

Z-Pump Elite S5 and S8 Series

3A8563H

EN

For pumping highly abrasive plural component materials. For professional use only.

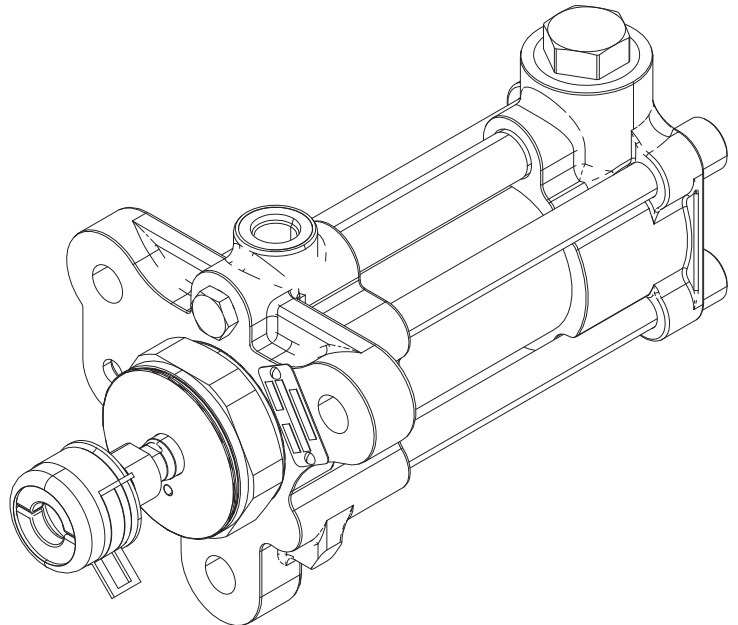
3500 psi (24 MPa, 241 bar) Maximum Working Pressure

See page 2 for model information.



Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment.
Save these instructions.



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Related Manuals

Manual in English	Description
3A6165	EFR Instructions - Parts
313997	HFR Setup - Operation
3A1961	HFR for NVH Foam - Modular Setup - Operation

Models

Model	Pump Size
L005S5	5cc
L010S5	10cc
L020S8	20cc
L040S8	40cc
L080S8	80cc
L100S8	100cc
L120S8	120cc
L160S8	160cc

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <h1 style="margin: 0;">WARNING</h1>	
   	<p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment only in well-ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking). • Ground all equipment in the work area. • Never spray or flush solvent at high pressure. • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present. • Use only grounded hoses. • Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive. • Stop operation immediately if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
    	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point dispensing device at anyone or at any part of the body. • Do not put your hand over the fluid outlet. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.



WARNING

**EQUIPMENT MISUSE HAZARD**

Misuse can cause death or serious injury.



- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

**MOVING PARTS HAZARD**

Moving parts can pinch, cut or amputate fingers and other body parts.



- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

**BURN HAZARD**

Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.



WARNING



TOXIC FLUID OR FUMES HAZARD

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

- Read Safety Data Sheets (SDSs) for handling instructions and to know the specific hazards of the fluids you are using, including the effects of long-term exposure.
- When spraying, servicing equipment, or when in the work area, always keep work area well-ventilated and always wear appropriate personal protective equipment. See **Personal Protective Equipment** warnings in this manual.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.







PERSONAL PROTECTIVE EQUIPMENT

Always wear appropriate personal protective equipment and cover all skin when spraying, servicing equipment, or when in the work area. Protective equipment helps prevent serious injury, including long-term exposure; inhalation of toxic fumes, mists or vapors; allergic reaction; burns; eye injury and hearing loss. This protective equipment includes but is not limited to:

- A properly fitting respirator, which may include a supplied-air respirator, chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority.
- Protective eyewear and hearing protection.




Important Isocyanate (ISO) Information

Isocyanate Conditions

				
<p>Spraying or dispensing fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates.</p>				

- Read and understand the fluid manufacturer’s warnings and Safety Data Sheets (SDSs) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with this equipment unless you are trained, qualified, and have read and understood the information in this manual and in the fluid manufacturer’s application instructions and SDSs.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocyanate mists, vapors, and atomized particulates, everyone in the work area must wear appropriate respiratory protection. Always wear a properly fitting respirator, which may include a supplied-air respirator. Ventilate the work area according to instructions in the fluid manufacturer’s SDSs.
- Avoid all skin contact with isocyanates. Everyone in the work area must wear chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority. Follow all fluid manufacturer recommendations, including those regarding handling of contaminated clothing. After spraying, wash hands and face before eating or drinking.

Keep Components A and B Separate

				
<p>Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination:</p> <ul style="list-style-type: none"> • Never interchange component A and component B wetted parts. • Never use solvent on one side if it has been contaminated from the other side. 				

Moisture Sensitivity of Isocyanates

Exposure to moisture (such as humidity) will cause ISO to partially cure, forming small, hard, abrasive crystal that become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity.

NOTICE
<p>Partially cured ISO will reduce performance and the life of all wetted parts.</p> <ul style="list-style-type: none"> • 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 pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere. • Use only moisture-proof hoses compatible with ISO. • Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use. • Always lubricate threaded parts with an appropriate lubricant when reassembling.

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

Changing Materials

NOTICE

Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

- 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.
- When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.

Component Identification

40cc pump shown

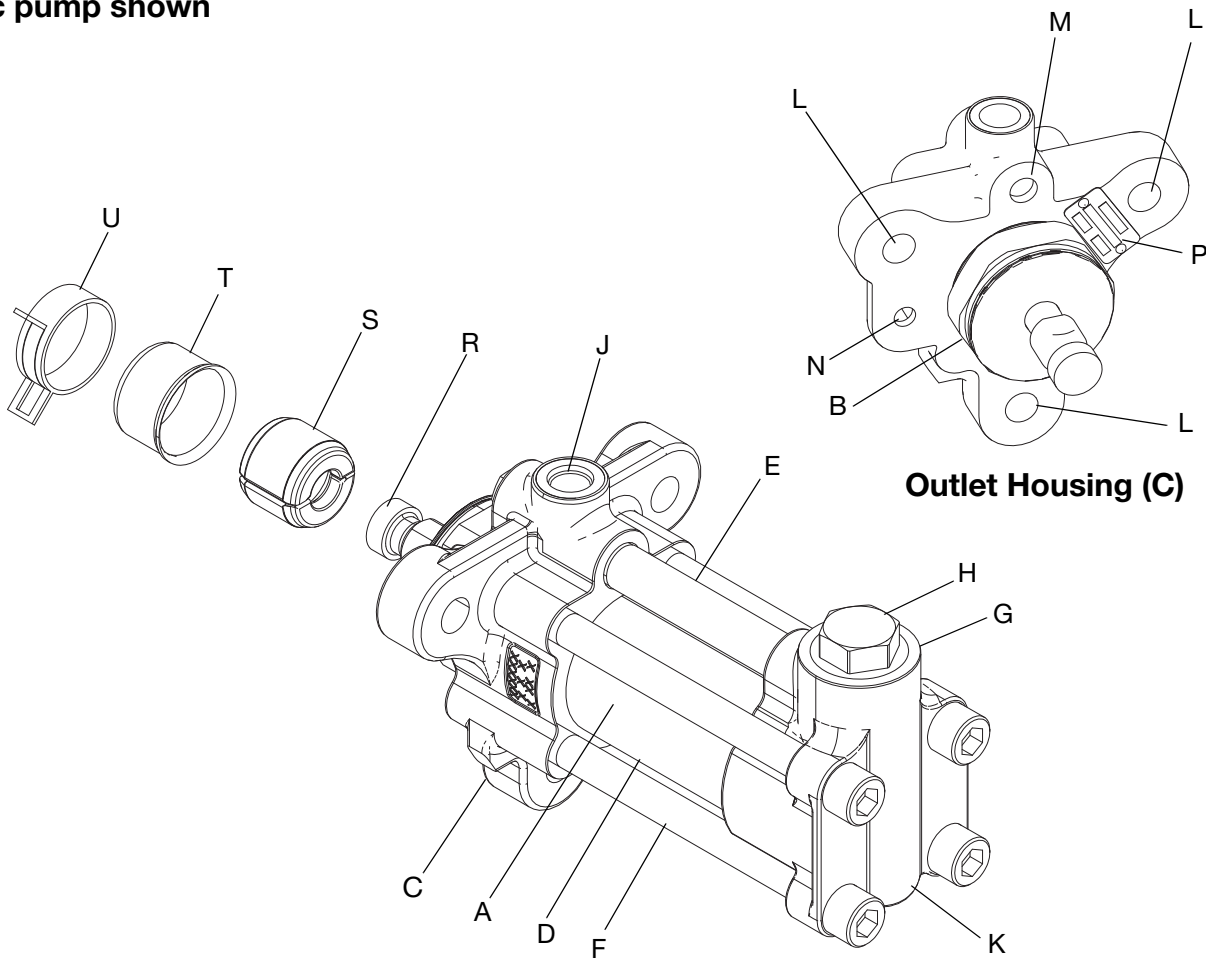


FIG. 1: Component Identification

Key:

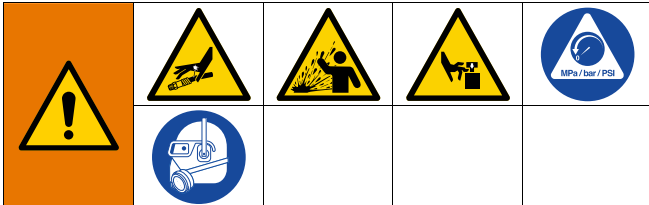
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|---|---|---|---------------------------------------|
| A | Displacement Rod (inside main cylinder) | K | Fluid Inlet (bottom of inlet housing) |
| B | Throat Cartridge | L | Pump Mounting Holes |
| C | Outlet Housing | M | Pressure Transducer Port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

Operation


Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



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

1. Press the enable/disable key on the ADM  to disable the EFR/HFR, and verify it is inactive.
2. Relieve pressure and shut off the supply systems. See your appropriate supply system manual.
3. Turn the PRESSURE RELIEF/DISPENSE valves to PRESSURE RELIEF/CIRCULATION. Route the fluid to grounded waste containers or supply tanks. Ensure gauges read 0.
4. For models with a dispense valve with a safety lock, engage the dispense valve safety lock.

Flushing



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

Hot solvent may ignite. To avoid fire and explosion:

- Flush equipment only in a well-ventilated area
- Ensure main power is off and the heater is cool before flushing
- Do not turn on heater until fluid lines are clear of solvent

- Flush before changing colors, before fluid can dry in the equipment, at the end of the day, before storing, and before repairing equipment.

- Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
- Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.

Maintenance Grease Cup Maintenance

NOTE: If the quick lube system is installed on the Z-Pump elite series, use one of the following operation manuals for instructions. 313997, 3A1961 or 3A6165.

Grease Cup Maintenance

NOTE: For pumps with grease fittings.

Frequency of greasing intervals is dependent on material being pumped. As a basic schedule, lubricate pump with grease after 250 gallons of material (five of fifty five gallon drums) has been passed through the pump.

If the grease has become hardened, remove the materials or grease, and shorten the intervals between greasing the pump.

If the grease remains clear and free of material, intervals between greasing the pump can be increased.

To Grease the Pump

1. Remove the M5 hex socket plug (D) to permit grease to circulate through the throat cartridge (119) correctly.
2. Attach grease gun to the grease fitting (C). Pump new grease into the pump until fresh grease is observed from grease relief hole (E).
3. Replace and re-tighten the M5 hex socket plug (D). See FIG. 2.

