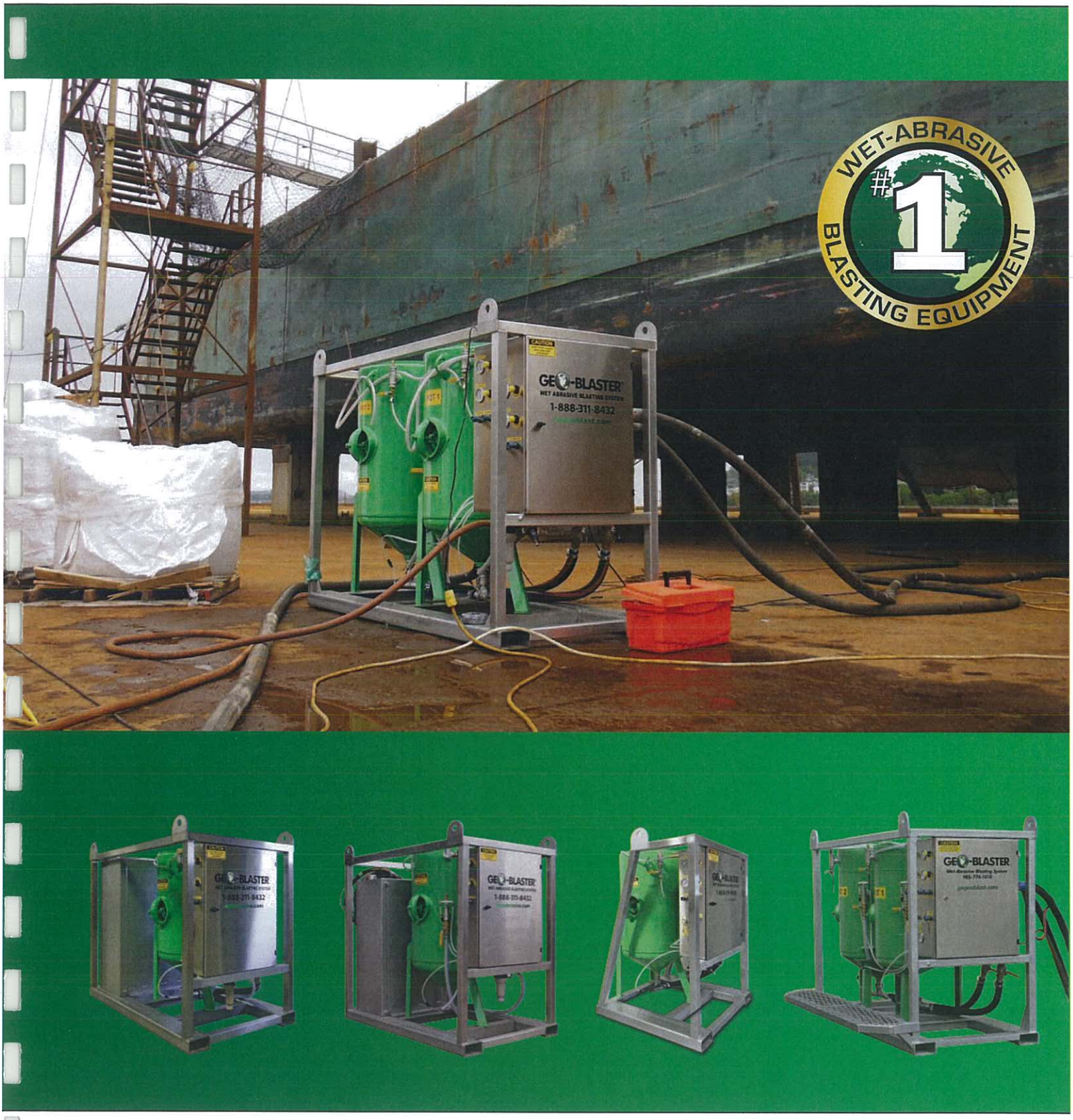
OPERATION MANUAL

GEO-BLASTER®

WET-ABRASIVE BLASTING EQUIPMENT



WetAbrasive.com **1-888-311-8432**

SECTION 1 - SET UP

1.0 - WEAR APPROPRIATE PERSONAL PROTECTION EQUIPMENT

1.1 - Shut Water Tank drains and then fill Tank. Be sure the tank does not run dry during blasting, as this will damage the water pump.

1.2 - Connect blast hose coupling to mating part on Control Box; apply whip check and safety pins to both the panel coupler and the hose Thread on 1/8 inch and 1/4 inch hoses to Control Box.

1.3 - PUSH E-Stop DOWN

1.4 - Turn Selector Handle to OFF Position

1.5 - Connect Air Supply Hose from Compressor(CFM-MIN 185/MAX 900)
Turn ON Air Compressor.
CHECK AIR INLET PRESSURE(PSI-MIN 110/MAX 150)

SECTION 2 - BLAST POT

2.0 - AUTOMATIC VENT VALVE

2.1 - Push Down Plunger and Lock.

2.2 - Fill pot with Abrasive
(GB400/4 to 5 Bags Crushed Glass - 7 to 8 Bags Garnet)
(GB600/8 to 9 Bags Crushed Glass - 11 to 12 Bags Garnet)

2.3 - Open fill line.

2.4 - Slowly Increase Pot Pressure Regulator until water pump engages, fill pot with water to top of plunger, with Fill Line.

2.5 - Turn Plunger to unlock(Up) Position.

2.6 - Turn selector handle to pressurize pot position.

SECTION 2 - BLAST POT

2.7 - When AUTOMATIC vent valve stops bleeding air, Increase pot pressure to at least 20 psi higher than desired blasting pressure.

2.8 - Turn Selector handle to blasting postition.

2.9 - Pull Up Emergency Stop Button.

2.10 - Open Abrasive Ball Valve.

2.11 - Adjust water dose and abrasive dose (for most applications use 1/2 turn on Abrasive Dose).

2.12 - Apply Deadman and adjust blasting pressure as needed.

NOW YOU ARE READY TO BLAST UNTIL POT NEEDS TO BE RE-FILLED

Re-Filling System

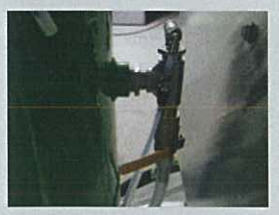
3.0 - PUSH DOWN E-STOP BUTTON.

3.1 - TURN SELECTOR HANDLE TO OFF POSITION.

3.2 - Open DUMP Valve until Pot Presure gauge reads 0 psi,
then push down and lock plunger down, in open position.

3.3 - Fill pot with Media/Abrasive (GB400/4 Bags - GB600/10 Bags)
Drain off excess water through dump valve to allow abrasive to
displace water.

3.4 - Close dump valve and refill pot to plunger level using fill hose.



3.5 - Turn Plunger to Unlock/Up position.

3.6 - Turn selector handle to pressurize pot position, allow automatic
vent valve to bleed out air, and allow pot pressure to build back up.

3.7 - Turn selector handle to blast position.

3.8 - Pull Up emergency stop switch.

THE SYSTEM IS NOW READY TO BLAST

SECTION 4 - Washdown

4.0 - Close Abrasive Valve.

4.1 - Turn Selector handle to washdown position.

4.2 - Return to Deadman Handle and activate the switch, pointing the nozzle away from object of wash down, to prevent residual abrasive in the hose from affecting the surface. Allow at least 30 seconds for hose to clear.

4.3 - To resume blasting turn selector handle back to blasting position, and open abrasive valve.

4.4 - To blowdown substrate with air only, turn selector handle to OFF position and close abrasive valve.

SECTION 5 - Shutdown

5.0 - Turn selector handle to OFF position.

5.1 - Open dump valve to depressurize pot.

5.2 - Close abrasive valve.

5.3 - Push down emergency stop button.

* **Close main airline from the compressor**
* **Allow 2 minutes for compressor to cycle and then turn off**
* **During cold weather, we recommend the pump be protected with Glycol to avoid freezing.**

Repair - Parts

Stainless Steel 3:1 Pump

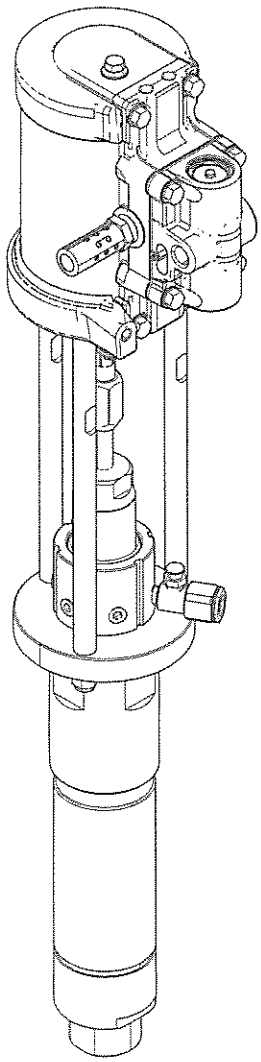
333397A
EN

For use in EcoQuip® vapor abrasive blast equipment.
Use only with water, or water with additives to inhibit corrosion or mold.
For professional use only.

Important Safety Instructions
Read all warnings and instructions in this manual.
Save these instructions.

