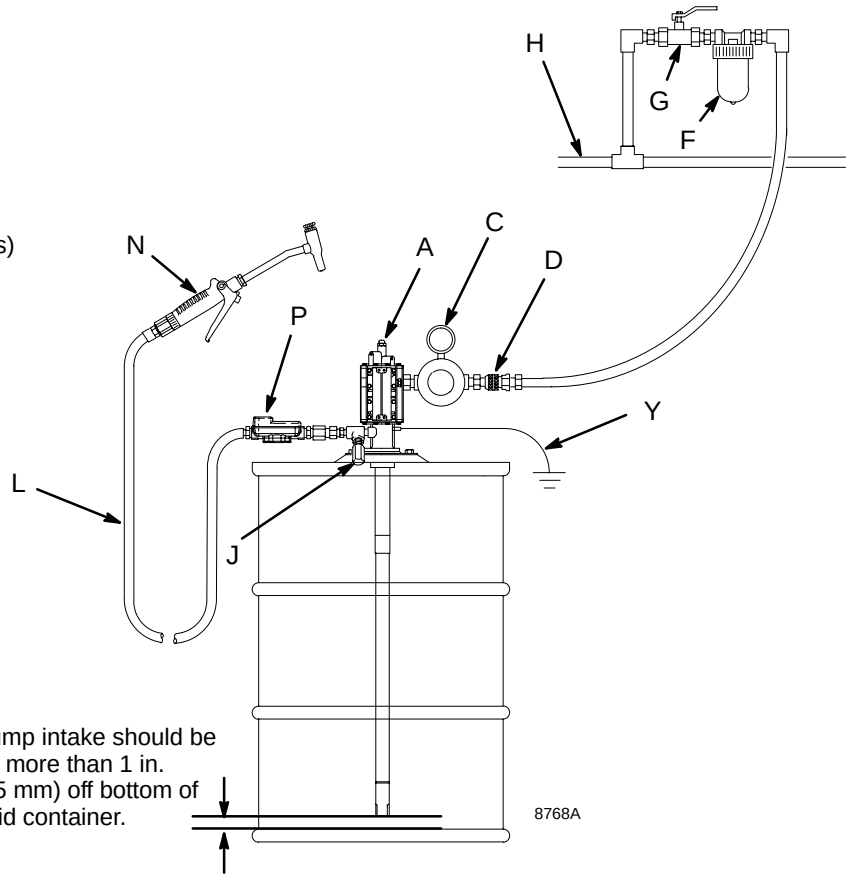
Fig. 3

Installation

Portable Installation

KEY

A Pump
C Air regulator
D Air line quick disconnect
E Air hose
F Air line filter
G Bleed-type master air valve (for accessories)
H Main air line
J Thermal relief kit (required, Part No. 235998)
L Fluid hose
N Dispense valve
P Inline, electronic fluid meter
Y Ground wire (required; see page 6 for installation instructions)



Bench-Top Tank Installation

KEY

A Pump
B Bleed-type master air valve (required, Part No. 110224)
C Air regulator
E Air hose
F Air line filter
G Bleed-type master air valve (for accessories)
H Main air line
J Thermal relief kit (required, Part No. 235998)
L Fluid hose
M Hose reel
N Electronic, metered dispense valve
Y Ground wire (required; see page 6 for installation instructions)

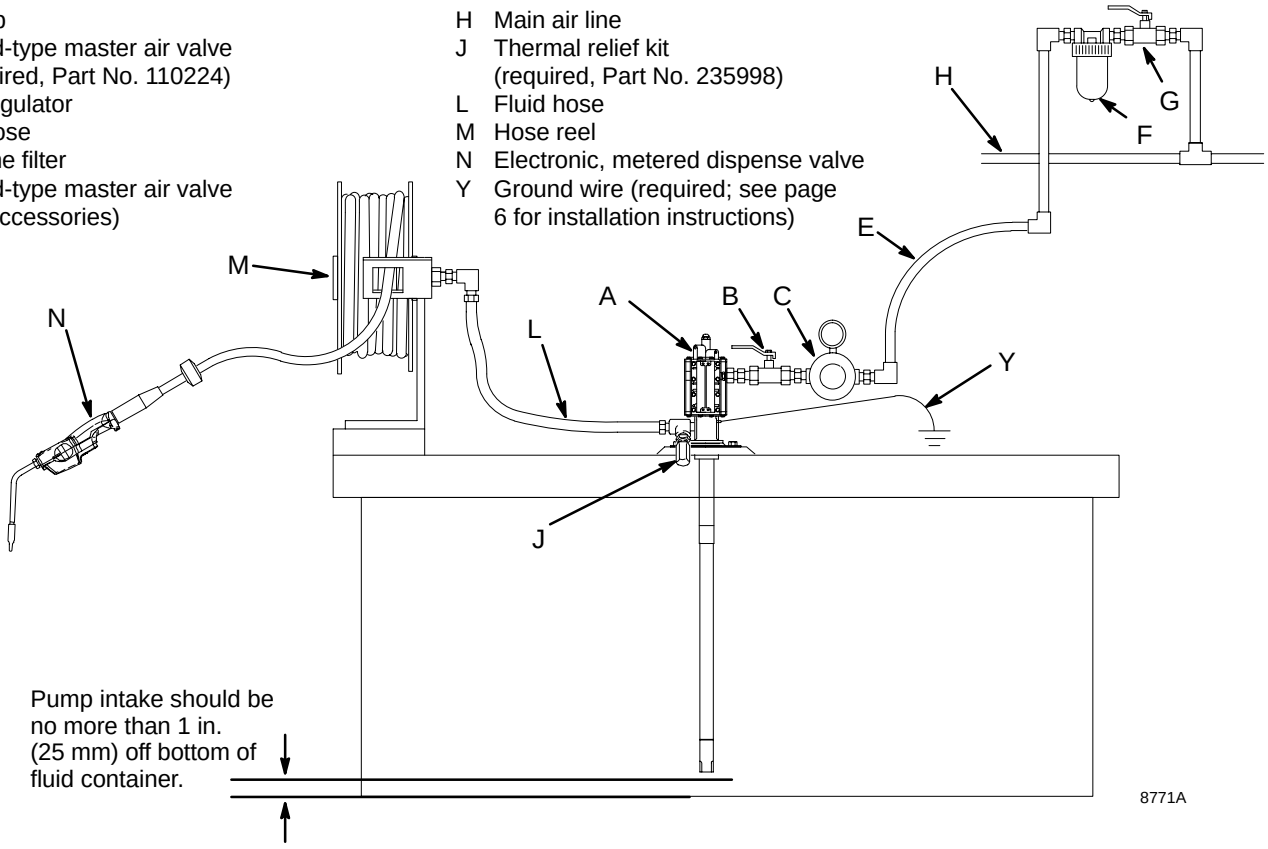


Fig. 4

Operation

Pressure Relief Procedure

⚠ WARNING

INJECTION HAZARD
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

- Are instructed to relieve the pressure
- Shut off the pump
- Check or service any of the system equipment
- Install or change the dispensing nozzles

1. Close the pump air regulator.
2. Close the bleed-type master air valve (required in your system).
3. Hold a metal part of the dispensing valve firmly to the side of a grounded metal waster container, and trigger the valve to relieve fluid pressure.

If you suspect that the dispensing valve, extension, or nozzle is clogged or that pressure has not been fully relieved after following the steps above, very slowly loosen the coupler or hose end coupling and relieve pressure gradually, then loosen it completely, then clear the clog.

Flush the Pump

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 fluid before using the pump.

