

Instructions – Parts List



1:1 MIX RATIO PRESIDENT®

Hydra-Cat® Proportioning Pump

307001 rev.N

600 psi (4.0 MPa, 40 bar) Maximum Working Pressure

*** Part No. 207914, Series E**

1:1 Mix Ratio by Volume

Includes Model 215932 Displacement Pump

*** Part No. 903843, Series A**

1:1 Mix Ratio by Volume

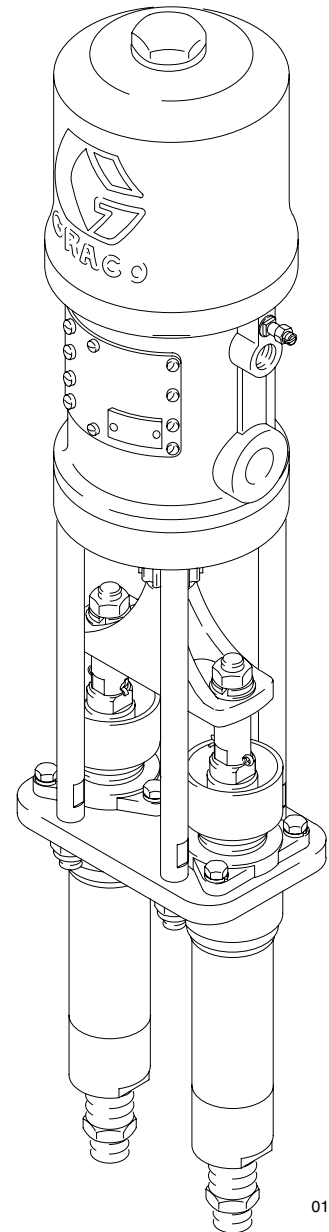
Includes Model 904287 Displacement Pump

*This model is  certified and  approved.



Important Safety Instructions.

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



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Table of Contents

Warnings	2
Installation	5
Operation	6
Troubleshooting	8
Service	9
Parts	10
Technical Data	11
Mounting Hole Layout	11
Dimensions	11
Graco Warranty	12
Graco Information	12

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 corresponding 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 uncertain about usage, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check the equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. This equipment has a **600 psi (4.0 MPa, 40 bar) maximum working pressure**.
- Do not lift pressurized equipment.
- Route the hoses away from the traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 180°F (82°C) or below -40°F (-40°C).
- Do not use the hoses to pull the equipment.
- Use only Graco approved hoses. Do not remove hose spring guards, which help protect the hose from rupture caused by kinks or bends near the couplings.
- Use fluids or solvents that are compatible with the equipment wetted parts. See the **Technical Data** section of all the equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Wear hearing protection when operating this equipment.
- Comply with all applicable local, state and national fire, electrical and other safety regulations.

Warnings are continued on the next page.

⚠ WARNING



PRESSURIZED EQUIPMENT HAZARD

Spray from the gun, hose leaks, or ruptured components can splash fluid in the eyes or on the skin and cause serious injury.

- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** on page 6 whenever you: are instructed to relieve the pressure; stop spraying; clean, check, or service the equipment; and install or clean the fluid nozzle.
- Tighten all the 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.



FIRE AND EXPLOSION HAZARD

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

- Ground the equipment and the object being sprayed. See **Grounding** on page 5.
- Provide fresh air ventilation to avoid the buildup of flammable fumes from solvent or the fluid being sprayed.
- Extinguish all the open flames or pilot lights in the spray area.
- Electrically disconnect all the equipment in the spray area.
- Keep the spray area free of debris, including solvent, rags, and gasoline.
- Do not turn on or off any light switch in the spray area while operating or if fumes are present.
- Do not smoke in the spray area.
- Do not operate a gasoline engine in the spray area.
- If there is any static sparking while using the equipment, **stop spraying immediately**. Identify and correct the problem.



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.
- Graco does not manufacture or supply the reactive chemical components that may be used in this equipment and is not responsible for injury or property loss, damage, expense, or claims (direct or consequential) that arise from the use of such chemical components.

[illegible]

Installation

General

Note: Reference numbers and letters in parentheses in the text refer to the callouts in the figures and parts drawings.

