

# Xtreme<sup>®</sup> PFP

3A2798C

EN

**For use with bulk supply of medium to high viscosity sealants and adhesive materials. For professional use only.**

*6500 psi (45 MPa, 448 bar) Maximum Fluid Working Pressure  
90 psi (620 kPa, 6.2 bar) Maximum Air Working Pressure  
100 psi (0.7 kPa, 7 bar) Maximum Air Inlet Pressure*

## Model 16T311

5 gallon (20 liter), with cart

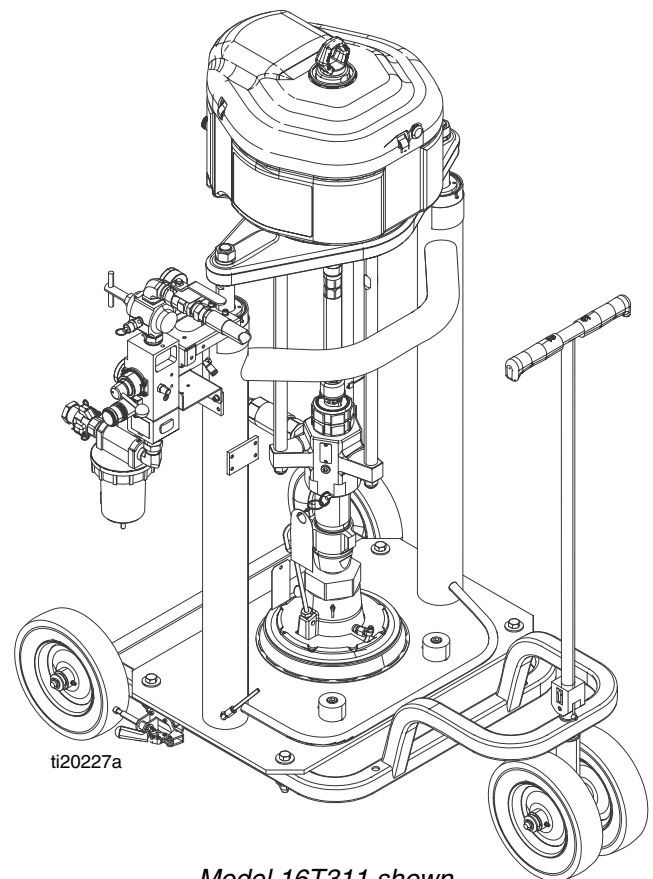
## Model 16P957

5 gallon (20 liter), no cart



### Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.



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## Related Manuals

The following manuals are available at [www.graco.com](http://www.graco.com).  
Component Manuals in English:

Manual	Description
311762	Xtreme Lowers Instructions-Parts
311238	NXT® Air Motor Instructions-Parts






# 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.

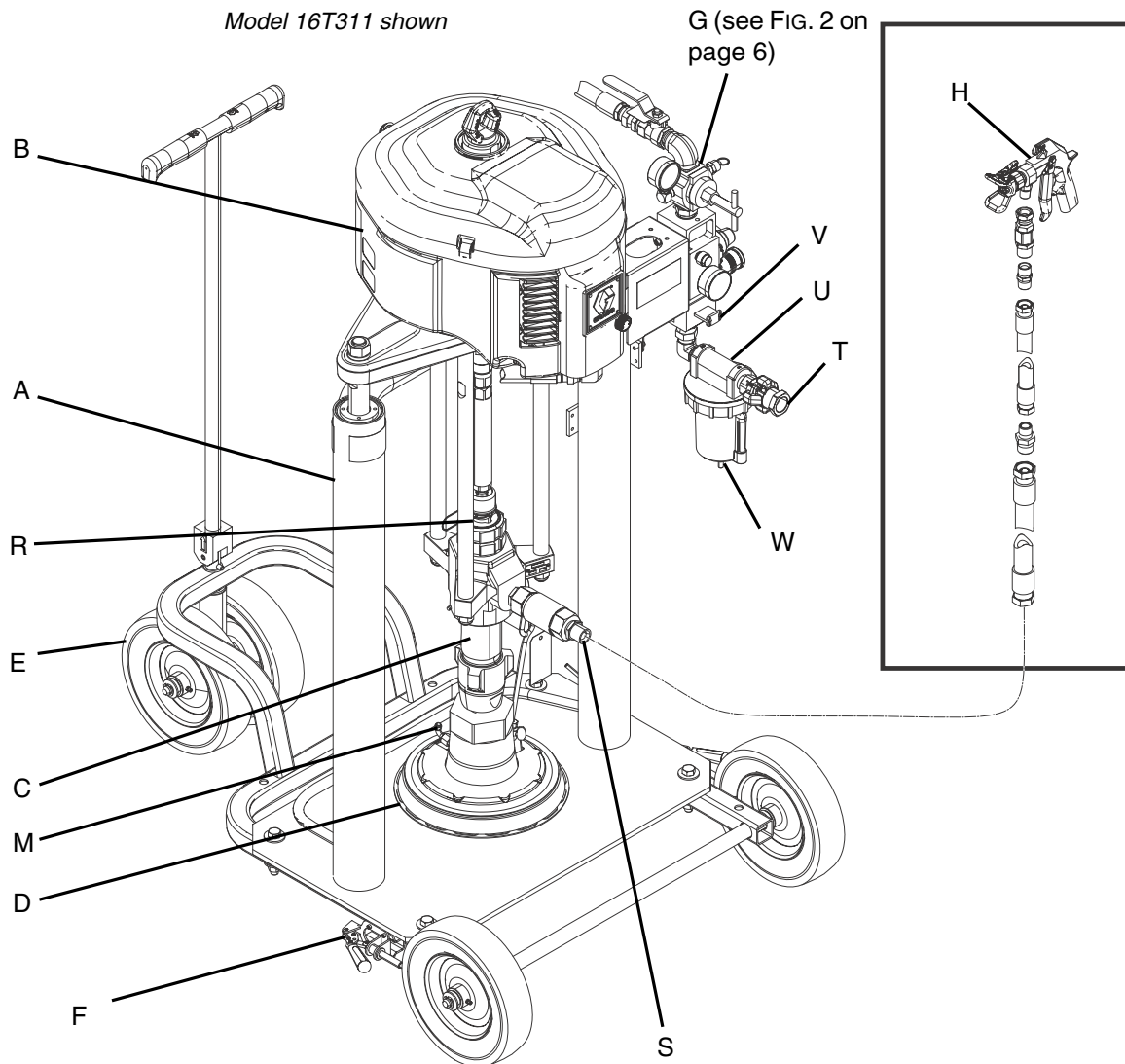
 <h2 style="margin: 0;">WARNING</h2>	
  	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not spray without tip guard and trigger guard installed.</li> <li>• Engage trigger lock when not spraying.</li> <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>• Follow the <b>Pressure Relief Procedure</b> when you stop spraying and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> </ul>
 	<p><b>MOVING PARTS HAZARD</b></p> <p>Moving parts can pinch, cut 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> and disconnect all power sources.</li> </ul>
   	<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. See <b>Grounding</b> instructions.</li> <li>• Use only grounded hoses.</li> <li>• Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic or conductive.</li> <li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>



# WARNING

 	<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>• Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.</li> <li>• Do not leave the work area while equipment is energized or under pressure.</li> <li>• Turn off all equipment and follow the <b>Pressure Relief Procedure</b> 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. Alterations or modifications may void agency approvals and create safety hazards.</li> <li>• Make sure all equipment is rated and approved for the environment in which you are using it.</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>
	<p><b>SPLATTER HAZARD</b></p> <p>Hot or toxic fluid can cause serious injury if splashed in the eyes or on skin. During blow off of platen, splatter may occur.</p> <ul style="list-style-type: none"> <li>• Use minimum air pressure when removing platen from drum.</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 MSDSs 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> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eyewear, and hearing protection.</li> <li>• Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer</li> </ul>

# Component Identification



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**FIG. 1**

**Key:**

- |   |  |   |                                |
|---|--|---|--------------------------------|
| A | Ram Assembly                                   | U | Air Filter and Water Separator |
| B | Air Motor                                      | V | Bleed Type Air Shutoff Valve   |
| C | Displacement Pump                              | W | Air Line Drain Valve           |
| D | Platen (see FIG. 3 on page 7)                  |   |                                |
| E | Cart   |   |                                |
| F | Cart Brake                                     |   |                                |
| G | Integrated Air Controls (see FIG. 2 on page 6) |   |                                |
| H | Spray Gun                                      |   |                                |
| M | Blowoff Air Supply Line                        |   |                                |
| R | Wet Cup  |   |                                |
| S | Fluid Outlet                                   |   |                                |
| T | Main Air Inlet                                 |   |                                |

## Integrated Air Controls

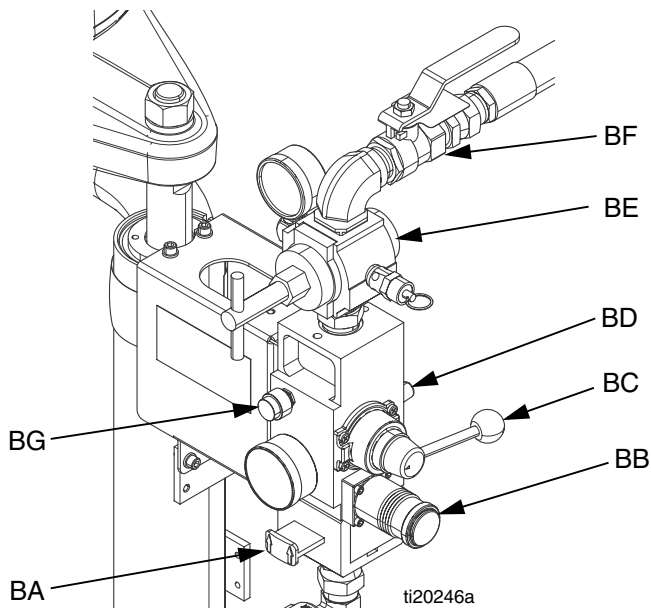
The integrated air controls include:

- **Main air slider valve (BA):** turns air on and off to the system. When closed, the valve relieves pressure downstream.
- **Ram air regulator (BB):** controls ram up and down pressure and blowoff pressure.
- **Ram director valve (BC):** controls ram direction.
- **Exhaust port with muffler (BD)**
- **Air motor regulator (BE):** Controls air pressure to motor.
- **Air motor ball valve (BF):** turns air on and off to the air motor. When closed, the valve relieves air trapped between it and the air motor.
- **Blowoff button (BG):** turns air on and off to push the platen out of an empty drum.

