

## Airless Paint Sprayer

3A1183A

ENG

For application of architectural paints and coatings. For professional use only.

### Airlessco - TS1500 (24F690)

3300 psi (22.8 MPa, 228 bar) Maximum Working Pressure



#### Important Safety Instructions

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

#### Related Manuals



Gun Manual 3A0413



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# 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, 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.

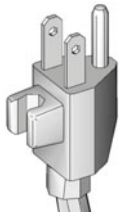
## **WARNING**



### **GROUNDING**

This product must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This product is equipped with a cord having a grounding wire with an appropriate grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

- Improper installation of the grounding plug is able to result in a risk of electric shock.
- When repair or replacement of the cord or plug is required, do not connect the grounding wire to either flat blade terminal.
- The wire with insulation having an outer surface that is green with or without yellow stripes is the grounding wire.
- Check with a qualified electrician or serviceman when the grounding instructions are not completely understood, or when in doubt as to whether the product is properly grounded.
- Do not modify the plug provided; if it does not fit the outlet, have the proper outlet installed by a qualified electrician.
- This product is for use on a nominal 120V circuit and has a grounding plug similar to the plug illustrated in the figure below.



- Only connect the product to an outlet having the same configuration as the plug.
- Do not use an adapter with this product.

#### Extension Cords:

- Use only a 3-wire extension cord that has a 3-blade grounding plug and a 3-slot receptacle that accepts the plug on the product.
- Make sure your extension cord is not damaged. If an extension cord is necessary, use 12 AWG (2.5 mm<sup>2</sup>) minimum to carry the current that the product draws.
- An undersized cord results in a drop in line voltage and loss of power and overheating.

# WARNING



## FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:

- Do not spray flammable or combustible materials near an open flame or sources of ignition such as cigarettes, motors, and electrical equipment.
- Paint or solvent flowing through the equipment is able to result in static electricity. Static electricity creates a risk of fire or explosion in the presence of paint or solvent fumes. All parts of the spray system, including the pump, hose assembly, spray gun, and objects in and around the spray area shall be properly grounded to protect against static discharge and sparks. Use Graco conductive or grounded high-pressure airless paint sprayer hoses.
- Verify that all containers and collection systems are grounded to prevent static discharge.
- Connect to a grounded outlet and use grounded extensions cords. Do not use a 3-to-2 adapter.
- Do not use a paint or a solvent containing halogenated hydrocarbons.
- Keep spray area well-ventilated. Keep a good supply of fresh air moving through the area. Keep pump assembly in a well ventilated area. Do not spray pump assembly.
- Do not smoke in the spray area.
- Do not operate light switches, engines, or similar spark producing products in the spray area.
- Keep area clean and free of paint or solvent containers, rags, and other flammable materials.
- Know the contents of the paints and solvents being sprayed. Read all Material Safety Data Sheets (MSDS) and container labels provided with the paints and solvents. Follow the paint and solvents manufacturer's safety instructions.
- Fire extinguisher equipment shall be present and working.
- Sprayer generates sparks. When flammable liquid is used in or near the sprayer or for flushing or cleaning, keep sprayer at least 20 feet (6 m) away from explosive vapors.



## ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power cord before servicing equipment.
- Use only grounded electrical outlets.
- Use only 3-wire extension cords.
- Ensure ground prongs are intact on power and extension cords.
- Do not expose to rain. Store indoors.

# ⚠ WARNING



## SKIN INJECTION HAZARD

High-pressure spray is able to inject toxins into the body and cause serious bodily injury. In the event that injection occurs, **get immediate surgical treatment**.

- Do not aim the gun at, or spray any person or animal.
- Keep hands and other body parts away from the discharge. For example, do not try to stop leaks with any part of the body.
- Always use the nozzle tip guard. Do not spray without nozzle tip guard in place.
- Use Airlessco nozzle tips.
- Use caution when cleaning and changing nozzle tips. In the case where the nozzle tip clogs while spraying, follow the **Pressure Relief Procedure** for turning off the unit and relieving the pressure before removing the nozzle tip to clean.
- Do not leave the unit energized or under pressure while unattended. When the unit is not in use, turn off the unit and follow the **Pressure Relief Procedure** for turning off the unit.
- Check hoses and parts for signs of damage. Replace any damaged hoses or parts.
- This system is capable of producing 3300 psi. Use Airlessco replacement parts or accessories that are rated a minimum of 3300 psi.
- Always engage the trigger lock when not spraying. Verify the trigger lock is functioning properly.
- Verify that all connections are secure before operating the unit.
- Know how to stop the unit and bleed pressure quickly. Be thoroughly familiar with the controls.



## EQUIPMENT MISUSE HAZARD

**Misuse can cause death or serious injury.**

- Always wear appropriate gloves, eye protection, and a respirator or mask when painting.
- Do not operate or spray near children. Keep children away from equipment at all times.
- Do not overreach or stand on an unstable support. Keep effective footing and balance at all times.
- Stay alert and watch what you are doing.
- Do not leave the unit energized or under pressure while unattended. When the unit is not in use, turn off the unit and follow the **Pressure Relief Procedure** for turning off the unit.
- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not kink or over-bend the hose.
- Do not expose the hose to temperatures or to pressures in excess of those specified by Airlessco.
- Do not use the hose as a strength member to pull or lift the equipment.







## PRESSURIZED ALUMINUM PARTS HAZARD

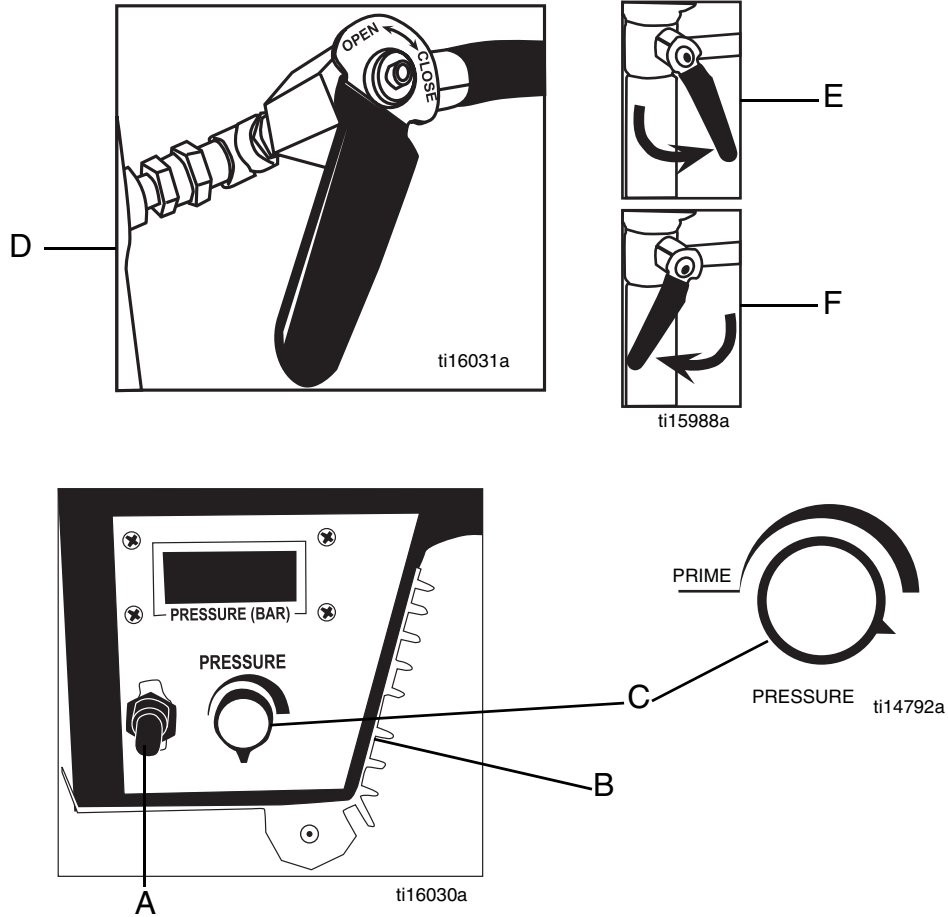
Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

# ! WARNING

 	<p><b>MOVING PARTS HAZARD</b>  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>TOXIC FLUID OR FUMES HAZARD</b>  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>  You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This 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



A	Power switch	Turns sprayer ON and OFF
B	Circuit Breaker	35 AMP
C	Pressure Control Knob	Adjusts pressure. Turn clockwise to increase pressure and counterclockwise to decrease pressure.
D	Prime/Pressure (PR) Relief Valve	Primes pump and relieves pressure from gun, hose and tip.
E	Prime/Pressure (PR) Relief Valve Open Position	Relieves pressure from gun, hose and tip and primes the unit when in the open position. Refer to <b>Pressure Relief Procedure</b> page 13
F	Prime/Pressure (PR) Relief Valve Closed Position	Pressurizes system when closed.

# Operation

## Setup

			
<ul style="list-style-type: none"> <li>To reduce the risk of static sparking, fire or explosion which can result in serious bodily injury and property damage, always ground the sprayer and system components and the object being sprayed, as instructed in the safety warning section of this manual.</li> <li>Ensure electrical service is 120 VAC, 20 amp minimum and the outlet is properly grounded.</li> <li>For generator power, a minimum 7000 watt generator with a voltage regulation must be used.</li> </ul>			

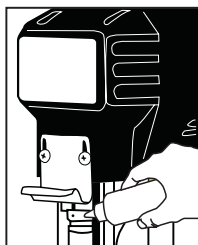
### Connect the hose and gun

- Remove the plastic cap plug from the outlet and screw a conductive or grounded 3000 psi spray hose onto fluid outlet.
- Connect an airless spray gun to the other end of the hose. Do not install spray tip.

**NOTE:** Do not use thread sealer on swivel unions as they are made to self seal.

### Fill the Packing Nut/Wet Cup

- Fill the Packing Nut with 5 drops of ASM Packing Seal Fluid.



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### Flush the Sprayer

- Flush the sprayer. See **Flushing Procedure** on page 7.

## Prime and Flush Storage Fluid






<b>NOTICE</b>
<p>The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment for the first time.</p>

Before beginning a new spraying project you need to prime the sprayer and flush the storage fluid out of the sprayer.

### Oil- or Water-based Materials

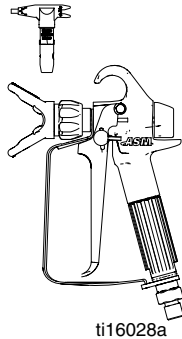
- When changing from water-based material to oil based material, flush with soapy water and then mineral spirits.
- When changing from oil based material to water base material, flush with mineral spirits, followed by soapy water, then a clean water flush.
- When flushing with solvents, ground pail and gun.
- Flush before changing colors, before fluid can dry in the equipment, at the end of the day, before storing, and before repairing equipment.

