

# Dyna-Star<sup>®</sup> Pump Air Motors

3A7718B

EN

*For use on Dyna-Star Air Motor piston pumps, which are used in grease transfer applications. For professional use only.*

**Model 25T843, Series A, 7.5 in. Air Motor**  
**Model 25T844, Series A, 6.0 in. Air Motor**

*See page 3 for model information, including maximum working pressure and approvals.*

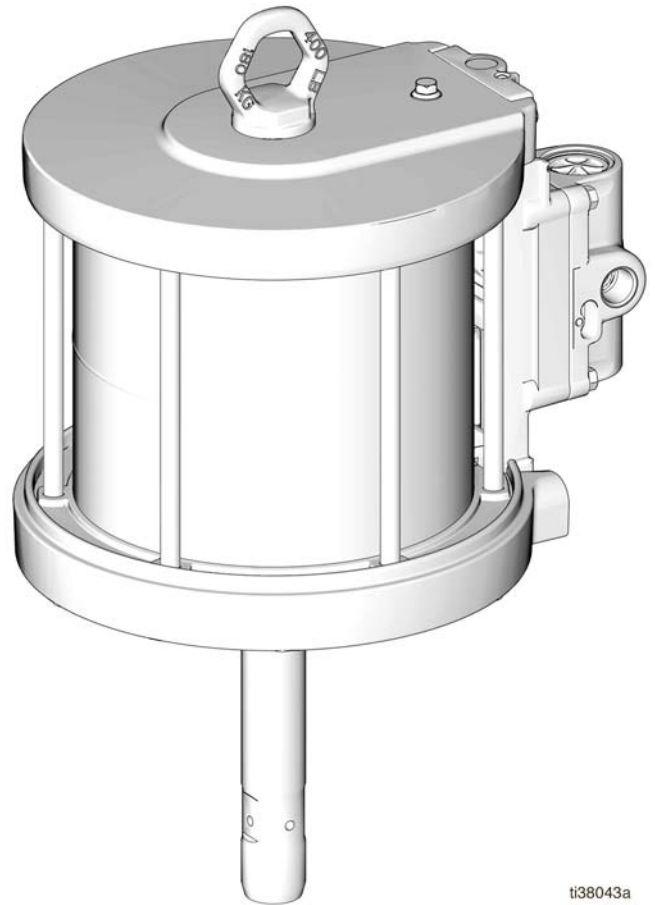


### Important Safety Instructions

Read all warnings and instructions in this manual and in your pump or package manual before using the equipment. Save all instructions.

## Related Manuals

Manual (English)	Description
3A7519	Dyna-Star 200:1 and Dyna-Star 120:1 Grease Pumps



ti38043a

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# Models

Check the motor's identification plate (ID) for the 6-digit part number.

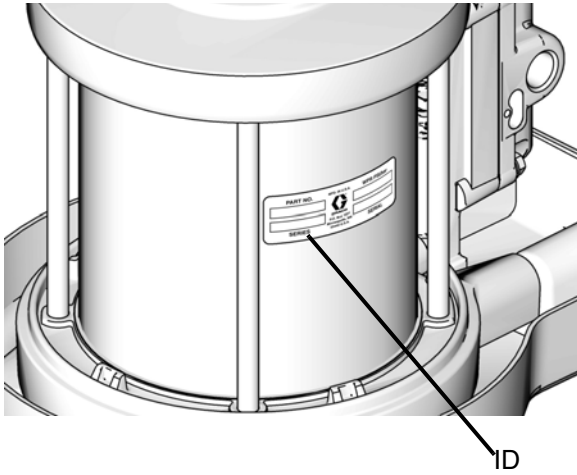







FIG. 1

Air Motor Part Number	Replacement Air Motor Part Number	Series	Stroke (in.)	Piston Diameter in. (mm)	Maximum Air Inlet Pressure psi (MPa, bar)
26A938*	25T843	A	4.75	7.5 (191)	100 psi (0.7 MPa, 7.0 bar)
26A939*	25T844	A	4.75	6.0 (152)	100 psi (0.7 MPa, 7.0 bar)

\*Not sale-able part numbers.

# 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.

 <h1 style="margin: 0;">WARNING</h1>	
 	<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>• 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>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



## 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 Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** 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.
- 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.

