



GRACO

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Rev. A



This manual contains important
warnings and information.
READ AND KEEP FOR REFERENCE.

INSTRUCTIONS

AIR-OPERATED

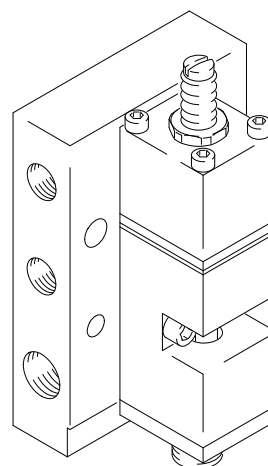
Modular Applicator Assembly

138 bar, 13.8 MPa (2000 psi) Maximum Working Pressure

Part No. 918-541, Series A

7/16-20" Port, Modular Applicator Assembly,
One Valve

The 7/16-20" port modular applicator assembly controls material flow of adhesives, sealants, and other materials that are compatible with the wetted parts of the applicator.



7606A

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Warnings

Warning Symbol



This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol



This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

WARNING



INSTRUCTIONS



EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to rupture, malfunction, or start unexpectedly and result in serious injury.

- This equipment is for professional use only.
- Read all instruction manuals, warnings, tags, and labels before operating the equipment.
- Use the equipment only for its intended purpose. If you are uncertain about usage, call Graco Technical Assistance at 313-416-3425.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Check the equipment daily. Repair or replace worn or damaged parts immediately.
- Do not exceed the maximum fluid working pressure of 13.8 MPa (10 bar, 2000 psi) to the applicator assembly or manifold.
- Never exceed the recommended working pressure or the maximum air inlet pressure stated on your pump or in the **Technical Data** on page 11.
- Be sure that all spray/dispensing equipment and accessories are rated to withstand the maximum working pressure of the pump. Do not exceed the maximum working pressure of any component or accessory used in the system.
- Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not expose Graco standard hoses to temperatures above 180°F (82°C) or below -40°F (-40°C).
- Do not use the hoses to pull the equipment.
- Use only fluids and solvents that are compatible with the equipment wetted parts. See the **Technical Data** sections of all the equipment manuals. Read the fluid manufacturer's warnings.
- Always wear protective eyewear, gloves, clothing, and respirator as recommended by the fluid and solvent manufacturers.
- Wear hearing protection when operating this equipment.
- Comply with all applicable local, state and national fire, electrical and other safety regulations.

WARNING



FIRE, EXPLOSION, AND ELECTRIC SHOCK HAZARD

Improper grounding, poor air ventilation, open flames, or sparks can cause a hazardous condition and result in fire or explosion and serious injury.

- Ground the equipment and the object being sprayed. See **Grounding** on page 5.
- Do not use this equipment with flammable liquids.
- Keep the dispense area free of debris, including solvent, rags, and gasoline.
- If there is any static sparking or you feel an electric shock while using the equipment, **stop dispensing immediately**. Do not use the equipment until you have identified and corrected the problem.
- Before operating the equipment, extinguish all open flames or pilot lights in the dispense area.
- Do not smoke in the dispensing area.
- Keep liquids away from the electrical components
- Disconnect electrical power at the main switch before servicing the equipment.



TOXIC FLUID HAZARD

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

- Provide fresh air ventilation to avoid the buildup of vapors from the fluid being dispensed.
- Know the specific hazards of the fluid you are using.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.
- Avoid exposure to heated material fumes.

WARNING



INJECTION HAZARD

Spray from the valve assembly, hose leaks, or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Fluid splashed in the eyes or on the skin can also cause serious injury.

- Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate medical attention.**
- Do not point the valve assembly at anyone or at any part of the body.
- Do not put hand or fingers over the front of the valve assembly.
- Do not stop or deflect fluid leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** on page 6 whenever you are instructed to: relieve pressure; stop dispensing; clean, check, or service the equipment; or install or clean a tip or nozzle.
- Tighten all the fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn, damaged, or loose parts immediately. Permanently coupled hoses cannot be repaired; replace the entire hose.
- Always wear eye protection and protective clothing when installing, operating, or servicing this dispensing equipment.
- Do not remove or modify any part of the valve assembly; this can cause a malfunction and result in serious bodily injury.
- Use extreme caution when cleaning or changing tips. If the tip clogs while applying material, Always follow the **Pressure Relief Procedure** on page 6, then remove the tip to clean it.
- Never wipe off build-up around the tip or air cap until pressure is fully relieved.