## Flushing

					
<ul style="list-style-type: none"> <li>To reduce the risk of static sparking, which can cause fire or explosion, always hold a metal part of the gun firmly against the metal pail when flushing. This also reduces splashing.</li> <li>Always remove the spray tip before flushing.</li> </ul>					

- Make sure the gun trigger lock is engaged and there is no spray tip in the gun. Refer to the separate

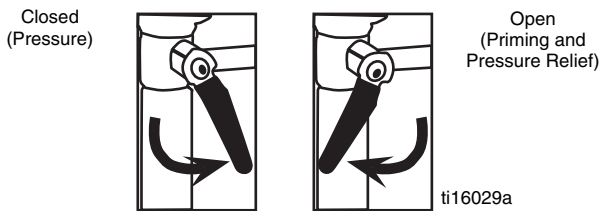
instruction manual provided with gun for safety features and how to engage the trigger lock.



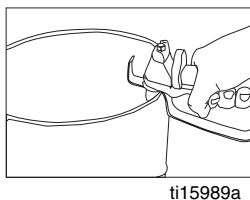
2. Pour enough clean, compatible solvent into a large, empty metal pail to fill the pump and hoses.
3. Place the suction tube into the pail or place the pail under the pump.
4. Turn Pressure Control Knob to low.



5. Open the prime valve to the open - "Priming Position". This will allow an easy start.



6. Point the gun into the metal pail and hold a metal part of the gun firmly against the pail. Maintain firm metal to metal contact between gun and container.



7. Disengage the gun trigger lock and squeeze the trigger. At the same time, slowly turn the pressure control knob clockwise, just enough to move liquid at low pressure.

8. Allow the pump to operate until clean solvent comes from the gun.
9. Release the trigger and engage the gun trigger lock.
10. If you are going to start spraying, place the pump or suction tube into the supply container. Release the gun trigger lock and trigger the gun into another empty, metal container, holding a metal part of the gun firmly against the metal pail, forcing the solvent from the pump and hose. When paint starts coming from gun, turn pressure control knob to minimum pressure, place prime valve in prime (open) position and engage the gun trigger lock.
11. If you are going to store the sprayer, remove the suction tube or pump from the solvent pail, force the solvent from the pump and hose. Engage the gun trigger lock. See **Storage**, 9.
12. Whenever shutting down the sprayer, follow **Pressure Relief Procedure**, page 13.

**NOTICE**




To prevent damage and freezing during storage, never leave water in the fluid pump

**Startup**

1. Prepare the material according to the material manufacturer's recommendations.
2. Place the suction tube into the material container.
3. Start the sprayer.
  - a. Prime/PR Valve must be "OPEN" in the priming position.
  - b. After ensuring the gun trigger lock is engaged, attach tip and safety guard.
  - c. Turn the engine ON/OFF switch to the "ON" position.
  - d. Turn the Pressure Control Knob clockwise to prime the pump.
  - e. After the pump is primed, turn the Prime/PR Valve to the "CLOSED" position.
  - f. Turn Pressure Control Knob to the desired spray pressure.
  - g. Disengage the gun trigger lock to begin spraying.



## Adjusting the Pressure

			
<ul style="list-style-type: none"> <li>To reduce the risk of injection, never hold your hand, body, fingers or hand in a rag in front of the spray tip when cleaning or checking for a cleared tip. Always point the gun toward the ground or into a waste container when checking to see if the tip is cleared or when using a self cleaning tip.</li> <li>When you spray into the paint bucket, always use the lowest spray pressure and maintain firm metal to metal contact between the gun and container.</li> <li>To stop the unit in an emergency, turn the engine off. Then relieve the fluid pressure in the pump and hose. See <b>Pressure Relief Procedure</b>, page 13</li> </ul>			

When adjusting the pressure, turn the Pressure Control Knob clockwise to increase pressure and counterclockwise to decrease pressure. Always use the lowest pressure necessary to completely atomize the material. If more coverage is needed, use a larger tip rather than increasing the pressure.

**NOTE:** Operating the sprayer at higher pressure than needed wastes material, causes early tip wear, and shortens sprayer life.

**NOTE:** Check the spray pattern. The tip size and angle determines the pattern width and flow rate.

## Shutdown

1. **Relieve Pressure**, page 13.
2. Clean the tip and gun as recommended in the separate Gun Manual supplied with the gun.
3. If spraying water-based material or a material that could harden in the sprayer overnight, flush the sprayer after use. See **Flushing**, page 7.

## Storage

### Short Term

1. Flush sprayer with compatible solvent before storing, then fill the pump and hoses with an oil based solvent such as mineral spirits or Graco or Airlessco Pump Armor.
  - For oil base paint: flush with mineral spirits
  - For water-base paint: flush with water, then mineral spirits and leave the pump, hose and gun filled with mineral spirits.

### Long Term

For longer storage, use Graco or Airlessco Pump Armor. Shut off sprayer, **Relieve Pressure**, page 13, and make sure prime valve is left open.

### Start Up After Storage

Before using water-base paint, flush sprayer with soapy water and then a clean water flush. When using oil-base paint, flush out the mineral spirits with the material to be sprayed.

**NOTE:** Always store unit indoors.

## Optional Air Atomizer

<b>NOTICE</b>
<p>Atomizer must be cleaned after each use, any debris will cause poor spray performance.</p> <p>To eliminate the back flow of material into the air system, always turn the air on first.</p>

- For best performance use at least a minimum of 1 gallon per minute paint sprayer.
- For fog finish and fine orange peel use tip #13 or 16 and apply maximum air flow.
- For medium orange peel and splatter coat, use tip #14 or 17 and apply medium air flow.
- For heavy splatter coat and knockdown finish use tip #15 or 17 and apply less air flow.

# Maintenance

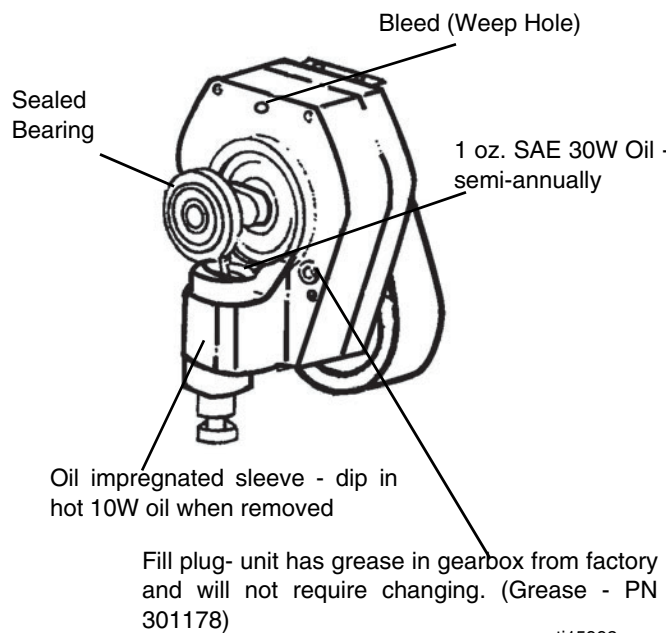
## Regular Maintenance

1. Always stop the pump at the bottom of its stroke when you take a break or at the end of the day. This helps keep material from drying on the rod, damaging the packings.
2. Keep displacement pump packing nut/wet cup 1/3 full of Airlessco Throat Seal Oil at all times. The TSO helps protect the packings and rod.
3. Lubricate Connecting Rod Pin every 3 months.

## Daily Maintenance

Inspect the packing nut daily. If seepage of paint into the packing nut and/or movement of the piston upward is found (while not spraying), the packing nut should be tightened just enough to stop leakage. Overtightening will damage the packings and reduce the packing life.

## Oil and Lubrication Instructions



## Electric Motor Maintenance

### Lubrication

The motor is supplied with pre-lubricated ball bearings, lubricated for the life of the bearing.

### Motor Brushes

Motor brushes need periodic inspection and replacement as wear indicates. Brushes have an initial length of 1 and 1/4" and should be replaced when they are worn to a length of 5/8". Brush wear is greatly influenced by individual application and it is recommended that brush wear be checked at early intervals of operation in order to determine future required inspection.

To change the brushes:

1. Unplug the machine.
2. Remove the cover over the motor.
3. Open the two covers at the rear of the motor.
4. Loosen the screw under the brush.
5. Pull out the wire.
6. Push the brush retainer clip in and withdraw.
7. Remove the worn brushes.
8. Install new brushes in the reverse order.

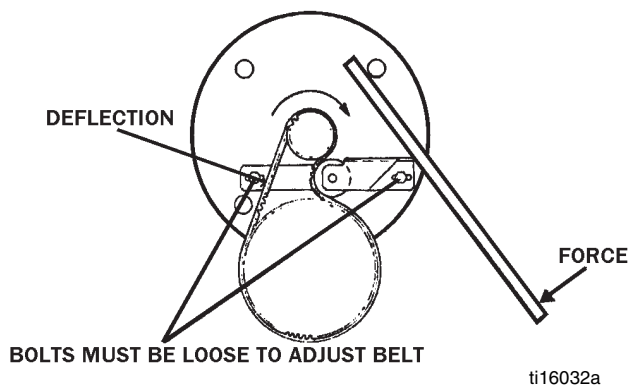
To increase brush life, new brushes (Part #301146 for 110 volt) need to have a run in period. After changing brushes, set the machine for spraying. With a bucket of Pump Conditioner and water, a 50' 1/4" airless hose, airless gun and tip on unit, open the prime valve and switch on. The pump will now prime. With pump running in the prime mode, turn the pressure control knob to high pressure. (The pump has to cycle fast with no pressure in the pump). Run the pump for 20 minutes and the brushes will be run in.

## Replacement of Belt/Belt Adjustment

**NOTE:** The Cog Belt System does not require alignment. When upper sheave is placed on motor shaft it is pushed on until a positive stop is reached. The set screws are then loctited. The lower pulley is placed on gearbox and held in place with keyway and snap ring. The flange on upper sheave holds the belt in alignment and the belt self aligns on lower pulley eliminating having to align.

1. Remove cover from unit.
2. Remove tensioner Assembly. Loosen screws. Move gearbox forward to allow removal and replacement of belt.
3. Retighten screws into gearbox until they bottom out. This will align gearbox correctly.
4. Replace tensioner with bolts and leave loose to allow adjusting belt tension.
5. Tighten belt. When properly tightened the deflection play should be 1/4 inch when pushing hard with thumb. (20 ft/lbs)

**NOTE:** When placing belt on pulleys and inserting the tensioner against belt, ensure cogs on belt are engaged into cogs on pulleys before tightening belts. Rotating upper pulley while holding the tensioner against the belt will allow proper engagement of cogs prior to tightening.