⚠ WARNING

FIRE AND EXPLOSION HAZARD
Before flushing, read the section **FIRE OR EXPLOSION HAZARD** on page 4 and follow all the recommendations given there.

Operation

Starting and Adjusting the Pump

1. Close the pump air regulator and bleed-type master air valve (required in your system).

2. Point the dispense valve into a grounded metal waste container, making firm metal-to-metal contact between the valve and the container. Open the dispense valve.

3. Open the bleed-type master air valve. Open the air regulator slowly until the pump starts running.

4. Run the pump until it is primed and all air has been pushed out of the fluid line, then close the dispense valve. The pump stalls against the pressure. With the pump and lines primed, and with adequate air pressure and volume supplied, the pump starts and stops as the dispensing valve is opened and closed.

   NOTE: If the pump is difficult to prime, follow the **Pressure Relief Procedure** at left, and remove the hose. Prime the pump alone, then reconnect the hose and continue to prime your system.

5. Use the air regulator to control the pump speed and the fluid pressure. Always use the lowest air pressure necessary to get the desired results. Higher pressures cause premature nozzle and pump wear.

6. Never allow the pump to run dry of the fluid being pumped. See **CAUTION** below.

⚠ CAUTION

A dry pump quickly accelerates to a high speed, possibly damaging itself. If your pump accelerates quickly or is running too fast, stop it immediately and check the fluid supply. If the supply container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines with fluid, or flush and leave it filled with a compatible solvent. Be sure to eliminate all air from the fluid system.

7. Read and follow the instructions supplied with each component in your system.

Shutting Down the Pump

Always shut off the pump when unattended or at the end of the work shift. Follow all steps of the **Pressure Relief Procedure**.

Troubleshooting

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 10.

Before servicing this equipment, always make sure to **relieve the pressure.**

NOTE: Check all possible problems and solutions before disassembling the pump.

Pump Problems

PROBLEM	CAUSE	SOLUTION
Pump fails to operate (with no audible or visible evidence).	Inadequate air supply pressure or restricted air line or accessories	Increase air supply (see **Technical Data** on page 26). Clear line.
	Closed or clogged air valves	Open valves; clean.
	Obstructed fluid hose or gun/valve; fluid hose ID is too small	Open, clear.* Use hose with larger ID, or use shorter hose.
	Dirty, worn, or damaged air motor parts	Clean or repair; see pages 14 to 21. Lubricate with grease.
	Obstructed pump intake or priming tube	Open, clear.
Pump operates, but output low on both strokes.	Inadequate air supply pressure or restricted air line or accessories	Increase air supply (see **Technical Data** on page 26). Clear line.
	Closed or clogged air valves	Open valves; clean.
	Obstructed fluid hose or gun/valve; fluid hose ID is too small	Open, clear.* Use hose with larger ID, or use shorter hose.
	Exhausted fluid supply	Refill and reprime or flush.
	Worn seals in displacement pump	Replace seals. See pages 15 to 16.
Pump operates, but output low on downstroke.	Held open or worn intake check valve.	Clear or repair check valve. See pages 15 to 16.
Pump operates, but output low on upstroke.	Held open or worn piston check valve.	Clear or repair check valve. See pages 15 to 16.
Erratic or accelerated pump speed.	Exhausted fluid supply	Refill and reprime or flush.

* Follow the **Pressure Relief Procedure,** above, and disconnect the fluid hose. Turn on the air. If the pump starts when the air is turned on, the clog is in the fluid hose or dispense valve.

Troubleshooting

Air Motor Problems

PROBLEM	CAUSE	SOLUTION
Continuous air exhaust from muffler.	Worn or damaged motor piston o-ring (26)	Inspect and replace. See page 15 to 16.
	Air cup (5) not seating properly, or damaged, or not properly assembled.	Inspect; reseat, or replace. See page 21.
	Muffler icing up severely	Disconnect air supply and let muffler thaw for 5 minutes. Restart pump.
	Improper placement of u-cups.	U-cup lips should face each other.
	Improper placement of valve plate.	Inspect and replace ladder gasket (11). See page 21.
Continuous air exhaust from pilot valve vent holes.	Worn or damaged carriage spool u-cups (25)	Inspect and replace. See page 20.
	Worn or damaged actuator valve pin o-rings (17)	Inspect and replace. See page 18.
	Actuator valve seal is leaking.	Inspect and replace. See page 18.
Air motor not shifting properly; erratic operation/stalling.	Worn or damaged actuator valve pin o-rings (17, top or bottom)	Inspect and replace. See page 18. If the o-ring is cut, be sure to remove the cut piece from the pilot port. This may require removing the port set screw (20).
	Damaged actuator valve springs (14, top or bottom)	Replace. See page 18.
	Worn or damaged carriage spool u-cups (25) (characterized by continuous air leakage from actuator valve vents)	Inspect and replace. See page 20.
	Clogged or obstructed valve porting	Clean.
	Worn out valve housing (3a)	Replace. See page 20.
	Improper seating or damaged port or valve housing o-rings (15, 24)	Inspect o-ring and groove. Clean or replace as necessary.
	Muffler icing up severely	Disconnect air supply and let muffler thaw for 5 minutes. Restart pump.

Service

Repair Kit 241268

Repair Kit 241268 is available to service the displacement pump and air motor. Purchase the kit separately. For the best results, use all the new parts in the kit. Parts included in the kit are denoted with an asterisk, for example (3*), in the **Parts Drawing** and **Parts List** on pages 22 and 23. The kit also contains a tube of sealant 113500. Refer to the text and the notes in the figures for sealant application instructions.

Required Tools

The following tools are required to service the pump:

- Vise with soft jaws
- Pipe wrench
- Strap wrench
- Needle-nose pliers
- O-ring pick
- 9/32 in. socket wrench or nut driver
- 3/8 in. box wrench
- 7/16 in. box wrench
- 1/2 in. box wrench
- 5/8 in. box wrench
- Adjustable wrench
- Torque wrench
- Phillips screwdriver
- Thread sealant
- U-cup assembly tool 191754 (included with kit)

Pump and Throat Service

Disassembly

⚠ WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 10.

NOTE: Repair Kit 241268 is available. For the best results, use all the new parts in the kit. Kit parts are marked with an asterisk, for example (3*), in the **Parts Drawing** and **Parts List** on pages 22 and 23.

1. **Relieve the pressure**. Disconnect air and fluid hoses and remove the pump from its mounting.
2. Remove the four screws (38) and two screws (19) holding the air motor base (37) to the air motor cylinder (1). Pull the cylinder off the base, remove the large o-ring (16) and two small o-rings (28), and set these parts aside. See Fig. 5.
3. Unscrew the intake valve housing (39) from the pump cylinder (50). Disassemble the intake valve.

