

NXT[®] Air Motor

3A3442B

2.5" NXT Air Motor with 0.75" Stroke

EN

For use with Graco fluid handling pumps. For professional use only.

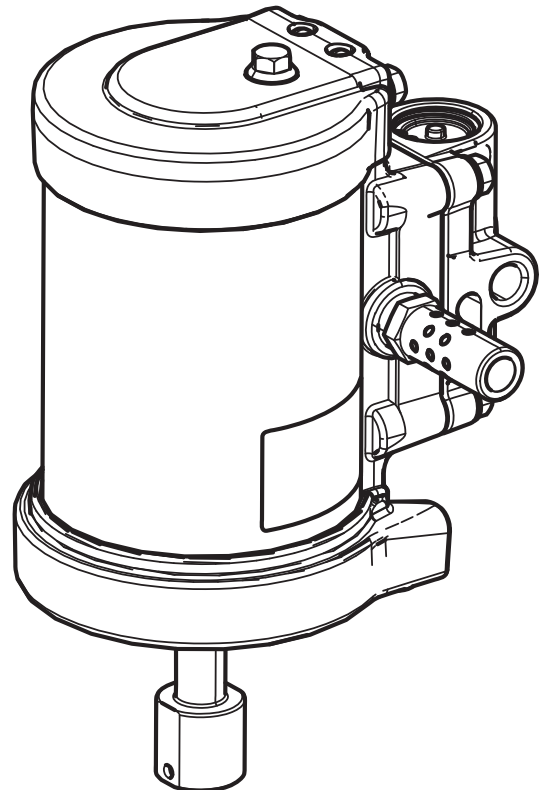
Part No. 25A641

100 psi (0.7 MPa, 7.0 bar) Maximum Air Inlet Pressure



Important Safety Instructions

Read all warnings and instructions in this manual and in all related manuals. Save all instructions.



Contents




- Related Manuals** **2**
- Warnings** **3**
- Repair** **6**
 - Pressure Relief Procedure 6
 - General Information 6
 - Repair Air Valve 6
 - Replace Pilot Valves 8
 - Repair Air Motor 10
- Troubleshooting** **12**
- Parts** **13**
 - Air Motor Parts 13
 - Air Motor Parts 15
 - Air Valve Parts 16
- Technical Data** **18**
- Graco Standard Warranty** **19**

Related Manuals

Manuals	
Part	Description
308302	Dyna-Mite™ 190 Pump Instructions

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	
	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from spray gun, 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. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point the dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.
	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • 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.

WARNING



FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).
- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Use only grounded hoses.
- Hold dispensing device/gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read Safety Data Sheet (SDS) to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.



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 Safety Data Sheet (SDS) from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- 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.



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. 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.

Repair

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



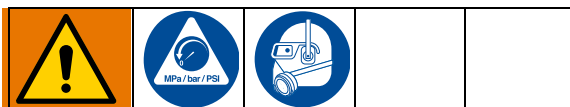
This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid, and moving parts, follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing the equipment.

The NXT air motor is used with the Graco DynaMite 190 Pump. Follow the **Pressure Relief Procedure** described in the DynaMite 190 Pump Instructions, manual 308302.

General Information

- Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawing.
- Always use Genuine Graco Parts and Accessories, available from your Graco distributor. If you supply your own accessories, be sure they are adequately sized and pressure rated for your system.

Repair Air Valve



Replace Complete Air Valve

1. Shut off air to the motor and relieve pressure.
2. Disconnect the air line to the motor.
3. See FIG. 5 on page 8. Remove four screws (211). Remove the air valve (214) and gasket (209).

4. To repair the air valve, go to **Disassemble the Air Valve**, page 5. To install a replacement air valve, continue with step 5.
5. Align the new air valve gasket (209) on the manifold, then attach the air valve (214). Torque screws (211) to 95-105 in-lb (11-12 N•m).
6. Reconnect the air line to the motor.

Replace Seals or Rebuild Air Valve

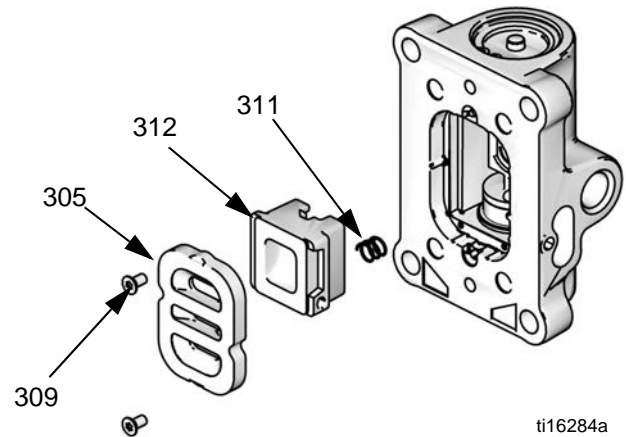
NOTE: Air Valve Seal Kits are available. See page 16.