Setup

Ground the System

 **WARNING**

**FIRE AND EXPLOSION HAZARD**

To reduce the risk of a fire, explosion, and serious injury, proper electrical grounding of every part of your system is essential. Read the warning section, **FIRE AND EXPLOSION HAZARD**, on page 3 and follow the grounding instructions below.

The following grounding instructions are minimum requirements for a basic dispensing system. Your system may include other equipment or objects which must be grounded. Check your local electrical code for detailed grounding instructions for your area and type of equipment. Your system must be connected to a true earth ground.

1. *Pump*: connect a ground wire and clamp to a true earth ground as shown in separate pump manual.
2. *Applicator assembly*: ground the applicator assembly by connecting it to a properly grounded fluid hose and pump.
3. *Fluid and air hoses*: use only electrically conductive material and air hoses.
4. *Dispense gun*: obtain grounding through the connection of the hose, or cable.
5. *Air compressor*: follow the manufacturer's recommendations.
6. *Object being sprayed*: according to local code.
7. *Fluid supply container*: according to local code.

Installation

NOTE: Read this manual thoroughly before installing the modular applicator.

The modular applicator assembly has four untapped mounting holes, making it ideal for use in robotic equipment or multiple manifold high production operations.

Refer to the **Parts** information on page 9 while performing the following procedure to install the modular applicator.

1. Inspect the modular applicator assembly for shipping damage. If damage is found, notify the carrier immediately.
2. Attach the modular applicator assembly to its mounting fixture using any of the untapped holes in the service block.

The .1875" diameter holes are suitable for locating dowel pins, and the .265" diameter holes are intended for 1/4" mounting screws.

 **CAUTION**

Only use air fittings that are rated at a temperature equal to or higher than the operating temperature of your fluid dispensing system. Lower rated air fittings could melt and cause damage to the modular applicator assembly.

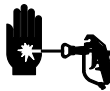
3. Connect air supply lines to the 1/8" NPT (f) inlet air ports (two places) on the modular applicator.
4. Connect fluid line to 1/4" NPT(f) fluid inlet in the applicator service block.
5. Check each fitting for firmness to avoid pressure leakage from the applicator (2).

Operation

Pressure Relief Procedure

 **WARNING**


MATERIAL FLUID HAZARD
To reduce risk of injury, wear eye protection, gloves and protective clothing when installing, operating, or servicing this dispensing system.


INJECTION HAZARD
The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. Fluid under high pressure can be injected through the skin and cause serious injury. To reduce the risk of an injury from injection, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

- are instructed to relieve the pressure
- stop spraying/dispensing
- install or clean the nozzle
- check or service any of the system equipment


PRESSURIZED FLUID HAZARD
High pressures can cause serious personal injury. Be sure to **open the valve during system start-up** to alleviate pressure which might occur in the system due to material expansion.

This procedure describes how to relieve pressure from the modular valve. See your supply unit or system documentation for instructions on relieving pressure for the entire system. Use this procedure whenever you shut off the modular valve and before checking or adjusting any part of the system, to reduce the risk of serious injury.

1. Shut off the material supply.
2. Close all air bleed valves to shut off the air supply to the applicator.
3. Actuate the applicator repeatedly until no fluid flows. Have a container ready to catch the drainage from the applicator.
4. If the modular applicator nozzle or fluid hose is completely clogged or if pressure has not been fully relieved after following the precedings steps, very slowly loosen the hose coupling and relieve pressure gradually, then loosen completely. Now clear the nozzle or hose.

Refer to page 9 for **Parts** information.

How the Modular Applicator Operates

The 7/16-20" modular applicator assembly uses the air-opened, air-closed mode of operation. The two 1/8" NPT air ports control the movement of the air-operated needle piston inside the valve. The needle piston, which is either lifted or pushed down when air is applied, controls material flow to and from the modular applicator.