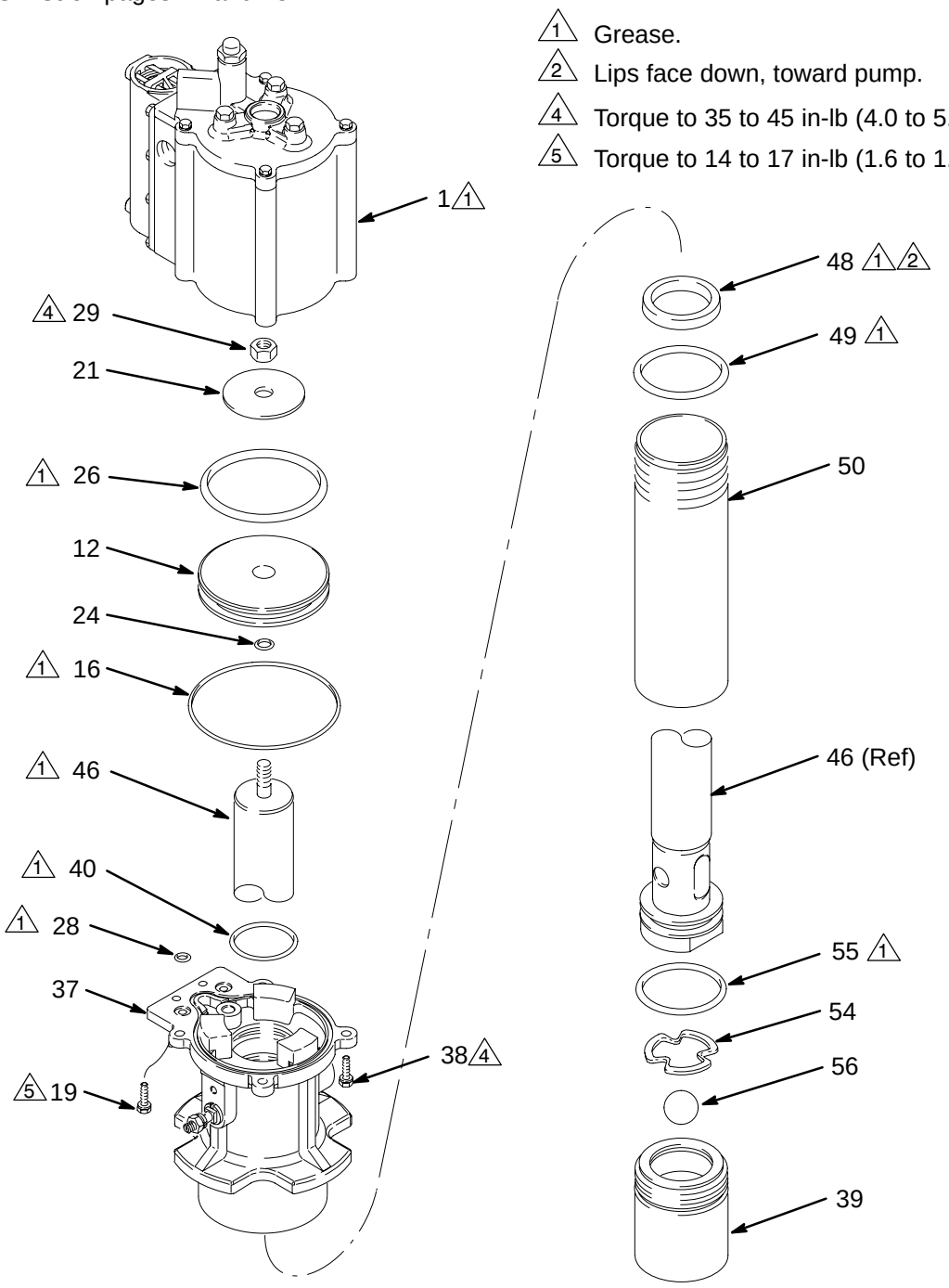


Fig. 5

Pump and Throat Service

4. Use a strap wrench on the pump cylinder (50) to loosen it from the motor base (37). Continue to unscrew the cylinder from the motor base by hand until the cylinder comes free. Pull the cylinder off the pump. See Fig. 5.

5. Hold the flats of the fluid piston (52) in a vise. Unscrew the nut (29) from the top of the displacement rod (46). Remove the washer (21), o-ring (3g), piston o-ring (26), and air motor piston (12) and set them aside. Pull the motor base (37) up off the displacement rod.

   NOTE: To service the actuator valves, see page 18. To service the director valve (3), see page 20.

6. Using a wrench on the flats of the displacement rod (46), unscrew the rod from the piston (52). Remove the ball (51) and o-ring (53). See Fig. 6.

7. Remove the o-ring (49) and block packing (48) from the inside bottom of the motor base (37).

8. Remove the o-ring (40) from inside the base.

9. Clean and inspect all parts. Replace any that are worn or damaged.

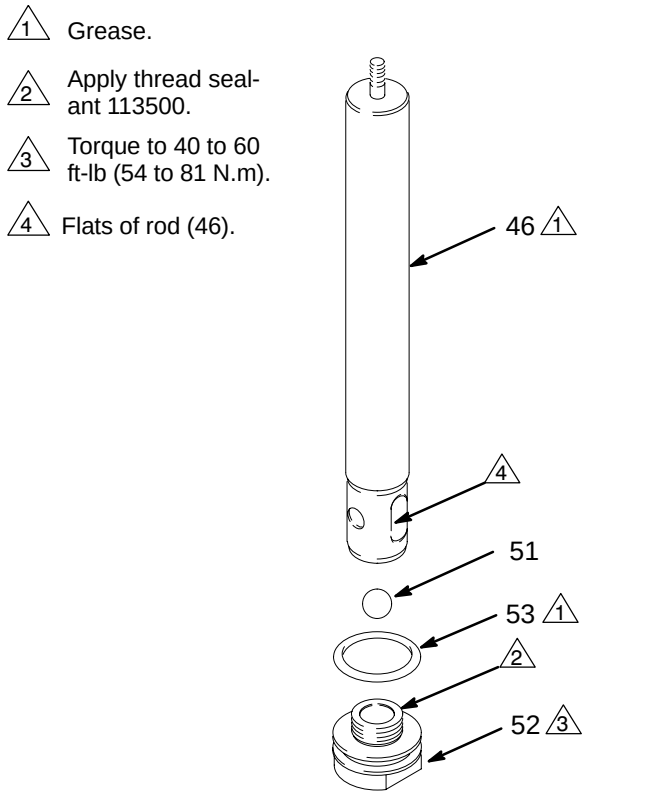


Fig. 6

Pump and Throat Service

Reassembly

1. Grease the o-ring (40) and install it inside the top of the base. See Fig. 5.

2. Grease the block packing (48) and install it in the motor base (37). The lips of the packing must be facing down, toward the pump. Grease the o-ring (49), and install it in the bottom of the motor base (37).

3. Grease the displacement rod (46) and slide it down into the air motor base (37) so the narrow end protrudes from the top of the base.

4. Grease the o-ring (53) and install it on the fluid piston. Apply thread sealant (113500) to the piston threads. Place the piston upright in a vise with the jaws on the flats. Set the ball (51) on the piston seat. Screw the displacement rod (46) with the motor base (37) onto the piston. Using a wrench on the flats of the rod, torque to 40 to 60 ft-lb (54 to 81 N.m). See Fig. 6.

5. Install one o-ring (3g), the air motor piston (12), and the flat washer (21) on the displacement rod (46). Make sure the chamfer side of the piston (12) is facing down toward the o-ring (3g). Screw the nut (29) onto the displacement rod (46). Torque to 35 to 45 in-lb (4.0 to 5.1 N.m). Grease the large o-ring (26) and install it in the outer groove of the piston (12). See Fig. 5.

6. One end of the cylinder (50) has threads on the outside. Slide this end over the fluid piston and into the motor base (37) so the threads engage with the base. Screw the cylinder into the base by hand, then place the base in a vise with soft jaws.

7. Grease the o-ring (55) and install it on the intake valve housing (39). Install the ball (56) and ball retainer (54), and screw the valve housing securely into the cylinder (50). Use a pipe wrench on the knurled portion of the intake valve housing to tighten the valve and cylinder.

8. Remove the pump from the vise. Grease the large o-ring (16) and two small o-rings (28), and install them on the motor base (37). Grease the inside of the air motor cylinder (1), and position it on the base. Install the four screws (38) and torque to 35 to 45 in-lb (4.0 to 5.1 N.m). Install the two screws (19) and torque to 14 to 17 in-lb (1.6 to 1.9 N.m).

