INSTRUCTIONS-PARTS LIST 308650K

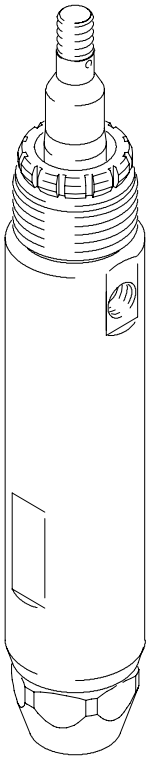
INSTRUCTIONS

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

SST STEEL
Displacement Pump

3000 psi (204 bar) Maximum Working Pressure

Model 238792, Series A



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Symbols

Warning Symbol

⚠ WARNING

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

Caution Symbol

⚠ CAUTION

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

⚠ WARNING

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, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure stated on the equipment or in the **Technical Data** for your equipment. Do not exceed the maximum working pressure of the lowest rated component in your system.
- Use fluids and solvents 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.
- Handle hoses carefully. Do not use hoses to pull equipment.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 66°C (150°F) or below −40°C (−40°F).
- Wear hearing protection when operating this equipment.
- Do not lift pressurized equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.

⚠ WARNING

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 medical attention.**
- 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.
- Close the gun ball valves when you stop spraying.
- Lock the gun trigger safety when you stop spraying.
- Follow the **Pressure Relief Procedure** on page 7 if the spray tip clogs and before cleaning, checking or servicing the equipment.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. Do not repair high pressure couplings; 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 can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Before checking or servicing the equipment, follow the **Pressure Relief Procedure** on page 7 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.
- Before operating this equipment, electrically disconnect all equipment in the spray area.
- Before operating this equipment, 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.

Grounding

⚠ WARNING

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

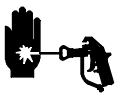
1. *Pump:* use a ground wire and clamp.
2. *Fluid hoses:* use only electrically conductive hoses.
3. *Power supply:* follow manufacturer's recommendations.
4. *Spray gun:* ground through connection to a properly grounded fluid hose and pump.
5. *Fluid supply container:* follow your local code.
6. *Object 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 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.

Notes

Operation/Maintenance

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 tips.

1. Lock the gun trigger safety.
2. Shut off the power supply to the pump.
3. Unlock the gun trigger safety.
4. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
5. Lock the gun trigger safety.
6. Open the drain valve (required in your system), having a container ready to catch the drainage.
7. Leave the drain valve open until you are ready to spray again.

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.

Packing Nut/Wet-Cup

Before starting, fill the packing nut (2) with Graco Throat Seal Liquid (TSL) or compatible solvent. See Fig. 1.

⚠ WARNING

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

The packing nut is torqued at the factory and is ready for operation. If it becomes loose and there is leaking from the throat packings, **relieve pressure,** then tighten the packing nut just enough to stop leakage, but no tighter. Do this whenever necessary. Do not overtighten the packing nut.

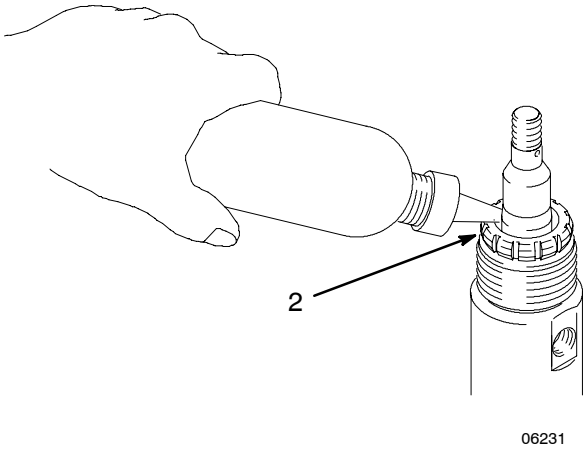


Fig. 1

Operation/Maintenance

Flush the 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** below.

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 7.