Air Valve Repair Kits are available. See page 16.

Air Valve End Cap Kits are available. See page 16.

Disassemble the Air Valve

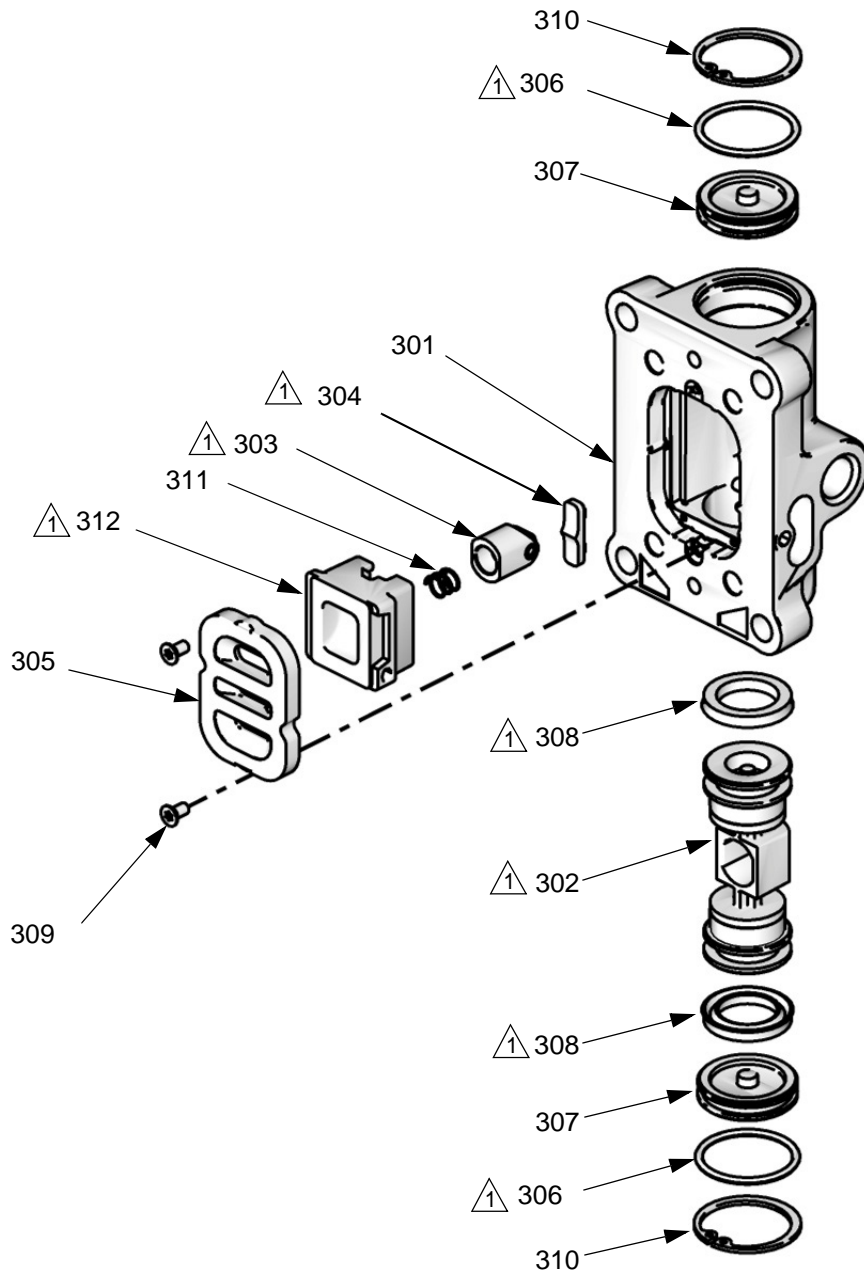
1. Perform steps 1-3 under **Replace Complete Air Valve**, page 5.
2. See FIG. 1. Use a 2 mm or 5/64 hex key to remove two screws (309). Remove the valve plate (305), cup (312), and spring (311).



