Instructions

Parts

200 LITER (55 GALLON) DRUM SIZE, 33:1 RATIO BULLDOG®

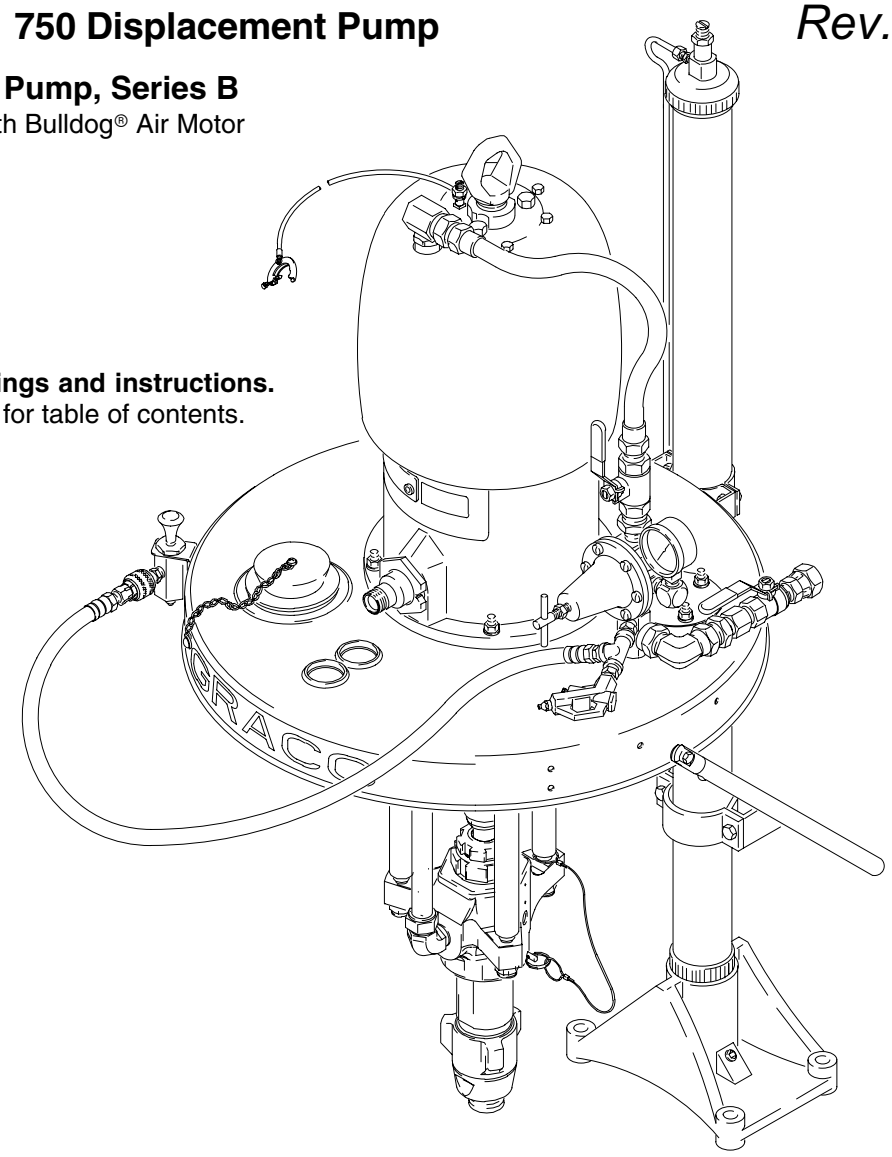
Elevator-Mounted Pump

308478

Rev.D

With Xtreme™ 750 Displacement Pump

Part No. 237615 Pump, Series B
33:1 Ratio Pump, with Bulldog® Air Motor



05400B

Read warnings and instructions.
See page 2 for table of contents.

