

680cc Pump Lower

332649A
EN

High performance, high output, low pressure pump lower. For professional use only.

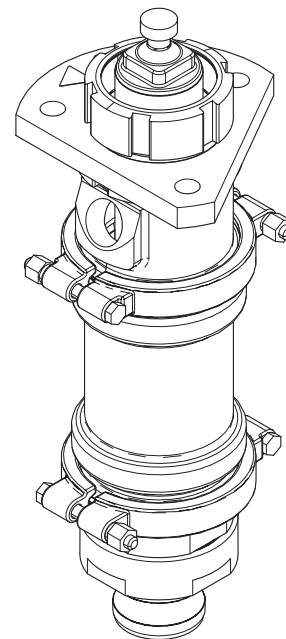


Important Safety Instructions

Read all warnings and instructions in all manuals. **Save all instructions.**

1000 psi (7 MPa, 69 bar) Maximum
Fluid Working Pressure

Model 24R253


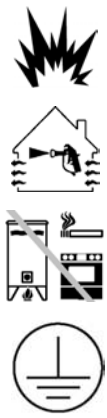










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Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
	<p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc). • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Ground all equipment in the work area. See Grounding instructions. • Use only grounded hoses. • Hold applicator firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic or conductive. • Stop operation immediately if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.

 <h1 style="margin: 0;">WARNING</h1>	
 	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer. • Do not leave the work area while equipment is energized or under pressure. • Turn off all equipment and follow the Pressure Relief Procedure when equipment is not in use. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards. • Make sure all equipment is rated and approved for the environment in which you are using it. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.
 	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.
 	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read MSDSs to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

WARNING



PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

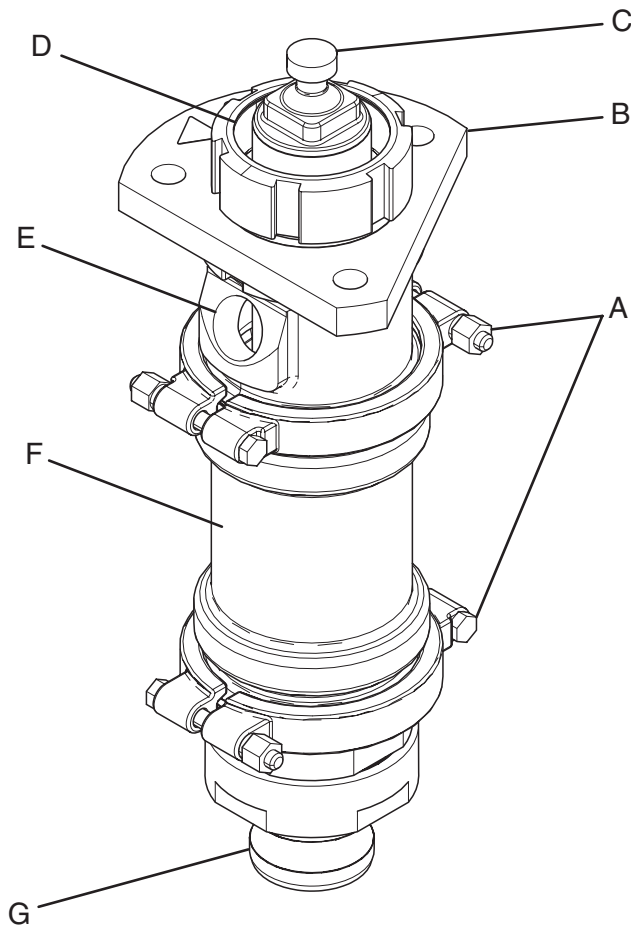


SUCTION HAZARD

Powerful suction could cause serious injury.

- Never place hands near the pump fluid inlet when pump is operating or pressurized.

Component Identification



Key:

- A Clamps; clamps include flats so only one wrench is needed to tighten/loosen
- B Mounting Plate
- C Displacement Rod
- D Packing Nut/Wet Cup
- E Fluid Outlet
- F Cylinder
- G Inlet Housing

Figure 1

Maintenance

Regularly check and maintain fluid level in packing nut/wet cup (D) to 1/2 full with Throat Seal Liquid (TSL).

Regularly inspect soft parts and replace when worn or damaged.

Troubleshooting



1. Relieve fluid pressure. See system manual for pressure relief procedure.
2. Check all possible causes and problems before disassembling pump.

PROBLEM — CAUSE — SOLUTION

Example:

- Problem.