Model 24V672

300 psi (2.06 MPa, 20.6 bar) Maximum Fluid Working Pressure
100 psi (0.68 MPa, 6.8 bar) Maximum Air Working Pressure



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PROVEN QUALITY. LEADING TECHNOLOGY.

Contents

Related Manuals

Manual	Description
334142	EcoQuip EQ100S Operation and Maintenance Manual - Vapor Abrasive Blast Equipment
334143	EcoQuip EQ300S-EQ600S Operation and Maintenance Manual - Vapor Abrasive Blast Equipment

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.

⚠ WARNING


EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.


PRESSURIZED EQUIPMENT HAZARD

Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- Follow the **Pressure Relief Procedure** when you stop spraying/dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.


MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

PERSONAL PROTECTIVE EQUIPMENT

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. This protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Component Identification

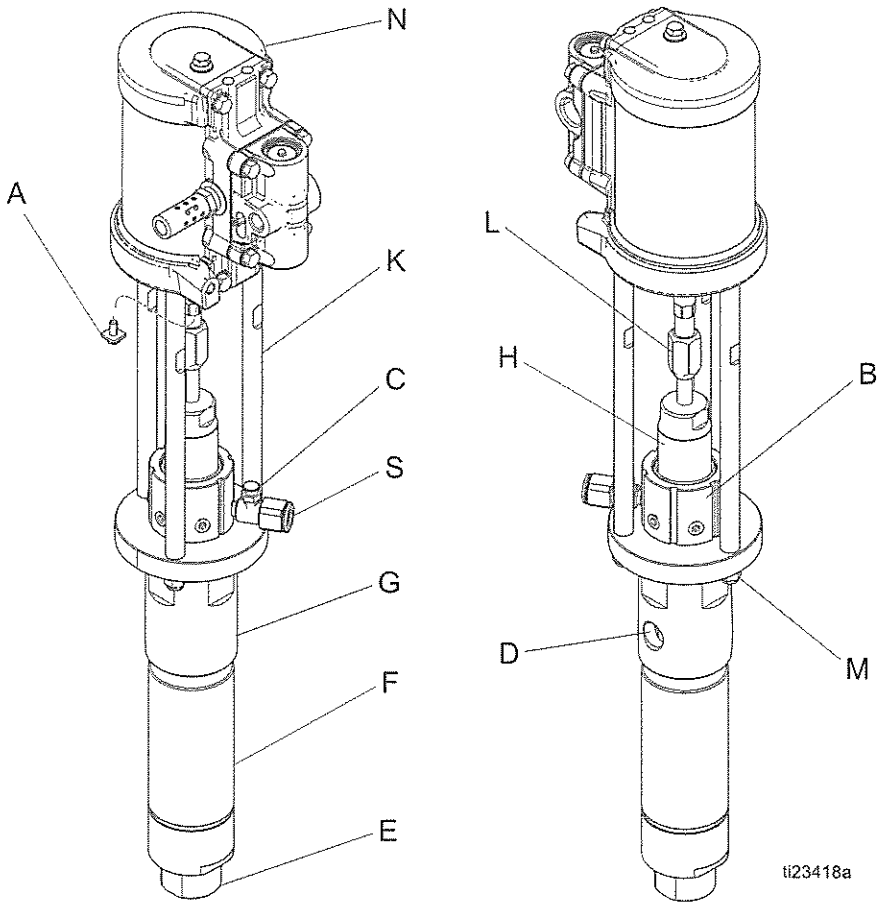


FIG. 1. Component Identification

Ref.	Description
A	Ground Screw
B	Enclosed Wet Cup
C	Wet Cup Fill Port
D	Fluid Outlet
E	Fluid Inlet
F	Lower Cylinder
G	Outlet Housing

Ref.	Description
H	Displacement Rod
K	Tie Rod
L	Coupling Nut
M	Tie Rod Nut
N	Air Motor
S	Sight Glass

General Information

This pump is designed for water use only.

This pump is intended to be mounted using a bracket to the frame of the system, which must be connected to earth ground.

NOTE: Reference numbers and letters in parentheses in the text refer to the call-outs in the figures and the parts drawing.

NOTE: Always use Genuine Graco Parts and Accessories, available from your Graco distributor. Accessories must be adequately sized and pressure-rated for your system.

NOTE: The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts.

Pressure Relief Procedure

Follow the Pressure Relief Procedure whenever you see this symbol.

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

Always de-pressurize the system prior to any repair.

1. Turn pot pressure regulator (PR) off.

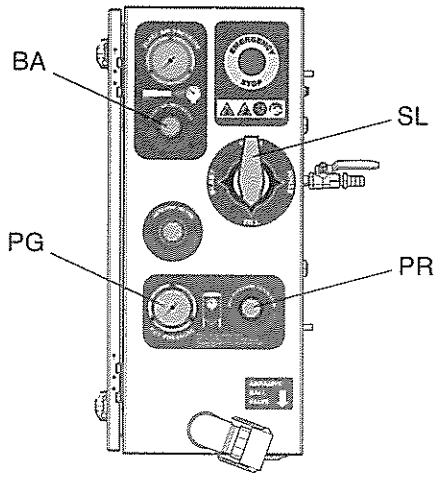
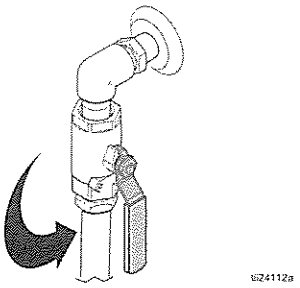


FIG. 2. System Control Panel

2. Turn the compressor OFF and disconnect the air inlet hose from the system.
3. Turn the 4-way selection (SL) to FILL position.
4. Open the dump valve on the blast tank.



5. Verify that the pot pressure gauge (PG) displays zero pressure. See FIG. 2.

Wet Cup

Before starting, fill wet cup fill port (C) 1/2 full with Graco Throat Seal Liquid (TSL) or compatible solvent. See FIG. 3.

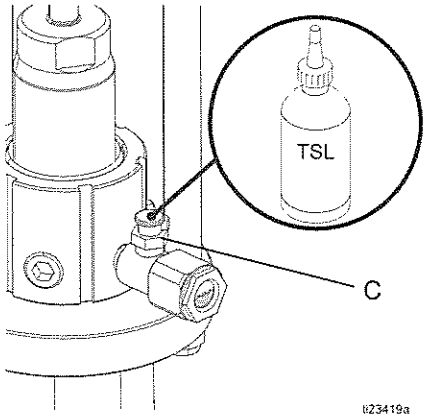


FIG. 3. Fill Wet Cup

Maintenance

Preventive Maintenance Schedule

The operating conditions of your particular system determine how often maintenance is required. Establish a preventive maintenance schedule by recording when and what kind of maintenance is needed, and then determine a regular schedule for checking your system.

Tighten Threaded Connections

Before each use, check all hoses for wear or damage. Replace as necessary. Check that all threaded connections are tight and leak-free.

Wet Cup Maintenance

Fill the Wet Cup half full with Graco TSL. Maintain level daily.

Troubleshooting

NOTE: Perform **Pressure Relief Procedure** (page 5) before checking or servicing the equipment.

NOTE: Check all possible problems and causes before disassembling the pump.

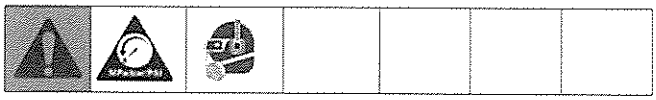
Pump

Problem	Cause	Solution
Pump output is low on both strokes.	Air supply lines are restricted.	Clear any obstructions from the air lines. Make sure all shutoff valves are open. Increase the pressure, but do not exceed the maximum working pressure.
	Fluid supply is empty.	Refill and reprime the pump.
	Fluid outlet line or valves are clogged.	Clear the fluid outlet line and valves, etc.
	Throat packings are worn.	Replace the throat packings.
	Air pressure is insufficient; or the air valves are closed or clogged.	Open and clean the air valves.
	Enclosed wet cup is too loose.	Tighten the enclosed wet cup.
Pump output is low on only one stroke.	Piston packings are worn.	Replace the piston packings.
No output.	Ball check valves are improperly installed.	Check and repair the ball check valves.
Pump operates erratically.	Fluid supply is empty.	Refill and reprime the pump.
	Ball check valves are held open or worn.	Check and repair the ball check valves.
	Piston packings are worn.	Replace the piston packings.
Pump will not operate.	Air supply lines are restricted.	Clear any obstructions from the air lines. Make sure all shutoff valves are open. Increase the pressure, but do not exceed the maximum working pressure.
	Fluid supply is empty.	Refill and reprime the pump.
	Fluid outlet line or valves are clogged.	Clear the fluid outlet line and valves, etc.
	Air pressure is insufficient; or the air valves are closed or clogged.	Open and clean the air valves.
	Air motor is damaged.	See **Air Motor Repair**, page 13.
	Dried fluid seizure of the displacement rod.	See FIG. 12, page 18. Clean the displacement rod (107). Check or replace the throat packings. Always stop the pump at the bottom of the stroke and keep the wet cup filled with TSL.