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GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440–1441

Table of Contents

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

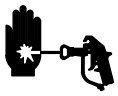
INSTRUCTIONS

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 Graco Technical Assistance at 1–800–543–0339.
- Do not alter or modify this equipment.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum working pressure of the lowest rated system component. Refer to the **Technical Data** on page 14 for the maximum working pressure of this equipment.
- 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.
- 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 82°C (180°F) or below –40°C (–40°F).
- Wear hearing protection when operating this 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.
- Lock the gun trigger safety when you stop spraying.
- Follow the **Pressure Relief Procedure** on page 8 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, such as the elevator, can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Keep hands and fingers away from the elevator, pump support, drum cover, and the lip of the drum during operation and whenever the pump or elevator is charged with air.
- Before servicing the equipment, follow the **Pressure Relief Procedure** on page 8 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.
- Electrically disconnect all equipment in the spray area.
- 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. Refer to Product Data Sheet 305721. If you supply your own accessories, be sure they are adequately sized and pressure rated for your system.

Fig. 2 is only a guide for selecting and installing system components and accessories. Contact your Graco representative or Graco Technical Assistance (see back page) for assistance in designing a system to suit your particular needs.

Location

Locate the elevator so there is at least 9 ft (2.75 m) overhead clearance. Refer to **Dimensions** on page 15.

Using the holes in the elevator base as a guide, drill four 14.2 mm (0.56 in.) diameter holes.

Level the base in all directions. If necessary, use metal shims. Secure the base to the floor using four 1/2 in. (13 mm) mounting bolts which are long enough to prevent the elevator from tipping.

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 the ground wire and clamp (supplied). See Fig. 1. Loosen the grounding lug locknut (W) and washer (X). Insert one end of the ground wire (Y) into the slot in lug (Z) and tighten the locknut securely. Connect the other end of the wire to a true earth ground.

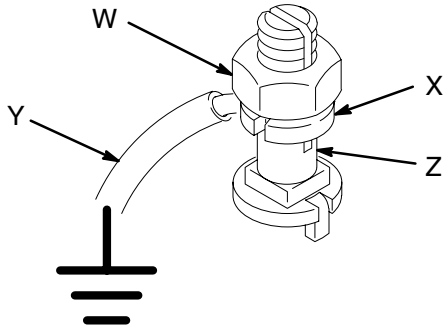


Fig. 1

2. *Air and fluid hoses:* use only electrically conductive hoses.
3. *Air compressor:* 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.

Installation

System Components and Accessories

Refer to Fig. 2.

⚠ WARNING

A red-handled main air bleed valve (E), pump air bleed valve (H), and fluid drain valve (P) are required. These accessories help reduce the risk of serious injury, including fluid injection and splashing of fluid in the eyes or on the skin, and injury from moving parts if you are adjusting or repairing the pump.

The red-handled main air bleed valve (E) shuts off and relieves the air to the pump and elevator. To relieve air pressure in the elevator, close the red-handled bleed valve (E) and the elevator will slowly drop.

The pump air bleed valve (H) relieves air trapped between it and the pump when the valve is closed. Trapped air can cause the pump to cycle unexpectedly. Locate the valve close to the pump.

The fluid drain valve assists in relieving fluid pressure in the displacement pump, hose, and gun. Triggering the gun to relieve pressure may not be sufficient.

Supplied Components

- **The red-handled main air bleed valve (E)** is required in your system to shut off the air supply to the pump and elevator (see the **WARNING** above). When closed, the valve will bleed off all air in the elevator and pump, and the elevator will slowly drop. Be sure the valve is easily accessible from the pump, and is located **upstream** from the air manifold (F).

- **The pump air bleed valve (H)** is required in your system to relieve air trapped between it and the air motor when the valve is closed (see the **WARNING** above). Be sure the valve is easily accessible from the pump, and is located **downstream** from the air regulator (G).

- **The air regulator (G)** controls pump speed and outlet pressure by adjusting the air pressure to the pump. Locate the regulator close to the pump, but **upstream** from the pump air bleed valve (H).

- **The air manifold (F)** has a swivel air inlet. It mounts to the drum cover (C), and provides ports for connecting lines to air-powered accessories.

- **The elevator air control valve (N)** controls the raising and lowering of the elevator.

Air and Fluid Hoses

Be sure all air hoses (D) and fluid hoses (R) are properly sized and pressure-rated for your system. Use only electrically conductive hoses. Fluid hoses must have spring guards on both ends.

Air Line Accessories

Install the following accessories in the locations shown in Fig. 2, using adapters as necessary:

- **An air line filter (J)** removes harmful dirt and moisture from the compressed air supply.