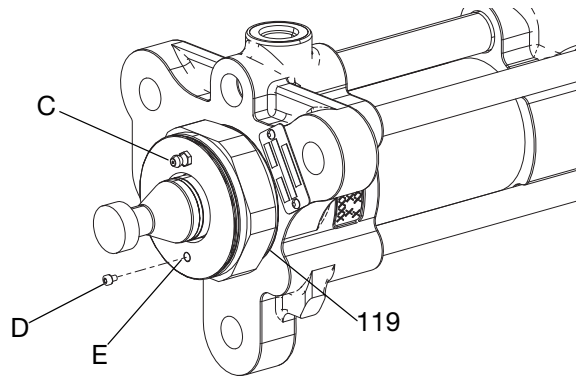
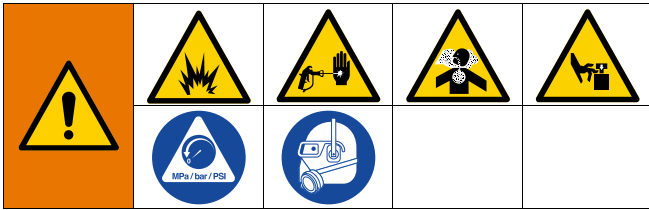


FIG. 2

Repair



Required Tools

- Large vise
- Set of adjustable wrenches
- O-ring pick
- 1/2 in. Allen (hex) bit socket
- 3/8 in. Allen (hex) wrench
- 1 1/4 in. wrench
- 1 1/8 in. crowfoot wrench
- Rubber mallet
- Torque wrench
- 1 in. wrench
- 2 in., 2 1/4 in. and 3 in. hex sockets
- Anti-seize lubricant
- Removable strength thread locker
- Grease (As compatible with the material being dispensed)

Inlet Housing Disassembly

Models 5cc - 20cc, S5 and S8 Pumps

1. Relieve pressure and flush system. Follow **Pressure Relief Procedure** and **Flushing**, page 9.
2. Remove inlet hose and drain inlet housing (106).
3. Remove inlet valve cap (113) from inlet housing (106), and remove O-ring (108). See FIG. 3.

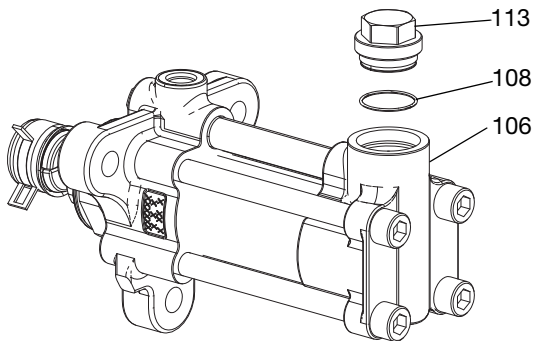


FIG. 3

4. Remove upper check assembly (AA), including the spring retainer (137), check housing (138), conical spring (139), ball housing retainer (140), ball (141), carbide seat (142), O-ring (143), retainer (144), and O-ring (108).
5. Remove lower check (BB), including the spring retainer (137), check housing (138), conical spring (139), ball housing retainer (140), ball (141), carbide seat (142), O-ring (143), retainer (144), and O-ring (108). See FIG. 4.

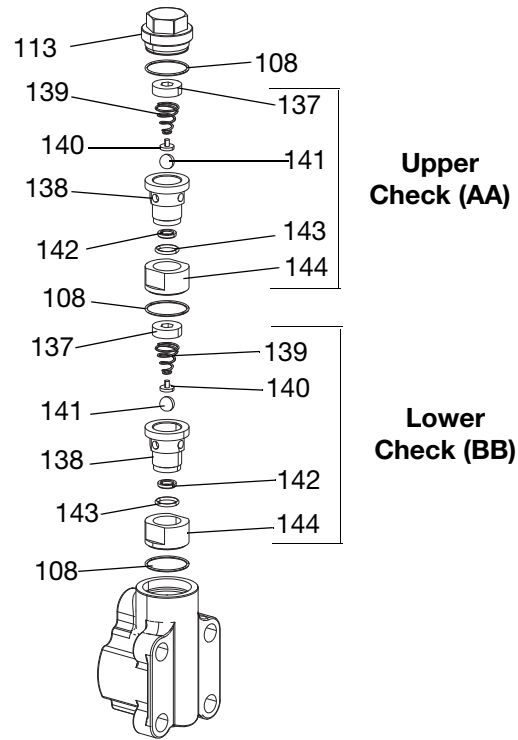


FIG. 4

6. Clean all parts in a compatible solvent. Lay the parts in order for easier reassembly. Inspect each ball and seat for nicks or scratches then replace as required.
7. It is recommended to replace the O-rings (108, 143) after cleaning.

Models 40cc - 160cc, S8 Pumps

1. Relieve pressure and flush system. Follow **Pressure Relief Procedure** and **Flushing**, page 9.
2. Remove inlet hose and drain inlet housing (106).

- Remove inlet valve cap (113) from inlet housing (106), and remove O-ring (108). See FIG. 5.

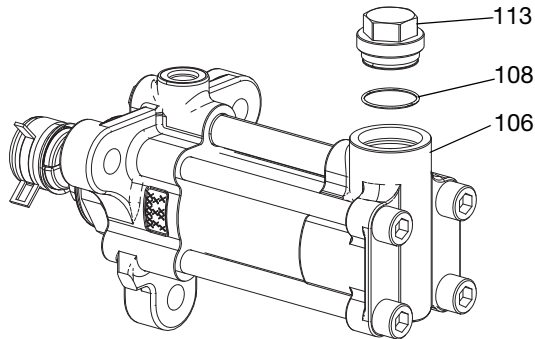


FIG. 5

- Remove upper check (CC) ball cage (112), check ball spring (111), ball (110), O-ring (108) and carbide seat (109).
- Press lower ball (110) off seat (109) from fluid inlet and drain the inlet housing (106).
- Remove lower check (DD) O-ring (108), ball cage (112), check ball spring (111), ball (110), carbide seat (109), and O-ring (108). See FIG. 6.

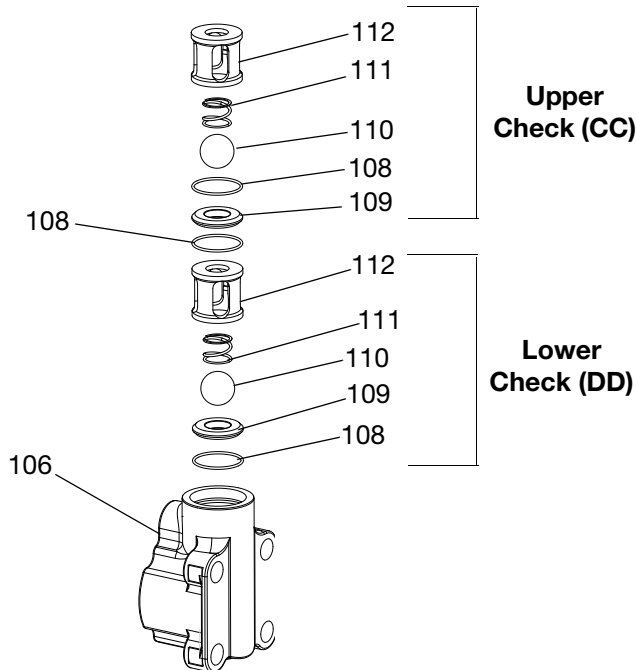


FIG. 6

- Clean all parts in a compatible solvent. Lay the parts in order for easier reassembly. Inspect each ball and seat for nicks or scratches then replace as required.
- It is recommended to replace the O-rings (108) after cleaning.

Inlet Housing Assembly

Models 5cc - 20cc, S5 and S8 Pumps

- Assemble upper check assembly (AA). Apply anti-seize lubricant to the check housing (138), spring retainer (137) and check valve retainer (144).
- Install the O-ring (143) and then the carbide seat (142) into the check valve retainer (144). The check housing (138) then threads into the check valve retainer and is torqued to 50 ft-lbs (67.5 N•m).

NOTE: The sharp corner of the outside diameter of the carbide seat (142) must face towards the check housing (138) and the ball (141). See FIG. 7.

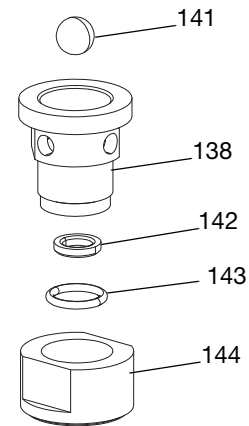


FIG. 7

- Install the ball (141), ball housing retainer (140) and conical spring (139) into the check housing (138).
- Install the spring retainer (137) cup side down into the check housing (138) to trap the spring (139) until the spring retainer bottoms out into the check housing. Torque spring retainer to 30 ft-lbs (41 N•m.) See FIG. 8, page 12.

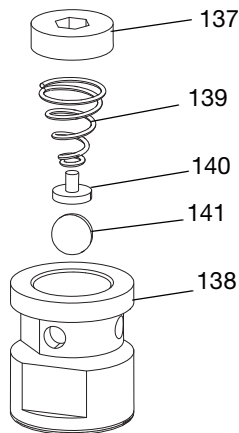


FIG. 8

5. Assemble lower check assembly (BB) using the steps 1 through 4 above.
6. Install the o-ring (108) into the inlet housing (106).
7. Install lower check (BB) into the housing (106) in the orientation shown.
8. Install the o-ring (108) into the inlet housing (106).
9. Install upper check assembly (AA) into the inlet housing (106) in the orientation shown.
10. Install o-ring (108) on valve inlet cap (113) and apply anti-seize lubricant to valve inlet cap threads. Torque inlet cap to 70 ft-lbs. (95 N•m). See FIG. 9 .

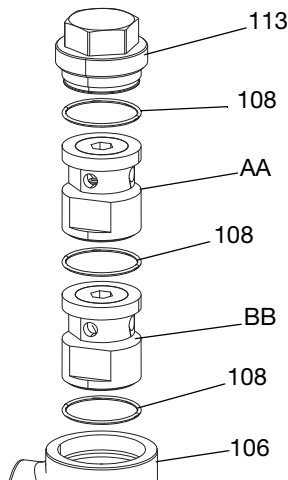


FIG. 9

Models 40cc-160cc, S8 Pumps

1. Apply anti-seize lubricant to the threads of inlet valve cap (113) and install O-ring (108) into the groove.
2. Assemble lower check assembly (DD). Install O-ring (108) into inlet housing (106) followed by the carbide seat (109).
3. Place the ball (110) onto the carbide seat (109) followed by the ball check spring (111) and the ball cage housing (112).

NOTE: Confirm the orientation of the ball cage prior to installing. The end with the larger opening must face the spring. See FIG. 10.

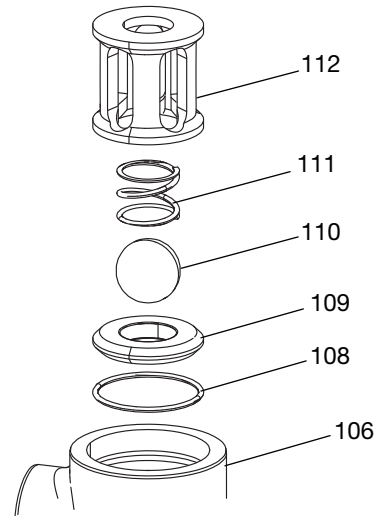


FIG. 10

4. Assemble upper check assembly (CC). Repeat step 2 above after placing an O-ring (108) on top of the lower check assembly (DD).
5. Install the valve inlet cap (113) compressing both check assemblies together into the inlet housing. Torque the valve inlet cap to 70 ft-lbs. (95 N•m).

Pump Disassembly

1. Relieve pressure and flush system. Follow **Pressure Relief Procedure** and **Flushing**, page 9.
2. Remove inlet and outlet hoses, drain inlet housing (106), and outlet housing (107). If quick lube system is installed, detach hoses from outlet housing (107).
3. Using a bench vice, horizontally clamp the pump on outlet housing (107). Use a 1/2 in. hex bit socket to loosen all four tie bolts (105) from inlet housing (106).
4. For 20cc - 40cc pumps only: Use wrench to remove rod adapter (121). See FIG. 11.