Air Motor

Problem	Cause	Solution
Air motor will not run.	Damaged air valve (214).	Replace or service the air valve (214). See FIG. 13, page 20.
	Damaged pilot valve (213).	Replace the pilot valves (213). See FIG. 13, page 20.
Air is continuously exhausting around the air motor piston rod.	Damaged u-cups (207).	Replace the piston rod u-cups (207). See FIG. 13, page 20.
Air is continuously exhausting from the muffler.	Damaged air valve plate (313) or cup (314).	Replace or service the air valve plate (214). See FIG. 14, page 22.
Air motor "bounces" at the top of the stroke.	Damaged bottom pilot valve (213).	Replace the bottom pilot valve (213). See FIG. 13, page 20.
Air motor "bounces" at the bottom of the stroke.	Damaged top pilot valve (213).	Replace the top pilot valve (213). See FIG. 13, page 20.
Icing inside the motor.	Air motor is operating at high pressure or at a high cycle rate.	Reduce the pressure, cycle rate, or duty cycle of motor. Reduce the dew point of the compressed air in the moisture coalescing filter.

Pump Repair



General Information

- Reference numbers and letters in parentheses in the text refer to the call-outs in the **Component Identification** (page 4) and the **Parts** section (pages 17-23).
- Always use Genuine Graco Parts and Accessories, available from your Graco distributor. Accessories must be adequately sized and pressure rated for your system.

Disconnect the Displacement Pump

1. Flush the pump if possible.
2. Slowly increase the pot pressure until the pump begins to move, then quickly lower pressure to stop the pump in the middle of the stroke.
3. Perform the **Pressure Relieve Procedure,** page 5.
4. Disconnect the air and fluid hoses. Remove the pump from its mounting.
5. See FIG. 11, page 17. Unscrew the tie rod nuts (4) from the tie rods (3). Unscrew coupler and remove coupler collars. Carefully pull the displacement pump (2) off of the air motor.
6. Note the relative position of the pump fluid outlet (D) to the air motor air inlet. See FIG. 1, page 4.
7. Refer to page 10 for displacement pump service. To service the air motor, refer to page 13.

Reconnect the Displacement Pump

1. See FIG. 13, page 20. Orient the pump fluid outlet (D) to the air motor air inlet (214) as explained in step 4 in **Disconnect the Displacement Pump** (page 9).
2. See FIG. 11, page 17. Position the displacement pump (2) on the tie rods (3).
3. Screw the tie rod nuts (4) onto the tie rods (3) loosely.
4. Install coupler nut and collars onto displacement rod. Hold the flats of the air motor position rod with a wrench. use another wrench to tighten the coupling. nut (9).
5. See FIG. 1, page 4. Apply thread sealant to the pump fluid outlet (D) and the threads of the fluid hose. Mount the pump and reconnect all hoses. Reconnect the ground wire if it was disconnected during repair. Torque the enclosed wet cup (B) to 60 ft-lb (81 N•m). Fill the wet cup fill port (C) with Graco TSL.
6. Tighten the tie rod nuts (4) evenly, and torque to 15-20 ft-lb (20-27 N•m).
7. Start the pump and run it at approximately 40 psi (2.8 bar) air pressure, to check that it is operating properly.
8. Check for fluid leakage at the enclosed wet cup (B). Perform **Pressure Relief Procedure**, page 5.

Disassemble the Displacement Pump

When disassembling the pump, lay out all removed parts in sequence, to ease reassembly. See page 12.

NOTE: Repair Kit 17B186 (Neoprene/UHMWPE packings) is available. For the best results, use all of the new parts in the kit. Parts included in the kit are marked with one asterisk, for example (1*).

Clean all of the parts thoroughly when disassembling. Check parts carefully for damage or wear. Replace parts as needed.

1. Remove the displacement pump from the air motor as explained on page 9.
2. See FIG. 12, page 18. Unscrew the locking ring (117) from the cylinder (111). Remove the intake valve housing (113).
3. Remove the o-ring (112), ball stop pin (105), ball guide (122) and ball (102) from the intake valve housing (113).
4. Loosen the enclosed wet cup (115). Push the displacement rod (107) down as far as possible, then pull it out from the bottom of the cylinder (111).
5. Secure the flats of the displacement rod (107) in a vise. Use a wrench on the flats of the piston mounting stud (28), and screw the piston off of the rod. Remove one cotter pin (101) and the ball stop pin (110). Take note which set of holes it is in, then remove the ball (102).
6. Place the flats of the piston mounting stud (128) in a vise, and unscrew the piston stud (114). Remove the piston packings (125), glands (124, 127), shim (129), and washer (123).
7. Remove the enclosed wet cup (115), throat packings (109, 119) and glands (106, 108) from the outlet housing (116). **NOTE:** Throat packings are spring loaded. Be careful when removing the throat packings or they could fall to the floor and become dirty.
8. Inspect all parts for damage. Clean all parts and threads with a compatible solvent before reassembling. Replace any worn or damaged parts.
9. Inspect the polished surfaces of the displacement rod (107) and cylinder (111) for scratches, scoring or other damage, which can cause premature packing wear and leaks. To check, run a finger over the surface or hold the part up to the light at an angle.
10. Be sure the piston stud (114) and intake valve housing (113) are not chipped or nicked.

Reassemble the Displacement Pump

1. See FIG. 12, page 18. Lubricate the throat packings and install them in the outlet housing (116) one at a time as follows, with the lips of the v-packings facing down: the male gland (106*), two neoprene v-packings (109*), one UHMWPE v-packing (119*), and the female gland (108*). Apply thread lubricant and install the enclosed wet cup (115) loosely. See Detail A, page 12.

2. If you removed the cylinder (111), be sure to replace the o-ring (104). Lubricate the o-ring and apply thread lubricant to the cylinder, then reinstall the cylinder in the outlet housing (116).

3. Lubricate the piston packings and install them onto the piston stud (114) one at a time in the following order, with the lips of the v-packings facing up: the female gland (127*), one UHMWPE v-packing (125*), one neoprene v-packing (119*), one UHMWPE v-packing (125*), the male gland (124*), the shim (129*), and the washer (123*). See Detail B, page 12.

4. Screw the piston stud (114) onto the piston mounting stud (128). Torque to 50–70 ft-lb (68–95 N•m). Install the piston ball (102*) on the piston seat. Slide the ball stop pin (110*) into the desired set of holes, and secure with the cotter pin (101*).

5. Place the flats of the displacement rod (107) in a vise. Screw the piston assembly onto the displacement rod. Torque to 50–70 ft-lb (68–95 N•m).

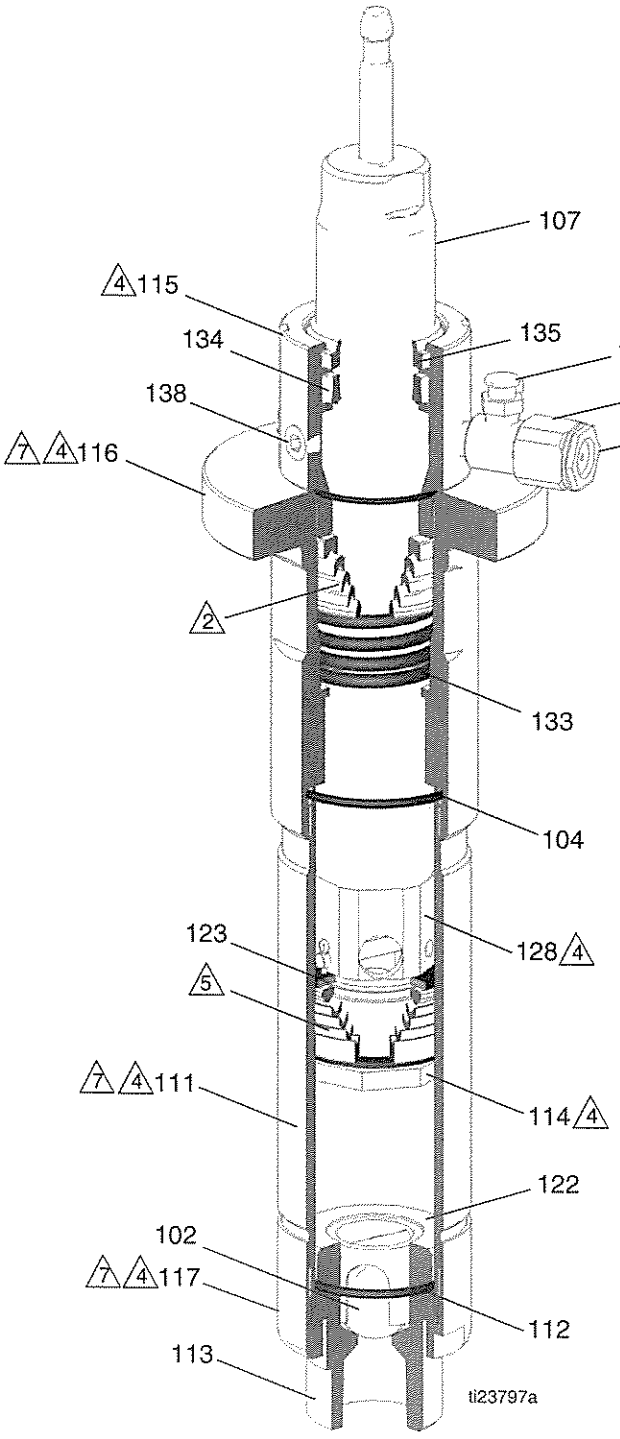
6. Insert the displacement rod (107) into the bottom of the cylinder (111), and be careful not to scratch the cylinder. Push the rod straight up until it protrudes from the enclosed wet cup (115).

