

3A1183E

EN

Airless Paint Sprayer

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

Airlessco - TS1500 (24F573) Series B

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



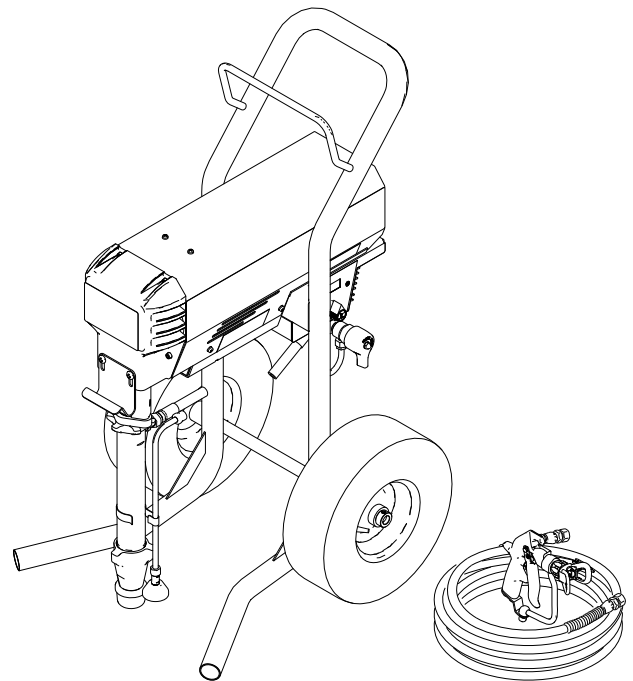
IMPORTANT SAFETY INSTRUCTIONS

Read all warnings and instructions in this manual.
Be familiar with the controls and the proper usage of
the equipment. Save these instructions.

Related Manuals



Gun Manual 3A0413



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3172585
Certified to CAN/CSA C22. No. 68
Conforms to UL 1450



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

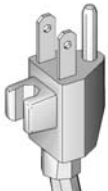


GROUNDING

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.

120V US



- 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 grounding plug and a grounding 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 mm²) 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 or clean with materials having flash points lower than 100° F (38° C). Use only non-flammable or water-based materials, or non-flammable paint thinners. For complete information about your material, request the SDS from the material distributor or retailer.



- 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. Do not use pail liners unless they are anti-static or conductive.

- Connect to a grounded outlet and use grounded extension cords. Do not use a 3-to-2 adapter.

- Do not use a paint or a solvent containing halogenated hydrocarbons.

- Do not spray combustible liquids in a confined area.

- Keep spray area well-ventilated. Keep a good supply of fresh air moving through the area.

- Spray generates sparks. Keep pump assembly in a well-ventilated area at least 20 feet (6.1 m) from the spray area when spraying, flushing, cleaning, or servicing. Do not spray pump assembly.

- Do not smoke in the spray area or spray where sparks or flame is present.

- 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 Safety Data Sheets (SDS) 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.



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

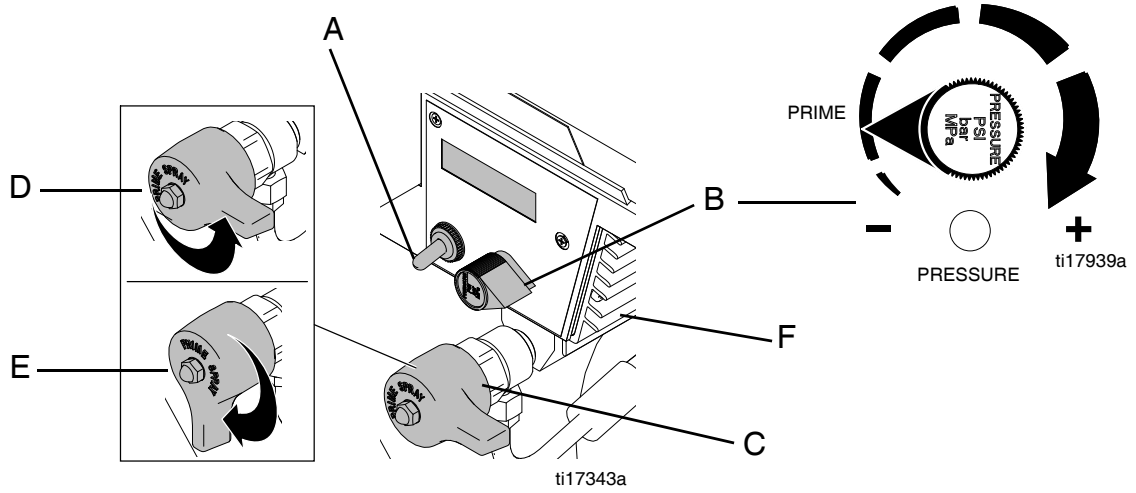
	<p>SKIN INJECTION HAZARD</p> <p>High-pressure spray is able to inject toxins into the body and cause serious bodily injury. In the event that injection occurs, get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not aim the gun at, or spray any person or animal. • Keep hands 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 Graco 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. • Equipment maintains pressure after power is shut off. Do not leave the equipment energized or under pressure while unattended. Follow the Pressure Relief Procedure when the equipment is unattended or not in use, and before servicing, cleaning, or removing parts. • Check hoses and parts for signs of damage. Replace any damaged hoses or parts. • This system is capable of producing 3000 psi. Use Graco replacement parts or accessories that are rated a minimum of 3000 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.
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • 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 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 Graco. • Do not use the hose as a strength member to pull or lift the equipment. • Do not spray with a hose shorter than 25 feet. • Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards. • Make sure all equipment is rated and approved for the equipment in which you are using it.
	<p>PRESSURIZED ALUMINUM PARTS HAZARD</p> <p>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.</p> <ul style="list-style-type: none"> • Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents. • Do not use chlorine bleach. • Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.



WARNING

 	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.
	<p>TOXIC FLUID OR FUMES HAZARD</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"> • Read Safety Data Sheet (SDS) to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	<p>PERSONAL PROTECTIVE EQUIPMENT</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. Protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.
	<p>CALIFORNIA PROPOSITION 65</p> <p>This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.</p>

Component Identification



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

Operation

Setup



- 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.
- Ensure electrical service is 120 VAC, 15 amp minimum and the outlet is properly grounded.
- For generator power, a minimum 7000 watt generator with a voltage regulation must be used.

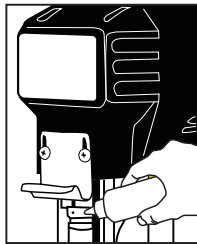
Connect the hose and gun

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

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

Fill the Packing Nut/Wet Cup

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



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Flush the Sprayer

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

Prime and Flush Storage Fluid

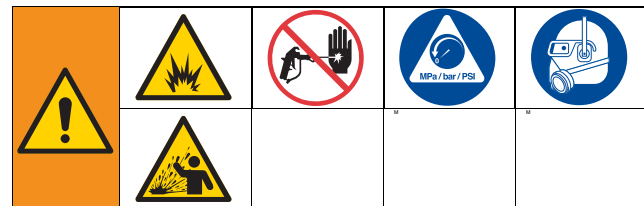
NOTICE	
<p>The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment for the first time.</p>	

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

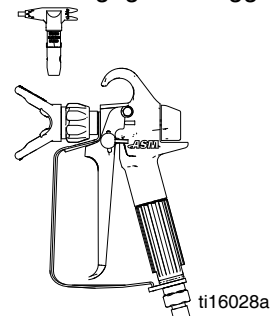
- When changing from water-based material to oil based material, flush with soapy water and then mineral spirits.
- When changing from oil based material to water base material, flush with mineral spirits, followed by soapy water, then a clean water flush.
- When flushing with solvents, ground pail and 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



- 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.
- To reduce risk of injection, always remove the spray tip before flushing.

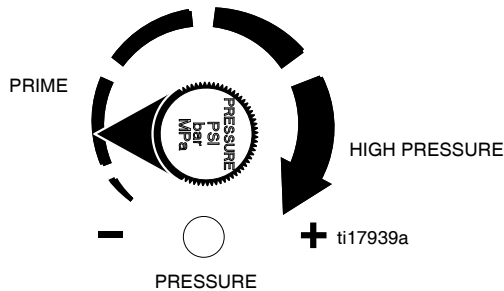
1. Make sure the gun trigger lock is engaged and there is no spray tip in the gun. Refer to the separate instruction manual provided with gun for safety features and how to engage the trigger lock.