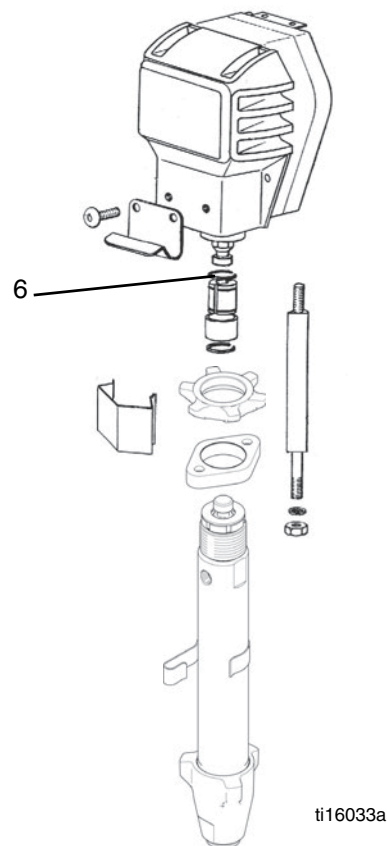


## Servicing the Fluid Pump

**NOTE:** Before disassembling the sprayer refer to Troubleshooting to try and resolve the problem.

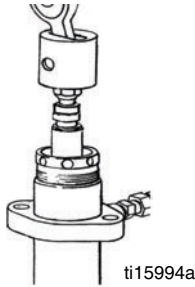
### Fluid Pump Disconnect

1. Flush out the material you are spraying, if possible.
2. **Relieve Pressure**, page 13. Stop the pump in the middle of down stroke.
3. Remove the suction tube and fluid hose (if so equipped) from the fluid pump.
4. Remove the connecting rod shield from the pump.
5. Remove two retaining rings (6), slip the sleeve of the coupling down, and remove both coupling halves. This will disconnect fluid pump from the connecting rod.
6. Using a 7/8" box wrench, disconnect the high pressure fluid line from the pump.
7. Using a 9/16" wrench, unscrew the two tie rod lock-nuts.
8. Pull the pump off the tie rods.

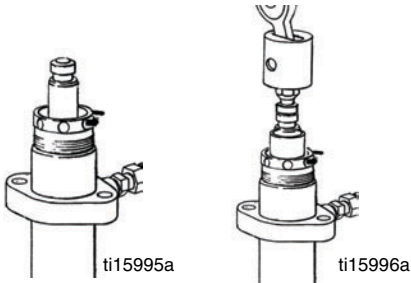


## Fluid Pump Reinstall

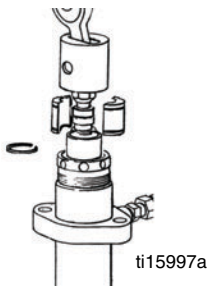
1. Loosen the packing nut and extend piston rod to fully up position. Slip sleeve over the piston rod.



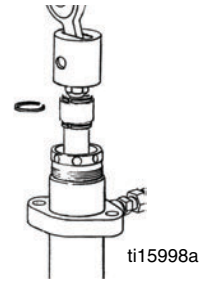
2. Insert one of the retaining rings through the packing nut and rest the sleeve on top of it.



3. Connect the connecting rod with the fluid pump by installing the coupling halves. Slide sleeve over the coupling halves and secure with retaining rings.



4. Remove the retaining ring from the packing nut and insert into coupling halves.






5. Secure the fluid pump housing to the tie rods and screw locknuts with washers on loosely.
6. Tighten the tie rod locknuts evenly to 30 ft. lb.

**NOTE:** After all the rod locknuts are tight, the alignment of both rods should allow easy assembly and disassembly of the coupling. If any binding, loosen and retighten all the rod locknuts to improve the alignment. Misalignment causes premature wear of seal and packings.

7. Tighten packing nut clockwise until resistance against the packings can be felt. Turn it one full turn more.
8. Start the pump and operate it slowly (at low engine speed) to check the piston rod for binding. Adjust tie rod lock nuts if necessary to eliminate binding.
9. Prime the unit and run at maximum pressure for several minutes, then release the pressure and repeat step 6.
10. Fill the wet cup (packing nut) with five drops of TSO (Throat Seal Oil).

## Service

### Pressure Relief Procedure



			
<p>The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. To reduce the risk of an injury from accidental spray from the gun, splashing fluid or moving parts, follow the Pressure Relief Procedure whenever you:</p> <ul style="list-style-type: none"> <li>• are instructed to relieve the pressure</li> <li>• stop spraying</li> <li>• check or service any of the system equipment</li> <li>• or install or clean the spray nozzle</li> </ul>			

1. Engage gun trigger lock.
2. Turn ON/OFF switch to OFF.
3. Unplug power cord.
4. Disengage gun trigger lock. Hold metal part of gun against grounded metal pail and trigger gun into pail to relieve pressure.
5. Engage gun trigger lock.
6. Open any fluid drain valves in system. Leave drain valve open until ready to dispense again.

### Tools Needed

- Vise
- 12" adjustable open end wrench (2)
- Hammer, 20 oz maximum
- Small screwdriver
- Throat Seal Liquid
- Pick or long small screwdriver

### Cleaning and Inspecting Parts

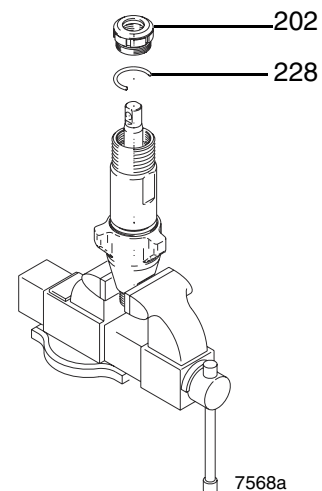
		
<ul style="list-style-type: none"> <li>• Never use sharp or pointed tools to remove sleeve or other components which could result in pump rupture and cause serious bodily injury. If the sleeve cannot be removed easily, return the sleeve and cylinder to your Graco/Airlessco distributor for removal.</li> </ul>		

1. Clean and inspect parts. Pay particular attention to the ball seats in the intake valve and piston, which must have no nicks or wear, and the inside of the sleeve and the outside of the piston rod, which must not be worn or scratched. Replace worn or damage parts.
2. Remove and clean the sleeve when you are repacking the pump.

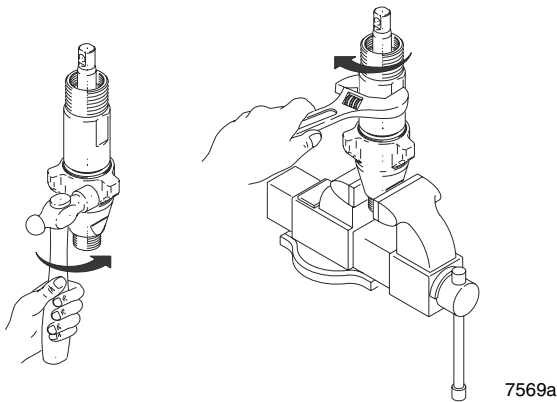
### Repair When Pump is Off the Sprayer

#### Disassembling the pump

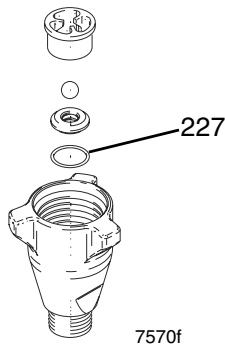
1. Remove packing nut (202) and throat adjustment spacer (228).



2. Unscrew intake valve from cylinder.

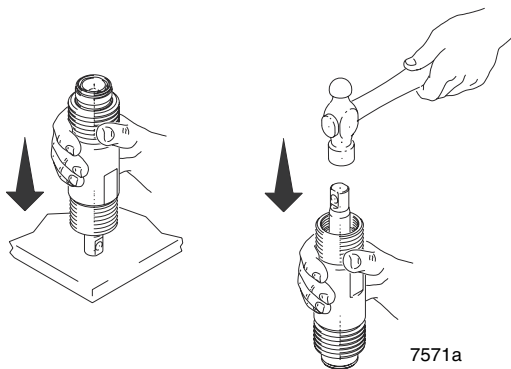


3. Disassemble intake valve. Clean and inspect. O-ring (227) may require a pick for removal.

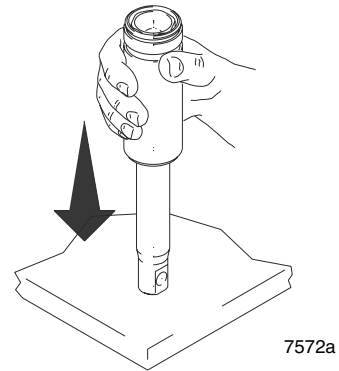


4. Tap piston rod out of cylinder with a hammer or flip over and tap piston rod against a bench.

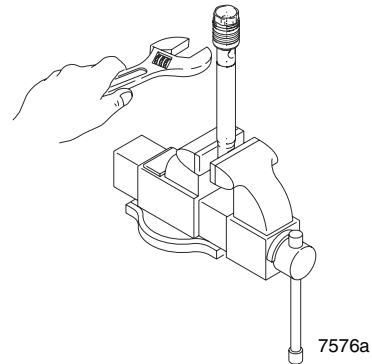
**NOTE:** Sleeve may come out of cylinder with piston rod.



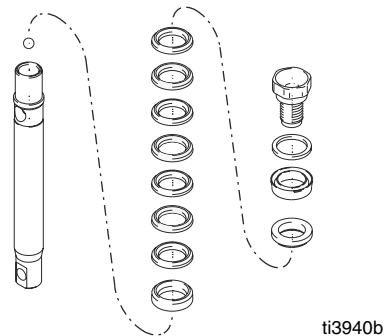
5. Remove piston rod from sleeve, or remove sleeve from cylinder.



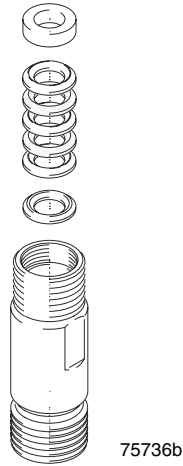
6. Unscrew piston valve from piston rod. Clean and inspect parts. The piston has a special thread locking/sealing patch. Do not remove the patch. The patch allows for disassembly/assembly procedures before it is necessary to apply Loctite® to the threads.



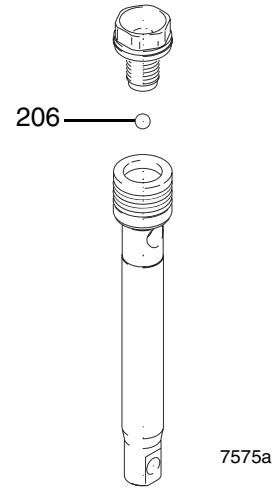
7. Remove packings and glands from piston rod.



- Remove throat packings and glands from cylinder. Discard throat packings and glands.