## Air Line Accessories

See FIG. 1 on page 5.

- **Air line drain valve (W)**
- **Air line 40 micron filter (U):** removes harmful dirt and moisture from compressed air supply.
- **Air relief valve** (attached to ram air regulator, not visible): automatically relieves excessive pressure.



**FIG. 2. Integrated Air Controls**

## Platen Component Identification

Model 16U676, 20 liter (5 gallon)

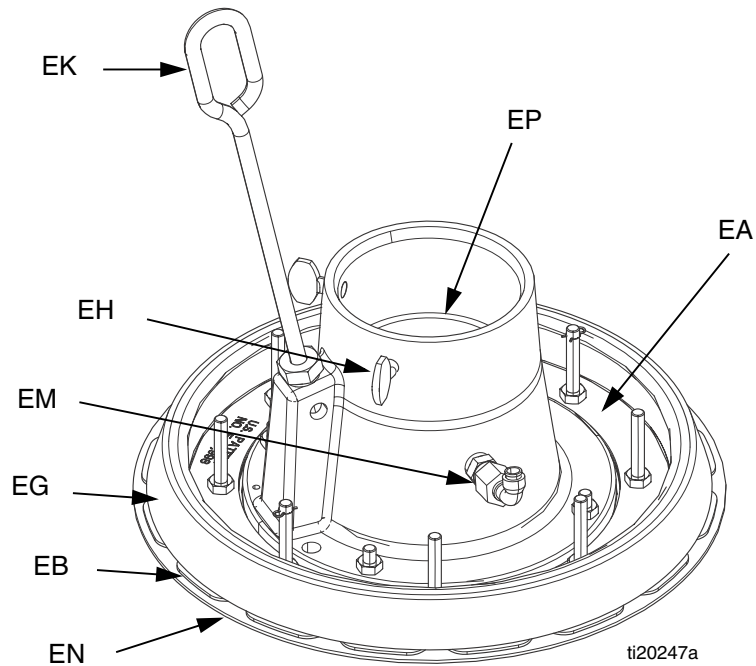


FIG. 3

**Key:**

- EA Retainer Clamp
- EB Wiper Support
- EG Spacer
- EH Thumb Screws
- EK Bleed Stick
- EM Air Assist Body Check Valve
- EN Wiper Support (under side)
- EP O-ring Seal (assembles to platen adapter, not shown)

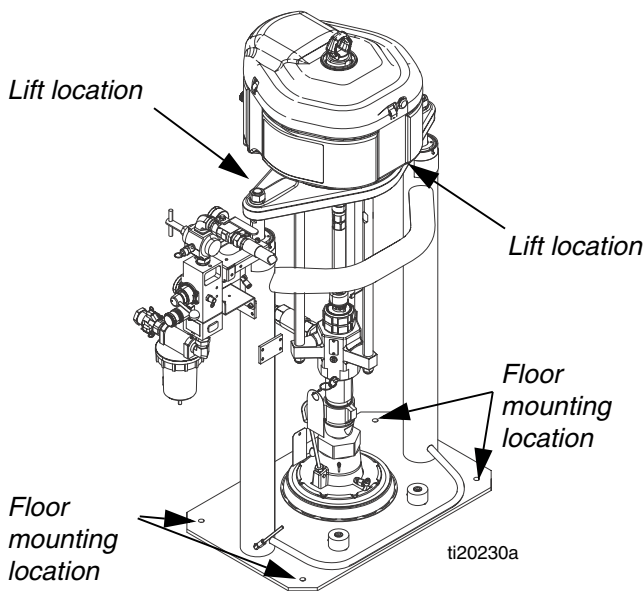
# Installation

## General Information

**NOTE:** Reference numbers and letters in parentheses in the text refer to the callouts in the figures.

Accessories are available from Graco. Make certain all accessories are adequately sized and pressure-rated to meet the system's requirements.

## Location



**FIG. 4**

Attach a lifting sling at the proper lift spots. Lift off the pallet using a crane or a forklift.

Position the ram so the air controls are easily accessible. Ensure that there is enough space overhead for the ram to raise fully. See **Dimensions**, page 30.

Set the brake on the cart before using the system.

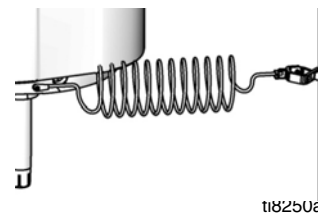
*Model 16P957 only:* Using the holes in the ram base as a guide, drill holes for 1/2 in. (13 mm) anchors.

*Model 16P957 only:* Ensure that the ram base is level in all directions. If necessary, level the base using metal shims. Secure the base to the floor using 1/2 in. (13 mm) anchors that are long enough to prevent the ram from tipping.

## Grounding

<p>The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.</p>						

**Pump:** use the supplied ground wire and clamp. Connect other end of wire to a true earth ground. See Fig. 5.



**FIG. 5**

**Air and fluid hoses:** use only electrically conductive hoses with a maximum of 500 ft. (150 m) combined hose length to ensure grounding continuity. Check electrical resistance of hoses. If total resistance to ground exceeds 25 megohms, replace hose immediately.

**Air compressor:** follow manufacturer's recommendations.

**Spray gun/dispense valve:** ground through connection to a properly grounded fluid hose and pump.

**Fluid supply container:** follow local code.

**Object being sprayed:** follow local code.

**Solvent pails used when flushing:** follow local code. Use only conductive metal pails that are properly grounded.

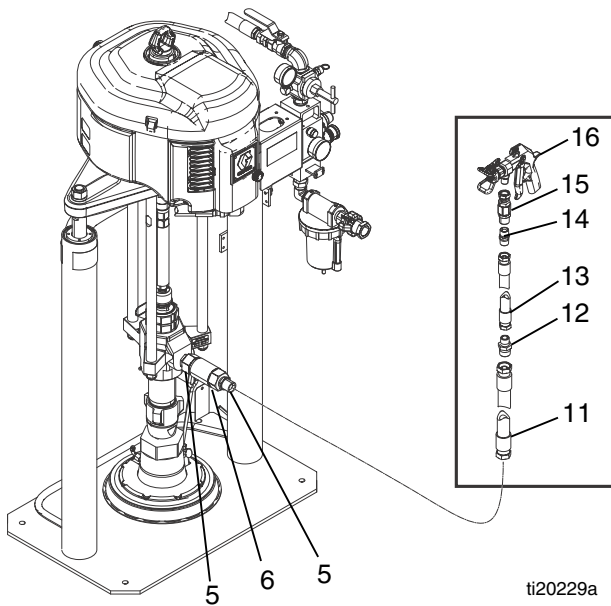
**To maintain grounding continuity when flushing or relieving pressure:** hold metal part of the dispense valve firmly to the side of a grounded metal pail, then trigger the valve.



## Connect Mix Line and Gun

**NOTE:** Kit 24P832 includes items 5, 6, and 11-16 in FIG. 6.

1. If installing mix line and gun kit 24P832, install nipple (5), check valve (6), and second nipple (5) onto the pump outlet as shown in FIG. 6.
2. Connect the supplied 3/4 in. hose (11) to the nipple (5). See FIG. 6.
3. Use reducing nipple (12) to connect the supplied 1/2 in. whip hose (13) to the 3/4 in. hose (11).
4. Use nipple (14) to connect gun swivel (15) to whip hose (13).
5. Connect gun (16) to gun swivel (15).



**FIG. 6**

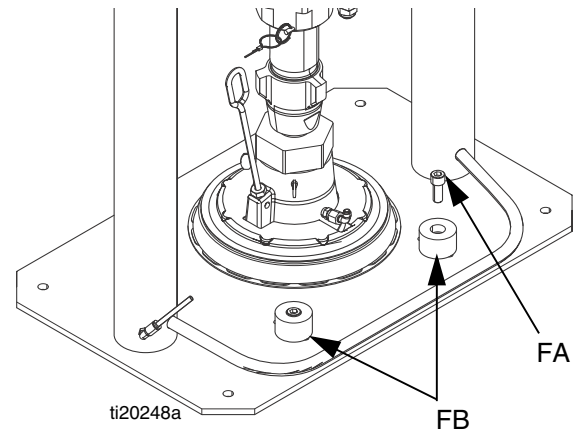
## Mechanical Setup

1. Fill displacement pump wet cup 2/3 full with Graco Throat Seal Liquid (TSL™).
2. Back-off air regulators to their full counterclockwise position and close all shutoff valves.
3. Connect air line from an air source to the system air inlet. See FIG. 1. Use a supply hose capable of meeting the required flow.

**NOTE:** Quick disconnects restrict flow for large air motors.

## Attach Drum Stops

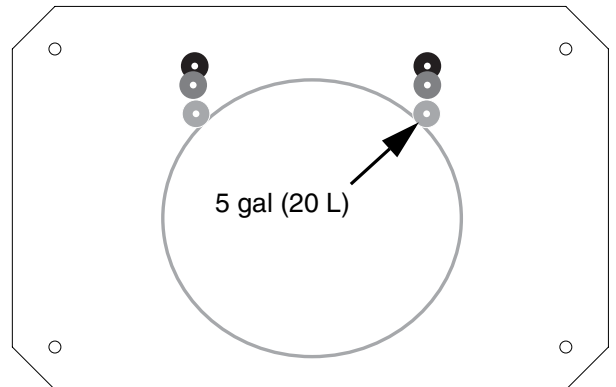
This unit is shipped with drum stops in place to help position the drum on the ram. For replacement parts, order Kit 255477. The kit includes 2 each of capscrews (FA), lock washers (not shown), and drum stops (FB).



**FIG. 7**

1. Locate the correct set of mounting holes on the ram base.
2. Using the capscrews (FA) and lock washers (not shown), attach the drum stops (FB) to the ram base.

