

INSTRUCTIONS



308660

Rev. B



INSTRUCTIONS

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

GM 3000® AIRLESS PAINT SPRAYERS

Drive Housing Replacement Kit 238691 Pinion Housing Replacement Kit 238684

Drive Housing, Connecting Rod, Crankshaft

WARNING



INJECTION HAZARD

To reduce the risk of serious injury, whenever you are instructed to relieve pressure, follow the **Pressure Relief Procedure** on page 8.

Removal

1. Relieve pressure.
2. Remove the displacement pump. See page 7.
3. Remove the pressure control (25). See page 3.
4. Remove the three drive housing screws and lock washers (15, 16). See Fig. 1 on page 2.
5. Remove the two pinion housing screws (69) and lock washers (16). See Fig. 1 on page 2.
6. Tap the lower rear of the drive housing (6) with a plastic mallet to loosen the drive housing. Pull the drive housing straight off the pinion housing.

CAUTION

Do not allow the gear (19) to fall; it may stay attached to the drive housing or to the pinion housing.

Do not lose the thrust balls (6a and 2d) or let them fall between the gears, which will damage the drive housing if not removed. If the balls are not in place, the bearings will wear prematurely.

7. Remove and inspect the crankshaft (8) and the connecting rod (10).

Installation

8. Lubricate the inside of the drive housing bronze bearing with SAE non-detergent oil.
9. Install the connecting rod.
10. Place the large washer (5) and then the small washer (3) on the crankshaft (8).
11. Insert the crankshaft into the bearing in the drive housing (6) and connecting rod (10).
12. If replacing the complete drive housing assembly (6), brush bearing grease (supplied) on all gear teeth. Then recoat the gear teeth with bearing grease (supplied). Pack the remaining bearing grease into the bottom part of the drive housing. Use 3/4 tube of the grease. See Fig. 2.
13. Install gear (19).
14. Install new gasket (64).
15. Work backwards from step 5 to reassemble.

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Drive Housing, Connecting Rod, Crankshaft

