

Instructions – Parts List



STAINLESS STEEL

Falcon and Falcon II Pumps

308996J

With Severe-Duty Rod and Cylinder

Part No. 241594 Pump, Series B, 10:1 Ratio, with Falcon Air Motor

1500 psi (10.3 MPa, 103.5 bar) Maximum Fluid Working Pressure
150 psi (1.0 MPa, 10.4 bar) Maximum Air Input Pressure

Part No. 241595 Pump, Series B, 20:1 Ratio, with Falcon II Air Motor

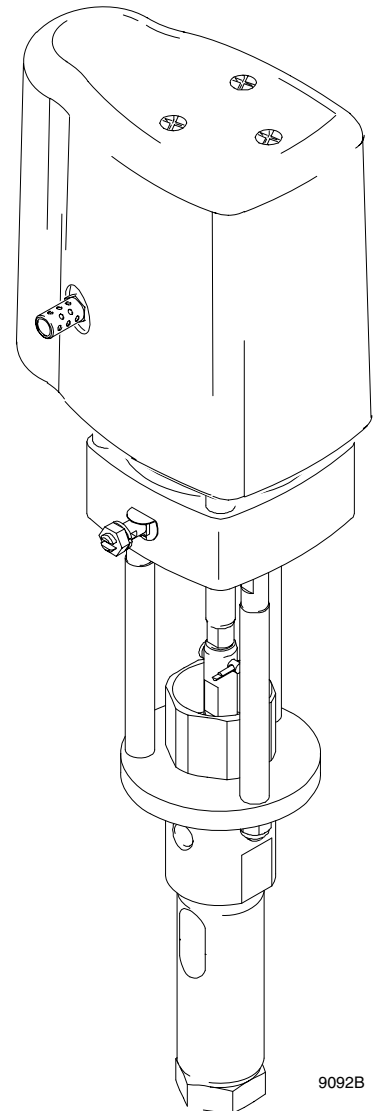
2200 psi (15 MPa, 152 bar) Maximum Fluid Working Pressure
100 psi (0.7 MPa, 7 bar) Maximum Air Input Pressure

Chinese Patent No. ZL00808468.8
Taiwan Patent R.O.C. New Invention Patent No. 163401
U.S. Patent No. 7,168,856
France Brevet No. 1192362
Germany DBP No. 1192362
Italy Patent No. 1192362
United Kingdom Patent No. 1192362
Korean Patent No. 10-0689946



Important Safety Instructions

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



9092B

PROVEN QUALITY. LEADING TECHNOLOGY.

Table of Contents

Warnings	2
Installation	5
Operation/Maintenance	8
Troubleshooting Chart	11
Service	12
Required Tools	12
Disconnecting the Displacement Pump	12
Reconnecting the Displacement Pump	12
Displacement Pump Service	14
Parts Drawings and Parts Lists	19
Pump Assemblies	19
Displacement Pump	20
Technical Data	23
Dimensions	25
Mounting Hole Layout	25
Graco Standard Warranty	26
Graco Information	26

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, contact 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 of the lowest rated system component. Refer to the **Technical Data** on pages 23–24 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.
- 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.
- Keep hands and clothing away from moving parts.
- Route hoses away from traffic areas, sharp edges, moving parts and hot surfaces. Do not expose Graco hoses to temperatures above 180° F (82° C) or below 0° F (–18° C).

! WARNING



SKIN INJECTION HAZARD

Spray from the gun, 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 might look like just a cut, but it is a serious injury. **Get immediate surgical treatment.**
- Do not point the gun at anyone or at any part of the body.
- Do not put your hand or fingers over the spray 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.
- Always have the tip guard and the trigger guard on the gun when spraying.
- Check the gun diffuser operation weekly. Refer to the gun manual.
- Be sure the gun trigger safety operates before spraying.
- Do not allow children to use this equipment.
- Lock the gun trigger safety when you stop spraying.
- Follow the **Pressure Relief Procedure** on page 8 whenever you are instructed to relieve pressure; stop spraying; clean, check, or service the equipment; and install or clean the spray tip.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn, loose, or damaged parts immediately. Permanently coupled hoses cannot be repaired; you must replace the entire hose.
- Fluid hoses must have spring guards on both ends, to help protect them from rupture caused by kinks or bends near the couplings.



MOVING PARTS HAZARD

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

- Keep clear of all moving parts when you start or operate the pump.
- Before you service this equipment, follow the **Pressure Relief Procedure** on page 8 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 sprayed. Refer to **Grounding** on page 5.
- If there is any static sparking or you feel an electric shock while using this equipment, **stop spraying 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 sprayed.
- Keep the spray area free of debris, including solvent, rags, and gasoline.
- Electrically disconnect all equipment in the spray area.
- Extinguish all open flames or pilot lights in the spray area.
- Do not smoke in the spray area.
- Do not turn on or off any light switch in the spray area while operating or if fumes are present.
- Do not operate a gasoline engine in the spray 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.

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.

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

⚠ WARNING

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

1. *Pump:* use a ground wire and clamp. See Fig. 1. Loosen the grounding lug locknut (W) and washer (X). Insert one end of a 1.5 mm² (12 ga) minimum 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. Order Part No. 238909 Ground Wire and Clamp.

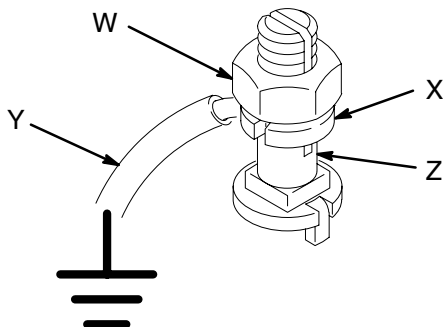


Fig. 1

0864

2. *Pump air supply and fluid hoses:* Use only electrically conductive hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity. Check the electrical resistance of your air and fluid hoses at least once a week. If the total resistance to ground exceeds 29 megohms, replace the hose immediately.

NOTE: Use a meter that is capable of measuring resistance at this level.

3. *Air compressor:* follow manufacturer's recommendations.
4. *Spray gun:* ground through connection to a properly grounded fluid hose and pump.
5. *Fluid supply container:* follow your local code.
6. *Object being sprayed:* 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 spray gun firmly to the side of a grounded *metal* pail, then trigger the gun.

System Accessories

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.

Air and Fluid Hoses

Ensure that you have an adequate compressed air supply. Bring a compressed air supply line from the air compressor to the pump location.

Be sure all air hoses (H and D) and fluid hose (N) are properly sized and pressure-rated for your system. Use only electrically conductive hoses. Fluid hoses must have spring guards on both ends.

The air hose (H) should have a 3/8 npt (m) thread. A quick disconnect coupling is recommended.

Mounting Accessories

Mount the pump (A) to suit the type of installation planned. Fig. 2 illustrates a wall mount system. Pump dimensions and the mounting hole layout are shown on page 25.

Installation

System Accessories (continued)

WARNING

A bleed-type master air valve (E) is required in your system. This accessory helps reduce the risk of serious injury, including fluid injection and 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. Order Part No. 114362.

Air Line Accessories

Install the following accessories in the locations shown in Fig. 2, using adapters as necessary:

- **A bleed-type master air valve (E)** 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 **upstream** from the air regulator.
- **An air regulator (F)** controls pump speed and outlet pressure by adjusting the air pressure to the pump. Locate the regulator close to the pump, but **downstream** from the bleed-type master air valve.
- **An air regulator (Z)** adjusts air pressure to the air-assisted gun.
- **An air line filter (J)** removes harmful dirt and moisture from the compressed air supply. Also, install a **drain valve (W)** at the bottom of each air line drop, to drain off moisture.
- **A second bleed-type air valve (K)** isolates the air line accessories for servicing. Locate upstream from all other air line accessories.
- **An Air Relief Valve (G)** (Falcon II Packages only) opens automatically to prevent over pressurization of the pump.

Fluid Line Accessories

Install the following accessories in the locations shown in Fig. 2, using adapters as necessary:

- **A fluid filter (not shown)** with a 60 mesh (250 micron) stainless steel element, to filter particles from the fluid as it leaves the pump.
- **A gun (S)** dispenses the fluid. The gun shown in Fig. 2 is an air-assisted spray gun for light to medium viscosity fluids.
- **A gun swivel (R)** allows freer gun movement.
- **A suction hose (T)** allows the pump to draw fluid from a supply container.

