

# Z-Series Chemical Pumps

3A0019P  
EN

**For pumping plural component materials. For professional use only.**

**Not for use in explosive atmospheres.**

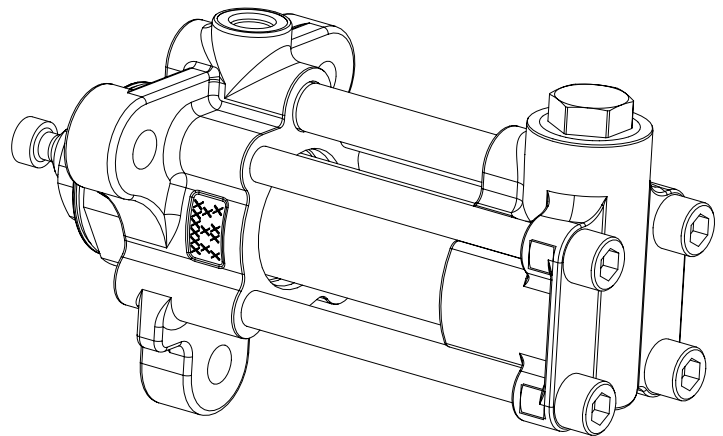
*3500 psi (24 MPa, 241 bar) Maximum Working Pressure*



### **Important Safety Instructions**

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

See page 2 for model information.



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# Models





| Model   | Pump Size |
|---------|-----------|
| *L005S1 | 5cc       |
| L010S1  | 10cc      |
| L010S3  | 10cc      |
| L015S1  | 15cc      |
| L020S1  | 20cc      |
| L020S3  | 20cc      |
| L025S1  | 25cc      |
| L030S1  | 30cc      |
| L035S1  | 35cc      |
| L040S1  | 40cc      |
| L045S1  | 45cc      |
| L050S1  | 50cc      |
| L060S1  | 60cc      |
| L065S1  | 65cc      |
| L075S1  | 75cc      |
| L080S1  | 80cc      |
| L086S1  | 86cc      |
| L090S1  | 90cc      |
| L100S1  | 100cc     |
| L105S1  | 105cc     |
| L120S1  | 120cc     |
| L140S1  | 140cc     |
| L150S1  | 150cc     |
| L160S1  | 160cc     |






\* Due to a small seal cross-section, use unfilled catalysts to achieve the best seal life results.

\*\* Pump models L010S3 and L020S3 are for NVH system use only.






# 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 symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

|  <b>WARNING</b> |  |
|--|--|
|                 | <p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> 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 pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li> <li>• Ground all equipment in the work area.</li> <li>• Use only grounded hoses.</li> <li>• Hold gun firmly to side of grounded pail when triggering into pail.</li> <li>• If there is static sparking or you feel a shock, <b>stop operation immediately</b>. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>   |
|               | <p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from gun, 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. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not point gun at anyone or at any part of the body.</li> <li>• Do not put your hand over the spray tip.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Do not spray without tip guard and trigger guard installed.</li> <li>• Engage trigger lock when not spraying.</li> <li>• Follow <b>Pressure Relief Procedure</b> in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.</li> </ul>  |
|               | <p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See <b>Technical Data</b> in all equipment manuals.</li> <li>• Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the <b>Pressure Relief Procedure</b> in this manual when equipment is not in use.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.</li> <li>• Do not alter or modify equipment.</li> <li>• Use equipment only for its intended purpose. Call your distributor for information.</li> <li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not kink or over bend hoses or use hoses to pull equipment.</li> <li>• Keep children and animals away from work area.</li> <li>• Comply with all applicable safety regulations.</li> </ul> |

|  <b>WARNING</b> |  |
|--|--|
|                 | <p><b>MOVING PARTS HAZARD</b></p> <p>Moving parts can pinch 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>• Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the <b>Pressure Relief Procedure</b> in this manual. Disconnect power or air supply.</li> </ul>   |
|                 | <p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> <li>• Read MSDS's to know the specific hazards of the fluids you are using.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> <li>• Always wear impervious gloves when spraying or cleaning equipment.</li> <li>• If this equipment is used with isocyanate material, see additional information on isocyanates in Isocyanate Conditions Section of this manual.</li> </ul> |
|                 | <p><b>BURN HAZARD</b></p> <p>Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> <li>• Do not touch hot fluid or equipment.</li> <li>• Wait until equipment/fluid has cooled completely.</li> </ul>   |
|                | <p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eyewear</li> <li>• Clothing and respirator as recommended by the fluid and solvent manufacturer</li> <li>• Gloves</li> <li>• Hearing protection</li> </ul>   |

# Isocyanate Conditions

|   |   |   |   |   |  |  |
|---|---|---|---|---|--|--|
|  |  |  |  |  |  |  |
|---|---|---|---|---|--|--|



Spraying materials containing isocyanates creates potentially harmful mists, vapors, and atomized particulates.

Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to isocyanates.

Prevent inhalation of isocyanate mists, vapors, and atomized particulates by providing sufficient ventilation in the work area. If sufficient ventilation is not available, a supplied-air respirator is required for everyone in the work area.

To prevent contact with isocyanates, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons, and goggles, is also required for everyone in the work area.

## Material Self-ignition

|   |   |  |  |  |  |  |
|---|---|--|--|--|--|--|
|  |  |  |  |  |  |  |
|---|---|--|--|--|--|--|

Some materials may become self-igniting if applied too thickly. Read material manufacturer's warnings and material MSDS.

## Moisture Sensitivity of Isocyanates

Isocyanates (ISO) are catalysts used in two component foam and polyurea coatings. ISO will react with moisture (such as humidity) to form small, hard, abrasive crystals, which become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity. If used, this partially cured ISO will reduce performance and the life of all wetted parts.

**NOTE: The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.**

To prevent exposing ISO to moisture:

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Keep the ISO lube pump reservoir (if installed) filled with Graco Throat Seal Liquid (TSL™), Part 206995. The lubricant creates a barrier between the ISO and the atmosphere.
- Use moisture-proof hoses specifically designed for ISO, such as those supplied with your system.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Never use solvent on one side if it has been contaminated from the other side.
- Always lubricate threaded parts with ISO pump oil or grease when reassembling.

## Keep Components A and B Separate

### NOTICE

To prevent cross-contamination of the equipment's wetted parts, **never** interchange component A (isocyanate) and component B (resin) parts.

## Foam Resins with 245 fa Blowing Agents

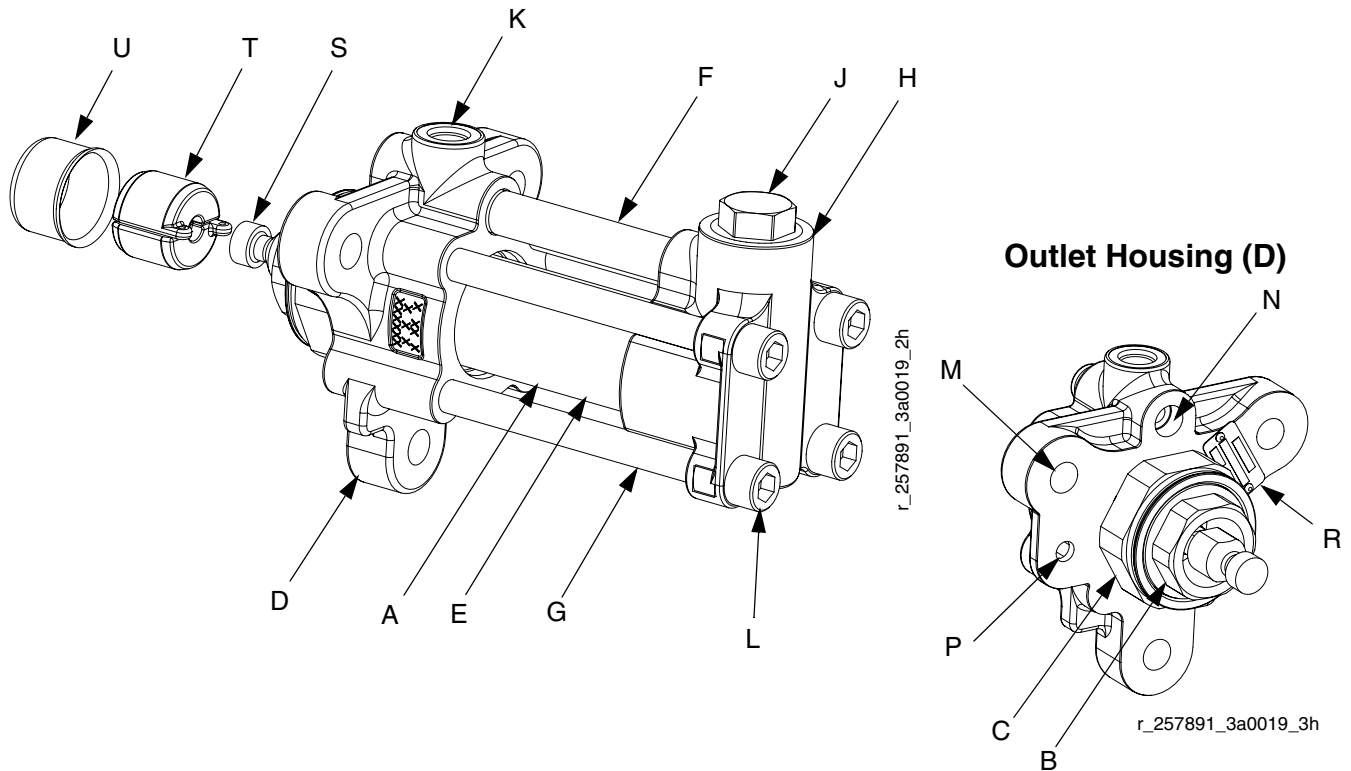
Some foam blowing agents will froth at temperatures above 90°F (33°C) when not under pressure, especially if agitated. To reduce frothing, minimize preheating in a circulation system.