- **An air bleed valve (K)** isolates the air line accessories for servicing. Locate upstream from all other air line accessories.

- **An air line lubricator (L)** provides automatic air motor lubrication.

- **A pump runaway valve (M**) senses when the pump is running too fast and automatically shuts off the air to the motor. A pump which runs too fast can be seriously damaged.

Fluid Line Accessories

Install the following accessories in the locations shown in Fig. 2, using adapters as necessary:

- **A fluid drain valve (P)** is required in your system to relieve fluid pressure in the hose and gun (see the **WARNING** at left). Screw the drain valve into the open branch of a tee mounted in the fluid line. Install the drain valve pointing down, but so the handle will point up when opened.

- **A gun (S)** dispenses the fluid. The gun shown in Fig. 2 is an airless spray gun for highly viscous fluids.

Installation

TYPICAL INSTALLATION

KEY

A Pump
B Elevator
C Drum Cover
D Electrically Conductive Air Supply Hose
E Red-Handled Main Air Bleed Valve (required, for pump and elevator)
F Air Manifold
G Pump Air Regulator
H Pump Air Bleed Valve (required, for pump)
J Air Line Filter
K Bleed-Type Air Valve (for accessories)
L Air Line Lubricator
M Pump Runaway Valve
N Elevator Air Control Valve
P Fluid Drain Valve (required)
R Electrically Conductive Fluid Hose
S Spray Gun
Y Ground Wire (required; see page 5 for installation instructions)

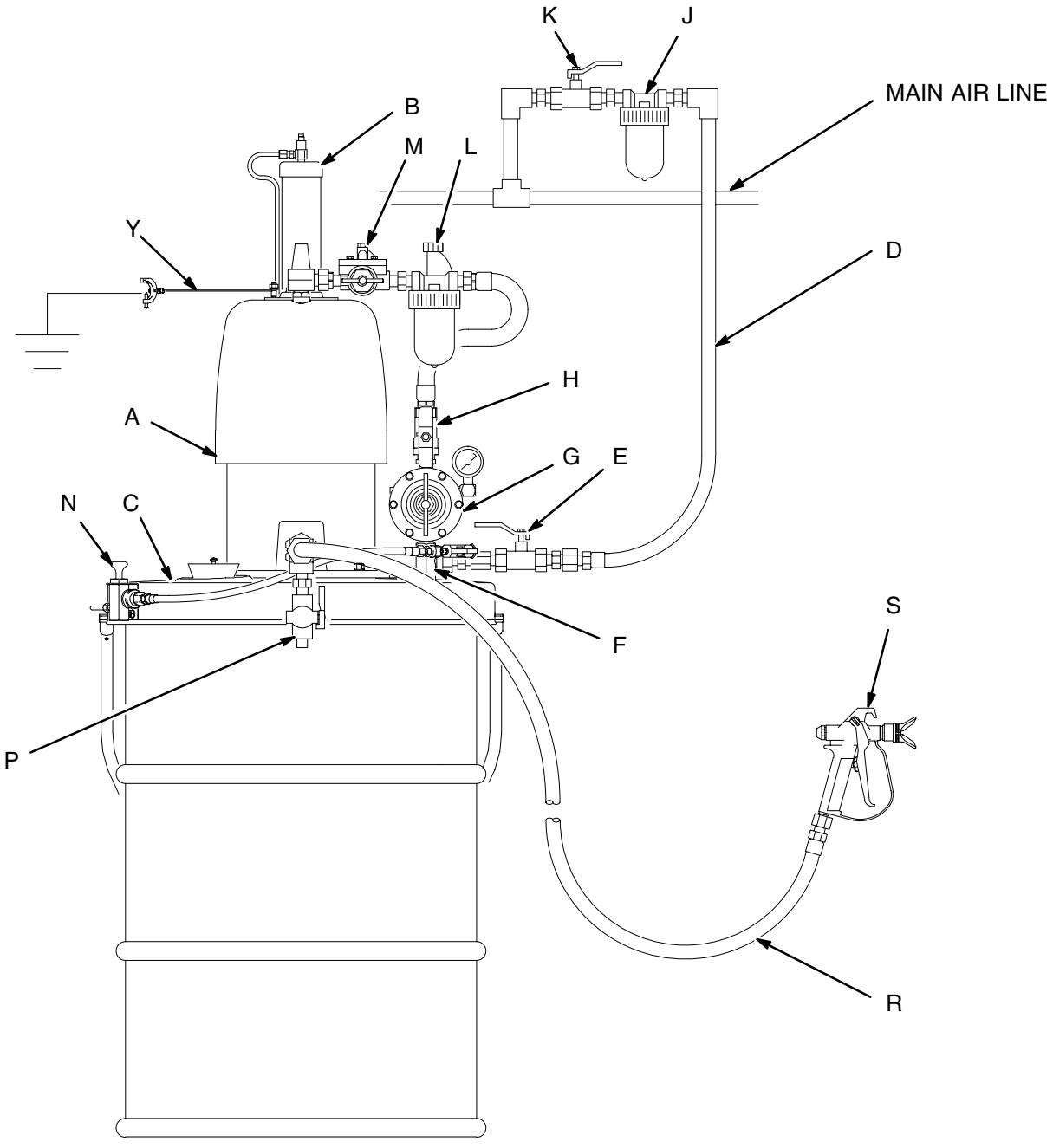
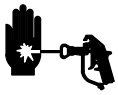