9. Mount the pump. Reconnect the air and fluid hoses. If the ground wire was disconnected during service, reconnect it before operating the pump.

Actuator Valve Service

NOTE: Repair Kit 241268 is available. For the best results, use all the new parts in the kit. Kit parts are marked with an asterisk, for example (3*), in the **Parts Drawing** and **Parts List** on pages 22 and 23.

Disassembly

1. Remove the upper actuator valve plug (9) from the top cap (2). Thread the sealing gasket (13) off the plug (9). See Fig. 7.

2. Pull the spring (14) and pin (10) out of the top cap (2). Remove the two o-rings (17) from the pin.

3. Remove the four screws (38) and two screws (19) holding the top cylinder cap (2) to the cylinder (1). Remove the large o-ring (16) and two small o-rings (28) from the cap. Remove the o-ring (18) from the inside of the top cap.

NOTE: To access the lower actuator valve, you must first do steps 1 to 5 under **Pump Disassembly,** pages 15 to 16.

4. Remove the lower actuator valve plug (45) from the motor base (37). Remove the o-ring (28) from the plug (47). Remove the o-ring (18) from the plug. See Fig. 7.

5. Remove the actuator pin (44) and spring (14). Remove the two o-rings (17) from the pin.

6. Clean and inspect all parts. Replace any that are worn or damaged.

Reassembly

1. Grease the o-ring (18), and install it in the lower actuator plug (45). Install the o-ring (28) onto the plug. See Fig. 7.

2. Install the spring (14) in the motor base (37). Install the two o-rings (17) on the lower actuator pin (44). Grease the pin and o-rings and install the pin in the base with the long end pointing out of the base.

3. Screw the plug (45) into the motor base (37). Torque to 14 to 17 in-lb (1.6 to 1.9 N.m).

NOTE: To reassemble the air motor piston and the pump, refer to **Pump Reassembly,** page 17.

4. Grease the two small o-rings (28) and the large o-ring (16). Install them in the recesses of the top cap (2). Grease the o-ring (18), and install it in the inside of the top cylinder cap (2). See Fig. 7.

5. Install the top cap (2) on the cylinder (1). Install the four screws (38), and torque to 35 to 45 in-lb (4.0 to 5.1 N.m). Install the two screws (19), and torque to 14 to 17 in-lb (1.6 to 1.9 N.m).

6. Install the two o-rings (17) on the pin (10). Grease the pin and o-rings, and insert the pin in the top cap (2). The long end must point toward the inside of the motor.

7. Thread the gasket (13) onto the plug (9). Install the spring (14) in the top cap (2). Screw the plug into the top cap and torque to 60 to 70 in-lb (6.8 to 7.9 N.m).

Actuator Valve Service

1. Grease.
2. Install with long end pointing out of base (37).
3. Torque to 14 to 17 in-lb (1.6 to 1.9 N.m).
4. Torque to 35 to 45 in-lb (4.0 to 5.1 N.m).
5. Install with long end pointing toward inside of motor.
6. Torque to 60 to 70 in-lb (6.8 to 7.9 N.m).

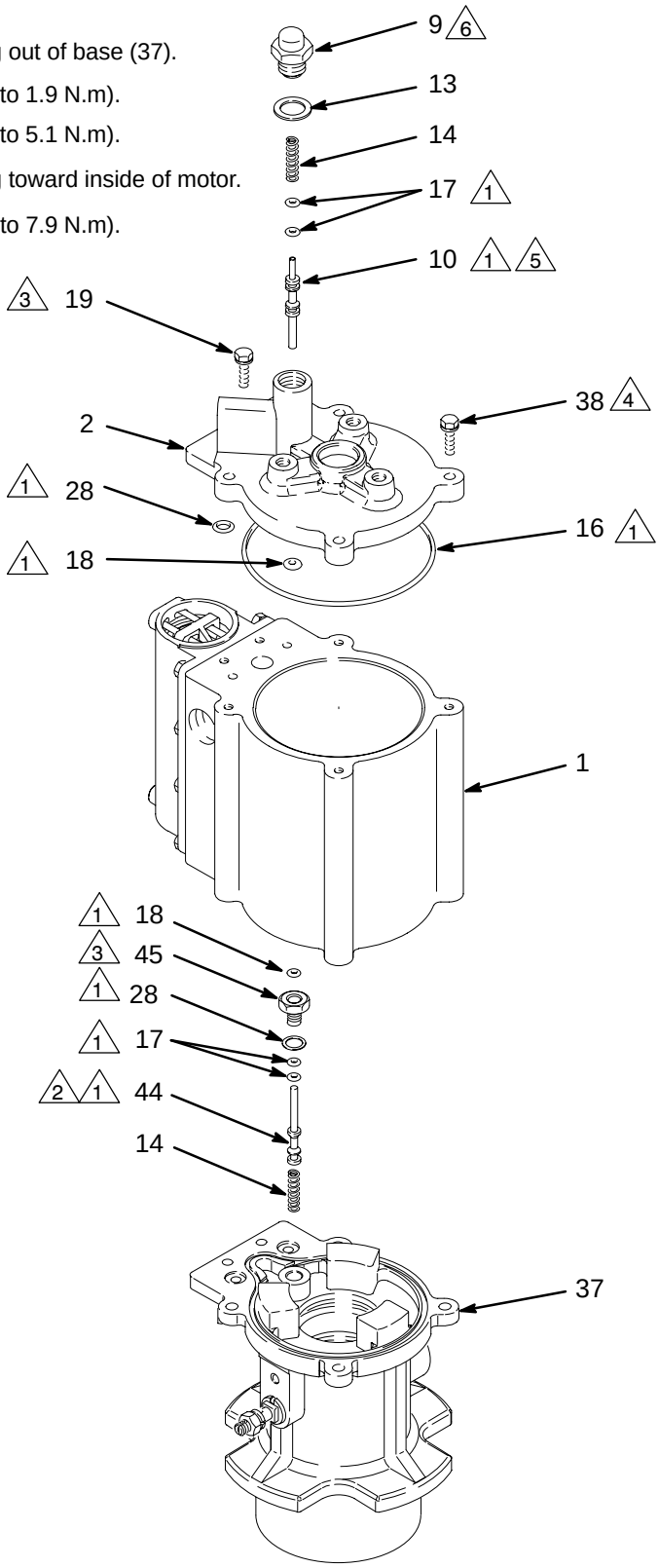


Fig. 7 8773A

Director Valve Service

Disassembly

NOTE: Pump Repair Kit 241268 is available. Also, director valve assembly 241357 is available by itself. For the best results, use all the new parts in the kit. Kit parts are marked with an asterisk, for example (3*), in the **Parts Drawing** and **Parts List** on pages 22 and 23.

1. Remove the screws (19) holding the director valve (3) to the cylinder (1). Be careful not to drop the valve cup (5) as you remove the housing; the cup can be easily damaged. Inspect the cup surface for scratches. If damaged, replace the cup. See Fig. 8.

   NOTE: The surface of the valve cup (5) can be repaired by rubbing it with 300 to 600 grit sandpaper on a flat surface.

   NOTE: Note the position of the spool inside of the valve housing.

2. Remove the screws (22) holding the valve plate (6) to the cylinder (1). Be very careful not to drop or damage the plate. Inspect the plate surface for scratches. If damaged, replace the plate.