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FIG. 1. Air Plate Removal

3. See FIG. 2. Remove the snap ring (310) from each end. Use the piston to push the end caps (307) out of the ends. Remove end cap o-rings (306).
4. Remove the piston (302). Remove the u-cup seals (308) from each end and the detent assembly (303) and detent cam (304) from the center.



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 Apply lubricant.

FIG. 2. Air Valve Assembly

Reassemble the Air Valve

1. See FIG. 2. Lubricate detent cam (304) and install into housing.
2. See FIG. 3. Lubricate the u-cups (308) and install on the piston (302) with lips facing toward the center of the piston.

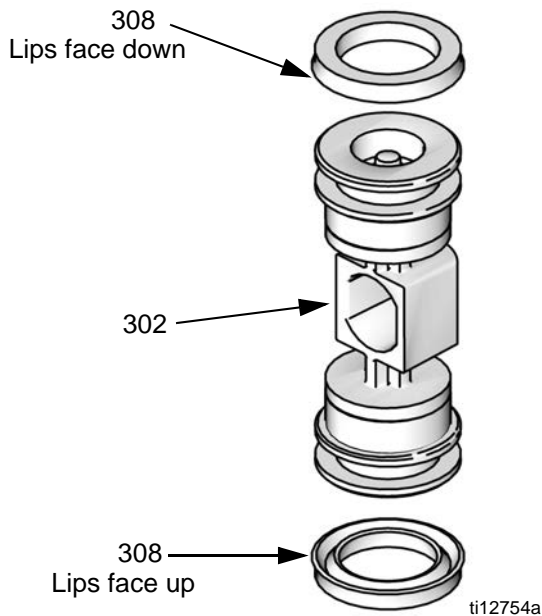


FIG. 3. Air Valve U-cup Installation

3. See FIG. 2. Lubricate both ends of the piston (302) and install it in the housing.
4. Lubricate and install the detent assembly (303) into the piston.
5. Lubricate new o-rings (306) and install on the end caps (307). Install the end caps into the housing.
6. Install a snap ring (310) on each end to hold end caps in place.

7. Install the spring (311). Lubricate and install the air valve cup (312), see FIG. 4. Align the small round magnet with the air inlet.
8. Install the valve plate (305). Tighten the screws (309) to hold it in place.