Fig. 2

Operation

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. Lock the gun trigger safety.
2. Close the pump air bleed valve (H, required in your system).
3. Shut off the red-handled main air bleed valve (E, required in your system). The elevator will slowly drop.
4. Unlock the 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 gun trigger safety.
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 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

⚠ 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 (U) 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 torque the nut to 61–75 N.m (45–55 ft-lb) using the supplied wrench. See Fig. 3. Do this whenever necessary. Do not overtighten the packing nut.

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** on page 10.

Operation

Starting and Adjusting the Elevator

1. Refer to Fig. 3. Close all air regulators and air valves.

2. Open the red-handled main air bleed valve (E). Pull up on the air control valve (N) and let the elevator rise to its full height.

⚠ CAUTION

Shortened or recycled drums may cause the pump to bottom out in the drum, causing damage. Contact your fluid supplier to order a standard size drum.

3. Set a full 200 liter (55 gal.) drum against the elevator base (T).

⚠ WARNING

MOVING PARTS HAZARD
Moving parts can pinch or amputate your fingers. When the pump is operating and when raising or lowering the elevator, keep your fingers and hands away from the elevator (B), pump support (W), drum cover (C), and lip of the drum.

4. With your hands away from the drum and the cover, push down on the air control valve (N) and lower the elevator until the cover rests on the lip of the drum.

NOTE: To increase or decrease the operating speed of the elevator, loosen the hex nut of the restrictor valve (V) and turn the valve needle either in or out.

Starting and Adjusting the Pump

1. Close the air regulator (G).

2. Open the red-handled main air bleed valve (E) and the pump's air bleed valve (H).

3. Hold a metal part of of the gun (S) firmly to the side of a grounded metal pail and hold the trigger open.

4. Slowly open the regulator (G) until the pump starts.

5. Cycle the pump slowly until all air is pushed out and the pump and hoses are fully primed.

6. Release the gun trigger and lock the trigger safety. The pump should stall against pressure.

7. If the pump fails to prime properly, open the drain valve (P). Use the drain valve as a priming valve until the fluid flows from the valve. Close the valve.

NOTE: When changing drums with the hose and gun already primed, open the drain valve (P) to help prime the pump and vent air before it enters the hose. Close the drain valve when all air is eliminated.

⚠ CAUTION

Do not allow the pump to run dry. It will quickly accelerate to a high speed, causing damage. If your pump is running too fast, stop it immediately and check the fluid supply. If the container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines, or flush and leave it filled with a compatible solvent. Eliminate all air from the fluid system.

8. With the pump and lines primed, and with adequate air pressure and volume supplied, the pump will start and stop as you open and close the gun.

⚠ WARNING

COMPONENT RUPTURE HAZARD
To reduce the risk of overpressurizing your system, which could cause component rupture and serious injury, *never exceed the specified Maximum Incoming Air Pressure to the pump* (see the **Technical Data,** on page 14).

