



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

INSTRUCTIONS

First choice when quality counts.™

Rev. A

AIR-OPERATED

3/4" NPT Fluid Port Ball Seat Applicator

345 bar, 34.5 MPa (5000 psi) Maximum Working Pressure, 42:1 Power Ratio

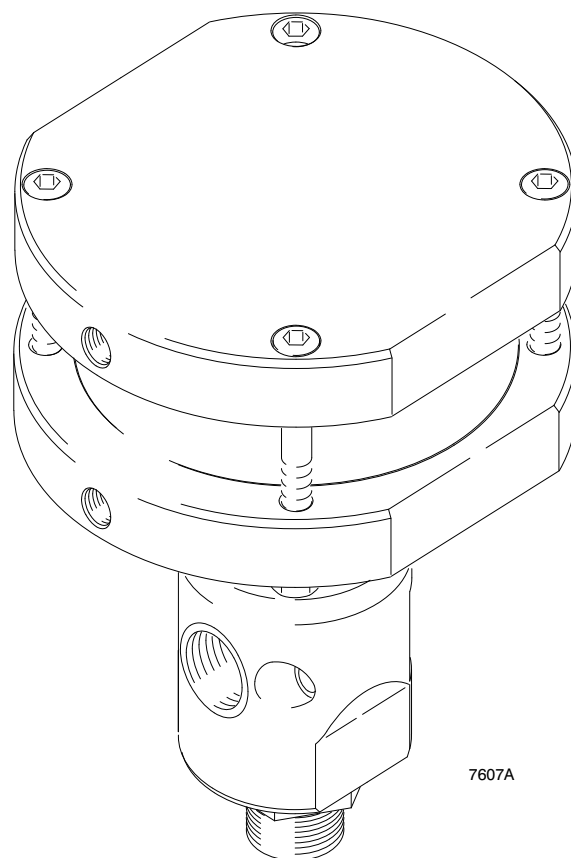
Part No. 918-539, Series A

3/4" Port, Ball Seat Applicator

The 3/4" port ball seat applicator controls material flow of adhesives, sealants, and other materials that are compatible with the wetted parts of the applicator.

Table of Contents

Warnings	2
Setup	5
Operation	6
Troubleshooting	7
Service	7
Parts	10
Dimensions	11
Technical Data	11
Graco Standard Warranty	12
Graco Phone Number	12



7607A

GRACO INC. 47700 HALYARD DRIVE PLYMOUTH MI 48170-2412

<http://www.graco.com>

©COPYRIGHT 1997, GRACO INC.

Graco Inc. is registered to I.S. EN ISO 9001

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 34.5 MPa (345 bar, 5000 psi) to the applicator or manifold.
- Do not exceed the 42:1 power ratio applied to the applicator.
- 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.
- Never exceed maximum wattage of the supply unit.



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 applicator, 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 applicator at anyone or at any part of the body.
- Do not put hand or fingers over the front of the applicator.
- 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 applicator; 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*: ground the applicator 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 applicator.

The applicator has a mounting slot with two tapped holes, making it ideal for use in robotic equipment or multiple manifold high production operations.

Refer to the **Parts** information on pages 9 and 10 while performing the following procedure to install the applicator.

1. Inspect the applicator for shipping damage. If damage is found, notify the carrier immediately.
2. Attach the applicator to its mounting fixture using two 5/16" sockethead cap screws. Mount the applicator in the 1.03" mounting slot of the applicator body (2).

 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 applicator.

3. Connect air lines to the applicator as follows:
 - a. Connect air line to 1/4" NPT(f) air-to-open air inlet in applicator body (2).
 - b. Connect air line to 1/4" NPT(f) air-to-close air inlet in cylinder cap (1) on applicator body (3).
4. Connect fluid line to 3/4" npt(f) fluid inlet in applicator body (3).
5. Check each fitting for firmness to avoid pressure leakage from the applicator.

