

# Instructions



## SEVERE-DUTY

# Displacement Pumps

307944W

### Part No. 222012, Series C (#2)

5000 psi (34.5 MPa, 345 bar) Maximum Working Pressure  
0.554 in.<sup>2</sup> (357.4 mm<sup>2</sup>) Effective Displacement Area

### Part No. 222015, Series B (#5)

5000 psi (34.5 MPa, 345 bar) Maximum Working Pressure  
0.443 in.<sup>2</sup> (285.8 mm<sup>2</sup>) Effective Displacement Area

### Part No. 222017, Series C (#7)

5000 psi (34.5 MPa, 345 bar) Maximum Working Pressure  
0.370 in.<sup>2</sup> (238.7 mm<sup>2</sup>) Effective Displacement Area

### Part No. 222019, Series B (#9)

5000 psi (34.5 MPa, 345 bar) Maximum Working Pressure  
0.277 in.<sup>2</sup> (178.7 mm<sup>2</sup>) Effective Displacement Area

### Part No. 239388, Series A (#2), with rod scraper

5000 psi (34.5 MPa, 345 bar) Maximum Working Pressure  
0.554 in.<sup>2</sup> (357.4 mm<sup>2</sup>) Effective Displacement Area

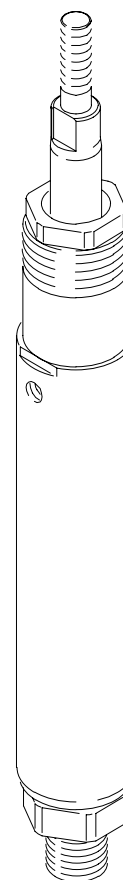
### Part No. 948640, Series A (#0)

3000 psi (21 MPa, 210 bar) Maximum Working Pressure  
0.884 in.<sup>2</sup> (572.2 mm<sup>2</sup>) Effective Displacement Area

### Part No. 948641, Series A (#1)

3000 psi (21 MPa, 210 bar) Maximum Working Pressure  
0.740 in.<sup>2</sup> (477.4 mm<sup>2</sup>) Effective Displacement Area

Severe-Duty Displacement Pumps have an abrasion and corrosion-resistant displacement rod and cylinder. Refer to **Technical Data** on page 13 for Wetted Parts information.



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## Contents



### Important Safety Instructions

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

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# 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 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 uncertain about usage, 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 of the lowest rated system component.
- Route hoses away from 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 and solvents that 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.
- Wear hearing protection when operating this equipment.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.



### MOVING PARTS HAZARD

Moving parts can pinch or amputate your fingers.

- Do not operate the equipment with the air motor plates removed.
- 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 4 to prevent the equipment from starting unexpectedly.

# **WARNING**



## **INJECTION HAZARD**

Spray from the gun, hose leaks, or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Splashing fluid 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 surgical treatment.**
- Do not point the spray 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.
- Be sure the gun trigger safety operates before spraying.
- Lock the gun trigger safety when you stop spraying.
- Follow the **Pressure Relief Procedure** on page 4 whenever you: are instructed to relieve pressure; stop spraying; clean, check, or service the equipment; and install or clean the spray tip.
- Tighten all 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 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 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.
- If there is any static sparking while using the equipment, **stop spraying immediately**. Identify and correct the problem.

# WARNING



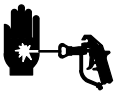
## TOXIC FLUID HAZARD

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 any of the reactive chemical components that may be used in this equipment and is not responsible for their effects. Graco assumes no responsibility for loss, damage, expense or claims for personal injury or property damage, direct or consequential, arising from the use of such chemical components.

## 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 spray gun trigger safety.
  2. Shut off the power supply to the pump.
  3. Close the bleed-type master air valve (required in air-powered systems).
  4. Unlock the spray gun trigger safety.
  5. Hold a metal part of the gun firmly to the side of a grounded metal pail, and trigger the gun to relieve pressure.
  6. Lock the spray gun trigger safety.
  7. Open the fluid drain valve (required in your system); have a container ready to catch the drainage.
  8. Leave the fluid drain valve open until you are ready to spray again.
  9. *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.*


# Installation


## General Information

### NOTE:

- Reference numbers and letters in parentheses in the text refer to the callouts in Figure 1 and the parts drawing.
- 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 AND EXPLOSION HAZARD** on page 3.

1. *Pump*: use a ground wire and clamp as shown in your separate pump manual.
2. *Air or hydraulic hoses*: use only electrically conductive hoses.
3. *Fluid hoses*: use only electrically conductive fluid hoses.
4. *Air compressor or hydraulic supply*: follow the manufacturer's recommendations.
5. *Spray gun*: ground by connecting the gun to a properly grounded fluid hose and pump.
6. *Fluid supply container*: follow your local code.
7. *Object being sprayed*: follow your local code.
8. *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.
9. *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.