**NOTE:** Only use the 5 gallon drum stop position shown in FIG. 8.




**FIG. 8: Ram Base**






# Supply System Operation

## Before Operating

NOTICE
<p>To prevent mixed material from fully curing in the system requiring replacement of all parts containing cured material, always be prepared to immediately begin flushing at the first sign of material curing in the system and immediately after stopping spraying. See <b>Flush</b> on page 12.</p>

## Pressure Relief Procedure

 Follow the Pressure Relief Procedure whenever you see this symbol.

						
<p>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.</p>						

1. Lock the gun/valve trigger.
2. See FIG. 2, page 6.
  - a. Close the air motor ball valve (BF) and the main air slider valve (BA).
  - b. *If the RAM is in a raised position*, set the ram director valve (BC) to DOWN. The ram will slowly drop.
  - c. Jog the director valve up and down to bleed air from ram cylinders.
3. Unlock the gun/valve trigger.
4. Hold a metal part of the gun/valve firmly to the side of a grounded metal pail, and trigger the gun/valve to relieve pressure.

5. Lock the gun/valve trigger.

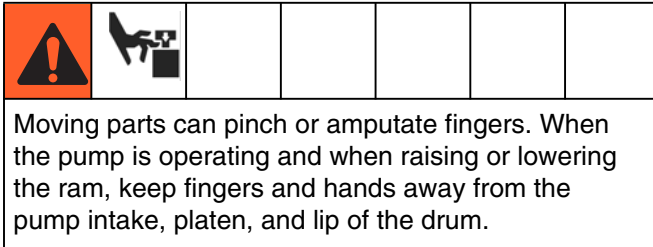


*If you suspect that the spray tip/nozzle or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, very slowly loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip/nozzle or hose.*

## Flush Before Using Equipment

The pump was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating fluid with oil, flush the pump with a compatible solvent before use. See **Flush** on page 12.

## Start and Adjust Ram

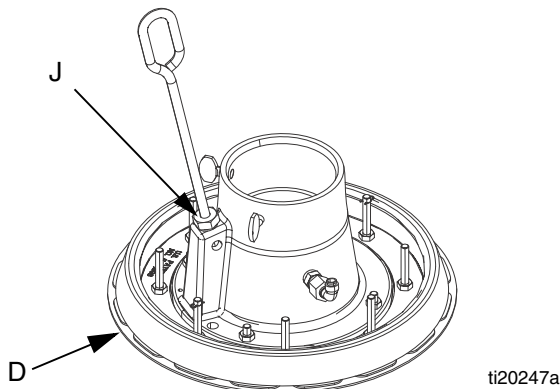


Moving parts can pinch or amputate fingers. When the pump is operating and when raising or lowering the ram, keep fingers and hands away from the pump intake, platen, and lip of the drum.

1. Refer to FIG. 1 and FIG. 2. Close all air regulators and air valves.
2. Open main air slider valve (BA) and set ram air regulator (BB) to 45 psi (0.31 MPa, 3.1 bar). Set director valve handle (BC) to UP and let the ram rise to its full height.
3. Remove the drum cover.
4. Put a full drum of fluid on the ram base, slide it back against the drum stops, and center it under the platen (D). See FIG. 9.

### NOTICE

To avoid damage to the platen seals, do not use a drum that is dented or damaged.



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FIG. 9

5. Remove bleed stick from platen bleed port (J).

**NOTE:** Some pails may require the spacer (EG) to be flipped upside down so the smaller diameter side is on the bottom. If unable to get ram into the pail, see **Remove and Reinstall Wiper** on page 14 to re-install the spacer upside down.

6. Set the director valve (BC) to DOWN and lower the ram until fluid appears at the top of the platen bleed

port (J). Adjust ram air regulator (BB) as needed. Set the director valve (BC) to neutral and close the platen bleed port (J).

## Start and Adjust Pump



To prevent equipment rupture, be sure all components are adequately sized and pressure rated to meet the system's requirements.

1. **Start and Adjust Ram**, page 11. Keep the director valve (BC) set to DOWN while pump is operating.
2. Be sure the main air slider valve (BA) is closed. Then set the ram air regulator (BB) to about 40-45 psi (0.28-3.1 MPa, 2.8-3.1 bar). Set the director valve (BC) to DOWN.
3. Open main air slider valve (BA). Use air motor regulator (BE) to slowly increase pressure until pump operates at desired flow rate.

**NOTE:** Increase air pressure to the ram if the pump does not prime properly with heavier fluids. Decrease Ram air pressure if fluid is forced out around the top seal or platen.

## Change Drums



Excessive air pressure in the material drum could cause the drum to rupture, causing serious injury. The platen must be free to move out of the drum. Never use drum blowoff air with a damaged drum.

1. Close the air motor ball valve (BF) to stop the pump.
2. Press and hold the blowoff air button (BG) then set ram director valve (BC) to UP to raise the platen (D) until the platen (D) is completely out of drum. When the ram exits the pail, release the blowoff air button to allow the ram to rise to its full height. Use minimum amount of air pressure necessary to push the platen out of the drum.
3. Remove empty drum.
4. Inspect platen and, if necessary, remove any remaining material or material build-up.
5. Place full drum on ram base.
6. Lower the ram and adjust the position of the drum relative to the platen. See **Start and Adjust Ram** on page 11.

### NOTICE

To prevent material from curing in the system, immediately flush the system when a pressure drop is noticed during spraying and when done spraying.

## Flush

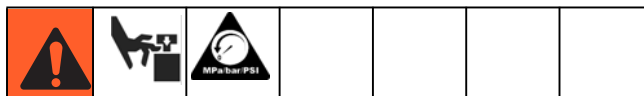


1. Perform **Change Drums** procedure to place platen in a pail of solvent. Clean any material from the side and top of the wipers while platen is removed from the pail.
2. Perform **Start and Adjust Ram** on page 11 to pressurize the pump with solvent.
3. Holding the gun firmly against a grounded pail, trigger the gun into the pail until clean solvent dispenses.

## Shutdown and Care of the Pump

1. Set the ram director valve (BC) to DOWN.
2. Follow the **Pressure Relief Procedure** on page 10.
3. Follow the pump shutdown instructions in Xtreme lowers manual. See **Related Manuals** on page 2.

## Replace Throat Seals

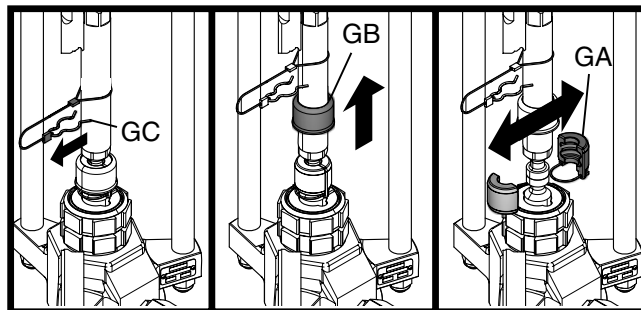


Remove wet cup from displacement pump while attached to the ram to replace throat seals.

1. Follow the **Pressure Relief Procedure** on page 10.
2. **Remove Quick Coupler.**
3. Remove wet cup and packing cartridge according to instructions in Xtreme lowers manual. See **Related Manuals** on page 2.

## Remove Quick Coupler

1. Ensure displacement pump is at bottom of stroke.
2. Follow the **Pressure Relief Procedure** on page 10.
3. Remove clip (GC), and slide coupling cover (GB) up to remove coupling (GA).



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# Before Beginning Repair

## Maintenance Procedures

						
<p>To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the <b>Pressure Relief</b> procedure.</p>						

## Platen Maintenance

See FIG. 10. If the platen does not come out of the pail easily when the pump is being raised, the air assist tube (EF) or air assist check valve may be plugged, or the bleed stick (J) may not be tightened. A plugged air assist check valve prevents air from reaching the underside of the plate to assist in raising it from the pail. If the bleed stick is not tightened no pressure will build.

1. Follow the **Pressure Relief Procedure** on page 10. Refer to platen parts illustration on page 28 and disassemble air assist check valve (414) as shown.
2. Clear air assist tube (EF) in platen. Clean all parts of air assist check valve (414) and reassemble.
3. Remove bleed stick (J) from platen. Push bleed stick through bleed relieve ports to remove material residue.

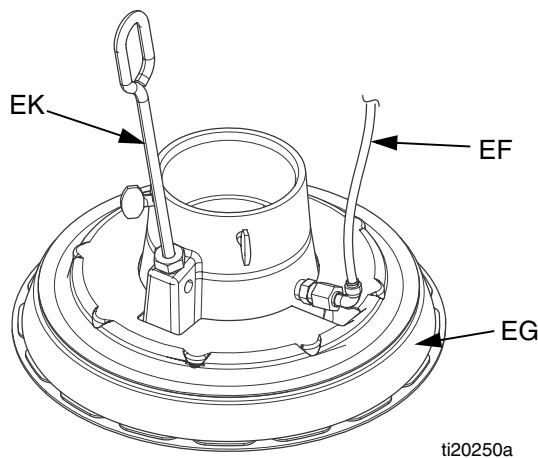


FIG. 10

## Adjust Spacers

### Use Platen with Tapered and Straight Sided Pails

#### Use platen with tapered pails

1. Working from the bottom, use screwdriver to pry spacer (EG) loose. Work spacer upward completely above the flange of the platen. See FIG. 11.
2. By hand, angle spacer (EG) and work it off the plate, pulling it down over the flange and bottom wipers (EB). See FIG. 12.
3. Save spacer (EG), as it is required for other applications.