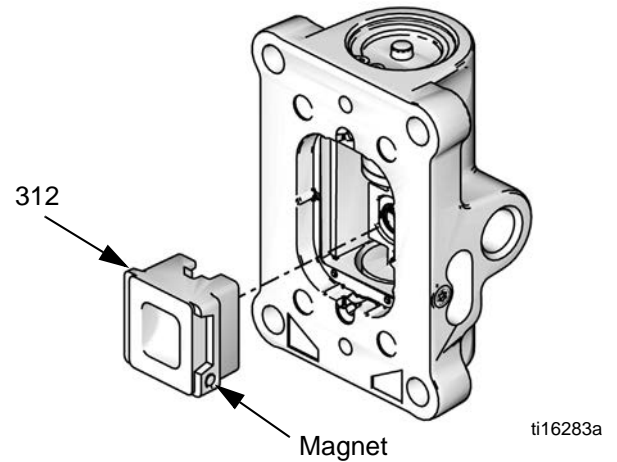



FIG. 4. Air Valve Cup Installation

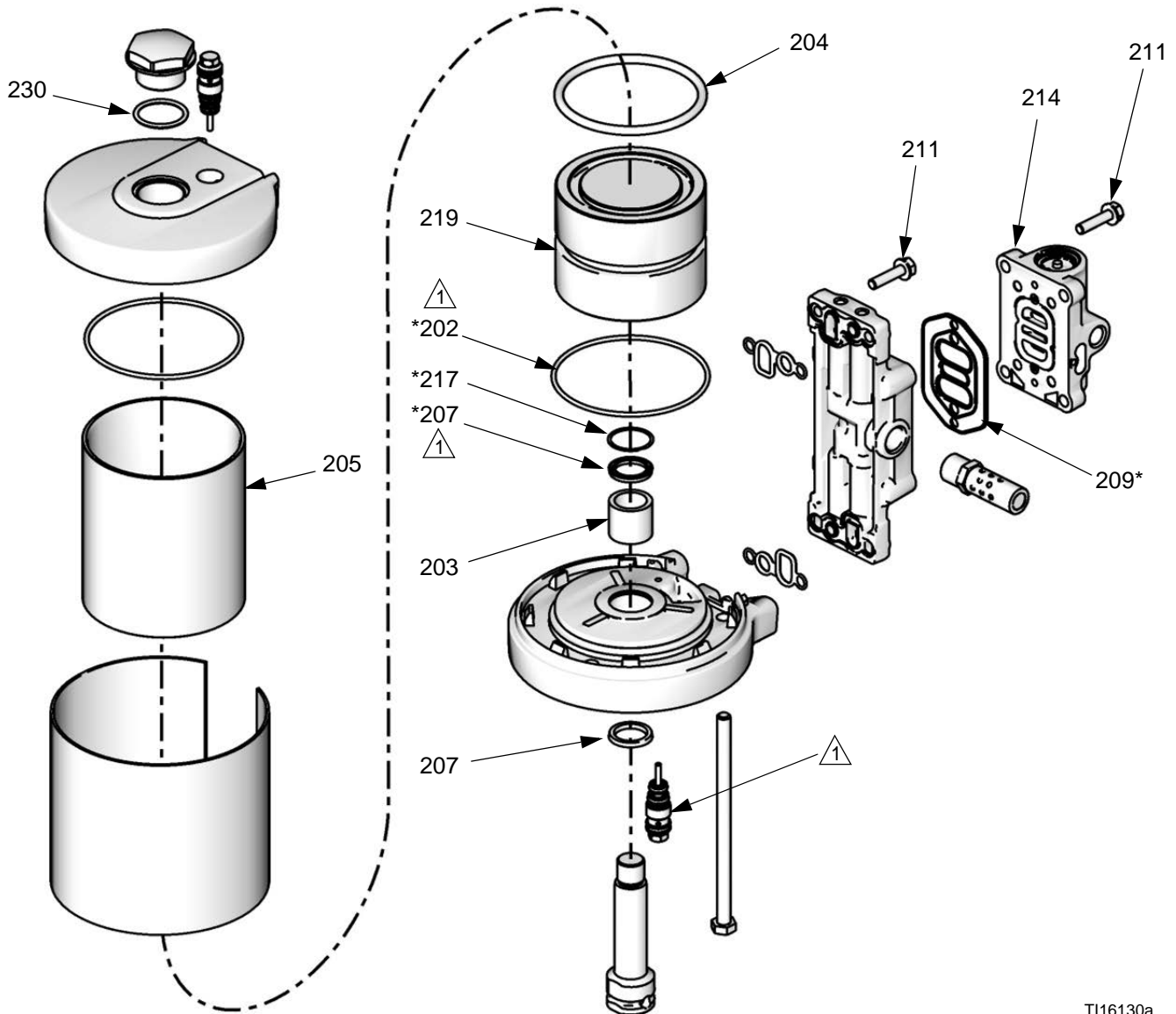
Replace Pilot Valves



1. Stop the pump and relieve pressure.
2. Disconnect the air line to the motor.
3. See FIG. 5 on page 8. Use a 10 mm 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).

 Apply lubricant.

 Item 214 consists of items 301-312.



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FIG. 5. Air Valve To Motor Assembly

Repair Air Motor



NOTE: Complete Air Motor Replacement Kits are available. See page 16.

NOTE: Bottom Cover Kits are available. See page 16.

NOTE: Air Motor Piston Kits are available. See page 16.

NOTE: Air Motor Seal Kits are available. See page 16.

NOTE: Air Motor Seal Kits are available. See page 13 for the correct kit for your motor. For best results, use all the parts in the kit.