# Service

## Displacement Pump Repair

### WARNING



#### INJECTION HAZARD








To reduce the risk of serious injury, follow the **Pressure Relief Procedure** on page 4 before checking or servicing any part of the system and whenever you are instructed to relieve the pressure.

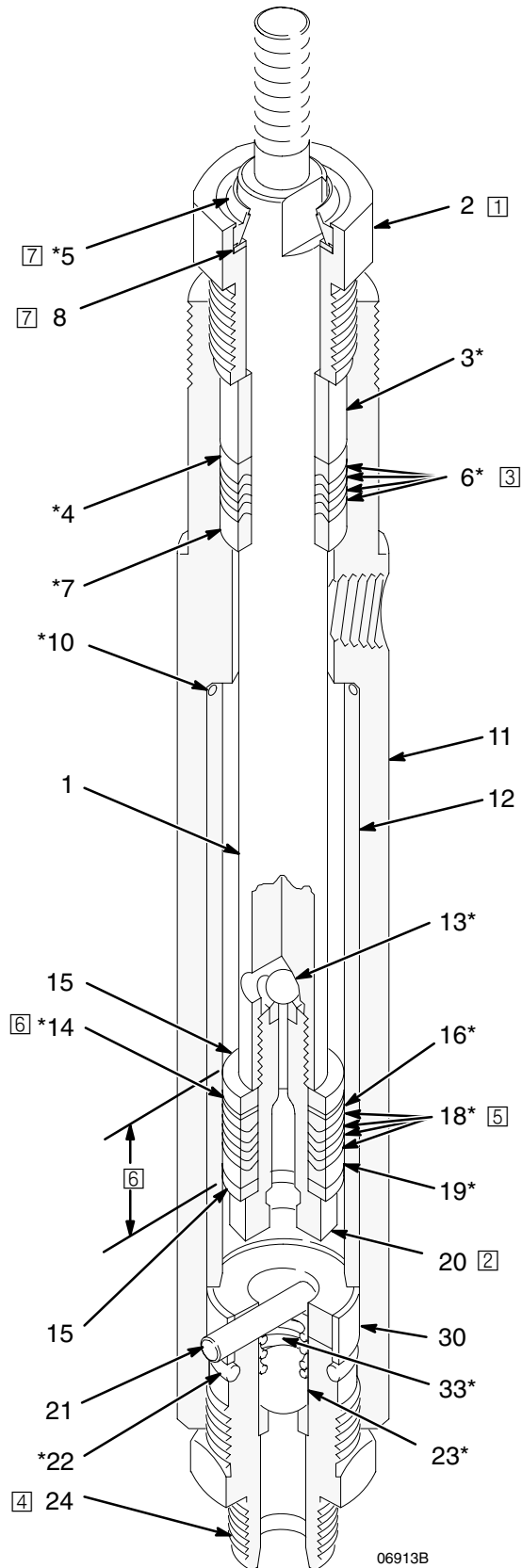
**NOTE:** Repair Kits are available. See the parts list for your pump model. All kits (except 948651) include eight shims (14\*) for use on the piston, but use only the number required. An asterisk behind a reference number, for example (3\*), indicates that this part is included in the repair kit.

1. Solvent flush the pump if possible.
2. Follow the **Pressure Relief Procedure** on page 4, stopping the pump at the bottom of its stroke.
3. Disconnect all hoses from the pump.
4. Unscrew the displacement rod (1) from the air motor connecting rod.
5. Screw the intake valve housing (24) out of the cylinder (11). See Fig. 1. Disassemble and clean the valve parts. Inspect the parts for damage or wear. If the seat in the valve housing is chipped or worn, replace the housing (24).
6. Loosen the packing nut (2).
7. Push down on the displacement rod (1) until you can grasp the piston stud (20). Pull the displacement rod out the bottom of the cylinder (11).

*Continued on the next page.*

#### SERVICE NOTES:

-  **All Pump Models except 239388:** Torque to 50–60 ft-lb (70–80 N•m).  
**239388 Pump Model:** Torque to 20–25 ft-lb (30–35 N•m).
-  Apply sealant. Torque to 200 in-lb (23 N•m).
-  Lips of v-packings must face down.
-  Torque to 50–60 ft-lb (70–80 N•m).
-  Lips of v-packings must face up.
-  Add shims (14\*) required to make stack height 0.950–0.975 in. (24.13–24.77 mm). For model 222017 add shims (14) required to make stack height 0.960–0.975 in. (24.38–24.77 mm).
-  Parts for 239388 Pump Model only



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**Fig. 1**

# Service

8. Inspect the outer surface of the displacement rod (1) and the polished inner surface of the cylinder sleeve (12) for scoring or wear by running a finger over the surface or holding the part up to a light at an angle. Damage to these parts may cause premature packing wear or leaking. If either part is worn or scratched, replace it.

