

## Viscount® I Hydraulic Motor and Displacement Pump

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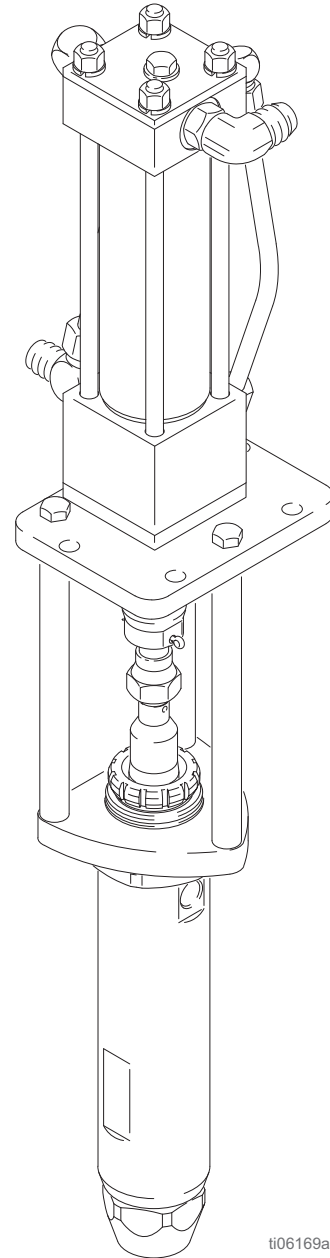
*2000 psi (138 bar, 13.8 MPa) Maximum Working Pressure*

**Part No. 238349, Series A**



### **IMPORTANT SAFETY INSTRUCTIONS**

Read all warnings and instructions in the repair kit instructions and in the Owners/Operation manual for the sprayer.



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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.

 <span style="font-size: 2em; font-weight: bold; margin-left: 10px;">WARNING</span>	
    	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure spray is able to inject toxins into the body and cause serious bodily injury. In the event that injection occurs, <b>get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not aim the gun at, or spray any person or animal.</li> <li>• Keep hands and other body parts away from the discharge. For example, do not try to stop leaks with any part of the body.</li> <li>• Always use the nozzle tip guard. Do not spray without nozzle tip guard in place.</li> <li>• Use Graco nozzle tips.</li> <li>• Use caution when cleaning and changing nozzle tips. In the case where the nozzle tip clogs while spraying, follow the <b>Pressure Relief Procedure</b> for turning off the unit and relieving the pressure before removing the nozzle tip to clean.</li> <li>• Equipment maintains pressure after power is shut off. Do not leave the equipment energized or under pressure while unattended. Follow the <b>Pressure Relief Procedure</b> when the equipment is unattended or not in use, and before servicing, cleaning, or removing parts.</li> <li>• Check hoses and parts for signs of damage. Replace any damaged hoses or parts.</li> <li>• This system is capable of producing 2000 psi. Use Graco replacement parts or accessories that are rated a minimum of 2000 psi.</li> <li>• Always engage the trigger lock when not spraying. Verify the trigger lock is functioning properly.</li> <li>• Verify that all connections are secure before operating the unit.</li> <li>• Know how to stop the unit and bleed pressure quickly. Be thoroughly familiar with the controls.</li> </ul>
   	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well ventilated area.</li> <li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).</li> <li>• Ground all equipment in the work area. See <b>Grounding</b> instructions.</li> <li>• Never spray or flush solvent at high pressure.</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li> <li>• Use only grounded hoses.</li> <li>• Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.</li> <li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>

# WARNING

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




# Installation

## General Information

**Note:** Reference numbers and letters in parentheses in the text refer to the call outs in the figures and the parts drawing.

**Note:** Always use Genuine Graco Parts and Accessories, available from your Graco distributor.

## Grounding

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

1. Pump: use a system ground wire and clamp. See manual 308611.
2. Hydraulic, and fluid hoses: use only electrically conductive hoses.
3. Hydraulic power supply: 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 non-conductive 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.

## General

Connect the hydraulic motor (101) and the displacement pump (102) as explained on page 8.