- These pumps are designed to be part of a Hydra-Cat® sprayer that will proportion, mix, and spray polyurethane chemicals. Refer to your separate Hydra-Cat® instructions. If you are using this pump to mix antifreeze and water, refer to page 9 for special plumbing instructions.
- Mount the pump to suit the type of installation planned. The pump dimensions and mounting hole layout are shown on page 11.
- The pump is supplied with a 3/4 npt(m) intake nipple. If your installation requires a 3/4 npt(f) or 1" npt(m) intake, remove and discard the 3/4 npt(m) nipple, and connect your plumbing directly to the intake housing. Refer to manual 307430 for a parts breakdown of the displacement pump.

WARNING

Two accessories are required in your system: a bleed-type master air valve and a fluid drain valve. These accessories 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.

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

Grounding

To reduce the risk of static sparking, ground the sprayer and all other spray equipment used or located in the spray area. Check your local electrical code for detailed grounding instructions for your area and type of equipment. Ground all of this spray equipment:

- *Pump:* use a ground wire and clamp to connect the sprayer to a true earth ground. See Fig. 1.
- *Feed pumps:* use a ground wire and clamp to connect the pump to a true earth ground. See your separate feed pump instruction manual.
- *Air compressors:* refer to manufacturer's recommendations.
- *Air and Fluid Hoses:* use only grounded hoses and check resistance regularly.
- *Heaters:* wire into a properly grounded power supply. If using a generator, be sure it is positively connected to a true earth ground.
- *Spray gun:* obtain grounding through connection to a properly grounded fluid hose and sprayer.
- *Fluid supply containers:* according to local code.
- *Object being sprayed:* according to local code.
- *All solvent pails* used when flushing, according to local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts grounding continuity.
- *To maintain grounding continuity when flushing or relieving pressure,* always hold a metal part of the gun firmly to the side of a grounded metal pail, then trigger the gun.

To ground the pump, loosen the grounding lug locknut (W) and washer (X). Insert one end of a 12 ga (1.5 mm²) minimum ground wire (Y) into the slot in the lug (Z) and tighten the locknut securely. See Fig. 1. Connect the other end of the wire to a true earth ground. Order Part No. 222011, grounding wire and clamp.

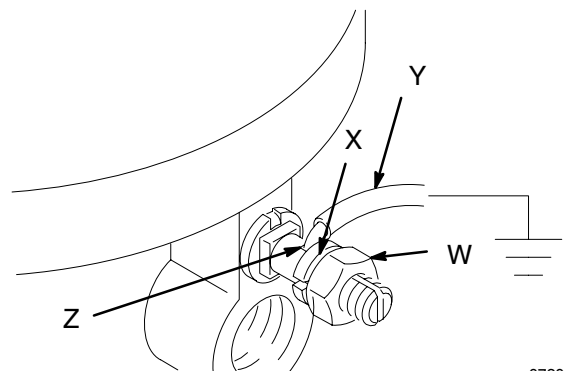


Fig. 1

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Operation

Pressure Relief Procedure

WARNING



PRESSURIZED EQUIPMENT HAZARD

The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. To reduce the risk of an injury from accidental spray from the gun, 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 fluid tips.

1. Shut off the air to the pump.
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 waste container, and trigger the gun to relieve pressure.
4. Open the drain valve (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 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 obstruction. Refer to your separate gun instruction manual, if necessary.

Fill the Wet Cups

Keep the wet-cups 1/3 full of ISO Pump Lube to prevent fluid from drying on the displacement rod and damaging the pump packings.

Flush 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 6.

The displacement pump was factory tested in light oil, which was left in to protect the pump parts. To prevent contamination of the fluid being pumped, flush the pump before using it. Be sure the solvent used is compatible with the fluid being pumped.

Place each pump intake into a separate, grounded pail of solvent. Direct the fluid outlet into a waste container. Open the dispensing valve. Open the bleed-type master air valve. Slowly open the pump air regulator until the pump is running smoothly – about 40 psi (280 kPa, 2.8 bar). Operate the pump until clean solvent is coming from the outlet. **Relieve the pressure.** If you are flushing to prepare the pump for storage, leave the pump and dispensing equipment filled with solvent to help protect it from corrosion.

Startup and Priming

Note: These are general operating instructions for the proportioning pump. Your specific installation may require a slightly different startup procedure. Consult your Graco representative if you have any questions.