**NOTE:** If replacing the sleeve (12), be sure to install it with the notched end up, and replace the o-ring (10\*) in the notch. If the old sleeve is hard to remove, contact your Graco representative.

9. Unscrew the piston stud (20) from the displacement rod (1). Remove the ball (13), shims (14), backup washers (15), glands (16 and 19), and v-packings (18). Clean all parts and inspect for damage. If the seat on the piston stud (20) is nicked or worn, replace it.
10. Remove the packing nut/wet-cup (2).
11. **239388 Pump Model only:** Remove the seal guard kit (5) and washer (8) from the packing nut (2).
12. Remove the bearing (3), glands (4 and 7), and v-packings (6) from the throat of the pump cylinder (11). Clean all parts and inspect for damage.
13. Lubricate all packings before reassembling the pump.
14. One at a time, place a male gland (7\*), four PTFE v-packings (6\*), a female gland (4\*), and the bearing (3\*) in the throat of the cylinder (11). *Be sure the lips of the v-packings face down in the throat.* See Fig. 1.
15. **239388 Pump Model only:** Install the washer (8) and seal guard kit (5) into the packing nut (2). Pack the packing nut inside and outside with Vaseline®. Use Vaseline® brand petroleum jelly only.
16. Loosely install the packing nut (2).
17. One at a time, place a backup washer (15), a female gland (19\*), four PTFE v-packings (18\*), a male gland (16\*), and a backup washer (15) on the piston stud (20). *Be sure the lips of the v-packings face up on the piston.* See Fig. 1.

18. **All Pump Models except 948640 and 948641:** Add shims (14\*) below the top backup washer (15\*), using as many as necessary to obtain a total packing stack height of 0.950–0.975 in. (24.13–24.77 mm). For pump model 222017 use stack height of 0.960–0.975 in. (24.38–24.77 mm).
19. Place the ball (13\*) on the piston stud (20). Apply liquid thread sealant to the piston threads and screw the piston assembly into the displacement rod (1), torquing it to 200 in-lb (23 N.m).
20. Lubricate the displacement rod (1), and guide it through the bottom of the pump cylinder (11) and carefully through the throat packings.
21. Install the o-ring (22\*) on the intake valve housing (24).
22. Place the ball (23\*) on the seat of the intake valve housing.
23. Slip the o-ring retainer (30) onto the intake housing and align the holes in the two parts.
24. Compress spring (33\*) on the ball (23\*).
25. Install the ball stop pin (21) through the o-ring retainer and intake valve housing (24), and screw the housing into the pump cylinder (11). Torque the housing to 50–60 ft-lb (70–80 N•m).
26. **All Pump Models except 239388:** Torque the packing nut (2) to 50–60 ft-lb (70–80 N•m).  
  
**239388 Pump Model:** Torque the packing nut (2) to 20–25 ft-lb (30–35 N•m).
27. **All Pump Models except 239388:** Fill the packing nut cavity with Throat Seal Liquid (TSL) for paints and resins, or ISO Pump Oil (217374) for moisture sensitive materials such as isocyanates.
28. Screw the displacement rod (1) into the air motor connecting rod.

**NOTE:** If the ground wire was disconnected before servicing, reconnect it before operating the pump. Check that the entire system is properly grounded.

# Parts

## Model 222012, Series C

Ref. No.	Part No.	Description	Qty.
1	181513	ROD, displacement; sst	1
2	192174	NUT, packing; cst	1
3*	188402	SPACER, packing; sst	1
4*	181725	GLAND, female; cst	1
6*	183757	V-PACKING; PTFE	4
7*	181726	GLAND, male; cst	1
10*	109115	O-RING; PTFE	1
11	181649	CYLINDER, pump; cst	1
12	181510	SLEEVE, cylinder; sst	1
13*	101823	BALL; 5/16 in. dia.; sst	1
14*	189314	SHIM; sst	8
15†	176107	WASHER, back-up; cst	2
16*	181664	GLAND, male; cst	1
18*	165104	V-PACKING; PTFE	4
19*	181663	GLAND, female; cst	1
20†	205383	STUD, piston; cst, w/carbide seat	1
21	165049	PIN, stop, ball; sst	1
22*	109176	O-RING; PTFE	1
23*	100064	BALL; 5/8 in. dia.; cst	1
24	220297	HOUSING, valve, intake; cst, w/carbide seat	1
30†	185265	RETAINER, o-ring; sst	1
33*	510956	SPRING, compression	1

\* These parts are also included in Repair Kit 236597, which may be purchased separately.

† Keep these spare parts on hand to reduce down time.