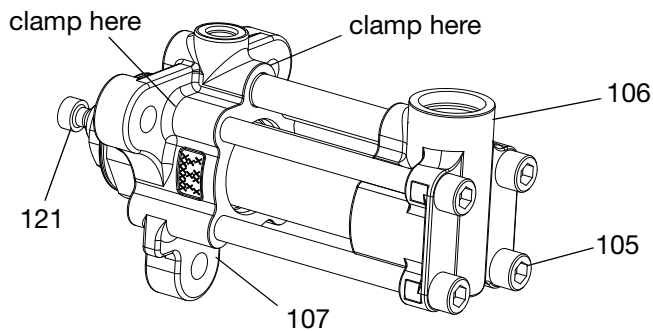


FIG. 11

5. Remove pump assembly from vise and lay on a flat surface with towels or in catch pan.
6. Completely remove the tie bolts (105). See FIG. 12.

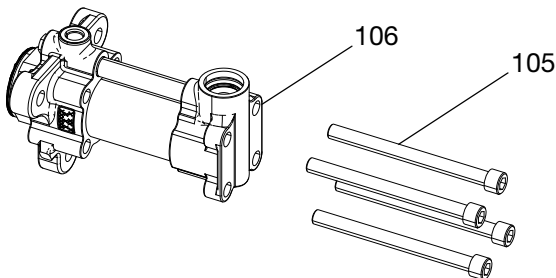


FIG. 12

7. Remove inlet housing (106) from pump cylinder (103). Remove pump crossover tube (104) and o-rings (102). See FIG. 13.

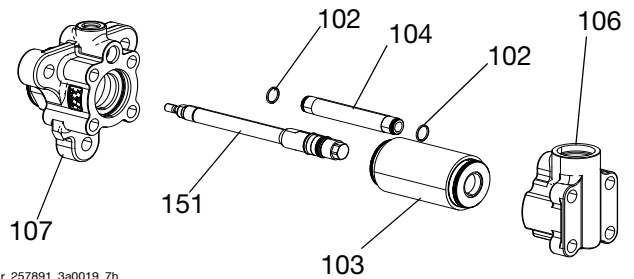


FIG. 13

8. Pull pump cylinder (103) and displacement rod (151) away from outlet housing (107).

NOTICE

Be careful not to scratch the displacement rod (151); place it on a smooth working surface. Damage to the displacement rod will shorten pump life.

9. Remove displacement rod (151) from pump cylinder (103). See FIG. 14.

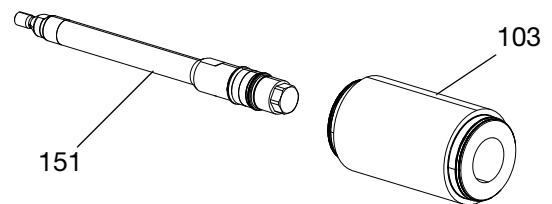


FIG. 14

10. Remove two o-rings (101) from pump cylinder (103). See FIG. 15.

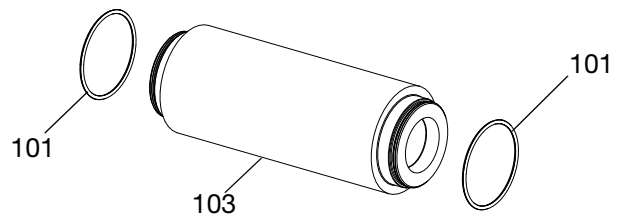


FIG. 15

11. Place outlet housing (107) in vise so throat cartridge (119) is facing up.

12. Remove throat cartridge (119).
13. Use o-ring pick and remove o-ring (145) from inside throat cartridge (119), two throat seals (126) out of the throat cartridge, and O-ring (125) from the shoulder of the throat cartridge. see FIG. 16.
14. Remove throat retainer (118) and throat retainer O-ring (120). See FIG. 16.

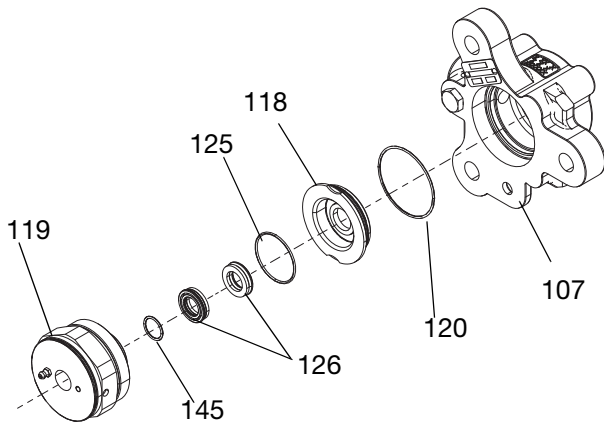
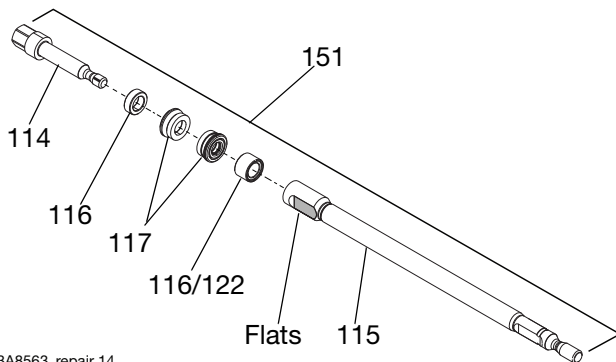


FIG. 16

15. To disassemble pump rods (151):
 - a. For 5cc and 10cc Pumps, clamp flats on seal end of displacement rod bottom (115) in vise. Remove piston retainer (114), piston rod bearing (116,122), and piston seals (117).

For 5cc-10cc S5 Pumps



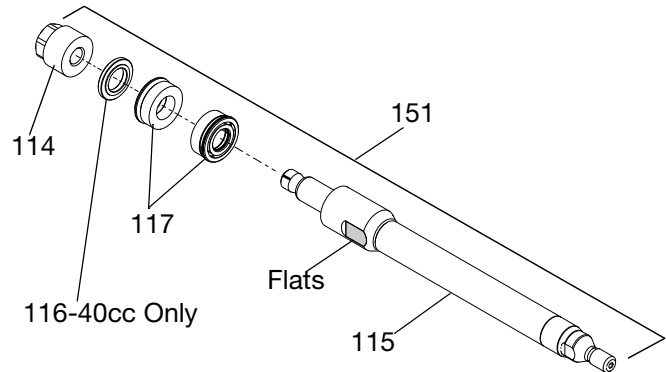
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FIG. 17

- b. For 20cc - 160cc pumps, clamp flats on seal end of displacement rod bottom (124) in vise. Remove piston retainer (114), piston bearing

(116), and two piston seals (117). See FIG. 18 and FIG. 19.

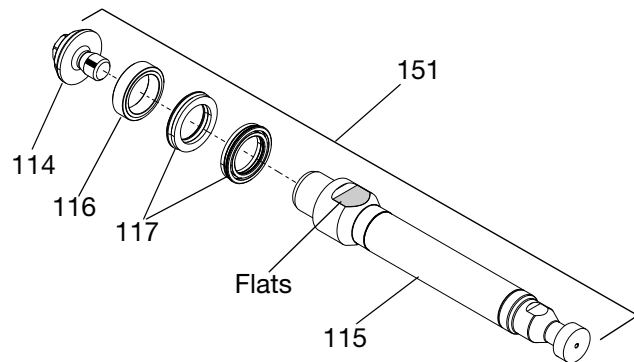
For 20cc-40cc S8 Pumps



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FIG. 18

For 80cc-160cc S8 Pumps



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FIG. 19

16. If the displacement rod (115) shows damage or wear on the surface below the piston seals (117) it should be replaced to prevent damage to new seals.

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

Pump Rod Assembly

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

1. If the displacement rod (115) was removed and disassembled from the piston retainer (114), clean any residual sealant from the threads. Apply one stripe of removable strength thread locker to the male threads of the displacement rod for pump sizes 20-120cc pumps or the male threads on the piston retainer for 160cc pumps. When fully threaded together torque the shafts to the value shown in the table below.

Pump Size	Torque
20	25 ft-lbs (34 Nm)
40	50 ft-lbs (67.5 Nm)
80-160	55 ft-lbs (74.5 Nm)

2. Apply grease to seal and bearing surface of displacement rod (115), piston seals (117) and piston bearing (116) 40cc -160cc only.
3. Install piston seals (117) onto the displacement rod (115). Confirm the first piston seal faces the displacement rod (115) and the second piston seal faces the piston retainer (114) for 20cc size and the bearing (116, 40cc-160cc size. only). See FIG. 21 and FIG. 22.

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 damage to the equipment from parts coming loose during operation. If faster cure time is required, warm components to 104° F (40° C) for 6 hours.

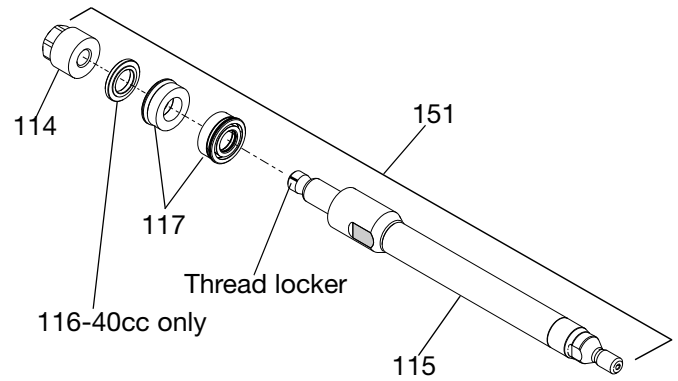
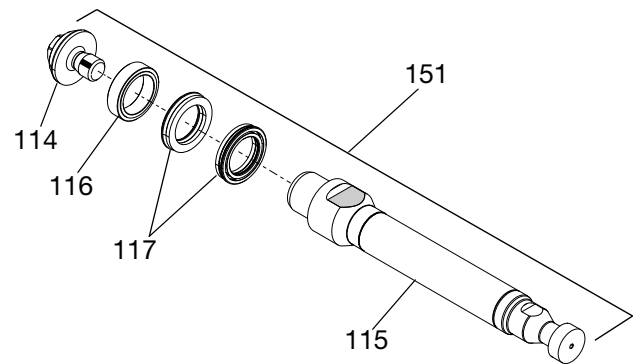


FIG. 21 20cc and 40cc pumps



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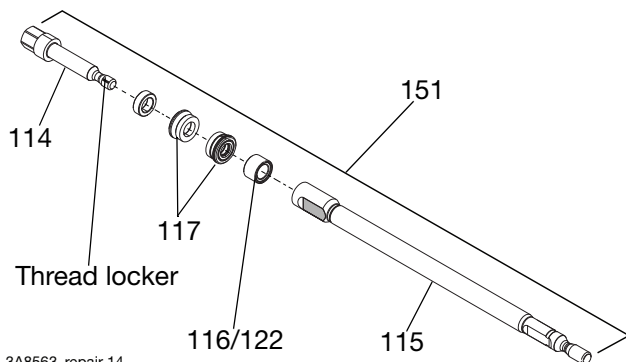
FIG. 22 80cc through 160cc pumps

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

4. Clamp flats on seal end of pump rod bottom (124) in vise. See Torque Specification table for piston retainer (114) torque according to pump size.