1. Using proper moisture-control equipment for your feed/supply pumps, place the RES (Resin) hose in the RES supply container and the ISO (Isocyanate) hose in the ISO supply container.
2. Open the bleed-type master air valve and set the pump air regulator to 40 psi (280 kPa) (2.8 bar). Operate the pump until all air is purged from the hoses, then close the air valve.
3. Prime the pump and hoses fully before connecting to the dispensing gun or valve.
4. Connect the dispensing gun.

Operation

Using Your Proportioning System

When the system is primed and operating, check the fluid outlet pressure gauges. Check the gauges frequently when using the system. Always make a note of the pressures indicated. These notes will be helpful in analyzing any troubles that may occur since a change in the displacement pump performance will be indicated by a change in the pressure gauge readings.

Note: A pressure drop does occur during pump stroke changeover.

Never exceed 120 psi (0.8 MPa, 8 bar) air pressure to the pump.



WARNING

Always close the air supply valve to the pump before operating the drain valves to relieve system pressure. This will reduce the risk of excessive pressure buildup in the opposite component hose and fittings, and component rupture, which can cause serious injury or property damage.

Lubrication and Care



WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 6.

Keep the wet cups/packing nuts 1/3 filled with ISO Pump Oil and check the tightness of the packing nut weekly. The packing nut should be tight enough to prevent leakage – no tighter. Too tight an adjustment will cause the packings to bind or wear prematurely and leak. Always **relieve the pressure** before adjusting the packing nut.

Never allow the supply containers to run dry of the fluid being pumped. A dry container allows air to be pumped into the system and cause incorrect proportioning. One dry displacement pump can also damage the other displacement pump because it causes a pressure rise in the other pump. If the supply container is dry, stop the pump immediately, refill the container, and prime the system. Be sure to eliminate all of the air from the system.

Always stop the pump at the bottom of its stroke to prevent fluid from drying on the displacement pump which can damage the throat packings.

Flush all fluid out of the displacement pump whenever you shut down for overnight or longer and fill the pump with mineral spirits or rust-inhibiting solvent to prevent corrosion.

Troubleshooting

WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 6.

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

Note: Check every possible problem and solution before disassembling the pump.

Problem	Cause	Solution
Pump won't run.	Not enough air pressure or volume.	Check, increase.
	Closed or clogged air valve or line.	Open, clear.
	Air motor inoperative.	Service. See manual 306982.
Pump runs, but RES output low on upstroke*.	Dirty, worn, or damaged RES pump piston valve.	Service. See manual 307430.
	Worn or damaged RES pump piston packings.	Service. See manual 307430.
Pump runs, but RES output low on downstroke*.	Dirty, worn, or damaged RES pump intake valve.	Clean, service. See manual 307430.
Pump runs, but RES output low on both strokes*.	Dirty, worn, or damaged RES pump intake valve.	Clean, service. See manual 307430.
	Empty or inadequate fluid supply.	Refill or change container.
Pump runs, but ISO output low on upstroke*.	Dirty, worn, or damaged ISO pump piston valve.	Service. See manual 307430.
	Worn or damaged ISO pump piston packings.	Service. See manual 307430.
Pump runs, but ISO output low on downstroke*.	Dirty, worn, or damaged ISO pump intake valve.	Clean, service. See manual 307430.
Pump runs, but ISO output low on both strokes*.	Dirty, worn, or damaged ISO pump intake valve.	Clean, service. See manual 307430.
	Empty or inadequate fluid supply.	Refill or change container.
Fluid leaks around fluid pump packing nut.	Loose packing nut or worn throat packings.	Tighten, replace. See manual 307430.
Pump speeds up or runs erratically.	Empty or inadequate fluid supply.	Refill or change container.
	Air in fluid lines.	Purge, check connections.

* Fluids ratio will be wrong.

Service



WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 6.

Disassembly (Fig. 2)

1. **Relieve the pressure.**
2. Solvent flush the pump, if possible, and **relieve the pressure** again.
3. Screw the shouldered nut (15) off the yoke (18).
4. Remove the four locknuts (8) from the tie rods (19) and remove the tie plate (16) with the pumps (22) and yoke still attached.
5. Remove the nuts and lockwashers (4 and 6) from the pump displacement rods and remove the yoke.
6. Remove the three screws and lockwashers (4 and 6) holding each pump to the tie plate and remove the pumps.
7. To service the air motor, refer to separate instruction manual 306982.
8. To service the displacement pumps, refer to separate instruction manual 307430.