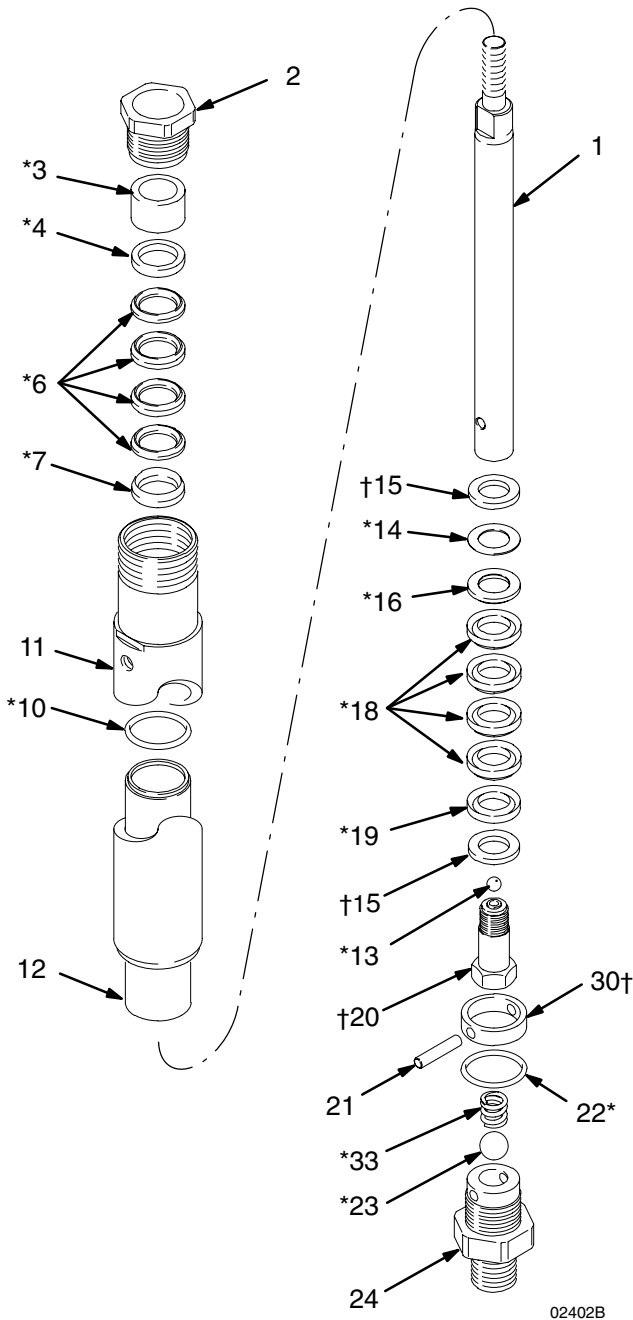
## Model 222015, Series B

Ref. No.	Part No.	Description	Qty.
1	181656	ROD, displacement; sst	1
2	192174	NUT, packing; cst	1
3*	181655	BEARING, sleeve; acetal	1
4*	181652	GLAND, female; cst	1
6*	183758	V-PACKING; PTFE	4
7*	181651	GLAND, male; cst	1
10*	109115	O-RING; PTFE	1
11	181649	CYLINDER, pump; cst	1
12	181509	SLEEVE, cylinder; sst	1
13*	101823	BALL; 5/16 in. dia.; sst	1
14*	188204	SHIM; sst	8
15†	176108	WASHER, back-up; cst	2
16*	181724	GLAND, male; cst	1
18*	183760	V-PACKING; PTFE	4
19*	181723	GLAND, female; cst	1
20†	205386	STUD, piston; cst, w/carbide seat	1
21	165049	PIN, stop, ball; sst	1
22*	109176	O-RING; PTFE	1
23*	100064	BALL; 5/8 in. dia.; cst	1
24	220297	HOUSING, valve, intake; cst, w/carbide seat	1
30†	185265	RETAINER, o-ring; sst	1
33* @	510956	SPRING, compression	1

\* These parts are also included in Repair Kit 236598, which may be purchased separately.

† Keep these spare parts on hand to reduce down time.

@ If this pump is being used in a VRHM system, spring 501095 is used. Purchase separately for repair.





