

# GT 750 Grease Pump

3A5363C

EN

***For transferring grease using a medium pressure, high volume pump. For professional use only.***

## **Model No.:**

24W337, Series A: 400 lb (180 kg) drum length

25D116, Series A: 120 lb (55 kg) drum length

24W498, Series A: stubby length

*3600 psi (24.8 MPa, 248 bar) Maximum Working Pressure*

*100 psi (0.7 MPa, 7 bar) Maximum Air Inlet Pressure*

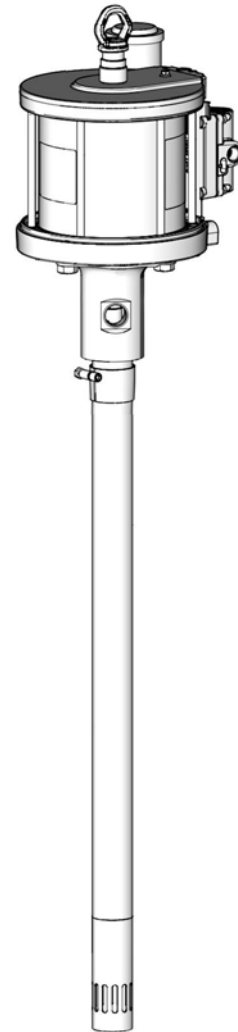


## **Important Safety Instructions**

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




## **Related Manuals**

3A1211 SaniForce™ Air Motor









# Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <h2 style="margin: 0;">WARNING</h2>	
	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not point dispensing device at anyone or at any part of the body.</li> <li>• Do not put your hand over the fluid outlet.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Follow the <b>Pressure Relief Procedure</b> when you stop dispensing and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> </ul>
	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well-ventilated area.</li> <li>• Eliminate all ignition sources, such as cigarettes and portable electric lamps.</li> <li>• Ground all equipment in the work area.</li> <li>• Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline.</li> <li>• Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.</li> <li>• Use only grounded hoses.</li> <li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>

# ! WARNING

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

# Installation

## Typical Installation



### Pump Installation on Drum

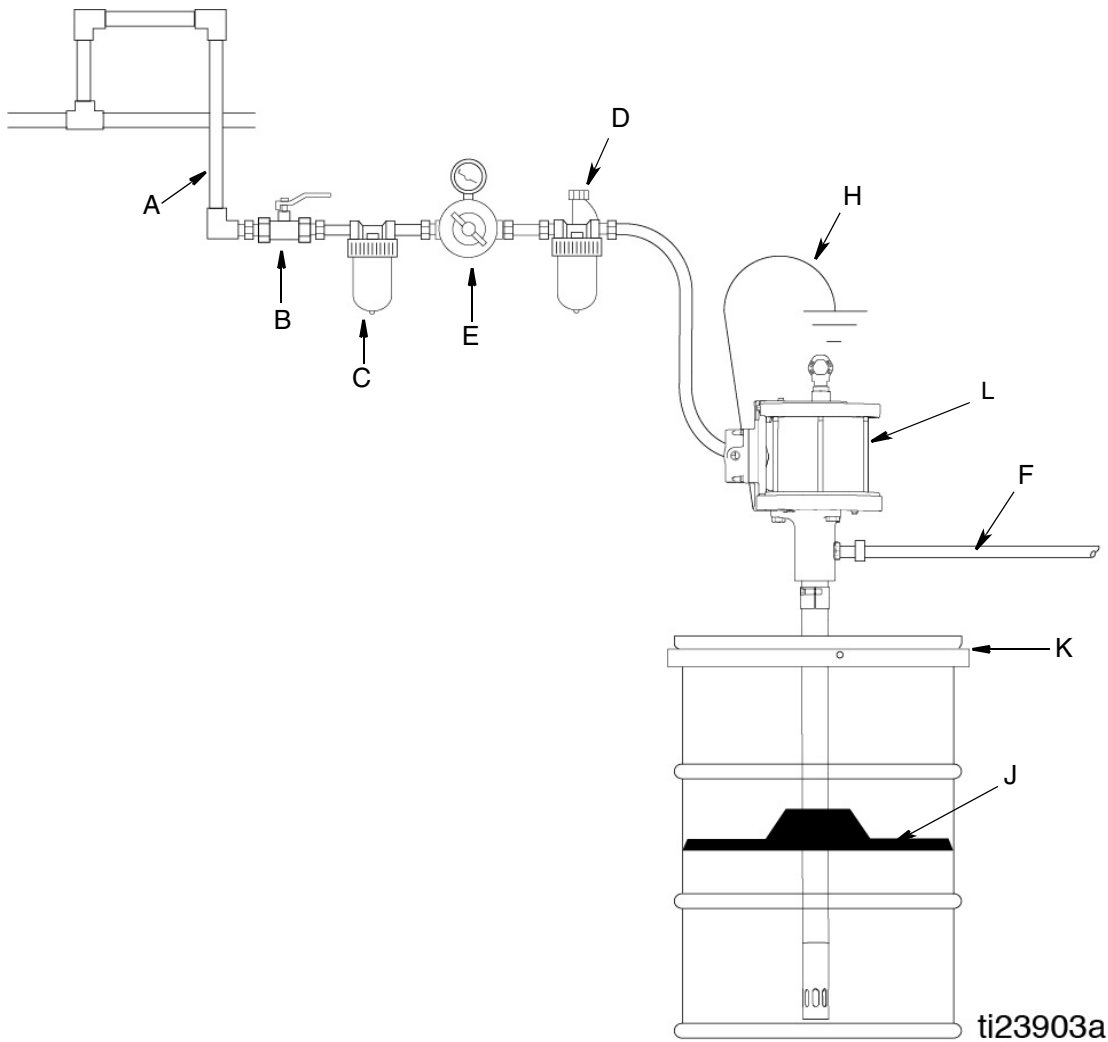


FIG. 1

**Key:**

- A Grounded Air Line
- B Bleed-type Master Air Valve
- C Air Filter
- D Air Line Oiler
- E Air Regulator
- F Fluid Hose
- H Ground Wire
- J Follower Plate