## Changing Materials

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- Most materials use ISO on the A side, but some use ISO on the B side.
- Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.

# Component Identification

40cc pump shown








**FIG. 1: Component Identification**

**Key:**





- A Displacement Rod (inside main cylinder)
- B Throat Retainer
- C Throat Cartridge
- D Outlet Housing
- E Main Cylinder
- F Crossover Tube
- G Tie Bolt
- H Inlet Housing
- J Inlet Cap
- K Fluid Outlet
- L Fluid Inlet (bottom of inlet housing)
- M Pump Mounting Holes
- N Pressure Transducer Port
- P Linear Transducer Mounting Hole
- R Identification Tag
- S Rod Adapter (not on all models)
- T Pump Coupler
- U Coupler Cover

# Pressure Relief Procedure

|  |   |   |   |   |  |  |
|--|---|---|---|---|--|--|
|   |  |  |  |  |  |  |
| Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing or moving parts. |   |   |   |   |  |  |

1. Select **Park** on Pump Control Switch if available, or turn off.
2. Turn off feed pumps.
3. Trigger gun to relieve pressure.
4. Close gun inlet valves.
5. Close fluid supply inlet valves.
6. Open all fluid drain valves in the system, having a waste container ready to catch drainage. Leave drain valve(s) open until you are ready to spray again.
7. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved after following the steps above, **VERY SLOWLY** loosen tip guard retaining nut or hose end coupling to relieve pressure gradually, then loosen completely. Clear hose or tip obstruction.

# Flushing

|   |  |   |   |  |  |  |
|---|--|---|---|--|--|--|
|    |  |  |  |  |  |  |
| Flush equipment only in a well-ventilated area. Do not spray flammable fluids. Do not turn on heaters while flushing with flammable solvents. |  |   |   |  |  |  |

- Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.
- Flush out old fluid with new fluid, or flush out old fluid with a compatible solvent before introducing new fluid.
- Use lowest possible pressure when flushing.

# Repair

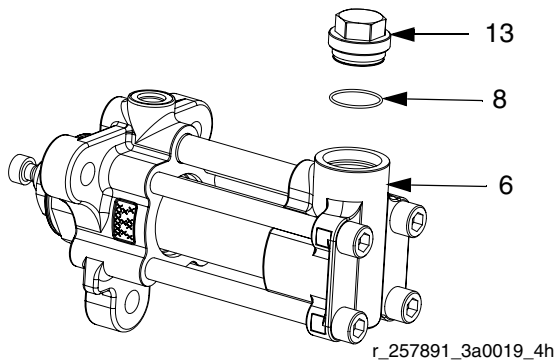


## Required Tools

- Large vise
- Set of adjustable wrenches
- O-ring pick
- 1/2 in. bit socket
- Rubber mallet
- Torque wrench
- 2 in. and 3 in. sockets
- Anti-seize lubricant
- Removable strength thread locker

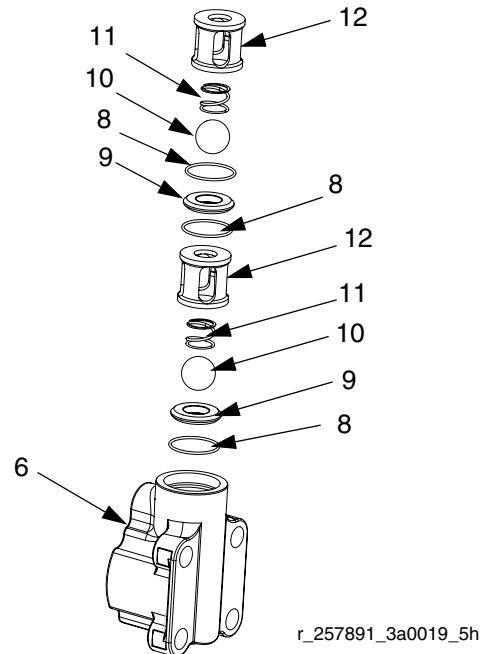
## Inlet Housing Disassembly

1. Relieve pressure and flush system. See **Pressure Relief Procedure** and **Flushing**, page 7.
2. Remove inlet hose and drain inlet housing (7).



3. Remove inlet cap (13) from inlet housing (6), and remove o-ring (8).

- a. Remove upper ball cage (12), spring (11), ball (10), o-ring (8) and seat (9).
- b. Press lower ball (10) off seat (9) from fluid inlet and drain the inlet housing (7).
- c. Remove o-ring (8), lower ball cage (12), spring (11), ball (10), seat (9), and o-ring (8).



- d. Clean all parts in a compatible solvent. Lay them in order for easier reassembly. Inspect each ball and seat for nicks or scratches; replace as required.

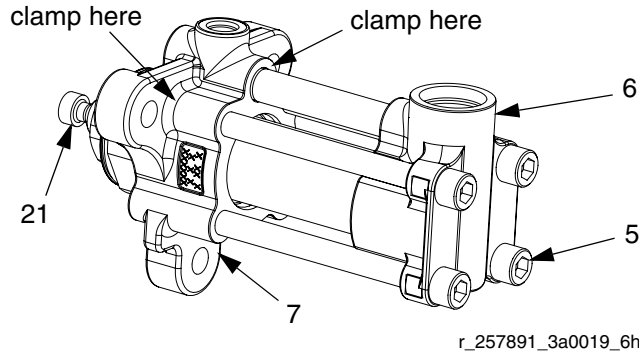
## Inlet Housing Assembly

1. Install inlet housing components in inlet housing (6).
2. Install o-ring (8) on inlet cap (13) and apply anti-seize lubricant to inlet cap (13) threads. Tighten inlet cap (13) to 100 ft-lbs. (136 N•m).

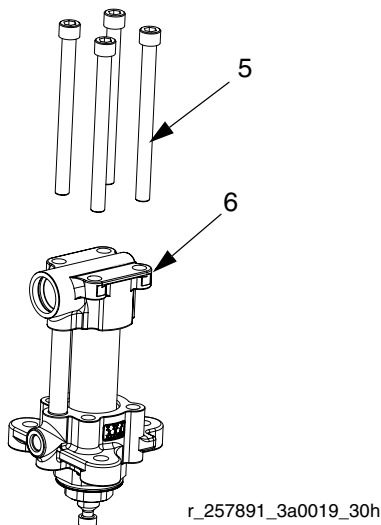


# Pump Disassembly

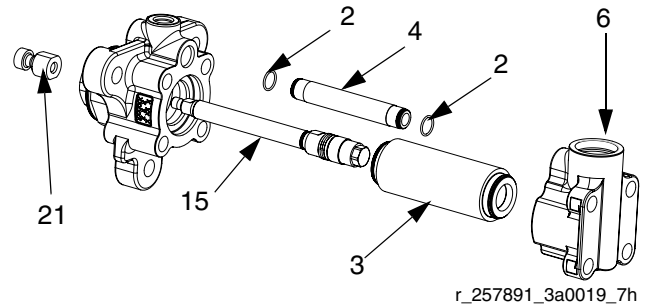
1. Relieve pressure and flush system. See **Pressure Relief Procedure and Flushing**, page 7.
2. Remove inlet hose and drain inlet housing (7).
3. Horizontally clamp pump on outlet housing (7) in vise, use 1/2 in. hex bit socket to loosen all four tie bolts (5) from inlet housing (6).



4. For 40cc and 50cc pumps only: Use wrench to remove rod adapter (21).
5. Remove pump assembly from vise and lay on a flat surface with towels or in catch pan.
6. Fully unthread and remove tie bolts (5).