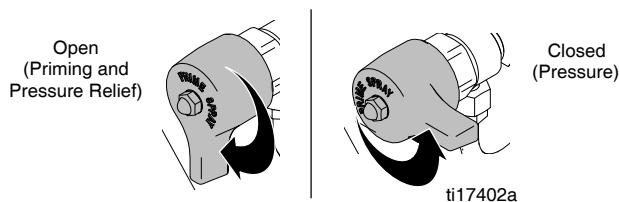
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Operation

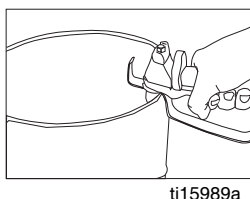
2. Pour enough clean, compatible solvent into a large, empty metal pail to fill the pump and hoses.
3. Place the suction tube into the pail or place the pail under the pump.
4. Turn Pressure Control Knob to low.



5. Open the Prime/Pressure Relief 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/pressure relief 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/Pressure Relief 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/Pressure Relief Valve to the "CLOSED" position.
 - f. Turn Pressure Control Knob to the desired spray pressure.
 - g. Disengage the gun trigger lock to begin spraying.³

Adjusting the Pressure

				
<ul style="list-style-type: none"> 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. 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. To stop the unit in an emergency, turn the engine off. Then relieve the fluid pressure in the pump and hose. See Pressure Relief Procedure, page 13. 				

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.

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

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/pressure relief 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.

Always store unit indoors.

Optional Air Atomizer

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

- 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

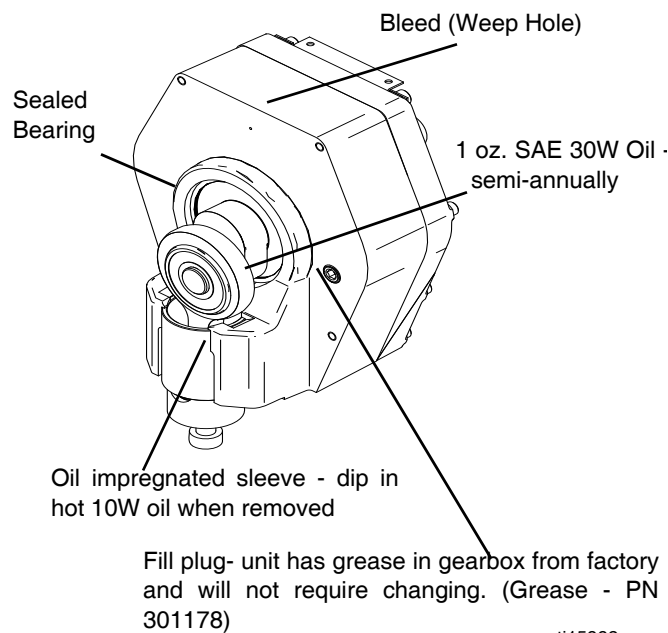
Regular Maintenance

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. Over tightening 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.

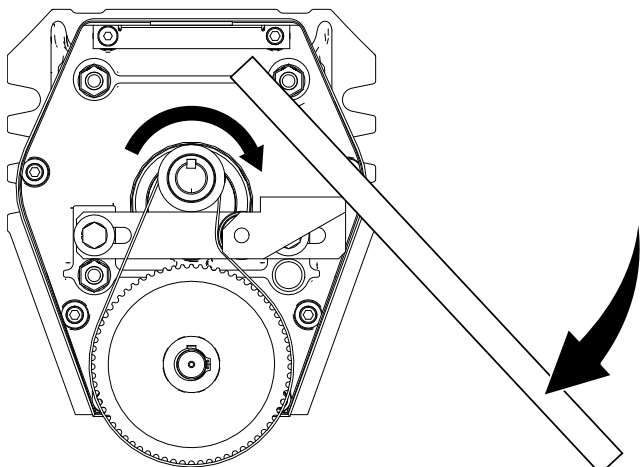
To increase brush life, new brushes (Part #301146 for 110 volt) need to have a run in period. After changing brushes, set the machine for spraying. With a bucket of Pump Conditioner and water, a 50' 1/4" airless hose, airless gun and tip on unit, open the prime/pressure relief valve and switch on. The 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

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 locked. 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)

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.



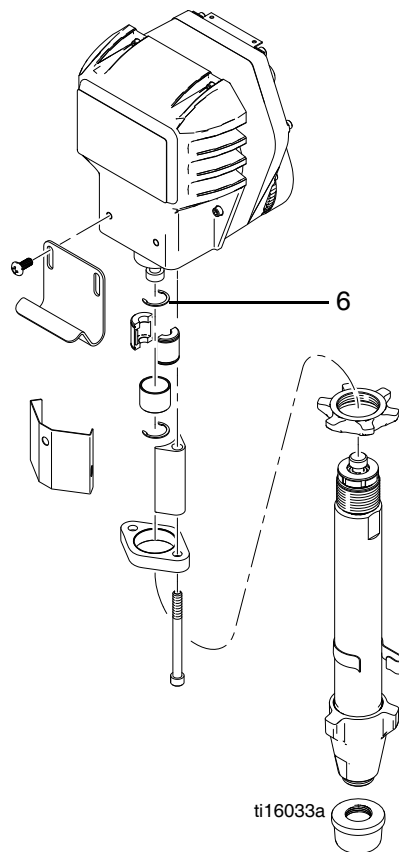
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Servicing the Fluid Pump

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

Fluid Pump Disconnect

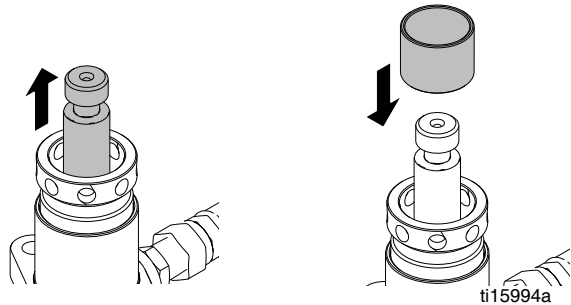
1. Flush out the material you are spraying, if possible.
2. **Relieve Pressure**, page 13. Stop the pump in the middle of down stroke.
3. Remove the suction tube and fluid hose (if so equipped) from the fluid pump.
4. Remove the connecting rod shield from the pump.
5. Remove two retaining rings (6), 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.



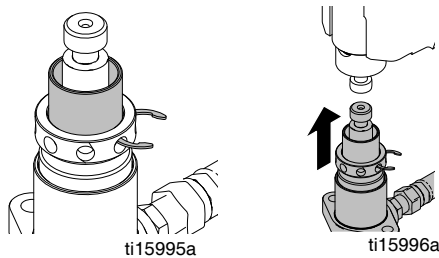
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Fluid Pump Reinstall

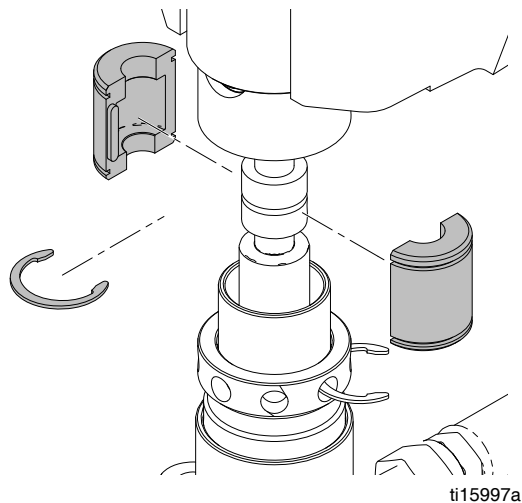
1. Loosen the packing nut and extend piston rod to fully up position. Slip sleeve over the piston rod.



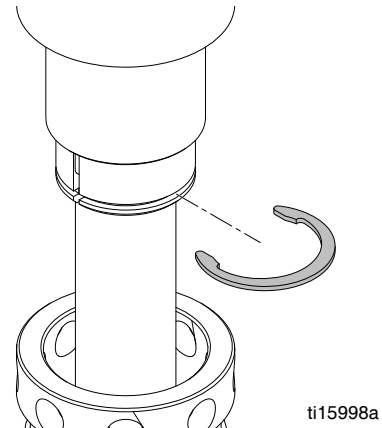
2. Insert one of the retaining rings through the packing nut and rest the sleeve on top of it.