9. Use the air regulator (G) to control pump speed and fluid pressure. Always use the lowest air pressure necessary to get the desired results. Higher pressures cause premature tip and pump wear.

Operation

Changing Drums

⚠ WARNING

MOVING PARTS HAZARD
Moving parts can pinch or amputate your fingers. When the pump is operating and when raising or lowering the elevator, keep your fingers and hands away from the elevator (B), pump support (W), drum cover (C), and lip of the drum.

⚠ CAUTION

Shortened or recycled drums may cause the pump to bottom out in the drum, causing damage. Contact your fluid supplier to order a standard size drum.

1. Stop the pump. **Close the pump air bleed valve (H).**
2. Pull up on the air control valve (N) to raise the elevator (B).
3. Remove the empty drum and place the full drum against the elevator base (T).
4. Lower the elevator as explained under **"Starting and Adjusting the Elevator"** on page 9.

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 8.

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** at right.

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 8.

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.**

KEY

- **A** Pump
- **B** Elevator
- **C** Drum Cover
- **E** Red-Handled Main Air Bleed Valve (required, for pump and elevator)
- **G** Pump Air Regulator
- **H** Pump Air Bleed Valve (required, for pump)
- **N** Elevator Air Control Valve
- **T** Elevator Base
- **U** Packing Nut
- **V** Elevator Restrictor Valve
- **W** Pump Support

⚠1 Torque to 34–41 N.m (25–30 ft-lb)