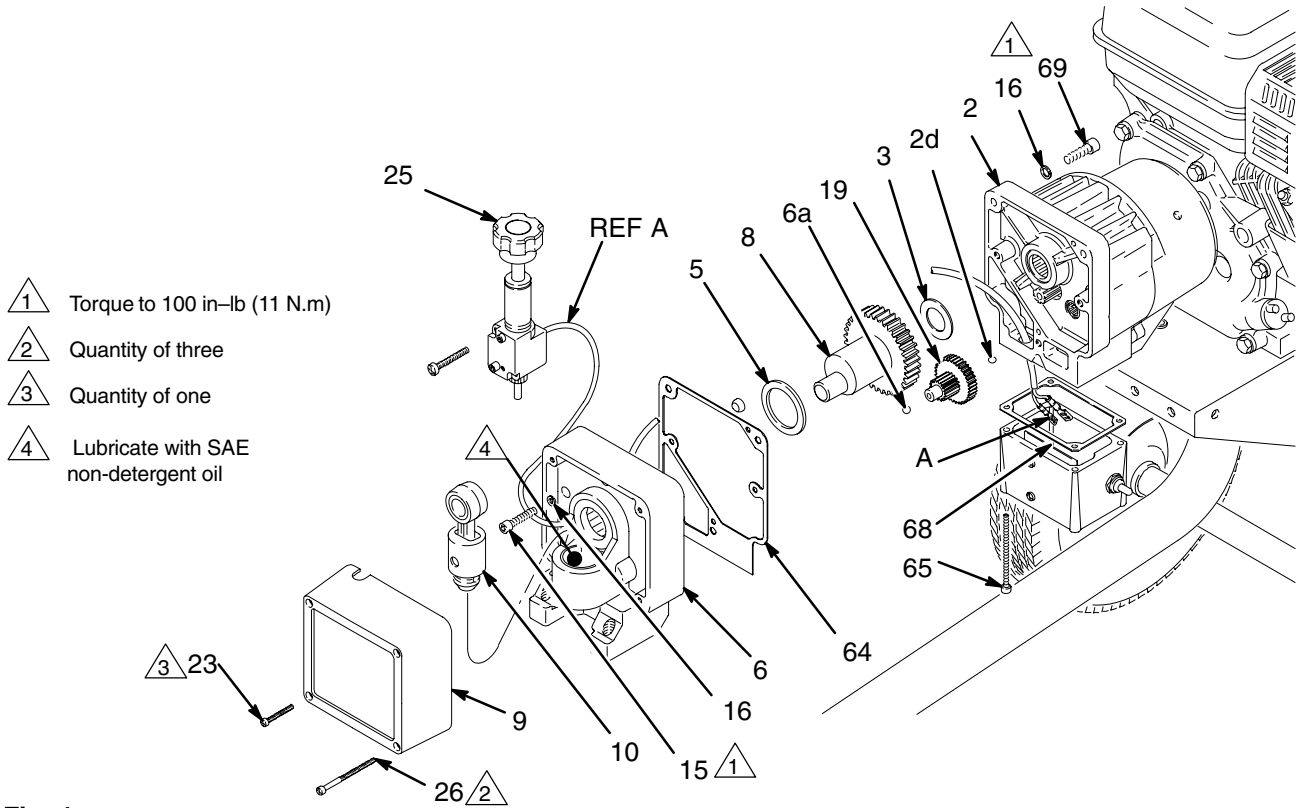


Fig. 1
 05833A

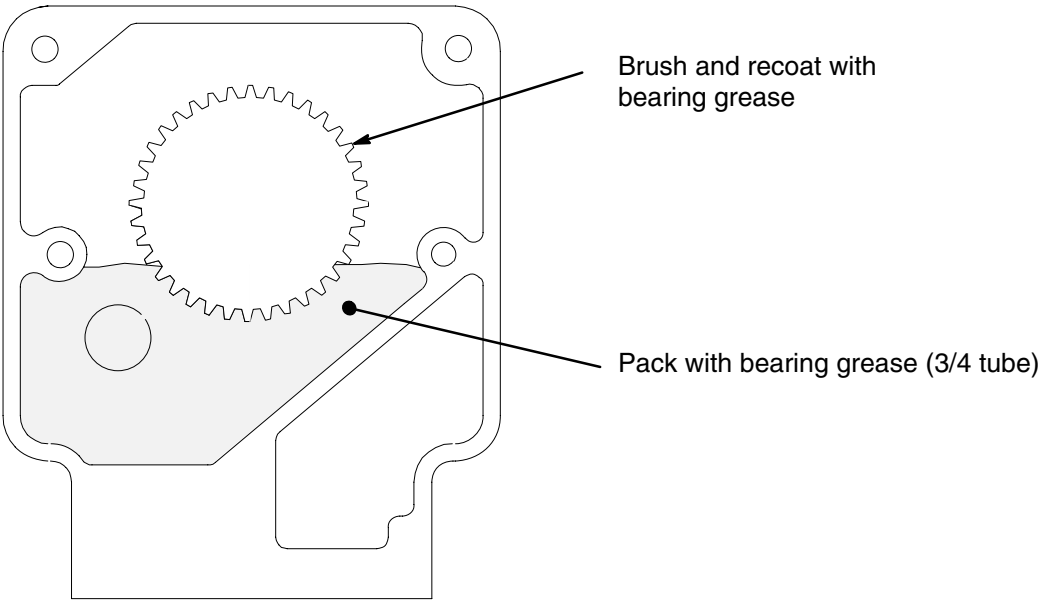


Fig. 2
 06003

Pressure Control

WARNING



INJECTION HAZARD

To reduce the risk of serious injury, whenever you are instructed to relieve pressure, follow the **Pressure Relief Procedure** on page 8.

NOTE: See Fig. 3 for this procedure.

NOTE: The pressure control (25) cannot be repaired or adjusted. If it has malfunctioned, replace it.

1. Remove the front cover (9). Remove the screws (65) and lock washers (37). Lower the junction box (63).
2. Disconnect the harness connector (A) from the control module inside the box (63).
3. Remove the screws (24). Pull forward on the pressure adjusting knob and tip the pressure control (25) forward and up to detach it from the drive housing (6).
4. Guide the harness (A) through the pinion housing and drive housing and remove the pressure control.
5. Guide the harness of the new pressure control through the drive housing and pinion housing passages.
6. Install the new pressure control. Tip the pressure control down and back into the drive housing (6). Do not pinch or damage the harness (A).

7. Loosely install the screws (24) and then torque them to 21 in-lb (2.4 N.m).
8. Install the front cover (9). Connect the harness (A) to the control module leads (B).
9. Install the junction box. Be sure no leads are pinched against the mounting face of the pinion housing.