3. Remove the gasket (11) from the face of the cylinder (1).

4. Clean and inspect all parts. Replace any that are worn or damaged.

Reassembly

1. Install the valve gasket (11) and plate (6) on the cylinder (1). Be sure the surface of the plate facing out is free of scratches or damage. Install the screws (22), and torque them oppositely and evenly to 4 to 6 in-lb (0.5 to 0.7 N.m).

2. Position the spool in the new director valve as you noted in step 1 at left.

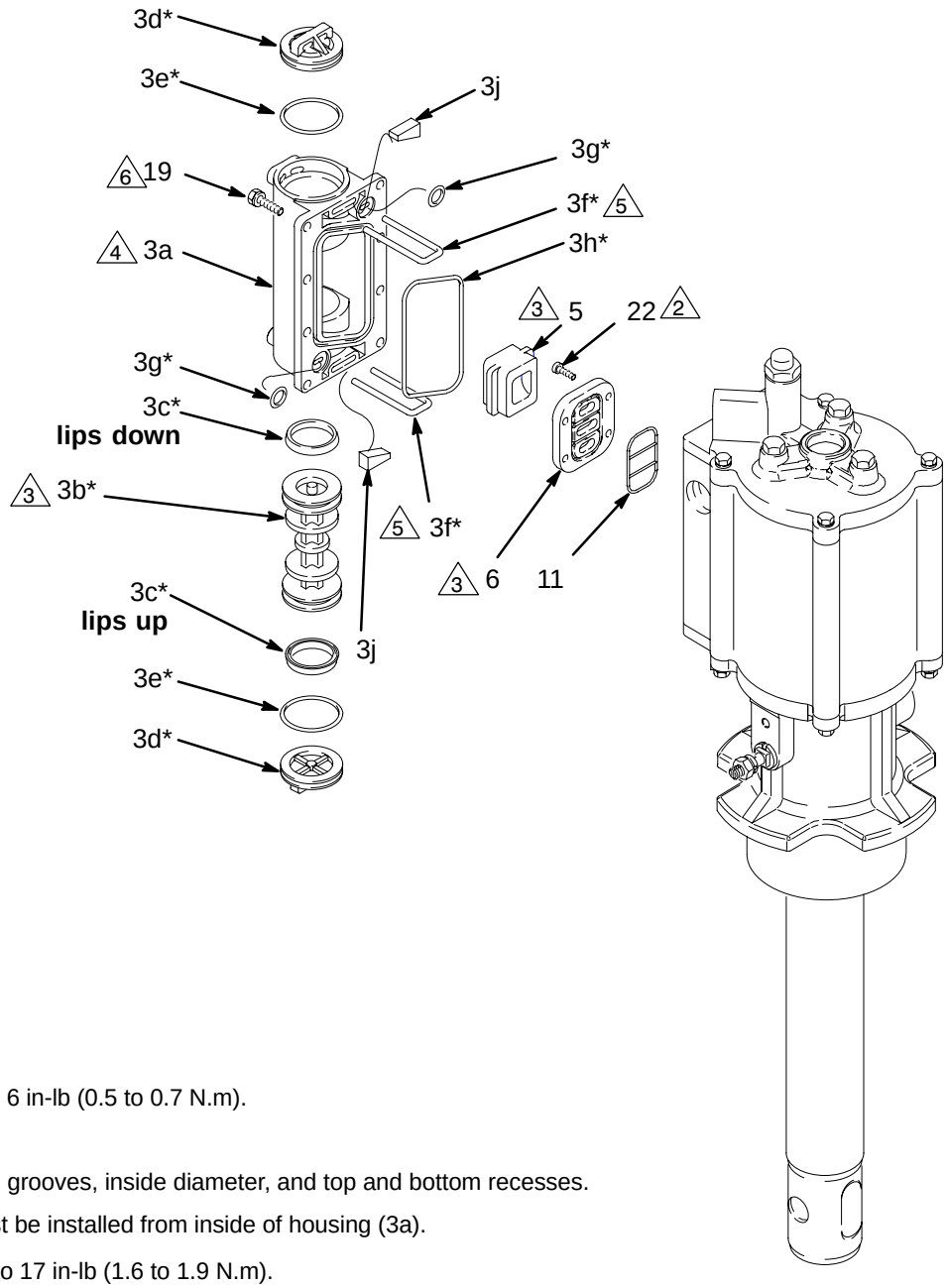
3. Grease the o-ring grooves in the valve housing (3a), then install the large o-ring (3h) and two small o-rings (3g). The grease holds the o-rings in place during assembly.

4. Grease the valve cup (5) and the valve plate (6). Orient the cup as shown in Fig. 8. Place the cup on the valve plate so its position corresponds to the position of the spool, as you noted in step 1 at left.

5. Place the director valve housing (3a) on the cylinder (1). The spool (3b) must engage the valve cup (5), or the valve housing assembly will not fit correctly. If necessary, move the cup to engage the spool.

6. Install the screws (19) and torque oppositely and evenly to 14 to 17 in-lb (1.6 to 1.9 N.m). Be sure the o-rings (3h, 3g) do not slip out of the grooves on the housing (3a).

Director Valve Service



2 Torque to 4 to 6 in-lb (0.5 to 0.7 N.m).

3 Grease.

4 Grease o-ring grooves, inside diameter, and top and bottom recesses.

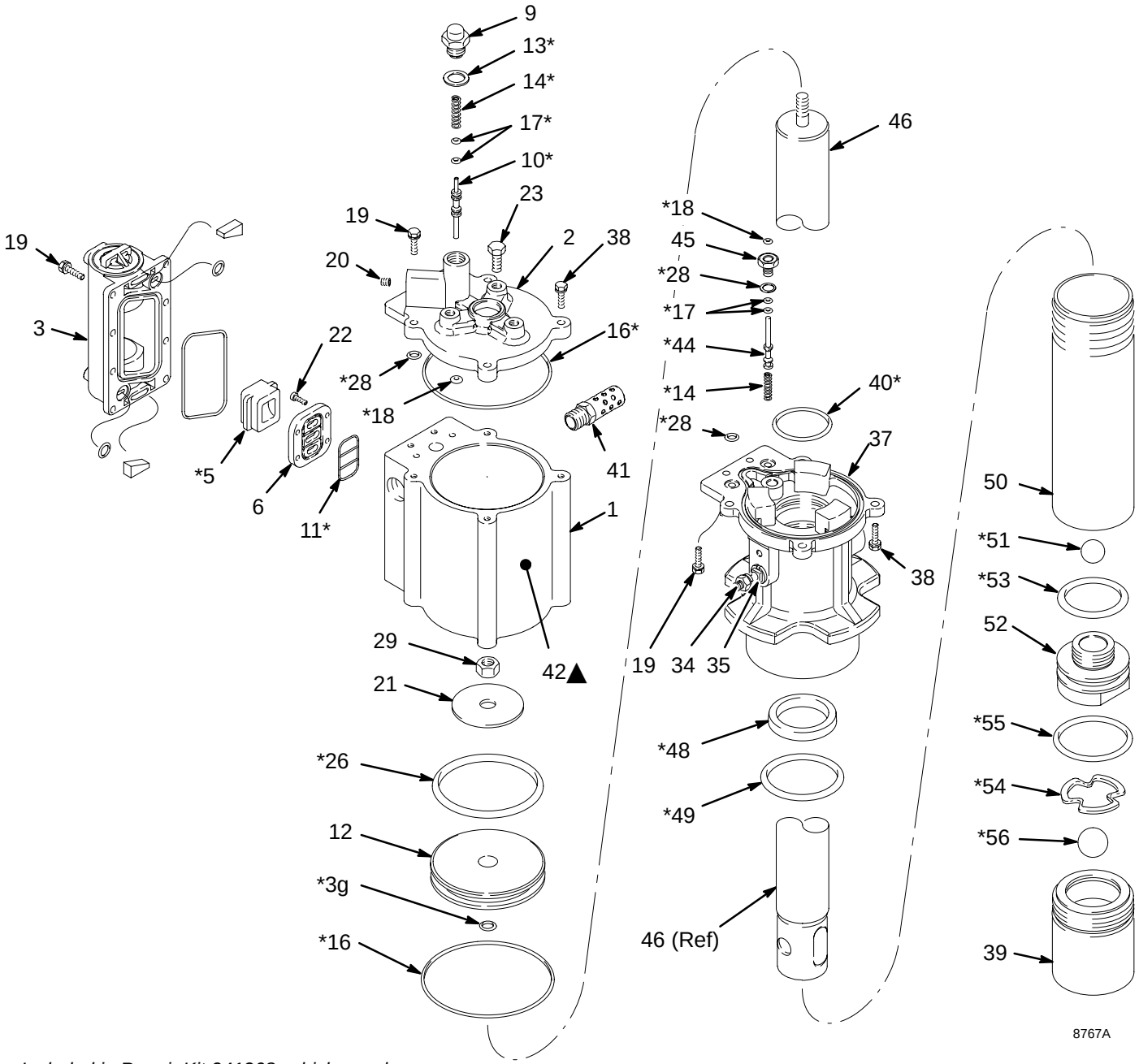
5 Clips (3f) must be installed from inside of housing (3a).