For overnight shutdown, stop the pump at the bottom of its stroke to prevent fluid from drying on the exposed displacement rod and damaging the throat packings. **Relieve the pressure.**

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

Flushing

⚠ WARNING

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

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.

⚠ CAUTION

Never leave water or water-base fluid in the pump overnight. If you are pumping water-base fluid, flush with water first, then with a rust inhibitor such as mineral spirits. Relieve the pressure, but leave the rust inhibitor in the pump to protect the parts from corrosion.

⚠ WARNING

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

1. **Relieve the pressure.**
2. Remove the spray tip from the gun.
3. Hold a metal part of the gun firmly to the side of a grounded *metal* pail.
4. Start the pump. Always use the lowest possible fluid pressure when flushing.
5. Trigger the gun.
6. Flush the system until clear solvent flows from the gun.
7. **Relieve the pressure.**

Troubleshooting

⚠ WARNING

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

1. **Relieve the pressure.**
2. Check all possible causes and problems before disassembling the pump.

PROBLEM	CAUSE	SOLUTION
The pump fails to operate.	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 filled with a compatible solvent.
The pump operates, but the output is low on both strokes	Dirty, worn, or damaged motor parts.	Clean or repair; see the separate motor manual.
	Obstructed fluid hose or gun; the fluid hose ID is too small.	Open, clear*; use a hose with a larger ID.
	Worn packings in the displacement pump.	Replace the packings.
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 packings.	Clear the valve; replace the packings.
Erratic or accelerated pump speed.	Exhausted fluid supply.	Refill the supply and prime the pump.
	Held open or worn piston valve or packings.	Clear the valve; replace the packings.
	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 7. Disconnect the fluid hose and place a container at the pump fluid outlet to catch any fluid. Turn on the power just enough to start the pump. If the pump starts when the power is turned on, the obstruction is in the fluid hose or gun.

Service

Required Tools

- Set of adjustable wrenches
- Torque wrench
- O-ring pick
- Large vise
- Thread lubricant
- Thread sealant

Service

Displacement Pump Disassembly

NOTE: Repair Kit 238793 is available. For the best results, use all the parts in the kit. Kit parts are marked with an asterisk, for example (3*).

NOTE: When disassembling, lay out all parts in sequence, to make reassembly easier. Clean and inspect all parts for wear or damage before reassembling. Replace as necessary.

1. Solvent flush the pump if Possible. Then follow the **Pressure Relief Procedure** on page 7.

2. Disconnect the fluid hoses. Disconnect the displacement pump as described in the separate system manual. Place the displacement pump in a vise.

3. Screw the valve foot (18) out of the pump housing (25). Remove the ball cage, o-ring, and ball.

4. Loosen the packing nut (2), then push the displacement rod (1) down until the piston body (20) clears the bottom of the pump housing (25). Grasp the piston and pull the rod out.

5. Screw the piston body (20) out of the rod (1). Remove the hex nut, ball, glands, packings, u-cup seal, and back-up washer.

6. Screw the packing nut (2) out of the pump housing (25). Remove the throat packings and glands.

7. Clean all parts with a compatible solvent and blow dry. Inspect the parts for wear or damage. The outside of displacement rod (1) and the smooth inner surface of the sleeve (8) should show no signs of scoring or scratching. If they do, replace both parts. If the sleeve cannot be removed easily, contact your nearest Graco Factory Branch or Graco representative to order **Sleeve Removal tool 238943**. Install a new sleeve with the tapered end down in the pump housing and replace the o-ring (7*)

Displacement Pump Reassembly

1. Lubricate the packings, glands, rod, and sleeve with a compatible grease before reassembling the pump.

2. Install the piston (20) packings. *Be sure the lips of the vee-packings face UP on the body*. If the ball stop pin (10*) and ball guide (11) were removed, install them also. Ensure that both cotter pins (9*) are inserted through the stop pin.

   a. One at a time, place the back up washer (15*), the u-cup seal (14*) the 2GPM female gland (21*), a vee piston packing (13*), a vee packing (22*), a vee piston packing (13*), a vee packing (22*), a vee piston packing (13*), the 2GPM male gland (23*), the hex nut (12), and the ball (24*) on the piston body (20). See fig. 1.

   b. Torque the hex nut (12) to 18-23 in-lb (2.0-2.6 N•m).