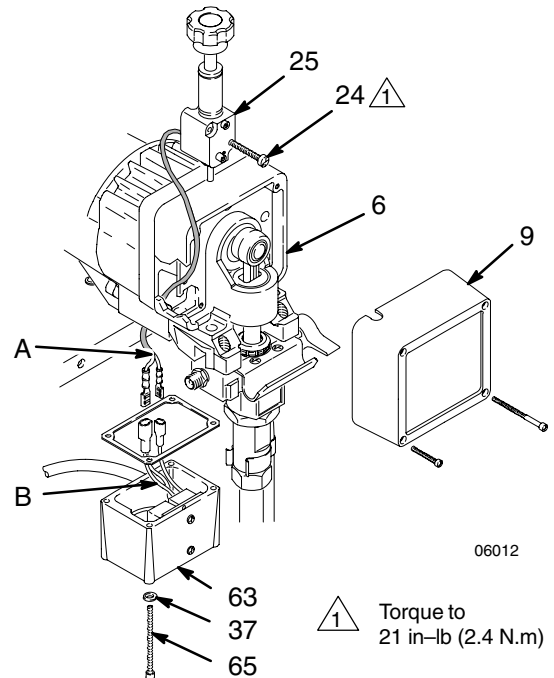


Fig. 3

Pinion, Clutch, Clamp, Field, & Engine

If servicing clutch components only, see Manual 308620.

If no service is needed for internal parts of pinion housing, remove drive assembly (drive and pinion housing) from clutch housing. See Manual 308620.

Pinion Housing Removal

⚠ WARNING



INJECTION HAZARD

To reduce the risk of serious injury, whenever you are instructed to relieve pressure, follow the **Pressure Relief Procedure** on page 8.

NOTE: Refer to Fig. 4 for Steps 1 to 5.

1. Follow the **Pressure Relief Procedure**, page 8.
2. If the drive housing has not yet been removed, follow steps 1 through 6 of **DRIVE HOUSING**, on page 1.
3. Remove the two bottom screws (59) and lockwashers (16) first, then remove the top three screws (59) and lockwashers (16).
4. Pull the pinion housing (2) away from the clutch housing (1). The armature (51b) will come with it.
5. Pull the armature (51b) off the hub (2h**) of the pinion housing. Also see Fig. 5.
6. If replacing the complete pinion housing assembly (2), brush bearing grease (supplied) on the pinion shaft teeth. Then recoat the pinion shaft teeth with bearing grease (supplied). Pack the remaining bearing grease in the bottom part of the pinion housing. Use 1/4 tube of the bearing grease.
7. Install new gasket (64) (supplied).

8. Reassemble to drive housing.

⚠ CAUTION

Do not lose the thrust ball (2d). Refer to the **CAUTION** on page 1 for more information

NOTE: To disassemble the pinion, go to page 5. To disassemble more of the sprayer, see Manual 308620. To reassemble the sprayer from this point, skip ahead to **Reassembly**, page 6, Step 1.

- 1 See page 5.
- 2 Brush with bearing grease
- 3 Pack with bearing grease (1/4 tube).