Piston Retainer (114) Torque Specifications

Pump Size	Torque
5cc	3.2 ft-lbs (4.3 N•m)
10cc	5.5 ft-lbs (7.45 N•m)
20cc	30 ft-lbs (40.6 N•m)
40cc	50 ft-lbs (67.5 N•m)
80cc	80 ft-lbs (108 N•m)
100cc	160 ft-lbs (216 N•m)
120cc	160 ft-lbs (216 N•m)
160cc	160 ft-lbs (216 N•m)



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FIG. 20 5cc and 10cc pumps

5. Apply grease to the o-ring (145) and the two throat seals (126). Install the o-ring (145) into the upper most groove of the throat cartridge (119). slide O-ring (110 or 125 depending on pump model) over the boss end of the throat cartridge (119). Place first throat seal into the throat cartridge (119) and ensure the first throat seal spring faces towards the bottom of the throat cartridge. Using a suitable size socket or dowel, press the throat seal to the bottom of the throat cartridge
6. Place the second throat seal (126) into the throat cartridge (119) ensuring the spring side faces up toward the throat retainer (118). Using a suitable size socket or dowel, press the second throat seal into the throat cartridge until it contacts the first throat seal. See FIG. 23.

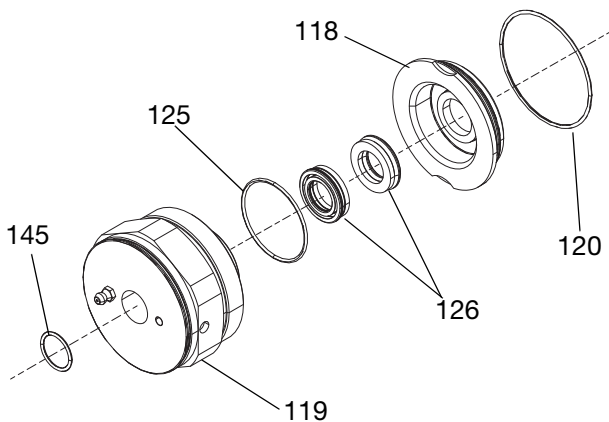


FIG. 23

7. With the outlet housing (107) mounted securely in a vice, install the throat retainer O-ring (120) onto the throat retainer (118). Place the retainer into the outlet housing (107).
8. Apply anti-seize to the threads on the throat retainer (119) and thread it into the outlet housing (107). When fully threaded together torque the throat retainer to 200 ft-lbs. (271 N•m). See FIG. 24.

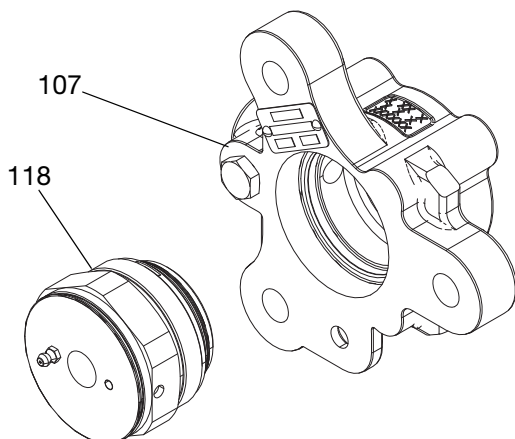


FIG. 24

9. Install cylinder o-rings (101) on pump cylinder (103) and crossover tube o-rings (102) on crossover pump tube (104). Lubricate o-rings with grease. See FIG. 25.

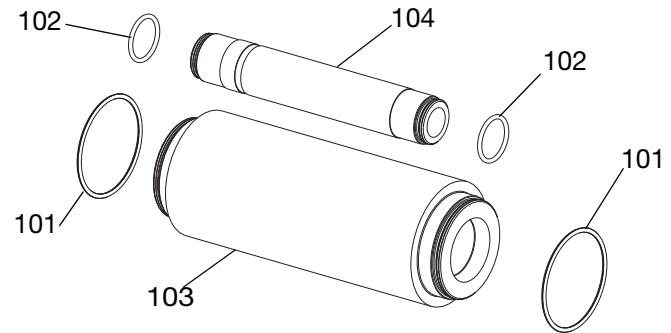
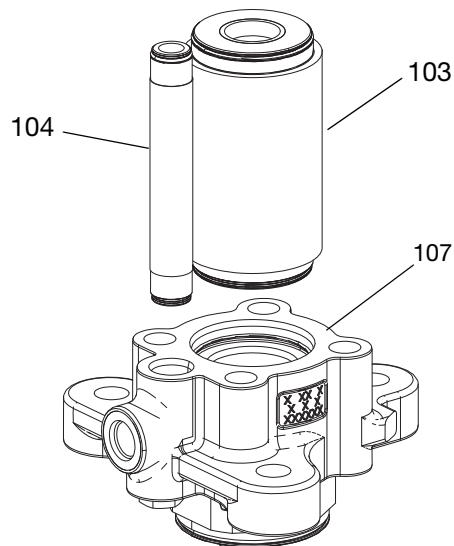


FIG. 25

10. Install pump cylinder (103) and pump crossover tube (104) in outlet housing (107) with a rubber mallet. See FIG. 26..



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FIG. 26

11. Lubricate piston seals (117), and piston bearing (116) with grease.

NOTE: For 160cc pumps, place the cylinder installation tool (150) over the end of the pump cylinder (103) to help guide the displacement rod (151) during installation. See FIG. 27 page 17.

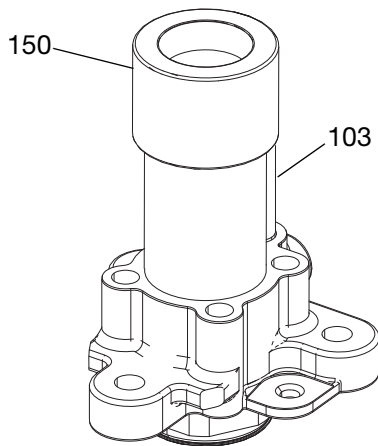
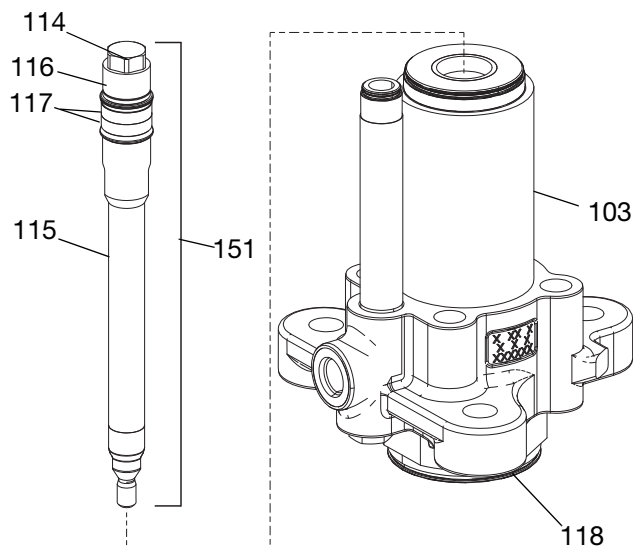


FIG. 27

12. Install displacement rod (151) in pump cylinder (103) and into throat cartridge (118). Gently tap displacement rod with a rubber mallet until the hex surface of the piston retainer (114) is flush or below the surface of the pump cylinder (103). See FIG. 28.



3A8563_repair 9
FIG. 28

13. Gently place inlet housing (106) on pump cylinder (103) and pump crossover tube (104). Ensure inlet housing bores are aligned with pump cylinder and pump 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 (105).

14. Lubricate four tie bolts (105) threads and install.

15. Torque tie bolts (105) in a star pattern (see FIG. 29) to 10 ft-lbs (13.5 N•m). Then torque again to 50 ft-lbs (67.5 N•m). Torque a final time to 200 ft-lbs (271 N•m)
16. After torquing the four tie bolts (105) ensure the inlet housing (106) is evenly seated onto the pump cylinder (103) and pump crossover tube (104).
17. For 20cc-40cc pumps only: Clean rod adapter (121) threads with a wire brush and apply removable strength thread locker to displacement rod (115) threads. Install rod adapter (121) on displacement rod (115). Torque Rod adapter and displacement rod together to 45 ft-lbs (60.75 N•m). See FIG. 29.

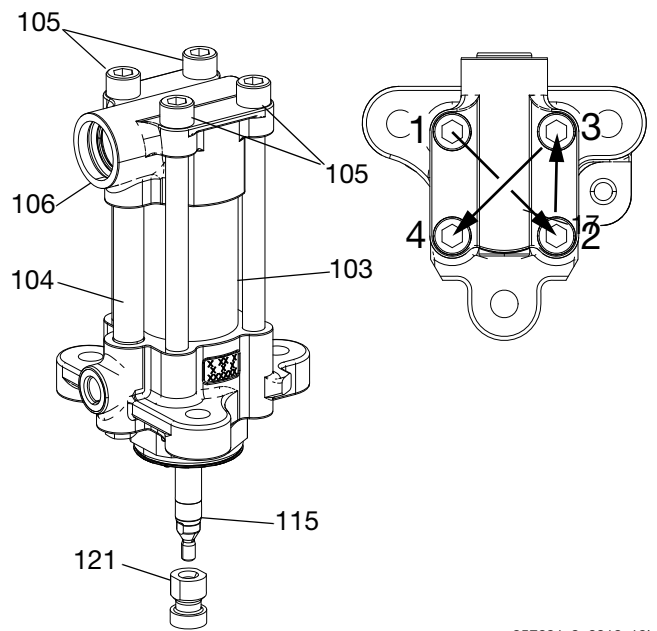


FIG. 29

r_257891_3a0019_19h

Parts

Complete Pump Assemblies for S5 and S8

5cc and 10cc Pump

NOTE: Some parts shown may appear slightly different in shape and size than actual.

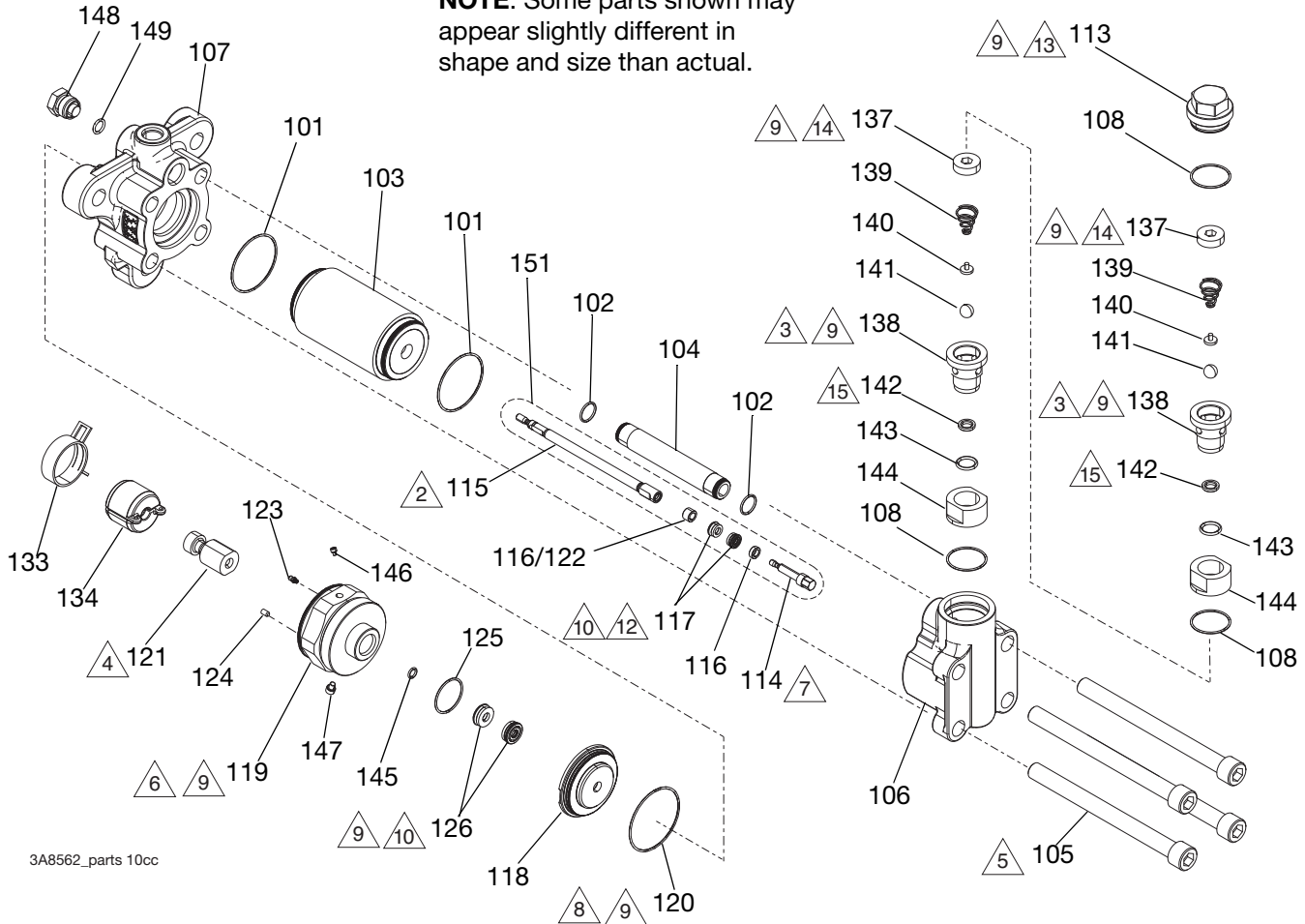


FIG. 30

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 damage to the equipment from parts coming loose during operation. If faster cure time is required, warm components to 104° F (40° C) for 6 hours

△ Torque to 50-ft-lbs (67.5 N•m).