3. With the pump housing (25) held upside-down, insert a packing o-ring (6) and a retainer o-ring (7*).

4. Apply sealant to the piston body (20). Screw the piston body (20) into the displacement rod (1) and torque to 60-80 ft-lb (81-108 N•m).

5. Install the throat packings. *Be sure the lips of the vee packings face DOWN in the housing.*

   a. One at a time, install a female gland (5*), a UHMW vee packing (4*), a leather vee packing (26*), a UHMW vee packing (4*), 2 leather vee packings (26*) a UHMW vee packing, and a female packing gland (3*). See fig. 1.

6. Guide the displacement rod (1) through the sleeve (8), into the bottom of the pump housing (25), and carefully through the throat packings. Loosely install the packing nut (2).

7. Place the ball (17*) in the valve foot (18). Install the o-ring (7*), ball stop cage (16) and the pin (19*). Screw this assembly firmly into the pump housing (25) and torque to 105-115 ft-lb (142-156 N•m).

8. Reconnect the displacement pump as described in the separate system manual.

9. Tighten the packing nut (2) just enough to stop leakage, but no tighter. FIll the packing nut/wet cup with Graco Throat Seal Liquid. See page 7.

Service

△1 Assemble pin in uppermost hole
△2 Apply lubricant
△3 Torque to 18-23 in-lb (2.0-2.6 N•m)
△4 Torque to 60-80 ft-lb (81-108 N•m)
△5 Torque to 105-115 ft-lb (142-156 N•m)
△6 Apply sealant to threads