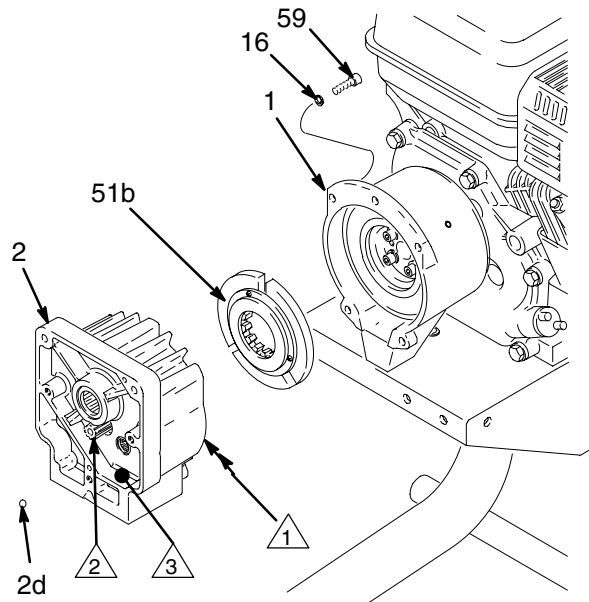


Fig. 4

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Pinion Housing

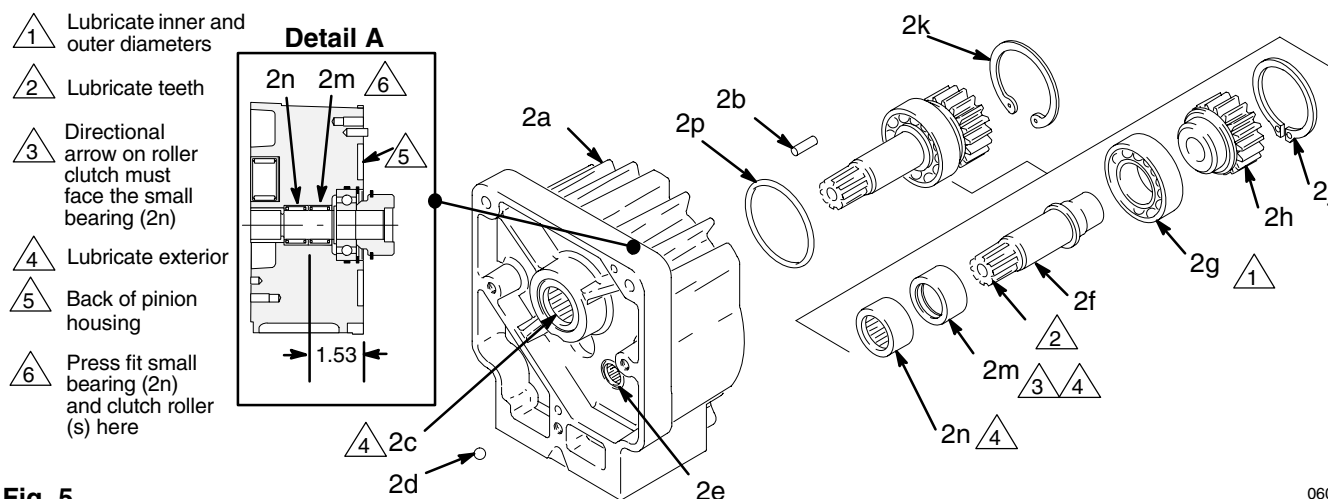


Fig. 5

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Repairing the Pinion (Fig. 13)

NOTE: Use a hydraulic press if you purchase the pinion parts individually. Otherwise, use Repair Kit 223189, which includes the shaft and bearings preassembled and lubricated.

If using Repair Kit 223189, follow Steps 1 to 7, below.

1. Remove the small ring (2j) from the hub (2h) and the large ring (2k) from the bearing recess of the housing (2a).
2. Push on front of the shaft (2f) to force the bearing and hub assembly out of the housing (2a).
3. Press the small bearing (2n) and roller clutch (2m) out of the pinion housing (2a). Remove the new bearing and roller clutch from the shaft of the kit and press it into the housing to the dimension shown. Directional arrow of roller clutch (2m) must face bearing (2n). See Detail A.
4. Inspect o-ring (2p) and replace if necessary.
5. Install the shaft assembly, pushing it to the shoulder of the housing (2a).
6. Install rings (2k and 2j). Ring (2k) must be installed with bevel facing back of pinion housing.
7. Go to **Reassembly**, page 29, Step 7, or continue on page 24.

If you purchased parts separately, follow steps 1 to 9, below. Disassemble only as far as needed for the parts being replaced.

NOTE: The old bearing (2g) will be damaged as it is removed. Have one on hand if you need to remove it for any reason. Always replace bearing 2g if installing a new hub 2h.

1. To replace small bearing (2n) or roller clutch (2m), press the old one out of the pinion housing (2a).

2. Remove the small ring (2j) from the hub (2h). Remove the snap ring (2k) from the bearing recess of the housing (2a).

KEY
A Round steel bar to push on shaft (2f)
B Hydraulic press
C Steel bar stock
D Two steel blocks
E Press platform