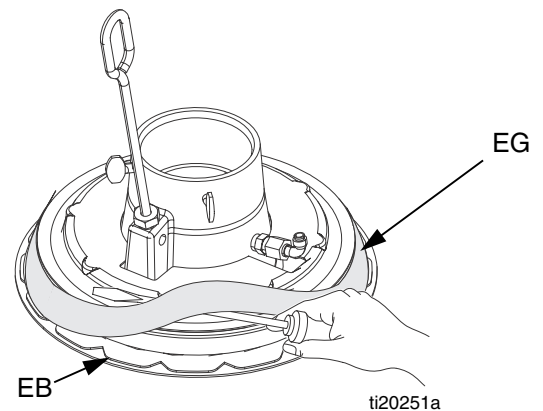
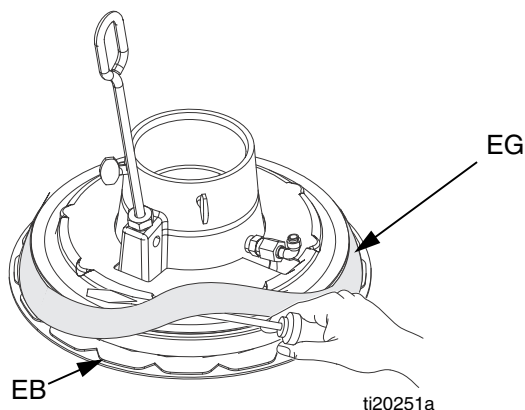


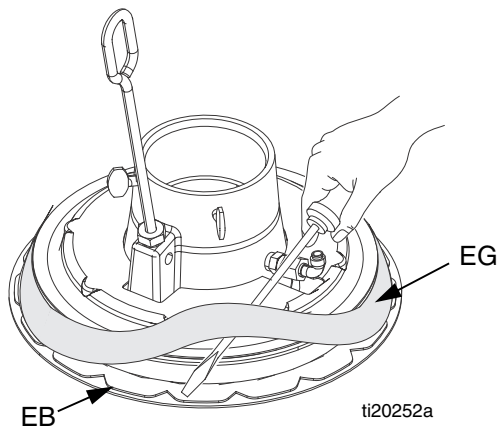
FIG. 11

### Use platen with straight sided pail

1. Ensure large diameter of spacer (EG) is facing **down**. Work spacer (EG) up over the platen by hand completely above the flange of the platen. See FIG. 12.
2. Working from the top, use screwdriver to position spacer (EG) between flange and wipers (EB). See FIG. 13.



**FIG. 12: Sliding spacer**



**FIG. 13: Installing Spacer**

### Remove and Reinstall Wiper

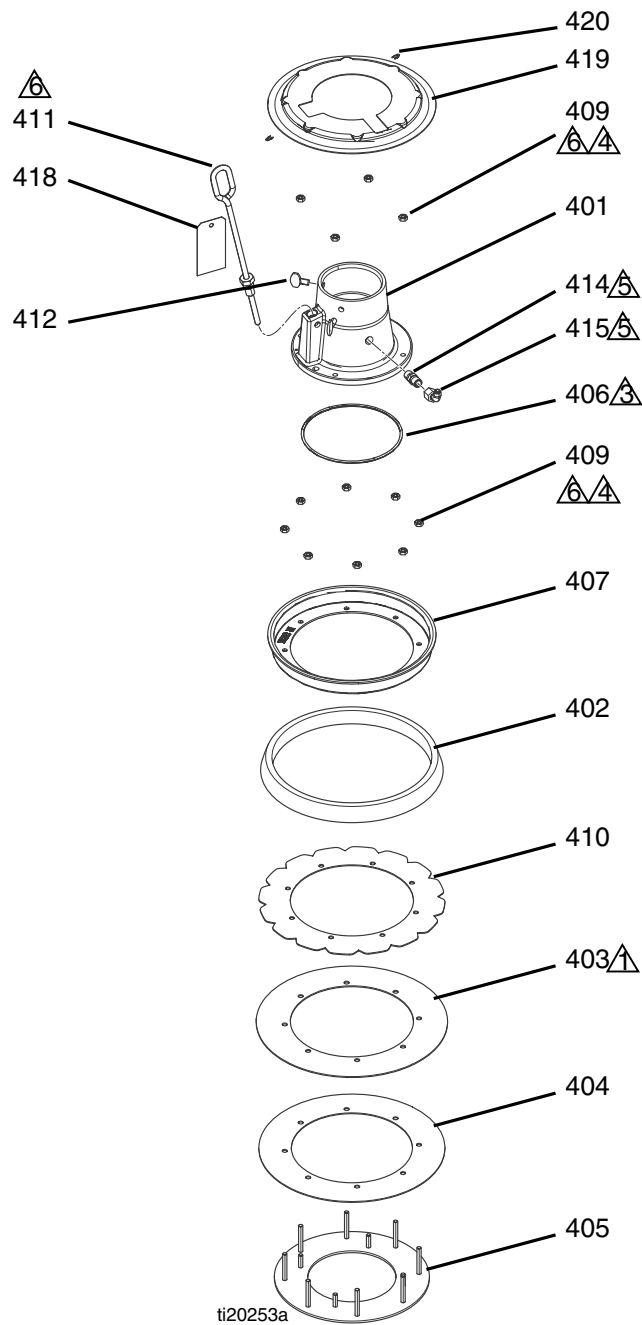
1. Remove wiper assembly; see FIG. 14:
  - a. Remove two clips (420) with needle nose pliers and remove platen cover (419).
  - b. Remove four nuts (409) that hold wiper assembly to platen casting (407) and remove wiper assembly.






- c. See **Reassemble 20 Liter Wiper Assembly** to change wiper styles or a complete wiper assembly.

2. Remove eight nuts (409) on wiper assembly.
3. Separate top plate (407), spacer (402), wiper (403), wiper supports (404, 410), and bottom plate (405).
4. Clean, inspect, and replace worn components.

### Reassemble 20 Liter Wiper Assembly

1. Place bottom plate (405) on flat surface. Place wiper support (404), wiper (403), flowered wiper support (410), spacer (402), and top plate (407) on bottom plate (405).
2. Install eight nuts (409) on outer ring. Torque to 40-50 in-lb (4.5-5.6 N•m).
3. Replace o-ring (406), or install new o-ring under platen casting (401). Use lubricant to hold in place.
4. Install platen casting (401). Tighten with four nuts (409). Torque to 40-50 in-lb (4.5-5.6 N•m).



-  Install PTFE wiper (403) with smooth, shiny, PTFE-coated side down.
-  Apply grease to hold ring (406) in place during assembly.
-  Torque to 40-50 in-lb (4.5-5.6 N•m).
-  Apply pipe sealant to all non-swiveling pipe threads.
-  Apply thread lubricant to threads.

**FIG. 14: Platen Assembly**

# Troubleshooting

Check all possible problems before disassembling the ram, pump, or platen. Refer to **Xtreme Pump Packages** manual 311762 for pump troubleshooting.

## Ram

Problem	Cause	Solution
Decreasing spraying pressure or poor spray pattern.	Material beginning to cure in lines.	Flush immediately.
Ram will not raise or lower.	Closed air valve or clogged air line.	Open, clear.
	Not enough air pressure.	Increase.
	Worn or damaged piston.	Replace. See <b>Supply Unit Repair</b> on page 20.
	Hand valve closed or clogged.	Open, clear.
Ram raises and lowers too fast.	Air pressure is too high.	Decrease.
Air leaks around cylinder rod.	Worn rod seal.	Replace. See <b>Supply Unit Repair</b> on page 20.
Fluid squeezes past ram plate wipers.	Air pressure too high.	Decrease.
	Worn or damaged wipers.	Replace. See <b>Remove and Reinstall Wiper</b> on page 14.
Pump will not prime properly or pumps air.	Closed air valve or clogged air line.	Open, clear.
	Not enough air pressure.	Increase.
	Worn or damaged piston.	Replace. See pump manual.
	Hand valve closed or clogged.	Open, clear. See <b>Platen Maintenance</b> on page 13.
	Hand valve is dirty, worn, or damaged.	Clean, service.
Air assist valve will not hold drum down or push plate up.	Closed air valve or clogged air line.	Open, clear. See <b>Platen Maintenance</b> on page 13.
	Not enough air pressure.	Increase.
	Valve passage clogged.	Clean. See <b>Platen Maintenance</b> on page 13.



# Repair

## Disconnect Pump from Platen

1. Loosen two thumb screws (412) from platen.
2. Carefully pull pump away to prevent damage to pump inlet. Remove adapter (421) and o-ring (406) from platen adapter (421).

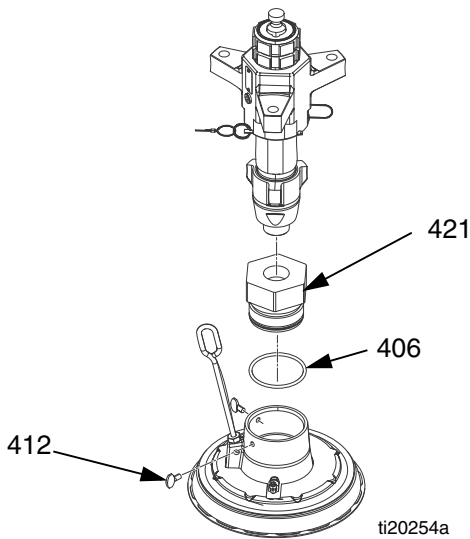


FIG. 15

## Connect Platen to Pump

1. Apply grease to o-ring (406) then install the o-ring on platen adapter (421). See FIG. 15.
2. Apply pipe sealant to pump inlet thread then thread onto adapter (421).
3. Loosen thumb screws (412) then carefully lower pump onto platen.
4. Tighten thumb screws (412) to secure platen to adapter.

## Remove Wipers

See **Remove and Reinstall Wipers** on page 13.

## Install Wipers

See **Remove and Reinstall Wipers** on page 13.

## Disconnect Displacement Pump

1. **Remove Quick Coupler**, page 12.
2. Remove tie rod nuts (206).

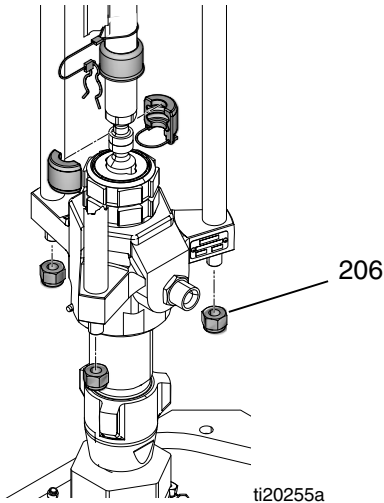
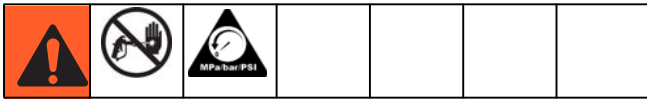


FIG. 16

3. Lift air motor rod to bring rod to top of stroke.

## Remove Displacement Pump



Refer to your Xtreme Displacement Pump 311762 manual to repair the displacement pump.