6 Torque to 14 to 17 in-lb (1.6 to 1.9 N.m).

Fig. 8 8774A

Parts

Part No. 241341 Pump, Series A



* *Included in Repair Kit 241268, which may be purchased separately.*

Parts

Part No. 241341 Pump, Series A

Ref No.	Part No.	Description	Qty
1	191826	CYLINDER, air motor	1
2	192742	CAP, cylinder, top	1
3	241357	VALVE, director *(Includes 3a to 3h)* *See parts on page 21.*	
3a		HOUSING, valve	1
3b*	276264	SPOOL; acetal	1
3c*	112181	PACKING, u-cup	2
3d*	276605	RETAINER, spool; acetal	2
3e*	108730	O-RING; buna-N	2
3f*	188583	CLIP	2
3g*	154741	O-RING; buna-N	2
3h*	191839	SEAL, housing	1
3j		DAMPENER, foam	2
5*	188947	CUP, air; acetal	1
6	191778	PLATE, valve; stainless steel	1
9	188539	PLUG, actuator, upper; aluminum	1
10*	188538	PIN, actuator, upper; stainless steel	1
11*	191777	GASKET, plate, valve; buna-N	1
12	191827	PISTON, motor; aluminum	1
13*	188582	GASKET, plug; nylon	1
14*	113876	SPRING, compression	2
16*	112106	O-RING; buna-N	2
17*	112107	O-RING; polyurethane	4
18*	112104	O-RING; polyurethane	2
19	112111	SCREW, cap, hex hd; M4 x 0.7; 14 mm (0.55 in.) long	12
20	112112	SCREW, set, socket hd; M5 x 0.8; 5 mm (0.20 in.) long	5
21	112717	WASHER, flat; 1.5 in. (38 mm) dia.	1
22	112116	SCREW, machine, pan hd; M3 x 0.5: 10 mm (0.40 in.) long	4
23	112117	SCREW, cap, hex hd; M6 x 1.0; 18 mm (0.71 in.) long	3
26*	113755	O-RING; buna-N	1
28*	156454	O-RING; buna-N	5
29	112840	NUT, hex; M8 x 1.25	1
34	104029	LUG, grounding	1
35	104582	WASHER, tab, grounding	1
37	189623	BASE, air motor; aluminum	1
38	113945	SCREW, machine, torx, flange, hex hd	8
39	183009	HOUSING, intake valve; carbon steel	1
40*	112562	O-RING; buna-N	1
41	113779	MUFFLER	1
42▲	189634	LABEL, warning	1
44*	189628	PIN, actuator, lower; aluminum	1
45	189629	PLUG, actuator, lower; aluminum	1
46	191766	ROD, displacement; carbon steel	1
48*	112561	PACKING, block; urethane	1
49*	156641	O-RING; buna-N	1
50	191125	CYLINDER, pump; carbon steel	1
51*	100279	BALL, piston; 0.875” (22 mm) dia.; chrome steel	1
52	186322	PISTON, fluid; carbon steel	1
53*	110831	O-RING; buna-N	1
54*	157182	RETAINER, ball; steel wire	1
55*	156633	O-RING; buna-N	1
56*	101190	BALL, intake; 1 in. (25 mm) dia.; chrome steel	1

* *These parts are included in Repair Kit 241268, which may be purchased separately. The kit includes a tube of sealant 113500. Install the kit as explained in the* ***Service*** *section, pages 14 to 21.*

▲ *Replacement Danger and Warning labels, tags and cards are available at no cost.*

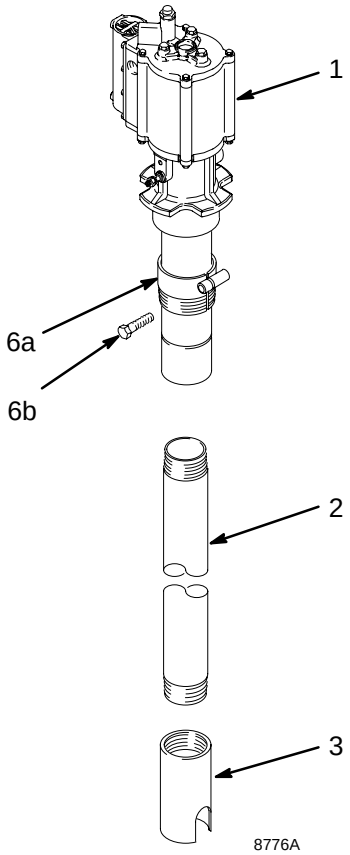
Parts

Bung-Mount Pumps

Model 241343, Series A
55-gallon (208 liter) size

Model 241345, Series A
275-gallon (1,040 liter) size

Ref No.	Part No.	Description	Qty
1	241341	PUMP, Eagle; 3:1 Ratio; See page 23 for parts	1
2	191130	SUCTION TUBE; 1–1/2” npt (mbe) *Used on Model 241343*	1
	191131	SUCTION TUBE; 1–1/2” npt (mbe) *Used on Model 241345*	1
3	110127	SPACER, intake	1
6	222308	BUNG ADAPTER *Includes items 6a and 6b*	1
6a	210834	• ADAPTER	1
6b	104542	• SCREW; M8 x 1.25 x 35 mm	1

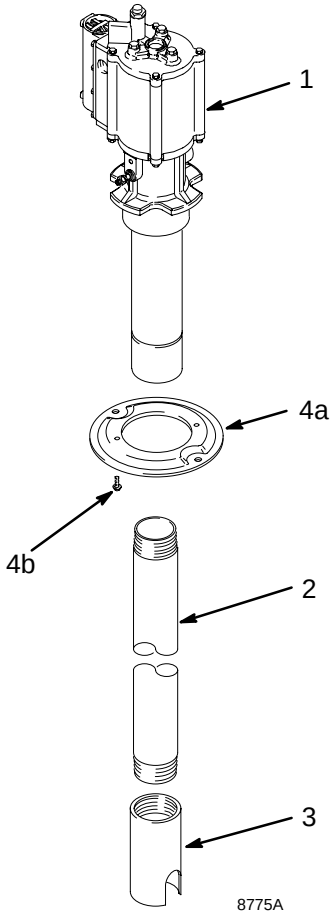


Cover-Mount Pumps

Model 241342, Series A
16-gallon (60 liter) size

Model 241344, Series A
55-gallon (208 liter) size

Ref No.	Part No.	Description	Qty
1	241341	PUMP, Eagle; 3:1 Ratio; See page 23 for parts	1
2	191126	SUCTION TUBE; 1–1/2” npt (mbe) Used on Model 241342	1
	191128	SUCTION TUBE; 1–1/2” npt (mbe) Used on Model 241344	1
3	110127	SPACER, intake	1
4	237077	PUMP MOUNTING PLATE KIT *Includes items 4a and 4b*	1
4a	189810	. MOUNTING PLATE, pump	1
4b	112718	. SCREW, hex washer hd; M4 x 12; 12 mm long	2