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.

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

Follow this **Pressure Relief Procedure** whenever you stop spraying and before cleaning, checking, servicing, or transporting equipment.



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 prime/pressure relief valves in system. Leave prime/pressure relief 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

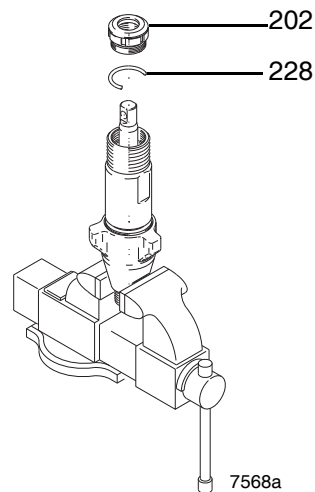
<ul style="list-style-type: none"> • Never use sharp or pointed tools to remove sleeve or other components which could result in pump rupture and cause serious bodily injury. If the sleeve cannot be removed easily, return the sleeve and cylinder to your Graco/Airlessco distributor for removal. 				

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.

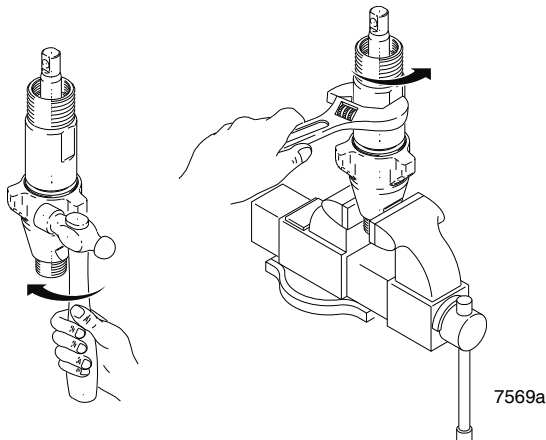
Repair When Pump is Off the Sprayer

Disassembling the pump

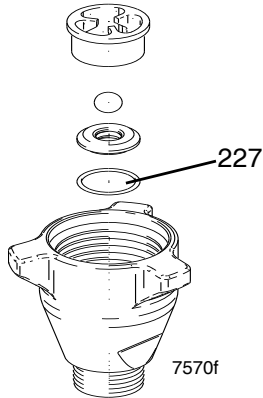
1. Remove packing nut (202) and throat adjustment spacer (228).



2. Unscrew intake valve from cylinder.

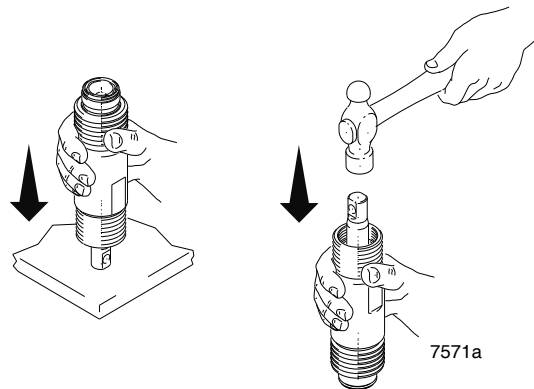


3. Disassemble intake valve. Clean and inspect. O-ring (227) may require a pick for removal.

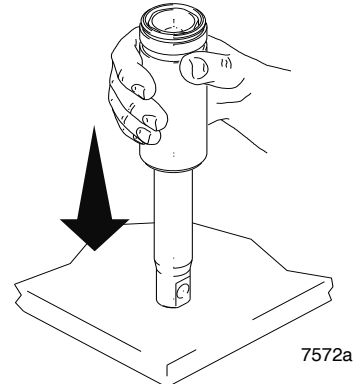


4. Tap piston rod out of cylinder with a hammer or flip over and tap piston rod against a bench.

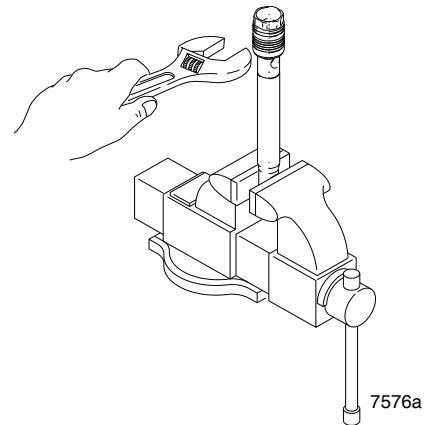
Sleeve may come out of cylinder with piston rod.



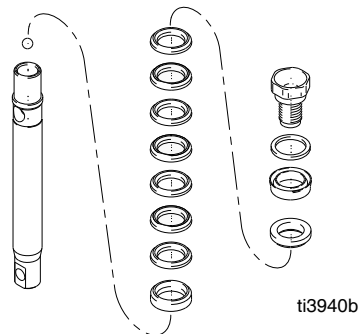
5. Remove piston rod from sleeve, or remove sleeve from cylinder.



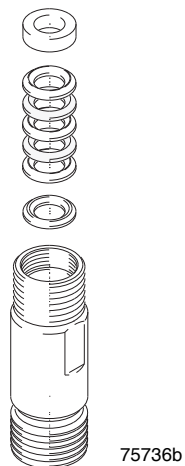
6. Unscrew piston valve from piston rod. Clean and inspect parts. The piston has a special thread locking/sealing patch. Do not remove the patch. The patch allows for disassembly/assembly procedures before it is necessary to apply Loctite® to the threads.



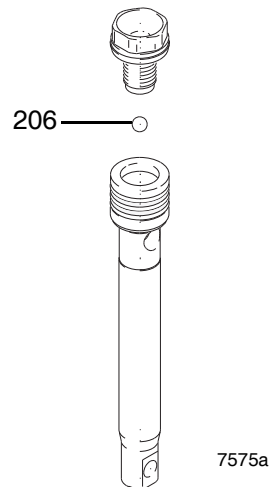
7. Remove packings and glands from piston rod.



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

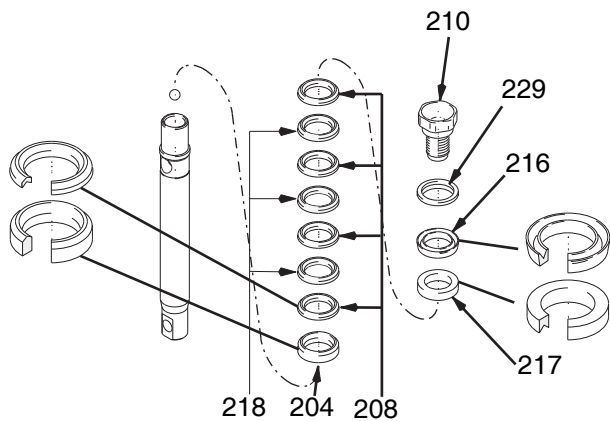


- Install ball (206) in piston rod. If Loctite is applied to piston valve threads, ensure that none gets on ball.

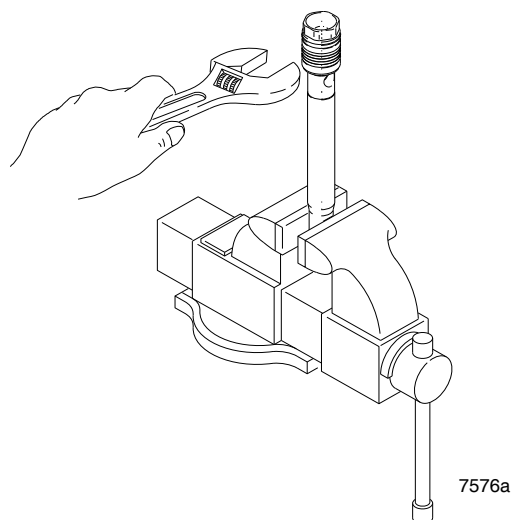


Assembling the pump

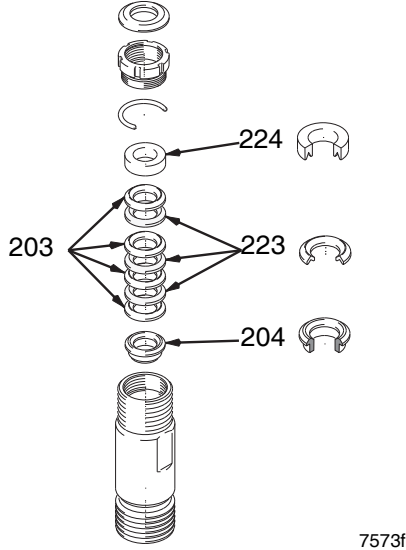
- Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (204) on piston rod. Alternately stack UHMWPE (208) and leather (218) packings (note orientation) and backup washer (229) on piston valve (210). The special sealing patch on piston valve threads is good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



- Tighten piston valve to piston rod as specified.