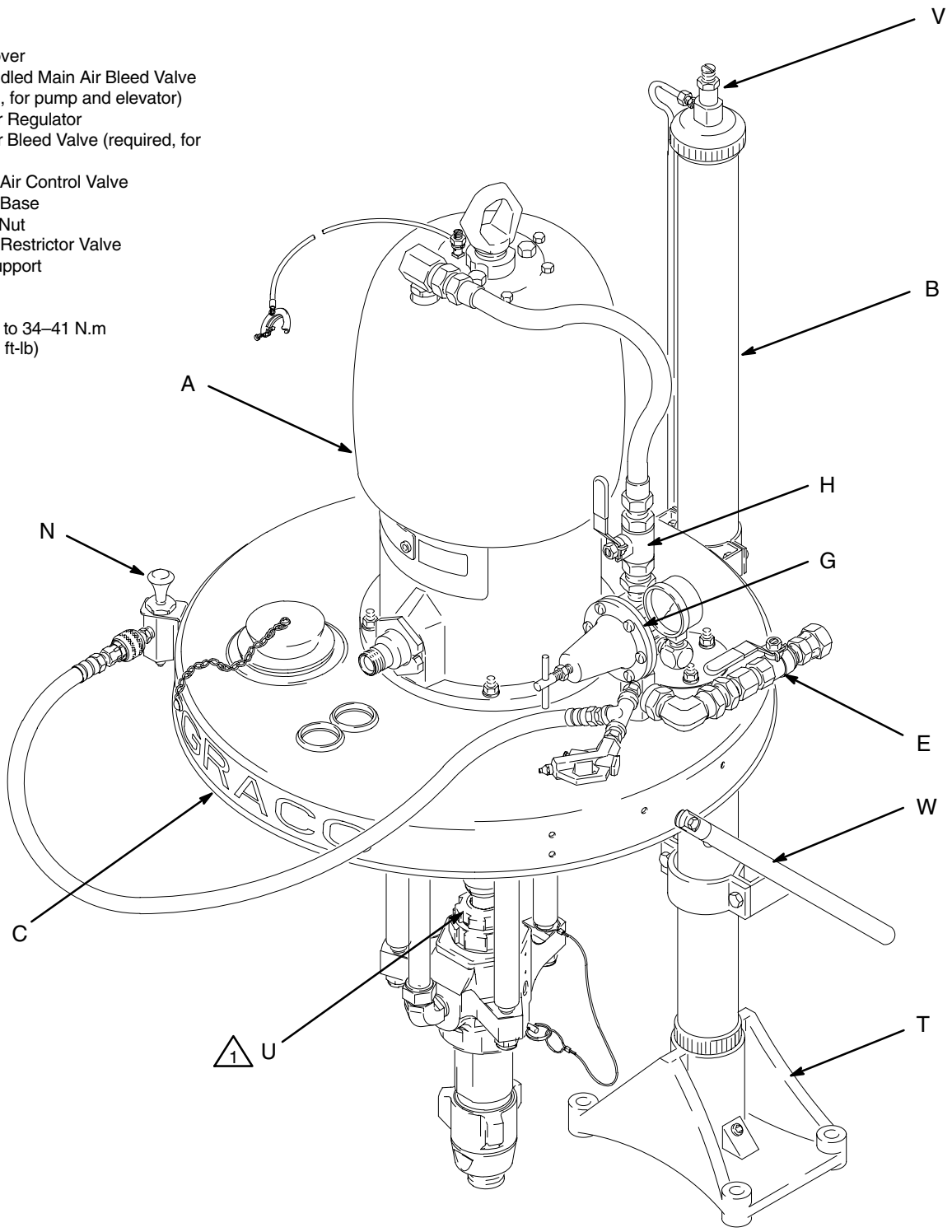


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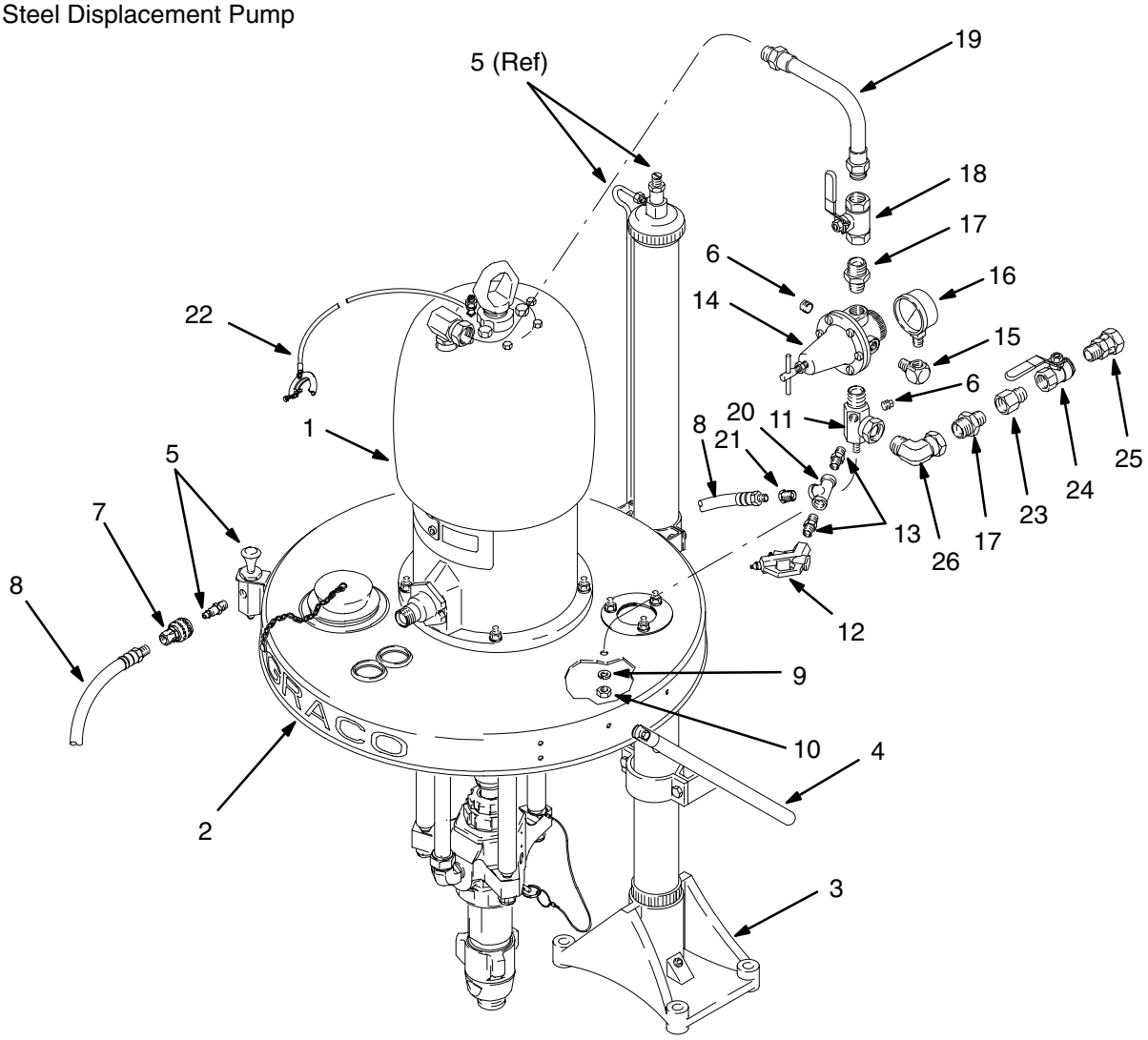
Fig. 3