Operation

Pressure Relief Procedure

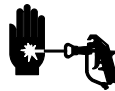
WARNING

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/dispersing
- 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 applicator 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 applicator. See your supply unit or system documentation for instructions on relieving pressure for the entire system. Use this procedure whenever you shut off the applicator 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 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 ball seat applicator (11) from the applicator fluid body (3) or hose coupling and relieve pressure gradually, then loosen completely. Now clear the nozzle or hose.

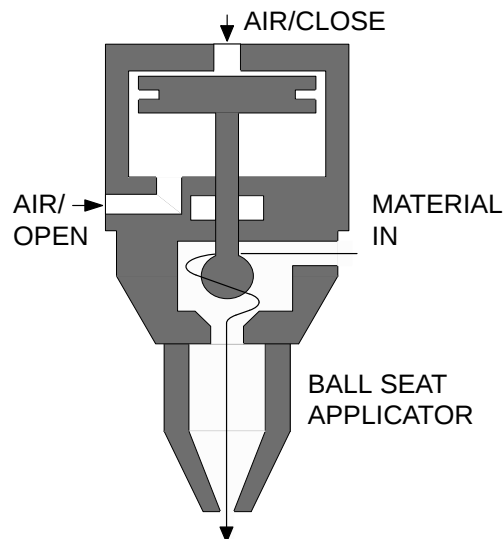
Refer to pages 9 and 10 for **Parts** information.

How the Applicator Operates

The 3/4" ball seat applicator has a 42:1 power ratio. The applicator uses the air-opened, air-closed mode of operation to control the piston inside the applicator.

The ball seat applicator has two 3/4" NPT fluid ports. The fluid inlet port is the supply port, feeding material into the applicator. The fluid outlet port dispenses material from the applicator through a dispense nozzle in regulated amounts.

The air-operated piston and ball needle move at the same time. When air lifts the piston and ball needle from its seat, it opens the fluid outlet port. Material can be pumped into the applicator and dispensed from the applicator when the fluid outlet port is open. When air pushes the piston and ball needle down into its seat, it closes the fluid outlet port. No material can be pumped into the applicator or flow from the applicator when the fluid outlet port is closed.



Adjusting the Applicator

There are no adjustments for the ball seat applicator. If fluid begins to discharge, drip, string, or weep irregularly from the fluid outlet port, the applicator may require cleaning, servicing, or replacement.

A repair kit is available to service the applicator. See **Parts** on pages 9 and 10 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 pages 9 and 10 for the parts that require service or replacement.

Problem	Cause(s)	Solution(s)
Applicator fails to open or close as required.	Actuating air line leaking, or is improperly connected.	Check air line connections.
	Material or debris in applicator is blocking needle assembly movement.	Check ball seat for materials or debris impeding needle movement. Remove impeding material.
	Worn o-rings.	Replace piston o-ring.
Air leaks from applicator	Loose air connections.	Check air connections.
	Worn o-rings.	Replace o-rings in cylinder cap and applicator body.
Material leaks from front of applicator	Seat is worn.	Replace needle seat.
	Obstruction inside applicator.	Remove ball seat. Check and replace if necessary.
	Worn needle.	Check and replace needle assembly (21), if necessary. If replacing needle, you must disassemble applicator.
Material leaks from applicator body	Seal not installed correctly.	Check needle seal and replace if necessary.
	Seal is worn.	

Service

Preparing to Service the 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 applicator.

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).

- Be sure material flow has been shut off.
- Be sure system air has been shut off.

Service

Disassembly – Part No. 918–539, Series A

Refer to the **Parts** information on pages 9 and 10 while performing the following procedure to disassemble the applicator.

1. Remove and keep warning tag (25, not shown) for reattachment.
2. Hold applicator in bench vise by 2.25" flats on fluid body (8). Use strap wrench to unscrew and remove applicator body (3) from the fluid body.
3. Remove o-ring (20) from face end of applicator body (3).
4. Remove fluid body from vise. Using wrenches, unscrew and remove ball seat (11) from fluid body (8).
5. Remove the o-ring (23) from ball seat (11).
6. Remove four hex nuts (7), lockwashers (6), flat washers (5), and cap screws (4) from cylinder cap (1) and applicator body (3).
7. Separate cylinder cap (1) from cylinder tube (2). Remove o-ring (12) from cylinder cap.
8. Hold needle assembly (21) with open-end wrench on flats at ball end. Unscrew and remove cap screw (13) and lockwasher (14) which secure piston (15) to needle assembly.
9. Separate piston (15) and cylinder tube (2) from applicator body (3). Separate the piston from the tube.
10. Remove o-ring (16) from piston (15) and remove o-ring (12) from applicator body (3).
11. Push needle assembly (21) through seal (20) and remove it from applicator body (3).
12. Push needle seal (19) and needle bearing (18) out of applicator body (3).
13. Remove o-ring (17) from applicator body (3).