7. Install the ball (102*), guide (122), o-ring (112), and ball stop pin (105*) in the intake valve housing (113). Place the intake valve assembly in the locking ring (117). Apply thread lubricant to the locking ring and cylinder (111), and screw the ring onto the cylinder.

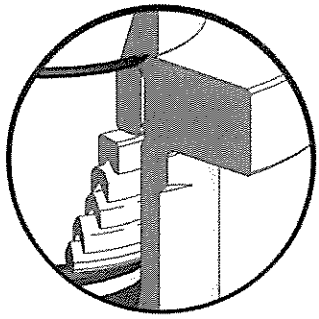
8. Reconnect the displacement pump to the air motor (see page 10).

Pump Diagram

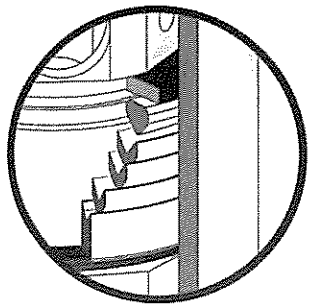
1 Lubricate
2 See Detail A
3 Lips of v-packings must be face down
4 Torque to 60 ft-lb (4.1 N•m)
5 See Detail B
6 Lips of v-packings must be face up
7 Apply lubricant



Detail A: Throat Packings 1 3



Detail B: Piston Packings 1 6



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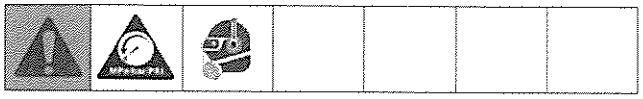
Air Motor Repair

Disconnect the Air Motor



1. Perform the **Pressure Relieve Procedure,** page 5.
2. Disconnect the air and fluid hoses.
3. See FIG. 4. Use a socket to remove the top two mounting screws (MS).

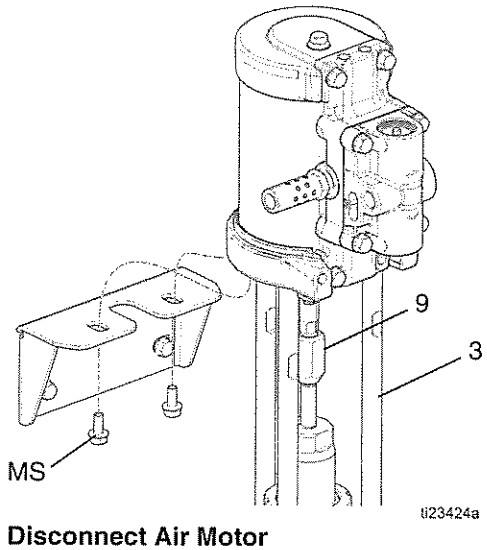


FIG. 4: Disconnect Air Motor

4. Lift up on the air motor to remove it. The tie rods (3) and the lower will remain attached.
5. Hold the flats of the air motor piston rod with a wrench. Use another wrench to loosen the coupling nut (9).
6. Use a socket to remove the tie rod nuts (4). See FIG. 11. page 17.
7. Use a wrench on the flats of the tie rods (3) to remove them from the bottom cover of the air motor.

Reconnect the Air Motor

1. Screw the tie rods (3) into the bottom cover of the air motor. Torque to 5-10 ft-lb (7-13.5 N•m).
2. Slide the pump onto the tie rods (3).
3. Attach the tie rod nuts (4) and torque to 15-20 ft-lb (20-27 N•m).
4. Hold the flats of the air motor piston rod with a wrench. Use another wrench to tighten the coupling nut (9).
5. Tighten the mounting screws.
6. Connect the air and fluid hoses.

Repair Air Valve

Replace Complete Air Valve

1. Stop the pump at the middle of its stroke. Perform the **Pressure Relieve Procedure,** page 5.
2. Disconnect the air line to the motor.
3. **For motors with DataTrak:** See FIG. 5. Remove screw (S) to disconnect the reed switch (RS) from the air valve (AV).

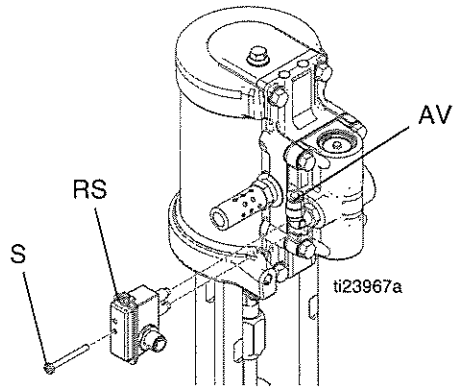


FIG. 5: Reed Switch Assembly and Air Line Removal

4. See FIG. 13, page 20. Remove screws (211). Remove the air valve (214) and gasket (209).
5. To repair the air valve, see **Disassemble the Air Valve,** step 1 (page 14). To install a replacement air valve, continue with step 6.
6. Align the new air valve gasket (209) on the manifold, then attach the air valve (214).
7. **For motors with DataTrak:** Use a screw to attach the reed switch assembly to the new air valve. Be sure the sensor cables are connected properly (see pump or package manual).
8. Reconnect the air line to the motor.

Replace Seals or Rebuild Air Valve

Air Valve Seal Kits are available. See page 25 to order the correct kit for your pump. Parts are marked †.

Air Valve Repair Kits are available. See page 25 to order the correct kit for your pump. Parts are marked ◆.

Air Valve End Cap Kits are available. See page 25 to order the correct kit for your pump. Parts are marked ✠.

Disassemble the Air Valve

1. Perform steps 1-5 under **Replace Complete Air Valve,** page 13.
2. See FIG. 6. Use a 2 mm or 5/64 hex key to remove two screws (302†◆). Remove the valve plate (313◆).
3. Remove the cup (314◆) and spring (304◆).

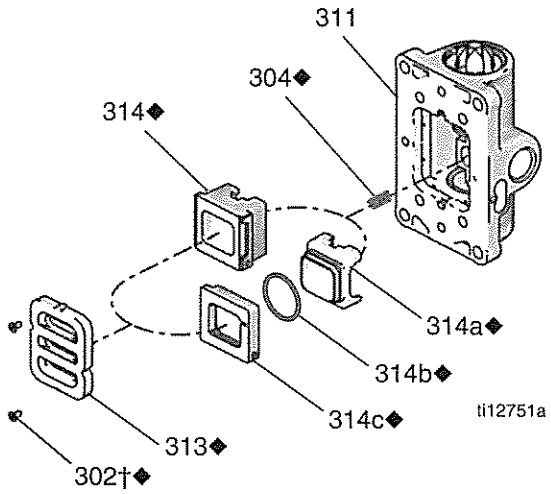


FIG. 6: Air Plate Removal

4. See FIG. 14, page 22. Remove the snap ring (303◆✠) from each end. Use the piston to push the end caps (308✠) out of the ends. Remove the end cap o-rings (301✠◆).
5. Remove the piston (306◆). Remove the u-cup seals (309†◆) from each end and the detent assembly (310◆) and the detent cam (307◆) from the center.

Reassemble the Air Valve

1. Lubricate the detent cam (307◆) and install into the housing.
2. See FIG. 7. Lubricate the u-cups (309†◆) and install on the piston (306◆) with the lips facing toward the center of the piston.

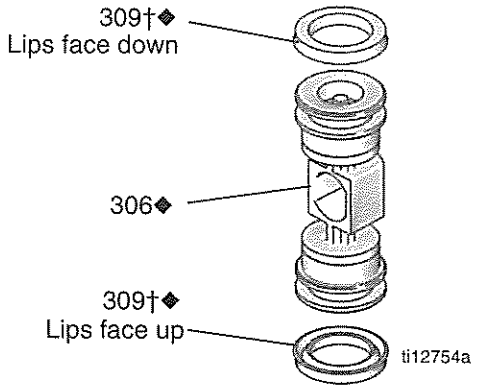


FIG. 7: Air Valve U-cup Installation

3. Lubricate both ends of the piston (306◆) and install it in the housing.
4. Lubricate and install the detent assembly (310◆) into the piston.
5. **Standard models (No DataTrak or DataTrak with cycle count only):** Lubricate new o-rings (301†✠◆) and install on the end caps (308✠). Install the end caps into the housing.
6. Install a snap ring (303◆✠) on each end to hold the end caps in place.
7. Install the spring (304◆).
8. See FIG. 8. Lubricate and install the air valve cup (314◆). Align the small round magnet with the air inlet.