Installation

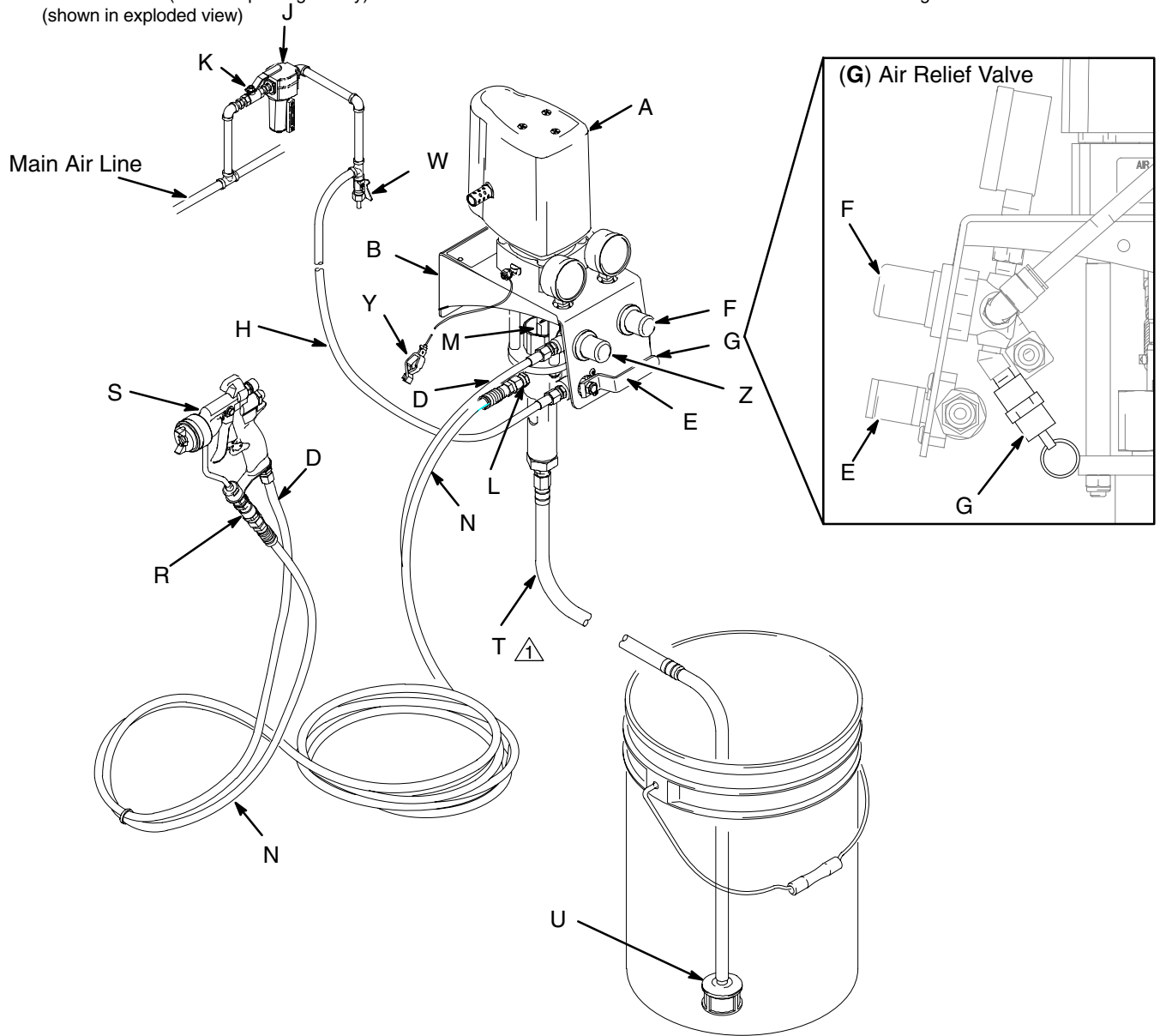
TYPICAL INSTALLATION

KEY

- A Pump
- B Wall Bracket
- D Gun Air Hose
- E Bleed-Type Master Air Valve (required, for pump)
- F Pump Air Regulator
- H Electrically Conductive Air Supply Hose
- G Air Relief Valve (Falcon II packages only) (shown in exploded view)

- J Air Line Filter
- K Bleed-Type Master Air Valve (for accessories)
- L Pump Outlet
- M Wet Cup
- N Electrically Conductive Fluid Supply Hose
- R Gun Swivel

- S Air-Assisted Spray Gun
- T Suction Hose
- U Strainer
- Y Ground Wire and Clamp (required; see page 5 for installation instructions)
- W Air Line Drain Valve
- Z Gun Air Regulator



9140B


 Do not stretch hose tight; let it hang as shown, to assist fluid flow into the pump. Adjust suction tube so it's about a 1/2 inch off bottom of the pail.

Fig. 2

Operation/Maintenance

Pressure Relief Procedure

WARNING



SKIN INJECTION HAZARD

The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. 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,
- stop spraying,
- check or service any of the system equipment,
- or install or clean the spray tips.

1. Lock the gun trigger safety.

2. Shut off the air supply to the pump.
3. Close the bleed-type master air valve (E) (required in your system).
4. Unlock the gun trigger safety.
5. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
6. Lock the gun trigger safety.

WARNING

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

Operation/Maintenance

Flush 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.

Starting and Adjusting Pump

Before starting, fill wet cup 1/3 full with TSL or compatible solvent.

1. Remove tip guard and spray tip from gun. Refer to gun manual.
2. Close air regulator (F).
3. Close bleed-type air valves (E and K). Connect airline (H) to bleed-type air valve (E).
4. Check that all fittings throughout the system are tightened securely.
5. See Fig. 2. Connect the suction hose (T) to pump's fluid inlet. Place tube into fluid supply. Do not stretch hose tight; let it hang as shown in Fig. 2, to assist fluid flow into pump.
6. Hold metal part of gun (S) firmly to side of grounded metal pail and hold trigger open.
7. Open pump's bleed-type master air valve (E).
8. Slowly turn regulator knob clockwise increasing pressure until pump starts.
9. Cycle pump slowly until all air is pushed out and pump and hoses are fully primed.
10. Release gun trigger and engage safety latch. Pump should stall against pressure.

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.

11. With pump and lines primed, and with adequate air pressure and volume supplied, pump will start and stop as you open and close gun.

WARNING

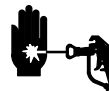
COMPONENT RUPTURE HAZARD



To reduce the risk of overpressurizing your system, which could cause component rupture and serious injury, *never exceed the specified Maximum Incoming Air Pressure to the pump* (see the Front page of this manual).

12. Use air regulator (F) to control pump speed and fluid pressure. Always use lowest air pressure necessary to get desired results. Higher pressures cause premature tip and pump wear.

WARNING



SKIN INJECTION HAZARD

The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. 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,
- stop spraying,
- check or service any of the system equipment,
- or install or clean the spray tips.

Install the Spray Tip

WARNING

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

Relieve the pressure by shutting off air valve and then trigger the gun. Install the spray tip and tip guard as explained in your separate gun manual.

Operation/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.

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

Preventive Maintenance Schedule

The operating conditions of your particular system determine how often maintenance is required. Establish a preventive maintenance schedule by recording when and what kind of maintenance is needed, and then determine a regular schedule for checking your system.

Flushing

WARNING



FIRE AND EXPLOSION HAZARD

Before flushing, read the section **FIRE AND EXPLOSION HAZARD** on page 4. Be sure the entire system and flushing pails are properly grounded. Refer to **Grounding** on page 5.

Flush the pump:

- Before first use
- When changing colors or fluids
- Before fluid dries or settles out in a dormant pump (check the pot life of catalyzed 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. Always flush the pump before fluid dries on the displacement rod.