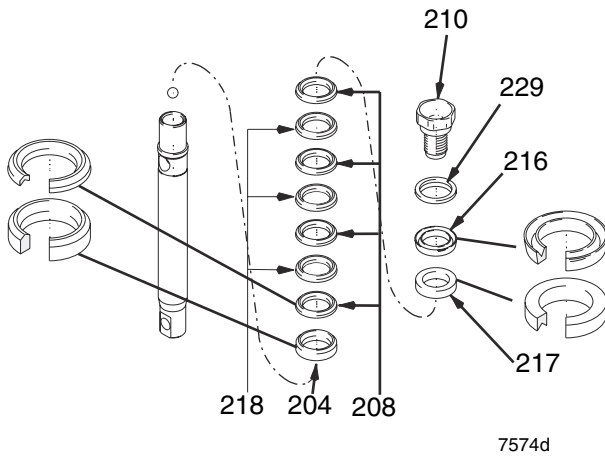


- Install ball (206) in piston rod. If Loctite® is applied to piston valve threads, ensure that none gets on ball.

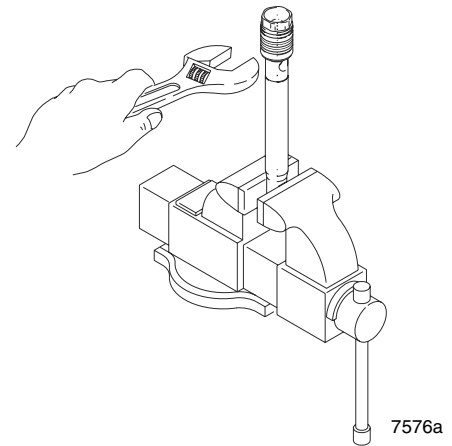


### Assembling the pump

- Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (204) on piston rod. Alternately stack UHMWPE (208) and leather (218) packings (note orientation) and backup washer (229) on piston valve (210). The special sealing patch on piston valve threads is good for four repackings. Use Loctite® on piston valve threads after four repackings.

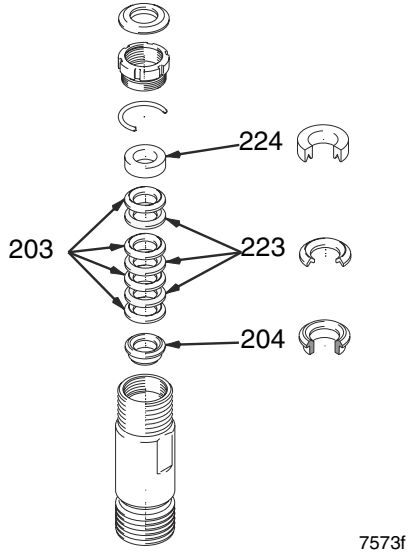


- Tighten piston valve to piston rod as specified.

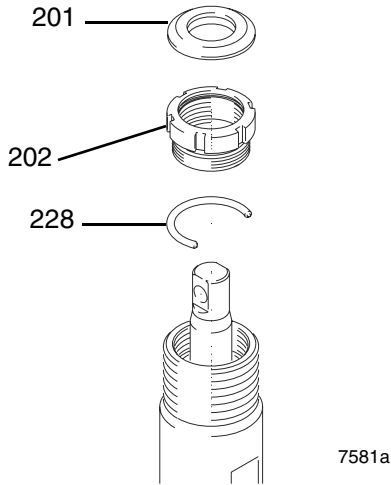


- Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Place male gland (204) in cylinder. Alternately stack (UHMWPE (203) and

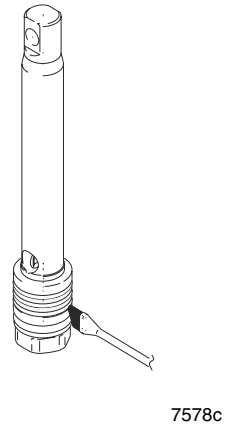
leather packings (223) (note orientation). Place female gland (224) in top of cylinder. Seat packings.



- 5. Install seal (201) into packing nut (202), Install throat adjustment spacer (228) onto packing nut. Loosely install packing nut into cylinder.

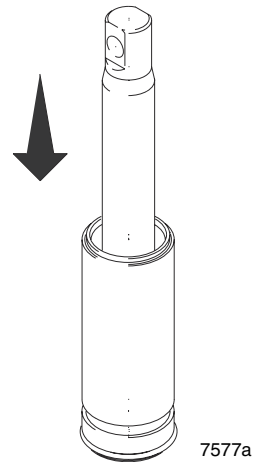


- 6. Grease piston packings.



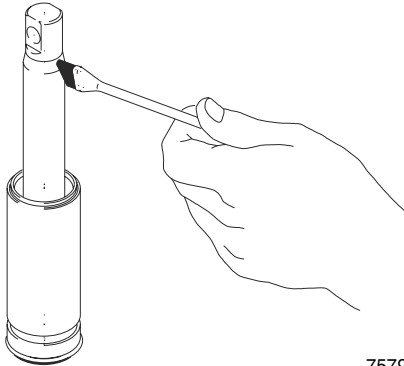
**NOTICE**  
Do not slide piston assembly into top of sleeve as this may damage piston packing.

- 7. Slide piston assembly into bottom of sleeve.





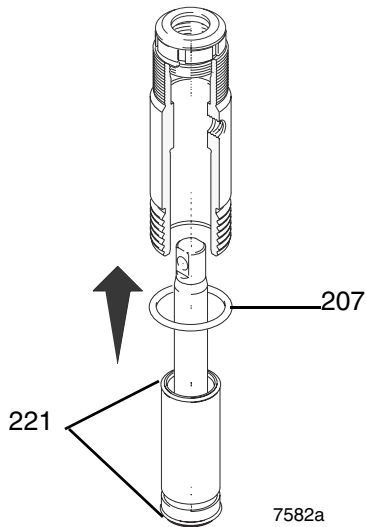
8. Grease top inch or two of piston rod that will go through the cylinder throat packings.



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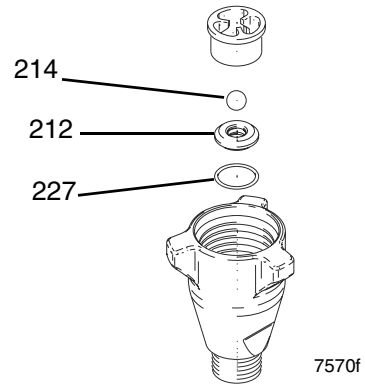
9. Grease O-rings (221) and place on sleeve. Slide sleeve/piston rod assembly into bottom of cylinder. Replace O-ring (207) if desired.

**NOTE:** O-ring (207) is not required for safe pump operation.



7582a

10. Reassemble intake valve with new O-ring (227), seat (212) and ball (214). Seat may be flipped over and used on other side. Clean seat thoroughly.

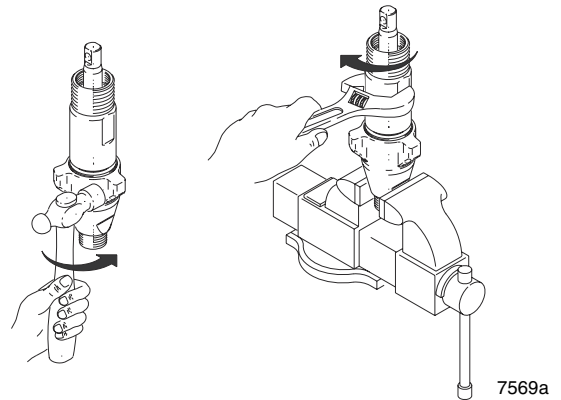


7570f

11. Install intake valve on cylinder. If a wrench is used torque as follows:

- 80 +/-5-ft-lb

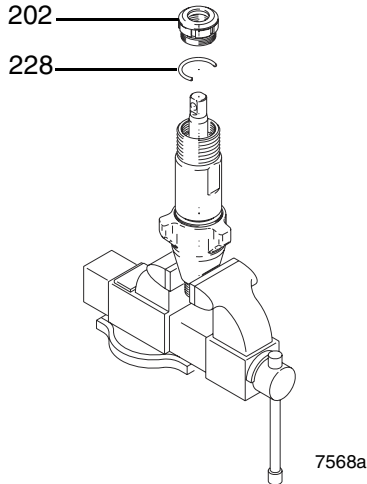
If a wrench is not used, be sure intake valve is bottomed out against cylinder.



7569a

12. Torque packing nut (202) down onto adjustment spacer (228) 100 +/-10 in-lb.

Remove throat adjustment spacer (228) when pump packings begin to leak after much use. Then tighten packing nut down until leakage stops or lessens. This allows approximately 100 gallons of additional operation before a repacking is required.



## Pressure Control Assembly Calibration

**NOTE:** Anytime a sensor or pressure control assembly (board) or both are replaced, the following calibrations must be performed.

**NOTE:** Pressure control assemblies (boards) are now being equipped with a green grounding wire attached. Connect the grounding wire to terminal box using the same screw that holds the grounding wire from the power cord.

### Zero Calibration

1. Place prime/pressure relief valve in the prime (open) position.
2. Set the pressure control knob to the minimum setting (CCW).
3. Remove the screws and lower the pressure control assembly.
4. Remove any jumper on the "P-ZR" terminal.

**NOTE:** This jumper is no longer used.

5. Turn machine "ON" and ensure it is not cycling.
6. If the yellow light on the electrical board is ON and you have "0000" on the LCD display, the Zero Calibration is complete no further adjustment is necessary. If the light is ON and there are numbers on the display, use an insulated screwdriver to turn the "ZERO" trimpot counter-clockwise until the light goes out. Then turn it clockwise until the yellow light comes on, continue to turn the trimpot and the numbers will reduce until the LCD shows "0000". The Zero Calibration is now complete. If you adjust beyond "0000". The Zero Calibration is now complete. If you adjust beyond "0000" the numbers will start to increase.

If the digital display shows "---" and no yellow light, you should turn the Zero trimpot clockwise until the yellow light is on, continue turning until "0000" is shown.

The goal is to see the "0000" on the digital display, this is when you have Zero Calibration (Relying on the yellow light is no longer used.)

## Pressure Calibration

1. Complete the ZERO calibration, as per “ZERO CALIBRATION” prior to commencing this calibration.
2. Attach a 50', 1/4" airless hose, airless gun with 0.017 tip and a 5000 psi glycerin filled pressure gauge to pump.
3. Place the suction tube into a bucket of Pump Conditioner and water.
4. Turn prime/pressure relief valve to the prime (open) position.
5. Turn pressure control knob clockwise until machine starts to prime.
6. Place the prime/pressure relief valve in the pressure (closed) position.
7. While watching pressure gauge, slowly adjust the pressure trimpot (clockwise to increase and counter clockwise to decrease) until the maximum static pressure is 3000 psi, with the pressure control knob fully clockwise. Trigger the gun several times to ensure pressure returns to 3000 psi.
2. Place the suction tube into a bucket of Pump Conditioner.
3. Turn pump on and turn up pressure control until the machine starts to prime.
4. Place the prime/pressure relief valve in the pressure (closed) position.
5. Pressurize pump to 600 psi.
6. Trigger the gun several times noting the deadband (the amount of pressure drop before the pump rebuilds to set pressure).
7. If deadband is greater than 150 psi, adjust the phase limit trimpot so that the deadband is less than 150 psi and the pressure increase after the gun trigger is released is less than 250 psi. These pressures are guidelines and may vary slightly from pump to pump.
8. Reattach pressure control assembly to unit.