Reassembly (Fig. 2)

1. Place the displacement pumps in the tie plate (16) and secure with the screws (4) and lockwashers (6).
2. If the rod extensions (20) were removed, replace them on the displacement rods and secure with the cotter pins (9). Secure the rod extensions to the yoke (18) with the lockwashers (5) and nuts (7).
3. Position the tie rods (19) in the tie plate (16) and install the nuts (8), torquing evenly to 30–50 ft-lb (47–68 N•m).
4. Screw the shouldered nut (15) down onto the yoke.
5. Reconnect the ground wire if it was disconnected during service.

Mixing Antifreeze and Water

To ensure complete mixing, the outlet line should be at least 1 in. diameter tubing or 3/4 in. pipe. Runs shorter than 45 m (150 ft) should use a 100 mm (4 in.) diameter x 0.9 m (36 in.) mixing chamber fabricated of schedule 40 pipe.

The plumbing and suction lift to the pump inlets must meet certain specifications so the volumes of the two fluids supplied to the pump remain equal, to ensure proper 1:1 proportioning. The inlet lines must be the same diameter and length, with the same number of bends or elbows. The lift requirements of the two inlets can vary within a range of 0.45 m (18 in.). Use a float valve set at the 0.45 m (18 in.) level of one of the fluid supply tanks to ensure that the lift requirement is maintained.

