

INSTRUCTIONS-PARTS LIST



307-728
Rev. D
SUPERSEDES C

This manual contains IMPORTANT WARNINGS and INSTRUCTIONS READ AND RETAIN FOR REFERENCE

DISPLACEMENT PUMP

4050 psi (283 bar) MAXIMUM WORKING PRESSURE

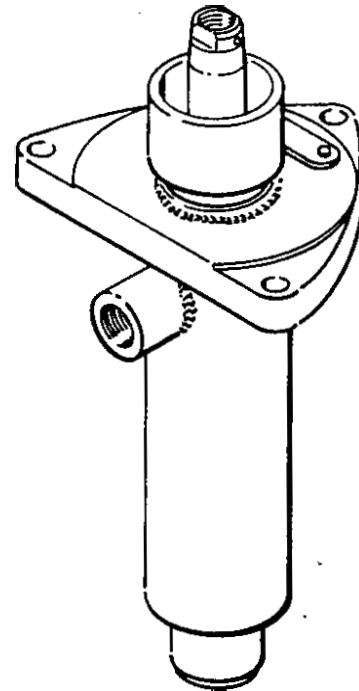
Model **217-527** Series **B**
Severe-Duty*

Model **207-474** Series **C**
Standard

*Severe-Duty Displacement Pumps have an abrasion and corrosion resistant displacement rod and sleeve. Refer to Technical Data for "wetted parts" information.

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WARNING

HIGH PRESSURE SPRAY CAN CAUSE SERIOUS INJURY. FOR PROFESSIONAL USE ONLY. OBSERVE ALL WARNINGS.

Read and understand all instruction manuals before operating equipment.

FLUID INJECTION HAZARD

General Safety

This equipment generates very high fluid pressure. Spray from the gun/dispensing valve, or from leaks or ruptured components can inject fluid through your skin and into your body and cause extremely serious bodily injury, including the need for amputation. Also, fluid injected or splashed into the eyes or on the skin can cause serious damage.

NEVER point the spray gun/dispensing valve at anyone or at any part of the body. NEVER put hand or fingers over the spray tip/nozzle. NEVER try to "blow back" paint; this is NOT an air spray system.

ALWAYS have the tip guard in place on the spray gun when spraying.

ALWAYS follow the Pressure Relief Procedure, to the right, before cleaning or removing the spray tip/nozzle or servicing any system equipment.

NEVER try to stop or deflect leaks with your hand or body.

Be sure equipment safety devices are operating properly before each use.

Medical Alert— Airless Spray Wounds

If any fluid appears to penetrate your skin, get EMERGENCY MEDICAL CARE AT ONCE. **DO NOT TREAT AS A SIMPLE CUT.** Tell the doctor exactly what fluid was injected.

Note to Physician: Injection in the skin is a traumatic injury. It is important to treat the injury surgically **as soon as possible.** Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the blood stream. Consultation with a plastic surgeon or reconstructive hand surgeon may be advisable.

Spray Gun/Dispensing Valve Safety Devices

Be sure all gun/dispensing valve safety devices are operating properly before each use. Do not remove or modify any part of the gun or dispensing valve; this can cause a malfunction and result in serious bodily injury.

Safety Latch

Whenever you stop spraying/dispensing, even for a moment, always set the safety latch in the closed or "safe" position, making the gun/dispensing valve inoperative. Failure to set the safety latch can result in accidental triggering of the gun/dispensing valve.

Diffuser (only on spray guns)

The gun diffuser breaks up spray and reduces the risk of fluid injection when the tip is not installed. Check diffuser operation regularly. Follow the Pressure Relief Procedure, at the right, and then remove the spray tip. Aim the gun into a grounded metal pail, holding the gun firmly to the pail. Using the lowest possible pressure, trigger the gun. If the fluid emitted is not diffused into an irregular stream, replace the diffuser immediately.

Tip Guard (only on spray guns)

ALWAYS have the tip guard in place on the spray gun while spraying. The tip guard alerts you to the fluid injection hazard and helps reduce, but **does not prevent,** the risk of accidentally placing your fingers or any part of your body close to the spray tip.

Trigger Guard (if so equipped)

NEVER operate the gun/dispensing valve with the trigger guard removed. The trigger guard reduces the risk of accidentally triggering the gun if it is dropped or bumped.

Spray Tip/Nozzle Safety

Use extreme caution when cleaning or changing spray tips/nozzles. If the spray tip/nozzle clogs while spraying/dispensing, engage the safety latch immediately. ALWAYS follow the Pressure Relief Procedure, below, and then remove the spray tip to clean it.