If the air motor does not require servicing, leave it attached to its mounting. If the air motor does need to be removed, see page 19.

1. Follow the **Pressure Relief Procedure** on page 10.
2. **Disconnect Displacement Pump**, page 18.
3. **Disconnect Pump from Platen**, page 17 to disconnect the platen from the displacement pump.
4. Raise the ram assembly to lift the air motor away from the displacement pump.
5. Remove displacement pump and service as needed.

## Install Displacement Pump

1. Raise ram to install displacement pump to platen.
2. **Connect Platen to Pump**, page 17.
3. **Connect Displacement Pump**, page 18.

## Connect Displacement Pump

1. Install tie rod nuts (206). Torque to 50-60 ft-lb (68-81 N•m).
2. Install quick coupler.

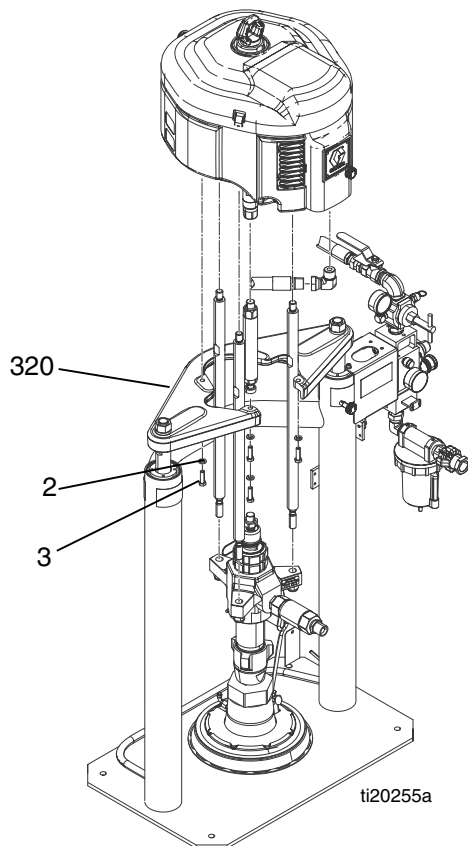
## Remove Air Motor



1. Follow the **Pressure Relief Procedure** on page 10.
2. **Disconnect Displacement Pump**, page 18.
3. Disconnect air hose from air motor fitting (7). See page 22.
4. **Remove Quick Coupler**, page 12.
5. Remove screws (3) and washers (2) that secure air motor to mounting plate (320).

## Install Air Motor

1. Using a secure hoist, attach motor to mounting plate (320) with screws (3) and washers (2). See FIG. 17.
2. **Connect Displacement Pump**, page 18.
3. Connect air hose to air motor fitting (7). See page 22.



**FIG. 17**

6. Using a capable hoist connected to air motor lift ring, secure air motor to hoist and remove air motor.

## Supply Unit Repair



To reduce the risk of serious injury whenever you are instructed to relieve pressure always follow the **Pressure Relief Procedure** on page 10. Do not use pressurized air to remove the guide sleeve or the piston.

### Ram Piston Rods

Always service both cylinders at the same time. When you service the piston rod always install new o-rings in the piston rod seal and ram piston.

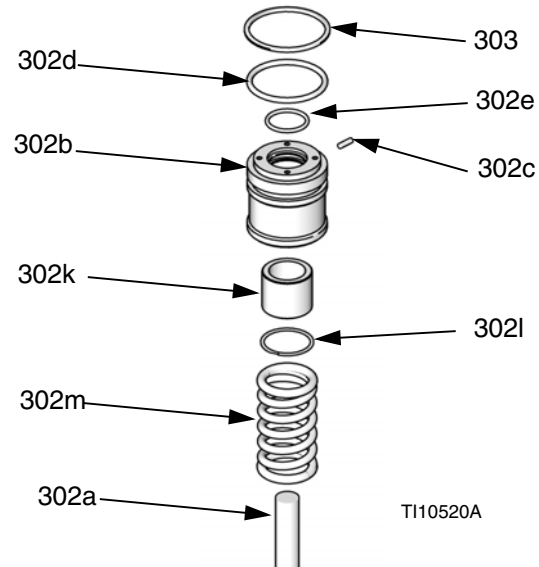
#### Repair Parts:

Piston Repair Kit 257622. See **Ram Frame** on page 26 for parts included in kit.

#### Disassemble Piston Rod Seal and Bearing

1. Relieve pressure.
2. Access piston rod seal and bearing.
  - a. Ensure ram is in lowest position.
  - b. Remove nuts (333) and lockwashers (332) from piston rods (302a).
  - c. Remove entire pump package, including the mounting plate (331) off of the piston rods (302a). Use a fork-truck to lift the assembly from the mounting plate.
  - d. Secure pump package so pump and platen will not fall.
3. Remove retaining ring (303).
4. Remove piston rod seal and bearing. Slide end cap (302b), pin (302c), o-ring (302d), and spring (302m) up off of the piston rod (302a). Remove retaining ring (302l) and bearing (302k) from end cap (302b) and remove o-ring (302e).
5. Inspect parts for wear or damage. Replace as necessary.

**NOTE:** Do not reinstall end cap assembly if the ram piston (302f) needs to be removed from the piston rod. See the next page for ram piston repair instructions.



**FIG. 18: 3 in. Piston Rod Seal**

## Assemble Piston Rod Seal and Bearing

See FIG. 18 on page 20.

1. Lubricate o-ring (302e) and bottom bearing (302k).
  - a. Install o-ring (302e), bottom bearing (302j), and retaining ring (302l) into end cap (302b).
  - b. Install new o-ring (302d) and pin (302c) on end cap (302b). Lubricate o-ring (302d) and end cap (302b).
  - c. Slide spring (302m) and end cap (302b) on piston rod (302a).
2. Install retaining ring (303).
3. Remount mounting plate (331) and attach nuts (333) and lockwashers (332). Torque to 40 ft-lb (54 N•m).

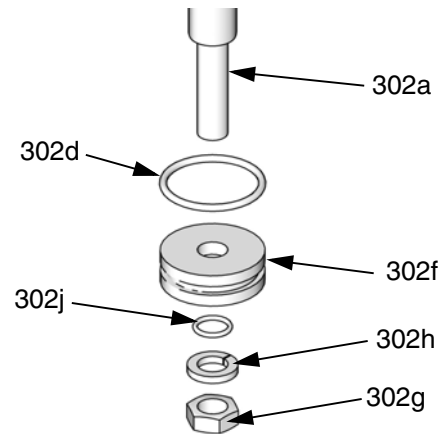
## Disassemble Ram Piston

1. Complete steps 1-4 from **Disassemble Piston Rod Seal and Bearing** to remove the end cap (302b) from the piston rod (302a).

### NOTICE

**Do not** tilt the piston rod to one side when removing it from the base or when installing it. Such movement can damage the piston or inside surface of the base cylinder.

2. Carefully lay piston (302f) and rod (302a) down so piston rod will not be bent. Remove nut (302g), washer (302h), piston (302f), outer o-ring (302d), and inner o-ring (302j). See FIG. 19.
3. Inspect parts for wear or damage. Replace as necessary.



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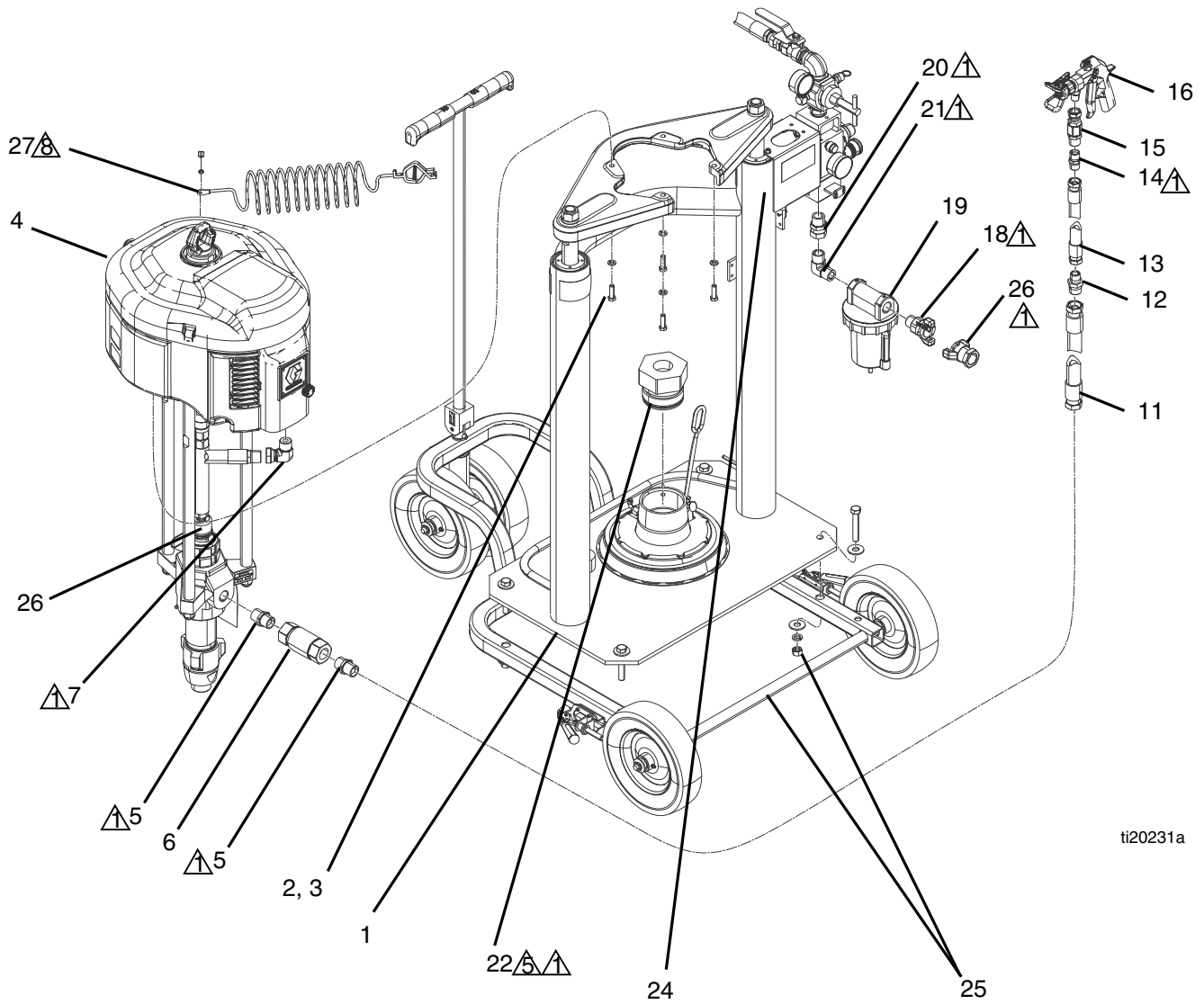
**FIG. 19: 3 in. Ram Piston**