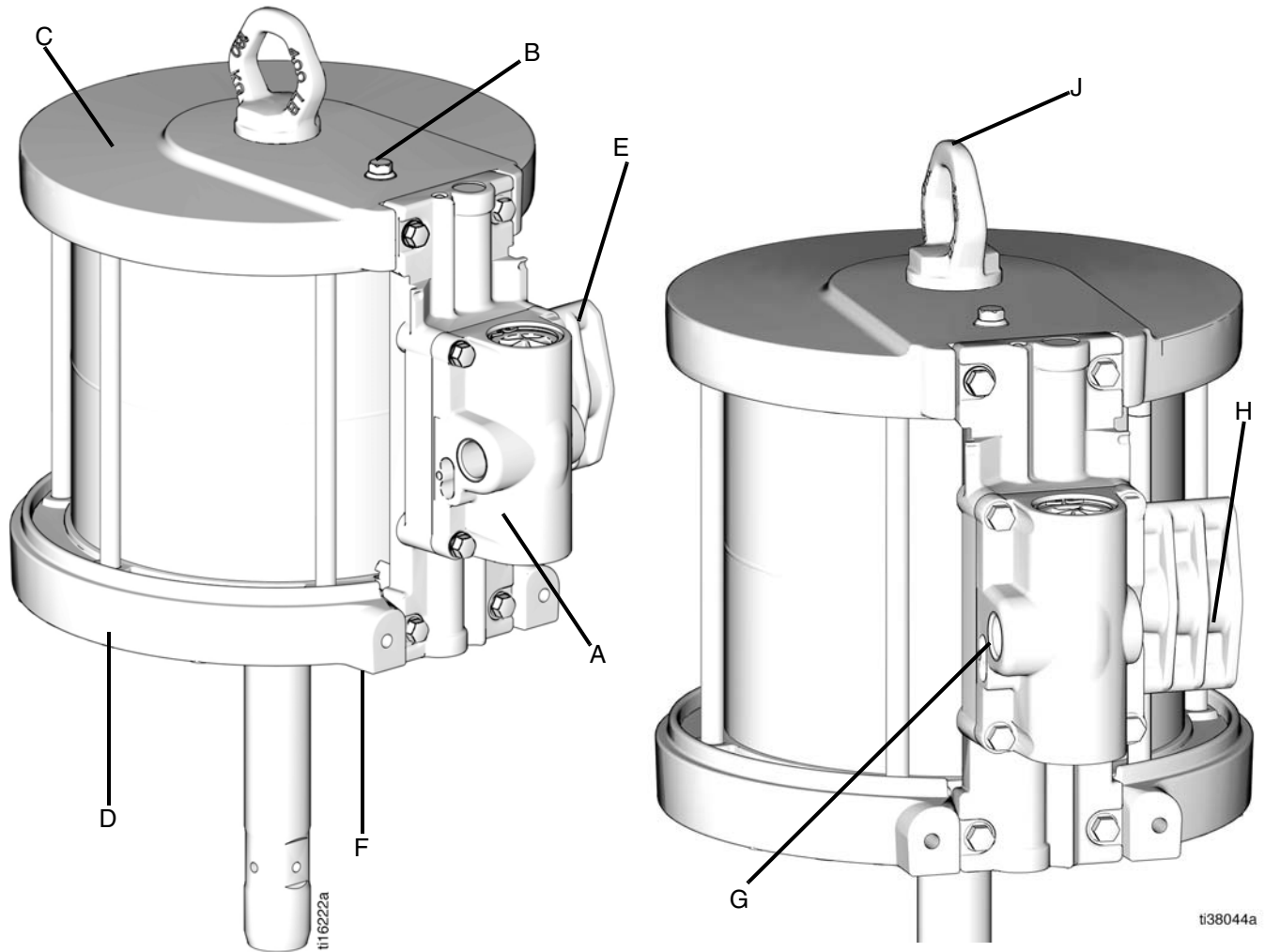


## PERSONAL PROTECTIVE EQUIPMENT

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.

# Component Identification



**FIG. 2: Typical Installation**

**Key:**




**Air Motor Kit Components**

- A Air valve
- B Pilot valve (bottom pilot valve is out of view)
- C Top cover
- D Bottom cover
- E Manifold
- F Ground screw

**Lift Ring, Shrouds, and fittings**

- G Air inlet, 1/2 in. npt(f)
- H Air outlet 3/4 in. npt
- J Lift ring

## 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>				

**Air Motor:** use ground wire and clamp (Graco P/N 222011, not supplied), as shown in FIG. 1.

1. Connect the ground wire (Y) to the ground screw (Z) located on the bottom of the air motor.
2. Connect the other end of the ground wire (Y) to a true earth ground.

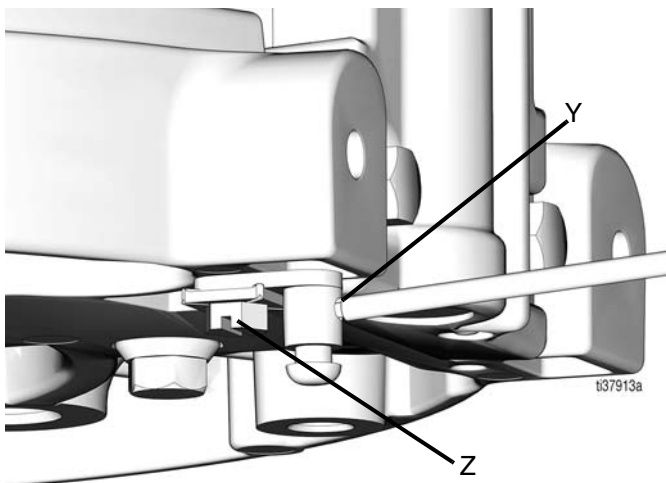


FIG. 3

# Recycling and Disposal

## End of Product Life

At the end of a product's useful life, recycle it in a responsible manner.



# Troubleshooting



1. Relieve pressure before checking or servicing the equipment, following the pressure relief procedure for your system.

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





Problem	Cause	Solution
Air motor will not run.	Damaged air valve (17).	Replace or service air valve (17), see page 18.
	Damaged pilot valve (19).	Replace pilot valves (19), see page 12.
Air continuously exhausting around air motor piston rod.	Damaged u-cups (3, 33)	Replace piston rod u-cups (3, 33), see page 13.
Air continuously exhausting muffler.	Damaged air valve plate (105) or cup (112)	Replace or service air valve (17), see page 10.
	Damaged piston o-rings (8)	Replace the seals, see page 13.
Air motor “bounces” at top of stroke.	Damaged bottom pilot valve.	Replace bottom pilot valve (19), see page 12.
Air motor “bounces” at bottom of stroke.	Damaged top pilot valve.	Replace top pilot valve (19), see page 12.
Icing inside the motor.	Air motor is operating at high pressure or high cycle rate.	Reduce pressure, cycle rate, or duty cycle of motor.  Reduce the dew point of compressed air by using a moisture coalescing filter.