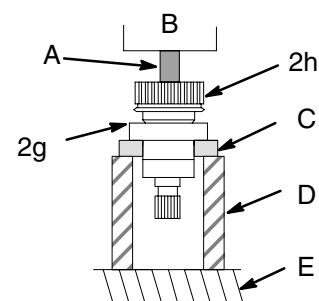


Fig. 6

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3. Push on the front of the shaft (2f) to force the bearing and hub assembly out of the housing (2a).
4. **Using a hydraulic press**, place pieces of steel bar stock on the inner race of the large bearing (2g) and press the shaft through the hub and bearing. See Fig. 6.
5. Apply lubricant to the parts as shown in Fig. 5.
6. Press fit the following parts:
 - Small bearing (2n) and then the roller clutch (2m), with the directional arrow facing the small bearing, into the rear of the housing (2a). See Detail A in Fig. 5.
 - Large bearing (2g) to shoulder of shaft (2f).
 - Hub (2h) onto the shaft (2f) all the way to the large bearing (2g).
7. Install the shaft assembly, pushing it to the shoulder of the housing (2a).
8. Install the rings (2k and 2j).
9. Skip ahead to **Reassembly**, page 6, Step 1.








Reassembly

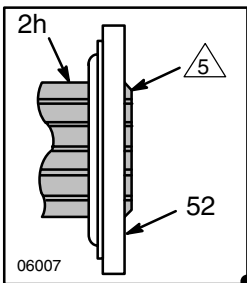
NOTE: With the autogap style armature, the gap between the rotor and the armature is critical for proper operation. The clutch kits with an autogap style armature include a cardboard spacer (p/n 186–857) to set the proper gap. This spacer is for use **only** during installation.

1. Clean the face of the **armature (51b)**. With the flat side of the armature facing the rotor (51a), slide the armature onto the hub (2h) in the drive/pinion assembly (D) just until the chamfered end of the hub (2h) protrudes through the armature. See Detail B, Fig. 7. There will be significant resistance. Attach the cardboard spacer, supplied with the clutch kit, to the face of the armature. Engage the tabs on the spacer with the slots in the armature or bend tabs over outside diameter of armature.

Brace the cart against a wall to keep it from rolling. Push the drive/pinion assembly onto the clutch housing (1). There will be significant resistance. When the mating surfaces of the drive/pinion assembly and the clutch housing (1) are flush, remove the drive/pinion assembly. **Remove the cardboard spacer.**

2. Assemble the **drive assembly (D)** to the clutch housing (1), using the capscrews (59) and lockwashers (16). See Fig. 7.

- | | |
|---|---|
|  Torque the screw to 7 ft-lb (9.5 N.m). |  Chamfered end of hub (2h) |
|  The face must be clean. |  Apply low strength thread locker. |
|  To engine alternator. |  Torque to 100 in.-lb (N-m). |
|  Spline | |