## Assemble Ram Piston

1. Install new o-rings (302d, 302j) and lubricate piston (302f) and o-rings.
2. Apply medium strength thread sealant. Install piston (302f), washer (302h), and nut (302g) on piston rod (302a).
3. Carefully insert piston (302f) into cylinder and push piston rod (302a) straight down into cylinder.
4. Slide spring (302m) and end cap (302b) onto piston rod (302a).
5. Install retaining ring (303).
6. Remount mounting plate (331) and attach nuts (333) and lockwashers (332). Torque to 40 ft-lb (54 N•m).

# Parts

## Xtreme PFP, 16P957 and 16T311



ti20231a

- ▲ Apply sealant (8) to all non-swiveling pipe threads.
- ▣ Assemble o-ring from platen to platen adapter (22) then assemble platen to adapter.
- ⊙ Install grounding wire (27) to ground screw on motor (4).

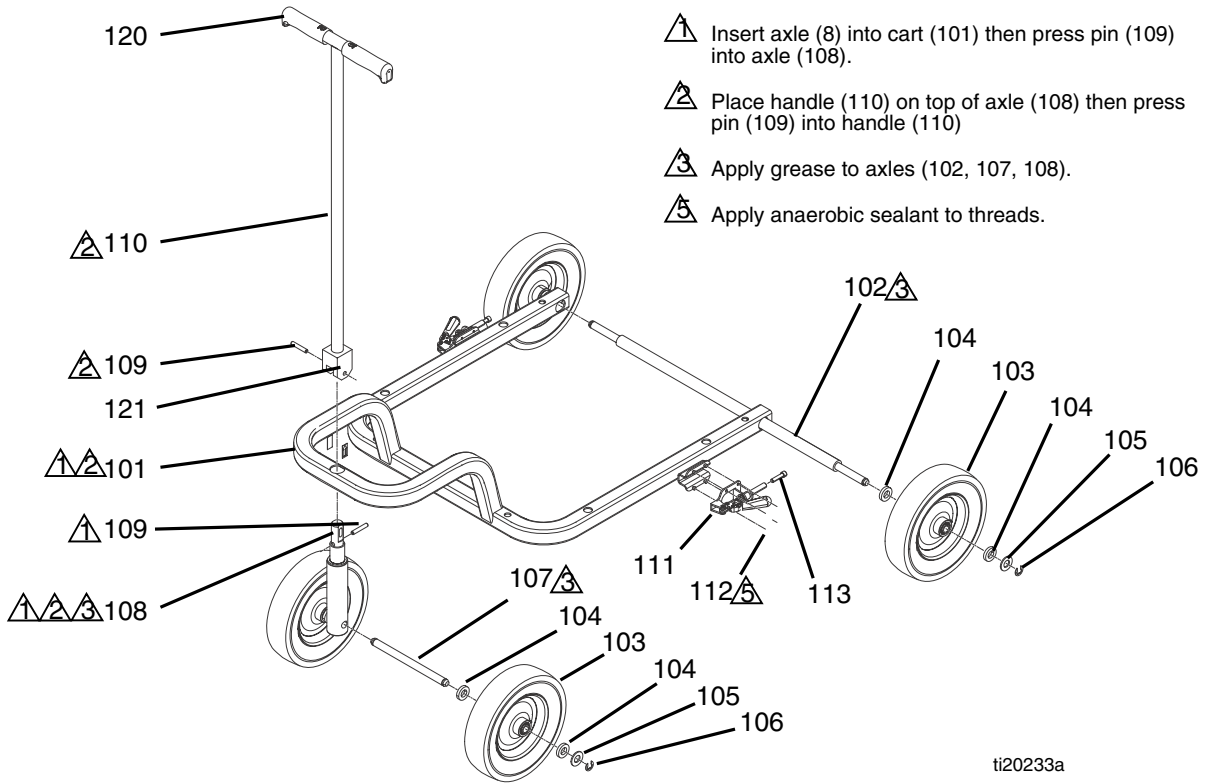
Ref	Part	Description	Qty
1	---	RAM, dual post, motor regulator	1
2	100133	WASHER, lock, 3/8	4
3	---	SCREW, cap, hex head	4
4	---	PUMP, Xtreme, PFP	1
5◆	160032	FITTING, nipple	2
6◆	16T481	VALVE, check	1
7	160327	FITTING, union adapter, 90 degree	1
8	---	SEALANT, pipe, stainless steel	1
10*	206994	FLUID, TSL, 8 oz bottle	1
11◆	H67550	HOSE, coupled, 3/4 in. ID, 6500 psi	1
12◆	16R883	FITTING, nipple, reducing, 3/4 x 1/2	1
13◆	H75025	HOSE, coupled, 7250 psi, 0.50 in. ID, 25 ft	1
14◆	158491	FITTING, nipple	1
15◆	207946	SWIVEL, straight	1
16◆	262854	GUN, spray, XHF	1
18	113429	COUPLING, universal, 3/4-14 npt male	1
19	117628	FILTER, air, 3/4 (auto drain)	1
20	157785	FITTING, swivel	1
21	295847	FITTING, elbow, 90, 3/4 mpt	1
22	---	ADAPTER, platen	1
24	---	LABEL, identification	1
25	16P434	CART, ram ( <i>Model 16T311 only</i> )	1
26	113430	COUPLING, universal, 3/4-14 npt female	1
27	238909	WIRE, grounding	1

--- Not for sale.

\* Not shown.

◆ Included in mix line and gun kit 24P832. See **Connect Mix Line and Gun** on page 9 for kit installation.

# Cart, 16P434



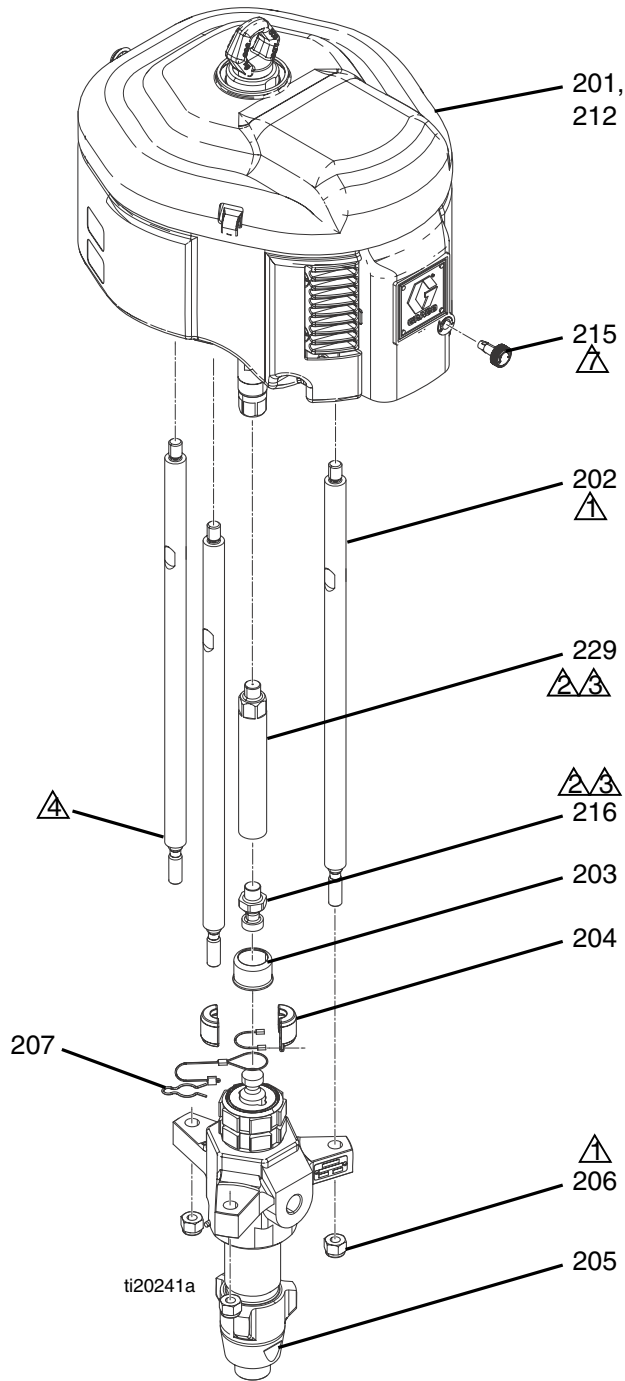
Ref	Part	Description	Qty
101	---	CART	1
102	---	AXLE	1
103	113807	WHEEL, flat free, urethane	4
104	191824	WASHER, space	8
105	111841	WASHER, plain 5/8	4
106	101242	RING, retaining, external	4
107	15A913	AXLE	1
108	---	AXLE	1
109	124291	PIN, spring	2
110	258982	HANDLE, cart	1
111	---	BRAKE	2
112	112788	SCREW, cap, socket head	8
113	102962	SCREW, cap, socket head	2
114	---	LUBRICANT, grease	1
115◆	101147	SCREW, cap, hex head	4
116◆	101044	WASHER, plain	8
117◆	100018	WASHER, lock, spring	4
118◆	100321	NUT	4
119	---	SEALANT, anaerobic	1
120	116139	GRIP, handle	2
121	---	LABEL, arrow	2

--- Not for sale.