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. Remove spray tip from gun.
3. Place suction hose in a container of solvent.
4. Hold metal part of gun firmly to side of grounded *metal* pail.
5. Start pump. Always use lowest possible fluid pressure when flushing.
6. Trigger gun.
7. Flush system until clear solvent flows from gun.
8. Stop pump with displacement rod at bottom of its stroke.
9. **Relieve the pressure.**
10. Clean tip guard, spray tip, and fluid filter element separately, then reinstall them.
11. Clean inside and outside of suction hose.

Troubleshooting Chart

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 causes and problems before disassembling the pump.

PROBLEM	CAUSE	SOLUTION
The pump fails to operate.	Restricted air line or an inadequate air supply; closed or clogged valves.	Clear the line; increase the air supply. Check that the valves are open.
	Obstructed fluid hose or gun; the fluid hose ID is too small.	Open, clear*; use a hose with a larger ID.
	Fluid has dried on the displacement rod.	Clean the rod; always stop the pump at the bottom of its stroke; keep the wet-cup 1/3 filled with a compatible solvent.
	Dirty, worn, or damaged motor parts.	Clean or repair; see the separate motor manual 308995.
The pump operates, but the output is low on both strokes.	Restricted air line or an inadequate air supply; closed or clogged valves.	Clear the line; increase the air supply. Check that the valves are open.
	Obstructed fluid hose or gun; the fluid hose ID is too small.	Open, clear*; use a hose with a larger ID.
	Worn u-cup seals in the displacement pump.	Replace the u-cup seals.
The pump operates, but the output is low on the downstroke.	Held open or worn intake valve.	Clear the valve; service.
The pump operates, but the output is low on the upstroke.	Held open or worn piston valve or u-cup seals.	Clear the valve; replace the u-cup seals.
Erratic or accelerated pump speed.	Exhausted fluid supply.	Refill the supply and prime the pump.
	Held open or worn piston valve or u-cup seals.	Clear the valve; replace the u-cup seals.
	Held open or worn intake valve.	Clear the valve; service.

* 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. If the pump starts when the air is turned on, the obstruction is in the fluid hose or gun.

NOTE: If you experience air motor icing, call your Graco distributor.

Service

Required Tools

- Set of adjustable wrenches
- Torque wrench
- Vise
- Thread lubricant

Disconnecting Displacement Pump

1. Fig. 3. Flush pump, if possible. Stop pump at bottom of its stroke.

WARNING

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

2. **Relieve the pressure.**
3. Disconnect air hose and fluid hose.
4. Disconnect displacement pump (109) from motor (101) as follows. Note relative position of pump's fluid outlet (U) to air inlet (V) of motor. If motor does not require servicing, leave it attached to its mounting.

CAUTION

If you are disconnecting the displacement pump from a motor which is still mounted (for example, on a wall bracket), *be sure* to support the displacement pump while it is being disconnected, to prevent it from falling and causing injury or property damage.

5. Using needle nose pliers, remove cotter pin (107) from clevis pin (106). Remove clevis pin from displacement rod (1).
6. Hold tie rod flats with wrench to keep rods from turning. Unscrew nuts (108) from tie rods (105). Carefully remove displacement pump (109) from motor (101).
7. Refer to page 14 for displacement pump service. To service air motor, refer to separate motor manual, 308995.

Reconnecting the Displacement Pump

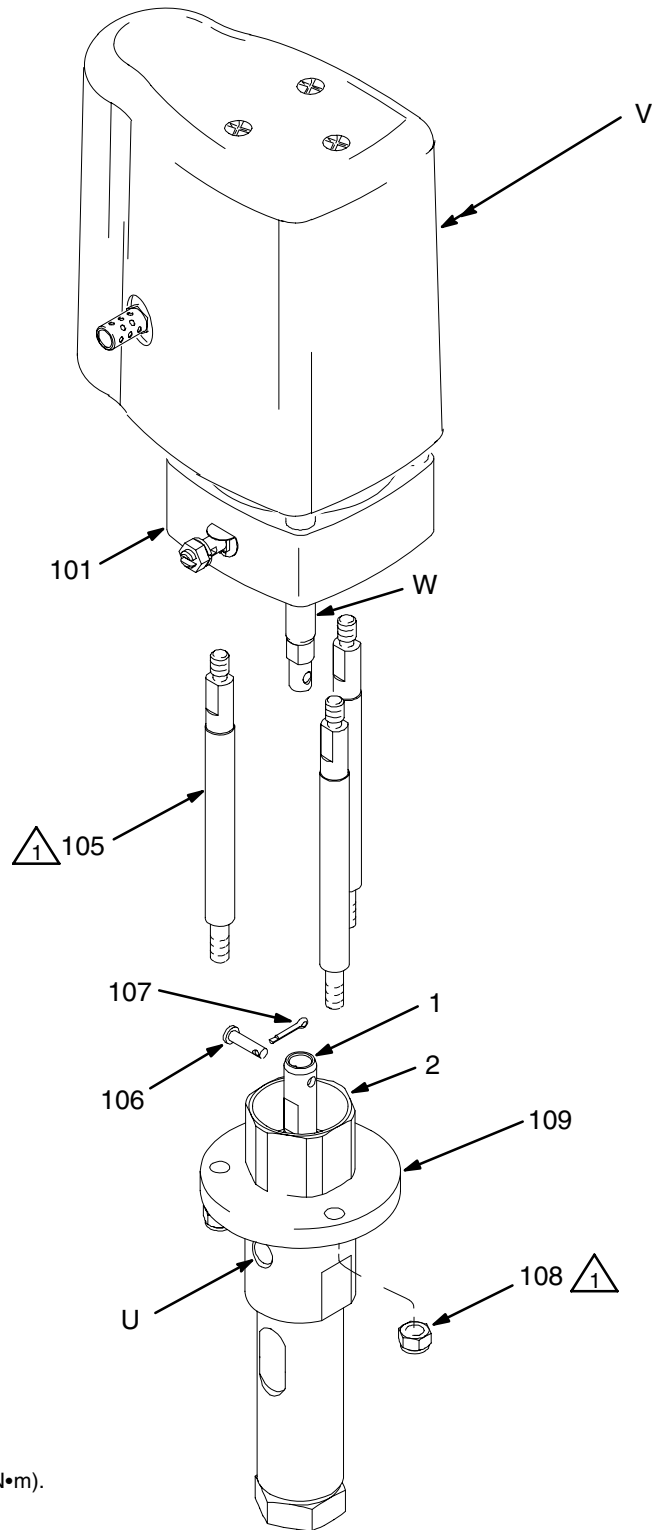
1. Fig. 3. Reconnect displacement pump (109) to motor (101) (see **CAUTION** at left). Orient pump's fluid outlet (U) to air inlet (V) as noted in step 4 under **Disconnecting the Displacement Pump**. Position displacement pump (109) on tie rods (105).
2. Insert clevis pin (106) through piston rod (W) and displacement rod (1). Install cotter pin (107).
3. Screw nuts (108) onto tie rods (105) and tighten.
4. Reconnect all hoses. Reconnect ground wire if disconnected. Fill wet cup (2) 1/3 full of Graco Throat Seal Liquid or compatible solvent.
5. Turn on air supply. Run pump slowly to ensure proper operation.

WARNING

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

Service

Model 241594 Shown




 Torque to 120–130 in-lb (10–11 N•m).

Fig. 3

9094B

Service

Disassembly

When disassembling the pump, lay out all removed parts in sequence, to ease reassembly.

NOTE: U-cup Repair Kits are available. For the best results, use all the new parts in the kit. Kit parts are marked with an asterisk, for example (8*).

1. Fig. 4. Place outlet housing (7) in vise.
2. Apply adjustable wrench to flats of intake valve (19). Unscrew intake valve from cylinder (9). Remove seal (8) from intake valve. Remove ball stop (3) and ball (17). Inspect ball and seat (D) of intake valve for wear or damage.
3. Unscrew cylinder (9). Gently pull cylinder straight out of outlet housing. Displacement rod (1) and piston assembly may come out with cylinder. If not, pull displacement rod out.
 - a. Fig. 5. Unscrew wet cup (2) from outlet housing (7). Remove u-cup (4), bearing (5), and seal (8).
 - b. Fig. 4. Remove seal (8) from cylinder (9). Shine light into cylinder to inspect inner surface for scoring or wear.
4. Fig. 6. Place flats of piston housing (16) in vise.
5. Using adjustable wrench, unscrew displacement rod (1) from piston housing. Examine displacement rod for scratches or other damage.
6. Fig. 7. Remove nut (13), lockwasher (12), u-cup seals (14), and spacers (15) from piston housing (16). Inspect seals for wear or damage.
7. Clean all parts with compatible solvent and inspect for wear or damage.
8. Remove piston housing from vise. Remove ball (11) and examine it and piston seat (A).