△ Assemble and torque after displacement rod (151) is assembled through throat retainer (110). Torque to 45 ft-lbs (61.01 N•m)

△ Torque tie bolts (105) in star pattern (FIG. 29 page 17) to 10 ft-lbs (13.5 N•m). Then torque again to 50 ft-lbs (67.5 N•m). Finally torque to 200 ft-lbs (271 N•m).

△ Torque to 200 ft-lbs. (271 N•m).

△ See **Piston Retainer (114) Torque Specifications** table on page 15 for torque specification.

△ Must be pressed straight into housing.

△ Apply anti-seize lubricant to threads.

△ Mount such that the non-spring end of one seal and the non-spring end of the other seal are joined.

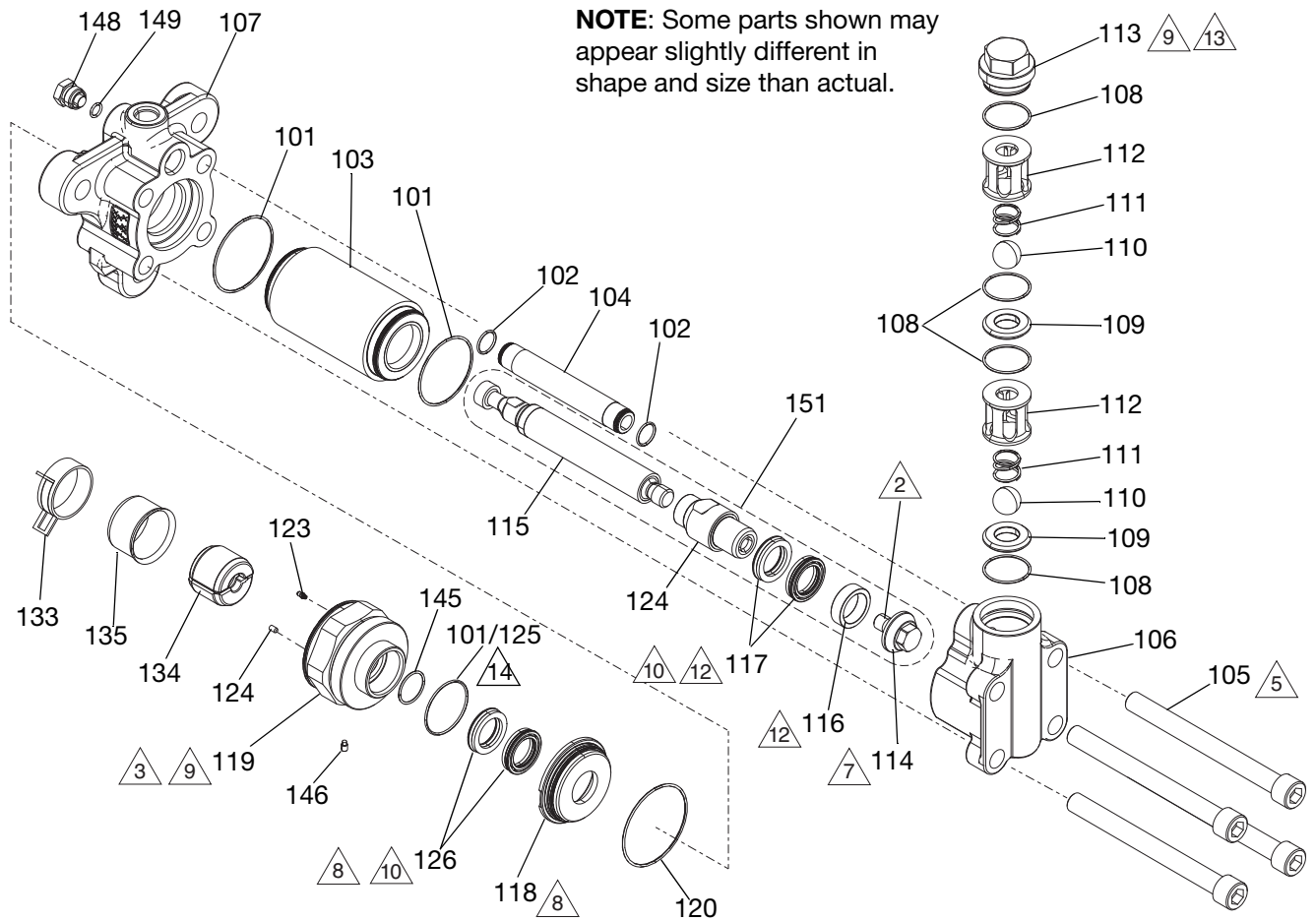
△ Assemble piston bearing (116), piston seals (117), and piston bearing (116/122) onto piston retainer (114).

△ Torque to 70 ft-lbs. (95 N•m).

△ Torque to 30 ft-lbs. (41 N•m).

△ Sharp corner of outside diameter faces up towards the check housing (138).

80cc, 100cc, 120cc, and 160cc Pump



3A8562 parts 80cc

Fig. 33

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 damage to the equipment from parts coming loose during operation. If faster cure time is required, warm components to 104° F (40° C) for 6 hours.

Torque to 50-ft-lbs (67.5 N•m).

Torque tie bolts (105) in star pattern (Fig. 29 page 17) to 10 ft-lbs (13.5 N•m). Then torque again to 50 ft-lbs (67.5 N•m). Finally torque to 200 ft-lbs (271 N•m)

Torque to 200 ft-lbs. (271 N•m).

See **Piston Retainer (114) Torque Specifications** table on page 15 for torque specification.

Must be pressed straight into housing.

Apply anti-seize lubricant to threads.

Mount such that the non-spring end of one seal and the non-spring end of the other seal are joined.

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

Torque to 70 ft-lbs. (95 N•m).

O-ring 125 is used for the 80cc and 160cc pumps and O-ring 101 is used for 100cc and 120cc pumps.

S5 and S8 Complete Pump Parts List

Pump Size		5cc	10cc	20cc	40cc	80cc	100cc	120cc	160cc	
Pump Model No.		L005S5	L010S5	L020S8	L040S8	L080S8	L100S8	L0120S8	L160S8	
		FIG. 30		FIG. 31	FIG. 32	FIG. 33				
Ref.	Part	Description	Quantity							
101	106259	PACKING, O-ring, PTFE	2	2	2	2	2	3	3	-
	108823		-	-	-	-	-	-	-	2
102	111116	PACKING, O-ring, PTFE	2	2	2	2	2	2	2	2
103	---	CYLINDER, pump	1	1	1	1	1	1	1	1
104	15V458	TUBE, crossover, pump	1	1	1	1	1	1	1	1
105	122704	BOLT, tie	4	4	4	4	4	4	4	4
106	15Y165	HOUSING, inlet	1	1	1	1	1	1	1	-
	---		-	-	-	-	-	-	-	1
107	15X946	HOUSING, outlet	1	1	1	1	1	1	1	-
	---		-	-	-	-	-	-	-	1
108	107098	PACKING, O-ring	3	3	3	4	4	4	4	4
109	196832	SEAT, carbide	-	-	-	2	2	2	2	2
110	17R046	BALL, carbide	-	-	-	2	2	2	2	2
111	122756	SPRING, ball check	-	-	-	2	2	2	2	2
112	---	HOUSING, ball cage	-	-	-	2	2	2	2	2
113	---	CAP, inlet valve	1	1	1	1	1	1	1	1
114	---	RETAINER, piston	1	1	1	1	1	1	1	1
115	---	ROD, displacement	1	1	1	1	1	1	1	1
116	---	BEARING, piston,	2	1	-	1	1	1	1	1
117	---	SEAL, piston	2	2	2	2	2	2	2	2
118	---	RETAINER, throat	1	1	1	1	1	1	1	1
119	---	CARTRIDGE, throat	1	1	1	1	1	1	1	1
120	117286	PACKING, O-ring	1	1	1	1	1	1	1	1
121	---	ADAPTER, rod	1	1	1	1	-	-	-	-
122	17Y434	BEARING, piston, rod	-	1	-	-	-	-	-	-
124	---	ROD, piston, bottom	-	-	1	1	1	1	1	1
125	108954	PACKING, O-ring	1	-	-	-	-	-	-	-
	109115		-	1	1	-	-	-	-	-
	113082		-	-	-	1	1	-	-	-
	106259		-	-	-	-	-	-	-	1
126	---	SEAL, throat, pump, HW	2	2	2	2	2	2	2	2
128	---	PLATE, identification	1	1	1	1	1	1	1	1
129	---	SCREW, drive	2	2	2	2	2	2	2	2
133	124078	CLAMP, spring	1	1	1	1	1	1	1	1
134	198031	COUPLER, pump	-	-	2	2	-	1	1	1
	15G923		2	2	-	-	2	-	-	-
135	197340	COVER, coupler	-	-	1	1	1	1	1	1
137	---	RETAINER, spring pump	2	2	2	-	-	-	-	-