# Repair

## Preventive Maintenance Schedule

The operating conditions of the system determine how often maintenance is required. Establish a preventative maintenance schedule by keeping a record of when and what type of maintenance is needed, and then determine a regular schedule for checking the system.

## Pressure Relief Procedure

				
<ul style="list-style-type: none"> <li>• Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from moving parts,</li> <li>• Relieve pressure when stopping the pump and before cleaning, checking, or servicing equipment.</li> <li>• Do not lift or move the motor while pressurized.</li> </ul>				

1. Turn off the air supply to the pump.
2. Close the bleed-type master valve (required).
3. Open the fluid ball valve and/or dispensing valve to relieve fluid pressure.

## Repair Air Valve

Refer to **Parts**, on page 16 for this section.



## Replace Complete Air Valve

1. Stop the pump in the middle of its stroke. Follow **Pressure Relief Procedure**, page 10.
2. Disconnect the air lines.
3. Remove screws (18), see **Parts**, page 16.
4. Remove the air valve (17) and gasket (16).
5. To repair the air valve, start at **Disassemble the Air Valve**, page 11, step 1. To install a replacement valve, continue to step 6.
6. Lubricate and align the new air valve gasket (16) on the manifold.
7. Lubricate the air valve plate (105), then attach the air valve (17) (torque 95 - 105 in-lb/10.7 - 11.9 N•m).

## Replace Seals or Repair Air Valve

### NOTE:

- Air Valve Seal Kits are available. To order the correct kit for the pump, see page 19 (parts are marked with an †).
- Air Valve Repair Kits are available. To order the correct kit for the pump, see page 19 (parts are marked with an ◆).
- Air Valve End Cap Kits are available. To order the correct kit for the pump, see page 19 (parts are marked with an ⌘).

### Disassemble the Air Valve

1. Perform steps 1 - 4 from **Replace Complete Air Valve**, page 10.
2. Use a 2 mm or 5/64 hex key to remove the two screws (109) (FIG. 4).
3. Remove the valve plate (105), cup (112), and spring (111) (FIG. 4).

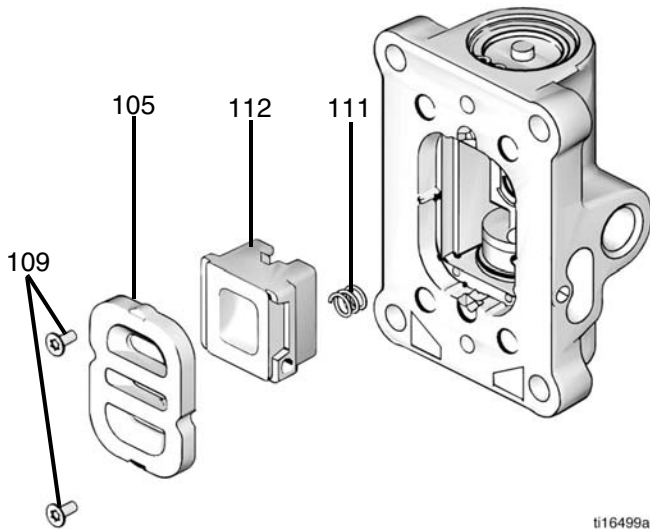


FIG. 4

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4. Remove the snap ring (110) from each end (FIG. 5).
5. Use the piston and push the end caps (107) out of each end (FIG. 5).
6. Remove the end cap o-rings (106) (FIG. 5).
7. Remove the piston (102) (FIG. 5).
8. Remove the u-cup seals (108) from each end (FIG. 5).
9. Remove the detent assembly (103) and detent cam (104) from the center (FIG. 5).