Detail B

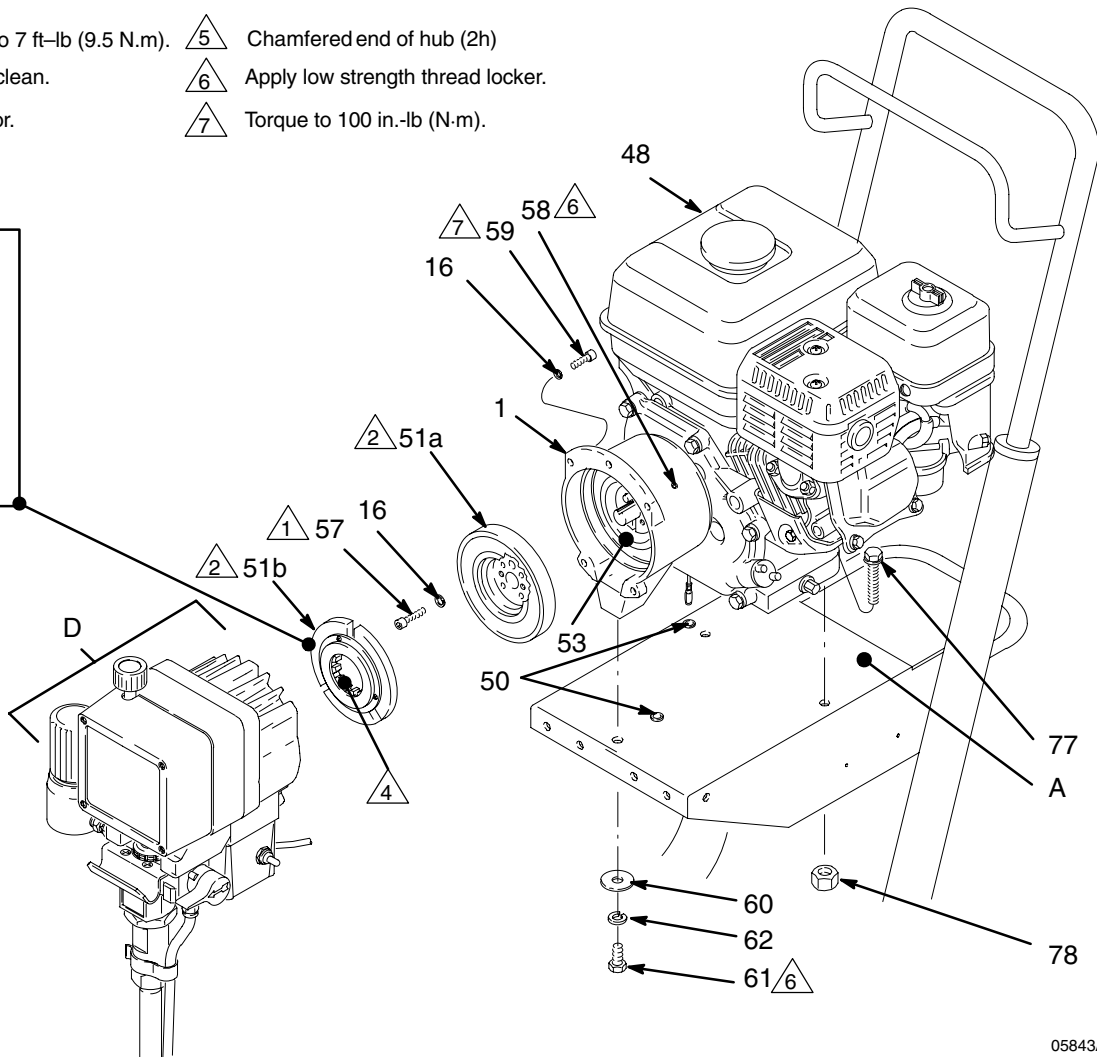


Fig. 7

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Displacement Pump

WARNING



INJECTION HAZARD

To reduce the risk of serious injury, whenever you are instructed to relieve pressure, follow the **Pressure Relief Procedure** on page 8.

NOTE: Packing Repair Kit 238692 is available. Reference numbers of parts included in the kit are marked with an asterisk, i.e., (121*). For the best results, use all the new parts in the kit, even if the old ones still look good.

NOTE: To minimize down time, and for the best sprayer performance, clean the transducer (22) whenever you repack the pump. Replace these parts as needed.

Removing the pump (See Fig. 8.)

1. Flush the pump, if possible. Relieve pressure. Stop the pump with the piston rod (107) in its lowest position, if possible.
2. Use a screwdriver to push the retaining spring (12) up and push out the pin (11).
3. Loosen the screws (17). Remove the pump (18).