Parts

Part No. 237615, Series B
33:1 Ratio Bulldog Pump, with Xtreme 750 (180 cc)
Carbon Steel Displacement Pump



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Parts

Part No. 237615, Series B

33:1 Ratio Bulldog Pump, with Xtreme 750 (180 cc)
Carbon Steel Displacement Pump

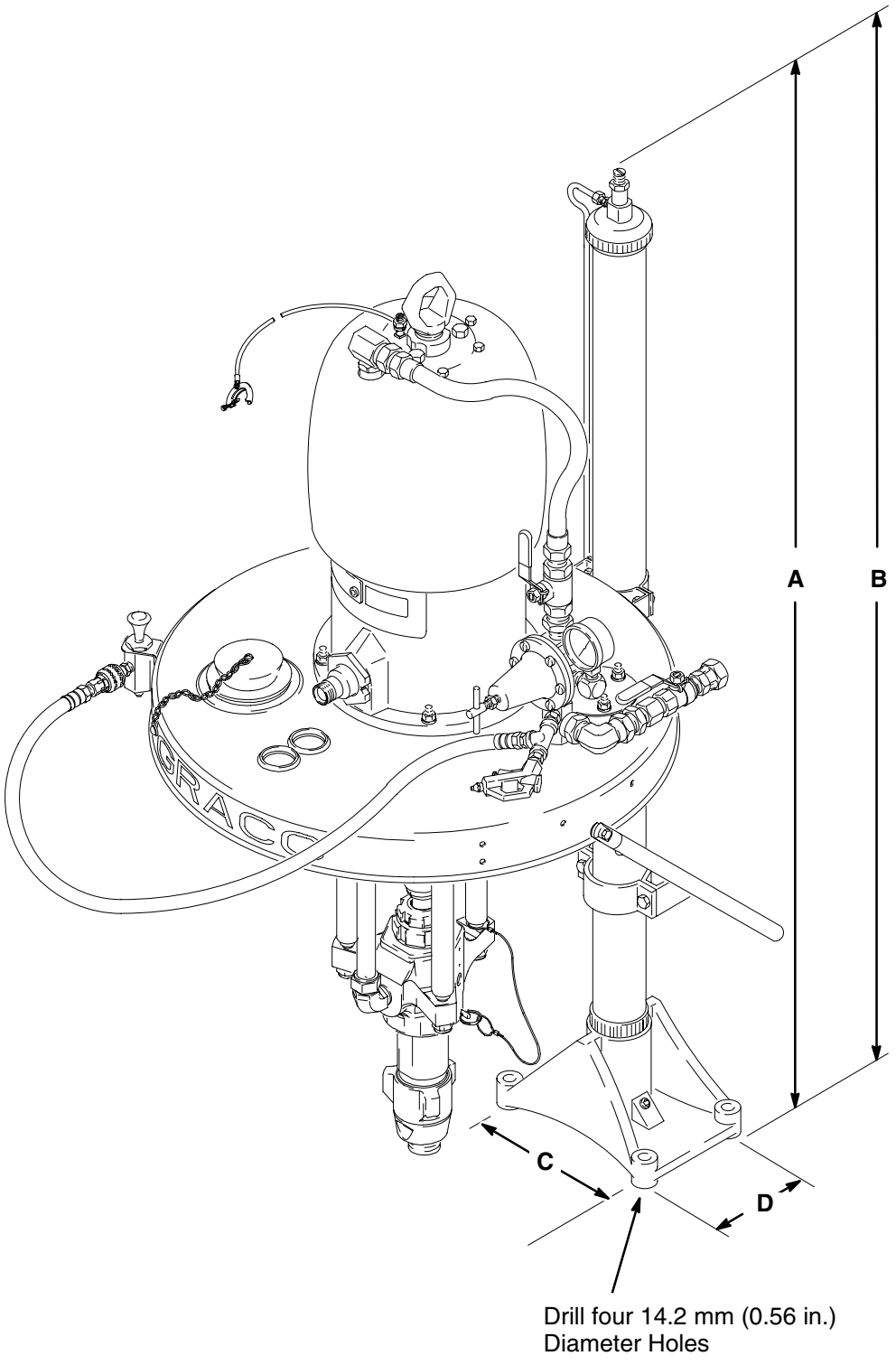
Ref. No.	Part No.	Description	Qty.
1	245165	PUMP, Bulldog, 33:1 ratio; *See manual 309340 for parts*	1
2	237309	COVER, drum; *See manual 308466 for parts*	1
3	207408	ELEVATOR, heavy duty; *See manual 306287 for parts*	1
4	237578	KIT, support, drum cover; *See manual 306287 for parts*	1
5	237579	KIT, air control, elevator; *See manual 306287 for parts*	1
6	100509	PLUG, pipe; 1/4 npt	2
7	208536	COUPLER, quick disconnect	1
8	237583	HOSE, air; 1/4” (6 mm) ID; 1/4 npt x 1/8 npt (mbe); 30” (762 mm) long	1
9	112922	WASHER, spring lock; 3/8”	1
10	112913	NUT, hex; 3/8–16	1
11	206205	MANIFOLD, air; 3/4 npsm(f)	1
12	208625	GUN, air blow	1
13	156971	NIPPLE; 1/4 npt	2
14	206197	AIR REGULATOR *See manual 308168 for parts*	1
15	100840	ELBOW, street; 90°; 1/4 npt (m x f)	1
16	100960	GAUGE, air	1
17	157191	NIPPLE, reducing; 3/4 npt x 1/2 npt	2
18	110226	BLEED VALVE; 3/4 npt (fbe)	1
19	214953	HOSE, air; 3/4” (19 mm) ID; 3/4 npt (mbe); 16” (406 mm) long	1
20	104984	TEE; 1/4 npt(f)	1
21	100030	BUSHING; 1/4 npt(m) x 1/8 npt(f)	1
22	237569	GROUND WIRE AND CLAMP	1
23	110332	ADAPTER; 1/2 npt (m x f)	1
24	113331	BLEED VALVE, red-handled; 1/2 npt (fbe)	1
25	113344	UNION, swivel; 1/2 npt(m) x 3/4 npsm(f)	1
26	160327	UNION, swivel; 90°; 3/4 npt(m) x 3/4 npsm(f)	1