Service

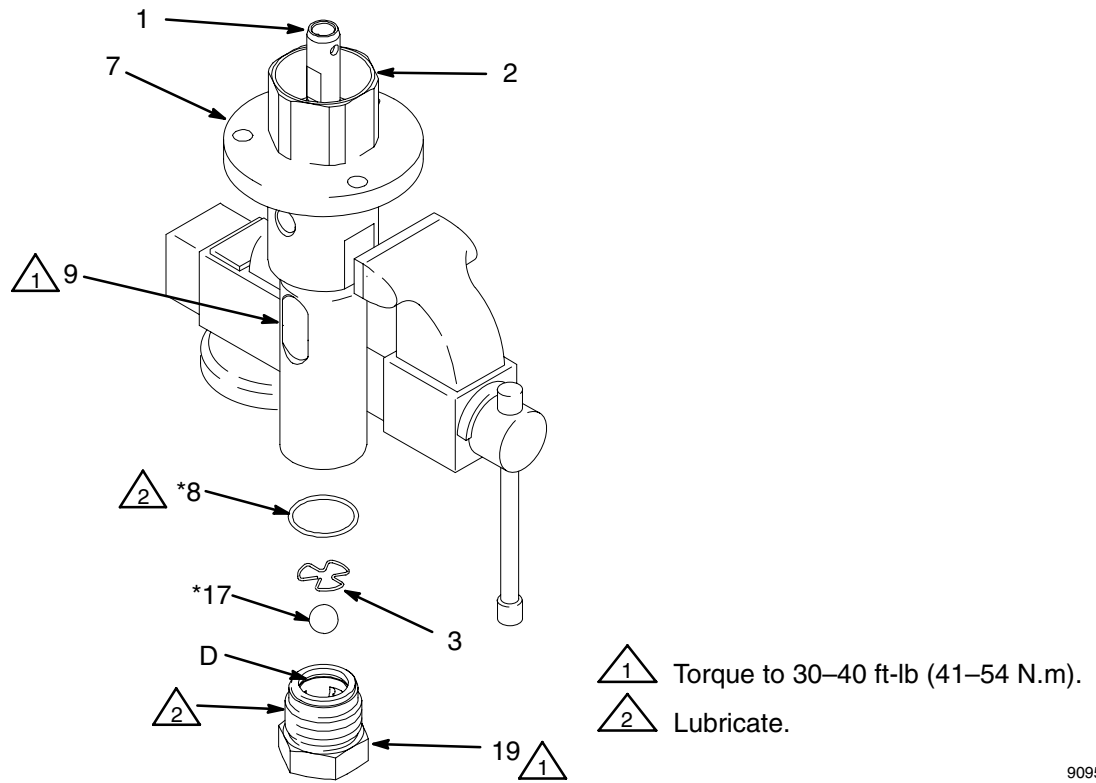


Fig. 4

9095A

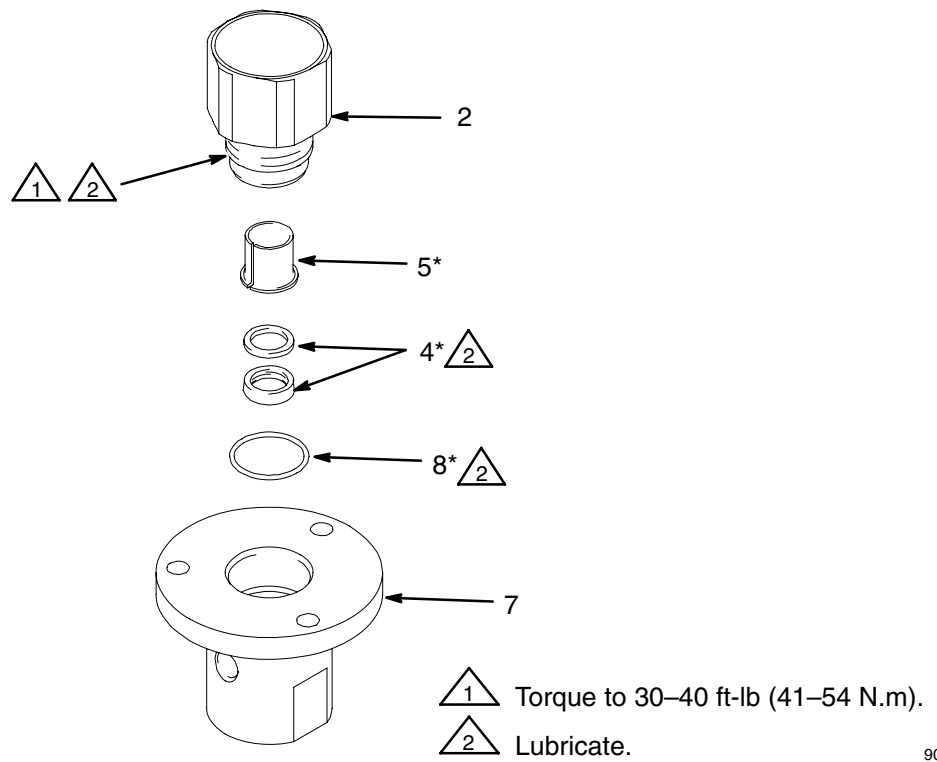
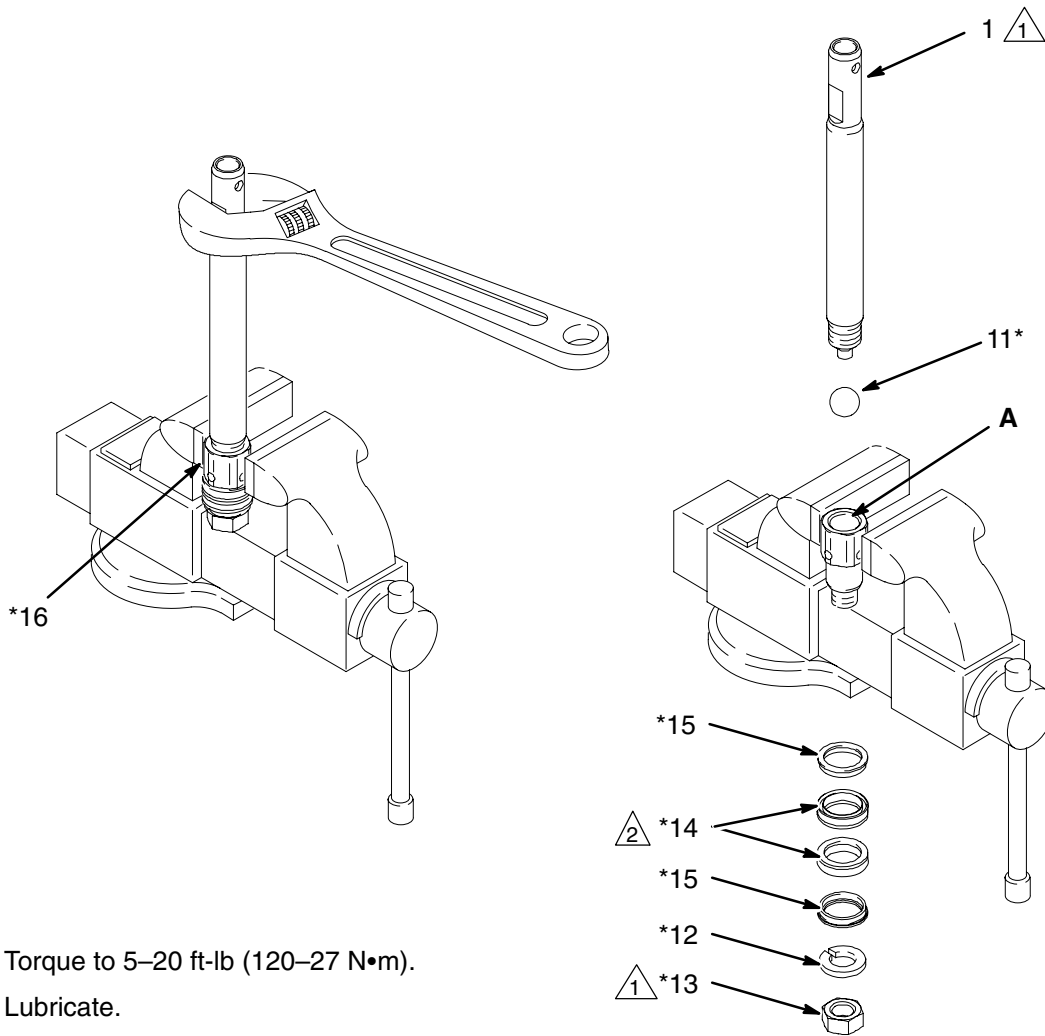