## LCD Display Calibration

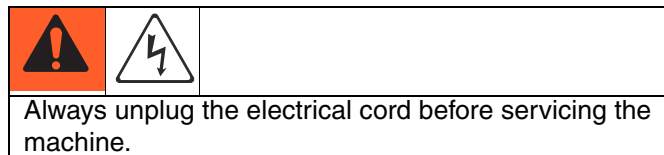
1. Complete the “ZERO CALIBRATION” and “PRESSURE CALIBRATION” procedures prior to commencing this calibration.
2. Turn pressure control knob up until system pressure is above 2500 psi (as indicated on the glycerin filled pressure gauge) and the machine is not cycling.
3. Use an insulated screwdriver to adjust the Set trimpot. Turn trimpot CCW until it clicks, then adjust to match pressure against pressure gauge reading.
4. Move the pressure control knob to different settings and trigger the gun several times to ensure that the LCD continues to match the pressure gauge reading.

## Phase Limit Calibration

Formerly known as the low voltage or master voltage calibration.

1. Attach a 50', 1/4" airless hose, airless gun with .017 tip and a 5000 psi glycerin filled pressure gauge to the pump.

## Replacement of Electrical Components



**NOTE:** Anytime the pressure control assembly, sensor, or both are replaced, perform the calibrations.

### Pressure Control Assembly (Electrical Control Board)

1. Unplug machine's power cord.
2. Remove eight screws and lower the pressure control assembly.
3. Disconnect all leads from pressure control assembly.
4. Reassemble in reverse order.

## Sensor

1. Remove the screws and lower the pressure control assembly.
2. Disconnect sensor lead from the board.
3. Unscrew sensor from pressure control assembly using a 7/8" wrench.
4. Reassemble in reverse order. Use PTFE tape on the sensor threads prior to reinstalling it into the pressure control assembly.

## Potentiometer

1. Lower pressure control assembly as described above.
2. Disconnect potentiometer lead from pressure control assembly.
3. Use a 1/16" allen wrench, loosen set screw in the potentiometer knob and remove knob and spacer.
4. Using a 1/2" wrench or deep socket, remove the nut from the potentiometer shaft assembly.
5. Pull entire potentiometer assembly out of the frame.
6. Replace in reverse order.

## On-Off Toggle Switch

1. Lower the pressure control assembly as described above.
2. Disconnect the two wires on the toggle switch.
3. Use a 9/16" wrench to loosen the nut on the toggle switch shaft.
4. Reassemble in reverse order.

## Circuit Breaker

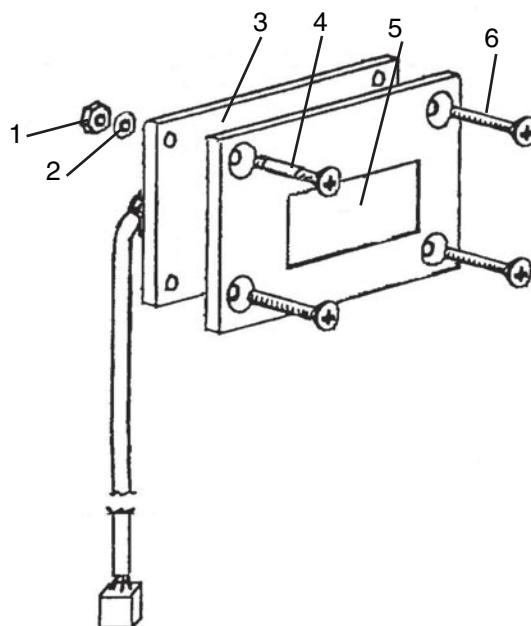
1. Lower pressure control assembly as described above.
2. Disconnect the two wires on the holder.
3. Unscrew rubber boot from breaker shaft.
4. Remove breaker from frame.

## Liquid Crystal Display (LCD)

1. Ensure the power switch is OFF and the machine is unplugged.
2. Detach the pressure control assembly from the frame by unscrewing the eight screws.
3. Disconnect the LCD lead from the pressure control assembly.
4. Separate the LCD assembly from the frame by undoing the four screws.
5. Disassemble items 1 - 6.
6. Remove and replace LCD Display.
7. Reassemble in reverse order.

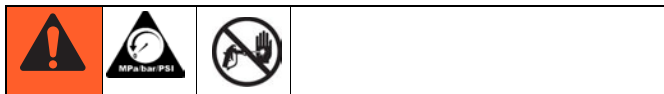
**NOTE:** Do not over tighten the screw and nuts. This can warp the LCD and damage it.

8. Perform **LCD Calibration Procedure**, page 19.



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# Troubleshooting



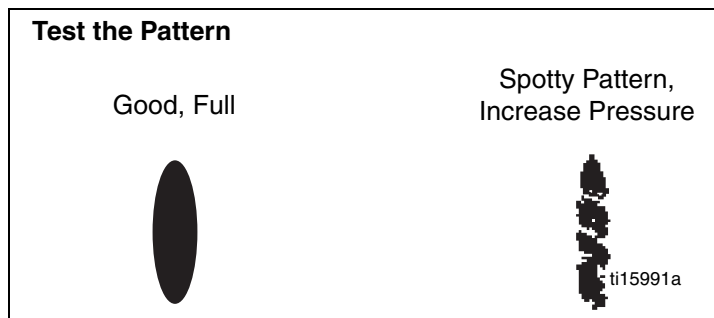
General		
Problem	Cause	Solution
Unit doesn't prime	Airleak due to loose suction nut	Tighten suction nut.
	Airleak due to worn o-rings	Replace o-ring (106018) on suction seat and o-ring (106017) below suction seat.
	Stuck or fouled balls	Service inlet and outlet valves.
	Prime/Pressure Relief valve not opening	Clean or replace Prime Valve (119083)
Unit primes but has poor or no pressure	Pressure set too low	Turn up pressure.
	Filter(s) are clogged	Clean or replace gun filter, inlet filter, and/or manifold filter.
	Outlet valve fouled/worn.	Service outlet valve.
	Prime/pressure relief valve bypassing	Clean or replace prime valve (119083).
	Packings and/or piston worn	Tighten packing nut, repack unit.
Unit does not maintain good spraying pressure	Blown spray tip	Replace spray tip.
	Packings and/or pistons worn	Repack unit.
	Upper seat worn	Replace upper seat.
Unit does not run		See <b>Machine Does Not Start</b>
Machine does not start	Control Settings	Make sure machine is plugged into the wall. Verify the on-off switch is in the ON position and the pressure control knob is turned all the way to the right (clockwise for maximum pressure).
	35A Circuit Breaker	Use multi-meter to test the breaker for continuity or replace with a new breaker. If breaker reads good, see <b>Power Source</b> .

Problem	Cause	Solution
	Power Source	<p>Using a Phillips Head screwdriver, remove the eight screws holding the pressure control assembly. Locate the red light on the board indicating there is power (it will be red or green).</p> <p>If the light is ON, see Pressure Control Assembly (Board).</p> <p>If the light is OFF, locate the L1 and L2 terminals on the board. Use the multi-meter to ensure there is 110 volts AC across the two terminals (the cord wires will still be attached.) If there is no voltage at the leads, there is no power getting to the machine. Check the power source (outlet, circuit breaker, extension cord, and power cord).</p> <p>If you have AC voltage at the L1 and L2 terminals, disconnect the two red motor leads (S1 and S2) and test for continuity between them. No continuity means the thermal coupler has opened due to excessive motor heat. If the motor is still hot to the touch, allow it to cool and then retest. If the motor is cool and there is not continuity on the red leads, contact Airlessco Technical Support to repair/replace the thermal coupler.</p> <p>Continuity shows that the motor's thermal coupler has not tripped. See Pressure Control Assembly (Board).</p>
	Pressure Control Assembly (Board)	<p>If the power indicating light is still out after checking the control settings, fuse and power source, replace the pressure control assembly.</p>
	Motor	<p>Remove the motor brush covers and turn the machine ON. Set the potentiometer (POT) at maximum pressure and check for DC voltage across both brush terminals. It should read greater than 80 volts DC.</p> <p>If you have DC voltage, turn the machine off and unplug it from the wall. Check to make sure the brushes are making good contact with the armature. Replace the brushes if they are less than 5/8" long. If the brushes are good, replace the motor.</p> <p>If you do not have DC voltage, see <b>Sensor</b>.</p>

Problem	Cause	Solution
	Sensor	<p>Plug another sensor board into the board and perform the zero calibration procedure. If the machine starts to run, the sensor is bad. If there is no replacement sensor available, use a multi-meter to test the resistance across the red and black wires of the sensor (be sure to test the plug). You should read 1.5 - 3.5k ohms. A faulty sensor usually reads no continuity (open).</p> <p>If the sensor passes all the tests, see Pressure Control Knob (Potentiometer).</p>
	Pressure Control Knob (Potentiometer)	<p>Plug another potentiometer (POT) into the control board. If the machine starts, the old POT is bad.</p> <p>When a replacement POT is not available, remove the POT lead (with the machine turned off) from the control board and test the resistance between the red and black wires (be sure to test at the plug). The resistance should read between 8-12k ohms. If it is outside of this range replace the POT.</p> <p>If there is DC voltage at the motor brushes and the sensor and pressure control knob are functioning, replace the pressure control assembly.</p>

Airless Spray Gun		
Problem	Cause	Solution
Coarse spray	Low pressure	Increase the pressure
Excessive fogging (overspray)	High pressure	Reduce the pressure to satisfactory pattern distribution.
	Material too thin	Use less thinner
Pattern too wide	Spray angle too large	Use smaller spray angle tip
Pattern too narrow	Spray angle too small	Use larger spray angle tip (if coverage is OK, try tip in same tip group)
Too much material	Nozzle too large	Use smaller tip
	Material too thin	Use smaller tip
	Pressure too high	Reduce pressure
Too little material	Nozzle too small	Use next larger tip Material too thick