- K Drum Cover
- L Air Motor

# Installation Orientation Options

## Top Mount

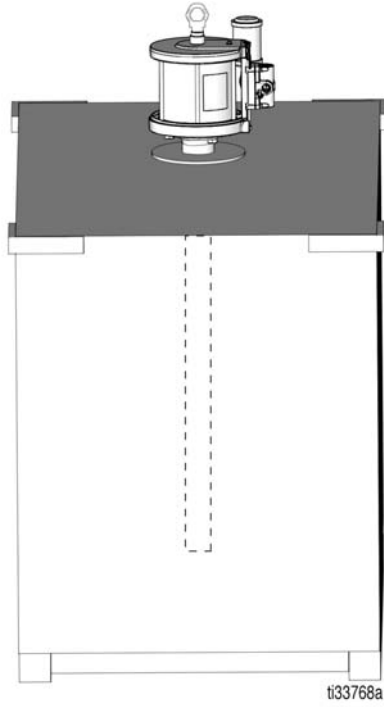


FIG. 2

## Side Mount

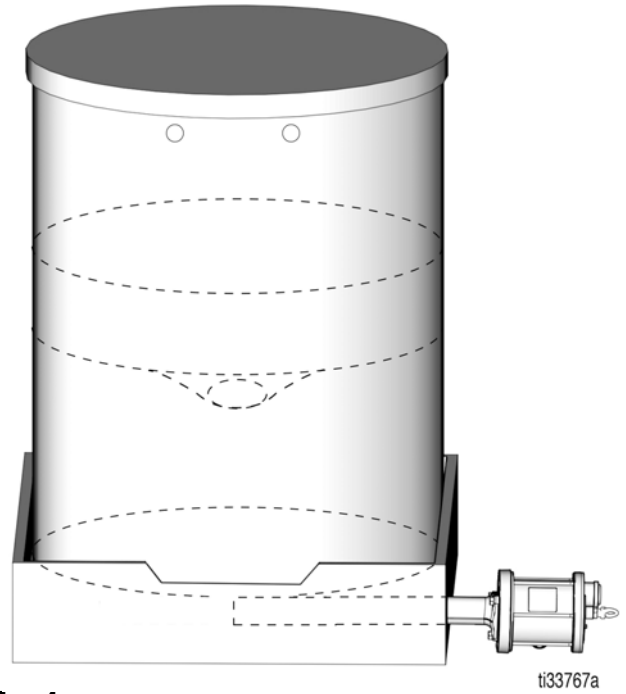


FIG. 4

## Pocket Mount

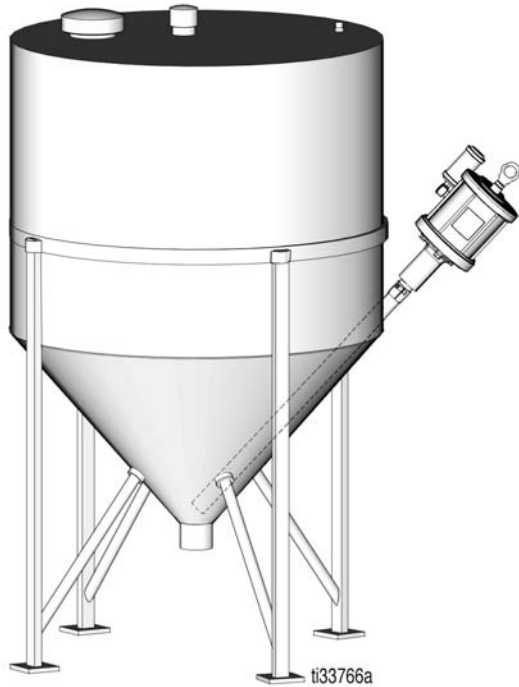



FIG. 3

## Installation Instructions

**NOTE:** The reference letters in the following instructions refer to the Typical Installation illustration, page 4.

### Grounding

				
<p>The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.</p>				

**Pump:** use ground wire and clamp (as shown in FIG. 5). Connect the other end of the ground wire to a true earth ground.

1. Remove the ground screw (Z) and insert through eye of the ring terminal at end of ground wire (Y).
2. Fasten the ground screw (Z) back into the pump and tighten securely.

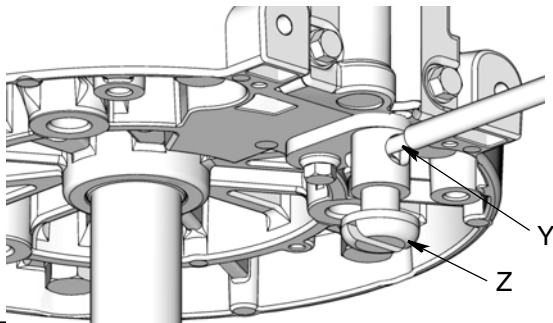


FIG. 5

**Air and fluid hoses:** use only electrically conductive hoses.


**Air compressor:** follow manufacturer's recommendations.

**Dispense valve:** ground through connection to a properly grounded fluid hose and pump.



**Solvent pails used when flushing:** follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts grounding continuity.

**To maintain grounding continuity when flushing or relieving pressure:** hold metal part of the dispense valve firmly to the side of a grounded metal pail, then trigger the valve.