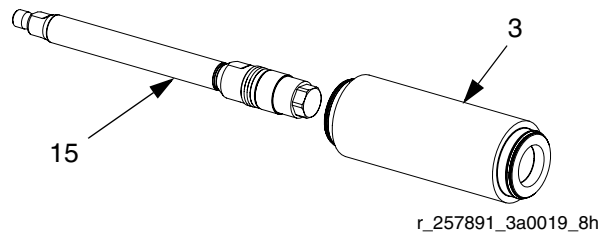
7. Remove inlet housing (6) from main cylinder (3). Remove crossover tube (4) and o-rings (2).



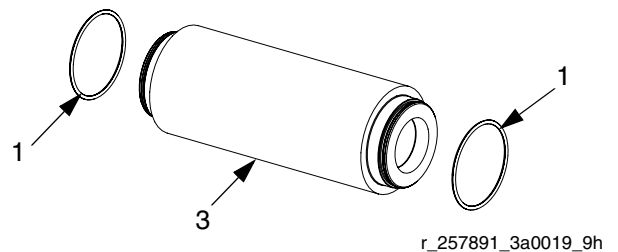
8. Pull main cylinder (3) and displacement rod (15) away from outlet housing (7).

**NOTICE**  
Be careful not to scratch the displacement rod (15); place it on a smooth working surface. Damage to the displacement rod will shorten pump life.

9. Remove displacement rod (15) from cylinder (3).

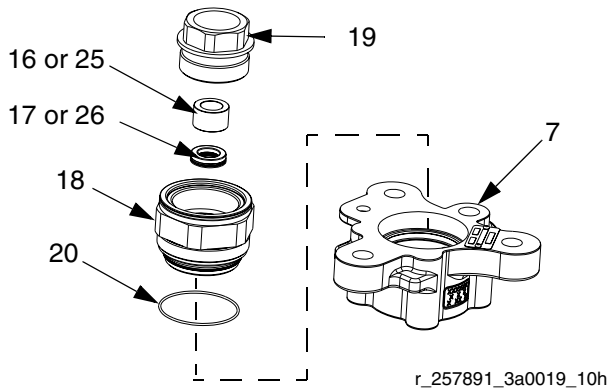


10. Remove two o-rings (1) from main cylinder (3).



11. Place outlet housing (7) in vise so throat cartridge (18) is facing up.

12. Remove throat retainer (19).



13. Use screwdriver and carefully press bearing (16 or 25) and u-cup (17 or 26) out of outlet housing (7).

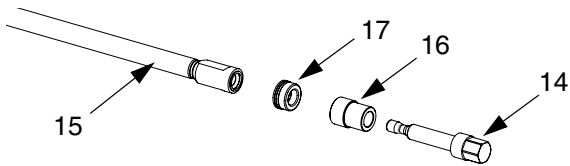
**NOTICE**

To prevent damage to seals, carefully press seals with a screwdriver.

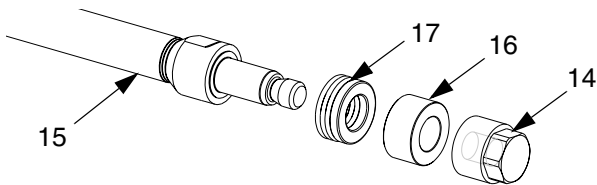
14. If o-ring (20) is leaking, remove throat cartridge (18) and o-ring (20).

15. Clamp flats on seal end of displacement rod (15) in vise. Remove piston retainer (14), bearing (16), and u-cup (17).

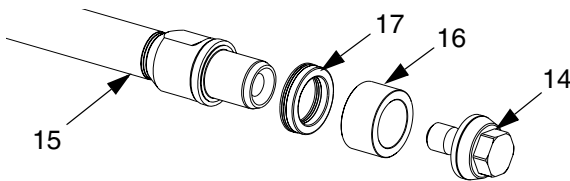
**For 5cc, 10cc, and 15cc pumps**



**For 20cc-50cc pumps**



**For 60cc-160cc pumps**



16. Thoroughly clean all metal parts in a compatible solvent.

# Pump Assembly

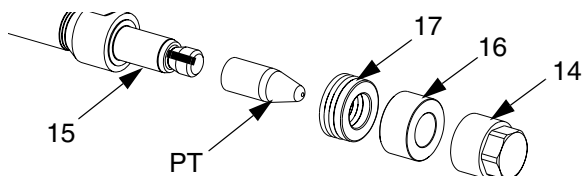
**NOTICE**  
To prevent cross-contamination of the equipment's wetted parts, never interchange component A (isocyanate) and component B (resin) parts.

**NOTICE**  
To prevent damage to seals always use piston assembly tool (PT) and rod installation tool (RT) from repair kit when assembling the piston seals and displacement rod.

**NOTE: Piston assembly tool is NOT needed for 10cc-15cc pump sizes.**

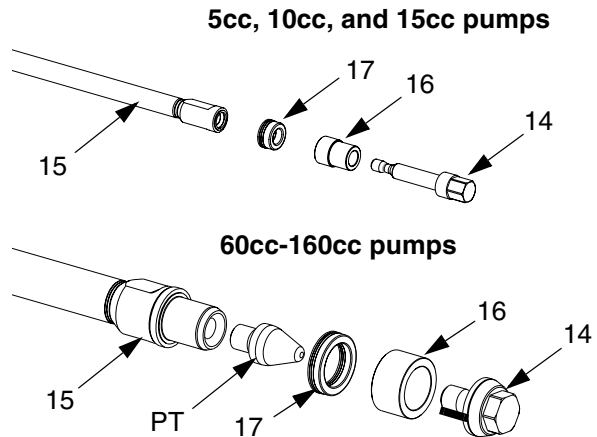
1. Install piston seal installation tool (PT) from pump repair kit on displacement rod (15). Hand tighten.
2. Apply grease to seal and bearing surface of displacement rod (15).
3. Install u-cup (17) and bearing (16). Ensure u-cup springs face displacement rod. Remove piston seal installation tool (PT).
4. For 20cc-50cc pumps: Apply one stripe of removable strength thread locker to displacement rod (15) male threads and install piston retainer (14).

**NOTICE**  
Specification sheets and Graco testing indicate that anaerobic sealant requires three days to fully cure. Failure to allow three days for full cure may result in parts coming loose during operation. If faster cure time is needed, Rapid Sealant Cure Kit is available, 24N985.



5. For 5cc, 10cc, 15cc, and 60cc-160cc pumps: Apply one stripe of removable strength thread locker to piston retainer (14) threads and assemble.

**NOTICE**  
Specification sheets and Graco testing indicate that anaerobic sealant requires three days to fully cure. Failure to allow three days for full cure may result in parts coming loose during operation. If faster cure time is needed, Rapid Sealant Cure Kit is available, 24N985.

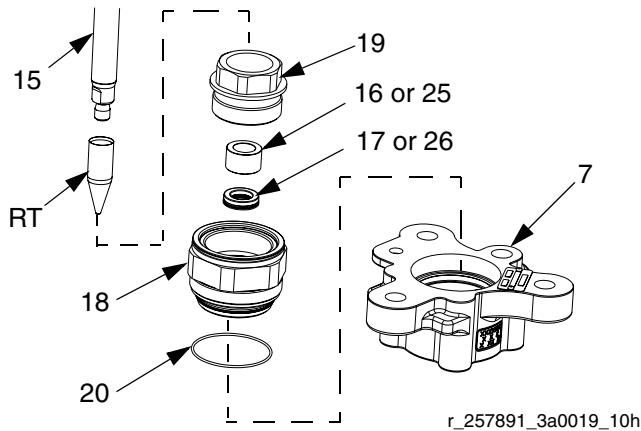


**NOTICE**  
To prevent displacement rod damage, do not clamp directly onto displacement rod surface.

6. Clamp flats on seal end of displacement rod (15) in vise. See Torque Specification table for piston retainer (14) torque according to pump size.

| Pump Size | Torque                           |
|-----------|----------------------------------|
| 5cc       | 38 in-lbs (3.2 ft-lbs) (4.3 N•m) |
| 10cc      | 5.5 ft-lbs (7.4 N•m)             |
| 15cc      | 5.5 ft-lbs (7.4 N•m)             |
| 20cc      | 30 ft-lbs (40.6 N•m)             |
| 25cc      | 30 ft-lbs (40.6 N•m)             |
| 30cc      | 30 ft-lbs (40.6 N•m)             |
| 35cc      | 50 ft-lbs (67.5 N•m)             |
| 40cc      | 50 ft-lbs (67.5 N•m)             |
| 45cc      | 50 ft-lbs (67.5 N•m)             |
| 50cc      | 50 ft-lbs (67.5 N•m)             |
| 60cc      | 80 ft-lbs (108 N•m)              |
| 65cc      | 80 ft-lbs (108 N•m)              |
| 75cc      | 80 ft-lbs (108 N•m)              |
| 80cc      | 80 ft-lbs (108 N•m)              |
| 86cc      | 80 ft-lbs (108 N•m)              |
| 90cc      | 160 ft-lbs (216 N•m)             |
| 100cc     | 160 ft-lbs (216 N•m)             |
| 105cc     | 160 ft-lbs (216 N•m)             |
| 120cc     | 160 ft-lbs (216 N•m)             |
| 140cc     | 160 ft-lbs (216 N•m)             |
| 150cc     | 160 ft-lbs (216 N•m)             |
| 160cc     | 160 ft-lbs (216 N•m)             |

7. If the throat cartridge (18) was removed, install o-ring (20) on throat cartridge (18) and lubricate with grease. Apply anti-seize lubricant to throat cartridge (18) threads and install in outlet housing (7). Tighten throat cartridge (18) to 200 ft-lbs. (271 N•m).
8. Apply grease to u-cup (17 or 26) and set in throat cartridge (18); ensure u-cup springs face throat cartridge. Set bearing (16 or 25) on top of u-cup (17 or 26).