A spring inside the applicator forces the needle piston down and stops material flow in the event there is a loss of controlling air pressure.

Adjusting the Modular Applicator

The stroke adjust screw (10) and thread seal nut (11) can be adjusted to set the movement of the needle piston in the modular valve. If fluid begins to discharge, drip, string, or weep irregularly from the fluid outlet port, the modular valve may require cleaning, servicing, or replacement.

Refer to page 9 for **Parts** information.

A repair kit is available to service the modular valve. See **Parts** on page 9 for information. For the best results, replace the original parts with the new parts in the repair kit.

Applicator Inspection Frequency

Inspect the applicator, material, and air hoses at least once every two weeks specifically for leakage and other visible damage.

Troubleshooting

Some solutions require disassembling the applicator. Always relieve system pressure before performing these procedures.

WARNING



To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** (page 6).

Refer to the **Parts** information on page 9 for the parts that require service or replacement.

Problem	Cause(s)	Solution(s)
Applicator assembly fails to open or close as required.	Actuating air line leaking, or is improperly connected.	Check air line connections.
	Material or debris in modular valve is blocking needle movement.	Check needle seat for materials or debris impeding needle movement. Remove impeding material.
Air leaks from modular valve	Loose air connections.	Check air connections.
	Worn o-rings.	Replace o-rings in valve bearing or between valve assembly and service block.
Material leaks from modular valve body	Seal not installed correctly.	Check needle seal and replace if necessary.
	Seal is worn.	

Service

Preparing to Service the Modular Applicator

Some fluid material in the applicator may thicken or cure when cooled to room temperature, or when exposed to air. If you are working with such a fluid material, service the applicator while the material is uncured or at a temperature where it is soft enough to work with.

Perform this procedure before servicing the modular valve.

1. Relieve the system pressure.

WARNING

To reduce the risk of serious injury, whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** (page 6).

2. Be sure material flow has been shut off.
3. Be sure system air has been shut off.

Service

Disassembly – Part No. 918–542, Series A

Refer to the **Parts** information on page 9 while performing the following procedure to disassemble the modular valve.

1. Remove and keep warning tag (28, not shown) for reattachment.
2. Unscrew and remove two cap screws (2) to remove modular valve assembly from the one-valve service block.
3. Remove three o-rings (3, two places, and 4) from the mounting surface of the modular valve.

WARNING

To reduce the risk of serious injury, exercise caution when removing the modular valve cylinder, which is spring-loaded and could project forcefully through the air if not removed properly.

4. Unscrew four cap screws (5) evenly to loosen valve cylinder (6) and relieve tension from in valve spring (7).
5. Remove cap screws (5), and valve cylinder (6) and its connected parts from valve fluid body (8) and piston-needle assembly (9).
6. Remove spring (7). Unscrew and remove thread seal nut (10) from stroke adjust screw (11).
7. Pull piston-needle assembly (9) out of fluid body (8).
8. Remove o-ring (12) from piston-needle assembly (9).
9. Remove bearing retainer plate (13) and gasket (14).
10. Unscrew and remove four flat head screws (9) and needle seat (16) from fluid body (8).
11. Remove o-ring (17) from needle seat (16).
12. Extract seal retainer (18) from fluid body (8).
13. Extract needle seal (19) from fluid body (8).
14. Extract bearing (20) and its associated o-rings from fluid body (8).
15. Remove o-ring (21) and o-ring (22) from bearing (20).