Assembly – Part No. 918–539, Series A

Refer to the **Parts** information on pages 9 and 10 while performing the following procedure to assemble the applicator.

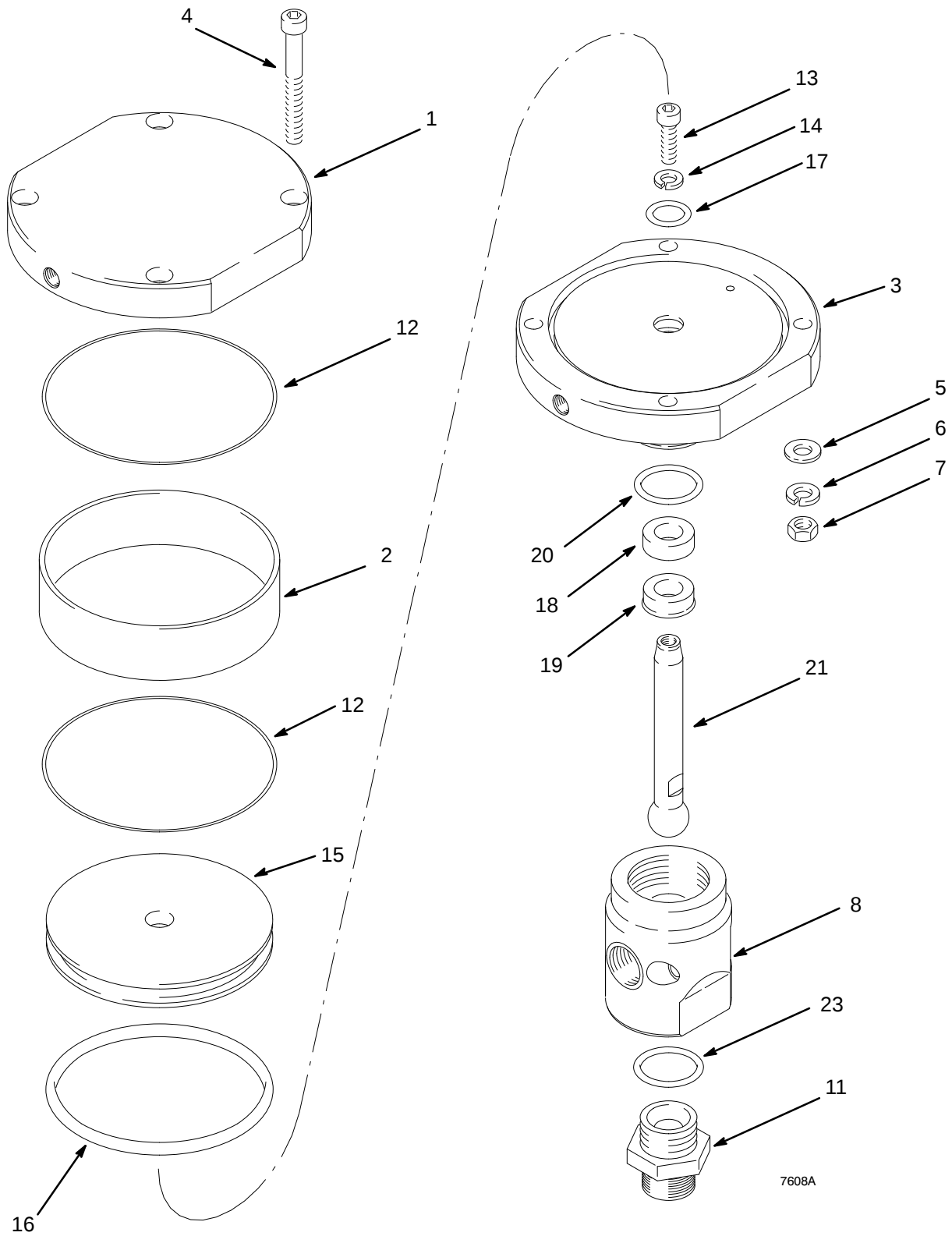
NOTE: Repair Kit 918–540 is available to service the applicator. For the best results, replace the original parts with the new parts in the repair kit.