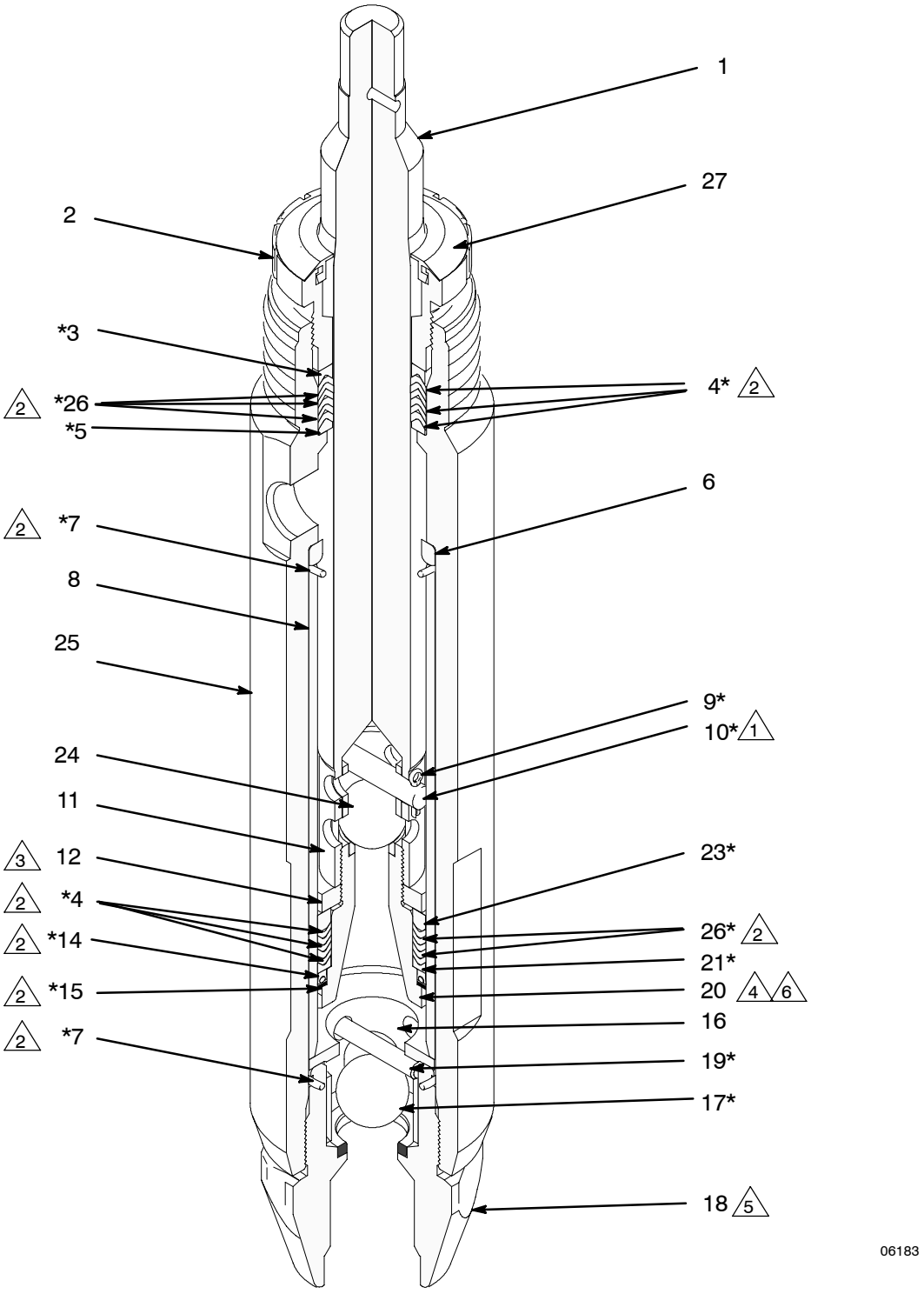


Fig. 2

Parts

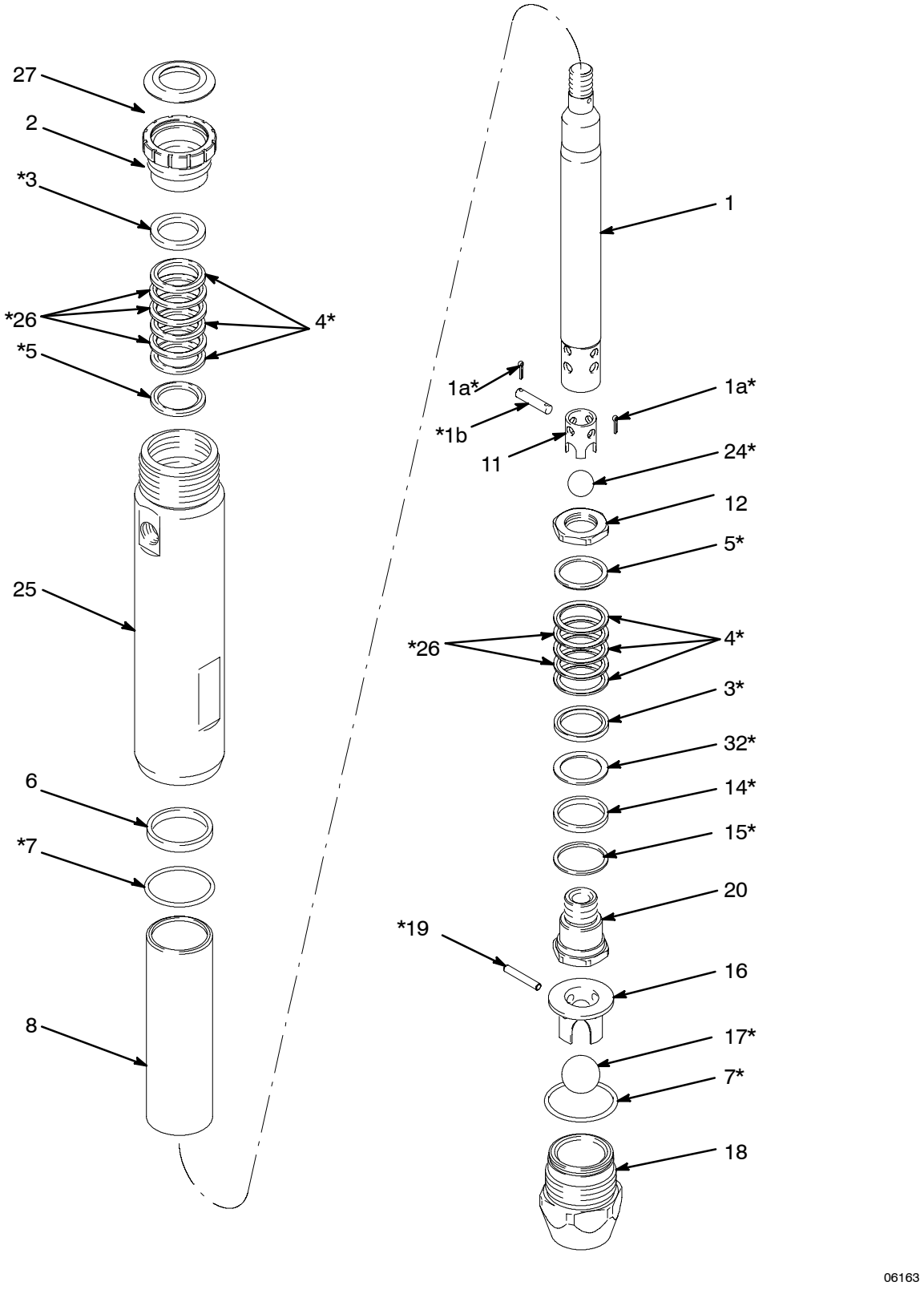

27
2
*3
*26
4*
*5
25
6
*7
8
1
1a*
1a*
*1b
11
24*
12
5*
*26
4*
3*
32*
14*
15*
20
*19
16
17*
7*
18
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Fig. 3

Parts

Ref No.	Part No.	Description	Qty.
1	191878	ROD, displacement, 10.125 in. (257 mm), includes 1a, 1b	1
1a*	100063	PIN, cotter	2
1b*	191227	PIN, straight	1
2	191234	NUT, packing	1
3*	191232	GLAND, packing, female	2
4*	108454	PACKING, vee, UHMW polyethylene	6
5*	191231	GLAND, packing, male	2
6	191621	RETAINER, o-ring	1
7*	108822	PACKING, o-ring,PTFE	2
8	238797	SLEEVE, housing	1
11	183021	GUIDE, ball	1
12	191639	NUT, hex	1
14*	188556	SEAL, u-cup	1
15*	188626	WASHER, back-up	1
16	189593	CAGE, ball	1
17*	102972	BALL, metallic, 7/8 in. diameter	1
18	238365	VALVE, foot	1
19*	112593	PIN	1
20	238364	VALVE, piston	1
24*	101822	BALL, bearing, 5/8 in. diameter	1
25	191211	HOUSING, pump, fluid	1
26*	191709	PACKING, vee, leather	5
27	112590	PLUG, throat seal, low density polyethylene	1
32*	191891	PACKING, spacer	1

* *These parts are included in Repair Kit* 238793*, which may be purchased separately.*

Technical Data

Maximum recommended delivery rate	2.5 gpm (8 lpm) delivery at 2000 psi (138 bar)
Maximum pump discharge pressure	2000 psi (138 bar)
Fluid outlet	3/8 npt(f)
Fluid inlet	1 npt(m)
Wetted parts	Stainless steel, UHMW polyethylene, leather, chrome over stainless steel, PTFE
Approx. weight	11 lb (5 kg)

Warranty

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

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 or 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.

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, gas engines, 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.

ADDITIONAL WARRANTY COVERAGE

Graco does provide extended warranty and wear warranty for products described in the "Graco Contractor Equipment Warranty Program".

Graco Phone Number

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you: **1-800-690-2894 Toll Free**

All information, illustrations, and specifications in this document are based on the latest product information available at the time of publication. The right is reserved to make changes at any time without notice.

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