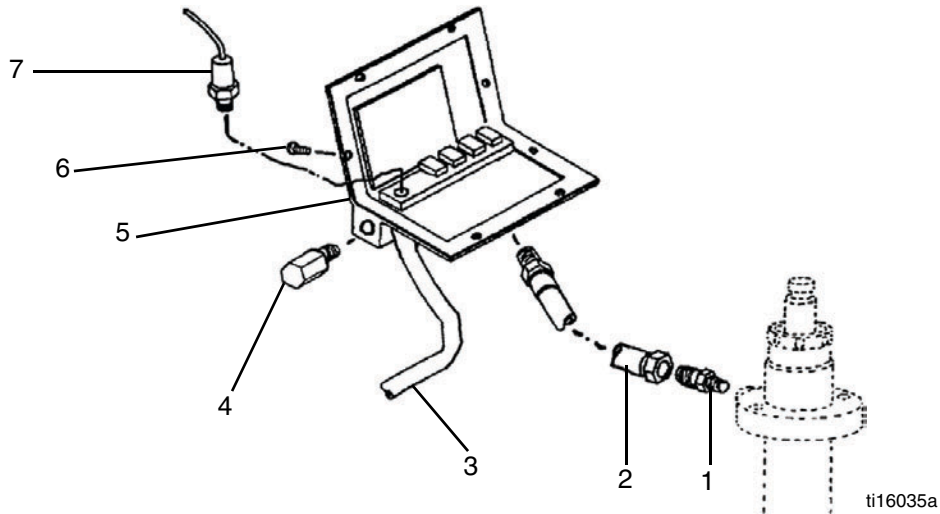
<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
Thin distribution in center of pattern "horns"	Worn tip	Change to new tip
	Wrong tip	Use nozzle with narrow spray angle
Thick skin on work	Material too viscous	Thin cautiously
	Application too heavy	Reduce pressure and/or use tip in next smaller tip size
Coating fails to close and smooth over	Material too viscous	Thin cautiously
Spray pattern irregular, deflected	Orifice clogged	Clean carefully
	Tip damaged	Replace with new tip
Craters or pock marks, bubbles on work	Solvent balance	Use 1 to 3% "short solvents remainder "long" solvents (this is most likely to happen with material of low viscosity, lacquers, etc.)
Clogged screens	Extraneous material in paint	Clean screen
	Coarse pigments	Use coarse screen if orifice size allows.
	Poorly milled pigments (paint pigments glocculate)	Use courser screen, larger orifice tips. Obtain ball milled paint. If thinner had been added, test to see if a cover screen. Incompatible drop placed on top of paint mixes or flattens out on the paint mixture and thinners on the surface. If not, try different thinner in fresh batch of paint.
Excess paint builds on tip guard	Spray gun too close to surface	Hold gun further from surface sprayed
	Pressure setting too high	Reduce pressure setting
Drips, spits from tip	Valve seat and/or ball in gun head damaged or worn	Service spray gun, replace valve assembly
Tip clogs continually	Debris in paint	Thoroughly strain the paint before use
	Gun filter missing	Do not operate without inlet strainer
	Coarse filter mesh	Do not operate without inlet strainer





# Parts

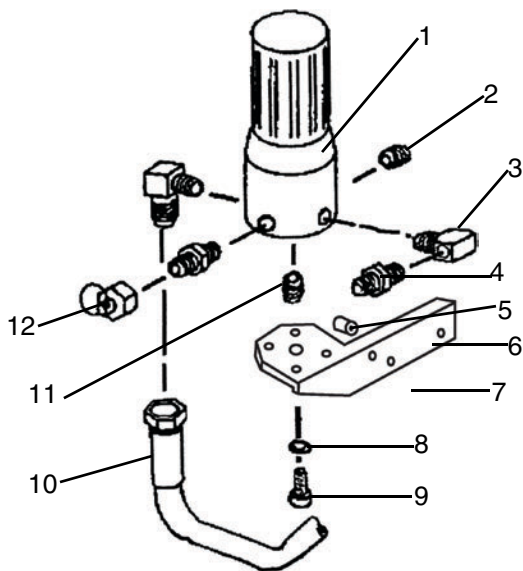
## Paint System



Ref.	Part	Description	Qty.
1	867311	Nipple	1
2	301308	Hose	1
3	867400	Hose	1
4	867417	Safety Valve	1

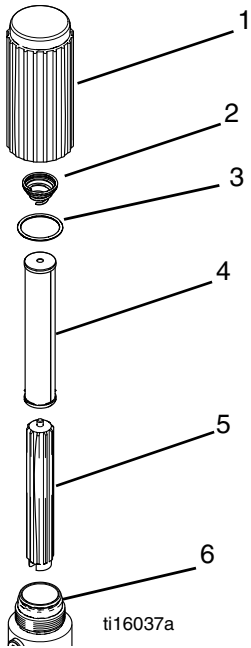
Ref.	Part	Description	Qty.
5	866282	Pressure Control Assembly	1
6	301337	Screw	8
7	866334	Sensor	1

## Optional Filter Kit (301440)



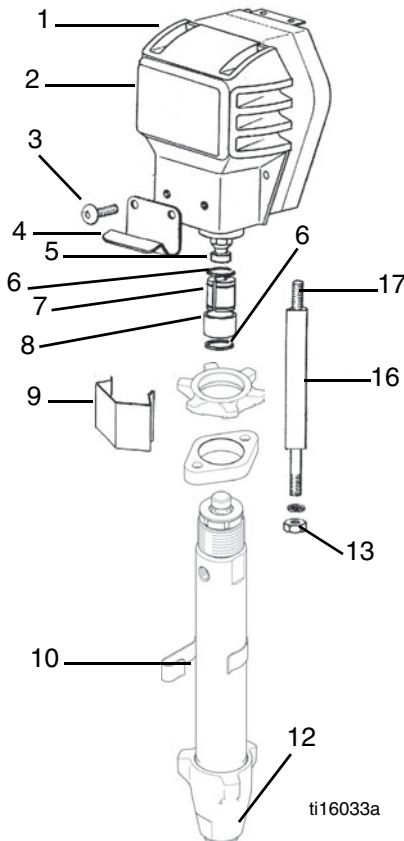
Ref.	Part	Description	Qty.
1	866123	Filter, Assy	1
2	867420	Plug, Plug (3/8") NPT Plated	1
3	867188	Fitting, Elbow Street 90 3/8 NPT	2
4	867309	Fitting, Nipple, 3/8 NPT to 1/4 NPT	2
5	866445	Spacer, .377 ID x .40 LG AL	2
6	305140	Bracket, Bracket - Filter	1
7	867534	Screw, Screw 5/16-18 x 1.00 PH HD	2
8	331103	Washer, Washer .562 .250 .060 .ST	2
9	121112	Screw, Cap, Socket Head	2
10	867400	Hose Paint, 3/8"x21" LG	1
11	867417	Plug, 1/4 NPT	1
12	866052	Cap Plug, Cap-plug Set .25	1

### Optional Manifold Filter (866123)



Ref.	Part	Description	Qty.
1	867145	Base	1
2	301356	Spring	1
3	867377	O-Ring	1
4	867214	Filter 60 Mesh	1
5	867647	Support	1
6	867077	Base	1

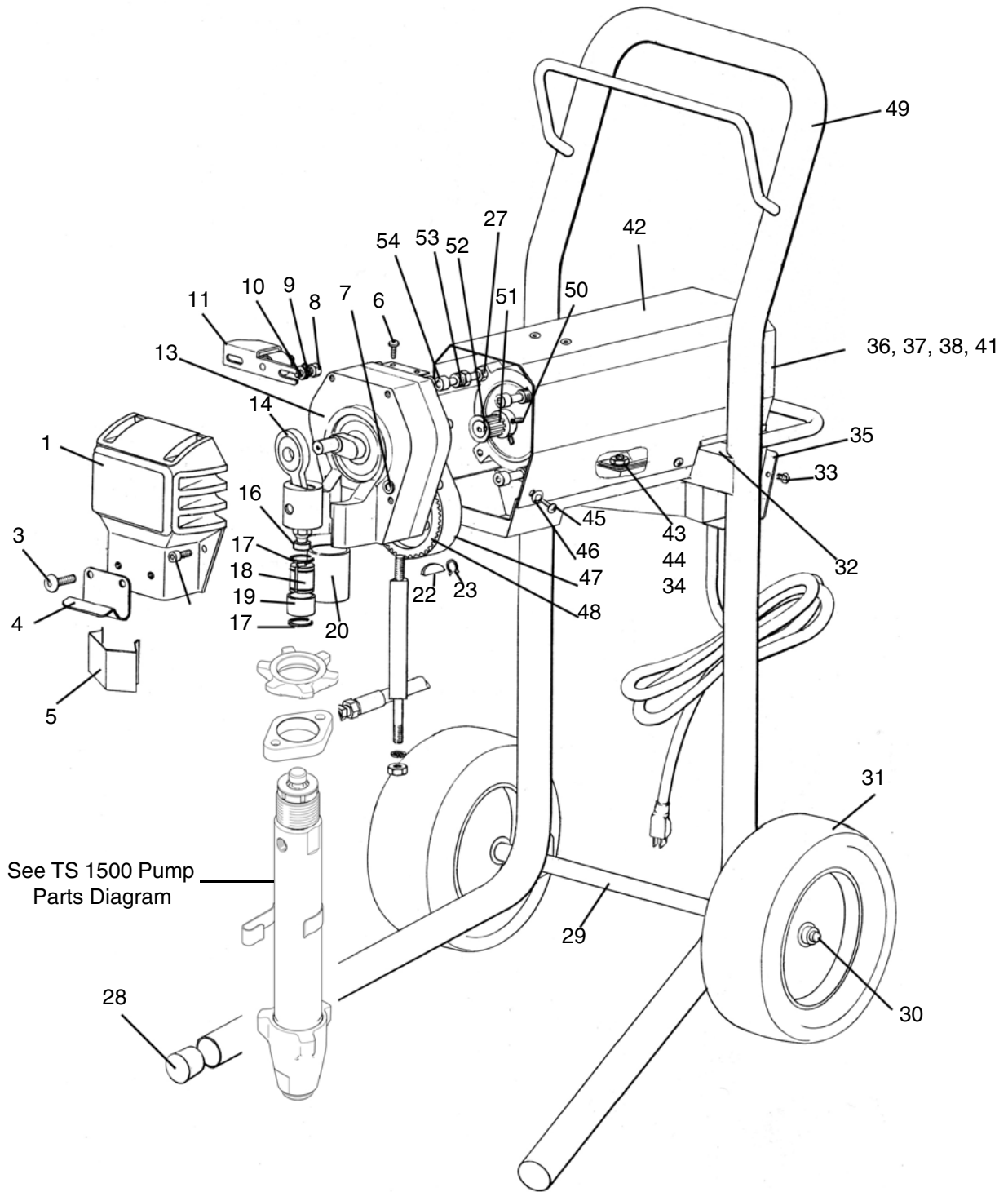
### Fluid Pump



Ref.	Part	Description	Qty.
1	301204	Gearbox 1" (1100/1110E)	1
2	301320	Cover	1
3	867529	Screw	1
4	301105	Hook	1
5	301046	Rod End	1
6	867468	Retaining Ring	1
7	866074	Coupling Set	1
8	866069	Retaining Ring	1
9	301467	Front Shield	1
10	24E349	Paint Pump Assembly	1
12	189920	Filter	1
13	140051	Nut	2
16	16C792	Spacer	2
17	124125	Stud	2
	16C304	Bracket, Pump (not shown)	1
	198542	Clip, Spring (not shown)	1
	193031	Nut, retaining (not shown)	1