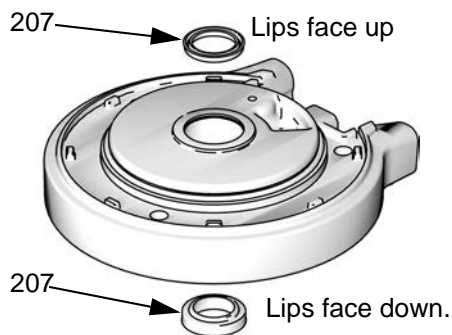
Disassemble the Air Motor

1. Shut off air to the motor and relieve pressure.
2. See FIG. 5. Use a 10 mm socket wrench to remove four screws (211). Remove the air valve (214) and gasket (209).
3. Remove four screws (211) and remove the manifold (220) and two gaskets (208).
4. Use a 10 mm socket wrench to remove the pilot valves (213) from the top and bottom cover.
5. Use a 13 mm socket wrench to remove the tie bolts (212).
6. Remove the top cover (210). Remove the o-ring (202). *On 3.5 in. motors only*, remove the plug (231) and o-ring (230).
7. Remove the shield (206) and cylinder (205).
8. Remove the o-ring (204) from the piston.
9. Secure the piston (219) in a vise with soft jaws. Use a wrench on the flats of the rod (218) to remove the rod and bottom cover assembly (201) from the piston.
10. Remove the rod from the bottom cover assembly.
11. Remove retaining ring (217), u-cup seals (207), and o-ring (202) 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. Lubricate and install the o-ring (202) on the top cover (210).
2. Lubricate the inside of the cylinder (205). Lower the cylinder onto the top cover (210).
3. Install the shield (206) around the cylinder (205) and in the groove on the top cover (210).
4. See FIG. 6. Lubricate and install new u-cup seal (207) in the bottom of the bearing in the bottom cover (201). The lips must face down. Lubricate and install new u-cup seal (207) in the top of the bearing. Lips must face up. Install retaining ring (217).

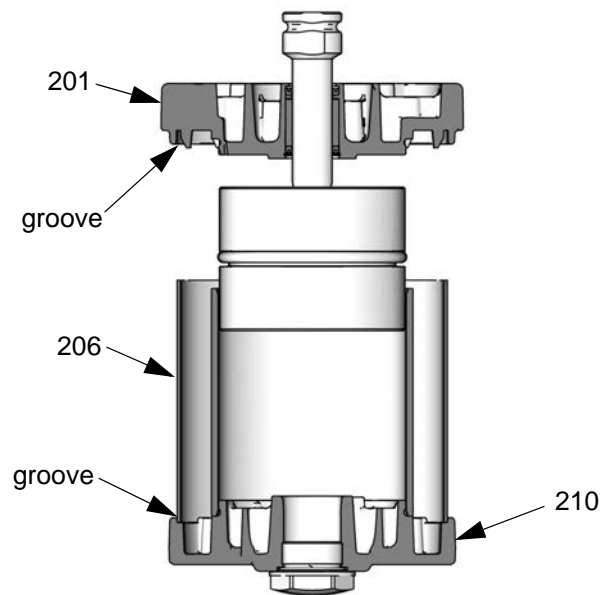


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FIG. 6. Air Motor U-cup Installation

5. Lubricate and install the o-ring (202) on the bottom cover (201).
6. Carefully push the threaded end of the rod (218) up through the bottom cover (201).
7. Apply 16G561 adhesive to the threads of the rod (218). Screw the piston (219) onto the rod. Place the piston in a vise with soft jaws and torque to 35-40 ft-lb (47-54 N•m).
8. Lubricate and install the o-ring (204) on the piston (219).
9. See FIG. 7. Carefully place the bottom cover/piston assembly on the cylinder (205), sliding the piston (219) into the cylinder. 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.






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FIG. 7. Align Shield in Grooves on Covers

10. Install the tie bolts (212) hand tight.
 11. Install two gaskets (208) on the manifold (220). Install the manifold (220). Torque screws (211) to 95-105 in-lb (10.7-11.9 N•m).
- NOTE:** The manifold is reversible for ease of placement of muffler or remote exhaust.
12. Align the air valve gasket (209) on the manifold, then attach the air valve (214). Torque screws (211) to 95-105 in-lb (11-12 N•m).
 13. Tighten the tie bolts (212) halfway. Work in a criss-cross pattern. Check that the shield (206) remains in the grooves on both covers. Continue tightening the bolts in pattern to 11-13 ft-lb (15-18 N•m).
 14. *On 3.5 in. motors only*, lubricate the o-ring (230). Install it and the plug (231) in the top cover (210).
 15. Lubricate and install pilot valves (213) in top and bottom cover. Torque to 95-105 in-lb (11-12 N•m).