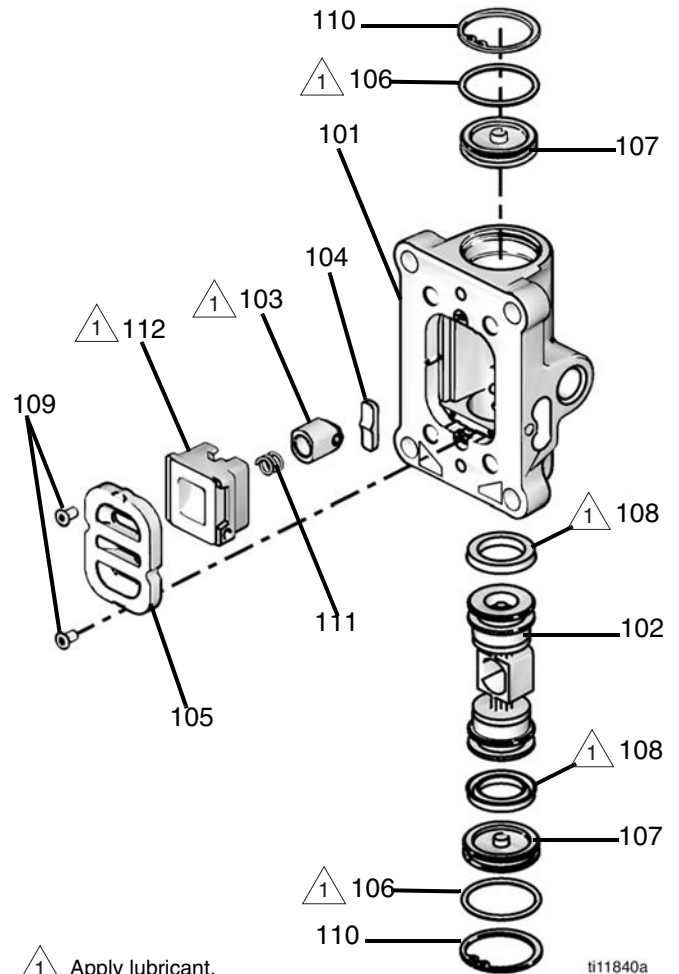
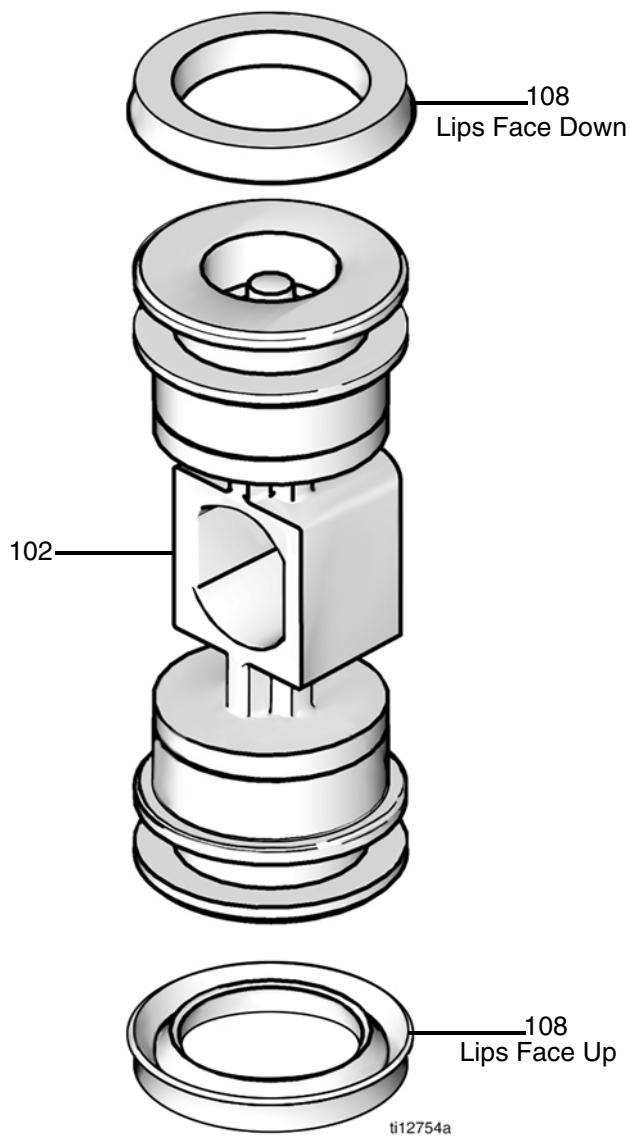


FIG. 5

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## Reassemble the Air Valve

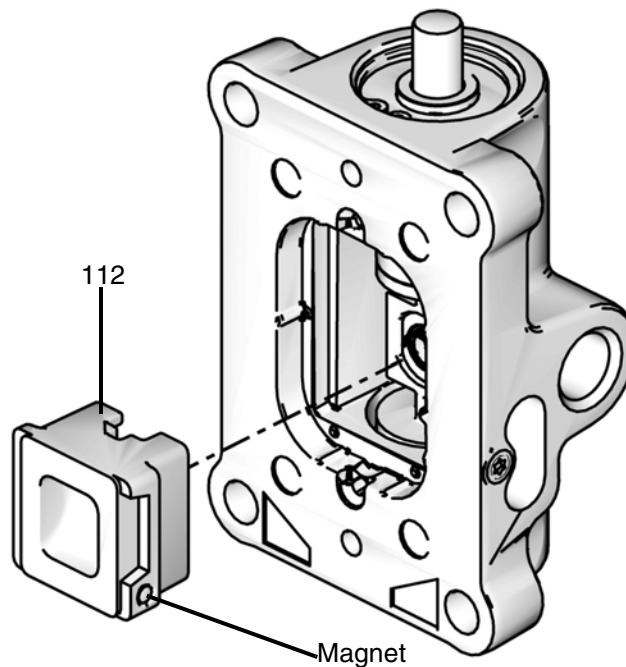
1. Lubricate detent cam (104) and install into housing.
2. Lubricate the u-cups (108) and install on the piston (103) with the lips facing the center of the piston.



**FIG. 6**

3. Lubricate both ends of the piston (102) and install it into the housing.
4. Lubricate the detent assembly (103) and install it into the piston.

5. Lubricate new o-rings (106) and install on the end caps (107) and install the end caps into the housing.
6. Install a snap ring (110) onto each end to held the end caps in place.



**FIG. 7**

7. Install the spring (111).
8. Lubricate and install the air valve cup (112).
9. Align the small round magnet with the air inlet.
10. Install the valve plate (105), then tighten the screws (109) to hold in place.