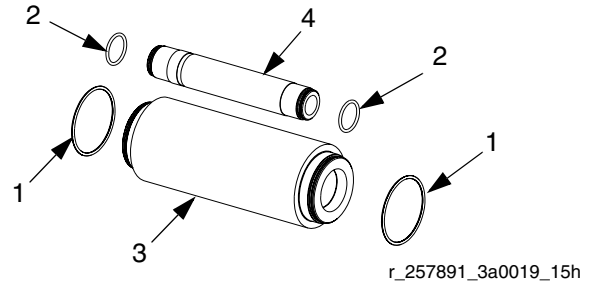
9. Apply anti-seize lubricant to throat retainer (19) threads and place on throat cartridge (18) above bearing (16 or 25).

**NOTE: Do not thread retainer(19) into throat cartridge (18).**

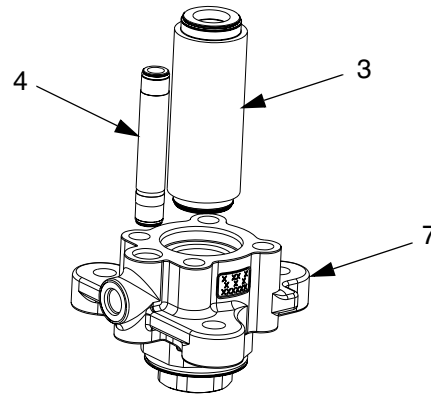
10. Install rod installation tool (RT) on displacement rod (15). Insert the displacement rod (15) through the throat retainer (19), bearing (16 or 25), and u-cup (17 or 26).

**NOTE: The displacement rod (15) guides the bearing (16 or 25) and u-cup (17 or 26) into the throat cartridge bore (18).**

11. By hand, thread throat retainer (19) into throat cartridge (18) to gradually press bearing (16 or 25) and u-cup (17 or 26) into bore.
12. When fully engaged, torque throat retainer (19) to 50 ft-lbs (67.5 N•m).
13. Remove displacement rod (15).
14. Clamp throat cartridge (18) in vise with outlet housing (7) facing up.
15. Install o-rings (1) on main cylinder (3) and o-rings (2) on crossover tube (4). Lubricate o-rings (1, 2) with grease.



16. Install main cylinder (3) and crossover tube (4) in outlet housing (7) with a rubber mallet.



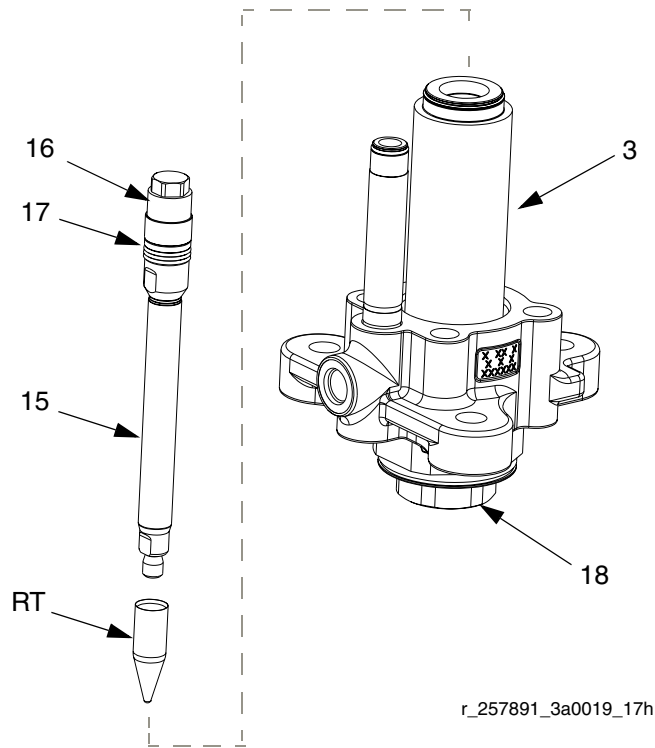
17. Lubricate piston u-cup seal (17), and bearing (16) with grease.

18. *For 60cc-160cc pumps:* Apply grease to coupler end of displacement rod (15) before installing the rod installation tool (RT).

**NOTE: The grease will hold the rod installation tool (RT) in place while assembling the displacement rod into the cylinder.**

19. Install rod installation tool (RT) on displacement rod (15).

20. Install displacement rod (15) in main cylinder (3) and throat cartridge (18). Gently tap displacement rod with a rubber mallet until piston is flush or below the surface of the main cylinder.



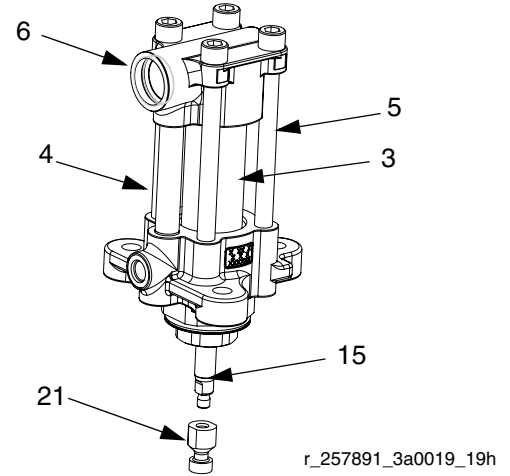
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21. Remove rod installation tool (RT).

22. Gently place inlet housing (6) on main cylinder (3) and crossover tube (4). Ensure inlet housing bores are aligned with cylinder and crossover tube. Install with a rubber mallet.

**NOTICE**

To prevent damage to o-rings, ensure inlet housing is evenly seated on main cylinder before installing tie bolts.



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23. Lubricate tie bolt (5) threads and install.

24. Torque tie bolts (5) in star pattern to 10 ft-lbs (13.5 N•m). Then torque again in star pattern to 50 ft-lbs (67.5 N•m). Finally torque again in star pattern to the pump size specific torque.

| Pump Size  | Torque               |
|------------|----------------------|
| 5cc-86cc   | 120 ft-lbs (163 N•m) |
| 90cc-160cc | 200 ft-lbs (271 N•m) |