### Mounting the Pump

				
<p>Mount the pump securely so that it cannot move around during operation. Failure to do so could result in personal injury or equipment damage.</p>				

- Select a convenient installation location for the equipment to ensure easy operator access to the pump air controls, sufficient room to change supply containers, and a secure mounting platform.
- If you are mounting the pump directly on the supply tank, position the pump so its intake valve is no more than 1 in. (25 mm) from the bottom of the container. Mount the pump to the cover or other suitable mounting device.
- Mount the pump to suit the type of installation planned. Very heavy lubricants may require an inductor plate.
- Install the air line accessories as shown in the Typical Installation, page 4. Install a bleed-type master air valve (B) within easy reach of the pump, upstream from the air regulator. Install an air filter (C) to remove harmful dirt and moisture from your compressed air supply. For automatic air motor lubrication, install an air line oiler (D) close to the pump air inlet. Install an air regulator (E) to control pump speed.

				
<p>A bleed-type master air valve (B) is required to shut off and relieve air pressure that may be trapped in the air motor. Trapped air could cause the pump to cycle unexpectedly and cause serious bodily injury, including amputation.</p>				

- Be sure the air hose is properly sized to deliver an adequate supply of air to the motor. Refer to the Technical Data on page 16.
- Connect a dispensing hose to the pump outlet. Install an appropriate dispensing valve to the hose.
- Ground the pump as explained on page 6.

# Operation

**NOTE:** The reference letters in the following instructions refer to the Typical Installation illustration, page 4.

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This pump is designed to be used only in pumping non-corrosive and non-abrasive lubricants. Any other use of the pump can cause unsafe operating conditions and component rupture, which can result in fluid injection or other serious injury or fire or explosion.

## Pressure Relief Procedure

Follow the Pressure Relief Procedure whenever you see this symbol.

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This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing the equipment.

1. Close the supply pump's bleed-type master air valve (B) (required in the system).
2. Open the dispensing valve until the pressure is fully relieved.

# Priming and Pump Speed Adjustment



1. Open the bleed-type master air valve (B).
2. Open the dispensing valve, and slowly open the air regulator (E) until the pump is running smoothly.
3. After all the air is purged, close the dispensing valve.

The pump will start and stop as the valve is opened and closed.

4. Use the air regulator (E) to control the pump speed and fluid pressure. Always use the lowest pressure necessary to obtain the desired results.
5. If the pump accelerates quickly or is running too fast, stop it immediately and check the fluid supply. If the supply container is empty and air has been pumped into the lines:
  - a. Refill the supply container.
  - b. Prime the pump and fill the lines with fluid to remove all the air from the fluid lines.

<b>NOTICE</b>
<p>Never allow the pump to run dry of the fluid being pumped. A dry pump quickly accelerates to a high speed and may damage itself. If your pump accelerates quickly or is running too fast, stop it immediately and check the fluid supply. If the supply container is empty and air has been pumped into the lines, prime the pump and lines with fluid, or flush the pump and leave it filled with a compatible solvent. Be sure to eliminate all air from the fluid system.</p>

# Troubleshooting



**NOTE:** Check all other possible problems and solutions before you disassemble the pump.

Problem	Cause	Solution
Pump fails to operate or there is no fluid flow	Inadequate air supply pressure	Increase air supply.
	Restricted air line	Clear line.
	Closed dispensing valve	Open valve.
	Clogged fluid lines, hoses, and/or dispense valve	<ol style="list-style-type: none"> <li>1. Follow Pressure Relief Procedure, page 7.</li> <li>2. Disconnect fluid line.</li> <li>3. Turn on air. If the pump starts when the air is turned again, the line, hose, and/or valve is clogged. Clear obstruction.</li> </ol>
	Damaged air motor	Service air motor. See SaniForce Air Motor manual.
	Exhausted fluid supply	Refill and prime or flush.
Continuous air exhaust	Worn or damaged air motor gasket, packing, seal, etc.	Service air motor. See SaniForce Air Motor manual.
Erratic pump operation	Exhausted fluid supply	Refill and prime or flush.
	Held open or worn intake valve or piston seals	Replace worn seals. See Service, page 9.
	Inadequate air supply pressure	Increase air supply.
Pump operates but output low on down stroke	Held open or worn intake valve or piston seals	Replace worn seals. See Service, page 9.
Fluid is coming out of the muffler	Worn or damaged throat seal	Replace worn seals. See Service, page 9.



# Service

## Before You Start

- Be sure you have all necessary parts on hand. Use Graco repair kit 25D511. Use all parts in the kit for best results.
- Parts included in the kit are marked with one asterisk, for example (19\*), in the text and drawings.
- Clean and inspect all parts for wear or damage as you disassemble them. Replace parts as needed.
- For best results, always use all new parts included in kit to replace all the o-rings and packings when you disassemble the pump.

## Displacement Pump Service

### Disassembly



1. Flush the pump.
2. **Relieve pressure**, page 7.
3. Disconnect fluid and air lines from pump and remove pump from its installation location.
4. Clamp the air motor base (21) in a vise horizontally by closing the vise jaws on the flange.
5. Insert a wrench through a slot in the foot valve (10) and secure it around the flats of the piston shovel rod (8). While holding the piston shovel rod securely in place, use a second wrench to loosen and remove jam nut (15). Remove washer (28), and priming plate (14) from shovel rod (FIG. 6).

**NOTE:** Using a wrench to hold the piston shovel rod (8) in place during this procedure will prevent it from unscrewing from the piston housing (7).