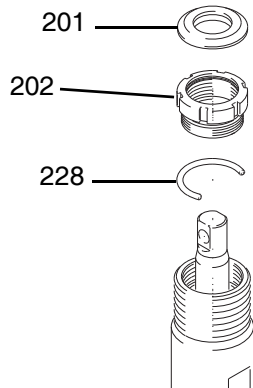


- Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Place male gland (204) in cylinder. Alternately stack (UHMWPE (203) and leather packings (223) (note orientation). Place female gland (224) in top of cylinder. Seat packings.



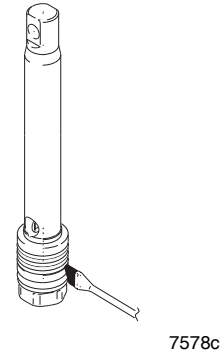
7573f

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



7581a

- Grease piston packings.

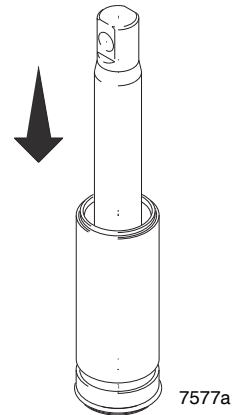


7578c

NOTICE

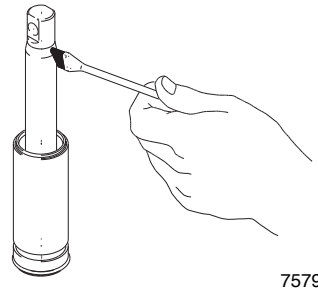
Do not slide piston assembly into top of sleeve as this may damage piston packing.

- Slide piston assembly into bottom of sleeve.



7577a

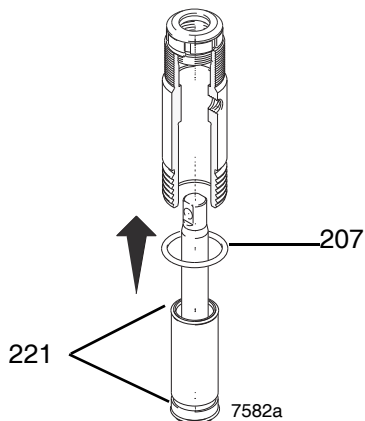
- Grease top inch or two of piston rod that will go through the cylinder throat packings.



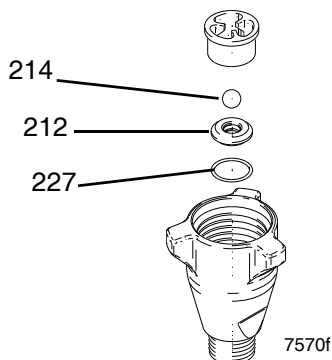
7579a

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

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



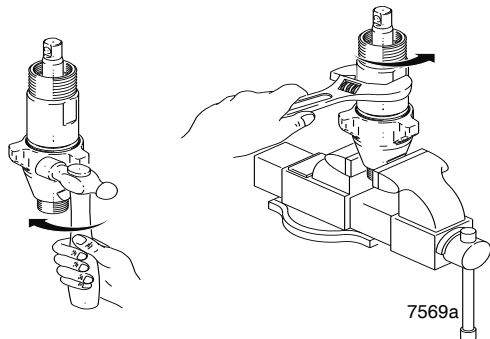
10. Reassemble intake valve with new O-ring (227), seat (212) and ball (214), Seat may be flipped over and used on other side. Clean seat thoroughly.



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

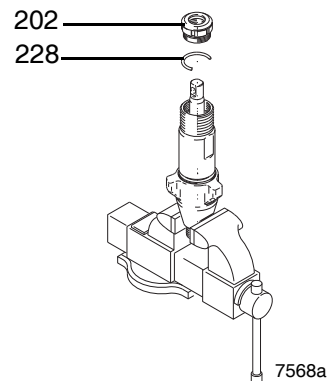
- 80 +/-5-ft-lb

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



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.



Replacement of Electrical Components

Always unplug the electrical cord before servicing the machine.				

Pressure Control Assembly (Electrical Control Board)

1. Unplug machine's power cord.
2. Remove 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 3/4" 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.

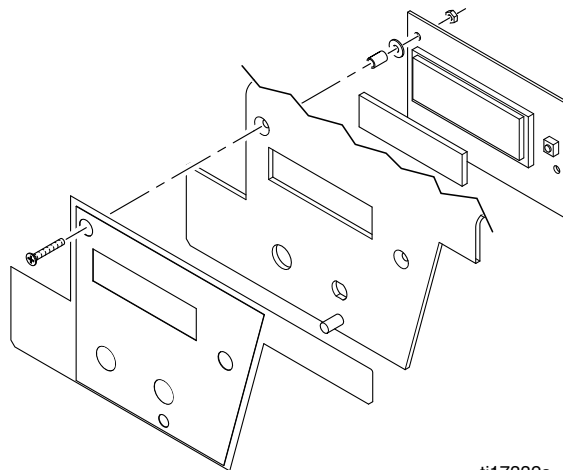
On-Off Toggle Switch

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.

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 two screws.
3. Disconnect the LCD lead from the pressure control assembly.
4. Separate the LCD assembly from the frame by undoing the eight screws.
5. Disassemble LCD from the control by removing the retaining screws.
6. Remove and replace LCD Display.
7. Reassemble in reverse order.

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



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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 on suction seat and o-ring below suction seat.
	Stuck or fouled balls	Service inlet and outlet valves.
	Prime/Pressure Relief valve not opening	Clean or replace Prime/Pressure Relief Valve
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/Pressure Relief Valve
	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 Machine Does Not Start
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).
	Pressure Control Assembly (Board)	If the power indicating light is still out after checking the control settings and power source, replace the pressure control assembly.

Problem	Cause	Solution
	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 Sensor.</p>
	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>

Pressure Control Repair

Motor Control Board Diagnostics

				
Relieve pressure and unplug sprayer before servicing control board. See Pressure Relief Procedure , page 13.				




Keep a new transducer on hand to use for test.

NOTICE
Do not allow sprayer to develop fluid pressure without transducer installed. Leave prime/pressure relief valve open if test transducer is used.