NEVER wipe off build-up around the spray tip/nozzle until pressure is fully relieved and the safety latch is engaged.

Pressure Relief Procedure

To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on to the skin, or injury from moving parts, always follow this procedure whenever you shut off the pump, when checking or servicing any part of the spray/dispensing system, when installing, cleaning or changing spray/dispensing tips, and whenever you stop spraying/dispensing.

1. Engage the safety latch.
2. Shut off the air to the pump.
3. Close the bleed-type master air valve (required in your system).
4. Disengage the safety latch.
5. Hold a metal pan of the gun/dispensing valve firmly to the side of a grounded metal pail, and trigger the gun/dispensing valve to relieve pressure.
6. Engage the safety latch.
7. Open the drain valve (required in your system), having a container ready to catch the drainage.
8. Leave the drain valve open until you are ready to spray again.

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

EQUIPMENT MISUSE HAZARD

General Safety

Any misuse of the spray/dispensing equipment or accessories, such as overpressurizing, modifying parts, using incompatible chemicals and fluids, or using worn or damaged parts, can **cause** them to rupture and result in fluid injection or other serious bodily injury, fire, explosion or property damage.

NEVER alter or modify any part of this equipment; doing so could cause it to malfunction.

CHECK all spray equipment regularly and repair or replace worn or damaged parts immediately.

Read and follow the fluid and solvent manufacturer's literature regarding the use of protective clothing and equipment.

System Pressure

The maximum safe working pressure is determined by the air motor. DO NOT exceed the maximum working pressure stated on your complete pump. Be sure that all system components and accessories are rated to withstand the maximum working pressure of the complete pump.

Fluid Compatibility

BE SURE that all fluids and solvents used are chemically compatible with the wetted parts shown in the Technical Data on the back cover. Always read the manufacturer's literature before using fluid or solvent in this pump.

FIRE OR EXPLOSION HAZARD

Static electricity is created by the high velocity flow of fluid through the pump and hose. If every part of the spraydispensing system is not properly grounded, sparking may occur, and the system may become hazardous. Sparking may also occur when plugging in or unplugging a power supply cord. Sparks can ignite fumes from solvents and the fluid being sprayed, dust particles and other flammable substances, whether you are spraying indoors or outdoors, and can cause a fire or explosion and serious bodily injury and property damage. Do not plug in or unplug any power supply cords in the spraydispensing area when there is any chance of igniting fumes still in the air.

If you experience any static sparking or even a slight shock while using this equipment, STOP SPRAYING/DISPENSING IMMEDIATELY. Check the entire system for positive grounding. Do not use the system again until the problem has been identified and corrected.

Grounding

To reduce the risk of static sparking, ground the pump and all other components used or located in the spraydispensing area. CHECK your local electrical code for detailed grounding instructions for your area and type of equipment and be sure to ground all of these components:

1. **Pump:** Ground the complete pump as indicated in your separate instruction manual.
2. **Air and fluid hoses:** use only grounded hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity. Refer to Hose Grounding Continuity.

HOSE SAFETY

High pressure fluid in the hoses can be very dangerous. If the hose develops a leak, split or rupture due to any kind of wear, damage or misuse, the high pressure spray emitted from it can cause a fluid injection injury or other serious bodily injury or property damage.

ALL FLUID HOSES MUST HAVE SPRING GUARDS ON BOTH ENDS! The spring guards help protect the hose from kinks or bends at or close to the coupling which can result in hose rupture.

TIGHTEN all fluid connections securely before each use. High pressure fluid can dislodge a loose coupling or allow high pressure spray to be emitted from the coupling.

NEVER use a damaged hose. Before each use, check the entire hose for cuts, leaks, abrasion, bulging cover, or damage or movement of the hose couplings. If any of these conditions exist, replace the hose immediately. DO NOT try to recouple high pressure hose or mend it with tape or any other device. A repaired hose cannot contain the high pressure fluid.

HANDLE AND ROUTE HOSES CAREFULLY. Do not pull on hoses to move equipment. Do not use fluids or solvents which are not compatible with the inner tube and cover of the hose. DO NOT expose Graco hoses to temperatures above 180°F (82°C) or below -40°F (-40°C).