Fig. 5

9099B

Service



9096A

Fig. 6

Service

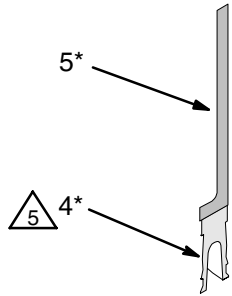
Reassembly

1. Fig. 6. Clean threads of displacement rod (1) and piston housing (16). Replace u-cup seals (14) and spacers (15). Reassemble piston nut (13) and lockwasher (12).
2. Place flats of piston seat housing (16) in vise. Tighten displacement rod and piston nut from 20 to 27 N•m (15 to 20 ft-lb).
3. Install seal (8) on cylinder (9). Lubricate seal and threads.
4. Fig. 5. Install throat bearing (5) and u-cup seal (4) into wet cup (2). Install seal (8) onto wet cup. Lubricate seals and threads.
5. Install wet cup into outlet housing (7), hand tight.
6. Fig. 6. Lubricate u-cup seals (14) and insert piston/displacement rod into cylinder (9).
7. Install cylinder, first by sliding displacement rod (1) up through outlet housing (7) and wet cup (2), then engage cylinder threads into outlet housing and hand tighten.
8. Replace intake ball (17) and ball stop (3) into intake valve (19). Install seal (8) on intake valve. Lubricate seal and threads.
9. Install intake valve into cylinder and hand tighten.
10. Place outlet housing into vise. Using an adjustable wrench, tighten the wet cup from 41 to 54 N•m (30 to 40 ft-lb).
11. Tighten the cylinder from 41 to 54 N•m (30 to 40 ft-lb) and the intake valve from 41 to 54 N•m (30 to 40 ft-lb).
12. Reconnect the displacement pump to the air motor as detailed in **Reconnecting the Displacement Pump** on page 12.

Service

- △1 Torque to 20–27 N.m (15–20 ft-lb).
- △2 Torque to 41–54 N.m (30–40 ft-lb).
- △3 Lubricate.
- △4 Lips face up.
- △5 Lips face down.
- △6 See Throat Seal Detail at left.
- △7 See Piston Seal Detail at left.

Throat Packing Stack Detail
(Displacement Pump 241516
Shown; see page 21 for options.)



Piston Packing Stack Detail
(Displacement Pump 241516
Shown; see page 21 for options.)

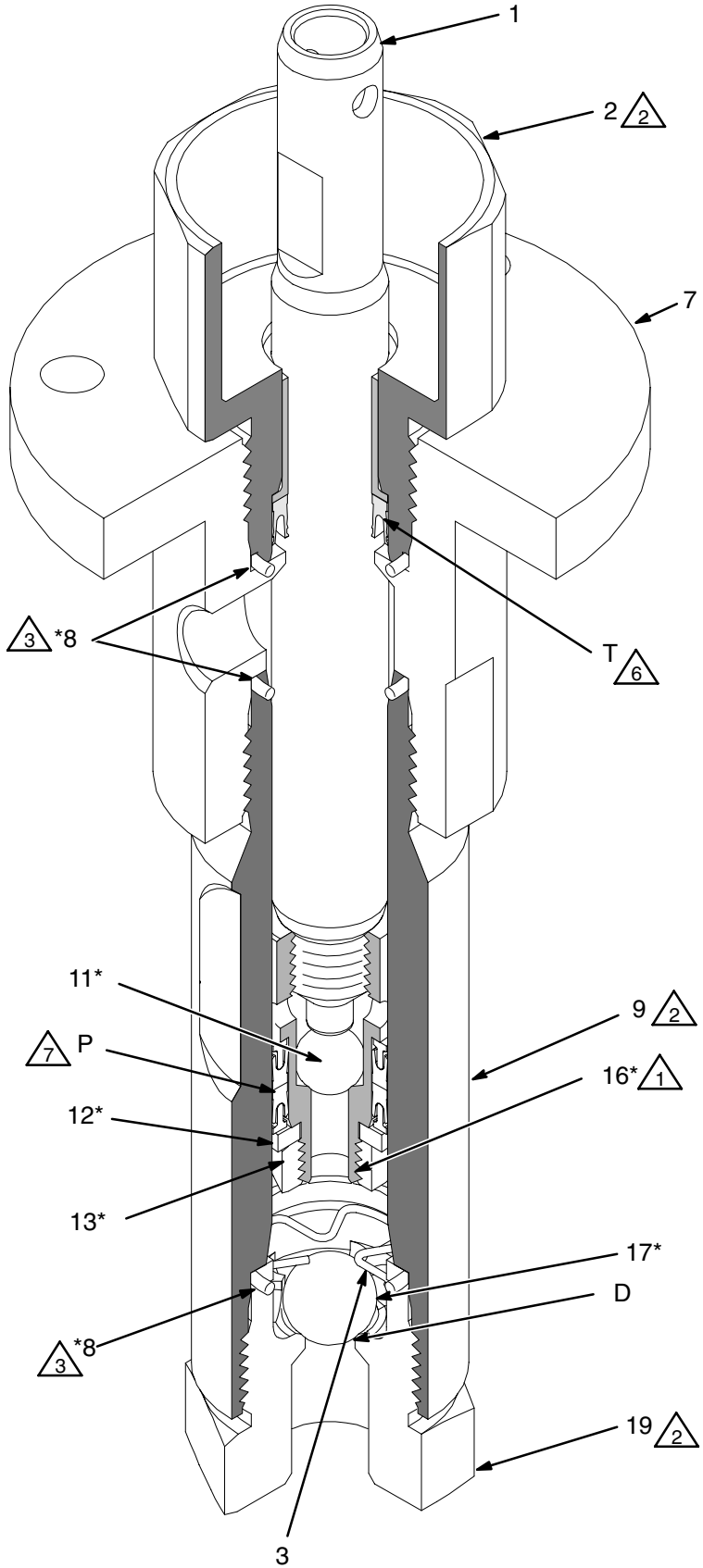
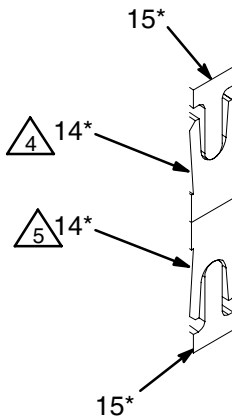
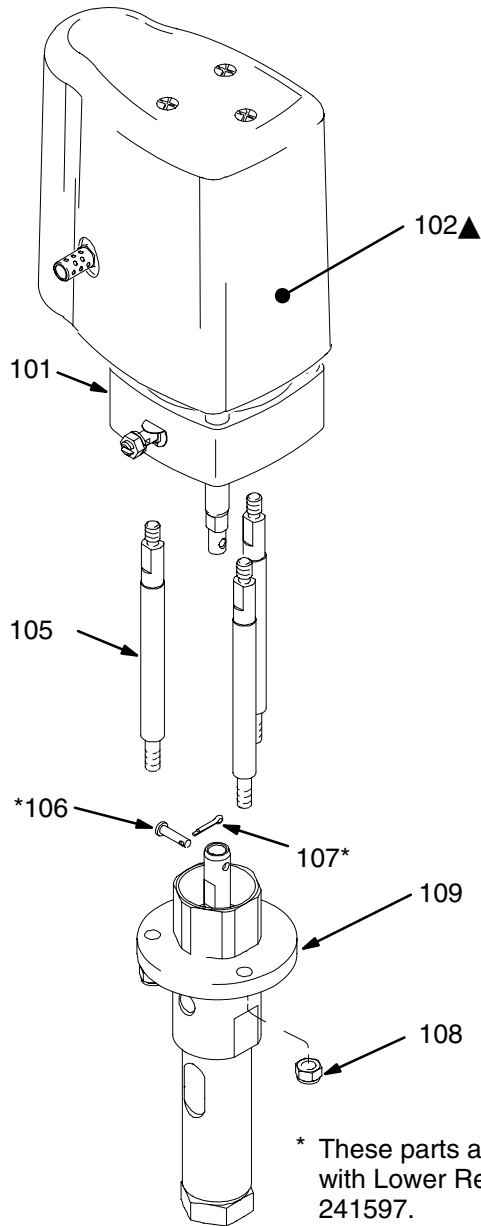