# Parts

## Model 222017, Series C

Ref. No.	Part No.	Description	Qty.
1	181660	ROD, displacement; sst	1
2	192174	NUT, packing; cst	1
3*	181659	BEARING, sleeve; acetal	1
4*	181719	GLAND, female; cst	1
6*	183861	V-PACKING; PTFE	4
7*	181720	GLAND, male; cst	1
10*	109115	O-RING; PTFE	1
11	181649	CYLINDER, pump; cst	1
12	181508	SLEEVE, cylinder; sst	1
13*	101823	BALL; 5/16 in. dia.; sst	1
14*	188204	SHIM; sst	8
15†	164391	WASHER, back-up; cst	2
16*	181722	GLAND, male; cst	1
18*	183759	V-PACKING; PTFE	4
19*	181721	GLAND, female; cst	1
20†	205388	STUD, piston; cst, w/carbide seat	1
21	165049	PIN, stop, ball; sst	1
22*	109176	O-RING; PTFE	1
23*	100064	BALL; 5/8 in. dia.; cst	1
24	220297	HOUSING, valve, intake; cst, w/carbide seat	1
30†	185265	RETAINER, o-ring; sst	1
33* @	510956	SPRING, compression	1

\* These parts are also included in Repair Kit 236595, which may be purchased separately.

† Keep these spare parts on hand to reduce down time.

@ If this pump is being used in a VRHM system, spring 501095 is used. Purchase separately for repair.

## Model 222019, Series B

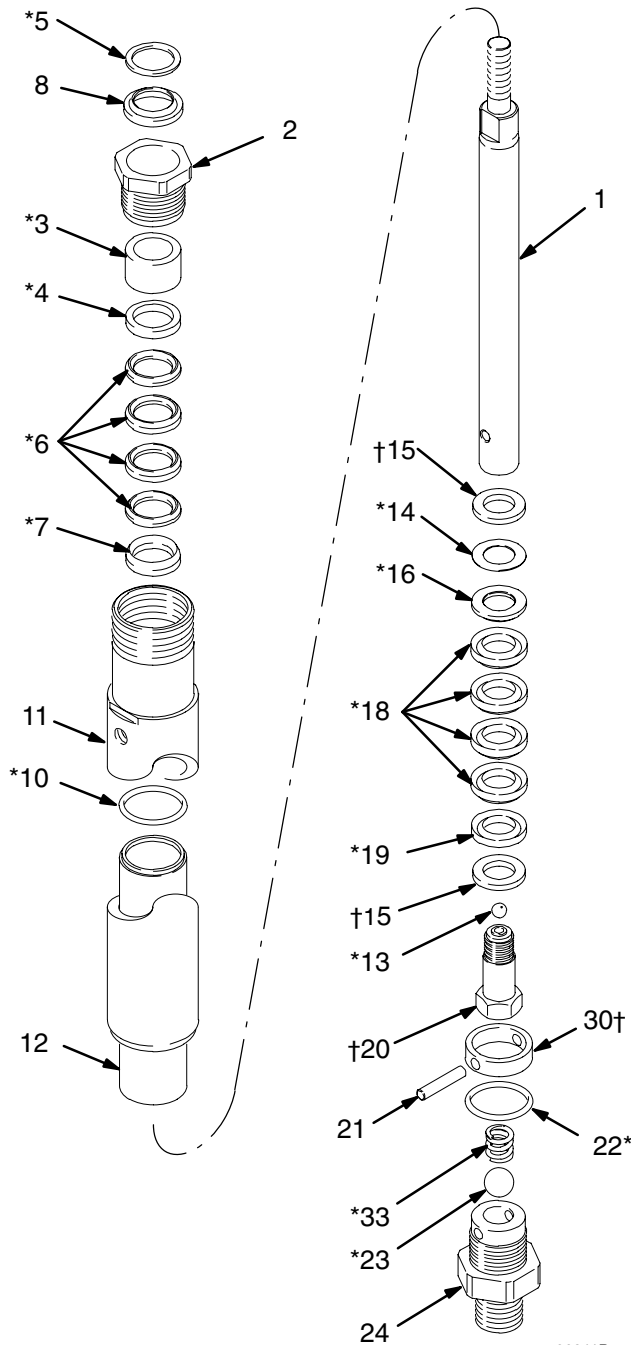
Ref. No.	Part No.	Description	Qty.
1	181512	ROD, displacement; sst	1
2	192174	NUT, packing; cst	1
3*	181645	BEARING, sleeve; acetal	1
4*	181718	GLAND, female; cst	1
6*	183761	V-PACKING; PTFE	4
7*	181717	GLAND, male; cst	1
10*	109115	O-RING; PTFE	1
11	181649	CYLINDER, pump; cst	1
12	181507	SLEEVE, cylinder; sst	1
13*	101823	BALL; 5/16 in. dia.; sst	1
14*	189315	SHIM; sst	8
15†	176109	WASHER, back-up; cst	2
16*	181646	GLAND, male; cst	1
18*	165109	V-PACKING; PTFE	4
19*	181647	GLAND, female; cst	1
20†	207923	STUD, piston; cst, w/carbide seat	1
21	165049	PIN, stop, ball; sst	1
22*	109176	O-RING; PTFE	1
23*	100064	BALL; 5/8 in. dia.; cst	1
24	220297	HOUSING, valve, intake; cst, w/carbide seat	1
30†	185265	RETAINER, o-ring; sst	1
33*	510956	SPRING, compression	1

\* These parts are also included in Repair Kit 236596, which may be purchased separately.