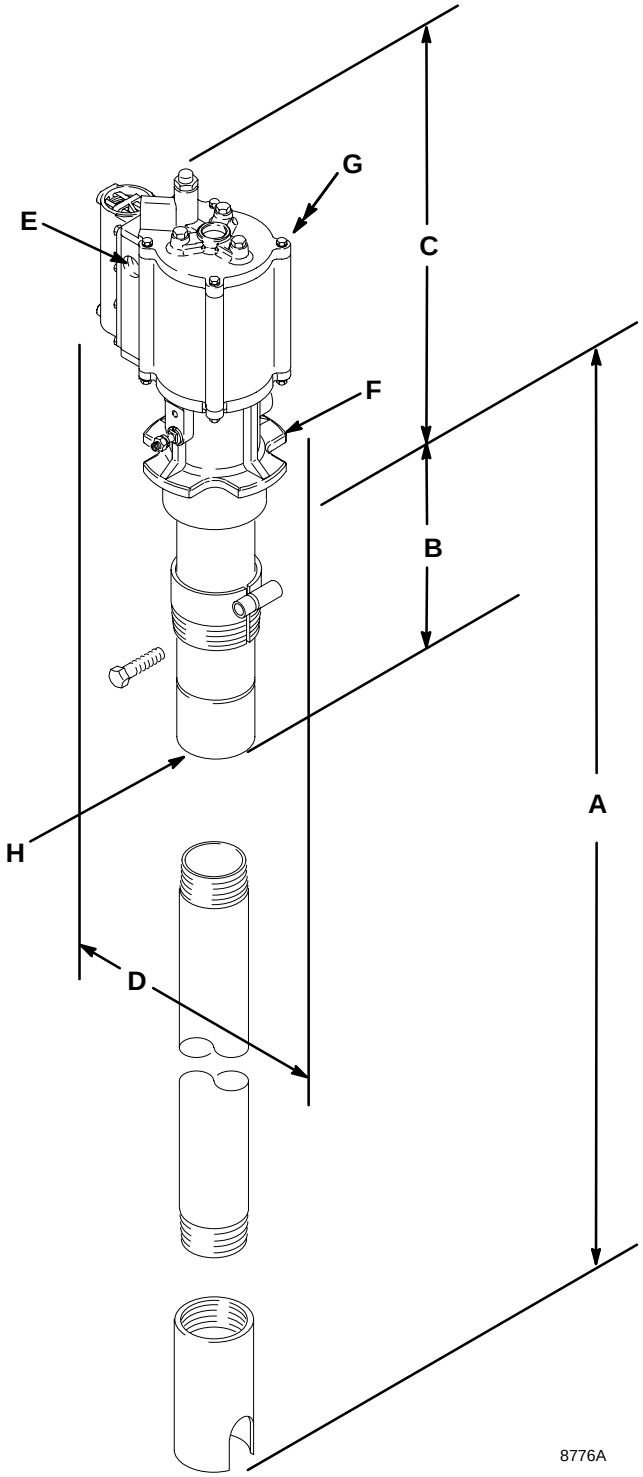


Dimensions

A Model 241342: 26.0 in. (660 mm)
Model 241343: 38.0 in. (965 mm)
Model 241344: 33.5 in. (851 mm)
Model 241345: 48.0 in. (1,219 mm)
B 8.8 in. (224 mm) all models
C 9.3 in. (236 mm) all models
D 6.4 in. (163 mm) all models

Port Sizes (All Models)

E 3/8 npt(f) air inlet
F 1/2 npt(f) fluid outlet
G 1/4 npt(f) exhaust outlet
H 1 1/2 npt(f) fluid inlet



Technical Data

Maximum fluid working pressure	540 psi (37 bar, 3.7 MPa)
Maximum air inlet pressure	150 psi (10 bar, 1.0 MPa)
Ratio	3:1
Volume per pump cycle	0.037 gal (0.140 liter)
Maximum recommended pump speed	115 cycles per minute
Recommended pump speed for continuous operation	95 cycles per minute
Maximum delivery	4.3 gpm (16.3 liters/min) at 115 cycles/minute
Stroke length	3.25 in. (82.5 mm)
Maximum pump operating temperature	130°F (54°C)
Air inlet size	3/8 npt(f)
Fluid outlet size	1/2 npt(f)
Fluid inlet size	1 1/2 npt(f)
Pump weight (Model 241341)	12.0 lb (5.4 kg)
Wetted parts	aluminum, carbon steel, chrome alloy steel, urethane, Buna-N, acetal, ultra-high molecular weight polyethylene
* Sound pressure level at 70 psi air and 30 cpm	72.99 dB(A)
Sound power level at 70 psi air and 30 cpm	85.88 dB(A)
* Sound pressure level at 150 psi air and maximum cycle rate	79.36 dB(A)
Sound power level at 70 psi air and maximum cycle rate	92.25 dB(A)