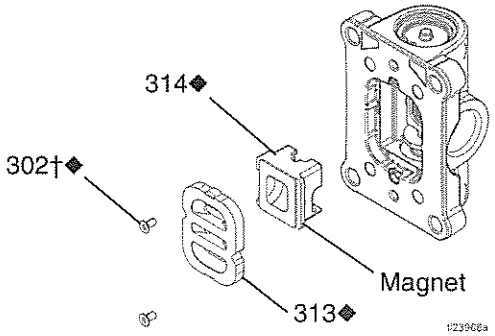
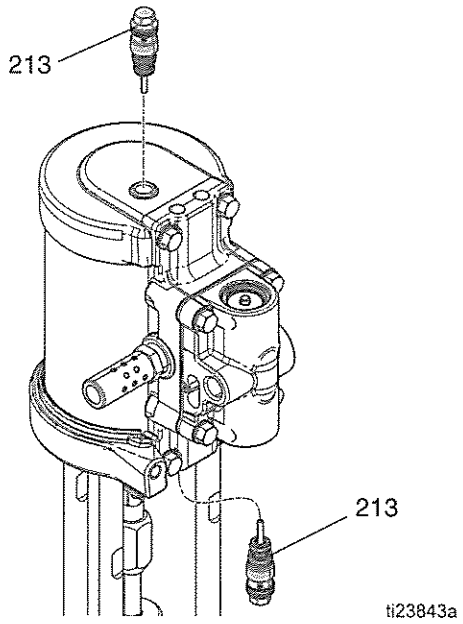


FIG. 8: Cup Installation

9. Install the valve plate (313◆). Tighten the screws (302†◆) to hold it in place.

Replace Pilot Valves

1. Stop the pump at the middle of its stroke. Perform the **Pressure Relieve Procedure,** page 5.
2. Disconnect the air line to the motor.
3. Use a 10 mm socket wrench to remove the old pilot valves (213) from the top and bottom covers.

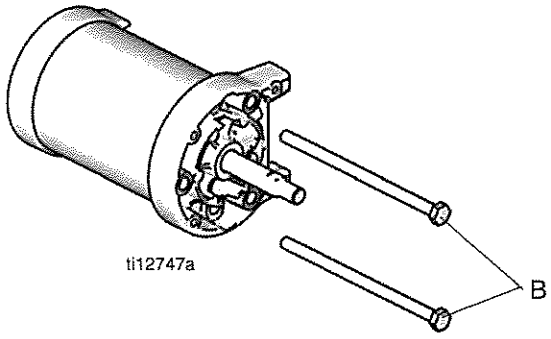


4. Lubricate and install the new pilot valves (213). Torque to 95-105 in-lb (11-12 N•m).

Repair Air Motor

Disassemble the Air Motor

1. **For motors with DataTrak:** Remove the screw to disconnect the reed switch from the air valve. See FIG. 5, page 13.
2. See FIG. 13, page 20. Use a 10 mm socket wrench to remove four screws (211). Remove the air valve (214) and gasket (209).
3. Remove the muffler.
4. Remove four screws (211) and remove the manifold (220) and two gaskets (208).
5. Use a 10 mm socket wrench to remove the pilot valves (213) from the top and bottom cover.
6. Remove the 13 mm tie bolts (B).



7. Remove the top cover. Remove the o-ring (202).
8. Remove the shield (206) from around the cylinder (205). Remove the cylinder.
9. Slide the piston assembly (219) straight up off the bottom cover.
10. Remove o-ring (204) from around the piston.
11. Remove u-cup seals (207) and o-ring (217) from the bottom cover.

Reassemble the Air Motor

NOTE: For easier reassembly, start with the top cover (210) turned over on the workbench and assemble the air motor upside-down.

1. See FIG. 13, page 20. Lubricate and install the o-rig (202) on the top cover (210).
2. Lubricate the inside of the cylinder (205). Lower the cylinder onto the top cover (210).
3. Lubricate and install the o-ring (204) around the piston (219).
4. Slide the piston assembly (219) down into the cylinder (205). Be sure the o-ring (202) stays in place.
5. Install the shield (206) around the cylinder (205) and in the groove on the top cover (210).
6. See FIG. 9. Lubricate and install the new u-cup seal with flange (207) in the bottom of the bearing in the bottom cover (201). The u-cup must face up and the flange must face down. Lubricate and install the new u-cup seal (207) in the top of the bearing. The lips must face up.

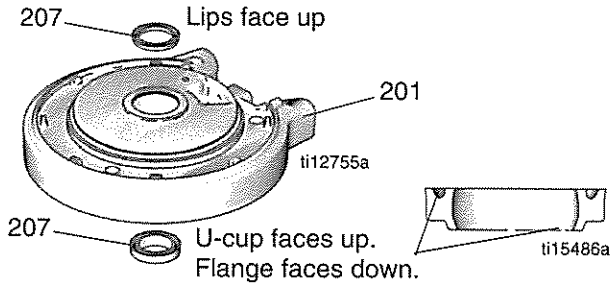


FIG. 9: Air Motor U-cup Installation

7. Lubricate and install the o-ring (202) on the bottom cover (201).
8. See FIG. 10. Carefully place the bottom cover (201) on the cylinder (205). Slide the rod through the bearing. The manifold surfaces of the top and bottom covers must align. Be sure the shield (206) is in the groove on both the top and bottom covers.

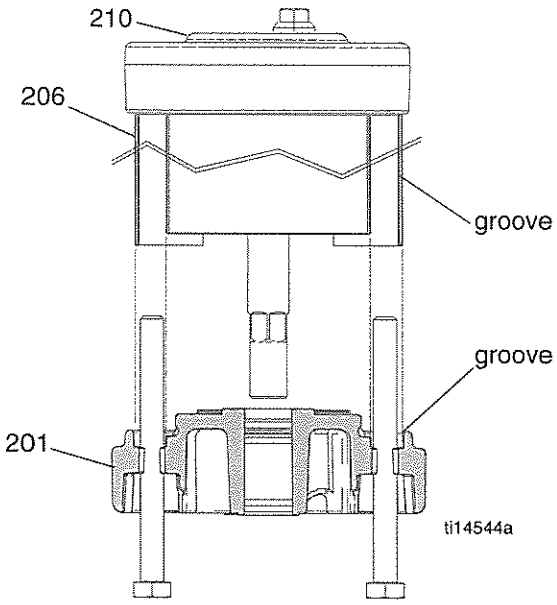


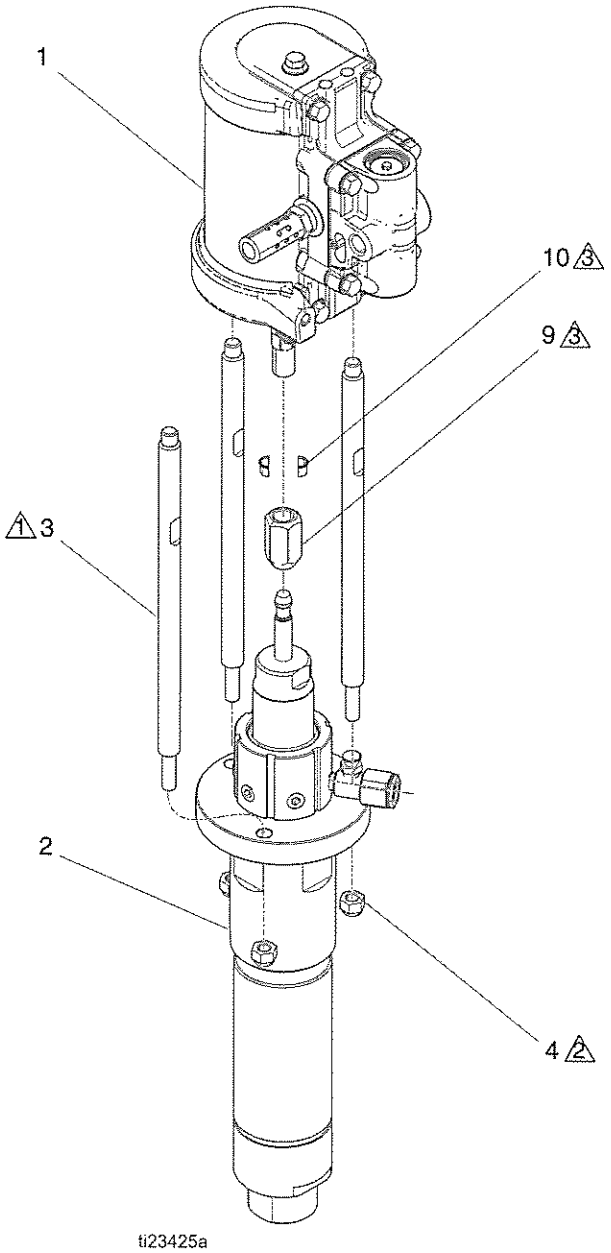
FIG. 10: Align Shield in Grooves on Covers

9. Install the tie bolts (211) and tighten by hand.
10. Install two gaskets (208) on the manifold (220). Install the manifold (214). Torque bolts to 95-105 in-lb (10.7-11.9 N•m).

    NOTE: The manifold is reversible for ease of placement of the muffler or the remote exhaust.
11. Align the air valve gasket (208*◆) on the manifold, then attach the air valve.
12. Tighten the tie bolts (211) halfway. Work in a criss-cross pattern. Check that the shield remains in the grooves on both covers. Tighten the bolts in pattern to 11-13 ft-lb (15-18 N•m).
13. Lubricate and install pilot valves (213) in the top and bottom cover. Torque to 95-105 in-lb (11-12 N•m).
14. Reinstall the muffler.