# Complete Sprayer

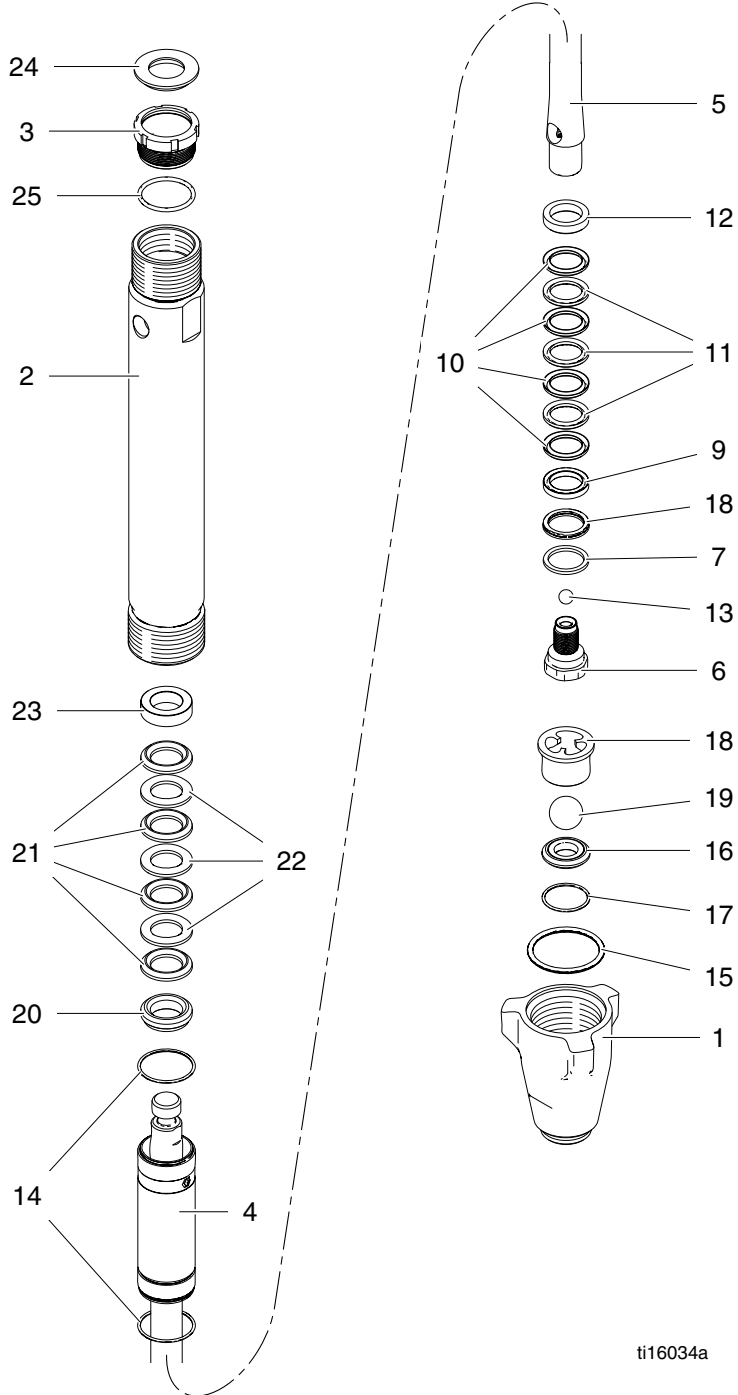


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Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	301320	Cover	1	36	867206	Fan - NWU	
2	121112	Screw	4	37	301191	Retaining Clip Fan - NWU	
3	867529	Screw	2	38	867554	Screw	
4	301105	Hook	1	41	867208	Fan Cover - NWU	
5	301467	Front Shield	1	42	301321	Cover	1
6	301337	Screw	2	43	867324	Nut	4
7	867417	Plug 1/4 NPT	1	44	867301	Lock Washer	4
8	867528	Screw	2	45	867505	Screw	4
9	867301	Lock Washer	2	46	301135	Grommet	6
10	867704	Washer	2	47	301231	Cog Belt	1
11	301193	Tensioner Assembly	1	48	866455	Cog Pulley	1
13	301204	Gearbox 1"	1	49	301206	Frame	1
14	301333	Connecting Rod Assembly	1	50	101118	Set Screw	2
16	301046	Rod End	1	51	866452	Sheave	1
17	867468	Retaining Ring	2	52	866212	Key	1
18	866074	Coupling Set	1	53	301099	Retainer	3
19	866069	Retaining Sleeve	1	54	301044	Screw	3
20	301047	Sleeve Bearing	1	55	112604	Inlet Strainer	1
21	124125	Stud	2		24F690	Gun, Mastic (not shown)	
22	301139	Woodruff Key			HSE3850	Hose, 3/8" x 50 (not shown)	1
23	867461	Retaining Ring	1		255439	Hose, cpd, 1/4" x 3' (not shown)	1
24	16C792	Spacer	2		16C304	Bracket, Pump (not shown)	1
27	140051	Nut	2		193031	Nut, Retaining (not shown)	1
28	301134	Stopper	1		24D688	Kit Drain Line (not shown)	1
29	866025	Axle			867377	O-Ring (not shown)	1
30	143029	Set Collar			867311	Nipple (not shown)	1
31	301165	Wheel			240525	Kit, repair, Sleeve (not shown)	1
32	301316	Rubber Edge 1.17' (makes 2)			24E353	Kit, repair, Piston Rod, SL (not shown)	1
33	867505	Screw	2		16F597	TS1500 Label, Left (not shown)	1
34	140029	Washer	1		16F598	TS1500 Label, Right (not shown)	1
35	342425▲	High Voltage Label	1		16F596	TS1500, Label, Front (not shown)	1
36	867206	Fan - NWU			342473▲	Label, Warning (not shown)	1
37	301191	Retaining Clip Fan - NWU			342506▲	Label, Warning (not shown)	1

▲ Additional warning labels are available at no cost.

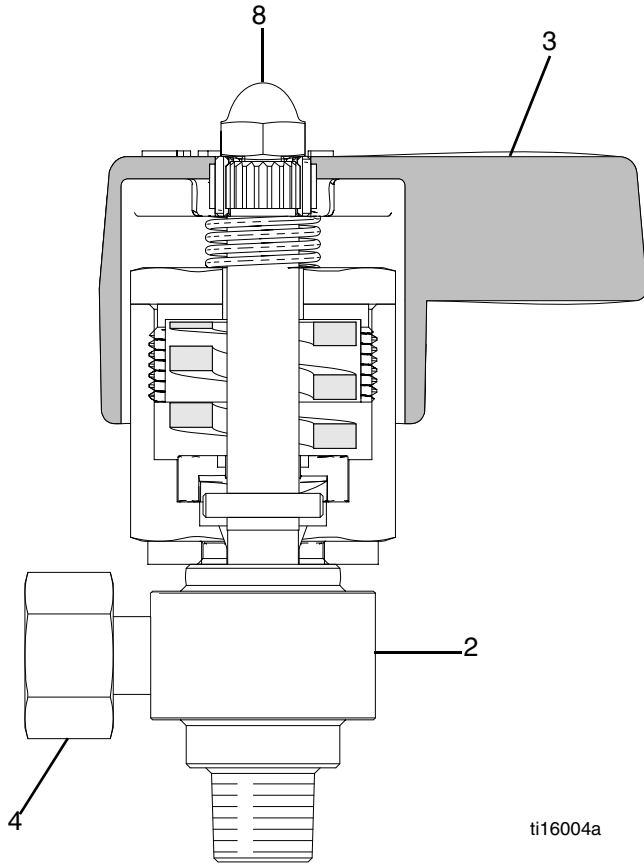
# TS1500 Pump Parts Diagram



Ref.	Part	Description	Qty.
1	196753	HOUSING, valve, intake	1
2		Cylinder, pump	1
3	193032	NUT, packing	1
4	240525	SLEEVE, cylinder	1
5	24E353	ROD, piston	1
6	248504	VALVE, piston	1
7	15C998	WASHER, backup	1
9	183185	GLAND, packing, female	1
10	193125	PACKING, vee	4
11	15E329	PACKING, vee	3
12	183178	PACKING, gland, male	1
13		BALL, bearing	1
14	107098	PACKING, O-Ring	2
15		PACKING, O-Ring	1
16	196866	SEAT, carbide	1
17	108526	PACKING, O-Ring	1
18	196976	GUIDE, ball	1
19	102972	BALL, metallic	1
20	15C989	GLAND, packing	1
21	193124	PACKING, vee	4
22	183175	PACKING, vee, leather	3
23	15C990	GLAND, packing	1
24	183171	PLUG	1
25	C20987	PACKING, O-Ring	1
28		WIPER, piston	1
<b>Repair Kits</b>			
	24E349	Kit, repair, pump, SL includes Ref. 1-28	
	244199	Kit, repair, carbide includes Ref. 16, 17, 19	
	248213	Kit, repair, pump packing includes Ref. 7-15, 17, 19-28.	