Fig. 7

9097A

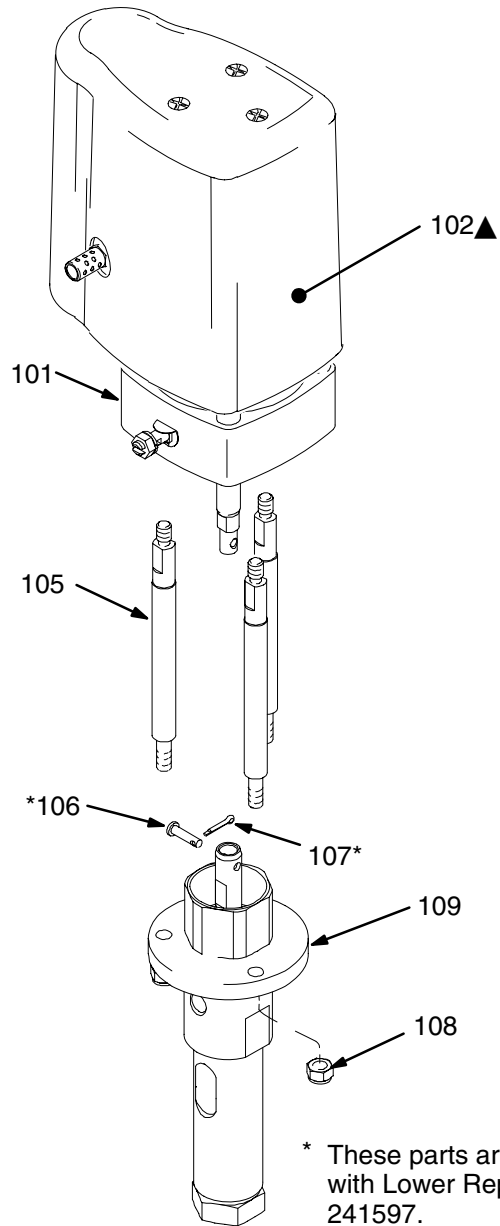
Parts

**Part No. 241594 Pump, Series B
10:1 Ratio, with Falcon Air Motor**



9094B

**Part No. 241595 Pump, Series B
20:1 Ratio, with Falcon II Air Motor**



9094B

Ref. No.	Part No.	Description	Qty.
101	241504	AIR MOTOR, Falcon See 308995 for parts	1
102▲	190867	LABEL, warning	1
105	194909	ROD, tie; 127 mm (5") shoulder to shoulder	3
106*	115218	PIN, clevis	1
107*	111609	PIN, cotter	1
108	111040	NUT, hex	3
109	241516	PUMP, displacement See page 20 for parts	1

* These parts are included with Lower Repair Kit 241597.

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

Ref. No.	Part No.	Description	Qty.
101	241505	AIR MOTOR, Falcon II See 308995 for parts	1
102▲	190867	LABEL, warning	1
105	194909	ROD, tie; 127 mm (5") shoulder to shoulder	3
106*	115218	PIN, clevis	1
107*	111609	PIN, cotter	1
108	111040	NUT, hex	3
109	241516	PUMP, displacement See page 20 for parts	1

* These parts are included with Lower Repair Kit 241597.

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

Parts

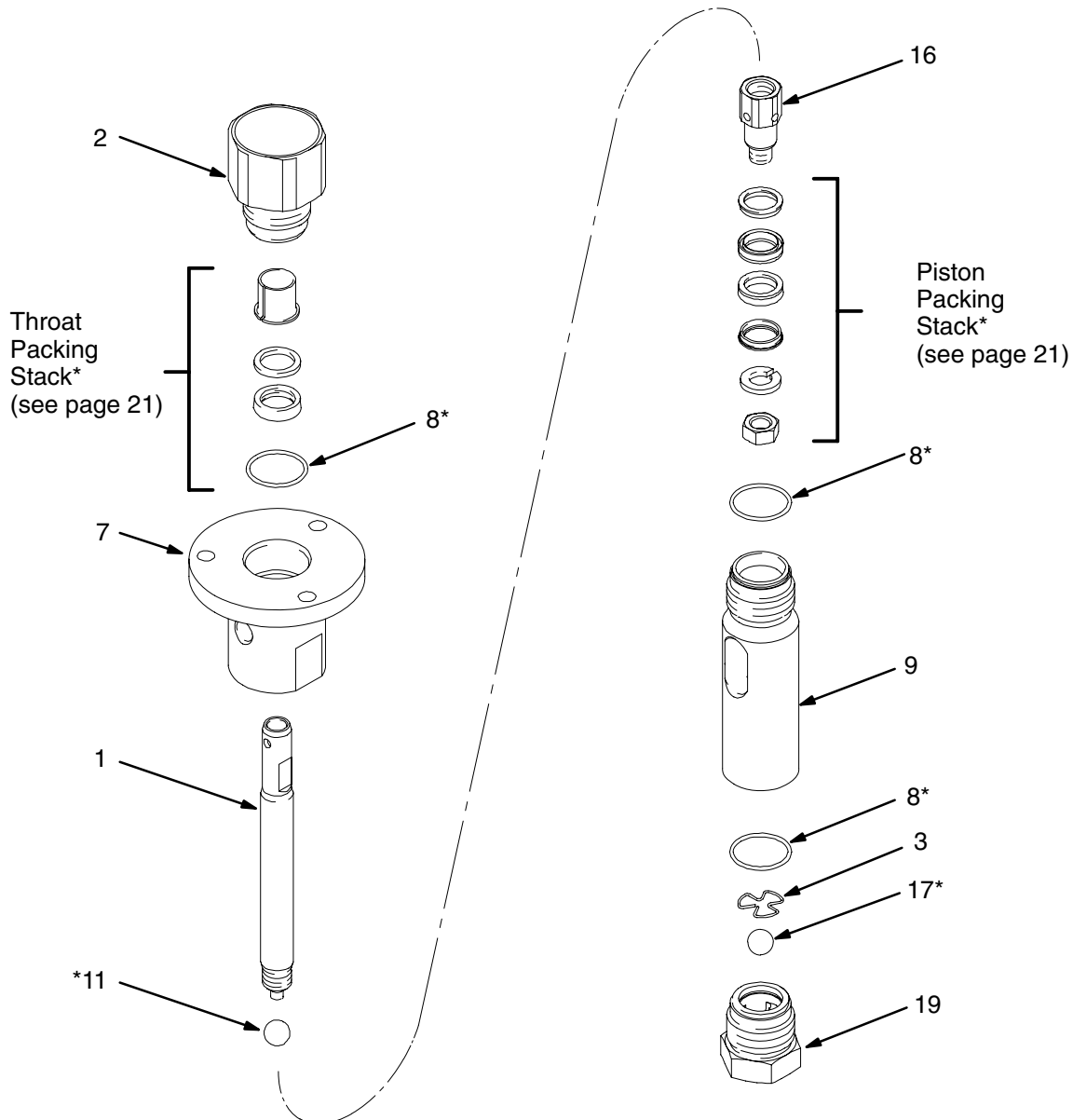
NOTE: The parts listed on this page are common to all displacement pumps covered in this manual. Refer to page 21 for the different packing configurations available.