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. Install needle bearing (18) and needle seal (19) in applicator body (3).
3. Install the o-ring (17) in applicator body (3).
4. Push needle assembly (21) carefully through seal (19) and bearing (18).
5. Install two o-rings (12) into grooves in cylinder cap (1) and applicator body (3).
6. Install o-ring (16) onto piston (15).
7. Apply Loctite sealant (24) or an equivalent to the threads of cap screw (13).
8. Assemble piston (15) to needle assembly (21) with cap screw (13) and lockwasher (14).
9. Assemble cylinder tube (2) onto piston (15) and into groove in applicator body (3).
10. Place cylinder cap (1) onto cylinder tube (2) and assemble with four cap screws (4), flat washers (5), lockwashers (6), and hex nuts (7).
11. Install o-ring (20) into face groove on applicator body (3).
12. Hold fluid body (8) in bench vise by 2.25" flats. Use strap wrench to assemble applicator body (3) into the fluid body.
13. Install o-ring (23) onto ball seat (11).
14. Screw ball seat (11) into fluid body (8).
15. Reattach warning tag (25, not shown).

Parts

Part No. 918-539, 3/4" Port Ball Seat Applicator

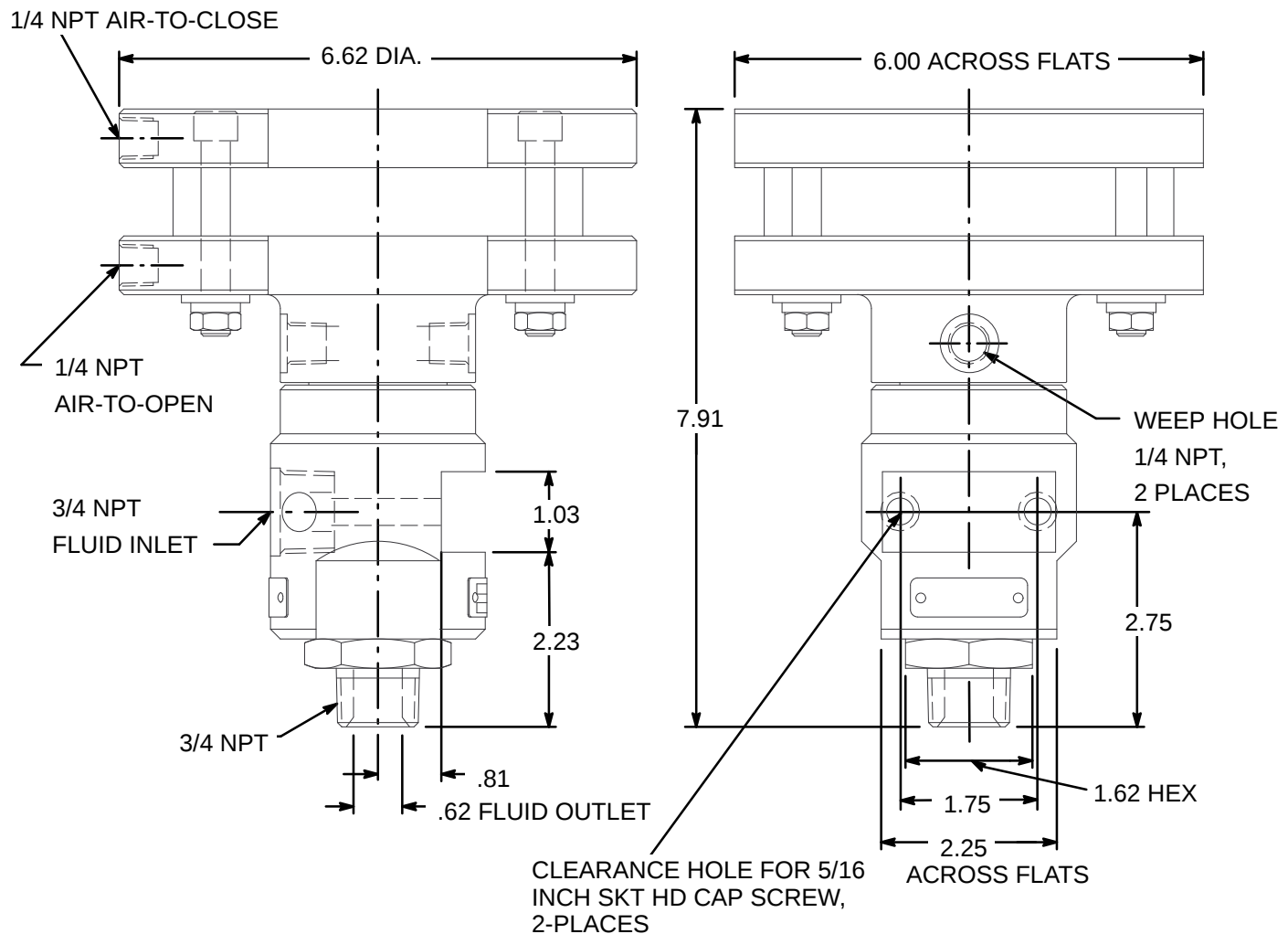


Parts

Part No. 918–539, 3/4” Port Ball Seat Applicator *(continued)*

Ref No.	Part No.	Description	Qty	Ref No.	Part No.	Description	Qty
1†		CAP, cylinder, 5.00 diameter	1	17✓	C38381	O-RING, -312 Viton®	1
2	617667	TUBE, cylinder, 5.00 inside diameter	1	18✓	617672	BEARING, needle, 0.625 inside diameter	1