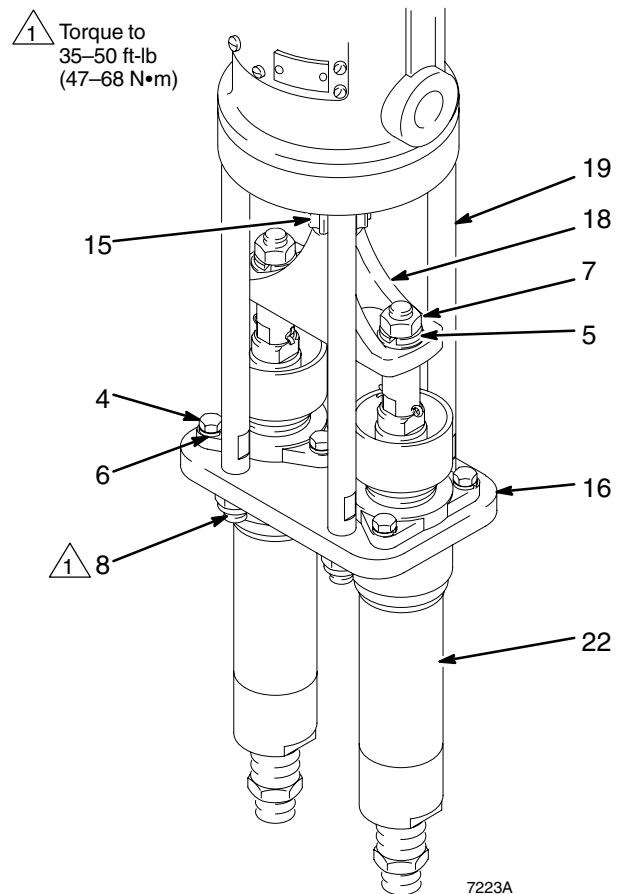
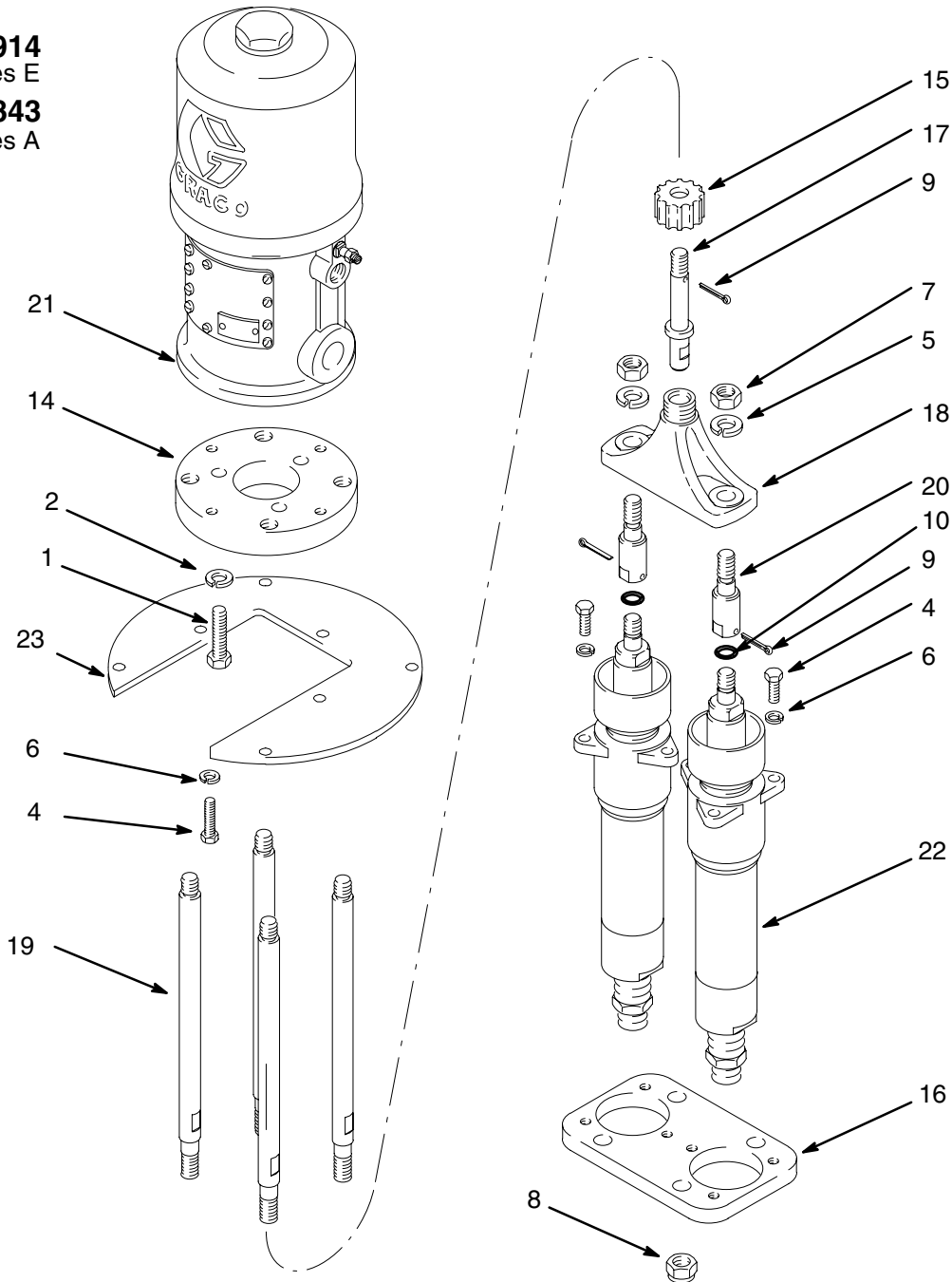