Parts

Pump Parts



1 Torque to 5-10 ft-lb (7-13.5 N•m)

2 Torque to 15-20 ft-lb (20-27 N•m)

3 Torque to 23-26 ft-lb (31-35 N•m)

FIG. 11: Pump Parts

Pump Parts List

Ref.	Part	Description	Qty.
1	M02LN0	MOTOR, air, 2.5 in.	1
2	24V671	LOWER, displacement, sst	1
3	17B185	ROD, tie (Pack of 3)	3
4	104541	NUT, locl	3
8#	102228	COVER, oil hole	1
9	15M758	NUT, coupler, lower	1
10	184132	COLLAR, coupling	2

*See **Air Motor Kits and Accessories**, page 25.*

Lower Parts

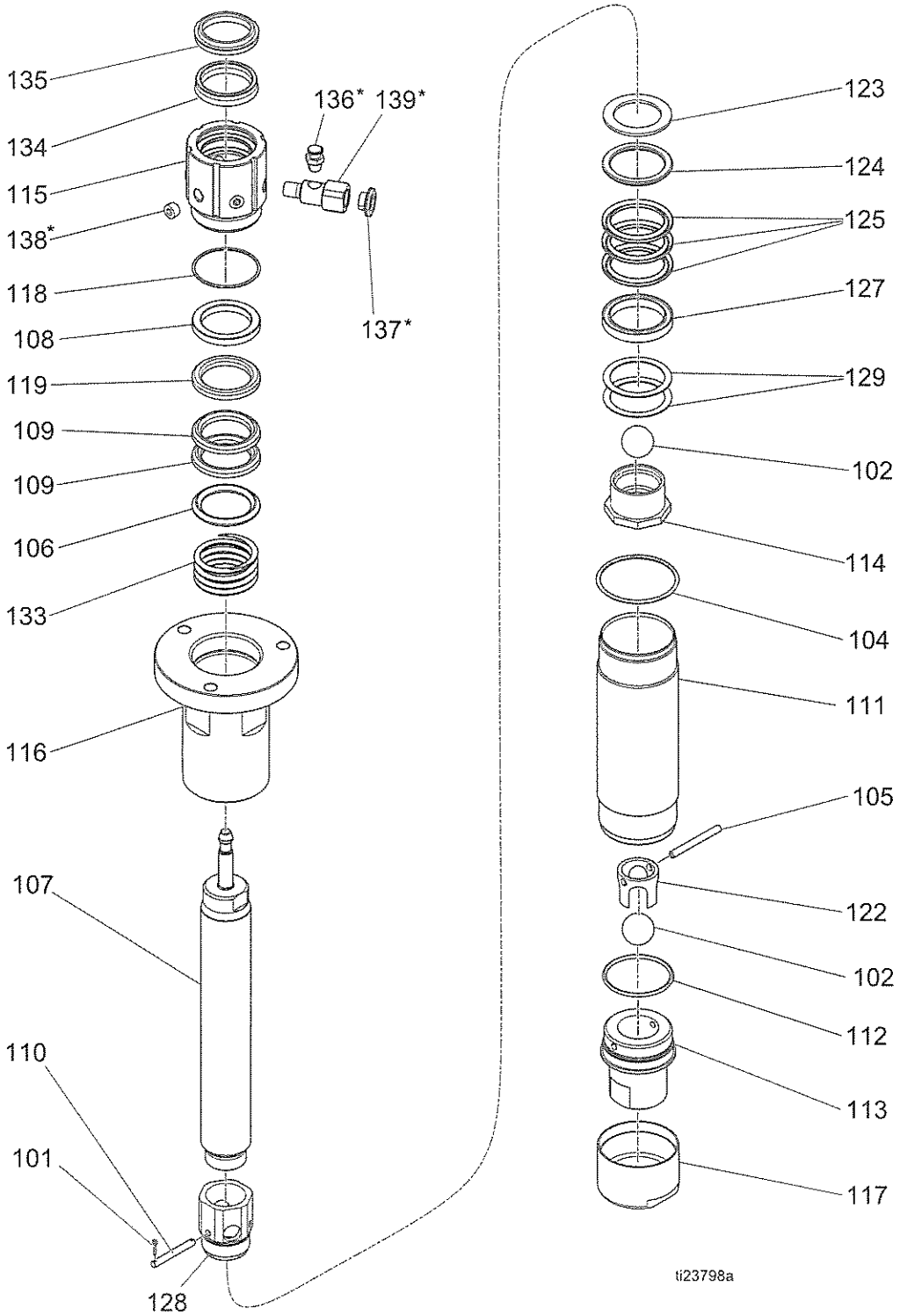


FIG. 12: Lower Parts

Lower Parts List

Ref.	Part	Description	Qty.
101‡	100063	PIN, cotter	2
102‡	101917	BALL, bearing, .875 dia. 304 ss	2
104‡	164782	PACKING, o-ring, 2 1/16 x 2 1/4	1
105‡	162947	PIN, str hdls	1
106‡	186987	GLAND, packing, 316 sst	1
107	17B183	ROD, displacement	1
108‡	186988	GLAND, packing, 304 sst	1
109‡	166133	PACKING, vee	2
110‡	176637	PIN, stop, ball	1
111	186994	CYLINDER, pump	1
112‡	164846	PACKING, o-ring, 1.75 id x 1.93 od	1
113	186992	HOUSING, valve, intake	1
114	186993	STUD, piston, 10:1 pr & 5:1 mo	1
115✓		NUT, packing, sealed	1
116	17B184	HOUSING, outlet	1
117	164630	RING, locking	1
118✓	111178	PACKING, o-ring	1
119‡	170625	PACKING, vee	1
122	164679	GUIDE, ball	1
123‡	176634	WASHER, stud, piston	1
124‡	186990	GLAND, packing, 316 sst	1
125‡	176638	PACKING, vee	3
127‡	186989	GLAND, packing, 316 sst	1
128	176644	STUD, mtg, piston	1
129‡	111790	SHIM	2
133‡		SPRING	1
134✓		SEAL, u-cup	1
135✓	117739	WIPER, rod	1
136#	102228	COVER, oil hole	1
137#		SIGHTGLASS, plastic	1
138#		PLUG, pipe, sst, 1/8 npt	5
139#		FITTING, adapter, fill port	1