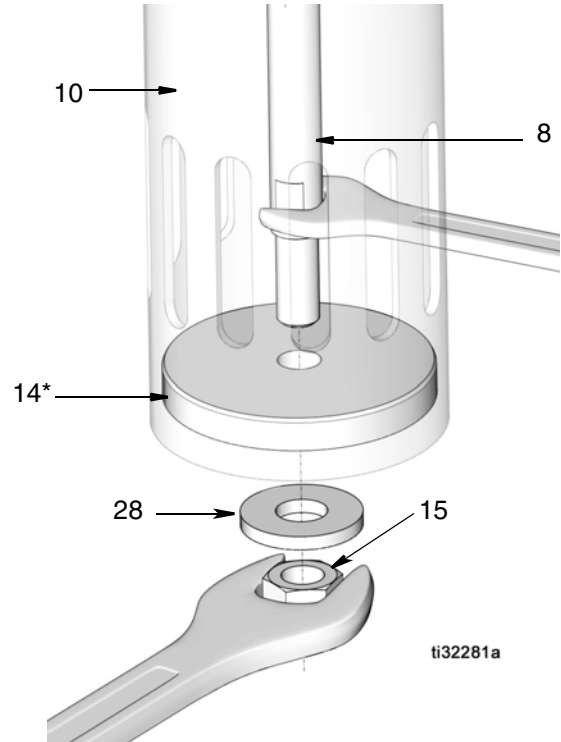


FIG. 6

6. Unscrew foot valve housing (10) from cylinder (20) (FIG. 7).

**NOTE:** Poppet check (12), foot valve packings (13), and bearing (11) slide off priming rod (8) when removing foot valve housing.

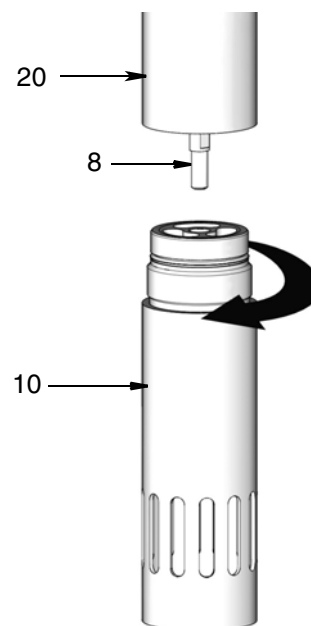
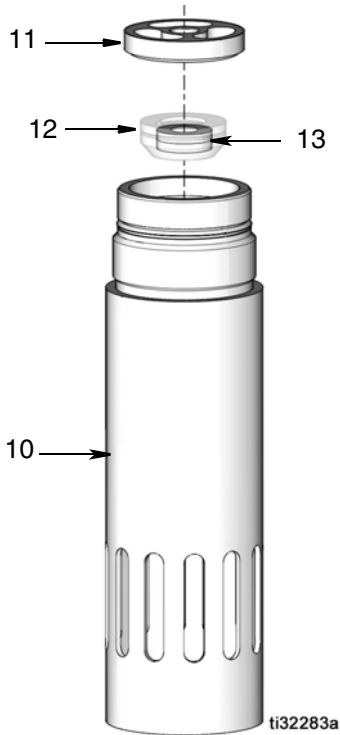


FIG. 7

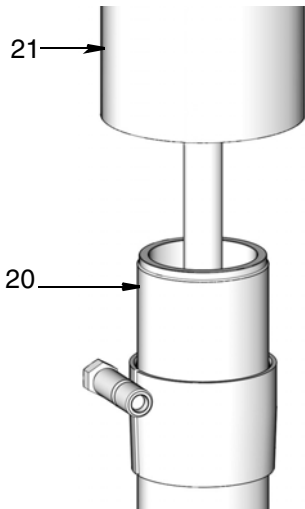
- Unscrew bearing (11) from foot valve housing. Remove the poppet check (12) and inspect foot valve packings (13) (FIG. 8).



**FIG. 8**

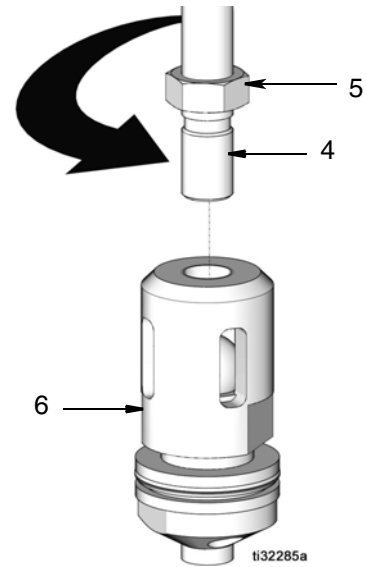
- Unscrew down tube (20) from pump base (21) (FIG. 9).

Clean the tube and inspect it for wear by holding it up to a light at a slight angle. If you see wavy lines or scratches where the piston travels, replace the tube as it will not seal well with the new piston seal and the pump will perform poorly.



**FIG. 9**

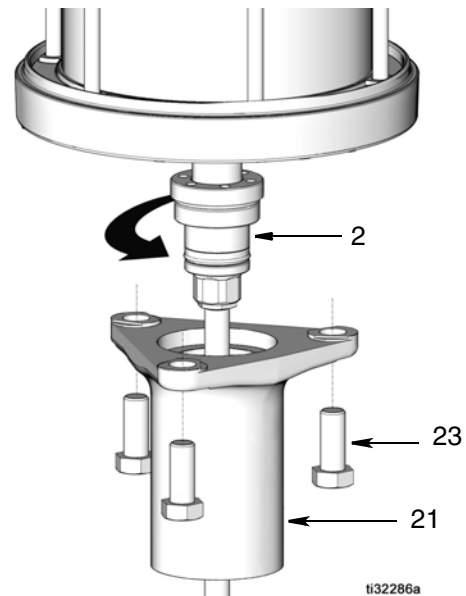
- Loosen nut (5) and unscrew the valve housing (6) from connecting rod (4) (FIG. 10).



**FIG. 10**

- Unscrew bolts (23) that connect pump base (21) to the air motor (FIG. 11).

- Remove pump base (21) from air motor and unscrew packing gland (2) (FIG. 11).