3. **Air compressor:** follow the air compressor manufacturer's recommendations.
4. **Spray gun/dispensing valve:** obtain grounding through connection to a properly grounded fluid hose and pump.
5. **Fluid Supply Container:** according to local code.
6. **Object being sprayed:** according to local code.
7. **All solvent pails** used when flushing, according to local code. Use only metal pails, which are conductive. 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, always hold a metal part of the gun firmly to the side of a grounded metal pail, then trigger the gun.

Flushing Safety

Before flushing, be sure the entire system and flushing pails are properly grounded. Refer to Grounding, above. Follow the Pressure Relief Procedure on page 2, and remove the spray tip/nozzle from the gun/dispensing valve. Always use the lowest possible fluid pressure, and maintain firm metal-to-metal contact between the gun/dispensing valve and the pail during flushing to reduce the risk of fluid injection injury, static sparking and splashing.

Hose Grounding Continuity

Proper hose grounding continuity is essential to maintaining a grounded spray system. Check the electrical resistance of your air and fluid hoses at least once a week. If your hose does not have a tag on it which specifies the maximum electrical resistance, contact the hose supplier or manufacturer for the maximum resistance limits. Use a resistance meter in the appropriate range for your hose to check the resistance. If the resistance exceeds the recommended limits, replace it immediately. An ungrounded or poorly grounded hose can make your system hazardous. Also read FIRE OR EXPLOSION HAZARD, above.

MOVING PARTS HAZARD

The piston in the air motor, located behind the air motor shield, moves when air is supplied to the motor. Moving parts can pinch or amputate your fingers or other body parts. Therefore, NEVER operate the pump with the air motor shield removed. KEEP CLEAR of moving parts when starting or operating the pump. Before checking or servicing the pump, follow the Pressure Relief Procedure on page 2 to prevent the pump from starting accidentally.

IMPORTANT

United States Government safety standards have been adopted under the Occupational Safety and Health Act. These standards—particularly the General Standards, Part 1910, and the Construction Standards, Part 1926—should be consulted.

Displacement Pump Repair

NOTES:

1. A repair kit is available. See page 6 or 7. For the best results, use all the new parts in the kit, even if the old ones still look good.
2. An asterisk behind a reference number, for example (8*), indicates that this part is included in the repair kit.
3. Refer to Fig 1 for displacement pump model 217-527. Refer to Fig 2 for displacement pump model 207-474.

1. Solvent flush the pump, if possible. Follow the Pressure Relief Procedure on page 2, stopping the pump at the bottom of its stroke. Then disconnect the air and fluid hoses from the pump.
2. Screw the intake valve housing (4) out of the pump housing (1). Disassemble and clean the parts of the valve.

NOTE: If your pump mounting provides enough clearance, you do not have to remove the entire pump from its mounting. Just follow step 3. Otherwise, remove the pump from its mounting, and clamp it in a vise before removing the displacement pump.

3. Loosen the packing nut (2). Pull up on the displacement rod (22) far enough to grasp the lower cotter pin (F) and remove it. Remove the three tie rod locknuts (G). Pull the displacement pump down.
4. Push down on the displacement rod (22) until the piston (3) flats clear the pump housing (1). Pull the piston and displacement rod assembly out of the pump housing.
5. Unscrew the piston, and remove the ball, washer, v-packings and glands. If the ball stop pin (21) or cotter pins (8) are worn or broken, remove them, also (Model 217-527 only).
6. Remove the packing nut/wet cup (2). Remove the v-packings and glands from the throat of the pump housing.
7. Clean all parts thoroughly, and check for wear, scratches or other damage. Scoring or irregular surfaces on the displacement rod (22) or polished inner wall of the sleeve (14) cause premature packing wear and leaking. Check these parts by rubbing a finger on the surfaces or by holding the parts up to a light at an angle. If either is worn or scratched, replace them. Be sure the ball seats of the piston (3) and intake valve housing (4) are not chipped or nicked. Replace any worn or damaged parts to ensure that the pump will not leak.

NOTE: If replacing the sleeve, be sure to install it with the tapered end down, and to replace the gasket (15*). If the old sleeve is hard to remove, contact your nearest Graco Factory Branch or Service Depot.

8. Lubricate all parts with a lightweight grease for easier assembly.

9. Model 217-527

One at a time, place a male gland (17*), a UHMWPE v-packing (19*), a leather v-packing (18*), a UHMWPE v-packing (19*), a leather v-packing (19*), and a female gland (20*) in the throat of the pump housing. Be sure the lips of the v-packings face down in the throat.