## Replace Pilot Valves

1. Stop the pump in the middle of its stroke. Follow **Pressure Relief Procedure**, page 10.
2. Disconnect the air line to the motor.
3. Use a 10 mm socket wrench to remove the old pilot valves (19) from the top and bottom covers.
4. Lubricate and install the new pilot valves (19) (torque 95 - 105 in-lb/10.7 - 11.9 N•m).

## Repair Air Motor

Refer to **Parts**, on page 16 for this section.



NOTE: Air Motor Seal Kits are available. To order the correct kit for the pump, see page 18. Parts included in the kit are marked with an (\*). For best results, use all of the parts in the kit.

### Disassemble the Air Motor

1. Stop the pump in the middle of its stroke. Follow **Pressure Relief Procedure**, page 10.
2. Disconnect the air lines.
3. Use a 10 mm socket wrench to remove four screws (18), then remove the air valve (17) and gasket (16).
4. Remove four screws (18) to remove the manifold (15) and gasket (14).
5. Use a 10 mm socket wrench to remove the pilot valves (19) from the top and the bottom covers.
6. Remove the lift ring (31) and o-ring (32) from the center of the top cover.
7. Remove the tie bolts (10).
8. Remove the top cover and take out the o-ring (9).
9. Remove the cylinder (11).
10. Slide the piston assembly (5) straight up and off of the bottom cover.

#### NOTICE

To prevent damage, do not attempt to take apart the piston assembly (5).

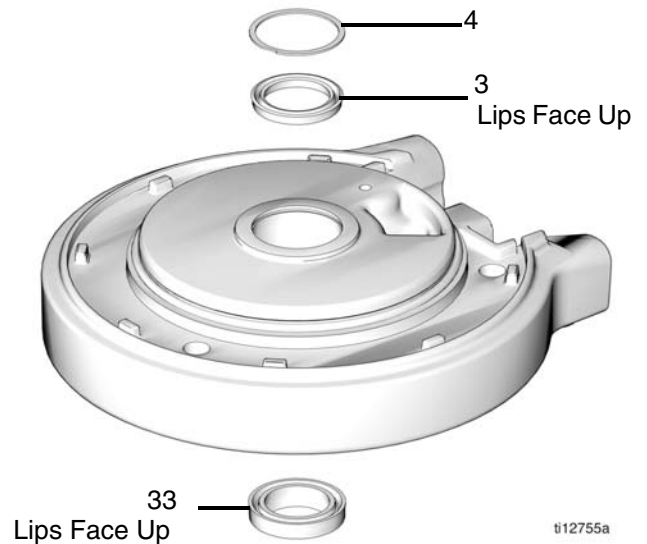
11. Remove the o-ring (8) from around the piston.
12. Remove the retaining ring (4), the u-cup seals (3, 33), and the o-ring (9) from the bottom cover.

### Reassemble the Air Motor

NOTE: Use NLGI No. 1, bentone-based grease for lubricant.

For easier reassembly, begin with the top cover (13) turned over on the workbench then reassemble the air motor from top to bottom.

1. Lubricate and install the o-ring (9) onto the top cover (13).
2. Lubricate the inside of the cylinder (11) then lower the cylinder (11) onto the top cover (13).
3. Lubricate then install the o-ring (8) around the piston assembly (5).
4. Slide the piston assembly (5) down onto the cylinder (11), making sure that the o-ring (9) stays in place.
5. Lubricate then install a new u-cup seal with flange (33) in the bottom of the bearing located in the bottom cover (1), making sure that the u-cup faces up and the flange faces down. Then lubricate and install a new u-cup seal (3) in the top of the bearing making sure that the u-cup lips are facing up (FIG. 8).