**FIG. 11**

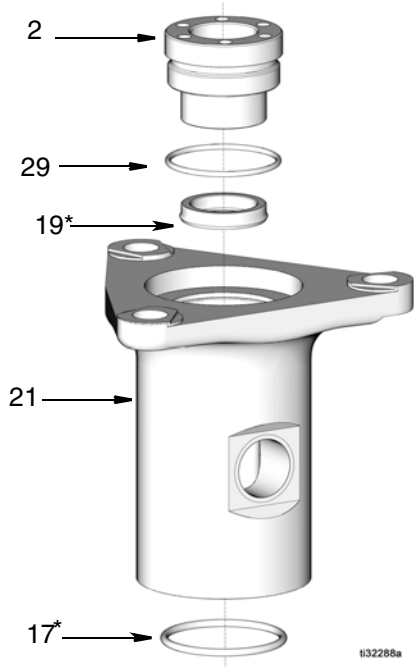
- Remove the following seals and inspect: piston seal (22), o-ring (17), o-ring (29), throat seal (19), o-ring (16) from the pump base (21) (See Parts, page 14).

- Clean and inspect all parts.

### Reassembly

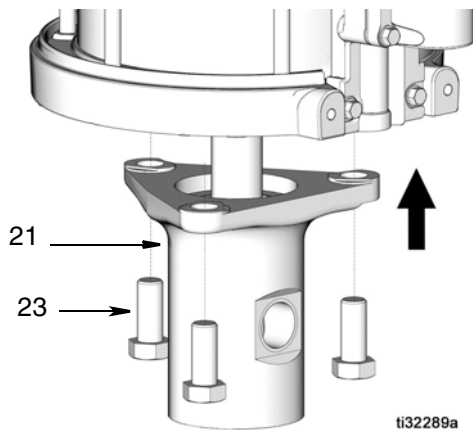
1. Apply a thin layer of grease to o-ring (17\*) and throat seal (19\*) and install parts in pump base (21) (FIG. 12).
2. Apply a thin layer of grease to o-ring (29\*) and install o-ring to packing gland (2). Tighten down packing gland (2) to pump base (FIG. 12).

**NOTE:** Throat seal (19\*) should be installed with the lips pointed down towards the bottom of the pump.



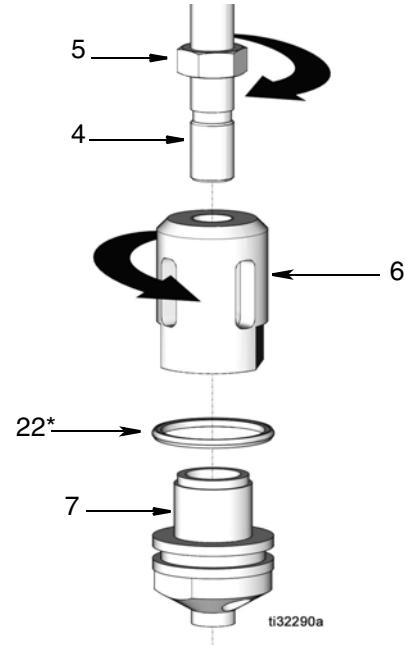
**FIG. 12**

3. Reattach pump base (21) to air motor (1) using 3 mounting bolts (23). Torque mounting bolts to 60 ft-lb (81.35 N•m) (FIG. 13).



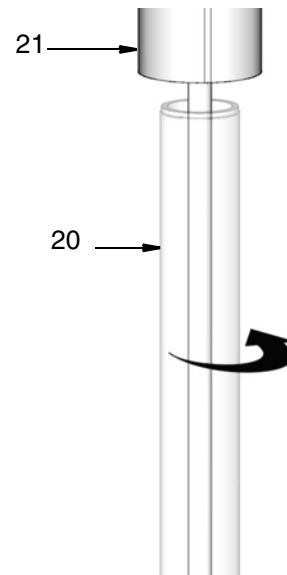
**FIG. 13**

4. Replace piston seal (22\*) on valve housing piston (7) (FIG. 14).
5. Screw the connecting rod (4) into the valve housing (6) and adjust the ball travel as instructed in **Check Valve Adjustment** on page 13 Tighten nut (5) to 60 ft-lb (81.35 N•m) (FIG. 14).



**FIG. 14**

6. Apply a thin layer of grease to piston seal (22\*). Reinstall down tube (20) into pump base (21). Torque to 100 to 150 ft-lb (135.6 to 203.4 N•m) (FIG. 15).



**FIG. 15**

For Steps 7 to 12 refer to FIG. 16.

7. Slide bearing (11) onto priming rod (8) with the step side facing the bottom of the pump.
8. Insert foot valve packings (13\*) into poppet check (12).
9. Slide poppet check containing foot valve packings onto priming rod (8) with beveled edge facing the bottom of the pump.
10. Apply a thin layer of grease to o-ring (16\*) and install o-ring on foot valve (10).
11. Slide foot valve over poppet check and screw bearing (11) into the foot valve (10).
12. Push foot valve up to the down tube (20) and screw in place.

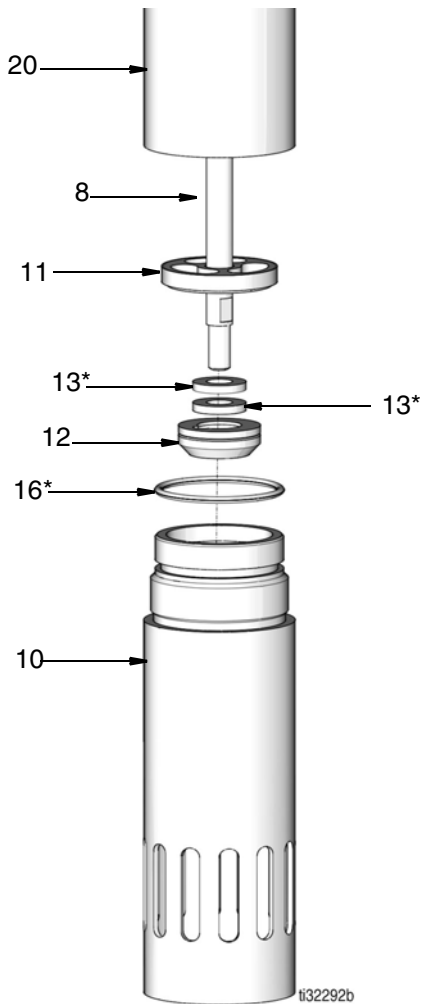


FIG. 16

13. Slide priming plate (9) (beveled edge up), followed by washer (28), onto priming rod (8). Insert a wrench through a slot in the foot valve (10) and secure it around the flats of the piston shovel rod (8). While holding the piston shovel rod securely in place, use a second wrench to tighten jam nut (15\*) to 10 ft-lb (13.5 N•m).