Model 207-474

One at a time, place a male gland (17*), four leather v-packings (18*), one PTFE v-packing (19*), and a female gland (20*) in the throat of the pump housing. Be sure the lips of the v-packings face down in the throat.

Model 217-527

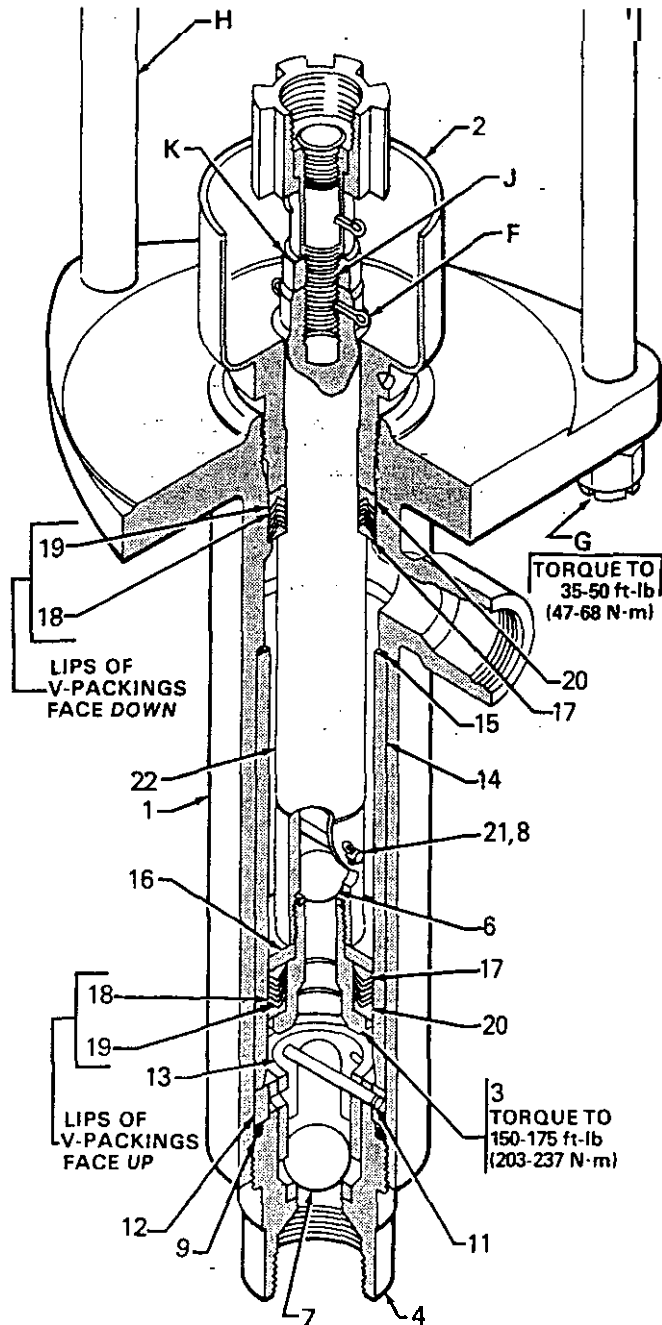


Fig 1

Model 207-474

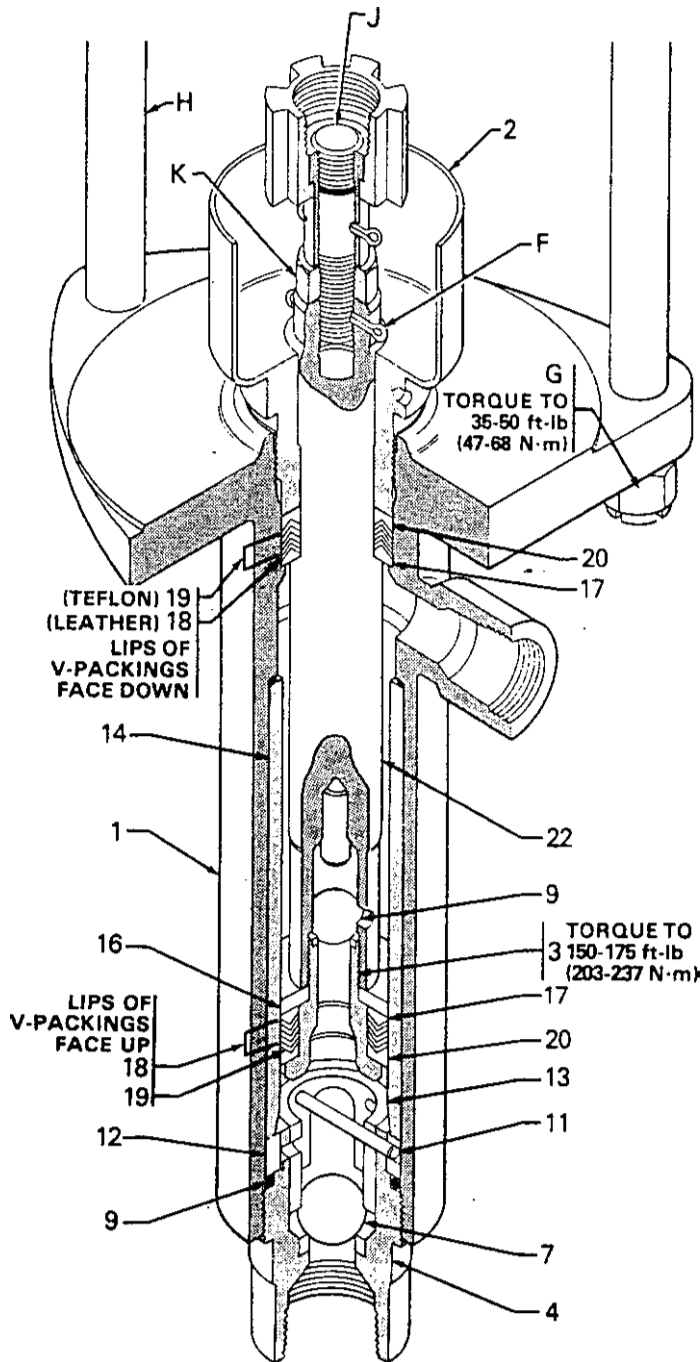


Fig 2

10. Loosely install the packing nut/wet cup (2).

11. Model 217-527

One at a time, place a female gland (20*), a UHMWPE v-packing (19*), a leather v-packing (18*), a UHMWPE v-packing (19*), a leather v-packing (18*), a UHMWPE v-packing (19*), a male gland (17*), and a washer (16) on the piston (3). Be sure the lips of the v-packings face up on the piston.

Model 207-474

One at a time, place a female gland (20*), one PTFE v-packing (19*), four leather v-packings (18*), a male gland (17*), and a washer (16) on the piston (3). Be sure the lips of the v-packings face up on the piston.

12. Place the ball (6) on the piston, and screw the piston assembly into the displacement rod (22), torquing to 150-175 ft-lb (203-237 N·m). Install the ball stop pin (21) and cotter pins (8*) in the proper holes of the displacement rod if they were removed (Model 217-527 only). Refer to the Check Valve Adjustment below.

13. Lubricate the displacement rod again, and guide it through the bottom of the pump housing and carefully through the throat packings.

14. Install the ball (7), ball guide (13), retainer (12), and ball stop pin (11) in the intake valve housing. Be sure the pin is in the correct set of holes. Refer to the Check Valve Adjustment below. Install the o-ring (9*) on the housing. Screw the assembly firmly into the pump housing.