**FIG. 8**

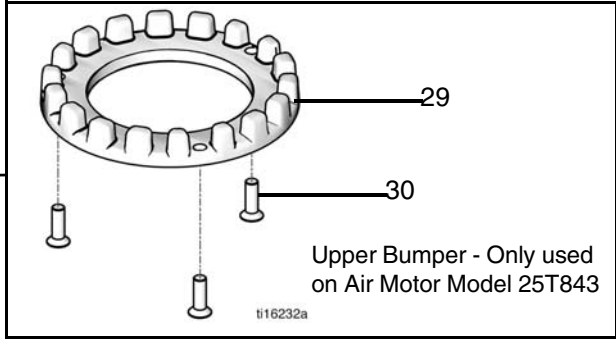
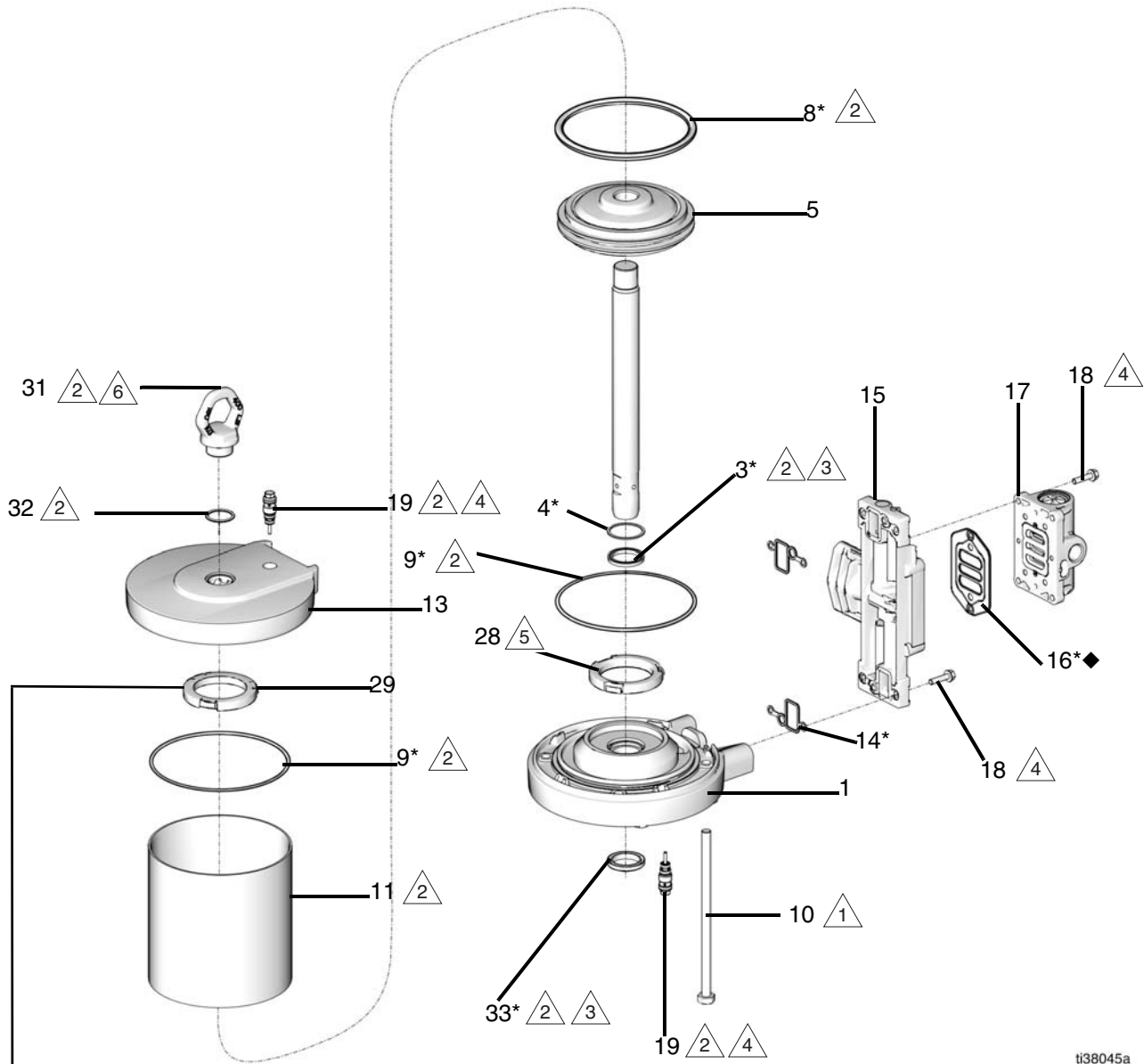
6. Install the retaining ring (4).
7. Lubricate and install the o-ring (9) onto the bottom cover (1).
8. Place the bottom cover (1) carefully onto the cylinder (11), sliding the rod through the bearing. The manifold surfaces of the top and bottom covers must align.
9. Install the tie bolts (10) and hand tighten.

## Repair

10. Install two gaskets (14) on the manifold (15).
11. Install the manifold (15) (torque 95 - 105 in-lb/10.7 - 11.9 N•m).
12. Align the air valve gasket (16) on the manifold, then attach the air valve.
13. Tighten the tie bolts (10) halfway. Work in a criss-cross pattern. Continue to tighten the bolts in criss-cross pattern and torque to 25 - 30 ft.-lb/33.9 - 40.7 N•m).
14. Lubricate and install pilot valves (19) into the top and bottom covers (torque 95 - 105 in-lb/10.7 - 11.9 N•m).
15. Install the lift ring (31) and o-ring (32) in the center of the top cover (13). Lubricate the o-ring.



# Parts



- ti38045a
- △1 Torque to 25-30 ft.-lb (33.9-40.7 N•m)
  - △2 Apply NLGI No. 1, bentone-based grease.
  - △3 U-cup faces up. Flange (bottom seal only) faces down. See FIG. 8, page 13.
  - △4 Torque to 95-105 in.-lb (10.7-11.9 N•m)
  - △5 Press to snap fit.
  - △6 Torque to 30-35 ft.-lb (40.7-47.5 N•m)