**NOTE:** Jam nut (15\*) should be replaced each time it is removed from priming rod.

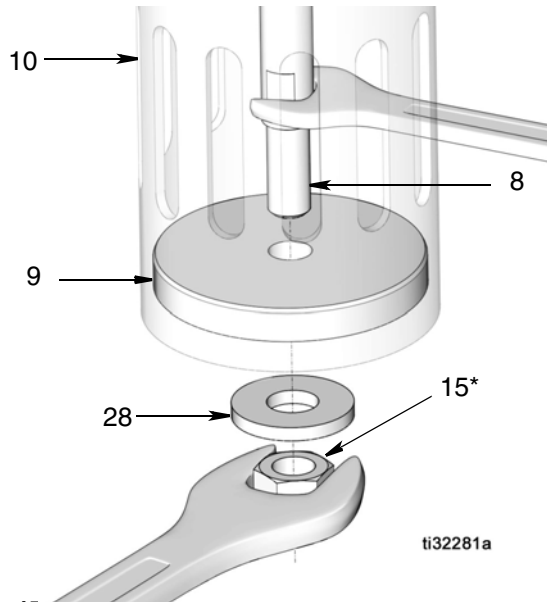


FIG. 17

14. Reconnect the pump's ground wire to a true earth ground.

## Check Valve Adjustment

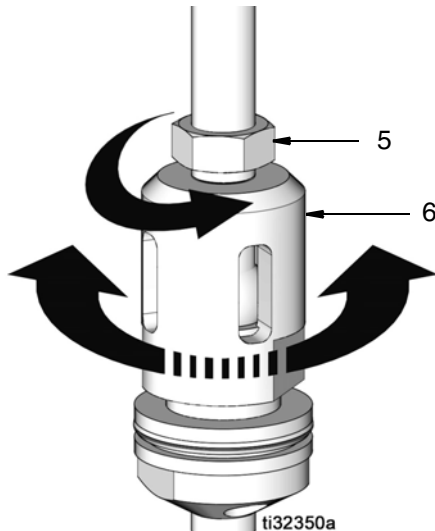


This pump has an adjustable piston ball check.

To change the piston ball travel:

1. **Relieve pressure**, page 7.
2. Loosen nut (5).
3. Turn the piston valve housing (6) **counterclockwise to increase** the ball travel and **clockwise to decrease** the ball travel.

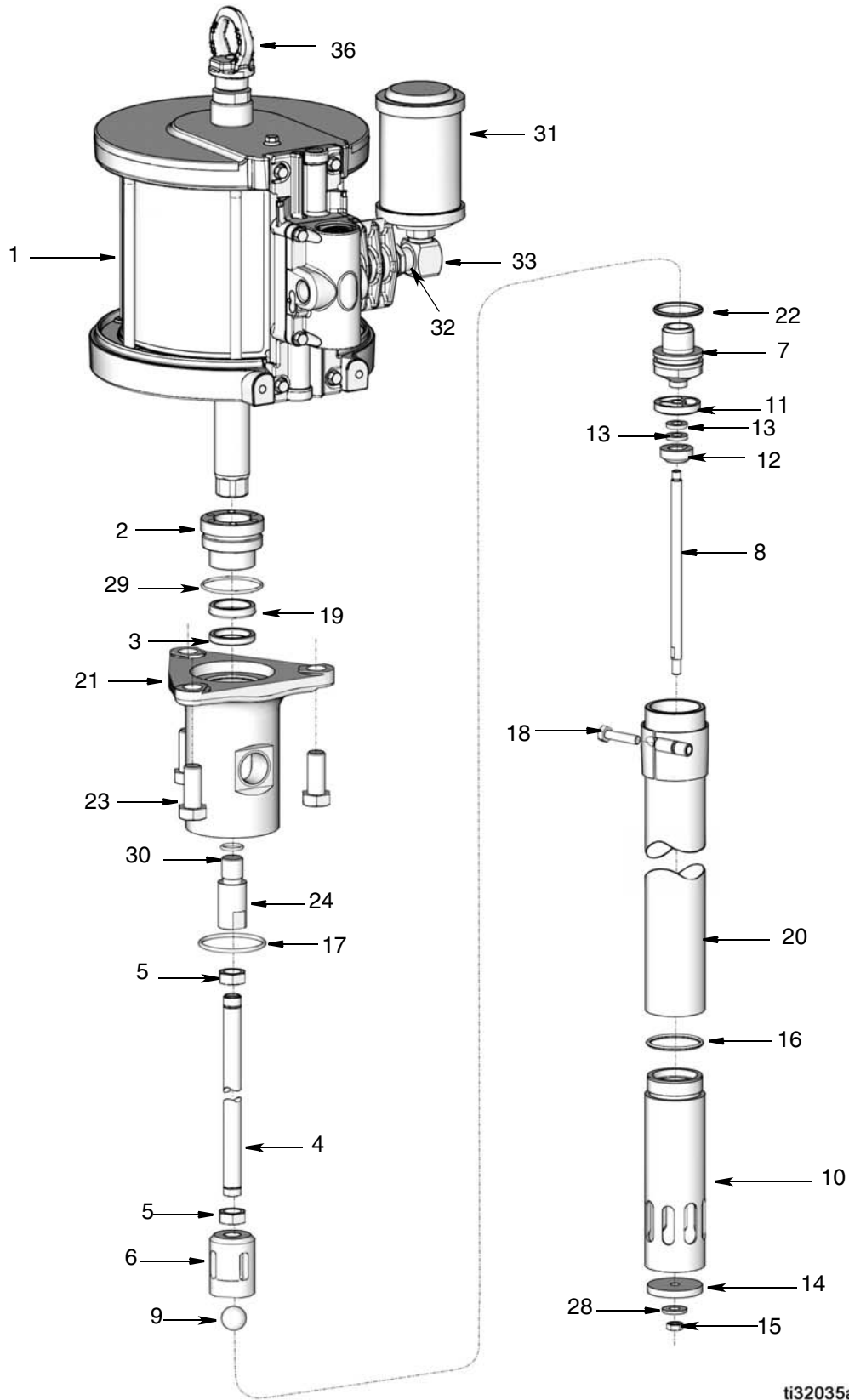
**NOTE:** The factory setting is a 0.225" ball travel. Decreasing the ball travel can minimize surging at stroke changeover; however, a travel that is too short restricts the flow and slows down the pump.