*See **Air Motor Kits and Accessories**, page 25.*

Air Motor Parts

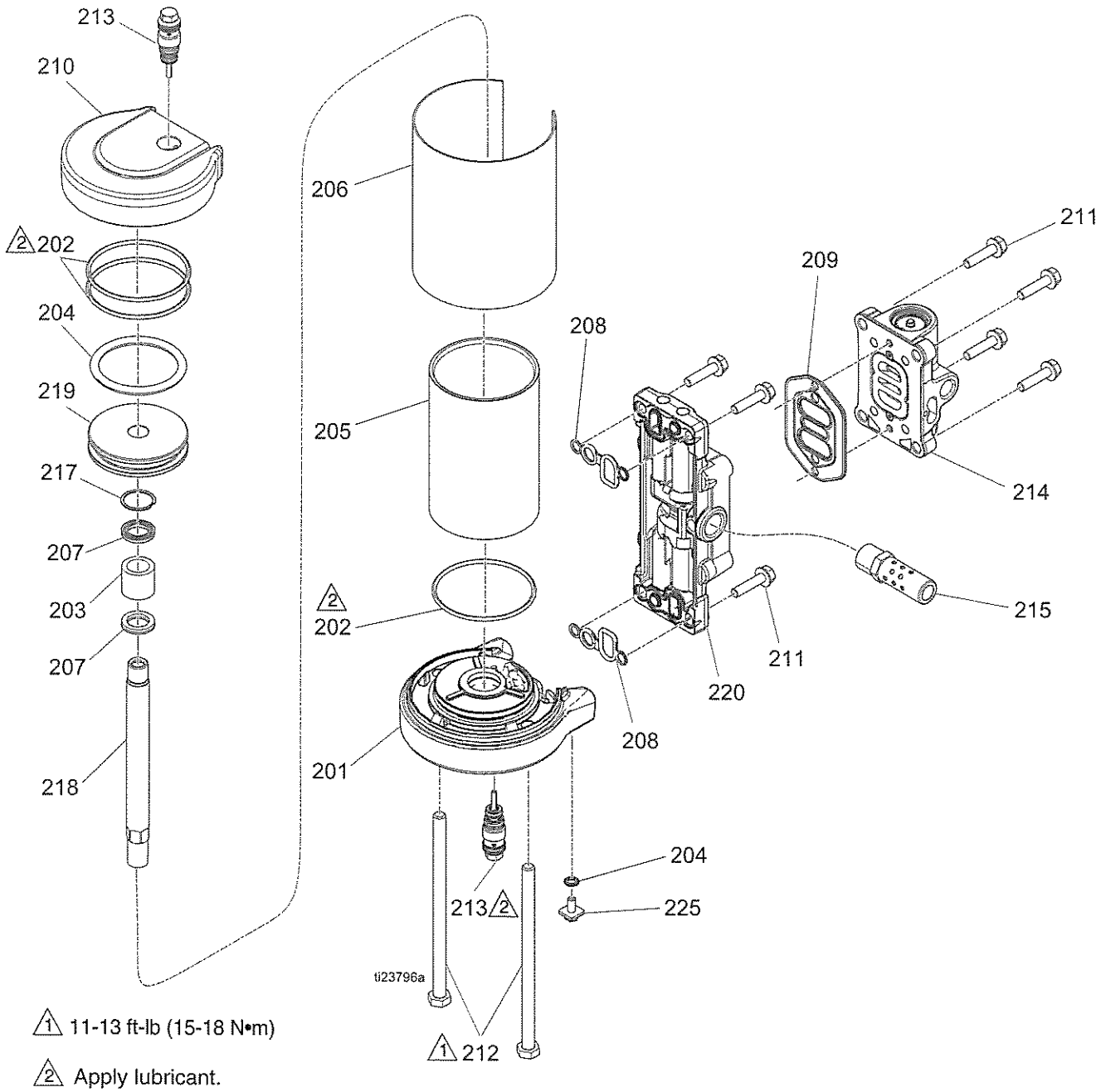


FIG. 13: Air Motor Parts

Air Motor Parts List

Ref.	Part	Description	Qty.
201❖★❄		COVER, lower, 2.5	1
202*	108993	PACKING, o-ring	2
203★		BEARING, 9/16	1
204*	117370	PACKING, o-ring	1
205	15M289	CYLINDER, motor, 2.5	1
206	15M302	COVER, bolt, 2.5 motor	1
207*		SEAL, u-cup, .562	2
208*		GASKET, cover, small	2
209*		SEAL, air valve, manifold	1
210	15M291	COVER, motor, 2.5	1
211✖		SCREW, M6 x 25, thread forming	8
212	15M314	SCREW, cap	2
213	24A366	VALVE, pilot	2
214✖		VALVE, air, small	1
215	15M213	MUFFLER, 3/8	1
217*		RING, retaining	1
218◆		ROD, piston, 2.5	1
219✿		PISTON, motor, 2.5	1
220	24A579	KIT, manifold, medium, short	1
225	116343	SCREW, ground	1
229▲	15W719	LABEL, safety, warning	1

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

*See **Air Motor Kits and Accessories**, page 25.*

Air Valve Parts

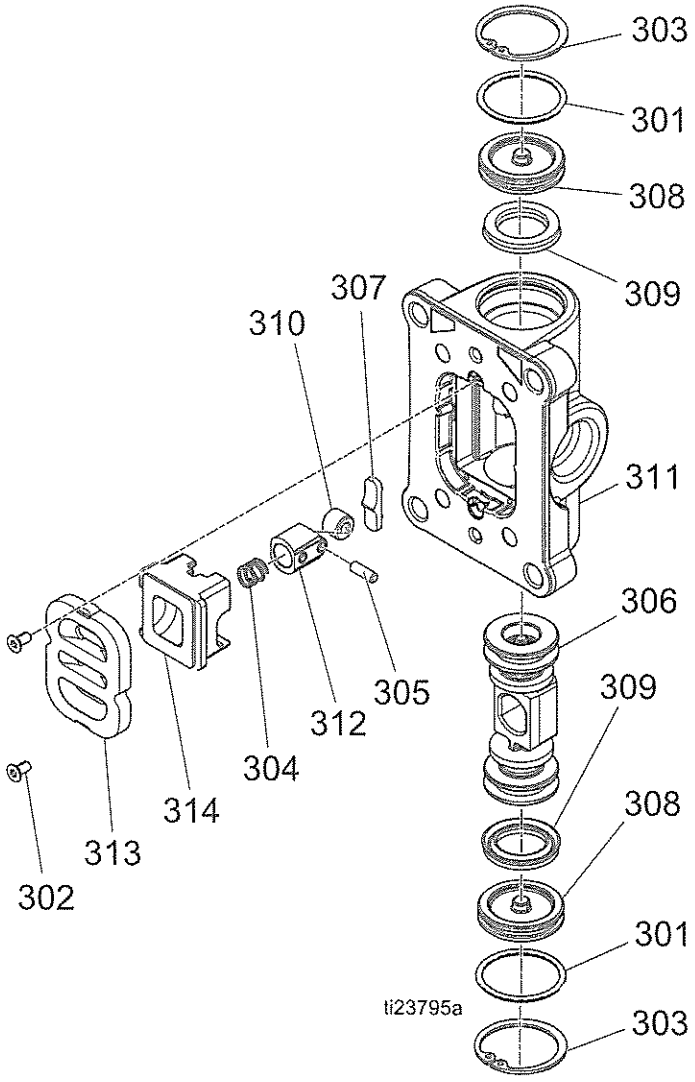


FIG. 14: Air Valve Parts

Air Valve Parts List

Ref.	Part	Description	Qty.
301†◆		O-RING, 018 buna	2
302†✖		SCREW, M3, thread forming	2
303✲		RING, snap, 1.0	2
304◆		SPRING, detent, small	1
305◆		PIN, detent, small	1
306◆		PISTON, air valve, small	1
307◆		CAM, detent	1
308✲		PLUG, air valve, small	2
309◆		SEAL, u-cup, bevel lip	2
310◆		ROLLER, detent, small	1
311✖		HOUSING, air valve, small, npt	1
312✖		PISTON, detent, small, machined	1
313◆		PLATE, air valve, machines	1
314◆		CUP, air valve, machined.	1

*See **Air Motor Kits and Accessories**, page 25.*

Air Valve Parts List

Air valve parts are not sold individually. The table below shows possible kit options for each part. See page 25 to order the correct kit(s), or full replacement air valves, for your motor.

Ref.	Part	Description	Qty.	Air Valve Repair Kit	Air Valve Seal Kit	Air Valve End Cap Kit	Other
311	16G067	HOUSING	1				
306◆	15K903	AIR VALVE PISTON	1	✔			
312◆	16G068	DETENT PISTON ASSEMBLY	1	✔			
307◆	278330	DETENT CAM	1	✔			
313◆	16G069	PLATE, air valve	1	✔			
301†✠◆	124796	O-RING	2	✔	✔	✔	
308✠	15K905	CAP, standard	2			✔	
309†◆	278333	U-CUP	2	✔	✔		
302†◆	15R551	SCREW	2	✔	✔		Screws Kit 24A359 (pack of 10)
303◆✠	124798	SNAP RING	2	✔		✔	
304◆	15K910	DETENT SPRING	1	✔			
314◆	16G070	CUP	1	✔			
211	15R553	SCREW, M6 x 25	4				See Manifold Assembly (**Air Motor Parts**, page 20)
208*†◆	15R001	AIR VALVE GASKET	1	✔	✔		See Air Motor Seal Kit (**Air Motor Parts**, 20) or Manifold Assembly (**Air Motor Parts**, 20)

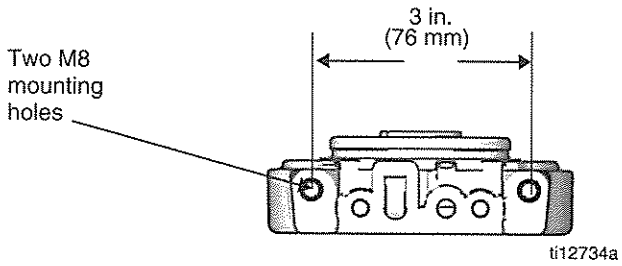
† Included in Air Valve Seal Kit. See page 25.

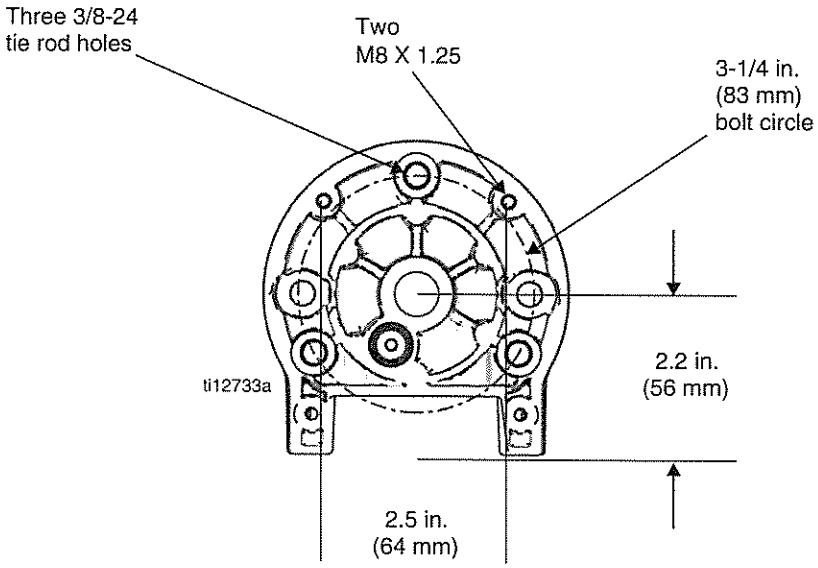
✠ Included in Air Valve End Cap Kit. See page 25.

◆ Included in Air Valve Repair Kit. See page 25.

Mounting Hole Diagram

M02xxx (2.5 in.)