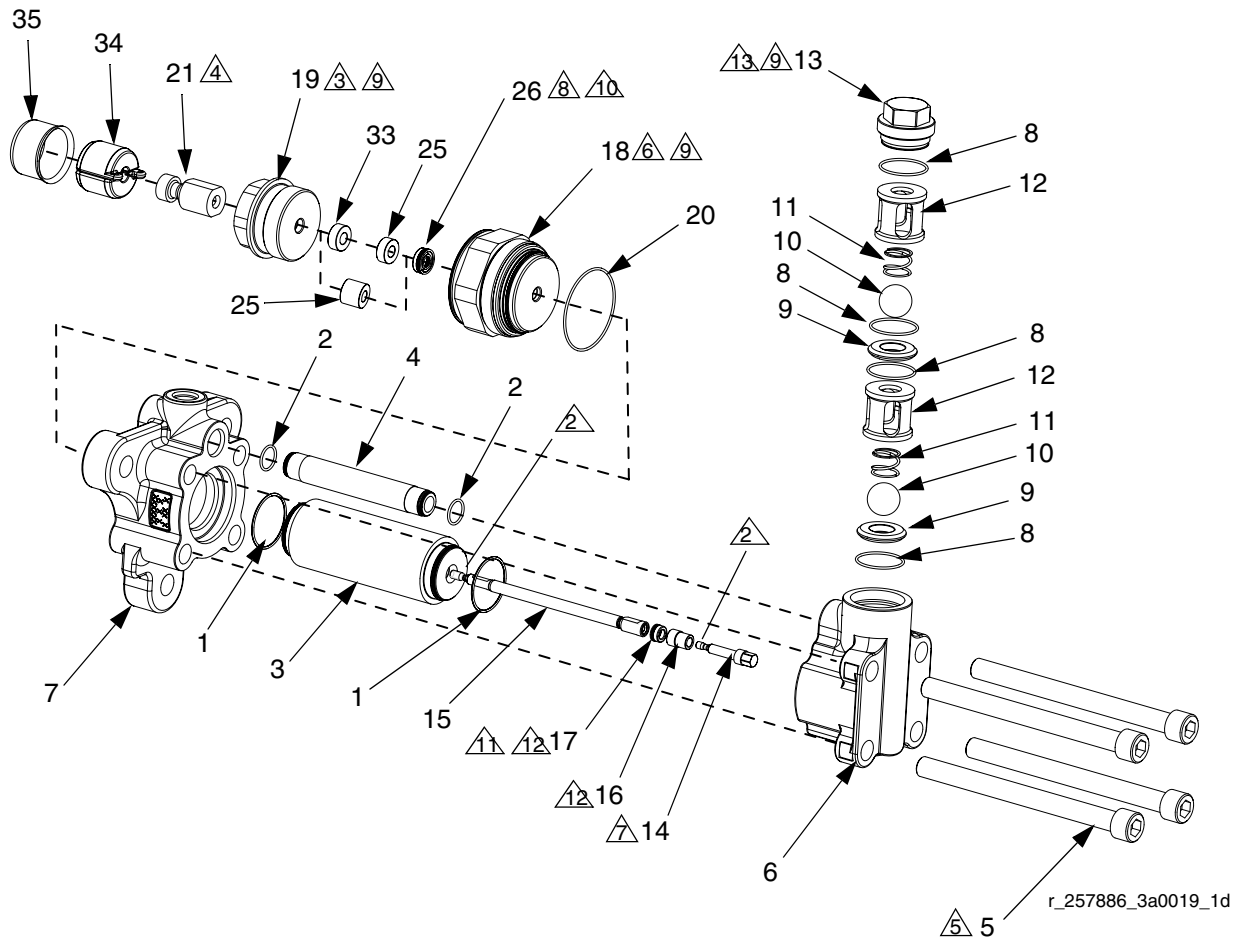
25. Ensure the inlet housing is evenly seated onto the main cylinder (3) and crossover tube (4).

26. *For 10cc-50cc pumps only:* Clean rod adapter (21) threads with a wire brush and apply removable strength thread locker to displacement rod (15) threads. Install rod adapter (21) on displacement rod (15). See Torque Specification table for rod adapter (21) torque according to pump size.

| Pump Size | Torque                           |
|-----------|----------------------------------|
| 5cc       | 38 in-lbs (3.2 ft-lbs) (4.3 N•m) |
| 10cc      | 8.5 ft-lbs (11.5 N•m)            |
| 15cc      | 8.5 ft-lbs (11.5 N•m)            |
| 20cc      | 30 ft-lbs (40.6 N•m)             |
| 25cc      | 30 ft-lbs (40.6 N•m)             |
| 30cc      | 30 ft-lbs (40.6 N•m)             |
| 35cc      | 45 ft-lbs (60.75 N•m)            |
| 40cc      | 45 ft-lbs (60.75 N•m)            |
| 45cc      | 45 ft-lbs (60.75 N•m)            |
| 50cc      | 45 ft-lbs (60.75 N•m)            |

# Parts

## 5cc, 10cc, and 15cc Pumps



1. Lubricate seals, o-rings, lead-in's and moving parts with grease.

△2 Apply one stripe of removable strength anaerobic sealant on threads.

**NOTICE**

Specification sheets and Graco testing indicate that anaerobic sealant requires three days to fully cure. Failure to allow three days for full cure may result in parts coming loose during operation. If faster cure time is needed, Rapid Sealant Cure Kit is available, 24N985.

△3 Torque to 50-ft-lbs (67.5 N•m).

△4 Assemble and torque after displacement rod (15) is assembled through throat retainer (19). See table on page 13 for torque specification.

△5 Torque tie bolts (5) in star pattern to 10 ft-lbs (13.5 N•m). Then torque again in star pattern to 50 ft-lbs (67.5 N•m). Finally torque again in star pattern to the pump size specific torque.  
 Pump size 5cc-86cc = 120 ft-lbs (163 N•m)  
 Pump size 90cc-160cc = 200 ft-lbs (271 N•m)

△6 Torque to 200 ft-lbs. (271 N•m).

△7 See table on page 11 for torque specification.

△8 Must be pressed straight into housing.

△9 Apply anti-seize lubricant to threads.

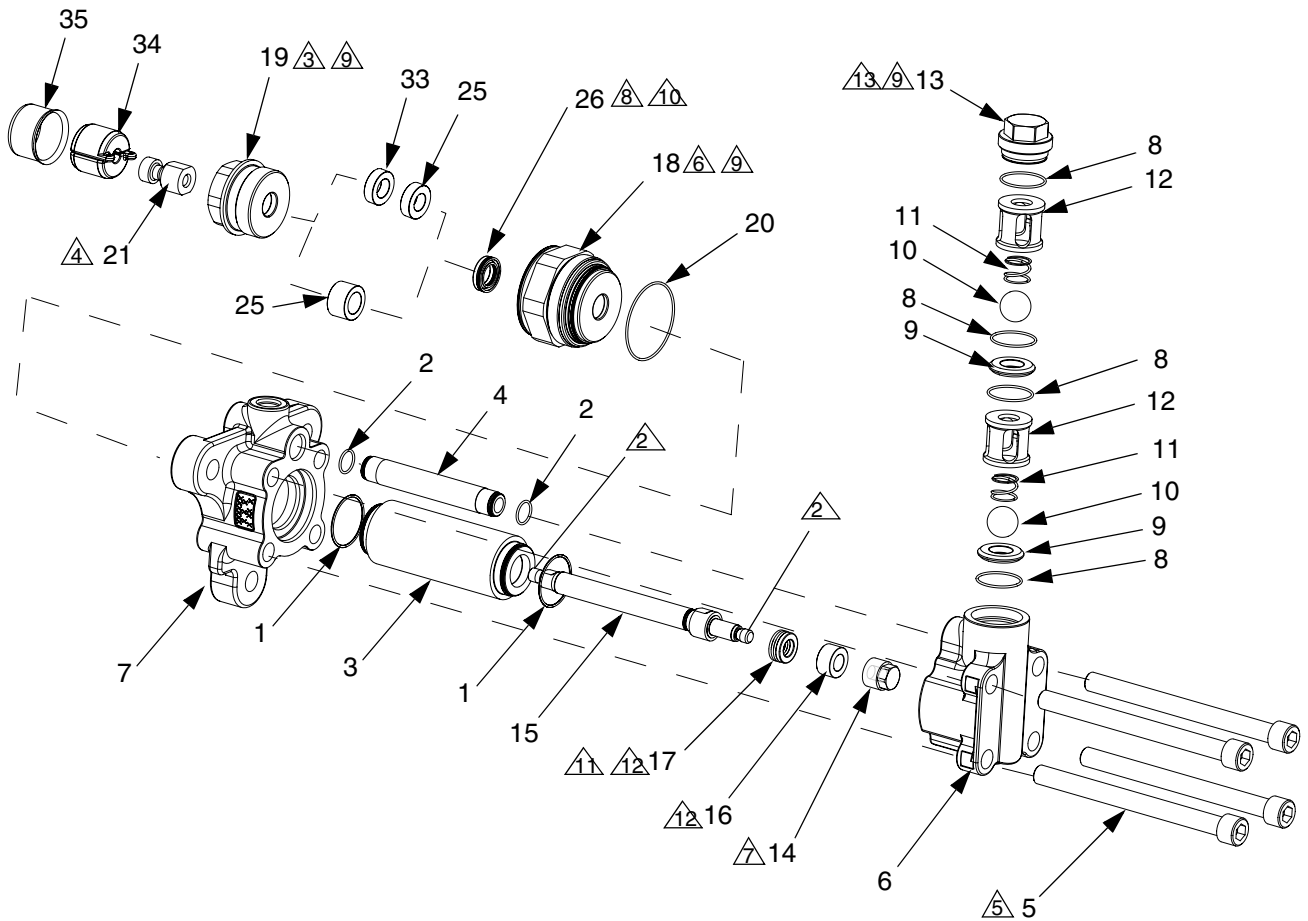
△10 Ensure u-cup (26) springs face throat cartridge (18).

△11 Ensure u-cup (17) springs face displacement rod (15).

△12 Fully assemble seal (17) and bearing (16) onto displacement rod (15) before tightening piston retainer (14).

△13 Torque to 100 ft-lbs. (136 N•m).

## 20cc, 25cc, 30cc, 35cc, 40cc, 45cc, and 50cc Pumps



r\_257891\_3a0019\_20h

1. Lubricate seals, o-rings, lead-in's and moving parts with grease.

Apply one stripe of removable strength anaerobic sealant on threads.