3†		BODY, applicator, 3/4 port	1	19✓	617673	SEAL, needle, 0.625 inside diameter	1
4	C19845	SCREW, SHC, 3/8–16 x 2.50	4	20✓	C20209	O-RING, -219 Viton®	1
5	C19199	WASHER, plain, 5/16	4	21✓	617674	NEEDLE BALL ASSEMBLY, 0.625 diameter	1
6	C19213	WASHER, lock, split, 3/8	4	23✓	C20203	O-RING, -217 Viton®	1
7	C19192	NUT, hex, 3/8–16	4	24*	070269	SEALANT, anaerobic	A/R
8†		BODY, fluid, applicator, 3/4 port	1	25▲*	172479	TAG, warning/instruction	1
11	617670	SEAT, applicator, ball	1	† <i>This part is not offered for sale.</i> ✓ <i>These parts are included in Repair Kit 918540, which may be purchased separately.</i> ▲ <i>Replacement Danger and Warning labels, tags and cards are available at no cost.</i> * <i>These items are not shown on the parts illustration.</i>			
12✓	C38379	O-RING, -049 Viton®	2				
13	C19824	SCREW, SHC, 5/16–18 x 1.00	1				
14	C19211	WASHER, lock, split, 5/16	1				
15	617671	PISTON, applicator, 5.00 diameter	1				
16✓	C38383	O-RING, -425 Viton®	1				

Dimensions



7664A

Technical Data

Maximum operating air pressure	1.03 MPa (10.3 bar, 150 psi)
Maximum fluid working pressure	34.5 MPa (345 bar, 5000 psi)
Maximum operating temperature	275°F (135° C)
Applicator weight	10.5 lbs. (4.8 kg)
Wetted parts	Carbon steel, stainless steel, tungsten carbide, chrome plate, Viton rubber, thermoplastic polyester

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

GRACO INC. 47700 HALYARD DRIVE PLYMOUTH MI 48170-2412

<http://www.graco.com>

PRINTED IN U.S.A. 310-551 October 1997