**FIG. 18**

4. Tighten nut (5). Torque to 60 ft-lb (81.35 N•m).

# Parts



ti32035a

## Parts

Ref	Part	Description	Qty
1	24R015	MOTOR, assy, air, 7.5 in,	1
2	17C099	GLAND, packing	1
3	17C098	SPACER, throat	1
4	17C102	ROD, connecting, model 24W337	1
	17C254	ROD, connecting, stubby, model 24W498	1
	131240	ROD, connecting, 120 lb, model 25D116	1
5	100155	NUT	2
6	17C101	HOUSING, valve	1
7	17C097	HOUSING, valve piston	1
8	17C103	ROD, piston, shovel	1
9	100279	BALL, metallic	1
10	17U190	VALVE, foot	1
11	624943	BEARING, rod guide 10:1 shovel	1
12	17U133	POPPET, foot, valve	1
13*		PACKING, foot valve	2
14*		PLATE, priming aluminum	1
15*		NUT, jam, hex, heavy, 5/16	1
16*		PACKING, o-ring	1
17*		PACKING, o-ring	1
18	222308	ADAPTER, bung 2" NPT	1
19*		SEAL, piston rod	1
20	17C096	CYLINDER, pump, model 24W337	1
	17C256	CYLINDER, pump, stubby, model 24W498	1
	131239	CYLINDER, pump 120 lb, model 25D116	1
21	17C095	HOUSING, adapter, machined	1

Ref	Part	Description	Qty
22*		SEAL, cylinder, double acting	1
23	123208	SCREW, cap, hex head	3
24	17C100	FITTING, connecting rod	1
28	100023	WASHER, flat	1
29*		PACKING, o-ring	1
30	158674	PACKING, o-ring	1
31	117237	MUFFLER	1
32	100896	FITTING, bushing, pipe	1
33	115764	FITTING, elbow, 90°	1
34	130447	LABEL, identification	1
35▲	130452	LABEL, safety, warning (not shown)	1
36	16C009	RING, lift	1

▲ Replacement Danger and Warning labels, tags and cards are available at no cost.

\* Parts are included in Pump Lower Repair Kit 25D511.

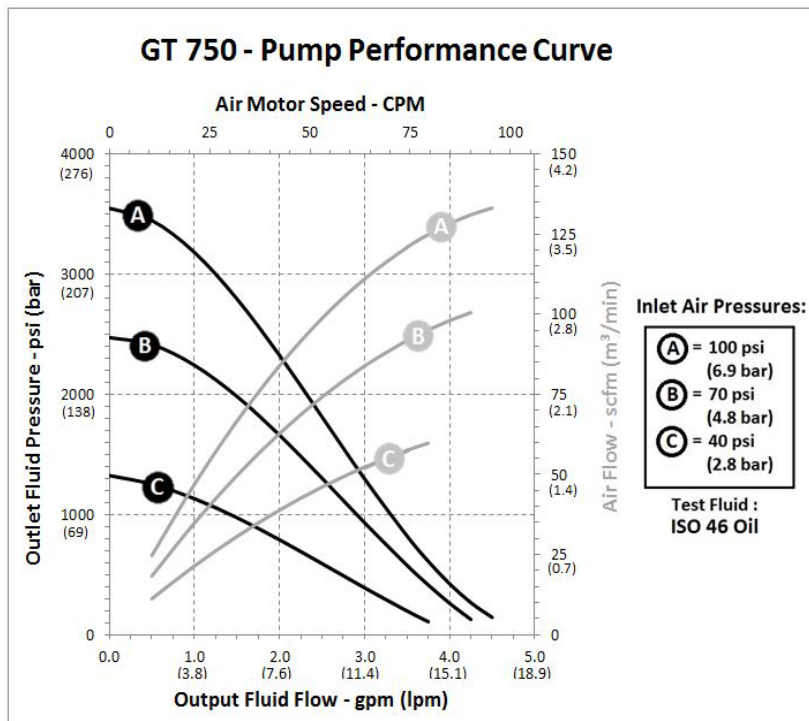
## Accessories

Part	Description
131394	ADAPTER, female cam lock, 3 in. (f) cam lock x 2 in. (f) NPT
131380	ADAPTER, male cam lock, 3 in. (m) cam lock x 2 in. (f) NPT
24A592	KIT, DataTrak® cycle count
223701	PLATE, follow, 400 lb.
223699	PLATE, follow, 120 lb.
200326	COVER, drum, 400 lb.
204574	COVER, drum, 120 lb.
160754	PLATE, bung adapter, 2 in.