Troubleshooting

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

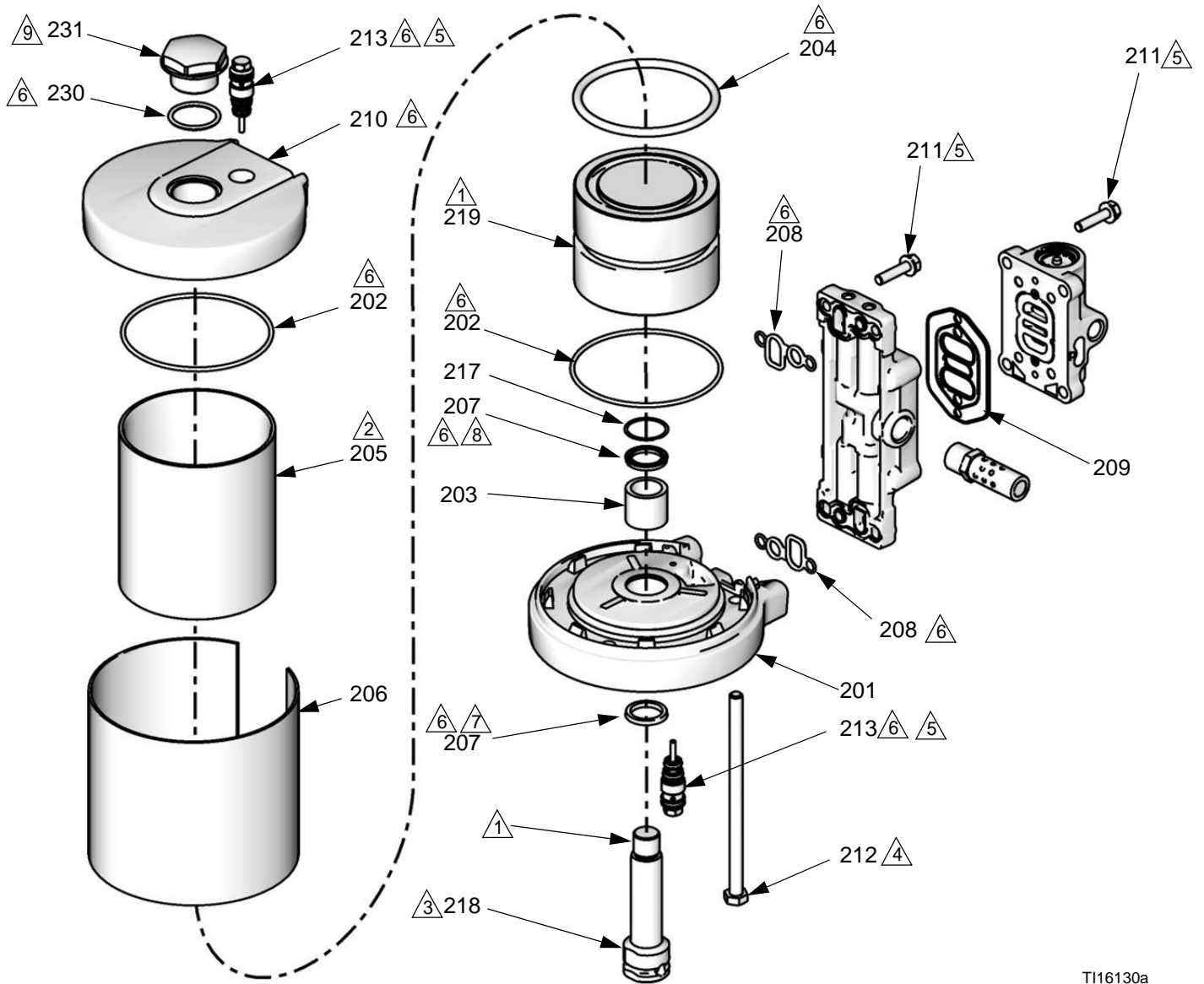
Relieve the pressure before checking or servicing the equipment.

Problem	Cause	Solution
Air motor will not run.	Damaged air valve (214).	Replace or service the air valve (214). See page 5.
	Damaged pilot valve (213).	Replace the pilot valves (213). See page 7.
Air continuously exhausting around air motor piston rod.	Damaged u-cups (207).	Replace the piston rod u-cups (207). See page 9.
Air continuously exhausting from muffler.	Damaged air valve plate (305) or cup (312).	Replace or service the air valve (214). See page 5.
Air motor “bounces” at top of stroke.	Damaged bottom pilot valve (213).	Replace the bottom pilot valve (213). See page 7.
Air motor “bounces” at bottom of stroke.	Damaged top pilot valve (213).	Replace the top pilot valve (213). See page 7.
Icing inside motor.	Air motor operating at high pressure or high cycle rate.	Reduce the pressure, cycle rate, or duty cycle of motor.
		Reduce the dew point of compressed air in the moisture coalescing filter.