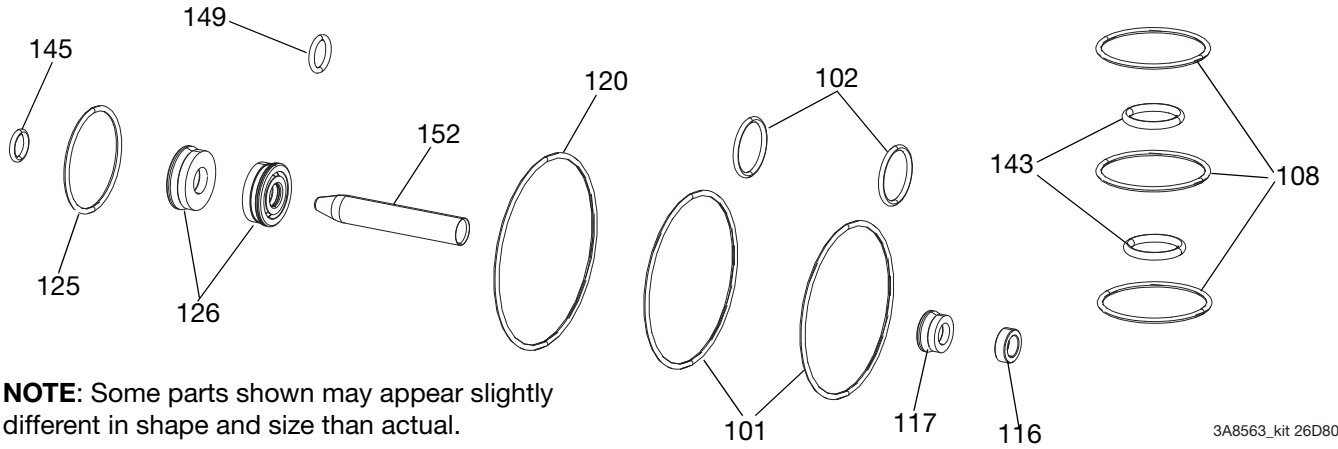
Pump Size			5cc	10cc	20cc	40cc	80cc	100cc	120cc	160cc
Pump Model No.			L005S5	L010S5	L020S8	L040S8	L080S8	L100S8	L0120S8	L160S8
			FIG. 30		FIG. 31	FIG. 32	FIG. 33			
Ref.	Part	Description	Quantity							
138	---	HOUSING, check valve, glass beads	2	2	2	-	-	-	-	-
139	---	SPRING, conical, 1x.85x.281, SST	2	2	2	-	-	-	-	-
140	---	RETAINER, housing, ball	2	2	2	-	-	-	-	-
141	---	BALL, .500, silicon-nitride, blk	2	2	2	-	-	-	-	-
142	196832	SEAT, sharp, glass beads	2	2	2	-	-	-	-	-
143	---	PACKING, O-ring	2	2	2	-	-	-	-	-
144	---	RETAINER, check valve	2	2	2	-	-	-	-	-
145	103337	PACKING, O-ring	1	-	-	-	-	-	-	-
	111710		-	1	-	-	-	-	-	-
	103610		-	-	1	-	-	-	-	-
	106553		-	-	-	1	-	-	-	-
	188555		-	-	-	-	1	-	-	-
	559013		-	-	-	-	-	1	-	-
	103559		-	-	-	-	-	-	1	-
	120901		-	-	-	-	-	-	-	1
146	---	SCREW, sealing, SCHS, M3 x 4mm	1	1	1	1	1	1	1	1
147	---	SCREW, sealing, SCHS, M5 x 6mm	1	1	1	-	-	-	-	-
148	198241	PLUG, port, pressure	1	1	1	1	1	1	1	1
149	121399	PACKING, O-ring	1	1	1	1	1	1	1	1
151	---	ROD, displacement (Including Ref. No's. 114,115, 116, 117, 122 and 124)	1	1	1	1	1	1	1	1

Various Kits

Pump Size	5cc	10cc	20cc	40cc	80cc	100cc	120cc	160cc	Reference No's.
Pump Model No.	L005S5	L010S5	L020S8	L040S8	L080S8	L100S8	L0120S8	L160S8	
Figure	FIG. 30		FIG. 31	FIG. 32	FIG. 33				
Description	Kit No's.								
Shaft Adapter	25P039	258966	258967	Not Included					121
Cylinder O-ring Kits	258773							25R206	101,102
Cylinder Kits	25N980	25E417	26B811	26B818	26B824	26B831	26B837	26B843	101,102,103, 150
Crossover Tube	24E556								101,102,104
Piston Retainer Kits	3E+05	3E+05	26B815	26B821	26B828	26B834	26B840	26B846	114
Throat Retainer Kits	25U638	25U639	26B813	26B819	26B826	26B832	26B838	26B844	118,120,125, 145
Throat Cartridge Kits	25U619	25U620	26B814	26B820	26B827	26B833	26B839	26B845	119, 125, 145, 146,147
Inlet Housing Kits	258792							25R211	104,106
Outlet Housing Kits	258791							25R212	107
Displacement Rod Kits (Without Seals)	25N978	25E472	26B817	26B823	26B830	26B836	26B842	26B848	151

Seal Kits

5cc and 10cc Pump Seal Kits

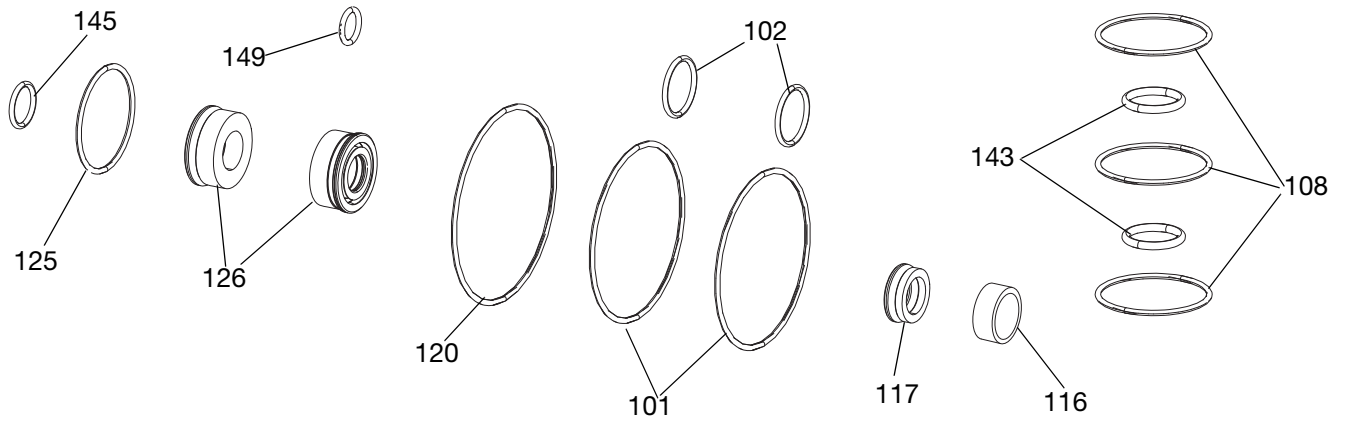


NOTE: Some parts shown may appear slightly different in shape and size than actual.

3A8563_kit 26D806

FIG. 34

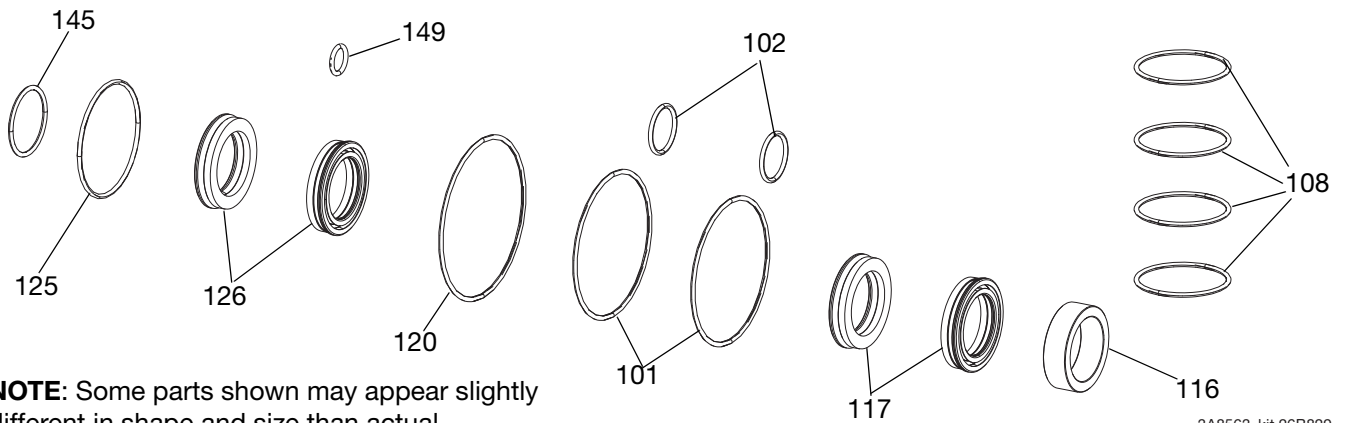
20cc Pump Seal Kits



3A8563_kit 26B816

FIG. 35

40cc and 80cc Pump Seal Kits

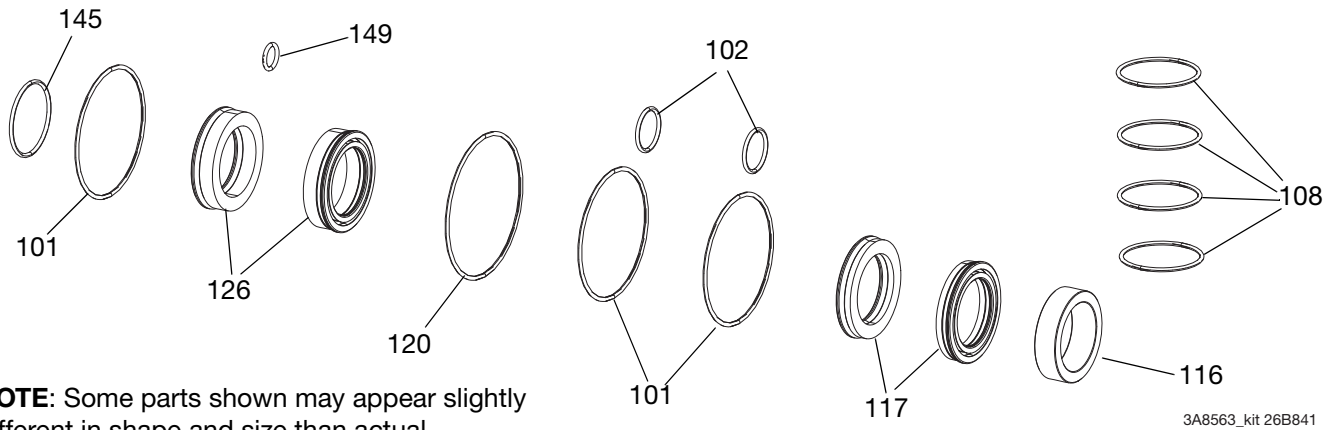


NOTE: Some parts shown may appear slightly different in shape and size than actual.

3A8563_kit 26B829

FIG. 36

100cc and 120cc Pump Seal Kits

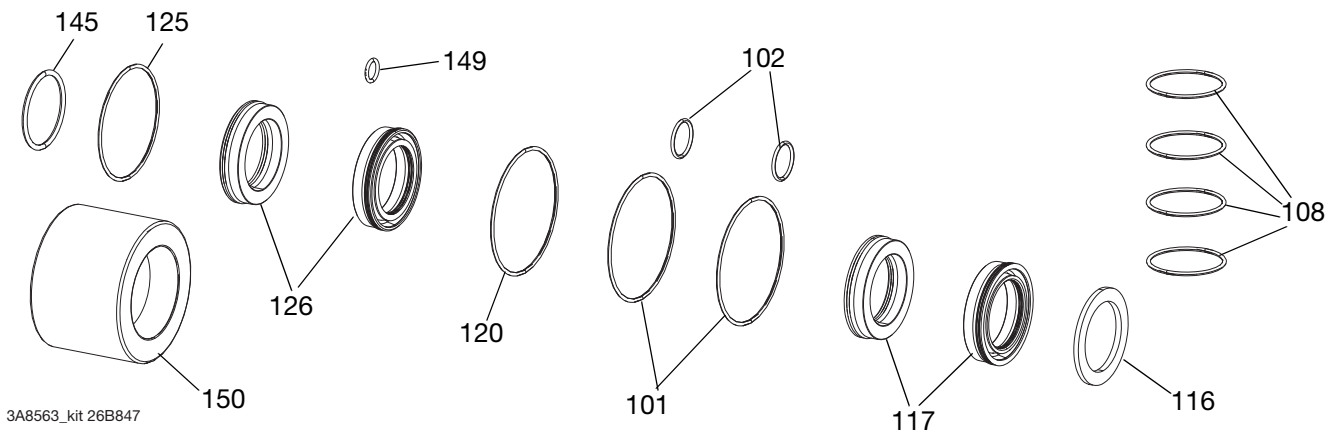


NOTE: Some parts shown may appear slightly different in shape and size than actual.