* *Sound pressure levels measured per ISO Standard 9614–2.*

Change Summary

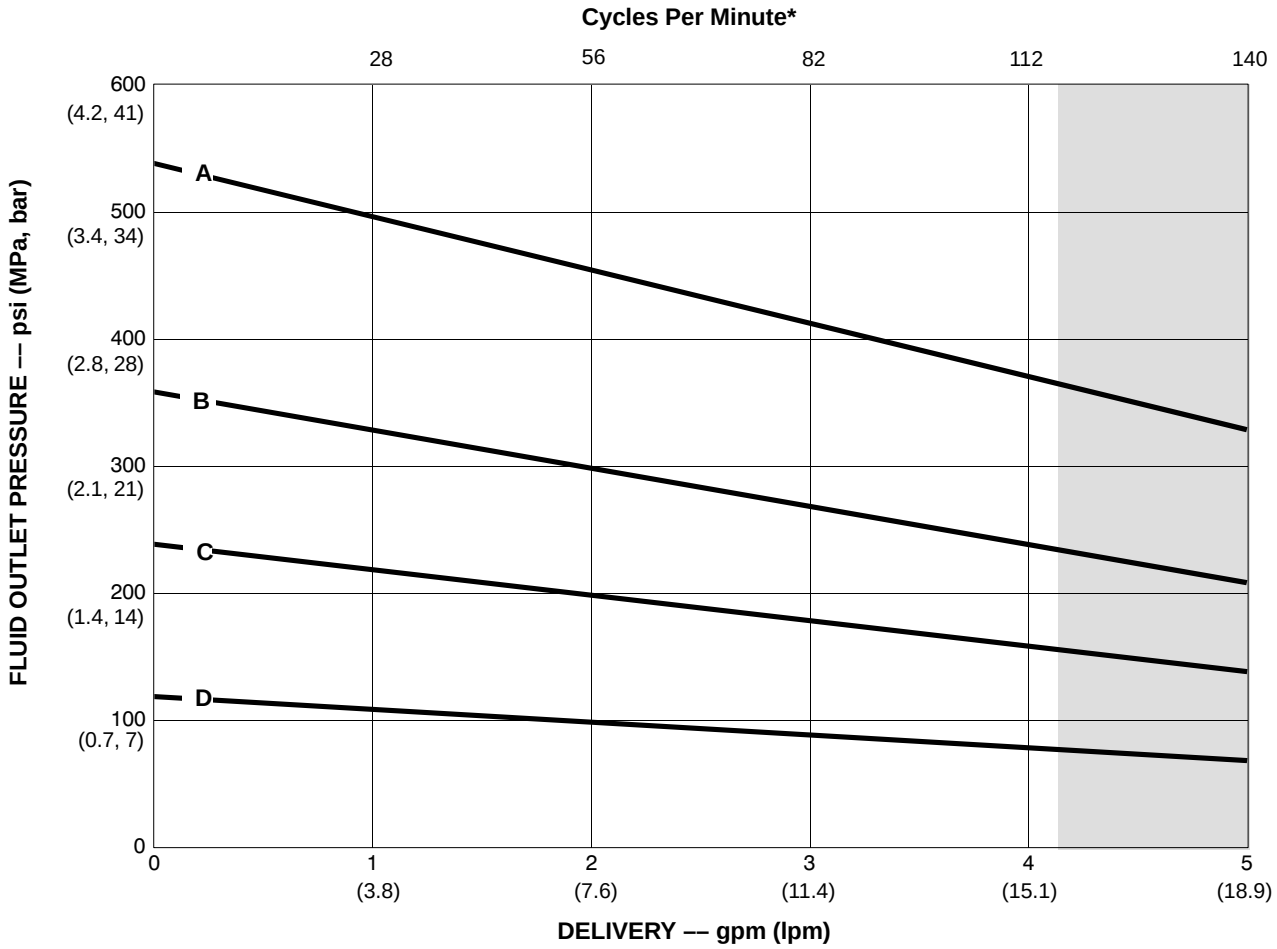
Added part number 196602 (foam dampener) to pages 21, 22, and 23.

Notes

Performance Charts

3:1 Eagle Oil Pumps Fluid Outlet Pressure

Test Fluid: No. 10 motor oil



To find Fluid Outlet Pressure (psi/MPa/bar) at a specific delivery rate (gpm or lpm) and operating air pressure (psi/MPa/bar):

1. Locate delivery rate along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve.
3. Follow left to scale to read fluid outlet pressure.

* Recommended pump speed for continuous operation: 95 cpm
Maximum recommended pump speed: 115 cpm

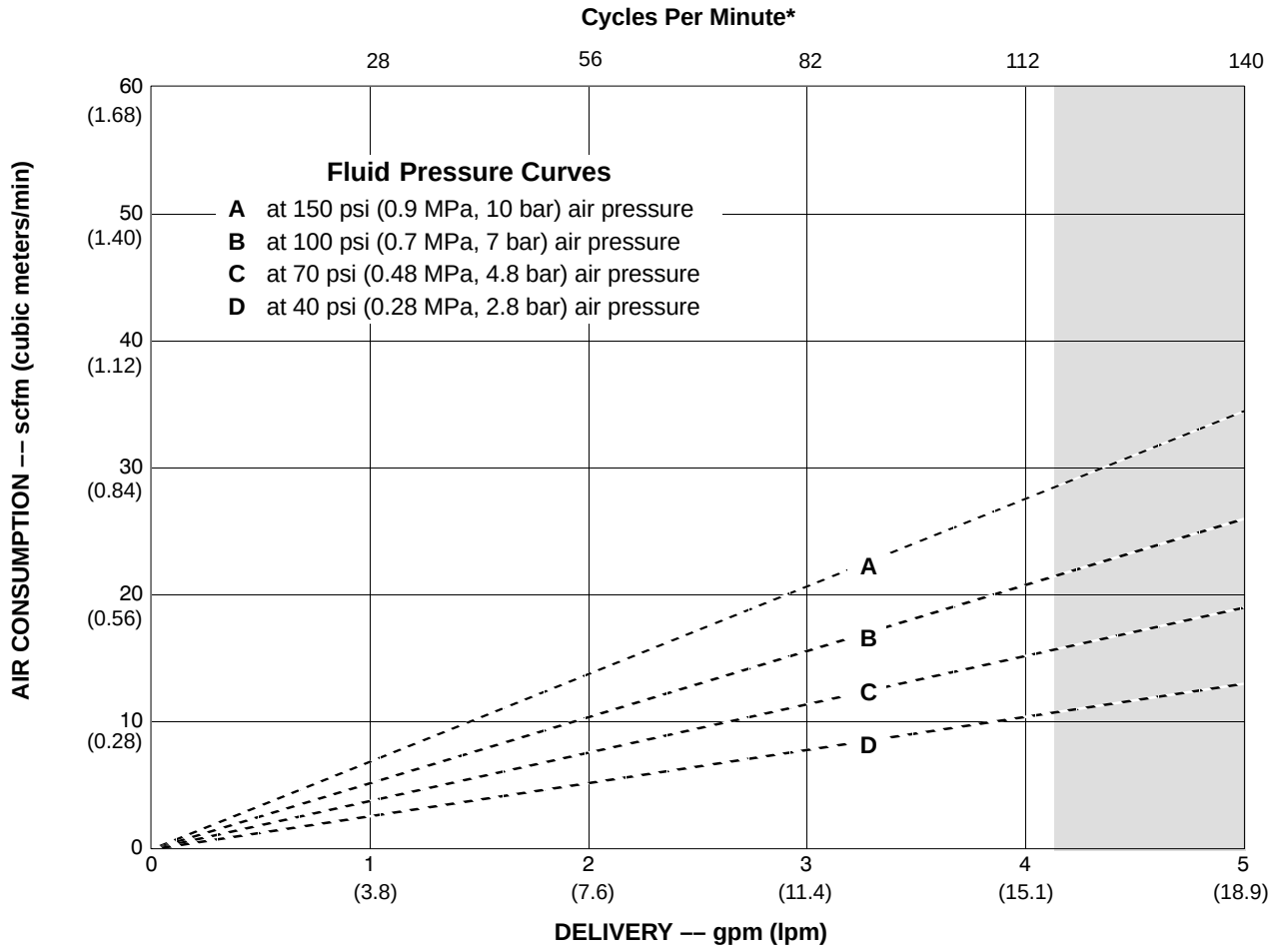
Fluid Pressure Curves

A at 150 psi (0.9 MPa, 10 bar) air pressure
B at 100 psi (0.7 MPa, 7 bar) air pressure
C at 70 psi (0.48 MPa, 4.8 bar) air pressure
D at 40 psi (0.28 MPa, 2.8 bar) air pressure

Performance Charts

3:1 Eagle Oil Pumps Air Consumption

Test Fluid: No. 10 motor oil



To find Pump Air Consumption (scfm or m^3/min) at a specific delivery rate (gpm/lpm) and air pressure (psi/MPa/bar):

1. Locate delivery rate along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve.
3. Follow left to scale to read air consumption.

* Recommended pump speed for continuous operation: 95 cpm
  Maximum recommended pump speed: 115 cpm

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Graco warrants all equipment 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. 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.

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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.

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Extended Product Warranty

Graco warrants all Eagle Lubrication Pumps to be free from defects in material and workmanship for a period of five years from date installed in service by the original purchaser. Normal wear of items such as packings or valve seats are not considered to be defects in material and workmanship.

One year	Graco will provide parts and labor.
Two through five years	Graco will replace defective parts only.

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