15. Screw the displacement rod (22) onto the connecting rod (J). Install the cotter pin (F). Tighten the jam nut (K). Align the tie rods with the pump housing (1), and install the tie rod locknuts loosely.

16. Start the pump, and run it at its lowest speed possible, about 40 psi (2.8 bar) while you tighten the tie rod locknuts (G) evenly to 35-50 ft-lb (47-68 N·m). Adjust the tie rod locknuts, if necessary, to eliminate binding.

17. Tighten the packing nut just enough to prevent leakage, but no tighter. Use the wrench supplied with the complete pump. Fill the wet-cup half full with TSL.

NOTE: If the ground wire was disconnected before servicing, be sure to reconnect it before operating the pump, and check to be sure the entire system is properly grounded.

Check Valve Adjustment
For Displacement Pump 207-474

The intake valve housing (4) is set for high flow rate or high viscosity fluids. To set the valve for lighter viscosity fluid or lower flow rate, to minimize surging at pump stroke change over, move the ball stop pin (11) to a lower set of holes, decreasing the check ball travel. The piston check valve in this pump is not adjustable. See Fig 3.

For Displacement Pump 217-527

The piston (3) and intake valve housing (4) are set for high flow rate or high viscosity fluids. To set the valves for lighter viscosity fluid or lower flow rate, to minimize surging at pump stroke change over, move the ball stop pins (21 or 11) to a lower set of holes, decreasing the check ball travel. See Fig 3.