- Cause.

- ◆ Solution.

- Output low on down-stroke.

- Open or worn intake valve.

- ◆ Clear or service intake valve.

- Output low on up-stroke.

- Open or worn piston valve or packings.

- ◆ Clear piston valve; replace packings.

- Erratic accelerated speed.

- Fluid supply exhausted, clogged suction.

- ◆ Refill fluid supply container and prime pump.

- Open or worn piston valve or packings.

- ◆ Clear piston valve; replace packings.

- Open or worn intake valve.

- ◆ Clear or service intake valve.

- Cycles or fails to hold pressure at stall.

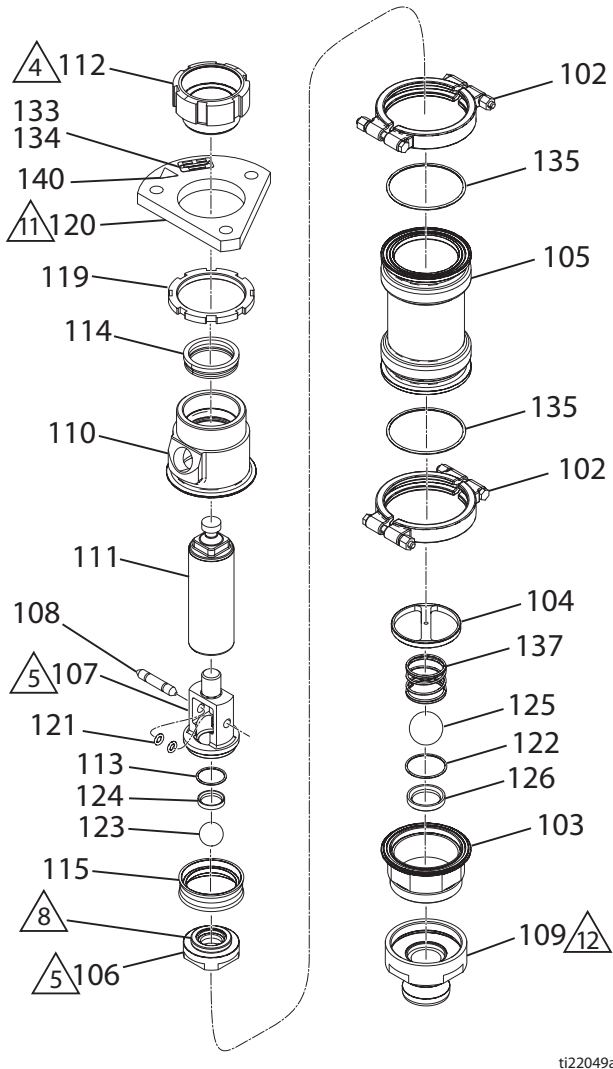
- Worn check balls, seats, or piston packing.

- ◆ Service lower. See [Repair, page 6](#).

Repair

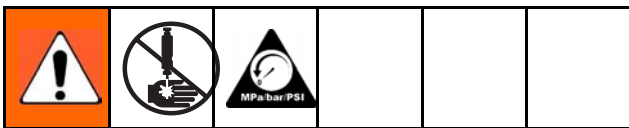
Suggested Tools

- 5/8 in. box end wrench or 5/8 in. socket and ratchet
- Rubber mallet (to break items loose, if necessary)



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Figure 2



See the figure at the beginning of this section.

NOTE: As items are disassembled, use a soft brush and water or a compatible solvent to clean components.

1. Perform Pressure Relief Procedure.

NOTICE

Ensure material pressure is relieved prior to removing the fluid hose from the system.

2. Remove inlet and outlet hoses from pump lower.
3. Disconnect pump lower from motor and remove pump lower from system.
4. While holding onto the inlet housing (109), use a 5/8 in. wrench to loosen the two nuts on the inlet housing clamp (102) then remove inlet housing assembly (109 and 103).

NOTE: Hold onto assembly firmly when removing clamp. Part will disengage and fall.

5. Remove inlet ball stop (104).
6. Clean the inlet housing assembly (109 and 103), inlet ball (125), and inlet ball stop (104).

NOTE: The inlet housing assembly (109 and 103) is not disassembled unless the inlet seat needs to be replaced.

7. Use 5/8 in. wrench to loosen the two nuts on the cylinder clamp (102) then remove cylinder (105).
8. Pull rod (111) down and out of outlet housing (110).
9. Remove outlet ball stop (108) from rod (111) by pushing o-rings off of ball stop (108).
10. Clean outlet ball stop (108), outlet ball stop o-rings, and rod (111).