Parts

Part No. 918-541, 7/16-20" Modular Applicator Assembly

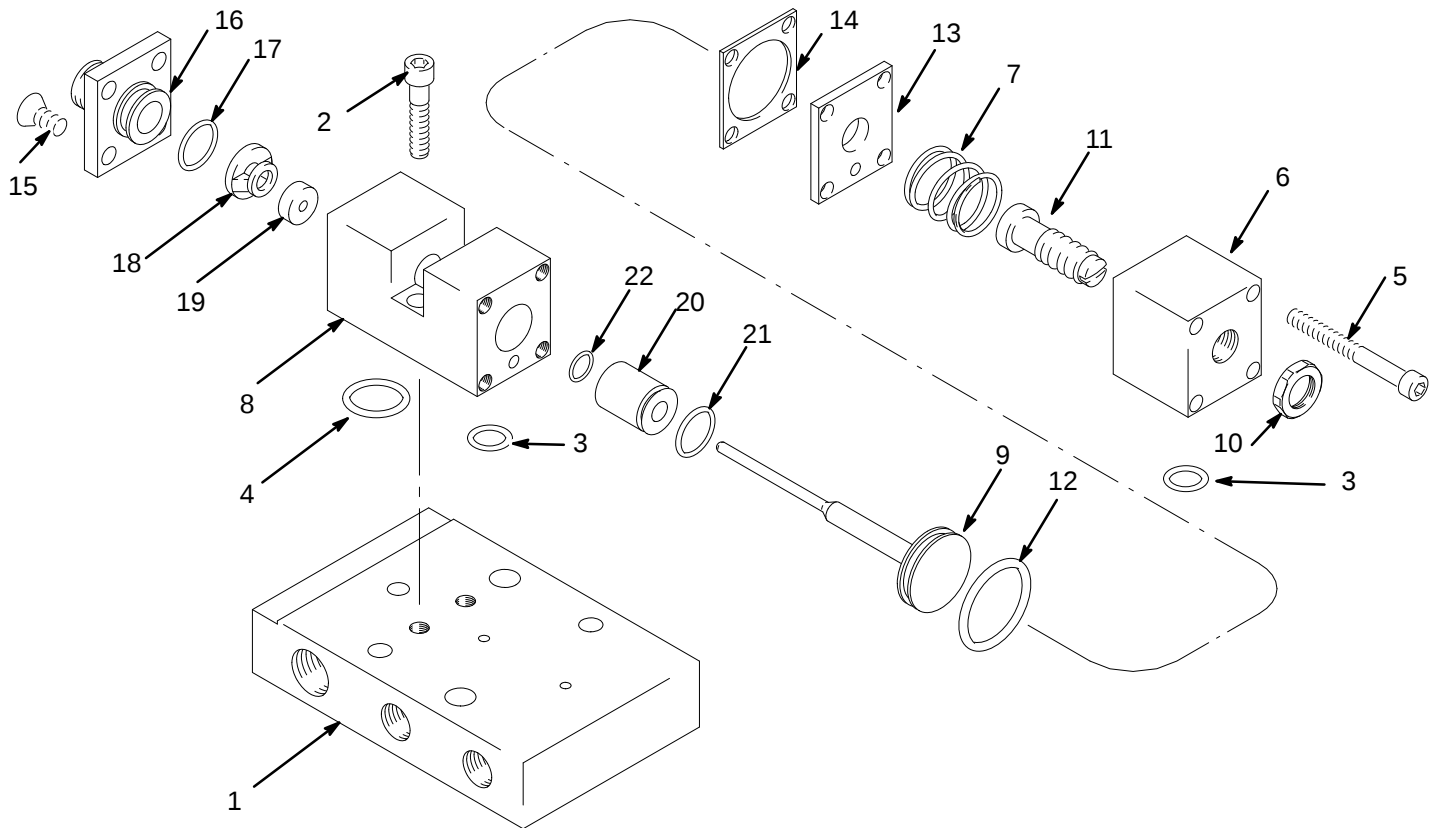
Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
1	617675	BLOCK, SERVICE, one valve	1	16	617680	. SEAT, NEEDLE, modular valve	1
2	C20005	SCREW, SHC, #10-32 x 1.00	2	17✓	C20115	. O-RING, -012 Viton®	1
—	918542	VALVE ASSEMBLY, modular	1	18	617687	. RETAINER, seal, modular valve	1
		Includes items 3-22	1	19✓	617686	. SEAL, needle, TFE, 0.093 inside diameter	1
3✓	C20080	. O-RING, -010 Viton®	2	20✓	617684	. BEARING, valve, modular	1
4✓	C20131	. O-RING, -013 Viton®	1	21✓	C20086	. O-RING, -011 Viton®	1
5	C19965	. SCREW, SHC, #6-32 x 1.25	4	22✓	C20291	. O-RING, -008 Viton®	1
6†		. CYLINDER, VAVLE, modular	1	—*	C19254	PLUG, hex skt, 1/4 npt	1
7	617683	. SPRING, valve modular	1	—*	C19252	PLUG, hex skt, 1/8 npt	1
8†		. BODY, fluid, modular valve	1	25▲*	172479	TAG, warning/instruction	1
9✓	617685	. PISTON-NEEDLE assembly	1				
10	617682	. NUT, thread seal, 5/16-24	1				
11	617681	. SCREW, stroke adjust	1				
12✓	C20169	. O-RING, -016 Viton®	1				
13†		. PLATE, retainer, bearing	1				
14✓	617678	. GASKET, retainer plate	1				
15	C38384	. SCREW, SKT FH, #8-32 x 0.375	4				