Technical Data

Maximum fluid working pressure	228 bar (3300 psi)
Maximum air inlet pressure	7 bar (100 psi)
Pump performance data	See pump manual 309340
Air consumption data	See pump manual 309340
Air inlet size	3/4 npsm(f)
Fluid outlet size	3/4 npt(m)
Fluid inlet size	1–1/2” npt(f)
Maximum operating temperature	82°C (180°F)
* Noise level at 100 psi, 25 cycles/min	93 dBa
* Sound power level at 100 psi, 25 cycles/min	108 dBa
Weight	approx. 125 kg (275 lb)
Wetted parts	See pump manual 309340

* Tested in accordance with ISO 3744.

Dimensions



Pump Model	A (Raised)	B (Lowered)	C	D
237615	2375 mm (93.5 in.)	1600 mm (63 in.)	226 mm (8.9 in.)	140 mm (5.5 in.)

Graco Standard Warranty

Graco warrants all equipment 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 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.

FOR GRACO CANADA CUSTOMERS

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Graco Information

TO PLACE AN ORDER, contact your Graco distributor, or call one of the following numbers to identify the distributor closest to you:

1–800–367–4023 Toll Free
612–623–6921
612–378–3505 Fax

Sales Offices: Minneapolis, Detroit
International Offices: Belgium, Korea, Hong Kong, Japan

www.graco.com

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