† Keep these spare parts on hand to reduce down time.

# Parts

## Model 239388, Series A



Ref. No.	Part No.	Description	Qty.
1	181513	ROD, displacement; sst	1
2	192174	NUT, packing; cst	1
3*	15A730	SPACER, packing; sst	1
4*	181725	GLAND, female; cst	1
5*	113938	KIT, seal guard	1
6*	113937	V-PACKING; carbon-filled PTFE	4
7*	181726	GLAND, male; cst	1
8	192175	WASHER, support	1
10*	109115	O-RING; PTFE	1
11	181649	CYLINDER, pump; cst	1
12	181510	SLEEVE, cylinder; sst	1
13*	101823	BALL; 5/16 in. dia.; sst	1
14*	189314	SHIM; sst	8
15†	176107	WASHER, back-up; cst	2
16*	181664	GLAND, male; cst	1
18*	165104	V-PACKING; PTFE	4
19*	181663	GLAND, female; cst	1
20†	205383	STUD, piston; cst, w/carbide seat	1
21	165049	PIN, stop, ball; sst	1
22*	109176	O-RING; PTFE	1
23*	100064	BALL; 5/8 in. dia.; cst	1
24	220297	HOUSING, valve, intake; cst, w/carbide seat	1
30†	185265	RETAINER, o-ring; sst	1
33*	510956	SPRING, compression	1

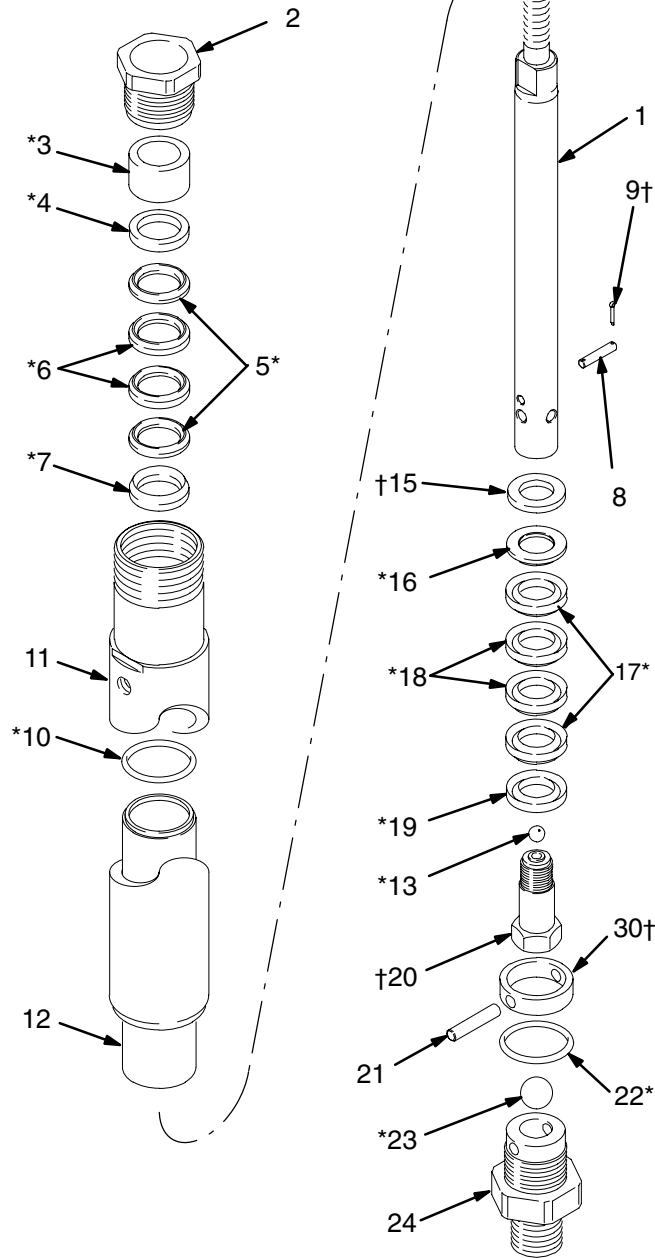
\* These parts are also included in Repair Kit 239387, which may be purchased separately.

† Keep these spare parts on hand to reduce down time.

