Instruction

Electric Airless Sprayers

3B0396C
EN

For portable airless spraying of architectural paints and coatings. For professional use only.
Not approved for use in explosive atmospheres or hazardous (classified) locations.

Models: GBM0001, GBM0002, GBM0005, GBM0006, GBM0007, GBM0008
3000 psi (207 bar, 20.7 MPa) Maximum Working Pressure

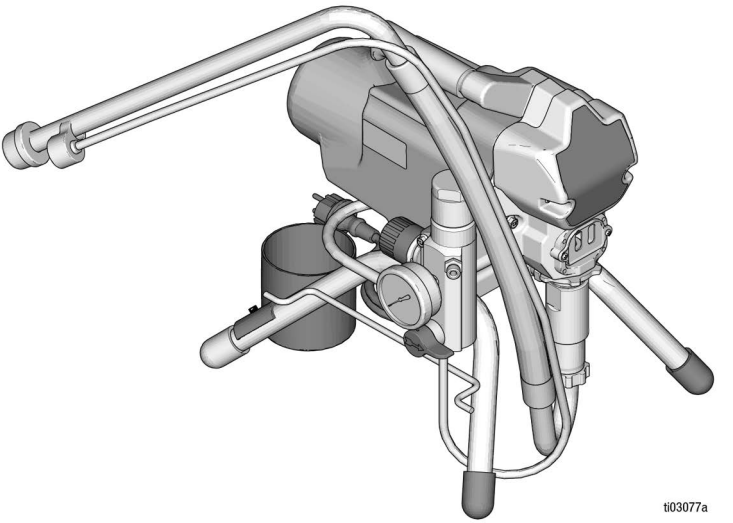
See page 3 for additional model information.

Important Safety Instructions

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

Important Medical Information

Read the medical alert card provided with the gun. it containts injection injury treatment information for a doctor. Keep it with you when operating the equipment.



Contents

Translated Manuals

Digital versions of translated manuals for this product can be found through your authorized spray equipment dealer. Available translations and their respective manual numbers are listed here for reference.

Danish	3B0412
Dutch	3B0410
English	3B0396
French	3B0406
Italian	3B0409
German	3B0407
Polish	3B0411
Spanish	3B0408
Swedish	3B0413

Models

	VAC	**Stand** 
CE	230 CEE 7/7 UK	GBM0001
		GBM0006
		GBM0007
		GBM0008
	230 Asia/ANZ	GBM0002
	230 India	GBM0005

Important User Information

This sprayer is designed to provide superior spray performance with water-based and oil-based architectural paints and coatings. This user information is intended to help you understand the types of materials that can be used with your sprayer.

Please read the information on the material container label to determine if it can be used with your sprayer. Ask for a Safety Data Sheet (SDS) from your supplier. The container label and SDS will explain the contents of the material and the specific precautions related to it.

Paints, coatings and clean-up materials generally fit into one of the following **3 basic categories:**

WATER-BASED: The container label should indicate that the material can be cleaned up with soap and water. Your sprayer is compatible with this type of material. Your sprayer is **NOT** compatible with harsh cleaners such as chlorine bleach.

OIL-BASED: The container label should indicate that the material is COMBUSTIBILE and can be cleaned up with paint thinner. The SDS must indicate that the flash point of the material is above 100° F. Your sprayer is compatible with this type of material. Use oil-based material outdoors or in a well-ventilated indoor area with a flow of fresh air. See the safety warnings in this manual.

FLAMMABLE: This type of material contains flammable solvents such as xylene, toluene, naphtha, MEK, lacquer thinner, acetone, denatured alcohol, and turpentine. The container label should indicate that this material is FLAMMABLE. This type of material is **NOT** compatible with your sprayer and **CANNOT** be used.

Safety Symbols

The following safety symbols appear throughout this manual and on warning labels. Read the table below to understand what each symbol means.