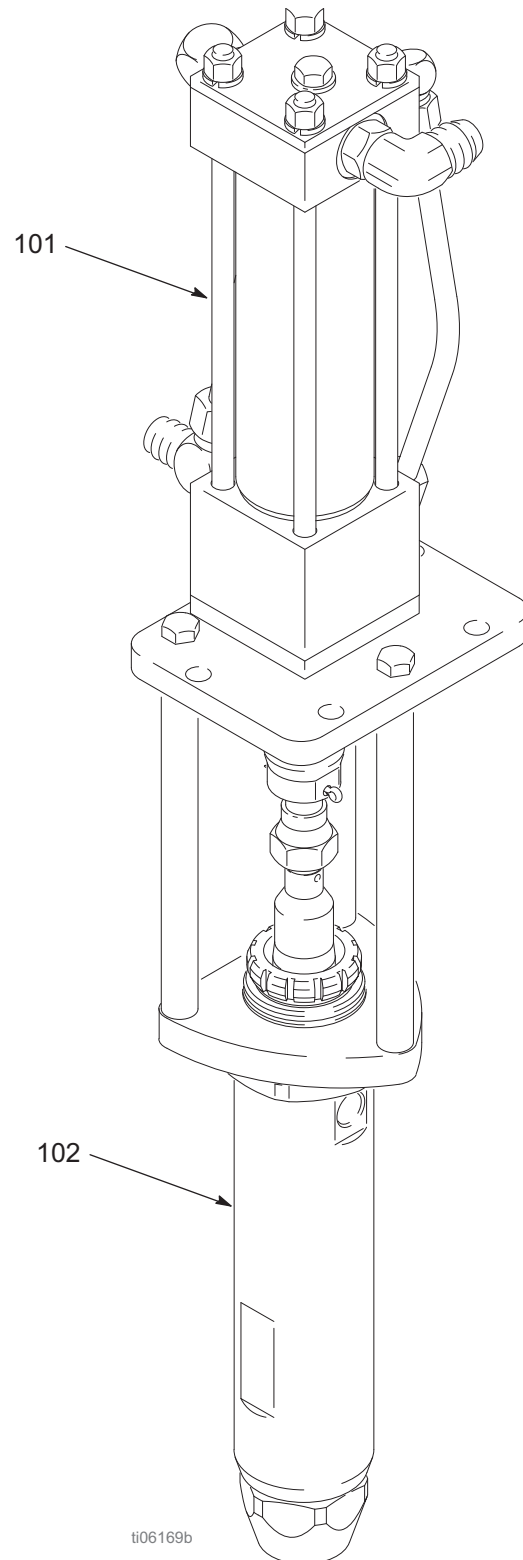
### NOTICE

Keep the hydraulic system clean

To reduce the risk of damaging the hydraulic power supply and motor, blow out all hydraulic lines with air, flush thoroughly with solvent, and then blow out with air again before connecting the lines to the hydraulic motor.

Always plug the hydraulic inlets, outlets and lines when disconnecting them for any reason to avoid introducing dirt and other contaminants into the system.

Carefully follow the manufacturer's recommendations on reservoir and filter cleaning, and periodic changes of hydraulic fluid. The maximum water content of the hydraulic oil is 1 percent.



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# Operation

## Startup

**Before each use**, check the hydraulic fluid level and add fluid as necessary to fill the lines.

### **WARNING**



#### **FIRE HAZARD**

If hydraulic oil becomes too hot, it can reach its flash point and cause a fire.

Operating at too high an oil temperature can also cause faster motor seal wear and leakage. The recommended hydraulic oil operating temperature is 80–115F (27–45C). If the oil temperature approaches 130F (54C), shut off the motor and check the hydraulic oil supply cooling system, filters, etc. Clean or repair as needed.

Always use Graco-approved Hydraulic Oil or equivalent. Do not substitute a lower grade oil or one with a lower flash point.

The equivalent is a premium, ISO grade 46 petroleum-based hydraulic oil containing rust and oxidation inhibitors and anti-wear agents. Before using any other type of oil in this equipment, contact Graco Technical Assistance, 1–800–543–0339.

**Unauthorized use of lesser grade oil or substitutes will void the warranty.**

## Shutdown & Care

Follow the **Pressure Relief Procedure Warning** below.

## Pressure Relief Procedure

### **WARNING**



#### **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 tip
1. Set hydraulic pump lever in by-pass position
  2. Place an empty pail under the drain valves to catch drainage from the drain valves.
  3. Open all paint drain valves.
  4. Place an empty pail under guns to catch drainage from the guns.
  5. Actuate guns to relieve pressure.
  6. Shut off engine.
  7. Leave the drain valve(s) open until you are ready to spray again.
  8. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved:
    - a. **VERY SLOWLY** loosen the spray tip guard retaining nut or the hose end coupling to relieve pressure gradually.
    - b. Loosen the nut or coupling completely.
    - c. Clear airless hose or spray tip obstruction.

# Service

## Disconnecting the Hydraulic Motor

### **WARNING**

To reduce the risk of injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** page 7.