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# Parts

## Model 948641, Series A



Ref. No.	Part No.	Description	Qty.
1	624925	ROD, displacement; sst	1
2	624888	NUT, packing; cst	1
3*	624926	BEARING, throat; acetal	1
4*	624931	GLAND, female; cst	1
5*	513427	V-PACKING; UHMWPE	2
6*	513429	V-PACKING; PTFE	2
7*	624932	GLAND, male; cst	1
8	167671	PIN, straight	1
9†	100063	PIN, cotter	2
10*	167668	GASKET; PTFE	1
11	624890	CYLINDER, pump; cst	1
12	624927	SLEEVE, cylinder; sst	1
13*	116166	BALL; carbide	1
15*	624928	RETAINER, packing; cst	1
16*	624929	GLAND, male; cst	1
17*	513430	V-PACKING; UHMWPE	2
18*	513428	V-PACKING; PTFE	2
19*	624930	GLAND, female; cst	1
20†	948639	STUD, piston; cst, w/carbide seat	1
21	167662	PIN, stop, ball; sst	1
22*	165053	O-RING; PTFE	1
23*	101859	BALL; sst	1
24	207357	HOUSING, valve, intake; cst, w/carbide seat	1
30†	185265	RETAINER, o-ring; sst	1

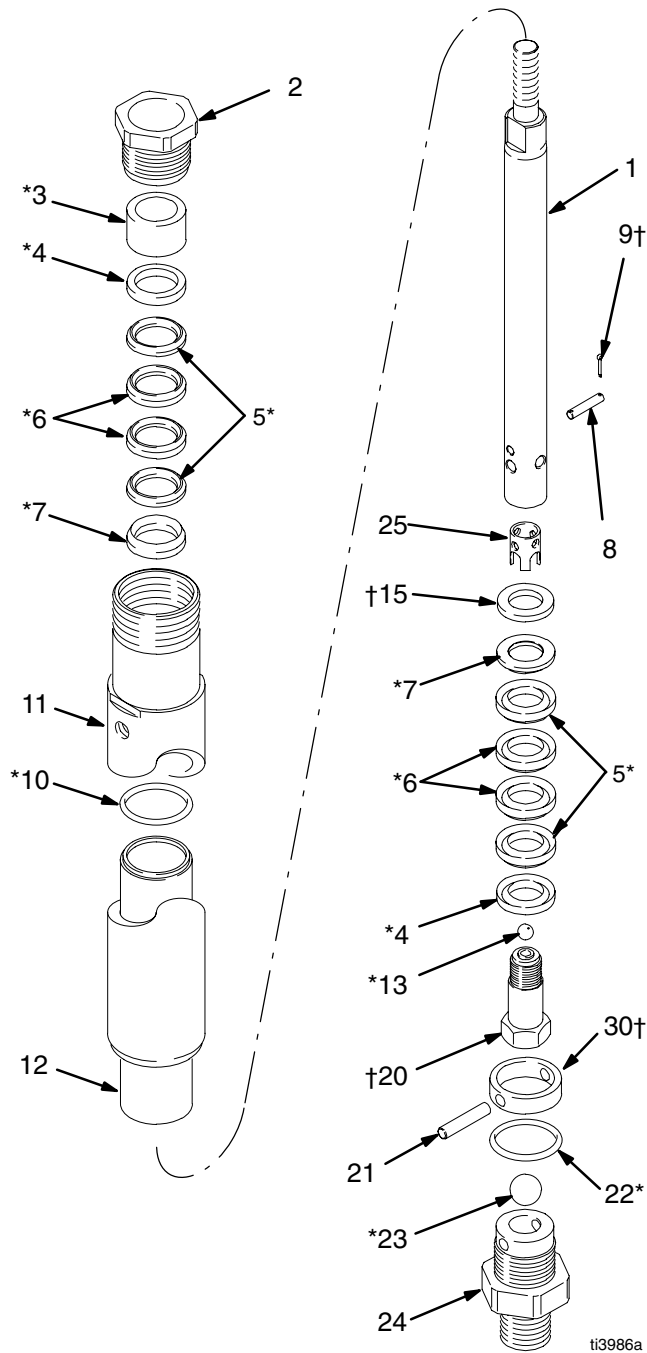
\* These parts are also included in Repair Kit 948651, which may be purchased separately.

† Keep these spare parts on hand to reduce down time.

ti3987a

# Parts

## Model 948640, Series A



Ref. No.	Part No.	Description	Qty.
1	624891	ROD, displacement; sst	1
2	624888	NUT, packing; cst	1
3*	624889	BEARING, throat; acetal	1
4*	625448	GLAND, female; cst	2
5*	108454	V-PACKING; UHMWPE	4
6*	167665	V-PACKING; PTFE	4
7*	183644	GLAND, male; cst	2
8	167671	PIN, straight	1
9†	100063	PIN, cotter	2
10*	167668	GASKET; PTFE	1
11	624890	CYLINDER, pump; cst	1
12	624886	SLEEVE, cylinder; sst	1
13*	101822	BALL; sst	1
15*	167672	RETAINER, packing; cst	1
20†	949117	STUD, piston; cst, w/carbide seat	1
21	167662	PIN, stop, ball; sst	1
22*	165053	O-RING; PTFE	1
23*	101859	BALL; sst	1
24	207357	HOUSING, valve, intake; cst, w/carbide seat	1
25	625999	GUIDE, ball	1
30†	167663	RETAINER, o-ring; sst	1

\* These parts are also included in Repair Kit 948650, which may be purchased separately.