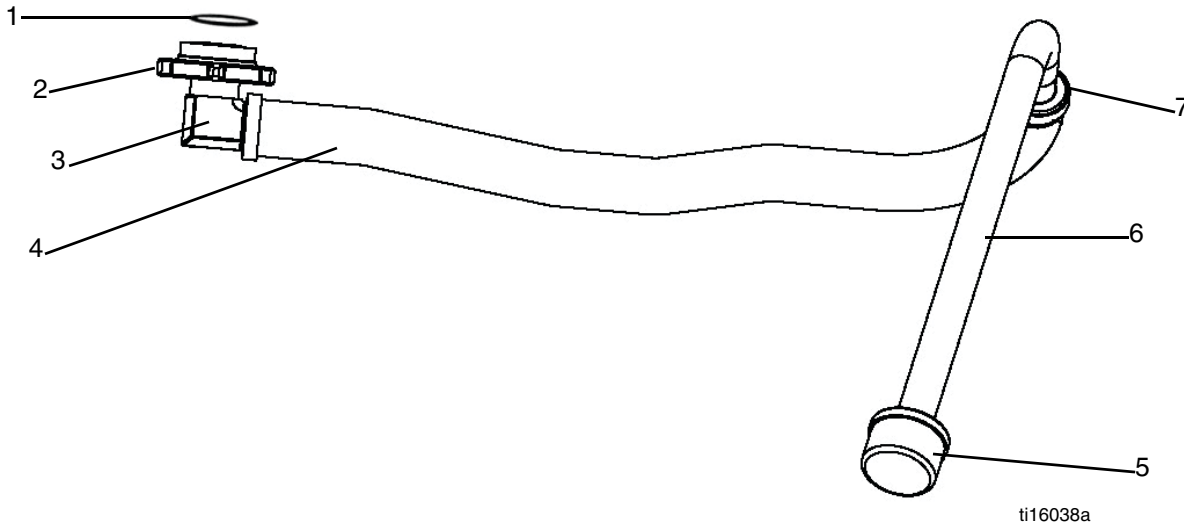
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# Prime Valve (865719)



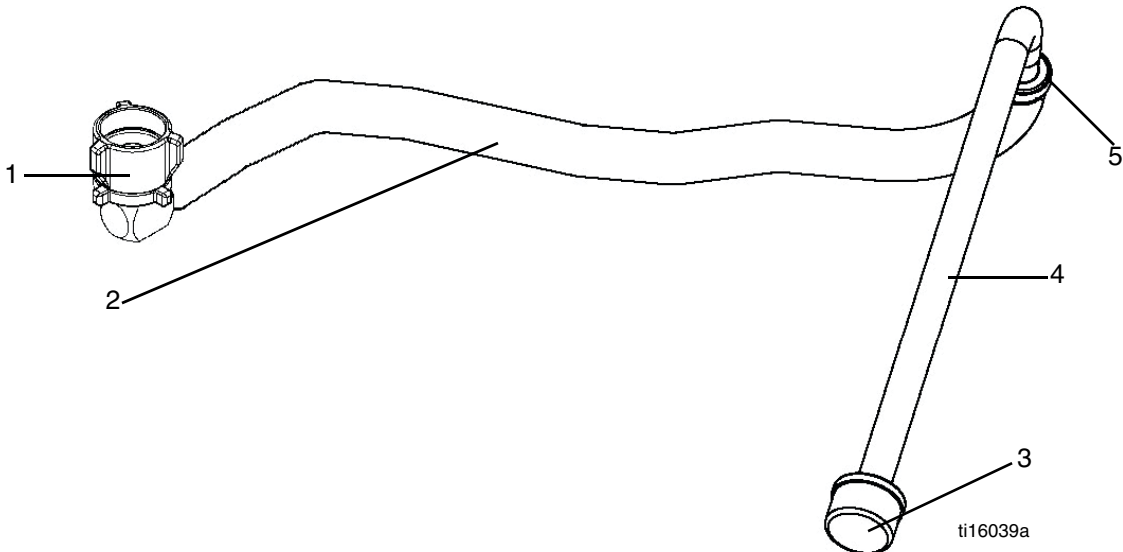
Ref.	Part	Description	Qty.
2	865013	ADAPTER, valve	1
3	15G563	HANDLE, valve	1
4	867759	CONNECTOR, male, 3/8 tube x 1/8 pipe	1
8	116424	NUT, cap	1

### Suction Assembly - 5 Gallon (866008)



Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	867366	Black O-Ring	1	5	187190	Filter basket	1
2	867316	Suction Nut	1	6	301514	5 Gal Suction Tube	1
3	867224	Suction Elbow	1	7	867446	Clamp	2
4	866388	1" ID Suction Hose	1				

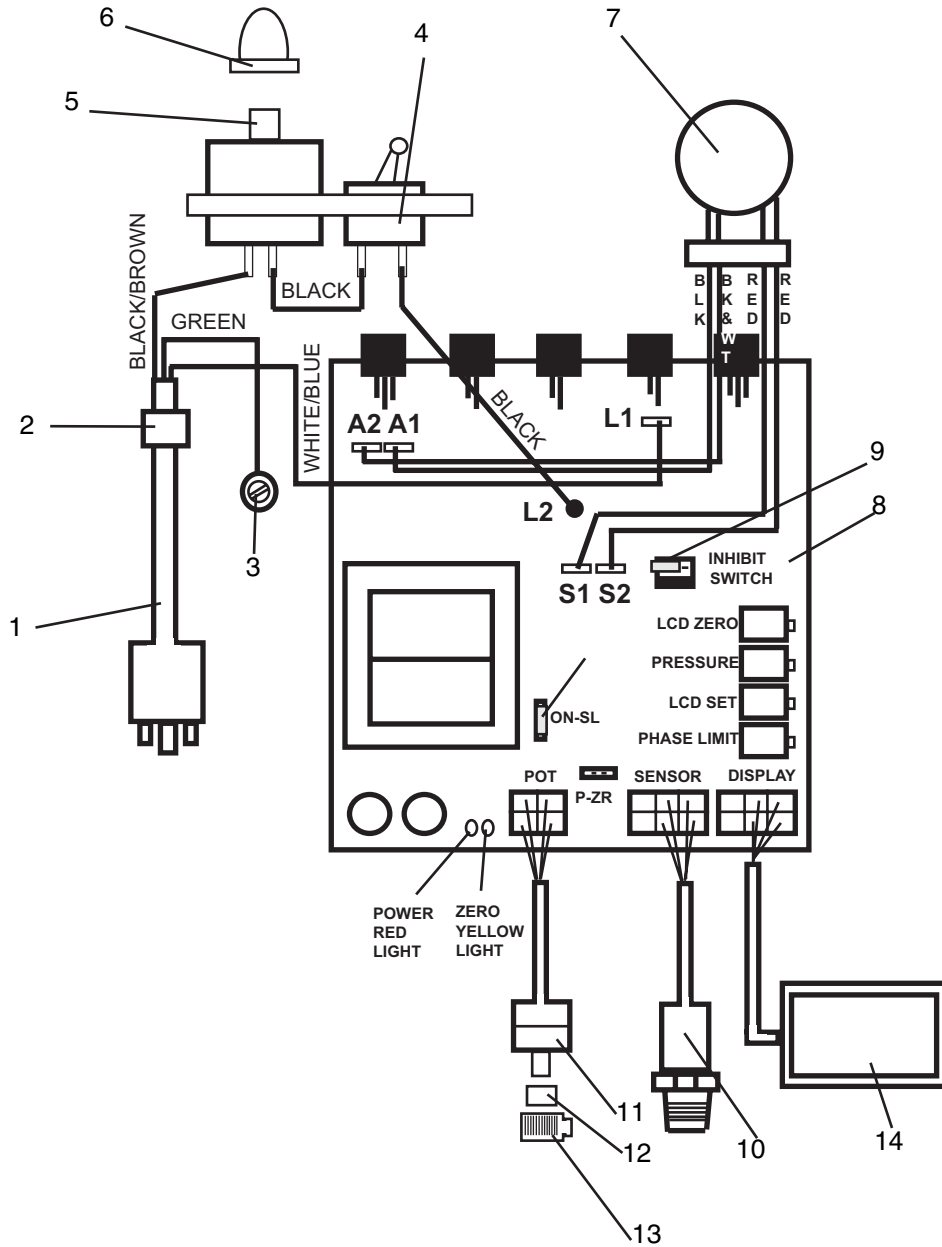
### Suction Assembly - 55 Gallon (119087)



Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	866203	Swivel Fitting Assy	1	4	301545	55 Gal Suction Tube	1
2	866388	1" ID Suction Hose	1	5	867445	Clamp	1
3	187190	Filter Basket	1				



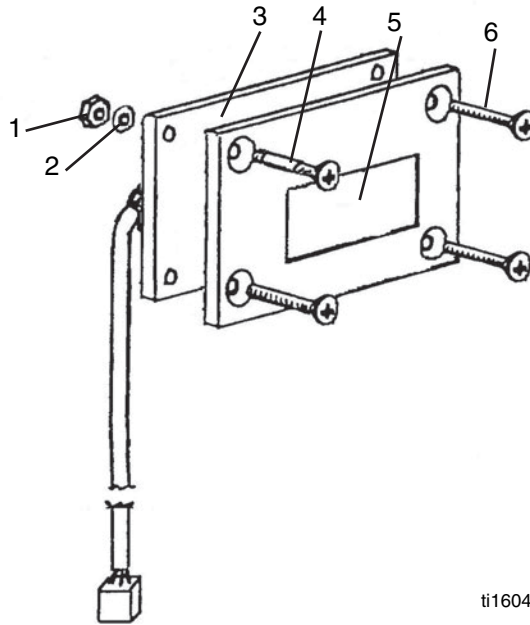
# Electrical System



ti16041a

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	331168	Electrical Cord 110V	1	8	866282	Pressure Control Assy 110V	1
2	331185	Strain Relief	1	9	117207	Jumper	1
3	331138	Screw	1	10	866334	Sensor	1
4	301083	Toggle Switch	1	11	866485	Potentiometer	1
5	301518	35A Circuit Breaker 110V	1	12	331184	Spacer	1
6	867430	Rubber Boot	1	13	867291	Knob	1
7	866228	1.25HP Motor 110V	1	14	331377	LCD PSI Display	1

# Liquid Crystal Display



ti16042a

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	867327	Nut	4	5	331360	Window	1
2	867731	Plastic Washer	4	6	867547	Screw	4
3	331377	Display Board Assy	1		865651	LCD Kit PSI	
4	117281	Spacer	4				

# Technical Data

Power requirements . . . . .	100 AC, 50 hz, 11A, 1 phase
Generator required . . . . .	3000 w minimum
Maximum working pressure . . . . .	3000 psi (20.7 MPa, 207 bar)
Maximum delivery gpm (lpm) . . . . .	1.1 GPM
Maximum tip size . . . . .	.033
Fluid outlet npsm . . . . .	3/8
Weight . . . . .	145 lb (65.7 kg)
Wetted parts . . . . .	zinc and nickel-plated carbon steel, nylon, stainless steel, PTFE, acetal, leather, UHMWPE, aluminum, tungsten carbide

# Airlessco Standard Warranty

Airlessco warrants all equipment referenced in this document which is manufactured by Airlessco 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 Airlessco, Airlessco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Airlessco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Airlessco's written recommendations.

This warranty does not cover, and Airlessco 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-Airlessco component parts. Nor shall Airlessco be liable for malfunction, damage or wear caused by the incompatibility of Airlessco equipment with structures, accessories, equipment or materials not supplied by Airlessco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Airlessco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Airlessco distributor for verification of the claimed defect. If the claimed defect is verified, Airlessco 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.**

Airlessco'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.

**AIRLESSCO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY Airlessco.** These items sold, but not manufactured by Airlessco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Airlessco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Airlessco be liable for indirect, incidental, special or consequential damages resulting from Airlessco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Airlessco, or otherwise.

## **FOR AIRLESSCO CANADA CUSTOMERS**

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**TO PLACE AN ORDER OR FOR SERVICE**, contact your Airlessco distributor,  
or call 1-800-223-8213 to identify the nearest distributor.

*All written and visual data contained in this document reflects the latest product information available at the time of publication.  
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Original Instructions. This manual contains English. *MM 3A1183*  
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