The pump rod (111) is not disassembled unless the piston packing or seat needs to be replaced.

11. Loosen and remove packing nut (112) then remove throat packing (114).
12. Clean the cylinder (105), two cylinder o-rings (135), outlet housing (110), throat packing (114), and packing nut (112).

Assemble the Pump

1. Loosely install throat packing (114) with the open end facing into the pump with packing nut (112).
2. Install outlet ball (123), outlet ball stop (108) with o-rings into rod (111). Ensure outlet ball stop o-rings are in the grooves on the outlet ball stop rod.
3. Gently slide rod (111) through throat packing (114).

4. Tighten packing nut (112) until it stops.

NOTE: This is not an adjustable packing.

5. Slide cylinder (105) over rod (111) with o-ring (135) installed between outlet housing (110) and cylinder (105).
6. Use cylinder clamp (102) to secure cylinder (105) to outlet housing (110).

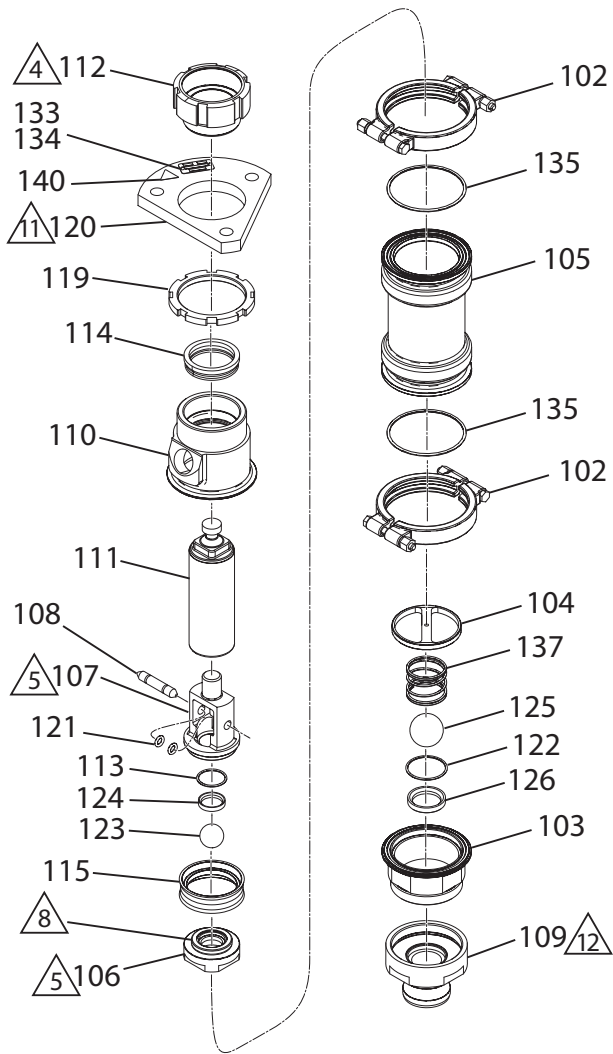
NOTE: The clamp has flats so that only one wrench is required to tighten clamp. Align bolt head with flat then use a wrench on the nut to tighten. Tighten both sides of the clamp evenly to approximately 20–30 ft-lb (27–41 N•m).

7. Install inlet ball (125) and inlet ball stop (104) in inlet housing (109).
8. With inlet ball (125) and inlet ball stop (104) in place, place o-ring (135) between cylinder (105) and inlet housing (109) then use inlet housing clamp (102) to install inlet housing (109) onto cylinder (105).

NOTE: The clamp has flats so that only one wrench is required to tighten clamp. Align bolt head with flat then use a wrench on the nut to tighten. Tighten both sides of the clamp evenly to approximately 20–30 ft-lb (27–41 N•m).

9. Connect pump lower to motor.
10. Connect inlet and outlet hoses to pump lower.
11. Add TSL to the packing nut (112) around the rod.

Parts



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NOTE: Apply clear, liquid petrolatum to threads, o-rings, and seals.

NOTE: Tighten lock nut (119), keeping mounting plate (120) within +/- 0.060 inch (1.5 mm) of being flush with housing (110).