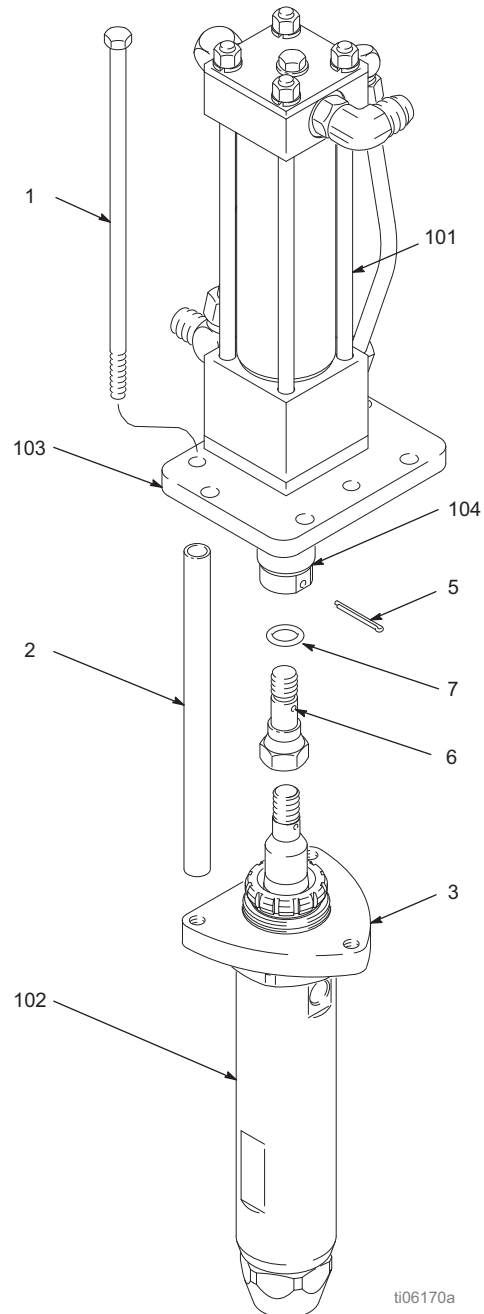
1. Relieve the pressure.
2. Disconnect the hydraulic hoses and plug all hydraulic connections and hoses.

### **NOTICE**

Keep the hydraulic system clean

Always plug the hydraulic inlets, outlets and lines when disconnecting them for any reason to avoid introducing dirt and other contaminants into the system.

3. Remove the cotter pin (5), and unscrew the coupler (6) from the hydraulic motor displacement rod (104). Remove the O-ring (7) from the coupler.
4. With the unit upright, remove the three bolts (1) and the tie rods (2) holding the hydraulic motor (101) to the pump (102).
5. Clean and inspect all parts. Replace parts as necessary. To service the hydraulic motor (101), refer to manual 312484.



## Reconnecting the Hydraulic Motor

1. With the unit upright, insert the three bolts (1) through the hydraulic motor tie plate (103), the tie rods (2), and into the pump tie plate (3). Torque the bolts to 20–30 ft-lb (27–40 Nm).
2. Lubricate, and place the o-ring (7) on the coupler (6). Insert the coupler into the hydraulic motor displacement rod (104), making sure that the holes in both pieces are aligned. Torque the coupler to 75–80 ft-lb (101–108 Nm). Insert the cotter pin (5).
3. Unplug all hydraulic connections and hoses. Reconnect the hydraulic hoses.



## Disconnecting the Displacement Pump

### NOTICE

When servicing the left and center displacement pumps (as viewed from the rear of the system), the packings in both units must be replaced at the same time, or uneven performance will result.