* These parts are included in Lower Repair Kit 241597, which may be purchased separately.

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

Part No. 241516 Displacement Pump, Series B

Ref No.	Part No.	Description	Qty
1	194756	ROD, displacement; stainless steel, chrome	1
2	194757	HOUSING, throat; stainless steel	1
3	115148	STOP, ball; stainless steel	1
7	194759	HOUSING, outlet; stainless steel	1
8*	103341	SEAL; PTFE	3
9	194760	CYLINDER; stainless steel, chrome	1
11*	101947	BALL, piston; stainless steel; 0.375" (9.5 mm) dia.	1
16	194761	HOUSING, seat, piston valve; stainless steel	1
17*	105445	BALL, intake; stainless steel; 0.5" (12.7 mm) dia.	1
19	195003	VALVE, intake; stainless steel	1
25▲	172479	TAG, warning (not shown)	1

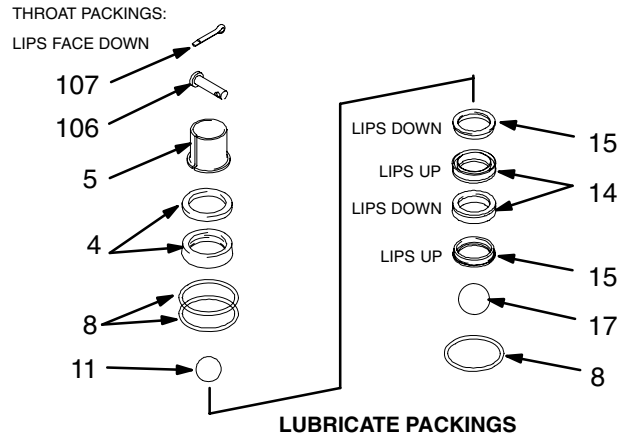


Repair Kits

Repair Kit 241597, for Falcon Pump 241516

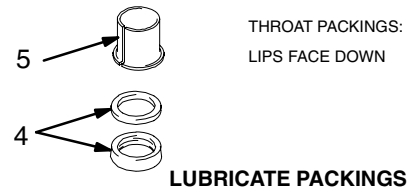
Ref No.	Part No.	Description	Qty
4	115251	SEAL, u-cup; uhmwpe	1
5	194758	BEARING, throat; acetal	1
8	103341	O-RING; PTFE	3
11	101947	BALL, piston	1
14*	115146	SEAL, u-cup; carbon-filled PTFE	2
15	194880	SPACER, seal; Nylon	2
17	105445	BALL, intake	1
106	115218	PIN, clevis	1
107	111609	PIN, cotter	1

* 115146 is a PTFE seal. An uhmwpe seal, 115408 is available and sold separately



Throat Seal Repair Kit 241827, for Falcon Pump 241516

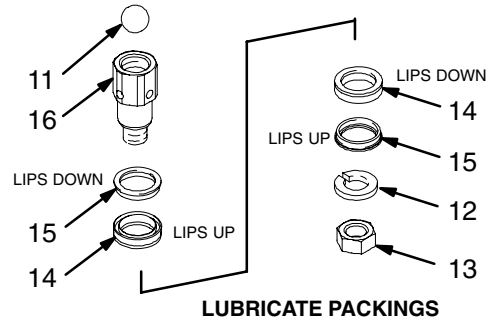
Ref No.	Part No.	Description	Qty
4	115251	SEAL, u-cup; uhmwpe	1
5	194758	BEARING, throat; acetal	1



Piston Repair Kit 241828, for Falcon Pump 241516

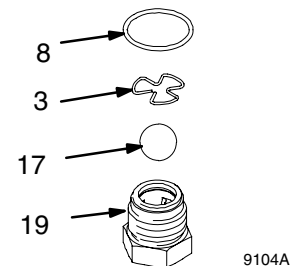
Ref No.	Part No.	Description	Qty
11	101947	BALL, bearing; 0.375 in.	1
12	103780	WASHER, lock	1
13	103777	NUT, hex, full	1
14*	115146	SEAL, u-cup; carbon-filled PTFE	2
15	194880	SPACER, seal; Nylon	2
16	194761	VALVE, piston	1

* 115146 is a PTFE seal. An uhmwpe seal, 115408 is available and sold separately



Intake Repair Kit 241829, for Falcon Pump 241516

Ref No.	Part No.	Description	Qty
3	115148	STOP, intake ball	1
8	103341	O-RING, packing	1
17	105445	BALL; 0.5000 in.	1
19	195003	VALVE, intake	1

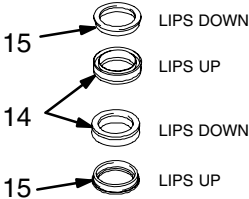


Repair Kits

Piston Repair Kit 241830, for Falcon Pump 241516

Ref No.	Part No.	Description	Qty
14*	115146	SEAL, u-cup; carbon-filled PTFE	2
15	194880	SPACER, seal; Nylon	2

* 115146 is a PTFE seal. An uhmwpe seal, 115408 is available and sold separately

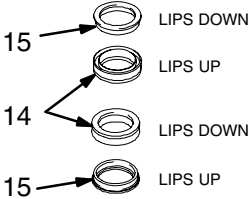


LUBRICATE PACKINGS

Piston SST Conversion Kit 15B327, for Falcon Pump 241516

Ref No.	Part No.	Description	Qty
14*	115146	SEAL, u-cup; carbon-filled PTFE	2
15	15B328	SPACER, seal; sst	2

* 115146 is a PTFE seal. An uhmwpe seal, 115408 is available and sold separately



LUBRICATE PACKINGS

Technical Data

WARNING

Be sure that all fluids and solvents used are chemically compatible with the Wetted Parts listed below. Always read the manufacturer's literature before using fluid or solvent in these pumps.

(Model 241594 Falcon Pump)

Ratio	10:1
Maximum fluid working pressure	104 bar (1500 psi)
Maximum air input pressure	10.4 bar (150 psi)
Cycle rate	60 cycles/min maximum
Pump cycles per 3.8 liters (1 gal.)	200
Fluid flow at 60 cycles/min	0.29 gpm
Air motor piston effective area	3.142 in. ²
Stroke length	57 mm (2.25 in.)
Displacement pump effective area	0.307 in. ²
Maximum pump operating temperature	66°C (120°F)
* Noise level at 100 psi, 30 cycles/min	70.8 dB(A)
* Sound power level at 100 psi, 30 cycles/min	74.8 dB(A)
Air inlet size	3/8 npsm(f)
Fluid inlet size	3/8 npt(f)
Fluid outlet size	1/4 npt(f)
Weight	20 lb
Wetted parts	stainless steel, PTFE, uhmwpe

* Tested in accordance with ISO 9614-2.

(Model 241595 Falcon II Pump)

Ratio	20:1
Maximum fluid working pressure	152 bar (2200 psi)
Maximum air input pressure	7 bar (100 psi)
Cycle rate	60 cycles/min maximum
Pump cycles per 3.8 liters (1 gal.)	200
Fluid flow at 60 cycles/min	0.29 gpm
Air motor piston effective area	6.665 in. ²
Stroke length	57 mm (2.25 in.)
Displacement pump effective area	0.307 in. ²
Maximum pump operating temperature	66°C (120°F)
* Noise level at 100 psi, 30 cycles/min	74.6 dB(A)
* Sound power level at 100 psi, 30 cycles/min	77.4 dB(A)
Air inlet size	3/8 npsm(f)
Fluid inlet size	3/8 npt(f)
Fluid outlet size	1/4 npt(f)
Weight	20 lb
Wetted parts	stainless steel, PTFE, uhmwpe

* Tested in accordance with ISO 9614-2.