4 Torque to 25–35 ft-lb (34–47 N•m).

5 Torque to 90–110 ft-lb (122–149 N•m).

8 Apply medium strength thread-locking fluid to threads.

11 Assemble plate (120) within +/- 0.060 inch (1.5 mm) of being flush with housing (110), with 1 inch npt hole in line with flats on plate (120).

12 Torque to 190–210 ft-lb (258–285 N•m).

Ref	Part	Description	Qty	Ref	Part	Description	Qty
102	16E963	CLAMP, double-bolted, 4 inch	2	105	16U798	CYLINDER, pump	1
103	16U796	HOUSING, inlet	1	106	16U799	VALVE, piston	1
104	16U797	STOP, ball	1	107	16U800	HOLDER, valve piston	1

Ref	Part	Description	Qty	Ref	Part	Description	Qty
108	16U801	STOP, upper ball	1	122	◆◆●	O-RING, 50mm x 2.5mm	1
109	16V143	HOUSING, inlet, 2 inch cam and groove	1	123	◆	BALL, hardened stainless steel (3-pack: 16W493)	1
110	16U803	HOUSING, outlet	1	124	*	SEAT	1
111	16U804	ROD, displacement	1	125	◆	BALL, hardened stainless (3-pack: 16W494)	1
112	16U805	NUT, packing	1	126	■	SEAT	1
113	◆◆●	O-RING, PTFE, 35mm x 2.5mm	1	133	---	SCREW, drive	2
114	◆◆	BEARING, seal, throat (3-pack)	1	134	---	PLATE, identification	1
115	◆◆	PACKING, cup, piston (3-pack)	1	135	◆◆●	PACKING, o-ring, cylinder (10-pack)	2
119	16U977	NUT, jam	1	137		SPRING, guide, ball	1
120	16U976	PLATE, mounting, cylinder	1	140	▲	LABEL, pinch point	1
121	◆◆	PACKING, o-ring, solvent-resistant (6-pack)	2				

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

* Parts included in Piston Seat Repair Kit 16W509 (purchase separately).

■ Parts included in Inlet Seat Repair Kit 16W510 (purchase separately).

◆ Parts included in Pump Rebuild Kit 16W508 (purchase separately).

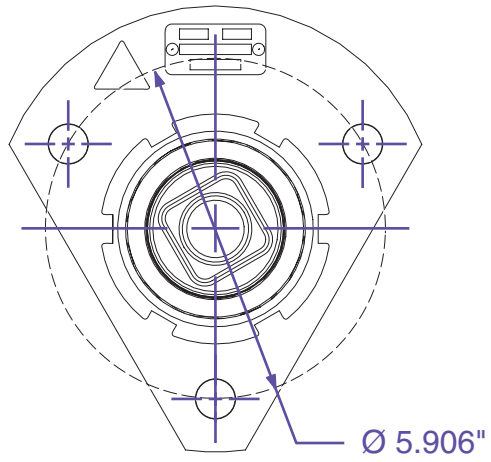
● Parts included in Soft Seal Rebuild Kit 24U173 (purchase separately).

--- Not for sale.

Technical Specifications

680cc Pump Lower		
	U.S.	Metric
Maximum Working Pressure	1000 psi	7 MPa, 70 bar
Fluid Supply Type	Gravity Feed	
Stroke Length	4.75 in.	120 mm
Height (rod extended)	23.75 in.	0.603 m
Height (rod retracted)	19.0 in.	0.483 m
Lower Output	41.9 cu. in. per cycle	686 cc per cycle
Flow Rate at 30 cycles per minute	5.44 gpm	20.6 lpm
Flow Rate at 60 cycles per minute	10.88 gpm	41.2 lpm
Fluid Inlet Size	2 in. Cam Groove (Male)	
Fluid Outlet Size	1 npt(f)	
Weight (without fluid)	47 lb	21 kg
Maximum Pump Speed (Do not exceed maximum recommended pump speed of fluid pump to prevent premature pump wear)		
Spraying	40 cycles per minute (typically less than 10 cycles per minute)	
Flushing	60–90 cycles per minute (only when pumping flushing fluid)	
Wetted Parts	Stainless steel, UHMWPE, PTFE, carbide seats, solvent-resistant elastomer	

Mounting Hole Layout Diagram



Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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Graco Information

For the latest information about Graco products, visit www.graco.com.

To place an order, contact your Graco Distributor or call to identify the nearest distributor.

Phone: 612-623-6921 or Toll Free: 1-800-328-0211 Fax: 612-378-3505

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Graco reserves the right to make changes at any time without notice.

For patent information, see www.graco.com/patents.

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