1. Flush the entire system. Any residual paint may clog the system.

### WARNING

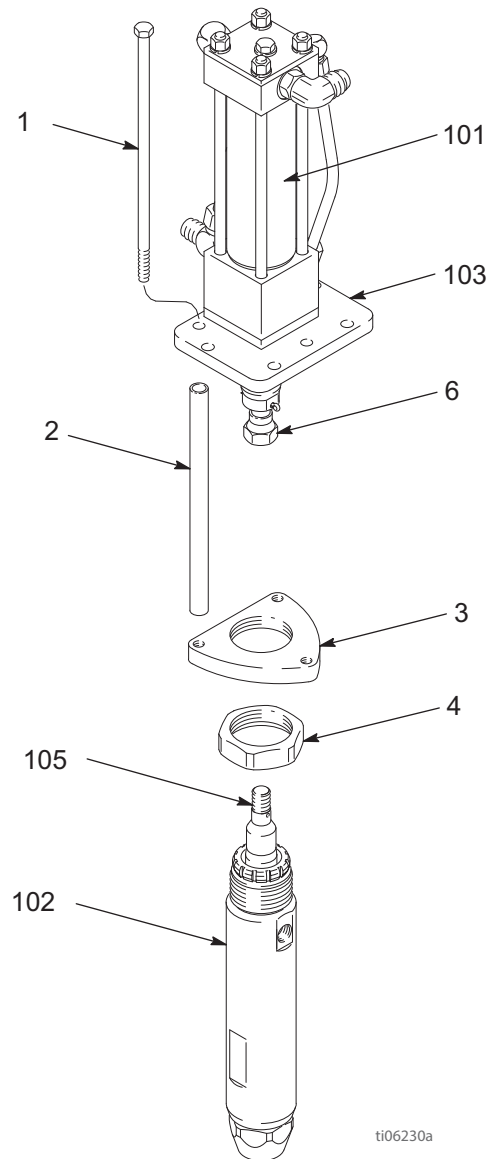
To reduce the risk of injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** page 7.

2. Relieve pressure.
3. Disconnect the filter hose and the inlet hose

### NOTICE

Be sure to support the displacement pump while it is being disconnected, to prevent it from falling and causing injury or property damage. Do this by securely bracing the pump, or by having one person hold it while another disconnects it.

4. Using an adjustable wrench, remove the three bolts (1) and the tie rods (2). Slide the pump (102) down as far as possible.
5. With two adjustable wrenches, use one to hold the coupler (6) to prevent it from turning, and the other to disconnect the displacement rod (105). Carefully remove the pump from the hydraulic motor (101).
6. Unscrew the lower tie plate (3), and retaining nut (4) from the displacement pump.
7. Refer to manual 308650 for displacement pump service.



## Reconnecting the Displacement Pump

### NOTICE

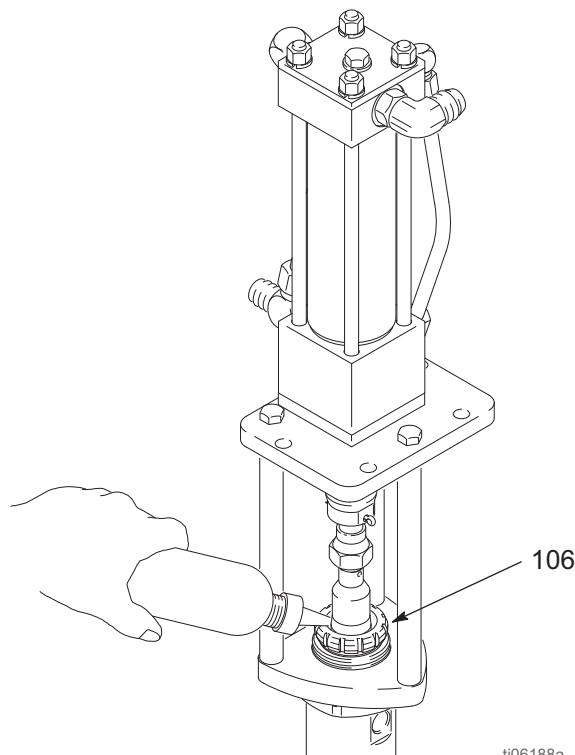
Be sure to support the displacement pump while it is being disconnected, to prevent it from falling and causing injury or property damage. Do this by securely bracing the pump, or by having one person hold it while another disconnects it.

1. Hand-tighten the locking nut (4) on the displacement pump (102).
2. Place the lower tie plate (3) above the locking nut (4). Tighten the locking nut against the lower tie plate. Torque to 140–150 ft-lb (190–203 Nm).
3. Have one person hold the displacement pump while another connects it to the motor (see the **NOTICE** above). With two adjustable wrenches, use one to prevent the coupler (6) from turning, and the other to firmly attach the displacement rod (105).
4. Attach the displacement pump to the hydraulic motor by inserting the three bolts (1) through the upper tie plate (103), tie rods (2), and the lower tie plate (3). Torque to 20–30 ft-lb (27–40 Nm).
5. Reconnect all hoses.
6. Fill the packing nut (106) with Graco Throat Seal Liquid, or compatible solvent.
7. Turn on the power supply. Open the hydraulic return line valve first, then the supply line valve. Run the pump slowly to ensure proper operation.

## WARNING

To reduce the risk of injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** page 7.