Parts

Air Motor Parts

Part No. 25A641, 2.5 in. (63.5 mm)



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FIG. 8

- | | |
|---|---------------------------------------|
| △1 Apply adhesive (200) to threads, per directions on packet. | △6 Lubricate with grease (299). |
| △2 Lubricate inside surface of cylinder with grease (299). | △7 Lips face down. |
| △3 Torque to 35-40 ft-lb (47-54 N•m). | △8 Lips face up. |
| △4 Torque to 11-13 ft-lb (15-18 N•m). | △9 Torque to 30-35 ft-lb (41-47 N•m). |
| △5 Torque to 95-105 in-lb (10.7-11.9 N•m). | |

Air Motor Parts

Part No. 25A641, 2.5 in. (63.5 mm)

Ref.	25A641	Description	Qty
201	24G695	KIT, cover, bottom; includes 202 (qty 1), 203, 207, 213 (qty 1), and 217	1
202	Not sold separately. See page 14.	O-RING, cover	2
203	Not sold separately. See page 14.	BEARING	1
204	Not sold separately. See page 14.	O-RING, piston	1
205	15M289	CYLINDER, motor	1
206▲	15M302	COVER, cylinder (includes English warning label)	1
207	Not sold separately. See page 14.	SEAL, u-cup	2
208	Not sold separately. See Manifold Assembly (220, this table), see page 14.	GASKET, manifold	2
209	Not sold separately. Manifold Assembly (220, this table), see page 14.	GASKET, air valve	1
210	24H004	KIT, cover, top; includes 202 and 213 (qty 1 of each). 15X353 also includes 230 and 231.	1
211	Not sold separately. See Manifold Assembly (220, this table), see page 14.	SCREW, M6 x 25	8
212	15M314	BOLT, tie, hex head	2
213	24A366	VALVE, pilot (pack of 2)	1
214	24A351	VALVE, air; includes items 209 and 211 (qty 4)	1
215	15M213	MUFFLER	1
217	Not sold separately. See page 14.	RING, retaining	1
218	Not sold separately. See page 14.	ROD, air motor	1
219	25A657	KIT, piston, motor; includes 16G561 adhesive.	1
220	24A579	MANIFOLD, assembly, includes 208, 209, and 211 (qty. 4)	1
229▲	15W719 (not shown)	LABEL, warning (French and Spanish)	1
230		O-RING, top plug (24G694 only)	0
231		PLUG, top cover (24G694 only)	0

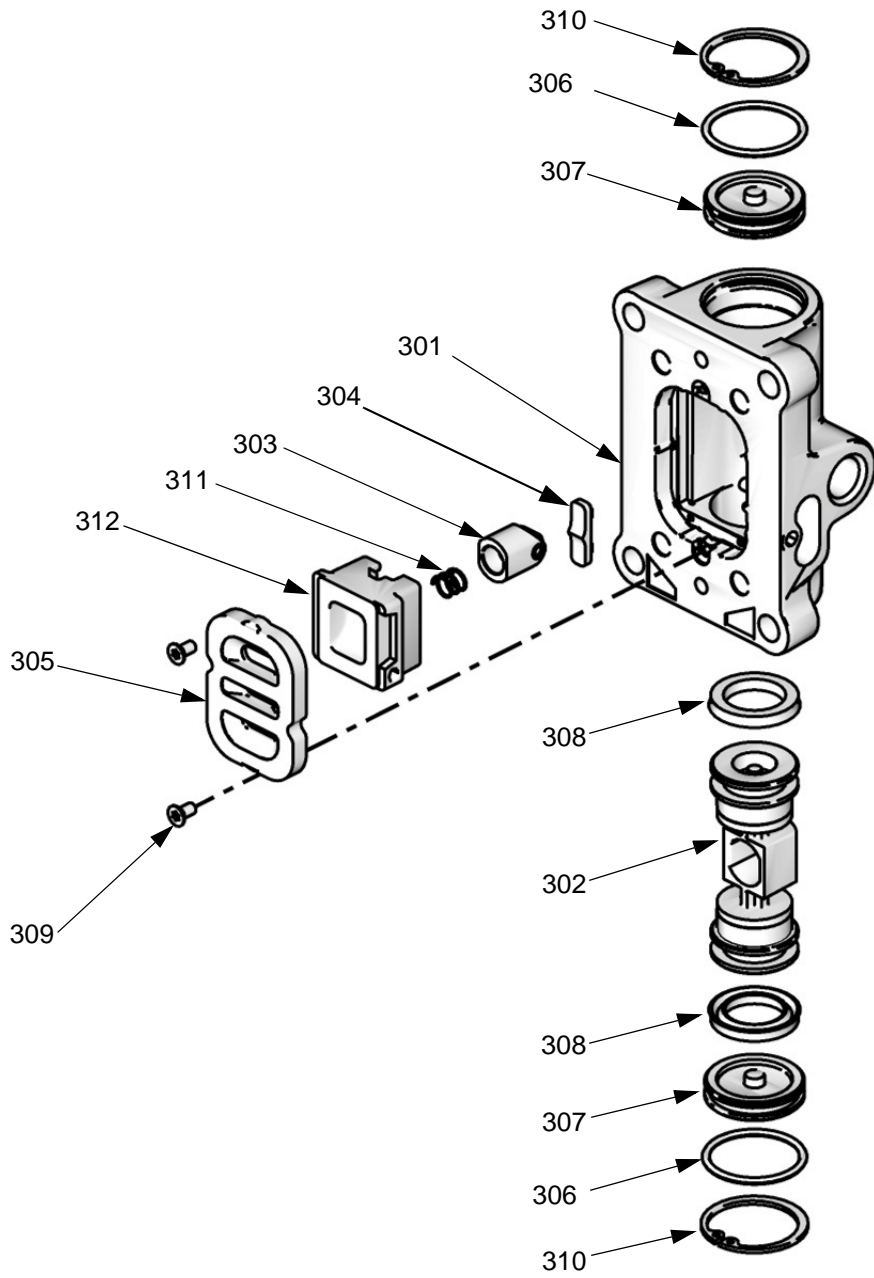
▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