1. For sprayers with digital display, see **Digital Display Messages**, page 22
2. Remove screws and cover.
3. Turn ON/OFF switch ON.
4. Observe LED operation and reference following table:

LED BLINKS	SPRAYER OPERATION	INDICATES	WHAT TO DO
Once	Sprayer runs	Normal operation	Do nothing
Two times repeatedly	Sprayer shuts down and LED continues to blink two times repeatedly	Run away pressure. Pressure greater than 4500 psi (310 bar, 31 MPa) or damaged pressure transducer.	Replace motor control board or pressure transducer.
Three times repeatedly	Sprayer shuts down and LED continues to blink four times repeatedly.	Pressure transducer is faulty or missing	Check transducer connection. Open prime/pressure relief valve. Substitute new transducer for transducer in sprayer. If sprayer runs, replace transducer.
Four times repeatedly	Sprayer shuts down and LED continues to blink four times repeatedly.	Line voltage is too high	Check for voltage supply problems
Five times repeatedly	Sprayer does not start or shuts down and LED continues to blink five times repeatedly	Motor fault	Check for locked rotor, shorted wiring or disconnected motor. Repair or replace failed parts.
Six times repeatedly	Sprayer shuts down and LED blinks six times repeatedly	Motor is too hot or there is a fault in the motor thermal device	Allow sprayer to cool. If sprayer runs correctly when cool, check motor fan function and air flow. Keep sprayer in cool location. If sprayer does not run when cool and continues to blink 6 times, replace motor.
Eight times repeatedly	Sprayer stops or does not run	High input voltage	Check power source for correct voltage

Digital Display Messages

				
<p>No display does not mean that sprayer is not pressurized. Relieve pressure before repair. See Pressure Relief Procedure, page 13.</p>				


DISPLAY	SPRAYER OPERATION	INDICATION	ACTION
No Display	Sprayer stops. Power is not applied. Sprayer may be pressurized.	Loss of power.	Check power source. Relieve pressure before repair or disassembly.
3000 psi 210 bar 21 Mpa	Sprayer is pressurized. Power is applied. (Pressure varies with tip size and pressure control setting.)	Normal operation	Spray
E=02	Sprayer may continue to run. Power is applied.	Pressure greater than 4500 psi (310 bar, 31 MPa) or pressure transducer faulty	Replace pressure control board or pressure transducer
E=03	Sprayer stops. Power is applied.	Pressure transducer faulty, bad connection or broken wire.	Check transducer connection. Open prime/pressure relief valve. Substitute new transducer for transducer in sprayer. If sprayer runs, replace transducer.
E=04	Sprayer stops. Power is applied.	Line voltage too high.	Check for voltage supply problem
E=05	Sprayer does not start or stops. Power is applied.	Motor fault	Check for locked rotor, shorted wiring or disconnected motor. Repair or replace failed parts.
E=06	Sprayer stops. Power is applied.	Motor is too hot.	Allow sprayer to cool. If sprayer runs correctly when cool, check motor fan function and air flow. Keep sprayer in cool location. If sprayer does not run when cool and continues to blink 6 times, replace motor.
----	Power is applied.	Pressure less than 200 psi (14 bar, 1.4 MPa)	Increase pressure if desired. Prime/pressure relief valve may be open.
E=08	Sprayer stops or does not run.	High input voltage	Check power source for correct voltage.

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
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
	Course 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


Problem	Cause	Solution
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

Test the Pattern

Good, Full



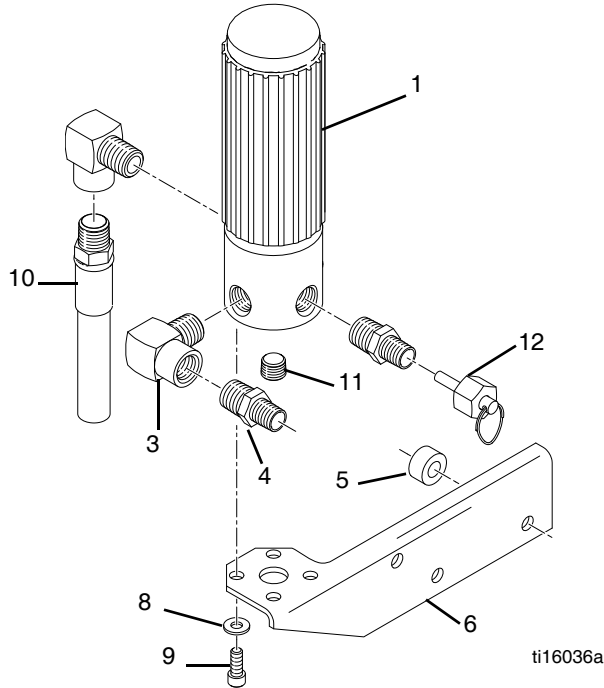
Spotty Pattern,
Increase Pressure



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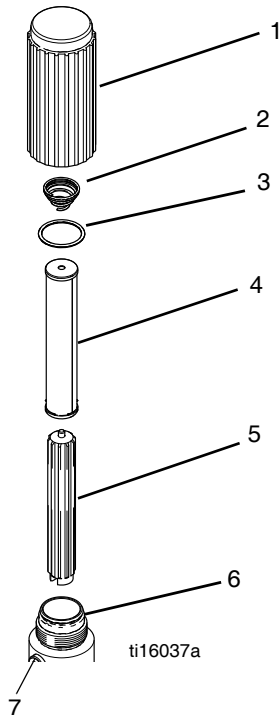
Parts

Optional Manifold Kit (301440)



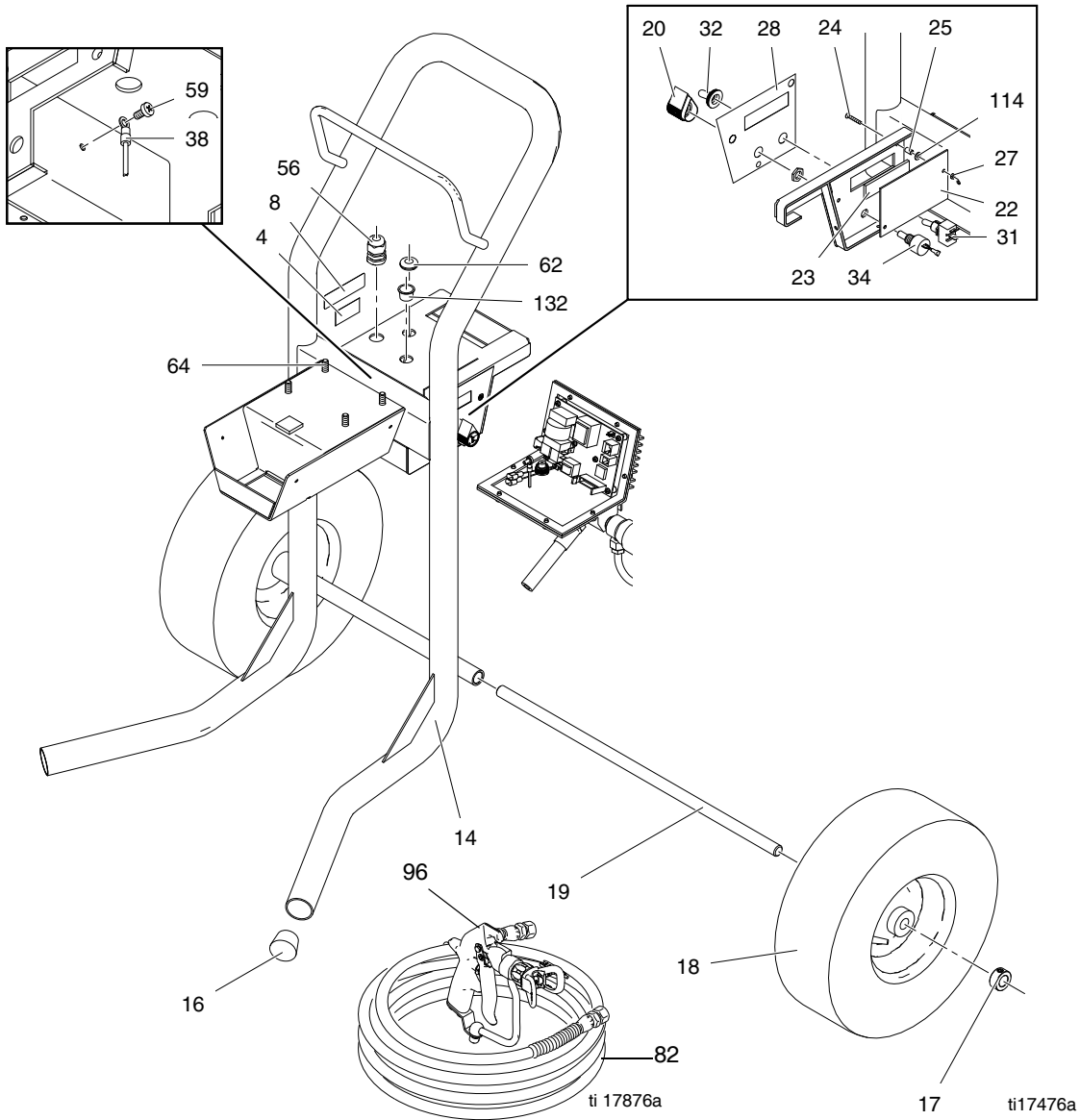
Ref.	Part	Description	Qty
1	866123	FILTER, ASSY	1
3	867188	FITTING, ELBOW STREET 90 3/8 NPT	2
4	867309	FITTING, NIPPLE, 3/8 NPT to 1/4 NPT	2
5	866445	SPACER, .377 ID x .40 LG AL	2
6	305140	BRACKET - FILTER	1
7	867534	SCREW 5/16-18 x 1.00 PH HD (not shown)	2
8	331103	WASHER .562 .250 .060 .ST	2
9	121112	SCREW, CAP, SOCKET HEAD	2
10	867400	HOSE PAINT, 3/8"x21" LG	1
11	557391	PLUG, 1/4 NPT	1
12	866052	CAP PLUG SET, .25	1