Symbol	Meaning
	Electric Shock Hazard
	Equipment Misuse Hazard
	Fire and Explosion Hazard
	Flying Debris Hazard
	Moving Parts Hazard
	Skin Injection Hazard
	Skin Injection Hazard
	Splash Hazard
	Toxic Fluid or Fumes Hazard

Symbol	Meaning
	Do Not Place Hands or Other Body Parts Near Fluid Outlet
	Do Not Put Hand in Front of Spray Tip
	Do Not Stop Leaks with Hand, Body, Glove or Rag
	Eliminate Ignition Sources
	Follow Pressure Relief Procedure
	Ground Equipment
	Read Manual
	Ventilate Work Area
	Wear Personal Protective Equipment

Safety Alert Symbol
This symbol indicates: Attention! Become Alert! Look for this symbol throughout the manual to indicate important safety messages.

Warnings

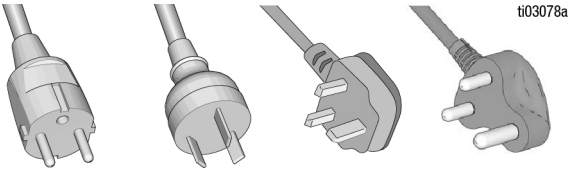
The following warnings apply throughout this manual. Read, understand, and follow the warnings before using this equipment. Failure to follow these warnings can result in serious injury.

⚠ 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 regulations.

- 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 power 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 230V circuit and has a grounding plug similar to the plugs illustrated below.



230V **230V ANZ** **230V UK** **230V INDIA**

- 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 (2.5mm^2) 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 Safety Data Sheets (SDSs) from the material distributor or retailer.
- Do not spray 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 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 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.
- Sprayer 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.
- **Stop operation immediately** if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- 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 (SDSs) and container labels provided with the paints and solvents. Follow the paint and solvents manufacturer's safety instructions.
- Keep a working fire extinguisher in the work area.


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.
- Connect only to 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.
- Only use authorized service center to replace a damaged power cord.

⚠ WARNING

SKIN INJECTION HAZARD

High-pressure spray is able to inject toxins into the body and cause serious injury that can result in amputation. 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 spray tip guard. Do not spray without spray tip guard in place.
- 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 (207 bar, 20.7 MPa). Use replacement parts or accessories that are rated a minimum of 3000 psi (207 bar, 20.7 MPa).
- 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 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.
- 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 environment in which you are using it.

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.
- Do not use chlorine bleach.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

⚠ WARNING

MOVING PARTS HAZARD

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

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

TOXIC FLUID OR FUMES HAZARD

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

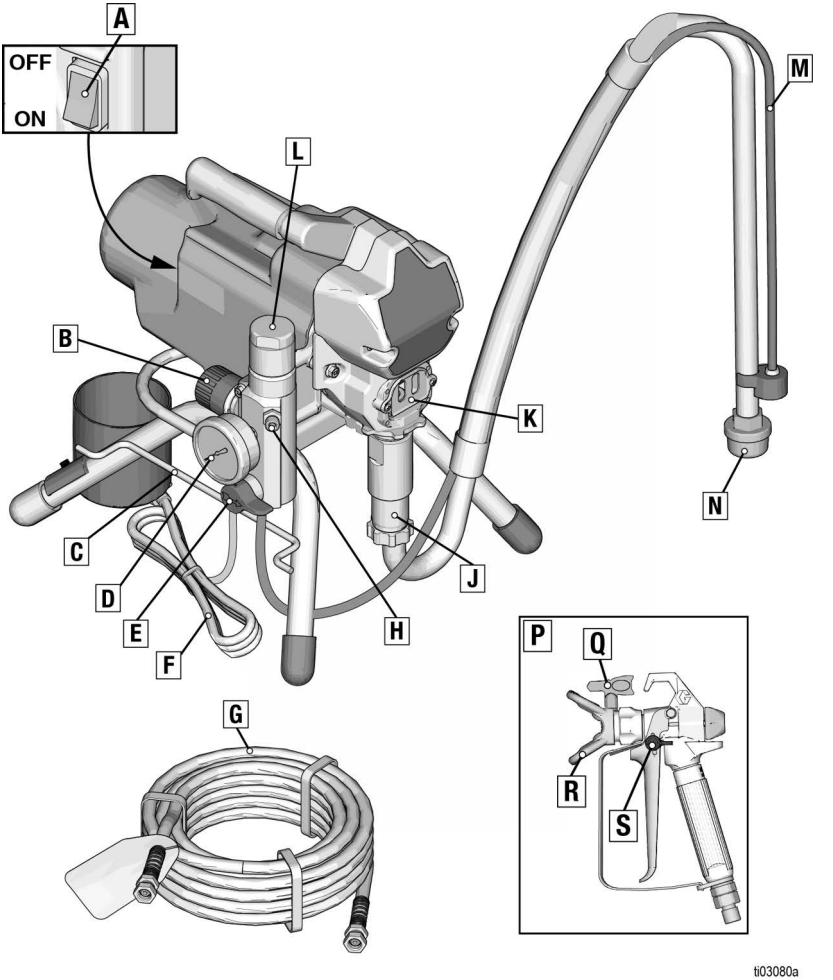
- Read Safety Data Sheets (SDSs) to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