Air Motor Parts

Ref.	Description	Manifold Assembly 24A353	Air Motor Seal Kit 24G699	Bottom Cover Kit 24G695	Top Cover Kit 24H004	Air Motor Piston Kit 25A657
201	COVER, motor, bottom			✓		
202	O-RING, cover		✓	✓	✓	
203	BEARING			✓		
204	O-RING, piston		✓			✓
207	SEAL, u-cup		✓	✓		
208	GASKET, manifold		✓			
209	GASKET, air valve	✓	✓			
210	COVER, motor, top				✓	
211	SCREW, M6 x 25	✓				
213	VALVE, pilot			✓	✓	
214	VALVE, air	✓				
217	RING, retaining		✓	✓		
218	ROD, air motor					✓
219	PISTON					✓

* Complete air motor replacement kit part number 25A641

Air Valve Parts



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FIG. 9

Air Valve Parts

Complete Air Valve Replacement Kit 24A351

To replace the complete air valve, order Air Valve Replacement Kit 24A351. The kit includes items 301-312 below.

Air Valve Repair Kits

Air valve parts are not sold individually. The table below shows possible kit options for each part.

Ref.	Description	Qty	Air Valve Repair Kit 24A537	Air Valve Seal Kit 24A535	Air Valve End Cap Kit 24A360
301	HOUSING	1			
302	AIR VALVE PISTON	1	✓		
303	DETENT PISTON ASSEMBLY	1	✓		
304	DETENT CAM	1	✓		
305	PLATE, air valve	1	✓		
306	O-RING	2	✓	✓	✓
307	CAP	2			✓
308	U-CUP	2	✓	✓	
309	SCREW	2	✓	✓	
310	SNAP RING	2	✓		✓
311	DETENT SPRING	1	✓		
312	CUP	1	✓		
209	SEAL, manifold	1	✓	✓	

Replacement screws (309) are available in a pack of 10. Order Kit 24A359.

Technical Data

Maximum air inlet pressure 100 psi (0.7 MPa, 7.0 bar)

Ambient air temperature range 35-120°F, 2-49°C

Package air inlet size 1/4 npt(f)

Maximum motor speed 60 cycles per minute

(Do not exceed maximum recommended speed of fluid pump, to prevent premature pump wear.)

Sound data

25A641 Air Motor

Sound power* 83.2 dBA

Sound pressure** 76.5 dBA

* Sound power at 70 psi (0.48 MPa, 4.8 bar), 80 cpm. Sound power measured per ISO-9614-2.

** Sound pressure was tested 3.28 feet (1 m) from equipment.

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.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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Graco Information

For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

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

Phone: 612-623-6921 or Toll Free: 1-800-746-1334 Fax: 330-966-3006

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. MM 3A3442

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

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