Optional Filter Kit (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
7	867420	PLUG (3/8") NPT PLATED	1

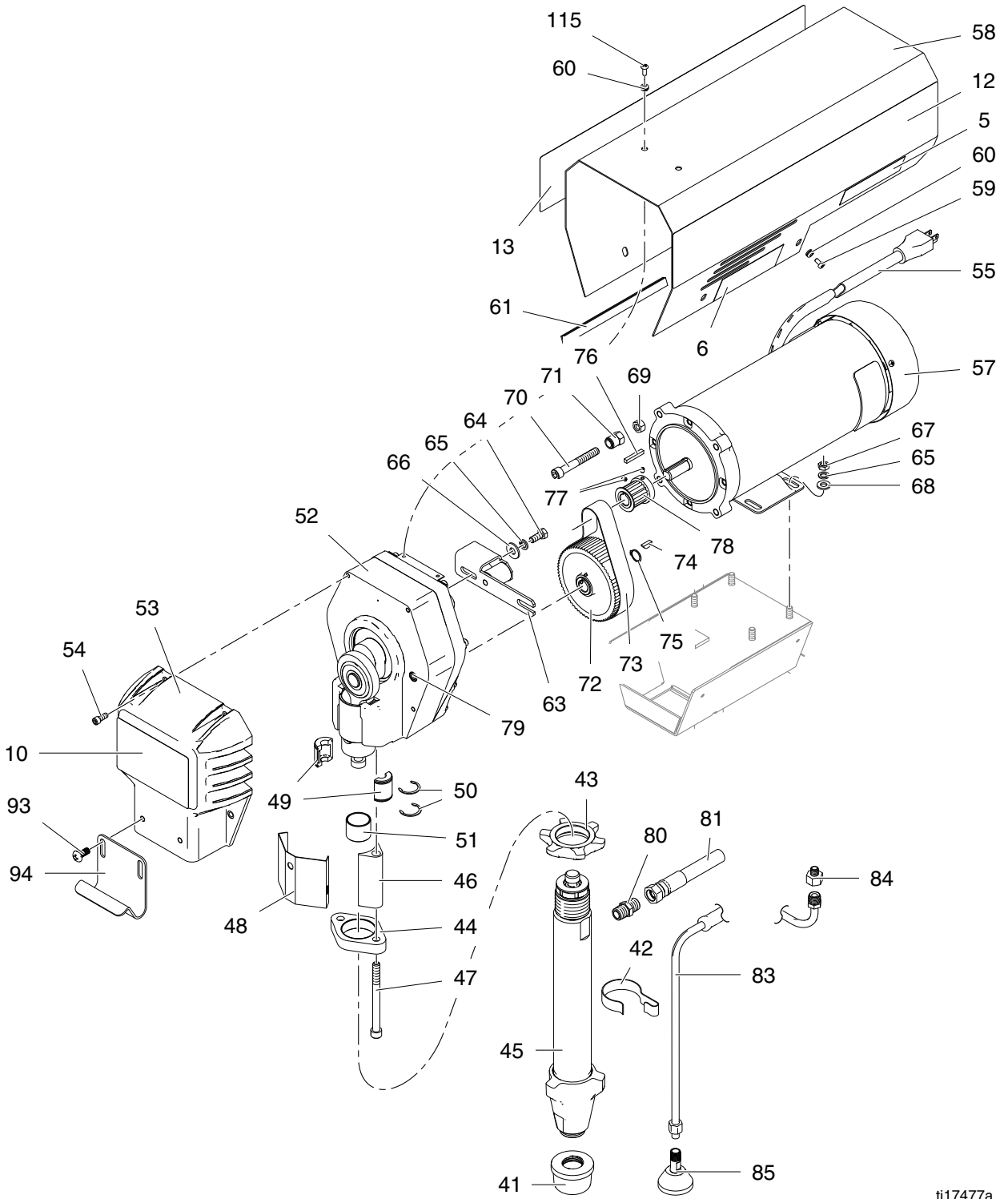
Frame Parts Diagram



Ref	Part	Description	Qty	Ref	Part	Description	Qty
4	342425▲	LABEL - HIGH VOLTAGE	1	32	301150	BOOT,RUBBER,BLACK	1
8		LABEL,DESIGNATION	1	34	256219	POTENTIOMETR,ASSEMBLY	1
14	867791	FRAME,CART	1	38	866049	CABLE,ASSY 9" LG	1
16	301134	PLUG,NEOPRENE	2	59	110637	SCREW,MACH,PANHEAD	13
17	143029	COLLAR,SCREW,SET (SPECIAL ID)	2	62	867252	GROMMET	1
18	301165	WHEEL,PNEUMATIC	2	82	HSE3850	HOSE, 3/8" x 50	
19	866025	AXLE	1		25439	HOSE, CPLD, 1/4" x 3'	
20	116167	KNOB,POTENTIMETER	1	96	24F690	GUN MASTIC, MASTIC	
22		DISPLAY,LCD	1	114	867731	WASHER,PLAIN-1/8IN.IDX5/16IN.	2
23	867798	DISPLAY,WINDOW	1		867821	DISPLAY KIT (includes 22, 23, 24, 25, 27, 114)	
24	867816	SCREW,MACH,PHILLIPS FLAT HD	2				
25	117281	SPACER,#6 X .312	2				
27	867817	NUT,HEX	2				
28	867803	LABEL,CONTROLS,SL	1				
31	301083	SWITCH,TOGGLE	1				

▲ Additional warning labels are available at no cost.

Motor and Drive



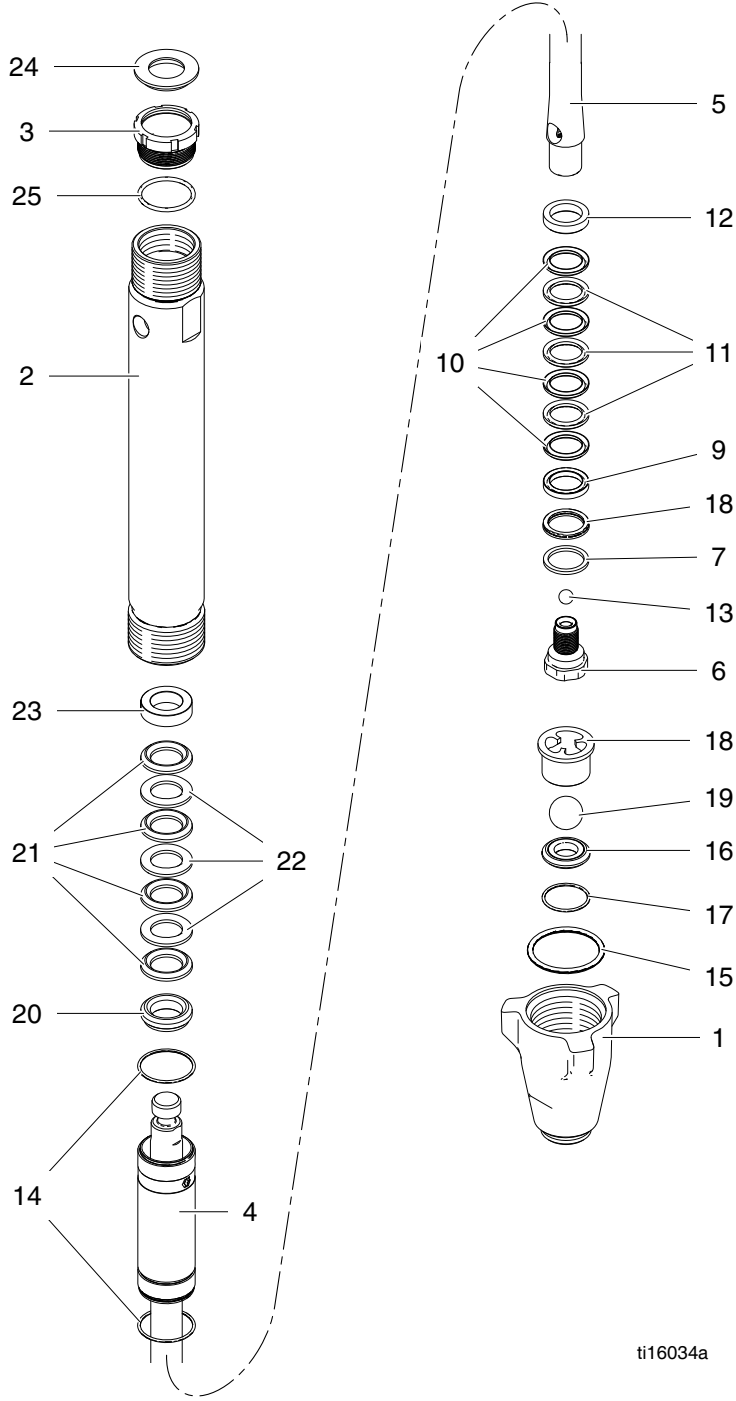
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Motor and Drive Parts List