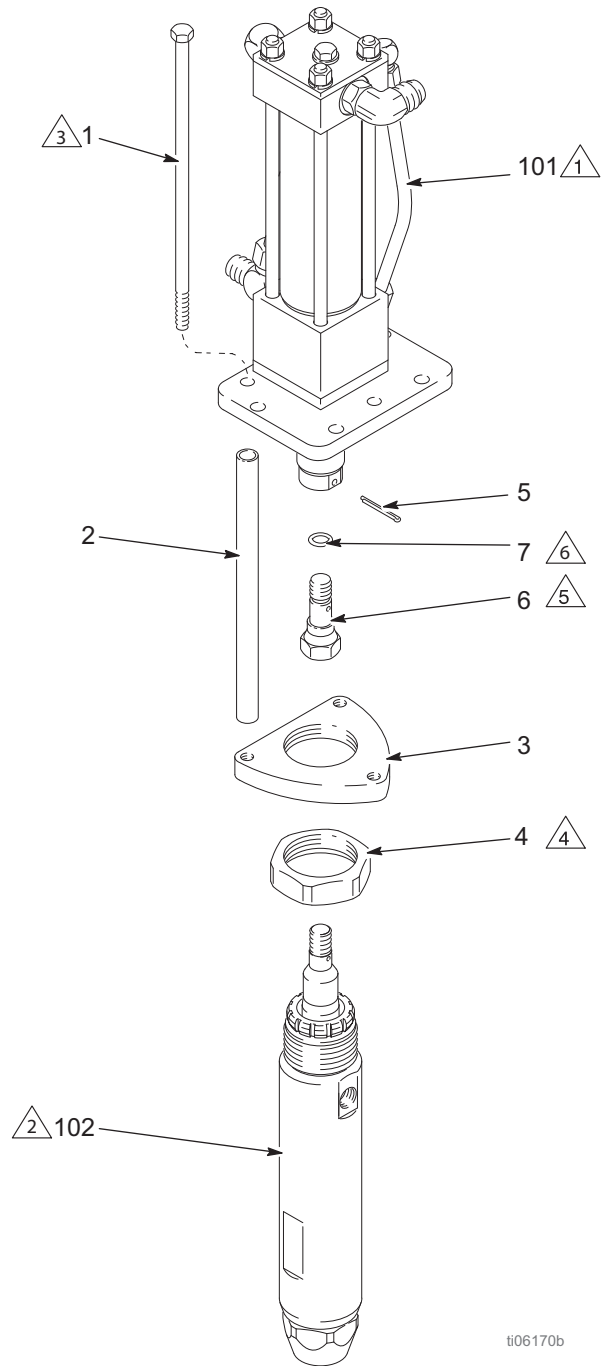
8. Before returning the pump to production, **relieve the pressure** and tighten the packing nut just enough to prevent leakage, but no tighter.



# Pump Assembly Parts

Ref.	Action
△1	For complete parts list, see manual 308618
△2	For complete parts list, see manual 308650
△3	Torque to 20-30 ft-lb (27 - 40 N•m)
△4	Torque to 140-150 ft-lb (190 - 203 N•m)
△5	Torque to 75-80 ft-lb (101 - 108 N•m)
△6	Apply lubricant

Ref.	Part	Description	Qty.
1	113583	BOLT, tie	3
2	191217	TIE ROD	3
3	191213	TIE PLATE, pump	1
4	193394	NUT, retaining	1
5	100103	PIN, cotter	1
6	207370	NUT, coupler	1
7	156082	PACKING, O-ring	1
101	255345	HYDRAULIC MOTOR (see manual 312484)	1
102	238348	DISPLACEMENT PUMP (see manual 308650)	1
103	191216	PLATE, tie (see manual 312484)	1
104	189070	ROD, displacement, motor (see manual 312484)	1
105	178395	ROD, displacement, pump (see manual 308650)	1
106	191234	NUT, packing pump (see manual 308650)	1



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# Technical Data

	<b>U.S.</b>	<b>Metric</b>
Maximum Hydraulic Input Pressure	1500 psi	10.3 MPa (103 bar)
Maximum Fluid Outlet Pressure	2000 psi	13.8 MPa (138 bar)

# 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.

## Graco Information

For the latest information about Graco products, visit [www.graco.com](http://www.graco.com).

For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

**TO PLACE AN ORDER**, contact your Graco distributor or call 1-800-690-2894 to identify the nearest distributor.

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*For patent information, see [www.graco.com/patents](http://www.graco.com/patents). Original instructions. This manual contains English. MM 308674*

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Revision E - February 2017