◆ Not shown.



# Pumpline

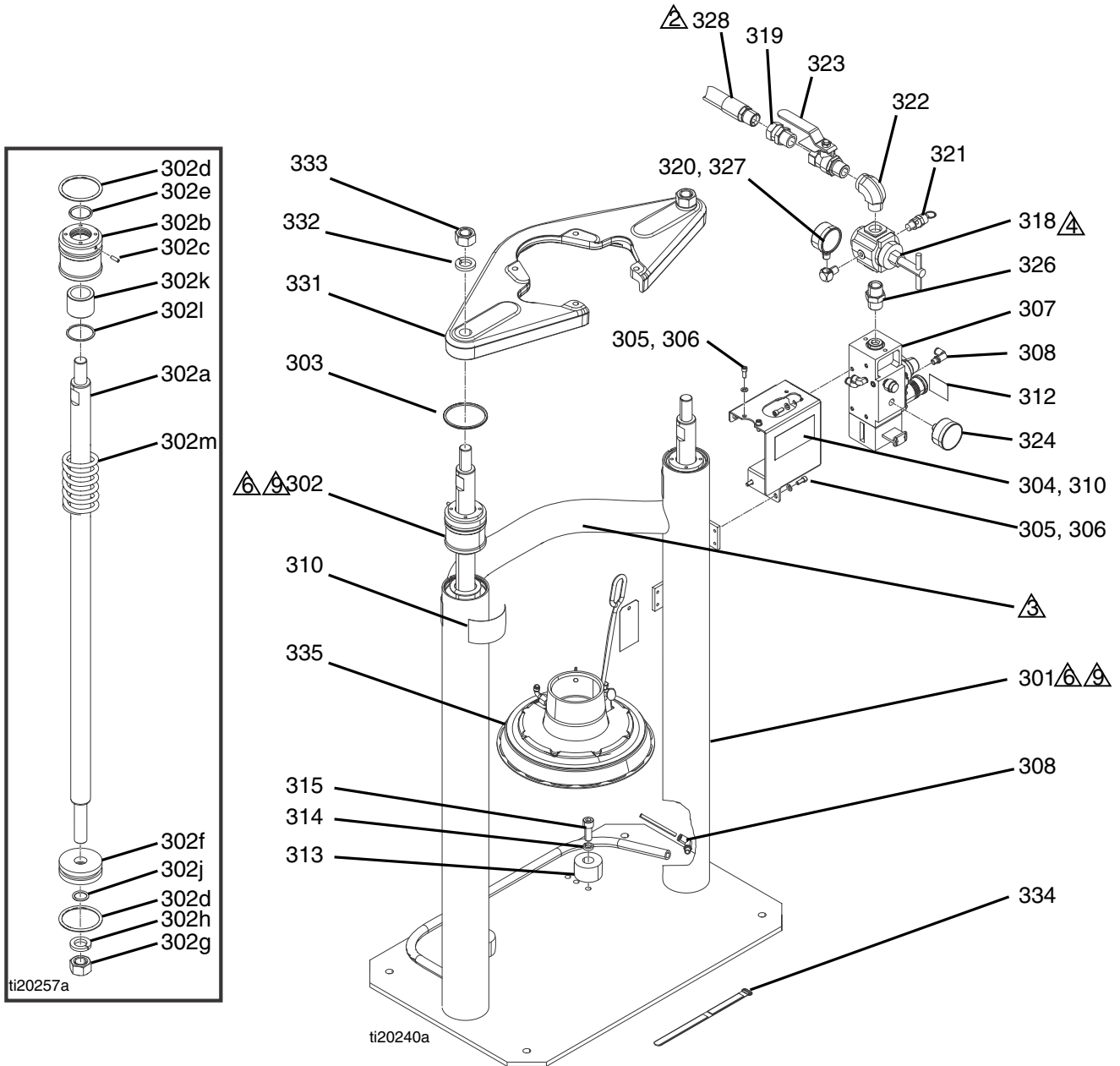


Ref	Part	Description	Qty
201	N65DN0	MOTOR, 6500	1
202	---	ROD, tie	3
203	197340	COVER, coupler	1
204	244819	COUPLING, assembly	1
205	L180C7	LOWER, Xtreme	1
206	101712	NUT, lock	3
207	244820	CLIP, hairpin; with lanyard	1
208	---	SEALANT, anaerobic	1
212	---	LABEL, Xtreme PFP	1
214	---	LUBRICANT, thread	1
215	15J277	CONTROL, de-ice	1
216	15H392	ADAPTER, rod, Xtreme	1
229	---	ROD, adapter	1

--- Not for sale.

- ⚠ Torque to 50-60 ft-lb (68-81 N•m).
- ⚠ Torque together to 145-155 ft-lb (196-210 N•m).
- ⚠ Apply sealant.
- ⚠ Insert lanyard from locking pin onto tie rod (2).
- ⚠ Apply thread lubricant to threads, o-rings, and seals. Do not apply to rod adapter (216) or rod (229).
- ⚠ Push in de-ice control (15) fully. Symbols must be upright.

# Ram Frame



Apply pipe sealant to all non-swiveling pipe threads.

Apply electrical tape and protective sleeve (316) to hose (315) at motor end with blow-off assist air hose. Double-back the sleeve over itself. Tape the air control end last.

Attach strap (323) and hose-tube routing over rear cross bar.

Arrow on air regulator (304) must point towards ell fitting (308).

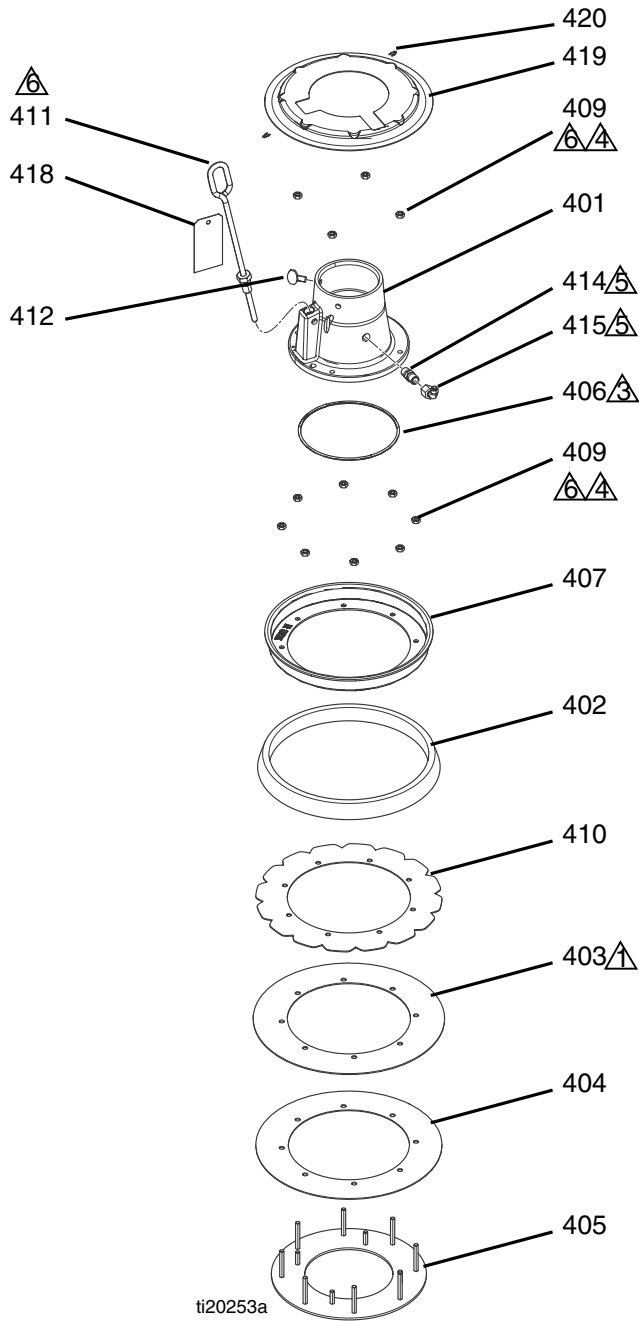
Apply grease to all packings and cavity of RAM cylinder

Add oil to cylinder (301) wall before and after piston assembly (302) is installed.

## Ram Frame Parts

Ref	Part	Description	Qty	Ref	Part	Description	Qty
301	---	RAM, dp, weldment	1	331	---	BRACKET, shelf, D60, 3400 / 6500	1
302◆	---	PISTON, ram, subassembly (includes items 302a-302p)	2	332	101533	WASHER, spring lock	2
302a◆	---	ROD, piston, ram	1	333	101535	NUT, full hex	2
302b◆	15M295	BEARING, ram end cap	1	334	198442	STRAP, retaining mix manifold	1
302c◆	15U979	PIN, spring, straight	1	335	16U676	PLATE, 20 L single wiper, PTFE	1
302d◆	160258	PACKING, o-ring, buna-n	2	--- Not for sale.			
302e◆	156698	PACKING, o-ring	1	▲ Replacement Danger and Warning labels, tags and cards are available at no cost.			
302f◆	183943	PISTON	1	◆ Included in kit 257622.			
302g◆	101535	NUT, full hex	1				
302h◆	101533	WASHER, spring lock	1				
302j◆	156401	PACKING, o-ring	1				
302k◆	---	BEARING, ram end cap	1				
302l◆	15F453	RETAINER, retaining ring	1				
302m◆	160138	SPRING, compression	1				
302n◆	---	LUBRICANT, grease	1				
302p◆	---	SEALANT, thread, medium strength	1				
303◆	---	RING, retaining	2				
304	255296	BRACKET, mounted	1				
305	100016	WASHER, lock	8				
306	101682	SCREW, socket cap head	8				
307	24C824	CONTROL, air, ram, hydraulic driver	1				
308	597151	FITTING, elbow	2				
309	---	LUBRICANT, grease	1				
310▲	15J074	LABEL, safety, crush and pinch	4				
311	---	SEALANT, pipe, sst	1				
312	---	LABEL, valve, shutoff, air control	1				
313	C32467	STOP, drum	2				
314	C38185	WASHER, lock	2				
315	C19853	SCREW, cap, socket head	2				
316	C12509	TUBE, nylon, round	14				
317	---	LUBRICANT, oil	1				
318	16F014	REGULATOR, air, t-handle	1				
319	157785	FITTING, swivel	1				
320	100960	GAUGE, pressure, air	1				
321	103347	VALVE, safety, 100 psi	1				
322	---	FITTING, elbow, street, 3/4-14	1				
323	113218	VALVE, ball, vented, 0.750	1				
324	101689	GAUGE, press, air	1				
326	C20487	FITTING, nipple, hex	1				
327	100840	FITTING, elbow, street	1				
328	C12034	HOSE, coupled 72 in.	1				
329	552071	SLEEVE, protective	15				
330	---	TAPE, electrical	1				