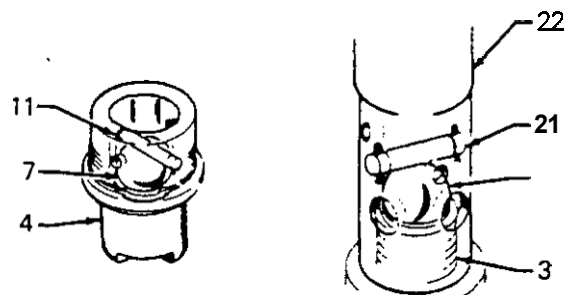
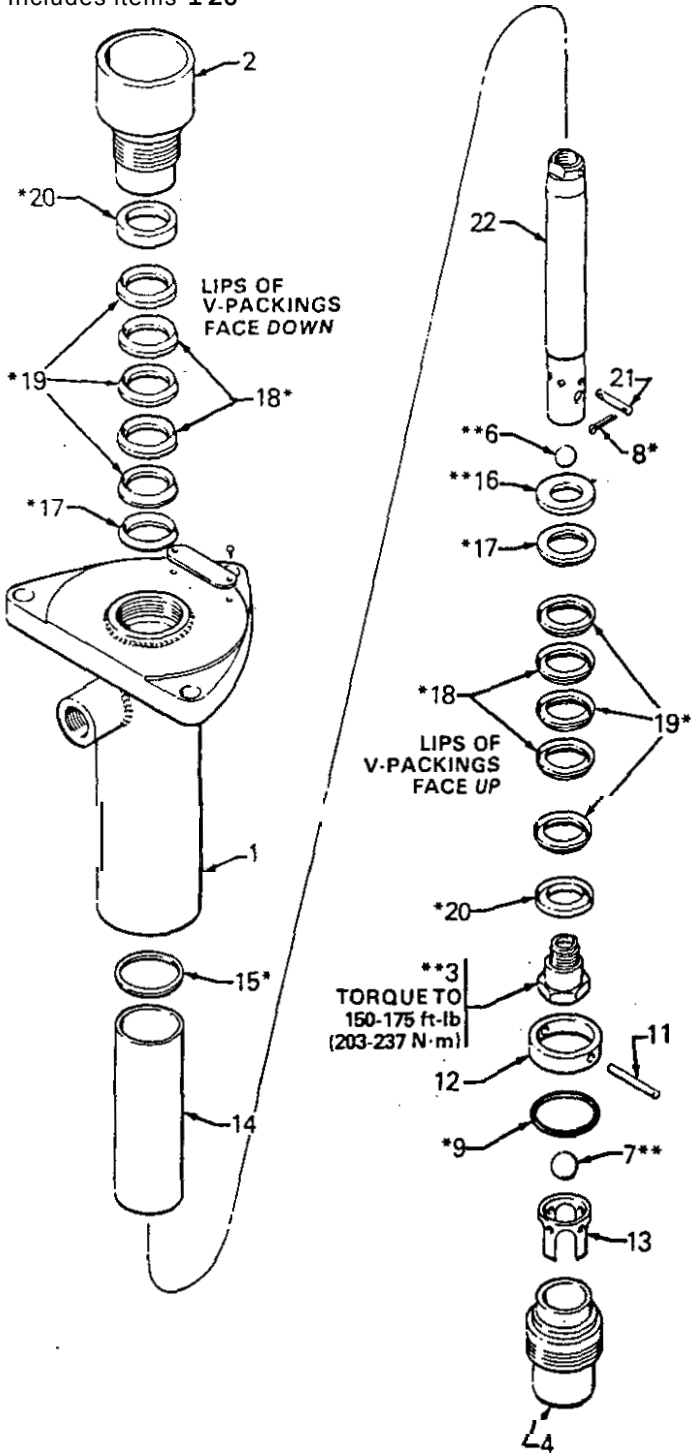


Fig 3

PARTS DRAWING

Model 217-527 Series B
Severe-Duty Displacement Pump
Includes items 1-26



PARTS LIST

REF NO.	PART NO.	DESCRIPTION	QTY
1	207-470	HOUSING, pump	
2	207-471	PACKING NUTIWET-CUP	
3	**207472	PISTON	
4	207-473	HOUSING, intake valve	
6	**102-972	BALL, stainless steel; 7/8" dia.	
7	**102-973	BALL, stainless steel; 1-1/4" dia.	
8	*101-274	PIN, cotter	
9	*102-642	O-RING; PTFE	
11	167-890	PIN, intake valve	1
12	167-891	RETAINER	1
13	167-892	GUIDE, ball	1
14	178-894	SLEEVE	
15	*167-894	GASKET; PTFE	
16	**167-895	WASHER; steel	
17	*167-896	GLAND, male	
16	*167-897	V-PACKING; leather	4
19	*108-451	V-PACKING; UHMW polyethylene	6
20	*167-899	GLAND, female	2
21	167-900	PIN, straight	1
22	178-888	ROD, displacement	1
26	***172-479	TAG, warning (not shown)	1

*Supplied in repair kit 220-395.