**NOTICE**

Specification sheets and Graco testing indicate that anaerobic sealant requires three days to fully cure. Failure to allow three days for full cure may result in parts coming loose during operation. If faster cure time is needed, Rapid Sealant Cure Kit is available, 24N985.

Torque to 50-ft-lbs (67.5 N•m).

Assemble and torque after displacement rod (15) is assembled through throat retainer (19). See table on page 13 for torque specification.

Torque tie bolts (5) in star pattern to 10 ft-lbs (13.5 N•m). Then torque again in star pattern to 50 ft-lbs (67.5 N•m). Finally torque again in star pattern to the pump size specific torque.  
 Pump size 5cc-86cc = 120 ft-lbs (163 N•m)  
 Pump size 90cc-160cc = 200 ft-lbs (271 N•m)

Torque to 200 ft-lbs. (271 N•m).

See table on page 11 for torque specification.

Must be pressed straight into housing.

Apply anti-seize lubricant to threads.

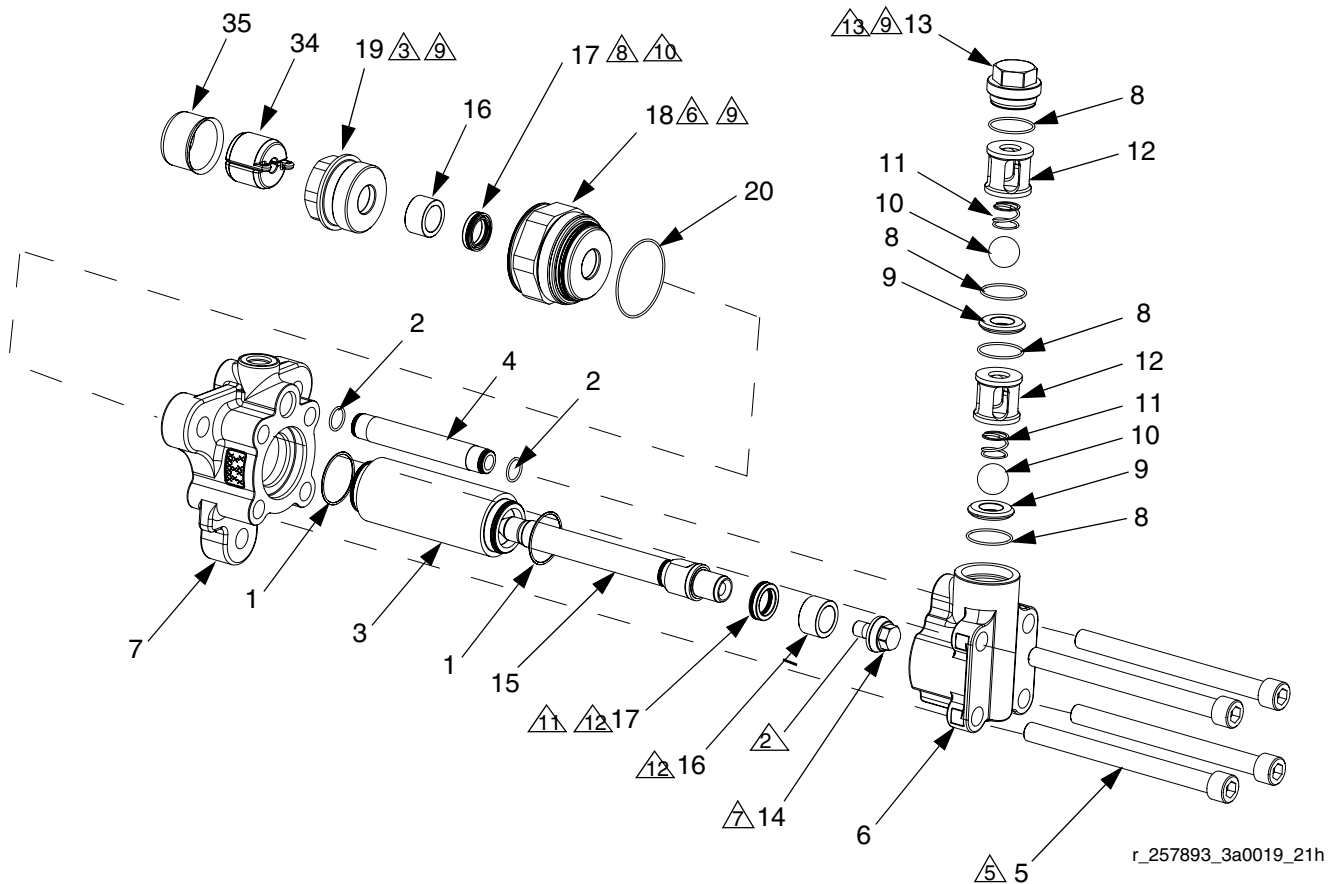
Ensure u-cup (26) springs face throat cartridge (18).

Ensure u-cup (17) springs face displacement rod (15).

Fully assemble seal (17) and bearing (16) onto displacement rod (15) before tightening piston retainer (14).

Torque to 100 ft-lbs. (136 N•m).

60cc, 65cc, 75cc, 80cc, 86cc, 90cc, 100cc, 105cc, 120cc, 140cc, 150cc, and 160cc Pumps



r\_257893\_3a0019\_21h

1. Lubricate seals, o-rings, lead-in's and moving parts with grease.

2. Apply one stripe of removable strength anaerobic sealant on threads.

**NOTICE**

Specification sheets and Graco testing indicate that anaerobic sealant requires three days to fully cure. Failure to allow three days for full cure may result in parts coming loose during operation. If faster cure time is needed, Rapid Sealant Cure Kit is available, 24N985.

3. Torque to 50-ft-lbs (67.5 N•m).

5. Torque tie bolts (5) in star pattern to 10 ft-lbs (13.5 N•m). Then torque again in star pattern to 50 ft-lbs (67.5 N•m). Finally torque again in star pattern to the pump size specific torque.  
 Pump size 5cc-86cc = 120 ft-lbs (163 N•m)  
 Pump size 90cc-160cc = 200 ft-lbs (271 N•m)

6. Torque to 200 ft-lbs. (271 N•m).

7. See table on page 11 for torque specification.

8. Must be pressed straight into housing.

9. Apply anti-seize lubricant to threads.

10. Ensure u-cup (17) springs face throat cartridge (18).

11. Ensure u-cup (17) springs face displacement rod (15).

12. Fully assemble seal (17) and bearing (16) onto displacement rod (15) before tightening piston retainer (14).

13. Torque to 100 ft-lbs. (136 N•m).



### Pump Parts

| Ref.               | Part          | Description                    | Qty. |
|--------------------|---------------|--------------------------------|------|
| 1 ✓ ❄️ ❄️ ❄️ ❄️ ❄️ |               | O-RING, cylinder               | 2    |
| 2 ✓ ❄️ ❄️ ❄️ ❄️ ❄️ |               | O-RING, crossover tube         | 2    |
| 3 ❄️               |               | CYLINDER, pump                 | 1    |
| 4 ❄️               |               | TUBE, crossover, pump          | 1    |
| 5                  | 258790        | BOLT, tie                      | 4    |
| 6                  | 258792        | HOUSING, inlet                 | 1    |
| 7                  | 258791        | HOUSING, outlet                | 1    |
| 8 ❄️ †             |               | O-RING, inlet                  | 4    |
|                    | 258775        | KIT, package of 4              | -    |
|                    | 258776        | KIT, package of 16             | -    |
| 9 †                |               | SEAT, carbide                  | 2    |
| 10 †               |               | BALL, sst                      | 2    |
| 11                 | 258784        | SPRING, ball check             | 2    |
| 12                 | 258785        | HOUSING, ball cage             | 2    |
| 13                 | 258787        | CAP, inlet valve               | 1    |
| 14 ** ❄️           |               | RETAINER, piston               | 1    |
| 15 ❄️              |               | ROD, displacement              | 1    |
| 16 ❄️ ❄️           |               | BEARING, piston                | 1(2) |
| 17 ❄️ ❄️           |               | SEAL, piston                   | 1(2) |
| 18 ★               |               | CARTRIDGE, throat              | 1    |
| 19 ❄️              |               | RETAINER, throat               | 1    |
| 20 ★ ❄️            | 117286        | O-RING, throat cartridge       | 1    |
| 21 ❄️              | (see Table 1) | ADAPTER, rod                   | 1    |
| 25 ❄️ ❄️           |               | BEARING, throat                | 1    |
| 26 ❄️ ❄️           |               | SEAL, throat                   | 1    |
| 28                 |               | PLATE, identification          | 1    |
| 29                 |               | SCREW, drive                   | 2    |
| 33 †               |               | SPACER, throat; 10cc-30cc only | 1    |
| 34 ❄️              | 247167        | COUPLER, pump; 10cc-80cc       | 1    |
|                    | 244819        | COUPLER, pump; 100cc-160cc     | 1    |
| 35                 | 197340        | COVER, coupler                 | 1    |

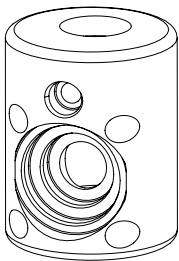
- ✓ See Cylinder O-ring Kits, page 18, for kit number.
- ❄️ See Cylinder Kits, page 18, for kit number.
- ❄️ See Crossover Tube Kits, page 18, for kit number.
- ★ See Throat Cartridge Kits, page 18, for kit number.
- ❄️ See Throat Retainer Kits, page 18, for kit number.
- \*\* See Piston Retainer Kits, page 18, for kit number.
- ❄️ See Seal Kits, page 19, for kit number.
- ❄️ See Displacement Rod Kits, page 21, for kit number.
- † See Throat Spacer Kits, page 21, for kit number.
- † Included in Kit 258783.
- ❄️ Clip coupler cable before installing on to proportioner pumpline.