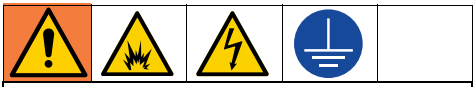
Component Identification



A	ON/OFF Switch
B	Pressure Control
C	Power Cord Wrap
D	Pressure Gauge
E	Prime Valve
F	Power Cord
G	Airless Hose
H	Fluid Outlet
J	Pump
K	Finger Guard/Seal Lubricant Fill Point

L	Manifold Filter
M	Drain Tube
N	Fluid Intake
P	Gun
Q	Spray Tip
R	Tip Guard
S	Trigger Lock
	Model/Serial Tag (Not shown, located on bottom of unit.)

Grounding



The equipment must be grounded to reduce the risk of static sparking and electric shock. An electric or static spark can cause fumes to ignite or explode. An improper ground can cause electric shock. A good ground provides an escape wire for the electric current.

This sprayer is equipped with a Power Cord that has a ground wire and 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 regulation.

Do not modify the plug provided; if it does not fit the outlet, have the proper outlet installed by a qualified electrician.

Extension Cords

Use an extension cord with an undamaged ground contact. If an extension cord is necessary, use a 3-wire, 12 AWG (2.5 mm^2) minimum.

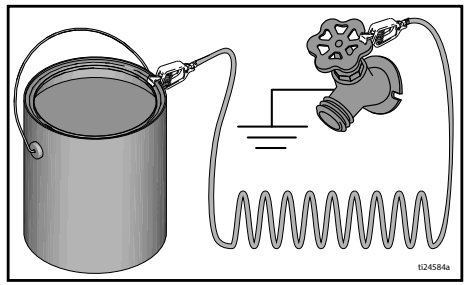
NOTE: Smaller gauge or longer extension cords may reduce sprayer performance.

Pails

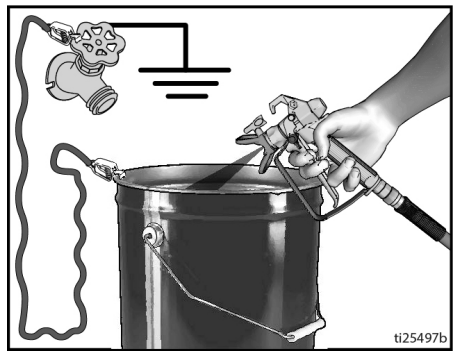
Non-Flammable Solvent and oil-based fluids: follow local code. Use only conductive metal pails, placed on a grounded surface such as concrete.

Do not place pail on a non-conductive surface such as paper or cardboard which interrupts grounding continuity.

Always ground a metal pail: connect a ground wire to the pail. Clamp one end to the pail and the other end to a true earth ground such as a water pipe.

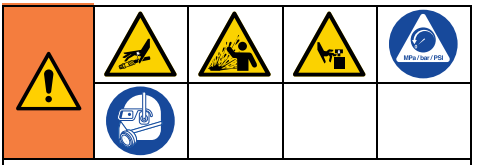


To maintain ground continuity when sprayer is flushed or pressure is relieved: hold metal part of spray gun firmly to the side of a grounded metal pail then trigger the gun.