Ref. Part	Description	Qty	Ref. Part	Description	Qty
5	342473▲ LABEL GENERAL WARNING	1	63	301193 BRACKET,TENSIONER	1
6	342506▲ LABEL NEVER/ALWAYS LP&SL	1	64	100057 SCREW,CAP,HEX HD	2
10	16F596 LABEL,AIRLESSCO, TS1500, FRONT	1	65	100214 WASHER,LOCK	6
12	16F597 LABEL,AIRLESSCO, TS1500, RIGHT	1	66	867704 WASHER,PLAIN, 5/16 NOMINAL	2
13	16F598 LABEL,AIRLESSCO, TS1500, LEFT	1	67	111303 NUT,HEX	4
41	189920 STRAINER,(1-11 1/2 NPSM)	1	68	140029 WASHER,PLAIN	4
42	198542 CLIP,SPRING	1	69	100307 NUT,HEX	3
43	193031 NUT,RETAINING	1	70	301044 SCREW,MODIFIED	3
44	16C304 PLATE,PUMP	1	71	301099 RETAINER,5/8-18	3
45	24E349 PUMP,DISPLACEMENT	1	72	866455 PULLEY,69 TEETH, MACHINING	1
46	16C792 SPACER,SL SERIES	2	73	301231 BELT,TIMING,5MM PITCH	1
47	124125 SCREW,CAP,SOC,3/8X4.25	2	74	301139 KEY,WOODRUFF, 3/16 X 5/8	1
48	301467 SHIELD FRONT SL SERIES	1	75	867461 RETAINER,RING, EXTERNAL,.625	1
49	867140 COUPLER,	2	76	866212 KEY,SQUARE,3/16 X 1.35	1
50	867468 RETAINER,RING,EXTERNAL,1.00	2	77	101118 SCREW	2
51	866069 COVER,COUPLING	1	78	866452 GEAR,SHEAVE	1
52	301204 BOX,GEAR (Includes 52a, 52b, 52c)	1	79	557391 PLUG,DRYSEAL 1/4 NPTF	1
52a	301046 ROD END (not shown)	1	80	867311 FITTING,NIPPLE HX 3/8 TO 3/8 NPT	1
52b	301333 CONNECTING ROD ASSEMBLY (not shown)	1	81	301308 HOSE,3/8 X 16 LONG	1
52c	301047 SLEEVE BEARING (not shown)	1	83	867758 HOSE,DRAIN	1
53	301320 COVER	1	84	867759 CONNECTOR,MALE,3/8 TUBE X 1/8 PIPE	2
54	121112 SCREW,CAP, SOCKET HEAD	4	85	241920 DEFLECTOR,THREADED	1
55	331163 CORD,POWER, USA ASSY	1	93	867529 SCREW 5/16-18 X .75 PH HD	2
57	301106 MOTOR	1	94	301105 HOOK	1
58	301321 COVER	1	115	110037 SCREW,MACH,PNH	2
59	110637 SCREW,MACH,PANHEAD	13		867206 FAN - NWU (Not Shown)	
60	301135 GROMMET	6		867208 FAN COVER - NWU (Not Shown)	
61	865180 TRIM,EDGE, RUBBER	2	▲	195793 LABEL, warning	1

▲ Additional warning labels are available at no cost.

TS1500 Pump Parts Diagram



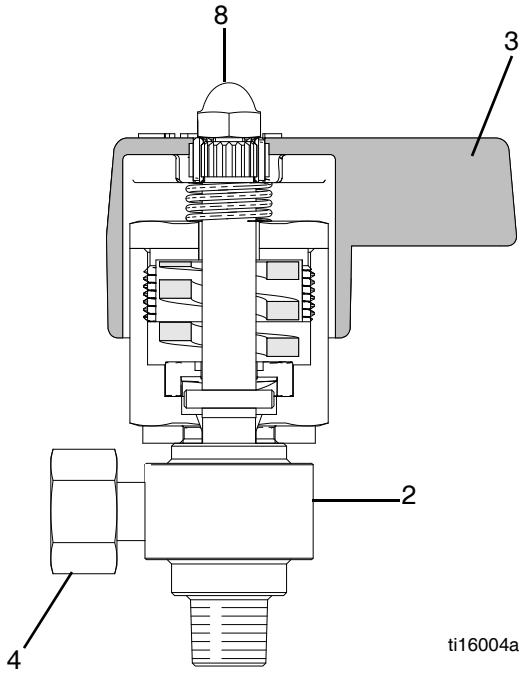
Ref.	Part	Description	Qty
1	196753	HOUSING, VALVE, INTAKE	1
2		CYLINDER, PUMP	1
3	193032	NUT, PACKING	1
4	248210	SLEEVE, CYLINDER	1
5	24E353	ROD, PISTON	1
6	240150	VALVE, PISTON	1
7	15C998	WASHER, BACKUP	1
9	183185	GLAND, PACKING, FEMALE	1
10	193125	PACKING, VEE	4
11	15E329	PACKING, VEE	3
12	183178	PACKING, 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	196967	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

Repair Kits

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.

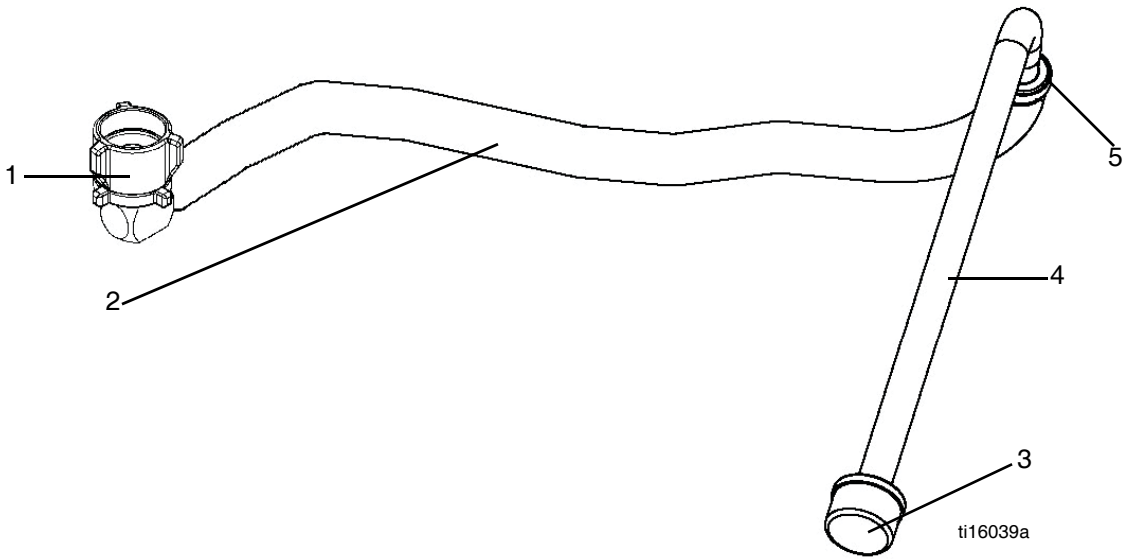
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Prime/Pressure Relief Valve (865719)