**Recommended "fool box" spare parts. Keep on hand to reduce down time.

***Extra warnings and tags are supplied at no charge.

220-395 Packing Repair Kit (Must be purchased separately.)

Ref No.	Qty
a	2
9	1
15	1
17	2
18	8
19	2
20	2

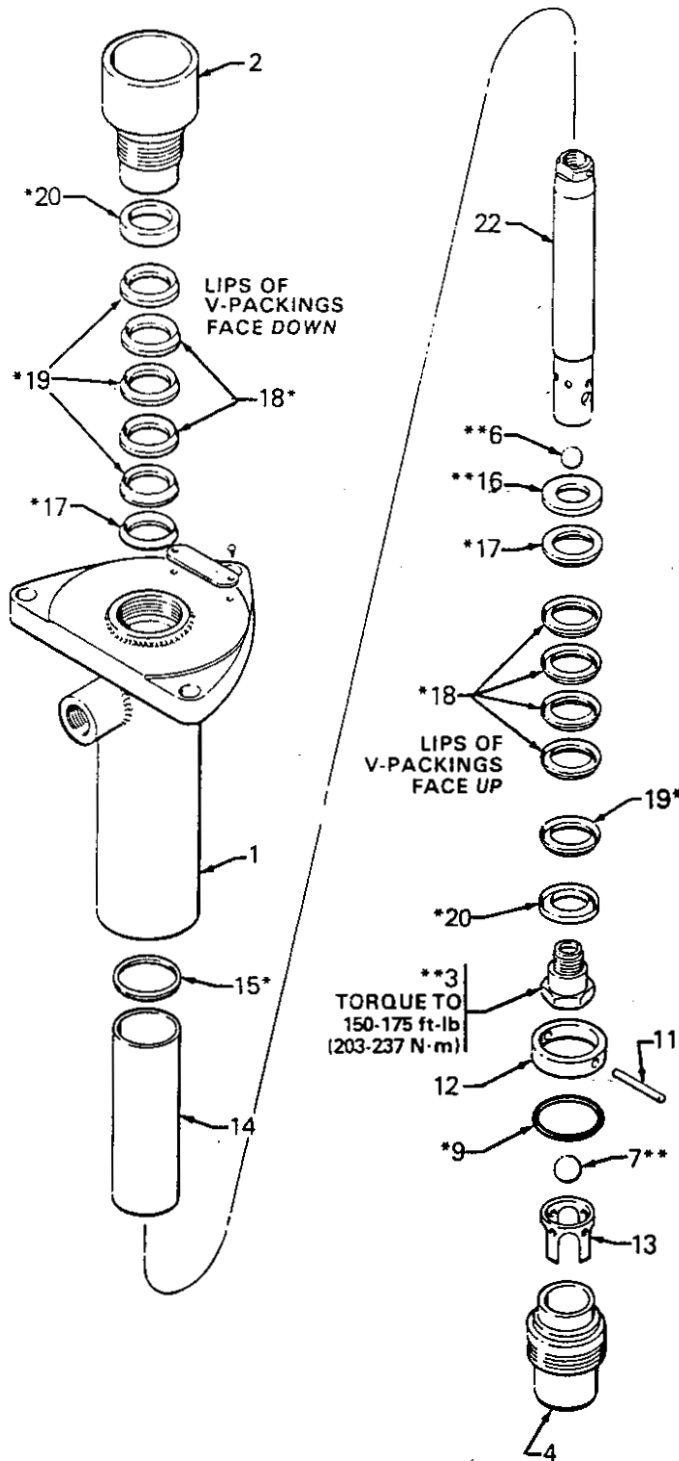
HOW TO ORDER REPLACEMENT PARTS

- To be sure you receive the correct replacement parts, kit or accessories, always give **all of the** information requested in the chart below.
- Check the parts list to identify the correct part number; **do not use the ref. no. when ordering.**
- Order all parts from your nearest Graco distributor.