✓ These parts are included in Repair Kit 918543, which may be purchased separately.

† This part is not offered for sale.

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

* These items are not shown on the parts illustration.



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Service

Assembly – Part No. 918–542, Series A

Refer to the **Parts** information on page 9 while performing the following procedure to assemble the modular valve.

NOTE: Repair Kit 918–543 is available to service the modular valve assembly. For the best results, replace the original parts with the new parts in the repair kit.

Prior to installation, lubricate all seals and o-rings with PARKER O LUBE™ or an equivalent lubricant. Check with the material supplier for a compatible lubricant.

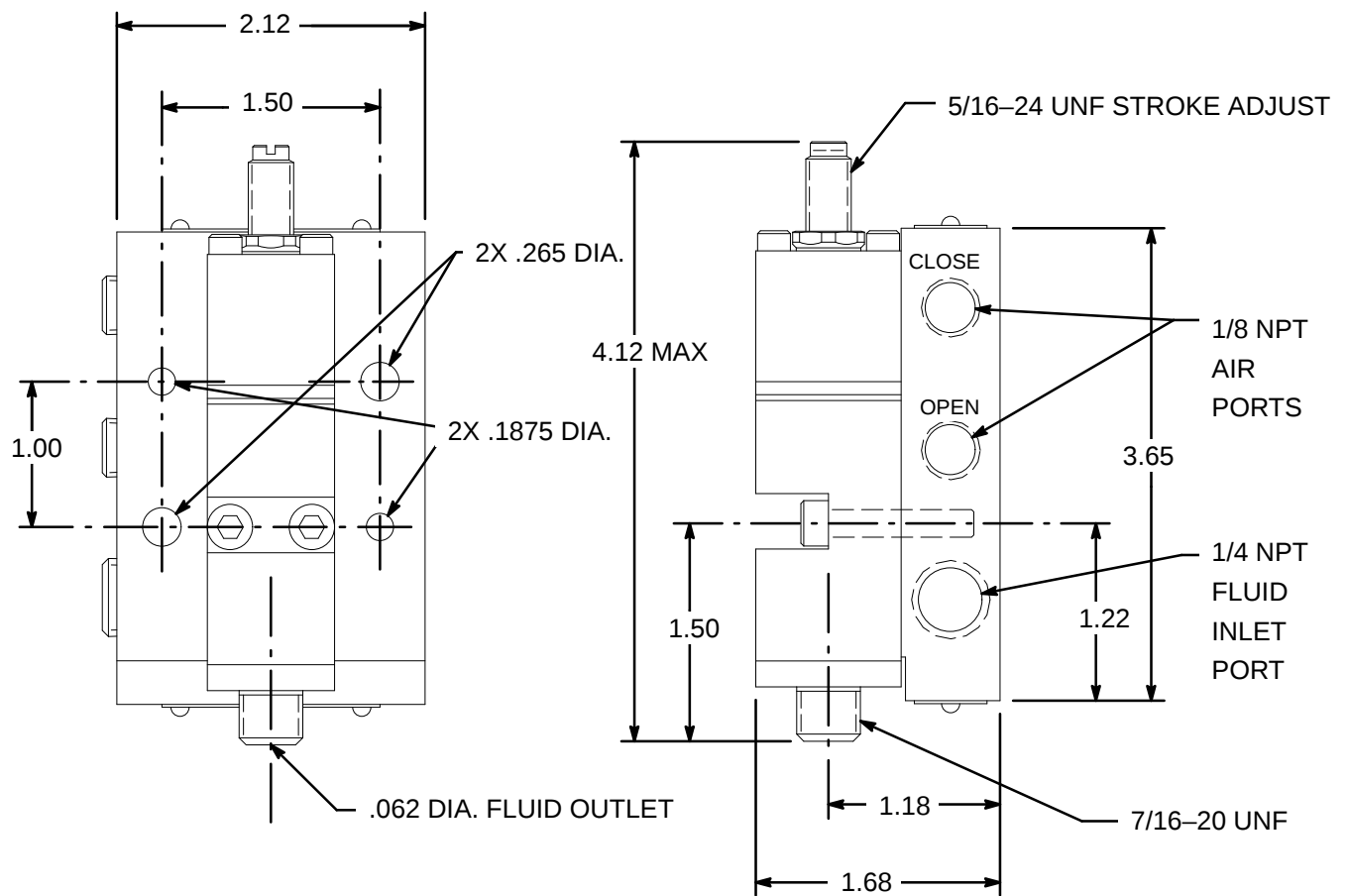
1. Be sure all parts are free of solid material residue.
2. Press needle seal (19) carefully into fluid body (8).
3. Install o-ring (21) onto, and o-ring (22) into bearing (20).
4. Push bearing (20) and its associated o-rings into fluid body (8).
5. Install o-ring (17) onto needle seat (16).
6. Install seal retainer (18) into fluid body (8).
7. Assemble needle seat (16) into fluid body (8) and secure with four flat head screws (15).
8. Install the o-ring (12) onto piston-needle assembly (9).
9. Place gasket (14) and retainer plate (13) in position on top of fluid body (8).
10. Push piston-needle assembly (9) carefully through retainer (13), gasket (14), bearing (20), and needle seal (19).
11. Assemble stroke adjust screw (11) and thread seal nut (10) to valve cylinder (6).
12. Position spring (7) on top of piston-needle assembly (9) and properly align air passage hole in retainer plate (13) with air hole in fluid body (8).