## Air Motor Parts - All Models

Ref.	Description	Qty.	Model 25T844	Model 25T843
1	Cover, lower, assembly; includes Refs. 3, 4, 9, 12, 19, 28, and 33	1	24A549	24A553
3*	U-cup	1	Not sold separately. See <b>Air Motor Seal Kits</b> , page 18 or Lower Cover Assembly (Ref. 1, this table)	
4*	Retaining ring	1	Not sold separately. See <b>Air Motor Seal Kits</b> , page 18 or Lower Cover Assembly (Ref. 1, this table)	
5	Piston/Rod, assembly	1		
8*	O-ring, piston	1	Not sold separately. See <b>Air Motor Seal Kits</b> , page 18 or Lower Cover Assembly (Ref. 1, this table)	
9*	O-ring, cover	2	Not sold separately. See <b>Air Motor Seal Kits</b> , page 18 or Lower Cover Assembly (Ref. 1, this table)	
10	Bolt, tie, hex head	4 6	15M315	15M315
11	Cylinder, motor	1	Not sold separately. See <b>Replacement Air Motor Part Number (Models)</b> , page 3.	
12	Screw, ground	1	116343	116343
13‡	Cover, upper	1	15M665	15M398
14*	Gasket, manifold	2	Not sold separately. See <b>Air Motor Seal Kits</b> , page 18 or Manifold Assembly (Ref. 15, this table)	
15	Manifold, assembly, includes Refs. 14, 16, and 18 (qty. 4)	1	16G521	16G521
16*◆	Gasket, air valve	1	Not sold separately. See <b>Air Motor Seal Kits</b> , page 18 or Manifold Assembly (Ref. 15, this table)	
17	Valve, air, assembly; includes Refs. 16 and 18 (qty. 4)	1	24A352	24X156
18	Screw, M6 x 25	8	Not sold separately. See Manifold Assembly (Ref. 15, this table) or Air Valve Assembly (Ref. 17, this table)	
19	Valve, pilot	2	24A366	24A366
28	Bumper Kit Lower bumper only Lower bumper, upper bumper, and screws (qty. 3)	1	24A914	24A915
29	Bumper, upper	1		Not sold separately. See Bumper Kit (Ref. 28, this table)
30	Screw, M5, flat head	3		
31	Ring, lift	1	16A795	16A795
32	O-ring, for adapter	1	110782	110782
33*	Seal, u-cup with flange	1	Not sold separately. See <b>Air Motor Seal Kits</b> , page 18 or Lower Cover Assembly (Ref. 1, this table)	

\* Parts included in Air Motor Seal Kit (purchase separately), see page 18.

◆ Included in Air Valve Repair Kit (purchase separately), see page 19.

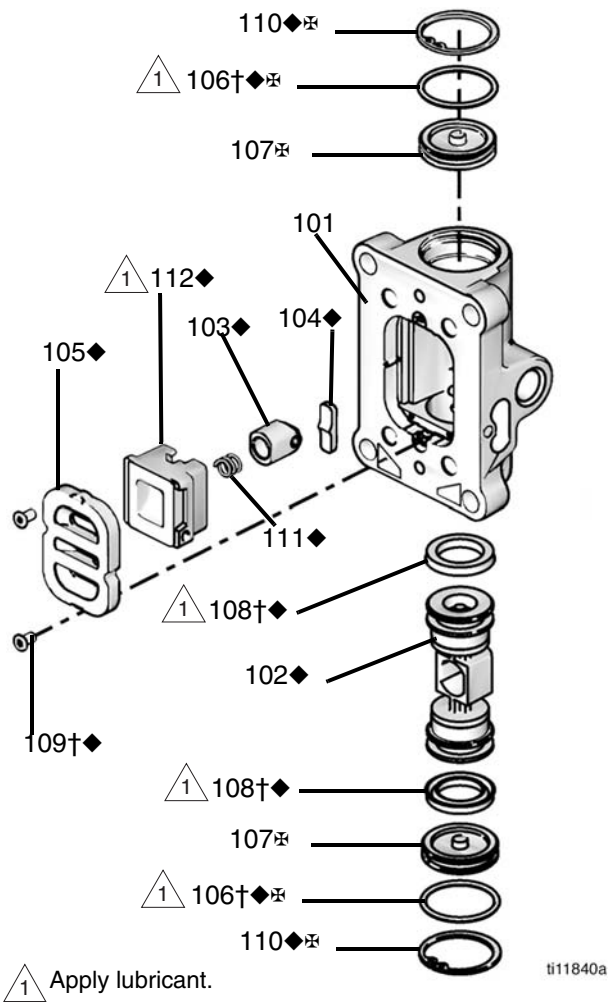
‡ The upper cover assembly includes two adapter o-rings. See Ref. 32 for the correct o-ring for use with your motor.

# Kits

## Air Motor Seal Kits

Pump Ratio	Air Motor Model	Replacement Air Motor Part Number	Air Motor Seal Kit
200:1	26A938	25T843	24A551
120:1	26A939	25T844	24A547

## Air Valve Parts



## Air Valve Kits

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

Ref.	Description	Qty.	Air Valve Repair Kit 24A538	Air Valve Seal Kit 24A536	Air Valve End Cap Kit 24A361	Other
101	HOUSING	1				
102◆	AIR VALVE PISTON	1	✓			
103◆	DETENT PISTON ASSEMBLY	1	✓			
104◆	DETENT CAM	1	✓			
105◆	PLATE, air valve	1	✓			
106†⊕◆	O-RING	2	✓	✓	✓	
107⊕	CAP	2			✓	
108†◆	U-CUP	2	✓	✓		
109†◆	SCREW	2	✓	✓		Screws Kit 24A359 (pack of 10)
110◆⊕	SNAP RING	2	✓		✓	
111◆	DETENT SPRING	1	✓			
112◆	CUP	1	✓			
18	SCREW, M6 x 25	4				See Manifold Assembly (Ref. 15, Air Motor Kit Parts table) or Air Valve Assembly (Ref. 17, Air Motor Kit Parts table)
16*†◆	AIR VALVE GASKET	1	✓	✓		See Air Motor Seal Kit (page 18) or Manifold Assembly (Ref. 15, Air Motor Kit Parts table) or Air Valve Assembly (Ref. 17, Air Motor Kit Parts table)