6 digit PART NUMBER	QTY	PART DESCRIPTION

PARTS DRAWING

Model 207474 Series C
 Standard Displacement Pump
 Includes items 1-23



PARTS LIST

REF NO.	PART NO.	DESCRIPTION	QTY
1	207-470	HOUSING, <i>pump</i>	1
2	207-471	NUT, <i>packing</i>	1
3	**207472	PISTON	1
4	207-473	HOUSING, <i>intake valve</i>	1
6	**102-972	BALL, <i>stainless steel: 7/8" dia.</i>	1
7	**102-973	BALL, <i>stainless steel: 1-1/4" dia.</i>	1
9	*102-642	O-RING, <i>Teflon®</i>	1
11	167-890	PIN, <i>intake valve</i>	1
12	167-891	RETAINER	1
13	167-892	GUIDE, <i>ball</i>	1
14	167-893	SLEEVE	1
15	*167-894	GASKET, <i>Teflon®</i>	1
16	**167-895	WASHER; <i>steel</i>	1
17	*167-896	GLAND, <i>male</i>	2
18	*167-897	V-PACKING; <i>leather</i>	
19	*167-898	V-PACKING; <i>PTFE</i>	
20	*167-899	GLAND, <i>female</i>	2
22	167-901	ROD, <i>displacement</i>	1
23	***172-479	TAG, <i>warning (not shown)</i>	1

*Supplied in repair kit 207-966.

**Recommended "tool box" spare parts. Keep on hand to reduce down time.

***Extra warnings and tags are supplied at no charge.

207-966 Packing Repair Kit
 (Must be purchased separately.)

Ref No.	Qty
9	1
15	1
17	2
18	8
19	2
20	2

HOW TO ORDER REPLACEMENT PARTS

1. To be sure you receive the correct replacement parts, kit or accessories, always give all of the information requested in the chart below.
2. Check the parts list to identify the correct part number: do not use the ref. no. when ordering.
3. Order all parts from your nearest Graco distributor.

6 digit PART NUMBER	QTY	PART DESCRIPTION

TECHNICAL DATA

Wetted parts : **207474:**

Stainless Steel; Nitralloy; Tungsten Carbide;
PTFE ; Leather

217-527:

Stainless Steel; Tungsten Carbide; Chrome over
Stainless Steel; PTFE Leather; Ultra High Molecular
Weight Polyethylene

PTFE

SERVICE INFORMATION

Listed below by the assembly changed are ADDED and DELETED parts.

ASSEMBLY CHANGED	PART STATUS	REF NO.	PART NO.	NAME
207-474	DELETED		178-888	Rod
	ADDED	22	167-901	Rod

THE GRACO WARRANTY AND DISCLAIMERS

WARRANTY

Graco warrants all equipment manufactured by it 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). As purchaser's sole remedy for breach of this warranty, Graco will, for a period of twelve months from the date of Sale, repair or replace any part of the equipment proven 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, 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 with Graco equipment of 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 for examination by Graco to verify 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 the costs of parts, labor and transportation.

DISCLAIMERS AND LIMITATIONS

THE TERMS OF THIS WARRANTY CONSTITUTE PURCHASER'S SOLE AND EXCLUSIVE REMEDY AND ARE IN LIEU OF ANY OTHER WARRANTIES (EXPRESS OR IMPLIED), INCLUDING WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ANY OF ANY NON-CONTRACTUAL LIABILITIES, INCLUDING PRODUCT LIABILITIES, BASED ON NEGLIGENCE OR STRICT LIABILITY. EVERY FORM OF LIABILITY FOR DIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS IS EXPRESSLY EXCLUDED AND DENIED. IN NO CASE SHALL GRACO'S LIABILITY EXCEED THE AMOUNT OF THE PURCHASE PRICE. ANY ACTION FOR BREACH OF WARRANTY MUST BE BROUGHT WITHIN TWO (2) YEARS OF THE DATE OF SALE.

EQUIPMENT NOT COVERED BY GRACO WARRANTY

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO ACCESSORIES, EQUIPMENT, MATERIALS, OR COMPONENTS SOLO BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motor, 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.

Factory Branches: Atlanta, Dallas, Detroit, Los Angeles, West Caldwell (N.J.)
Subsidiary and Affiliate Companies: Canada; England; Switzerland; France; Germany; Hong Kong; Japan
GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1444

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