FIG. 37

3A8563_kit 26B841

160cc Pump Seal Kit



3A8563_kit 26B847

FIG. 38

Seal Kits, Parts List

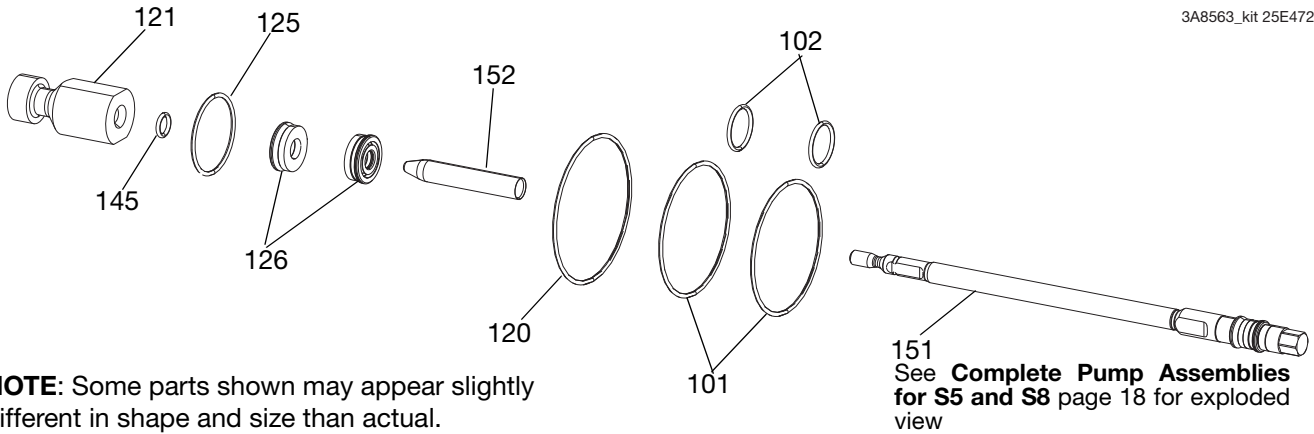
Pump Size	5cc	10cc	20cc	40cc	80cc	100cc	120cc	160cc	
Kit Part No.	26D805	26D806	26B816	26B822	26B829	26B835	26B841	26B847	
	FIG. 34		FIG. 35	FIG. 36		FIG. 37		FIG. 38	
Ref.	Description	Quantity							
101	PACKING, O-ring	2	2	2	2	2	3	3	-
		-	-	-	-	-	-	-	2
102	PACKING, O-ring, seat	2	2	2	2	2	2	2	2
108	PACKING, O-ring	4	4	3	4	4	4	4	4
116	BEARING, piston	2	1	-	1	1	1	1	1
117	SEAL, piston	2	2	2	2	2	2	2	2
120	PACKING, O-ring	1	1	1	1	1	1	1	1
122	BEARING, piston, rod	-	1	-	-	-	-	-	-

		Pump Size	5cc	10cc	20cc	40cc	80cc	100cc	120cc	160cc
		Kit Part No.	26D805	26D806	26B816	26B822	26B829	26B835	26B841	26B847
			FIG. 34		FIG. 35	FIG. 36		FIG. 37		FIG. 38
Ref.	Description	Quantity								
125	PACKING, O-ring	1	-	-	-	-	-	-	-	-
		-	1	1	-	-	-	-	-	-
		-	-	-	1	1	-	-	-	-
		-	-	-	-	-	-	-	-	1
126	SEAL, throat, pump, HW	2	2	2	-	-	2	2	2	
		-	-	-	2	-	-	-	-	
		-	-	-	-	2	-	-	-	
143	PACKING, O-ring	2	2	2	-	-	-	-	-	
145	PACKING, O-ring	1	-	-	-	-	-	-	-	
		-	1	-	-	-	-	-	-	
		-	-	1	-	-	-	-	-	
		-	-	-	1	-	-	-	-	
		-	-	-	-	1	-	-	-	
		-	-	-	-	-	1	-	-	
		-	-	-	-	-	-	1	-	
149	PACKING, O-ring	1	1	1	1	1	1	1	1	
150	TOOL, displace, rod/cyl, HW	-	-	-	-	-	-	-	-	1
152	TOOL, installation,	1	1	-	-	-	-	-	-	-
Not Shown	ADHESIVE, anerobic	1	1	1	1	1	1	1	1	1
	LUBRICANT, anti-seize	1	1	1	1	1	1	1	1	1
	MANUAL	1	1	1	1	1	1	1	1	1

Displacement Rod Kits

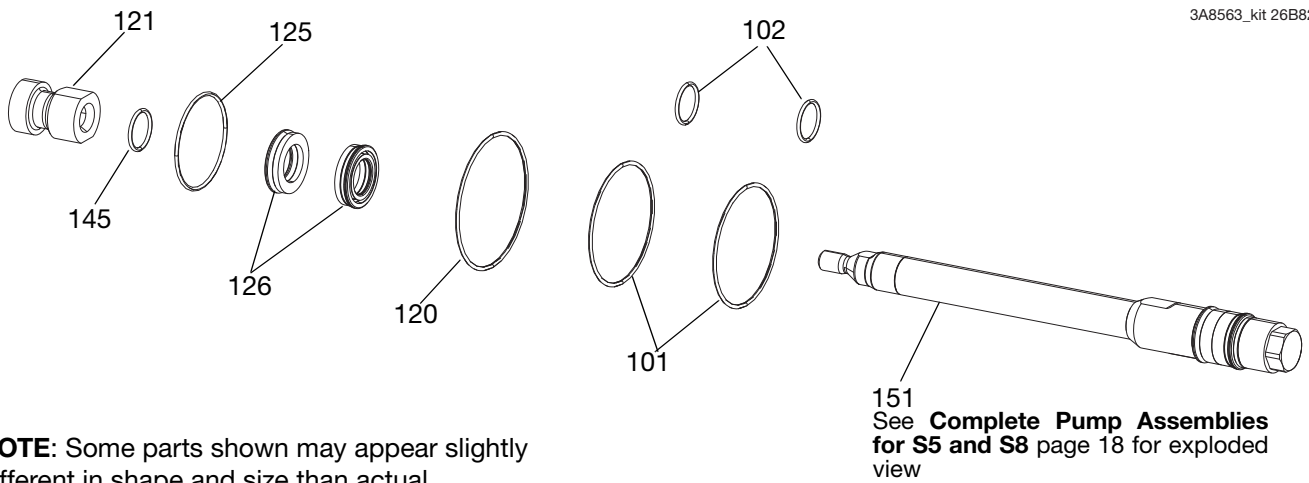
5cc and 10cc Pump Displacement Rod Kit

3A8563_kit 25E472



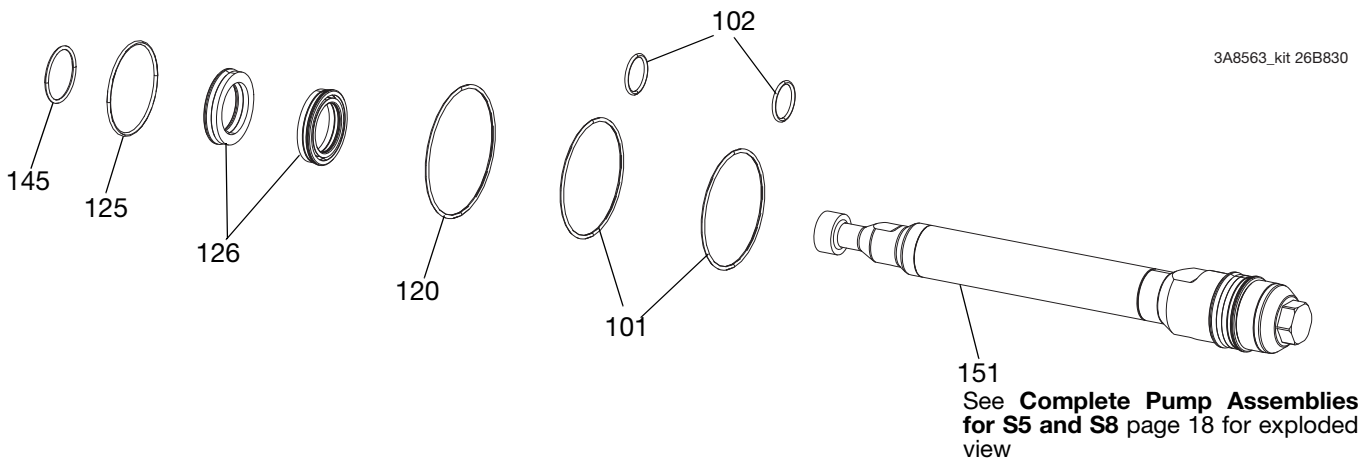
20cc and 40cc Pump Displacement Rod Kit

3A8563_kit 26B823

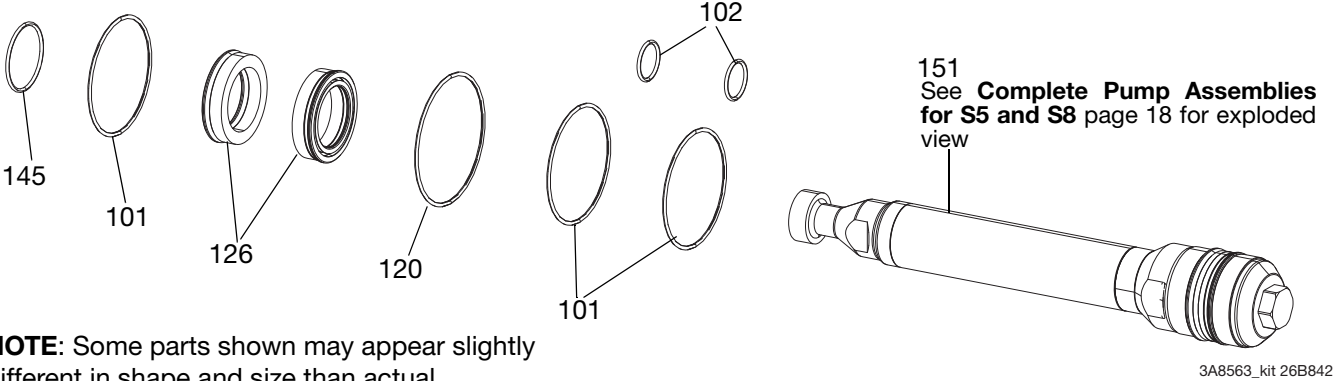


80cc Pump Displacement Rod Kit

3A8563_kit 26B830



100cc and 120cc Pump Displacement Rod Kit



NOTE: Some parts shown may appear slightly different in shape and size than actual.