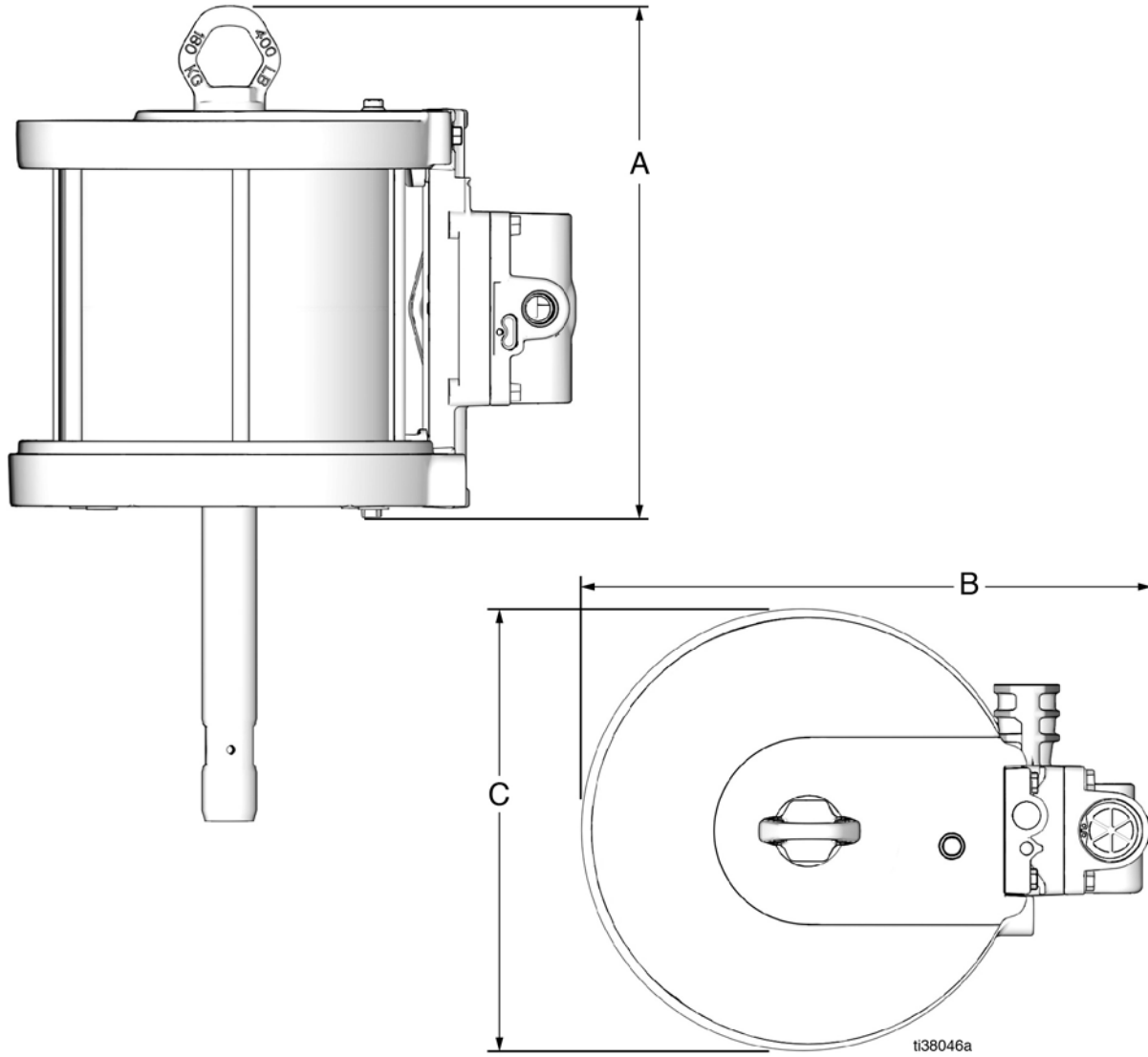
† Included in Air Valve Seal Kit 24A536.

◆ Included in Air Valve Repair Kit 24A538.

⊕ Included in Air Valve End Cap Kit 24A361.

# Dimensions

Air Motor Model	A inch (mm)	B inch (mm)	C inch (mm)	Weight lb (kg)
25T844	11.7 (297)	11.4 (290)	8.5 (216)	23.0 (10.4)
25T843	11.7 (297)	12.9 (328)	10.0 (254)	29.0 (13.1)



# Technical Specifications

	<b>US</b>	<b>Metric</b>
Maximum air inlet pressure	100 psi	0.7 MPa, 7 bar
Stroke length	4.75 in.	3810 mm
Air inlet size	1/2 in. npt(f)	
Air exhaust port size	3/4 in. npt(f)	
Maximum motor speed	60 cycles per minute	
<b>Noise (dBa)</b>		
25T844		
Sound power*	77.5 dBa	
Sound pressure**	70.7 dBa	
25T843		
Sound power*	77.2 dBa	
Sound pressure**	70.5 dBa	
*Sound power at 70 psi (0.48 MPa, 4.8 bar), 20 cpm. Sound power measured per ISO-9614-2.		
**Sound pressure measured 3.28 feet (1.0 meter) from equipment.		

## California Proposition 65

### CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – [www.P65warnings.ca.gov](http://www.P65warnings.ca.gov).

# 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.

## **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

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