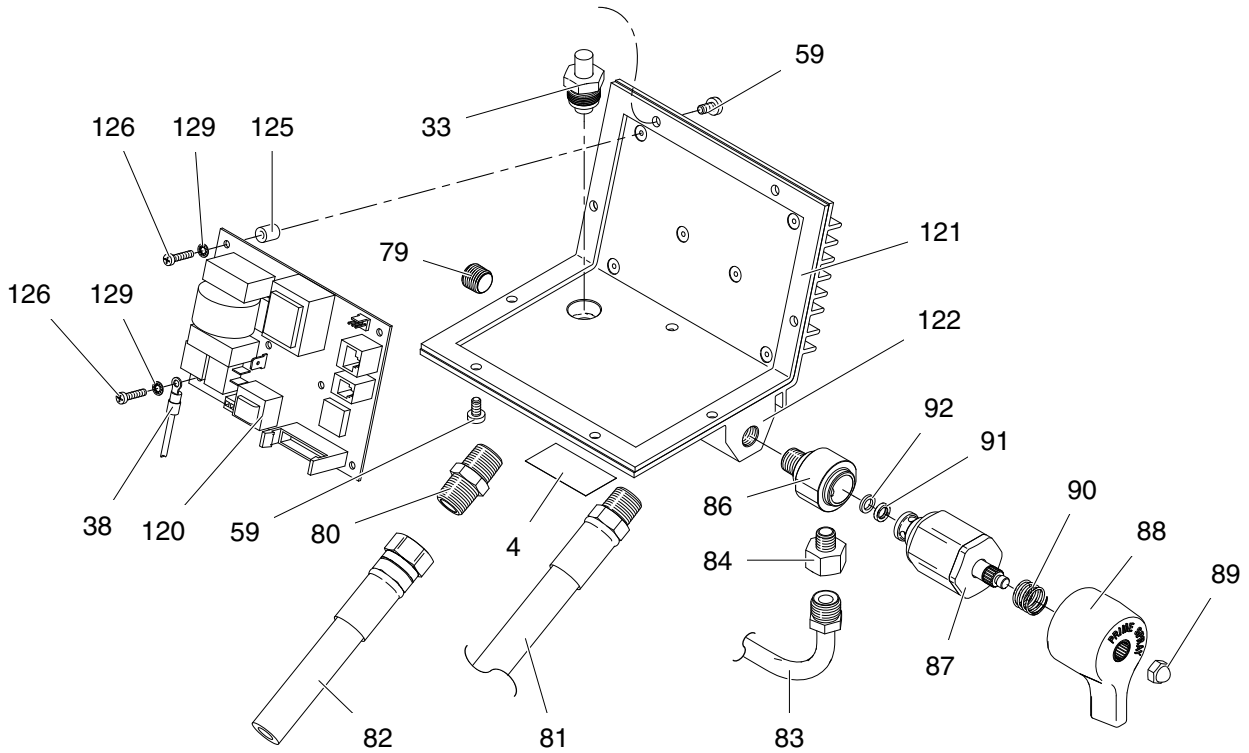
Ref.	Part	Description	Qty
2	865013	ADAPTER, VALVE	1
3	15G563	HANDLE, VALVE	1
4	867759	CONNECTOR, MALE, 3/8 TUBE x 1/8 PIPE	1
8	116424	NUT, CAP	1

Suction Assembly - 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	867446	CLAMP	1
3	187190	FILTER BASKET	1				

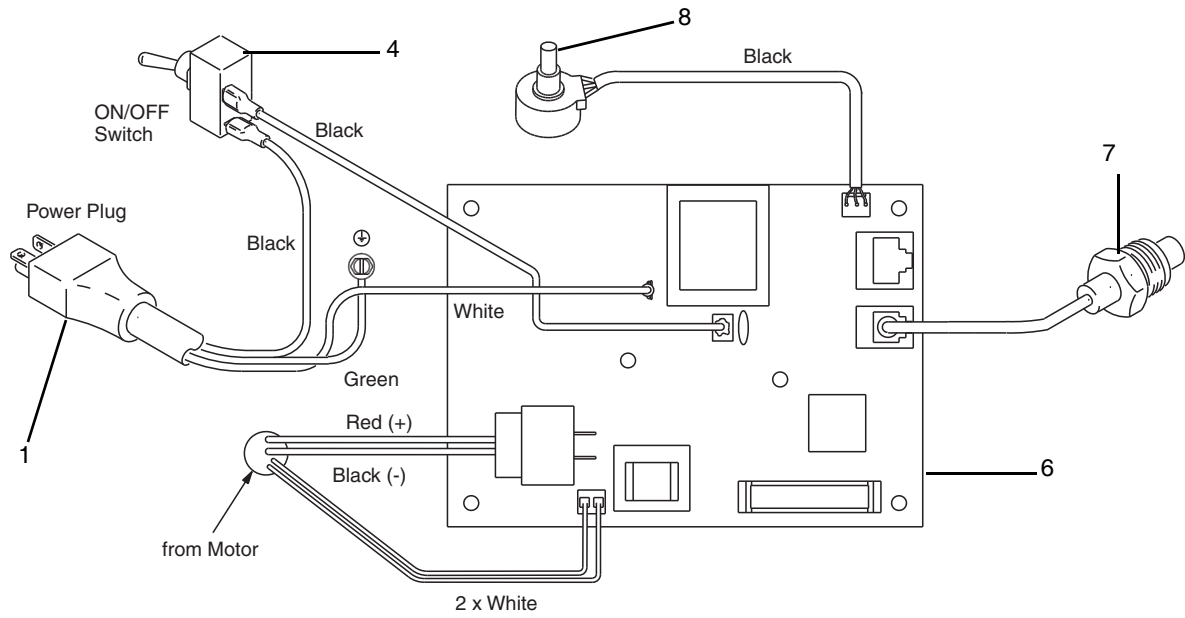
Control Parts Diagram



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Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
4	342425▲	LABEL - HIGH VOLTAGE	1				
33	24B599	TRANSDUCER,PRESSURE CONTROL	1	867824		CONTROL BOARD KIT (includes 38, 120, 121, 122, 125, 126, 129)	
38	866049	CABLE,ASSY 9" LG	1	867831		KIT, upgrade from old control board to new control board	
59	110637	SCREW,MACH,PANHEAD	13	▲ 15H085		LABEL, warning	1
79	557391	PLUG,DRYSEAL 1/4 NPTF	1	▲ Additional warning labels are available at no cost.			
80	867311	FITTING,NIPPLE HX 3/8 TO 3/8 NPT	1				
81	301308	HOSE,3/8 X 16 LONG	1				
83	867758	HOSE,DRAIN	1				
84	867759	CONNECTOR,MALE,3/8 TUBE X 1/8 PIPE	2				
86	865013	ADAPTER,VALVE	1				
87	865719	VALVE,DRAIN,ASSY	1				
88	15G563	HANDLE,VALVE	1				
89	116424	NUT,CAP	1				
90	114708	SPRING,COMPRESSION	1				
91	193709	SEAT,VALVE	1				
92	193710	SEAL,SEAT,VALVE	1				
120	867965	CONTROL,BOARD,120V	1				
121	867796	GASKET,COVER SL	1				
122		HEAT SINK,MACHINED SL	1				
125		SPACER,CONTROL BOARD	6				
126		SCREW,MACH,PHILLIPS PAN HD	6				
129	100272	WASHER,LOCK	6				

Electrical System



ti12471a

Ref. Part	Description	Qty	Ref. Part	Description	Qty
1	331168 ELECTRICAL CORD110V	1	7	24B599 SENSOR	1
4	301083 TOGGLE SWITCH	1	8	256219 POTENTIOMETER	1
6	PRESSURE CONTROL ASSY 110V	1			

Technical Data

Airless Paint Sprayer		
	US	Metric
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	1.1 gpm	
Maximum tip size	0.033	
Fluid outlet npsm	3/8 in.	
Weight	145 lbs	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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All written and visual data contained in this document reflects the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 3A1183

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