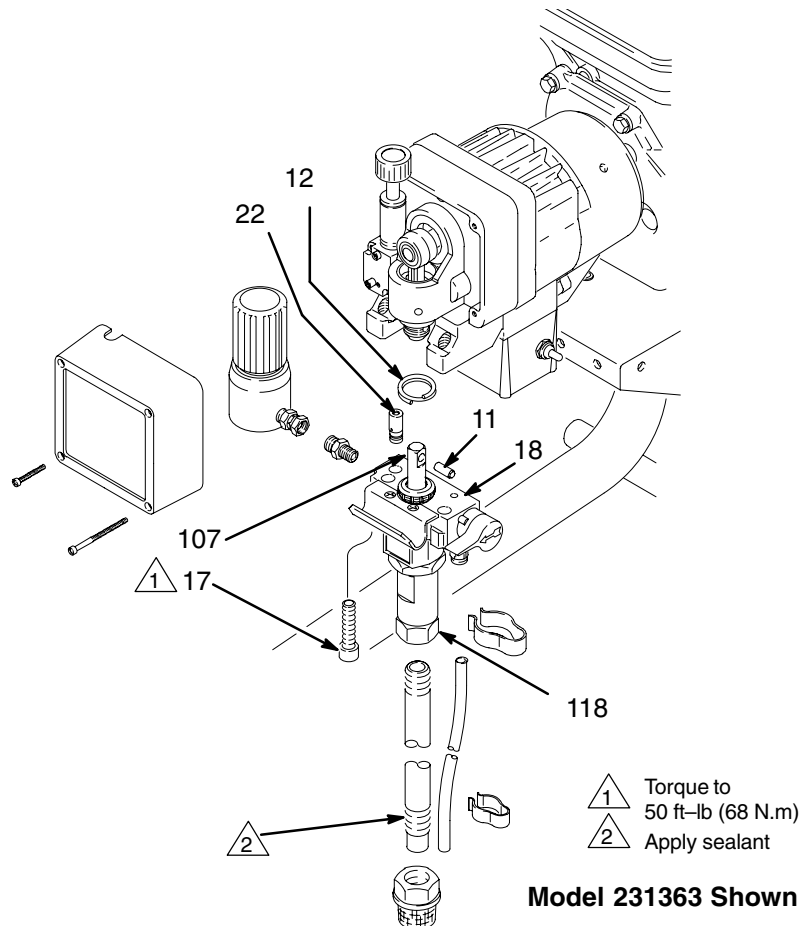


Fig. 8

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Displacement Pump

Installing the pump (See Fig. 8 and 9.)

1. Mount the pump on the drive housing. Tap it into the alignment pins with a soft hammer. Tighten the screws (17) to 50 ft-lb (68 N.m).

WARNING



MOVING PARTS HAZARD

Be sure the retaining spring (12) is firmly in the groove all the way around, to prevent the pin (11) from working loose due to vibration. See Fig. 9.

If the pin works loose, it or other parts could break off due to the force of the pump action. These parts could be projected into the air and result in serious injury or property damage, including the pump connecting rod or drive housing.

2. Align the hole in the rod (107) with the connecting rod assembly (10). Use a screwdriver to push the retaining spring (12) up and push in the pin (11). Push the retaining spring (12) into place around the connecting rod.

3. Tighten the packing nut (102) just enough to stop leakage, but no tighter. Fill the packing nut/wet-cup 1/3 full with Graco TSL. Push the plug (123) into the wet-cup.

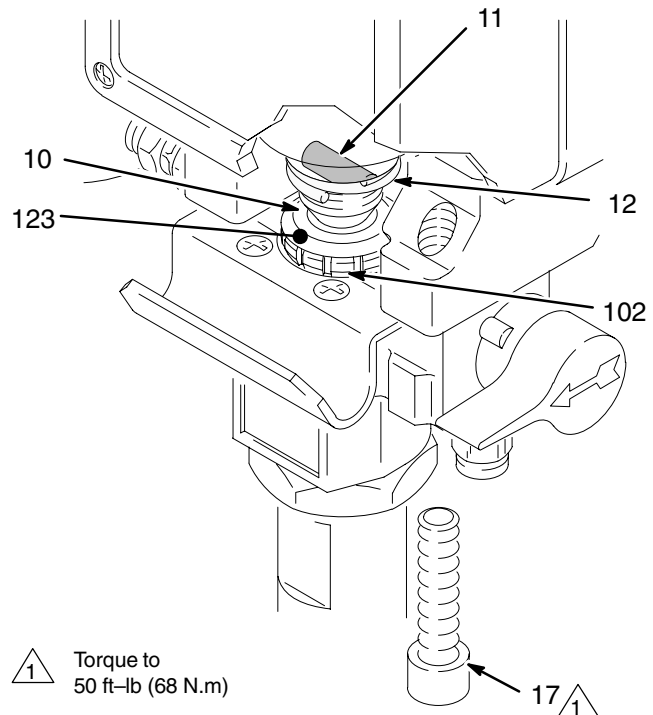


Fig. 9

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Pressure Relief

WARNING



INJECTION HAZARD

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

- are instructed to relieve the pressure,
- stop spraying,
- check or service any of the system equipment,
- install or clean the spray tip.

Pressure Relief Procedure

1. Engage the gun safety latch.
2. Turn the engine switch to OFF.
3. Move the pressure control ON/OFF switch to OFF.
4. Disengage the gun safety latch. Hold a metal part of the gun firmly to a grounded metal pail. Trigger the gun to relieve pressure.
5. Engage the gun safety latch.
6. Open the pressure drain valve. Leave the pressure drain valve open until you are ready to spray again.
7. Disconnect the spark plug cable.

If you suspect that the spray tip or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, **VERY SLOWLY** loosen the tip guard retaining nut or hose end coupling to Relieve the pressure gradually, then loosen completely. Now clear the tip or hose.

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