Fig. 2

Parts

Model 207914
Series E

Model 903843
Series A



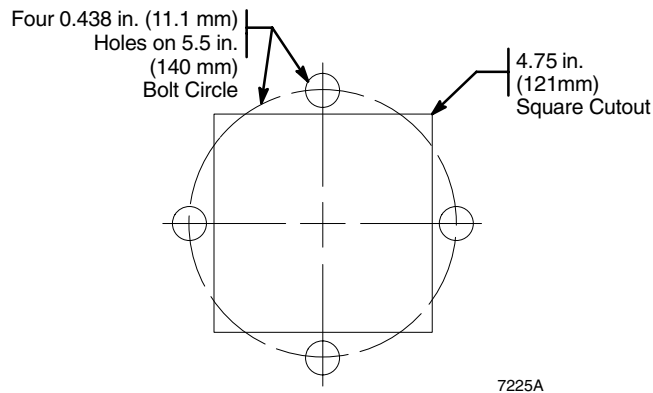
TI0557B

Ref No.	Part No.	Description	Qty.	Ref No.	Part No.	Description	Qty.
1	100017	SCREW, hex hd cap; 1/2 in.—13 x 1.5 in.	3	16	168600	PLATE, tie	1
2	100018	LOCKWASHER, spring; 1/2 in. size	3	17	168606	ROD, connecting	1
4	100101	SCREW, hex hd cap; 3/8 in.—16 x 1.0 in.	9	18	168607	YOKE, connecting	1
5	100128	LOCKWASHER, spring; 5/8 in.	2	19	171313	ROD, tie; 10.687 in. (272 mm)	4
6	100133	LOCKWASHER, spring; 3/8 in.	9	20	171314	EXTENSION, displacement rod	2
7	100681	NUT, hex jam; 5/8 in.—11	2	21	207352	AIR MOTOR; See manual 306982 for parts	1
8	101712	NUT, lock; 5/8 in.—11	4	22	215932	DISPLACEMENT PUMP ASSY See manual 307430 for parts	2
9	101946	PIN, cotter; SST; 0.125 in. (3.2 mm) dia; 1.50 in. (38.1 mm) lg	3		904287	DISPLACEMENT PUMP ASSY See manual 307430 for parts	2
10	156082	O-RING; <i>Model 903843 only</i>	2			<i>Model 903843 only</i>	2
14	168418	PLATE, adapter	1	23	178471	PLATE, mounting	1
15	168453	NUT, shouldered	1				
10	307001						

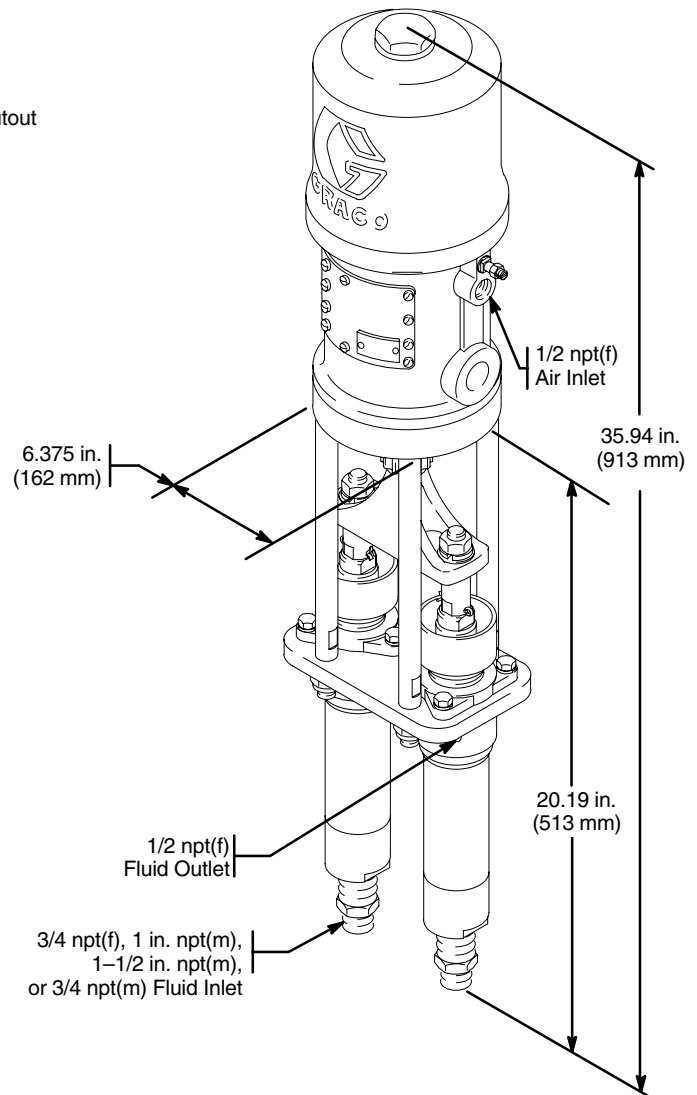
Technical Data

Category	Data
Weight	65 lb (29.5 kg)
Air Operating Range	40–120 psi (0.28–0.84 MPa, 2.8–8.4 bar)
Air Consumption	Approximately 20 cfm per gallon pumped (0.13 m ³ /min/liter) at 100 psi (0.7 MPa, 7 bar)
Pump Cycles per Gallon (3.8 liter)	10
Maximum Recommended Pump Speed	60 cycles/min; 6 gpm (22.8 liters/min)
Recommended Speed for Optimum Pump Life	20–40 cpm
Wetted Parts	Stainless Steel, nitralloy steel, Buna-n, PTFE

Mounting Hole Layout



Dimensions



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

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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

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