WARNING

To reduce the risk of serious injury, exercise caution when installing the modular valve cylinder, which is spring-loaded and could project forcefully through the air if not installed properly.

13. Install valve cylinder (6) and its associated parts onto the piston-needle (9). Secure the cylinder to fluid body (8) with four cap screws (5), turning the screws evenly to control compression of spring (7). Do not tighten the screws. Leave the screws and valve cylinder loosely assembled.
14. To assure proper valve component alignment, place the loosely assembled valve onto a true flat surface with the mounting surfaces of fluid body (8), retainer plate (13), and valve cylinder (6) on the true surface. Hold the valve assembly firmly against the true surface while tightening the four cap screws (5).
15. Position the three o-rings (3, two places, and 4) into grooves in the mounting surface of fluid body (8) and valve cylinder (6).
16. Position modular valve assembly and o-rings (3 and 4) on mounting surface of service block (1). Assemble modular valve to service block (1) with two cap screws (2).
17. Reattach warning tag (28, not shown).

Dimensions



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Technical Data

Maximum operating air pressure

1.03 MPa (10.3 bar, 150 psi)

Maximum fluid working pressure

13.8 MPa (138 bar, 2000 psi)

Maximum operating temperature

400°F (204° C)

Applicator weight

0.70 lbs. (0.32 kg)

Wetted parts

Aluminum, carbon steel, tungsten carbide, chrome plate,
Viton rubber, TFE

Viton® is a registered trademark of the DuPont Company.

PARKER O LUBE is a trademark of Parker Seal.

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 by an authorized Graco distributor to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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

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

FOR GRACO CANADA CUSTOMERS

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 Phone Number

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you: **1-800-367-4023, FAX: 612-623-6580.**

FOR TECHNICAL ASSISTANCE, service repair information or assistance regarding the application of this Graco equipment, call Graco in Plymouth, Michigan: **313-416-3425.**

All information, illustrations and specifications in this document are based on the latest product information available at the time of publication. The right is reserved to make changes at any time without notice.

Sales Offices Worldwide

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