**Table 1: Various Kits**

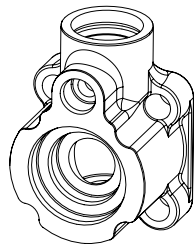
| Pump Model | Pump Size | Adapter      | ✓ Cylinder O-ring Kit | ✿ Cylinder Kit | ✕ Crossover Tube |             | ★ Throat Cartridge Kit | ✖ Throat Retainer Kit | ** Piston Retainer Kit |
|------------|-----------|--------------|-----------------------|----------------|------------------|-------------|------------------------|-----------------------|------------------------|
|            |           |              |                       |                | Bar Stock Inlet* | Cast inlet* |                        |                       |                        |
| L005S1     | 5cc       | 258966       | 258774                | 262557         | 258789           | 24E557      | 262558                 | 262559                | 262560                 |
| L010S1     | 10cc      | 258966       |                       | 258925         |                  |             | 258928                 | 258927                | 258926                 |
| L010S3     | 10cc      | 24U649       |                       | 24U651         |                  |             | 24U647                 | 258927                | 24U645                 |
| L015S1     | 15cc      | 258966       |                       | 258931         |                  |             | 258934                 | 258933                | 258932                 |
| L020S1     | 20cc      | 258967       |                       | 258937         |                  |             | 258940                 | 258939                | 258938                 |
| L020S3     | 20cc      | 24U650       |                       | 24U652         |                  |             | 24U648                 | 258939                | 258938                 |
| L025S1     | 25cc      | 258967       |                       | 258943         |                  |             | 258946                 | 258945                | 258944                 |
| L030S1     | 30cc      | 258967       |                       | 258949         |                  |             | 258952                 | 258951                | 258950                 |
| L035S1     | 35cc      | 258786       |                       | 24R310         |                  |             | 24R316                 | 24R314                | 24R312                 |
| L040S1     | 40cc      | 258786       |                       | 258795         |                  |             | 258798                 | 258797                | 258796                 |
| L045S1     | 45cc      | 258786       |                       | 24R311         |                  |             | 24R317                 | 24R315                | 24R313                 |
| L050S1     | 50cc      | 258786       |                       | 258801         |                  |             | 258804                 | 258803                | 258802                 |
| L060S1     | 60cc      | Not included |                       | 258807         |                  |             | 258810                 | 258809                | 258808                 |
| L065S1     | 65cc      |              |                       | 24H998         |                  |             | 24J007                 | 24J010                | 24J012                 |
| L075S1     | 75cc      |              |                       | 24N821         |                  |             | 24N819                 | 24N818                | 24N822                 |
| L080S1     | 80cc      |              |                       | 258813         |                  |             | 258816                 | 258815                | 258814                 |
| L086S1     | 86cc      |              |                       | 24H999         |                  |             | 24J008                 | 24J011                | 24J013                 |
| L090S1     | 90cc      |              |                       | 258773         |                  |             | 24T165                 | 24T175                | 24T171                 |
| L100S1     | 100cc     |              | 258819                |                | 258822           | 258821      | 258820                 |                       |                        |
| L105S1     | 105cc     |              | 24R011                |                | 24R014           | 24R013      | 24R012                 |                       |                        |
| L120S1     | 120cc     |              | 258825                |                | 258828           | 258827      | 258826                 |                       |                        |
| L140S1     | 140cc     |              | 24T166                |                | 24T176           | 24T172      | 24T169                 |                       |                        |
| L150S1     | 150cc     | 24T167       | 24T177                |                | 24T173           | 24T170      |                        |                       |                        |
| L160S1     | 160cc     | 258831       | 258834                | 258833         | 258832           |             |                        |                       |                        |

\* See figure below for inlet types:

*Bar Stock Inlet*

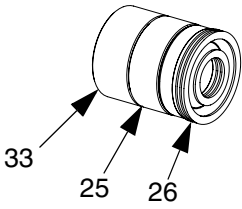


*Cast Inlet*

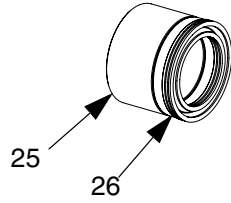


### Seal Kits

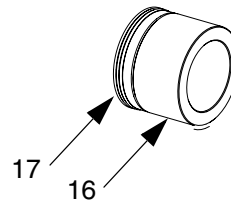
**5cc-30cc Throat Seals  
(excluding L010S3,  
L020S3)**



**35cc-160cc Throat Seals  
(also includes L010S3,  
L020S3)**



**Piston Seals**



**Table 2: Seal Kits**

| Pump Model | Pump Size | Reference Number and Quantity Included in Kit |   |   |   |    |    |    |    |
|------------|-----------|---|---|---|---|----|----|----|----|
|            |           | Seal Kit                                      | 1 | 2 | 8 | 16 | 17 | 25 | 26 |
| L005S1     | 5cc       | 262561  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L010S1     | 10cc      | 258923  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L010S3     | 10cc      | 24U653  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L015S1     | 15cc      | 258929  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L020S1     | 20cc      | 258935  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L020S3     | 20cc      | 24U654  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L025S1     | 25cc      | 258941  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L030S1     | 30cc      | 258947  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L035S1     | 35cc      | 24R306  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L040S1     | 40cc      | 258793  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L045S1     | 45cc      | 24R307  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L050S1     | 50cc      | 258799  | 2 | 2 | 4 | 1  | 1  | 1  | 1  |
| L060S1     | 60cc      | 258805  | 2 | 2 | 4 | 2  | 2  |    |    |
| L065S1     | 65cc      | 24J002  | 2 | 2 | 4 | 2  | 2  |    |    |
| L075S1     | 75cc      | 24N820  | 2 | 2 | 4 | 2  | 2  |    |    |
| L080S1     | 80cc      | 258811  | 2 | 2 | 4 | 2  | 2  |    |    |
| L086S1     | 86cc      | 24J003  | 2 | 2 | 4 | 2  | 2  |    |    |
| L090S1     | 90cc      | 24T162  | 2 | 2 | 4 | 2  | 2  |    |    |
| L100S1     | 100cc     | 258817  | 2 | 2 | 4 | 2  | 2  |    |    |
| L105S1     | 105cc     | 24R009  | 2 | 2 | 4 | 2  | 2  |    |    |
| L120S1     | 120cc     | 258823  | 2 | 2 | 4 | 2  | 2  |    |    |
| L140S1     | 140cc     | 24T163  | 2 | 2 | 4 | 2  | 2  |    |    |
| L150S1     | 150cc     | 24T164  | 2 | 2 | 4 | 2  | 2  |    |    |
| L160S1     | 160cc     | 258829  | 2 | 2 | 4 | 2  | 2  |    |    |