Technical Data

Performance Charts

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

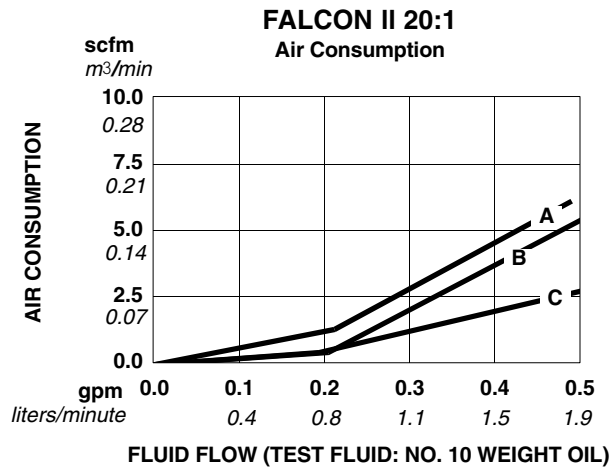
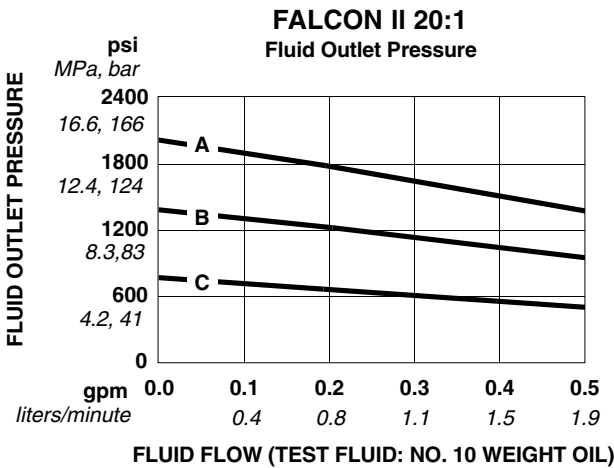
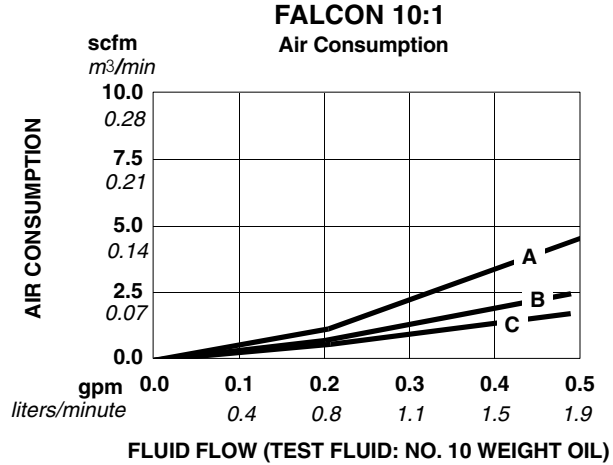
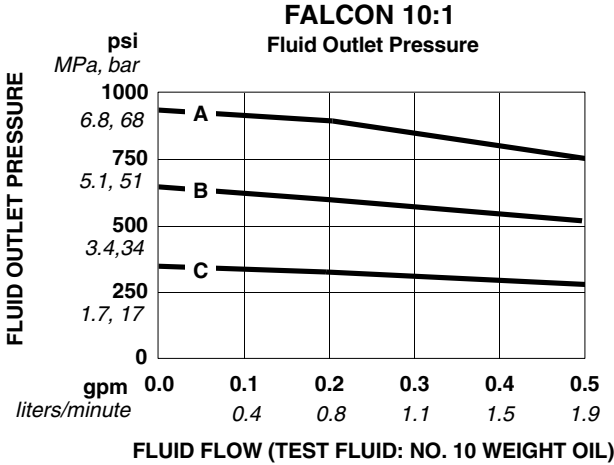
1. Locate fluid flow rate along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve.
3. Follow left to scale to read fluid outlet pressure.

- A 100 psi (0.7 MPa, 7 bar) air pressure
- B 70 psi (0.49 MPa, 4.9 bar) air pressure
- C 40 psi (0.28 MPa, 2.8 bar) air pressure

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

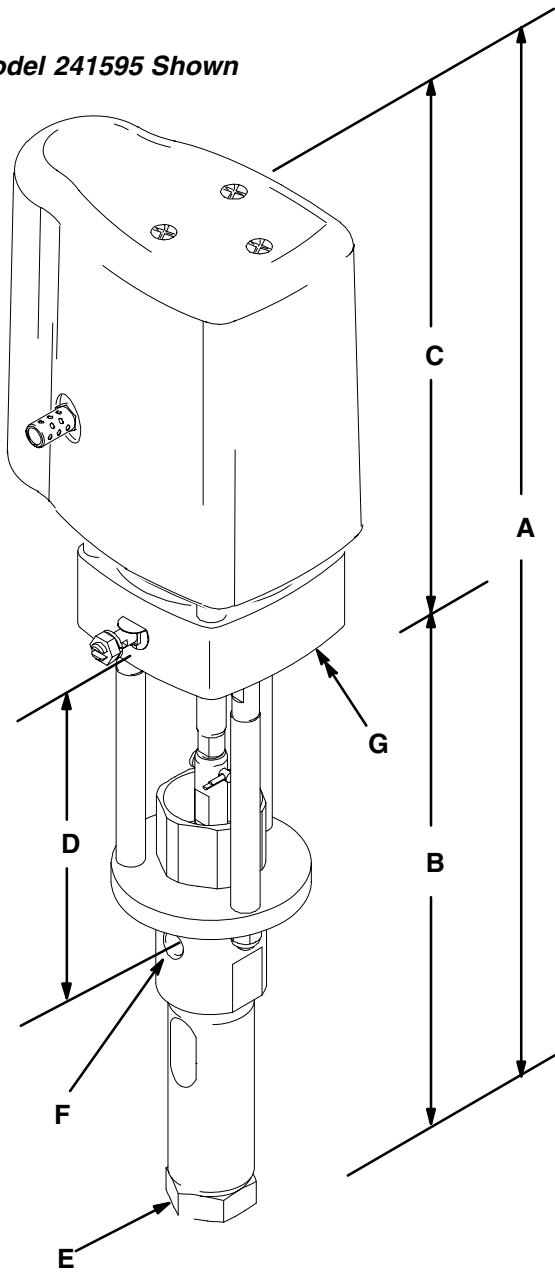
1. Locate fluid flow rate along bottom of chart.
2. Read vertical line up to intersection with selected air consumption curve.
3. Follow left to scale to read air consumption.

- A 100 psi (0.7 MPa, 7 bar) air pressure
- B 70 psi (0.49 MPa, 4.9 bar) air pressure
- C 40 psi (0.28 MPa, 2.8 bar) air pressure

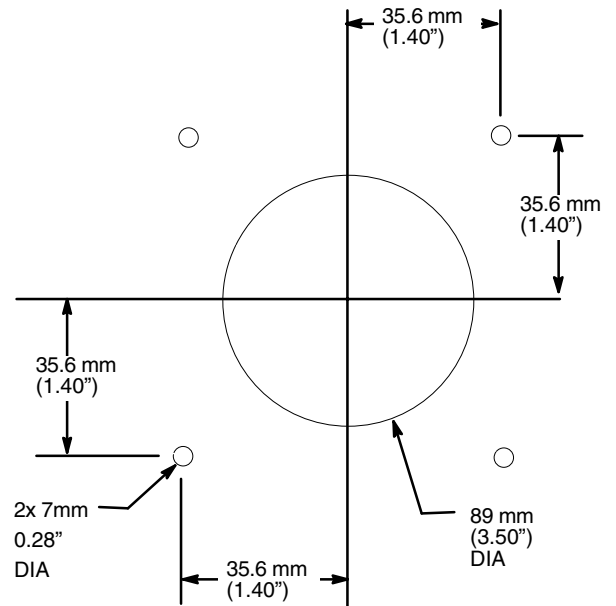


Dimensions

Model 241595 Shown



Mounting Hole Layout



0653

9092B

Pump Model	A	B	C	D	E	F	G
241594, 241595	513 mm (20.2 in.)	304 mm (11.97 in.)	209 mm (8.23 in.)	159 mm (6.25 in.)	3/8 in. npt(f)	1/4 in. npt(f)	3/8 npt(f)

Graco Standard Warranty

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 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

TO PLACE AN ORDER, contact your Graco distributor, or call one of the following numbers to identify the distributor closest to you:

1-800-328-0211 Toll Free

612-623-6921

612-378-3505 Fax

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 308996

Graco Headquarters: Minneapolis
International Offices: Belgium, Korea, China, Japan

www.graco.com

308996 06/1999, Revised 04/2007