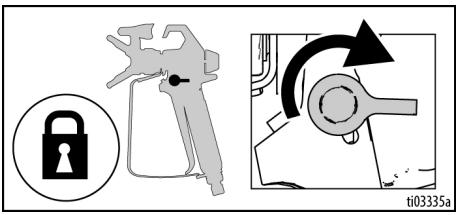
Pressure Relief Procedure

Follow the Pressure Relief Procedure whenever you see this symbol.

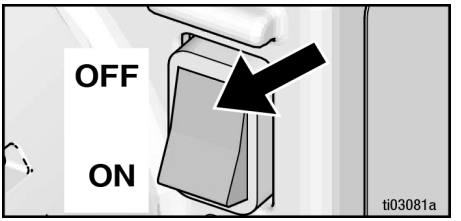


This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashed fluid and moving parts, follow the Pressure Relief Procedure whenever sprayer is stopped and before sprayer is cleaned or checked, and before equipment is serviced.

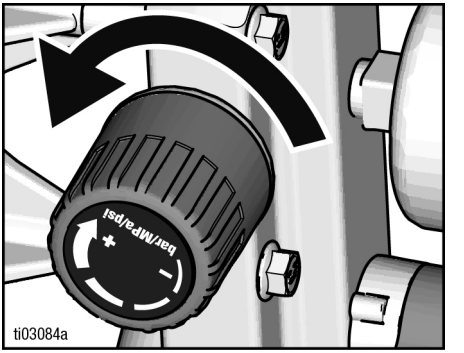
1. Engage the trigger lock.



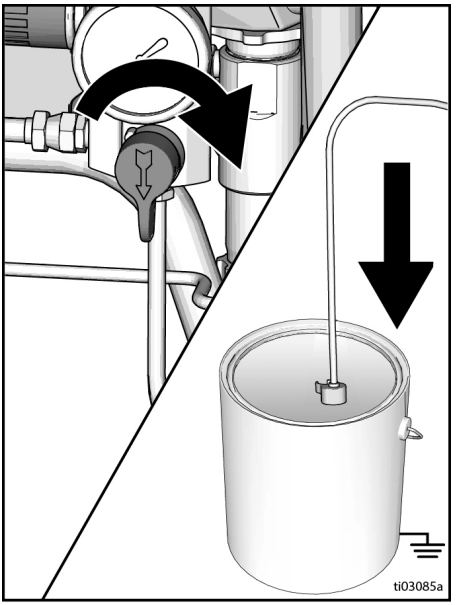
2. Turn the ON/OFF switch to the **OFF** position. Wait 60 seconds for power to dissipate.



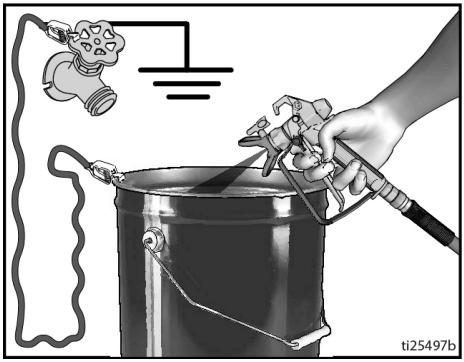
3. Turn pressure control to lowest setting.



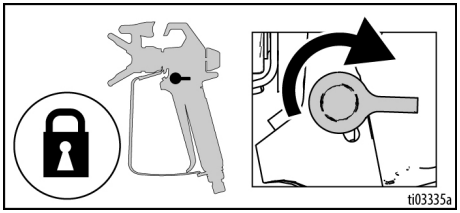
4. Put drain tube in a pail. Turn prime valve down to the prime position until you are ready to spray again.



5. Disengage the trigger lock. Hold a metal part of the gun firmly to a grounded metal pail. Trigger the gun to relieve pressure.