# Technical Specifications

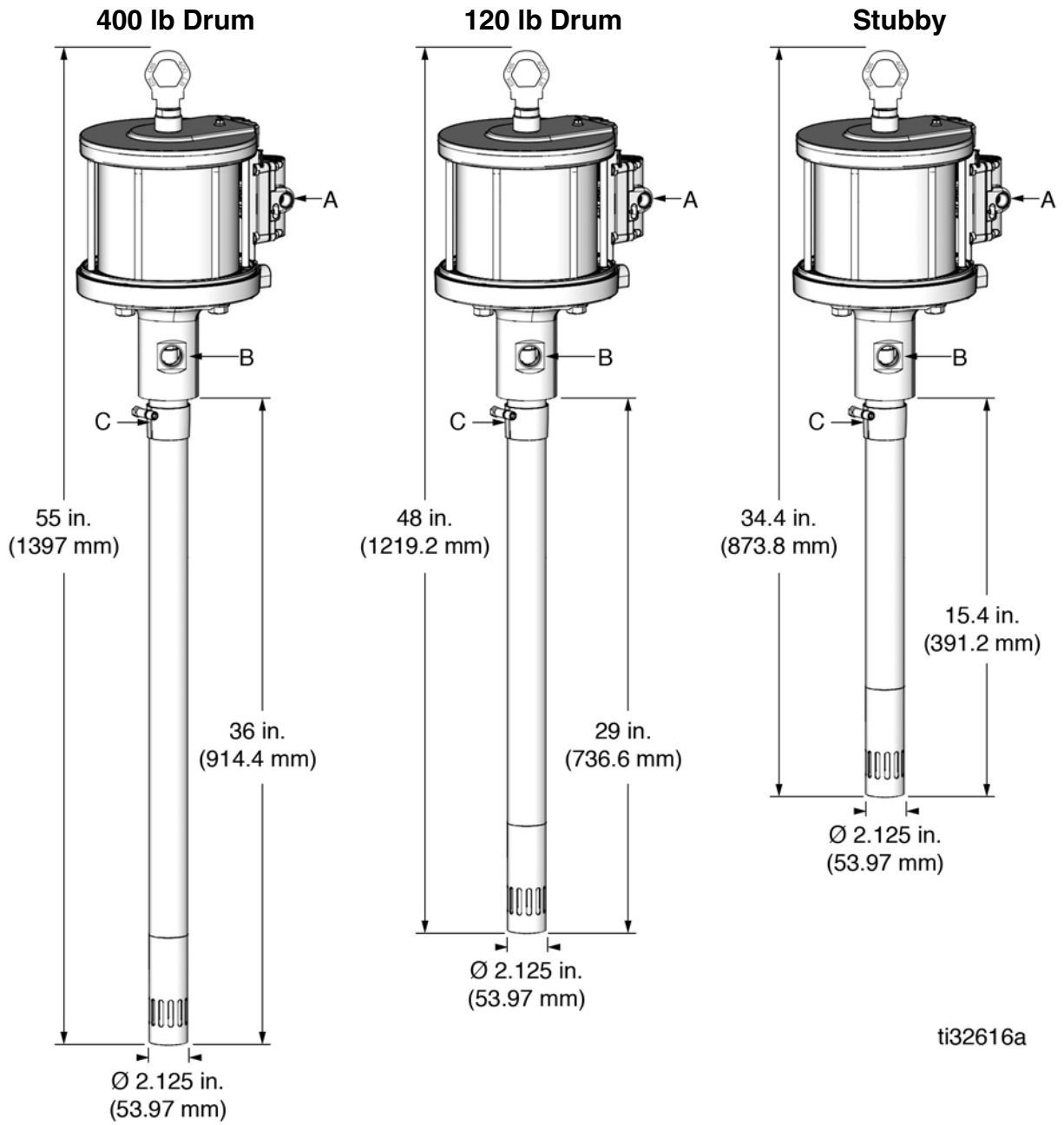
GT 750 Pump		
	US	Metric
Fluid Pressure Ratio	36:1	
Air Pressure Operating Range	40-100 psi	0.3 - 0.7 MPa (3-7 bar)
Maximum Working Pressure	3600 psi	24.8 MPa (248 bar)
Maximum recommended pump speed	60 cycles per minute	
Air Motor Effective Diameter	7.5 in.	190 mm
Stroke	4.75 in.	121 mm
Air Inlet	1/2 in. NPT	
Fluid Outlet	1 in. NPT	
Maximum Delivery	32 lbs/minute	14.5 kg/minute
Pump Weight	59 lbs.	26.76 kg
Wetted Parts	steel, brass, Buna-N, urethane, ductile iron, aluminum	
Sound Power (Measured at 70 psi (0.48 MPa, 4.8 bar), 20 CPM. Sound Power is measured per ISO-9414-2)	77.2 dBA	
Sound Pressure (Tested at 3.28 ft (1 M) from equipment.	70.5 dBA	
Pump Cycles Per Pound	3 cycles	
Pump Cycles Per KG	6 cycles	

## Performance Curve





## Dimensions



### Dimension Table

Ref	Description
A	Air Inlet, 1/2 inch NPT
B	Fluid Outlet, 1 inch NPT
C	2 inch NPT mounting adapter

# Graco 5-Year Pump 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 from the date of sale as defined in the table below, repair or replace equipment covered by this warranty and 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.

Graco 5-Year Pump Extended Warranty	
Components	Warranty Period
Structural Components	5 years
Wear Parts - including but not limited to o-rings, packings and seal	1 year

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 one (1) year past the warranty period, or two (2) years for all other parts.

**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

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.

# Graco Information

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

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

**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

**Phone:** 612-623-6928 **or Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590.

*All written and visual data contained in this document reflects the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English. MM3A5363

**Graco Headquarters:** Minneapolis

**International Offices:** Belgium, China, Japan, Korea

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