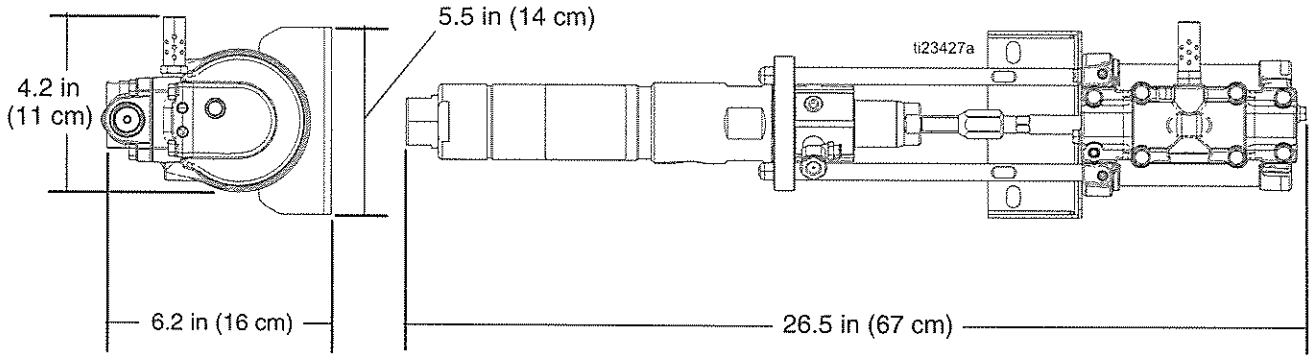


Air Motor Kits and Accessories

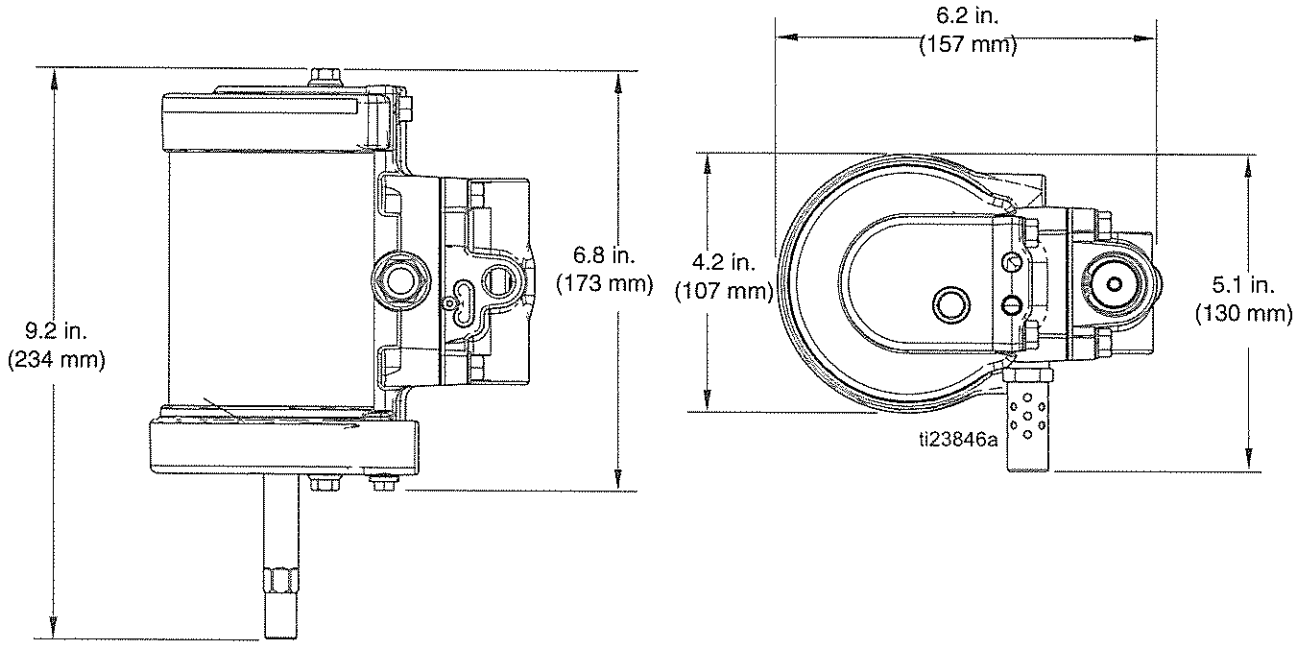
Kit Description	Kit Number
✖ Complete Air Valve Replacement Kit – Standard	24A351
* Air Motor Seal Kit	24A539
◆ Air Valve Repair Kit	24A537
† Air Valve Seal Kit	24A535
✠ Air Valve End Cap Kit – Standard	24A360
‡ Lower Repair Kit	17B186
Screws Kit — Includes ten screws (109)	24A359
★ Lower Cover Kit	24G695
✿ Motor Piston Assembly Kit	24A542
❖ Motor Cover Kit	24A541
❄ Merkur Lower Cover Kit	24R704
✓ Sealed Wet Cup Kit	17B181
# Fill Port Repair Kit	17B182

Dimensions

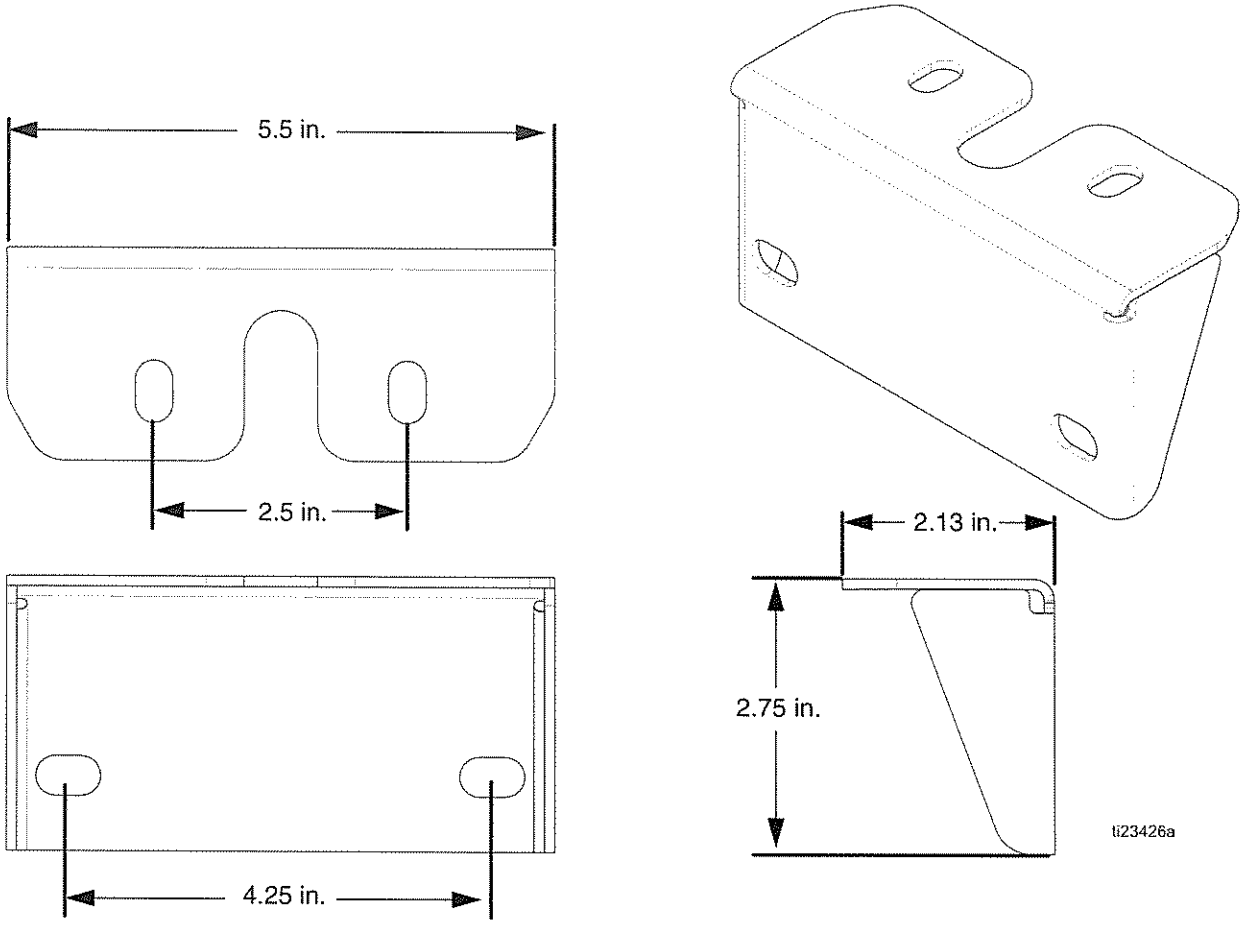
Pump



Air Motor



Bracket Mount



Technical Data

Stainless Steel 3:1 Pump - 24V672		
	US	**Metric**
Maximum fluid working pressure	300 psi	2.06 MPa, 20.6 bar
Maximum air inlet pressure	100 psi	0.68 MPa, 6.89 bar
Minimum air inlet pressure	15 psi	.0103 MPa, 1.03 bar
Maximum ambient air temperature	120° F	49° C
Maximum fluid temperature	120° F	49° C
Wetted parts	Stainless steel, carbide, UHMWPE, Nitrile, Neoprene, Polyurethane, PTFE	
Air Motor		
Stroke length	2.5 in.	63.5 mm
Air inlet size	1/4 in.	
Maximum motor speed (Do not exceed maximum recommended speed of fluid pump, to prevent premature pump wear.)	60 cycles per minute	
Noise (dBa)		
Sound power	82.8 dBa	
Sound pressure	72.9 dBa	
Notes		
** Sound power at 70 psi (0.48 MPa, 4.8 bar), 20 cpm. Sound power measured per ISO-9614-2.*		
*** Sound pressure was tested 3.28 feet (1 m) from equipment.*		

Notes

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.

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.

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Original instructions. This manual contains English. MM 333397

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