† Keep these spare parts on hand to reduce down time.

# Accessories

*Must be ordered separately*

## ISO Pump Oil

Use in wet-cup instead of Throat Seal Liquid (TSL) when pumping moisture-sensitive fluids.

**217374** 1 pint container – quantity of 1

**218656** 1 gallon containers – quantity of 4

## Hydra-Cat™ Wrench 176881

For tightening packing nut and intake valve.

## UHMWPE/PTFE Packing Conversion Kits

To convert the pump to ultra-high molecular weight polyethylene and PTFE packings. Includes instructions.

**222237** For pump model 222015

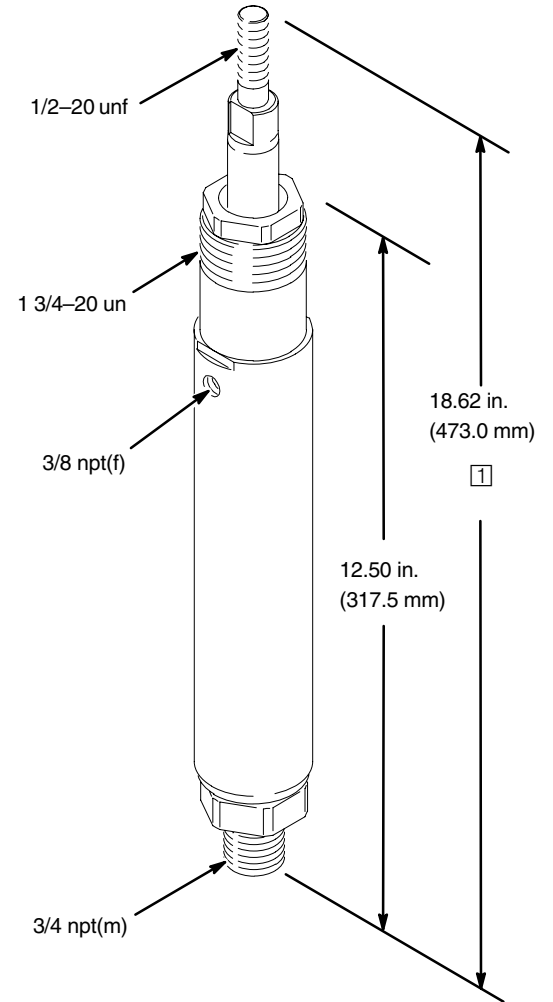
**222235** For pump model 222019

**222236** For pump model 222012

**222234** For pump model 222017

# Dimensions

① With connecting rod at bottom of stroke.



02403

# Technical Data

Wetted parts ..... Stainless Steel, Tungsten Carbide,  
Chrome and Zinc Plating, Carbon Steel, PTFE,  
Ultra-High Molecular Weight Polyethylene (948640 and 948641 only)

Displ. Pump Part No.	Maximum Working Pressure psi (MPa, bar)	Cylinder ID Area in. <sup>2</sup> (mm <sup>2</sup> )	Displ. Rod OD Area in. <sup>2</sup> (mm <sup>2</sup> )	% of Diff.	Effective Area in. <sup>2</sup> (mm <sup>2</sup> )	Maximum Stroke in. (mm)
222012 and 239388	5000 (34.5, 345)	1.107 (714.20)	0.544 (350.99)	0.16	0.554 (357.44)	4.75 (120.7)
222015	5000 (34.5, 345)	0.887 (572.29)	0.442 (285.18)	-0.7	0.443 (285.81)	4.75 (120.7)
222017	5000 (34.5, 345)	0.740 (477.42)	0.371 (239.37)	1.00	0.370 (238.71)	4.75 (120.7)
222019	5000 (34.5, 345)	0.554 (357.44)	0.277 (178.72)	0.00	0.277 (178.72)	4.75 (120.7)
948640	3000 (21, 210)	1.767 (1140.1)	0.887 (572.6)	0.4	0.884 (570.0)	4.75 (120.7)
948641	3000 (21, 210)	1.480 (954.76)	0.740 (477.7)	.07	0.740 (477.4)	4.75 (120.7)

# 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.

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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

**TO PLACE AN ORDER**, contact your Graco distributor, or call this number to identify the distributor closest to you:

**1-800-328-0211 Toll Free**

**612-623-6921**

**612-378-3505 Fax**

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MM 307944

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