## Displacement Rod Kits

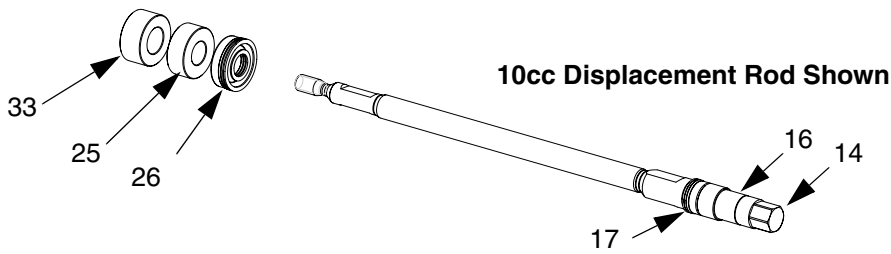
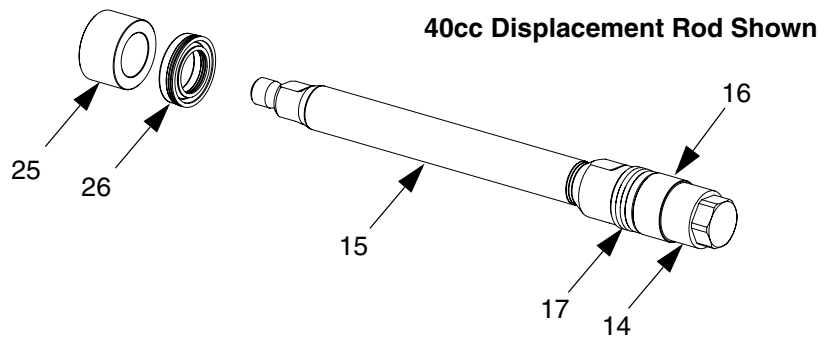
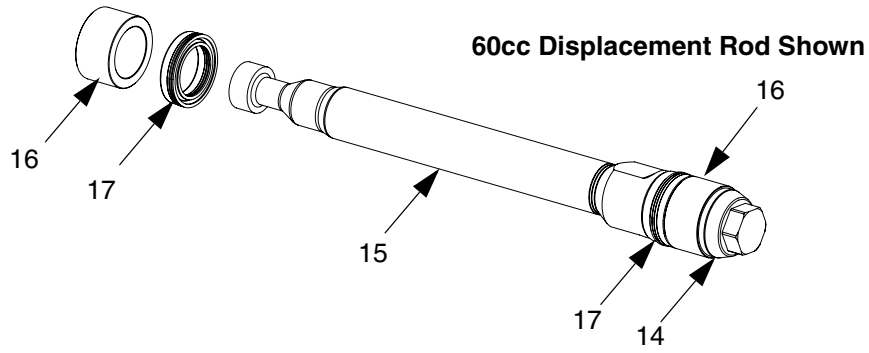


Table 3: Displacement Rod Kits

| Pump Model | Pump Size | Displacement Rod Kit | Reference Number and Quantity Included in Kit |   |    |    |    |    |    |    |    |    |
|------------|-----------|----------------------|---|---|----|----|----|----|----|----|----|----|
|            |           |                      | 1   | 2 | 14 | 15 | 16 | 17 | 20 | 21 | 25 | 26 |
| L005S1     | 5cc       | 262562               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L010S1     | 10cc      | 258924               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L010S3     | 10cc      | 24U655               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L015S1     | 15cc      | 258930               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L020S1     | 20cc      | 258936               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L020S3     | 20cc      | 24U656               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L025S1     | 25cc      | 258942               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L030S1     | 30cc      | 258948               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L035S1     | 35cc      | 24R308               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L040S1     | 40cc      | 258794               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L045S1     | 45cc      | 24R309               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L050S1     | 50cc      | 258800               | 2   | 2 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| L060S1     | 60cc      | 258806               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L065S1     | 65cc      | 24J004               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L075S1     | 75cc      | 24N823               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L080S1     | 80cc      | 258812               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L086S1     | 86cc      | 24J005               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L090S1     | 90cc      | 24T158               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L100S1     | 100cc     | 258818               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L105S1     | 105cc     | 24R010               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L120S1     | 120cc     | 258824               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L140S1     | 140cc     | 24T159               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L150S1     | 150cc     | 24T160               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |
| L160S1     | 160cc     | 258830               | 2   | 2 | 1  | 1  | 2  | 2  | 1  |    |    |    |

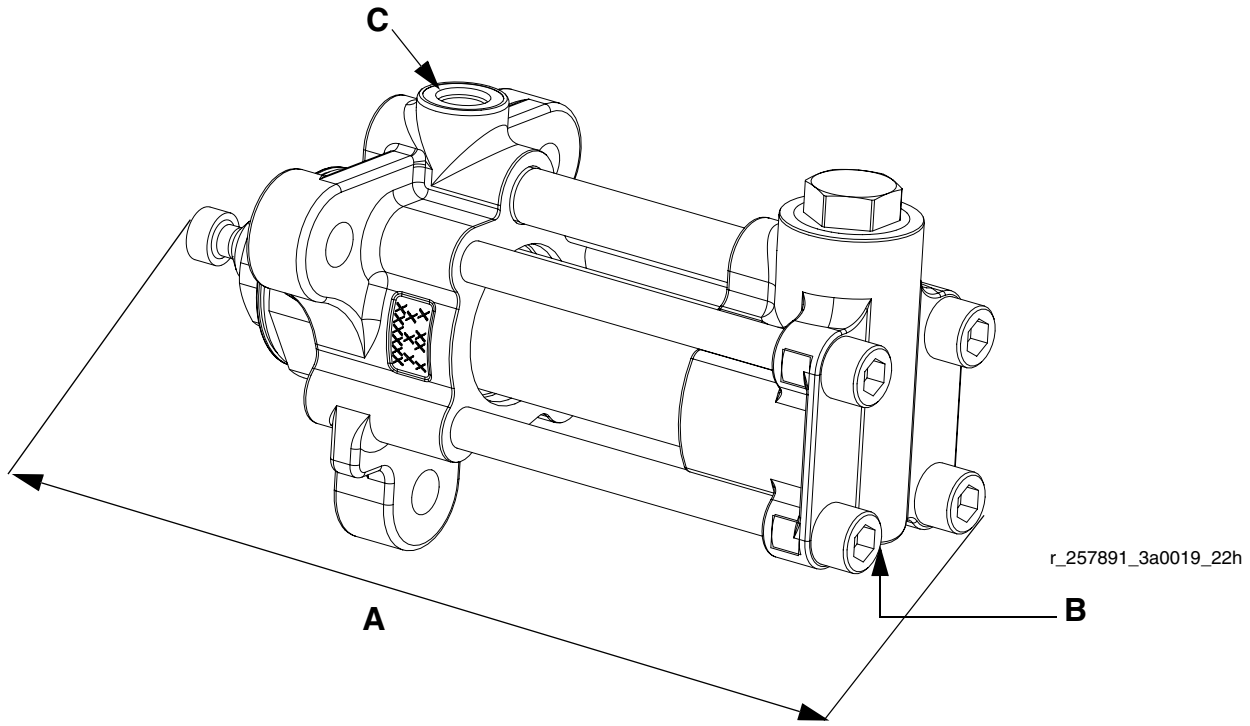
Table 4: Throat Spacer Kits

| Pump Model | Pump Size | Throat Spacer Kit |
|------------|-----------|-------------------|
| L005S1     | 5cc       | 16E364            |
| L010S1     | 10cc      | 16D188            |
| L010S3     | 10cc      | (Not included)    |
| L015S1     | 15cc      | 16D189            |
| L020S1     | 20cc      | 16D190            |

| Pump Model | Pump Size | Throat Spacer Kit |
|------------|-----------|-------------------|
| L020S3     | 20cc      | (Not included)    |
| L025S1     | 25cc      | 16D191            |
| L030S1     | 30cc      | 16D192            |

## Dimensions

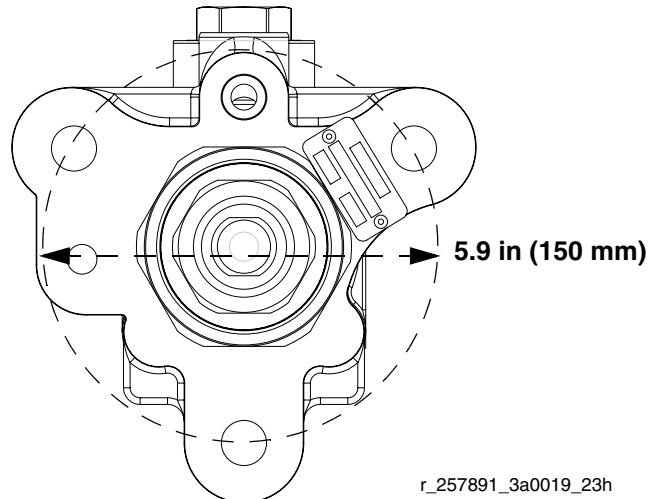
All pump sizes have the same dimensions.



| <b>A</b><br><b>(Length)</b><br>in. (mm) | <b>B</b><br><b>(Inlet)</b><br>in. npt (f) | <b>C</b><br><b>(Outlet)</b><br>SAE (f) |
|---|---|--|
| 13.36 (339.34)                          | 3/4-14                                    | 3/4-16                                 |

## Outlet Housing Mounting Hole Layout

All pumps have the same outlet housing mounting hole layout.



# Technical Data

|  |   |
|--|---|
| Maximum working pressure . . . . .       | 3500 psi (24MPa, 241 bar)                   |
| Maximum operating temperature . . . . .  | 180° F (82° C)                              |
| Maximum cycle rate . . . . .             | 65 cycles per minute                        |
| Minimum feed pressure at inlet . . . . . | 50 psi (0.35 MPa, 3.5 bar)                  |
| Weight . . . . .                         | 30 lbs (13.6 kg)                            |
| Wetted parts . . . . .                   | SST, tungsten carbide, acetal, PTFE, UHMWPE |

# Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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

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

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

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

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