FIG. 42

160cc Pump Displacement Rod Kit

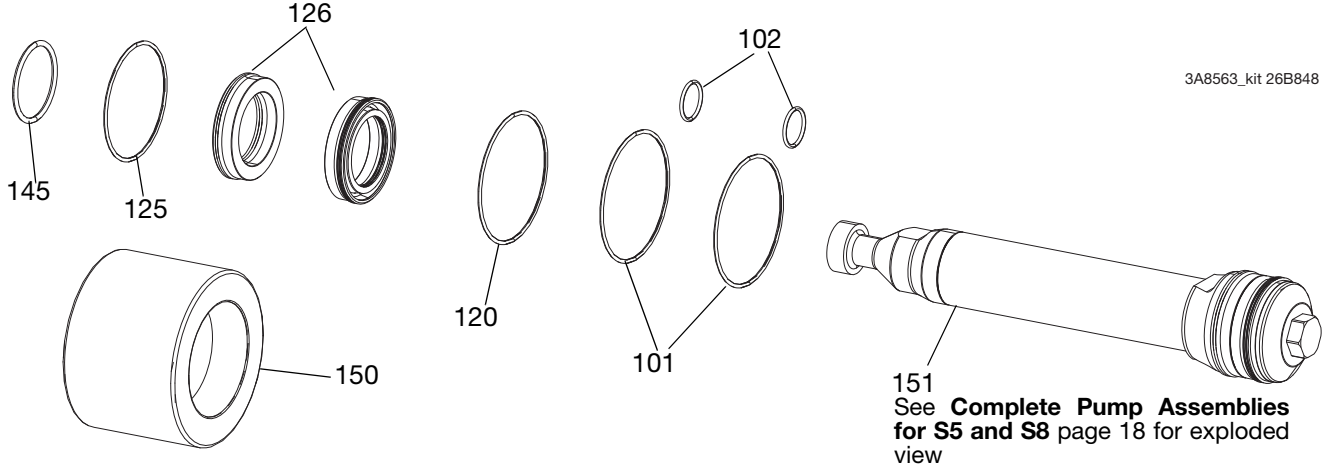


FIG. 43

Displacement Rod Kits, Parts List

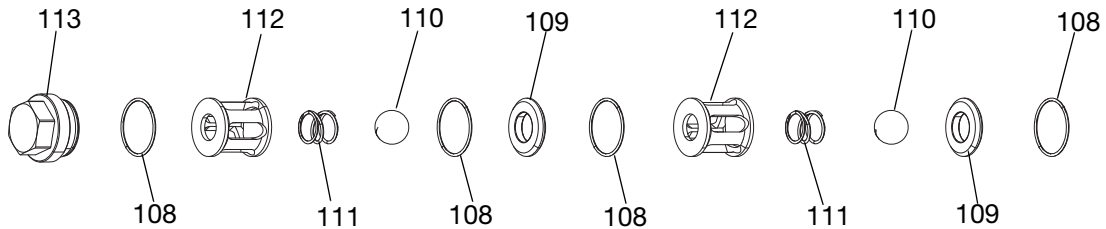
Ref.	Description	Pump Size								
		5cc	10cc	20cc	40cc	80cc	100cc	120cc	160cc	
	Kit Part No.	25N979	25E472	26B817	26B823	26B830	26B836	26B842	26B848	
		FIG. 39		FIG. 40		FIG. 41	FIG. 42		FIG. 43	
		Quantity								
101	PACKING, O-ring	2	2	2	2	2	3	3	2	
102	PACKING, O-ring, seat	2	2	2	2	2	2	2	2	
120	PACKING, O-ring	1	1	1	1	1	1	1	1	
121	ADAPTER, pump shaft, 20 and 40	1	1	1	1	-	-	-	-	
125	PACKING, O-ring	1	1	1	1	1	1	1	1	
126	SEAL, throat	2	2	2	2	2	2	2	2	
145	PACKING, O-ring	1	1	1	1	1	1	1	1	
150	TOOL, displace , rod,/cyl, 160 HW	-	-	-	-	-	-	-	1	

Pump Size	5cc	10cc	20cc	40cc	80cc	100cc	120cc	160cc
Kit Part No.	25N979	25E472	26B817	26B823	26B830	26B836	26B842	26B848
	FIG. 39		FIG. 40		FIG. 41	FIG. 42		FIG. 43

Ref.	Description	Quantity							
151	ROD, displacement	1	1	1	1	1	1	1	1
152	TOOL, installation	1	1	-	-	-	-	-	-
Not Shown	LUBRICANT, anti -seize	1	1	1	1	1	1	1	1
	ADHESIVE, anaerobic	1	1	1	1	1	1	1	1
	MANUAL	1	1	1	1	1	1	1	1

Check Valve Kits, 5cc, 10cc S5, 20cc S8

From kit to kit, quantities of a given part may vary from that pictured. Refer to quantities shown in the table.



3A8563_kit chkvlv 20cc

FIG. 44

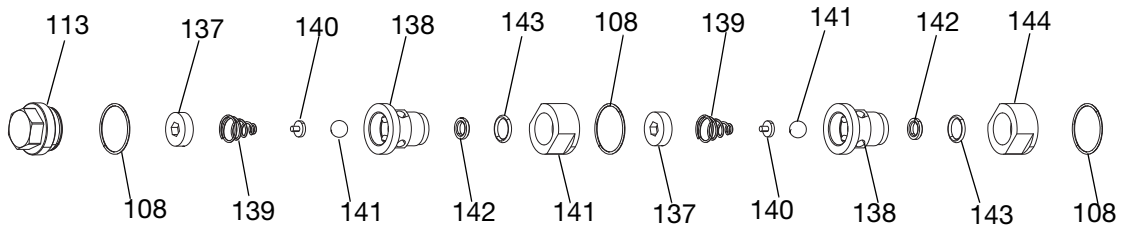
Check Valve Kits, 5cc, 10cc S5, 20cc S8 Parts List

Ref.	Description	Pump Type	5cc S5, 10cc S5, and 20cc S8		
		Kit Part No.	25R749	25R213	26U860
		Kit Type	Full	Partial	Sharp Seat
108	PACKING, O-ring		4	4	4
109	SEAT, carbide		2	2	2
110	BALL, SST 1 In. Dia.		2	2	2
111	SPRING, ball, check		2	-	2
112	HOUSING, cage, ball		2	-	2
113	CAP, inlet, valve		1	-	1
155*	LUBRICANT, anti-seize		1	1	1

* Parts not shown in parts diagrams.

Check Valve Kits 40cc, 80cc, 100cc, 120cc, and 160cc S8

From kit to kit, quantities of a given part may vary from that pictured. Refer to quantities shown in the table.



3A8563_kit chkvlv 20cc

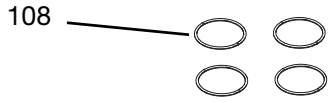
FIG. 45

Check Valve Kits, 40cc, 80cc, 100cc, 120cc, and 160cc S8 Parts List

Ref.	Description	S8		
		Pump Type		
		Kit Part No.	25B123	25B124
Kit Type		Full	Partial	Sharp Seat
		Quantity		
108	PACKING, O-ring	3	3	3
136	CAP, inlet, valve, SQ,HD	1	-	1
137	RETAINER, spring, pump	2	-	2
138	HOUSING, ball cage	2	-	2
139	SPRING, conical, 1X0.85X0.281	2	2	2
140	RETAINER, housing, ball	2	2	2
141	BALL, 0.500, silicone-nitride, BLK	2	2	2
142	SEAT, lapped	2	2	2
143	O-RING	2	2	2
144	RETAINER, check valve	2	-	2
155*	LUBRICANT, anti-seize	1	-	1

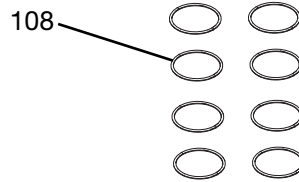
* Parts not shown in parts diagrams.

O-Ring Inlet Kit, All Pump Sizes



3A8563_kit O-ring 8

FIG. 46



3A8563_kit O-ring 8

FIG. 47

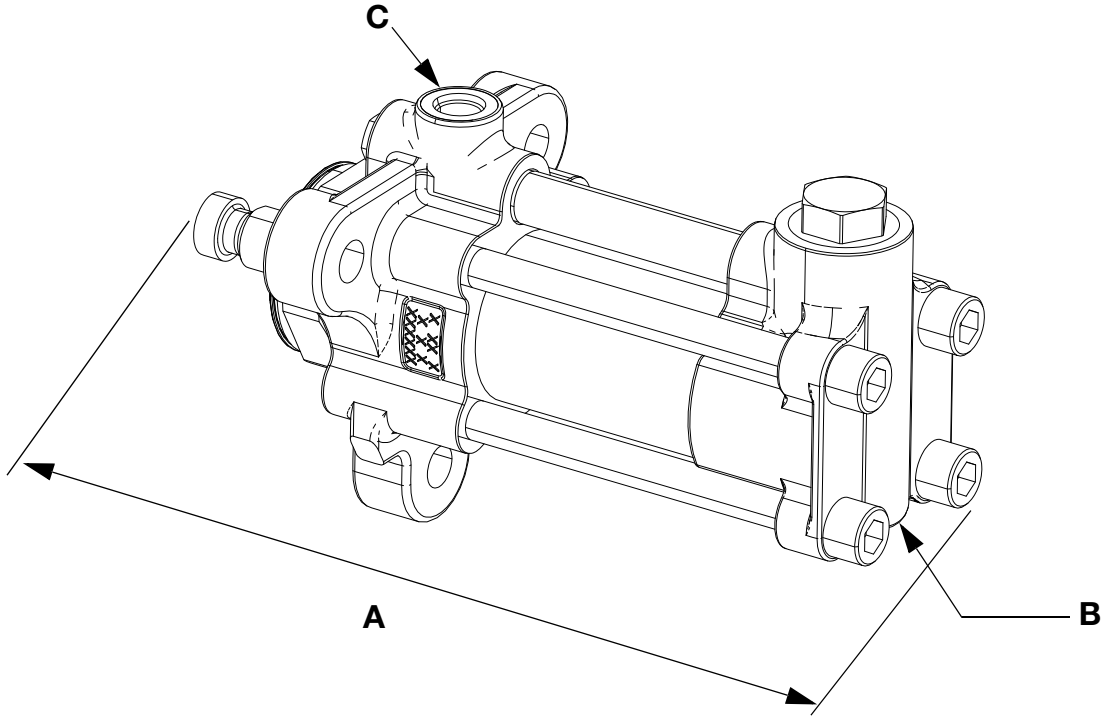
O-Ring Inlet Kit, All Pump Sizes, Parts List

Pump Size	5cc, 10cc, 20cc, 40cc, 80cc, 100cc, 120cc, 160cc	
Kit Part No.	258775	258776
	FIG. 46	FIG. 47

Ref.	Part	Description	Quantity	
108	107098	PACKING, O-ring	4	8

Dimensions

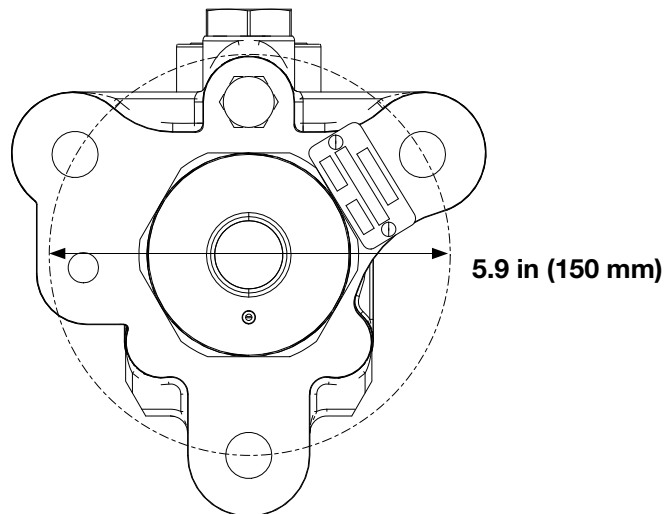
All pump sizes have the same dimensions.



A (Length) in. (mm)	B (Inlet) in. npt (f)	C (Outlet) 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 Specifications

Z-Series Chemical Pumps High Wear		
	US	Metric
Maximum working pressure	3500 psi	24 MPa, 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
Materials of Construction		
Wetted materials on all models	SST, tungsten carbide, PEEK, PTFE, UHMWPE, silicon nitride	
Weight		
All models	30 lbs	13.6 kg

California Proposition 65

CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

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Original instructions. This manual contains English. MM 3A8563

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA
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