## 20L Platen, 16U676



Ref	Part	Description	Qty
401	---	BASE, platen, 20L	1
402	276049	SPACER	1
403	257675	WIPER, main	1
404	16W009	WIPER, polyethylene support	1
405	---	PLATE, bottom, platen	1
406	121829	O-RING, packing, -162	1
407	---	CLAMP, retainer	1
409	---	NUT, keps, hex head, 1/4-20	12
410	16W010	WIPER, support	1
411	257697	HANDLE, bleed, stainless steel	1
412	---	SCREW, thumb, 5/16-18 x 1/2, carbon steel	2
413	◆ 112358	PACKING, o-ring	1
414	122056	VALVE, check	1
415	C20350	FITTING, elbow 90 degree	1
416	---	LUBRICANT, grease	1
417	---	SEALANT, pipe, stainless steel	1
418	---	TAG, instruction	1
419	15W184	COVER, 20L, shroud	1
420	16U740	PIN, hairpin, cotter; pack of 10	1
421	---	LUBRICANT, thread	1

--- Not for sale.

◆ Not shown. Item is not assembled. Items installs onto platen adapter.

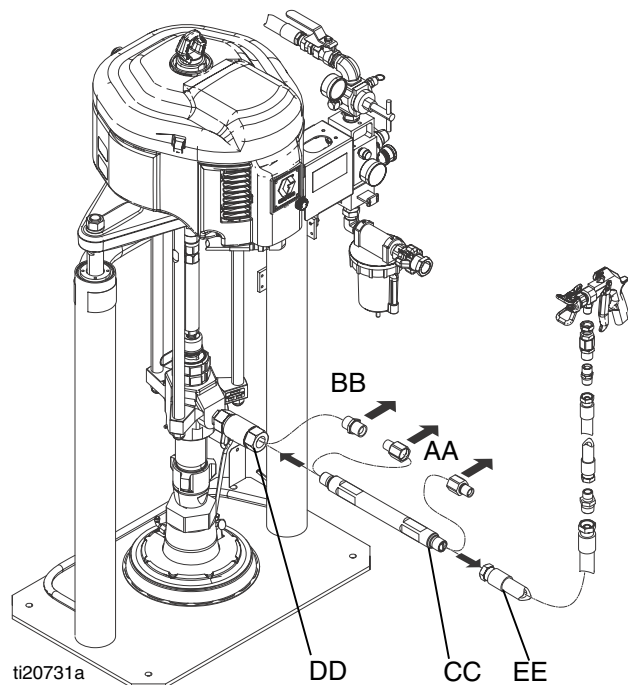
- ▲ Install PTFE wiper (403) with smooth, shiny, PTFE-coated side down.
- ▲ Apply grease to hold ring (406) in place during assembly.
- ▲ Torque to 40-50 in-lb (4.5-5.6 N•m).
- ▲ Apply pipe sealant to all non-swiveling pipe threads.
- ▲ Apply thread lubricant to threads.

# Accessories

## Static Mixer Kit, 16T316

This is a 12 element, stainless steel, static mixer used to thoroughly mix the materials. The static mixer kit is installed between the 3/4 in. ID hose and 1/2 in. ID hose.

### Static Mixer Kit Installation:

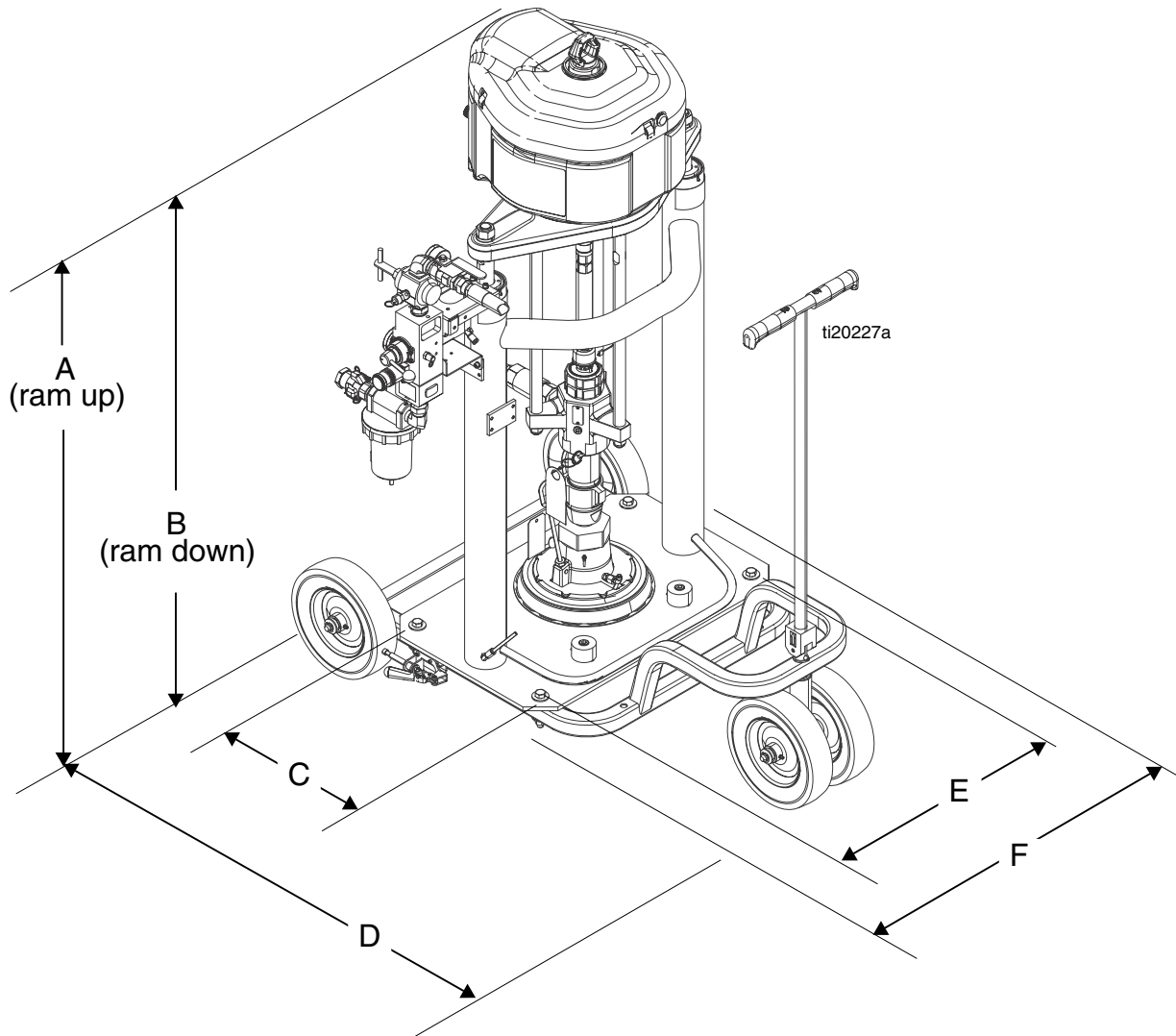


**FIG. 20**

See FIG. 20.

1. Remove bushings (AA) on each end of static mixer assembly and discard.
2. Disconnect 3/4 in. ID hose (EE) from pump outlet check valve then remove and discard the nipple (BB) used to connect the check valve to the hose.
3. Install static mixer (CC) onto pump outlet check valve (DD).
4. Install 3/4 in. ID hose (EE) onto the static mixer (CC) outlet.

# Dimensions



Model	A in. (m)	B in. (m)	C in. (m); Mounting Holes	D in. (m)	E in. (m); Mounting Holes	F in. (m)
Xtreme PFP, no cart (16P957)	81.43 (2.07)	54-7/8 (1.39)	14 (0.36)	20-3/4 (0.53)	24 (0.61)	37 (0.94)
Xtreme PFP, with cart (16T311)	87.18 (2.21)	60-5/8 (1.54)	14 (0.36)	47-5/8 (1.21)	24.0 (0.61)	39-3/4 (1.01)

## Technical Data

Maximum fluid working pressure . . . . .	6500 psi (45, 448 bar)
Max working air pressure . . . . .	90 psi (620 kPa, 6.2 bar)
Max air inlet pressure . . . . .	100 psi (0.7 MPa, 7 bar)
Air inlet size . . . . .	3/4 npt(f)
System Weight . . . . .	<i>16P957</i> : 325 lb (147 kg) <i>16T311</i> : 392 lb (178 kg)
Pump Wetted parts. . . . .	See Xtreme lowers manual 311762.
System Wetted parts . . . . .	Electroless nickel, polyurethane, PTFE-coated nitrile, polyethylene, PTFE, carbon steel, buna, 316 stainless steel, 17-4 stainless steel
Ambient operating temperature range (supply system)	32-120 °F (0- 49°C)
Sound data . . . . .	See NXT air motor manual 311238.

# 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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**TO PLACE AN ORDER**, contact your Graco distributor or call to identify the nearest distributor.

**Phone:** 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

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For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

Original instructions. This manual contains English. MM 3A2798

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