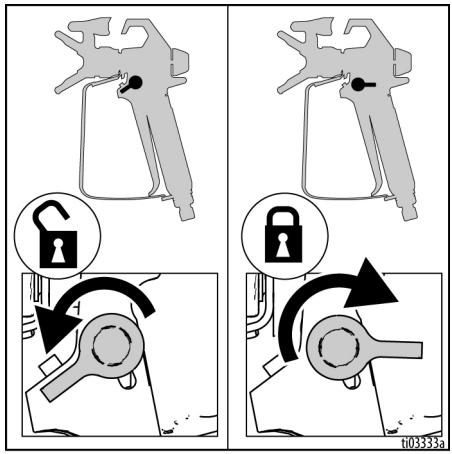
6. Engage the trigger lock.



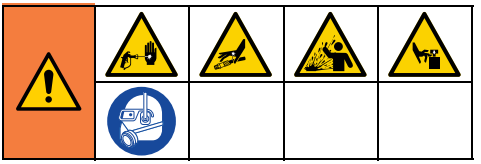
7. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved:
   a. Using a wrench, VERY SLOWLY loosen the tip guard retaining nut or the hose end coupling to relieve pressure gradually.
   b. Using a wrench, loosen the nut or coupling completely.
   c. Clear hose or tip obstruction.

Trigger Lock

Always engage the trigger lock when sprayer is stopped to prevent the gun from being triggered accidentally by hand or if dropped or bumped.

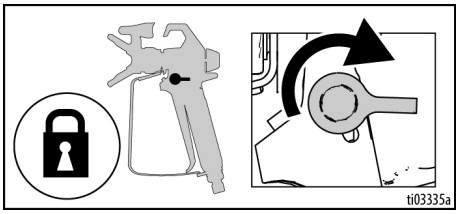


Setup



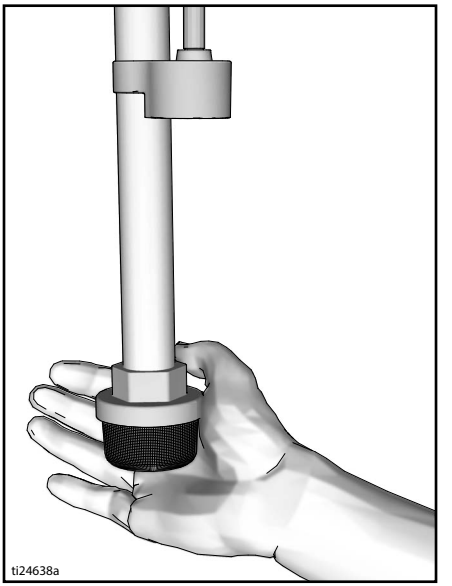
When unpacking sprayer for the first time or after long term storage perform setup procedure. When first setup is performed remove shipping plug from fluid outlet.

1. Connect airless hose to fluid outlet. Use wrenches to tighten securely.
2. Connect other end of hose to gun.
3. Use wrenches to tighten securely.
4. Engage trigger lock.



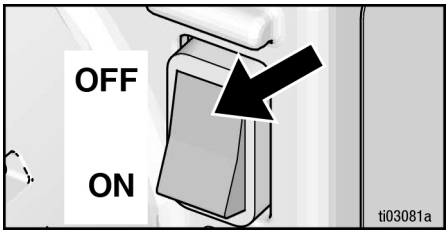
5. Remove tip guard.

6. When unpacking sprayer for the first time remove packaging materials from inlet strainer. After long term storage check inlet strainer for clogs and debris.

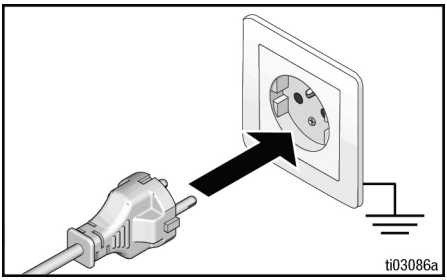


7. Fill throat packing nut with seal lubricant to prevent premature packing wear. Do this daily or each time you spray.
   a. Place the seal lubricant bottle nozzle into the center opening in the grill at the front of the sprayer.
   b. Squeeze bottle to dispense enough seal lubricant to fill the space between the pump rod and packing nut seal.

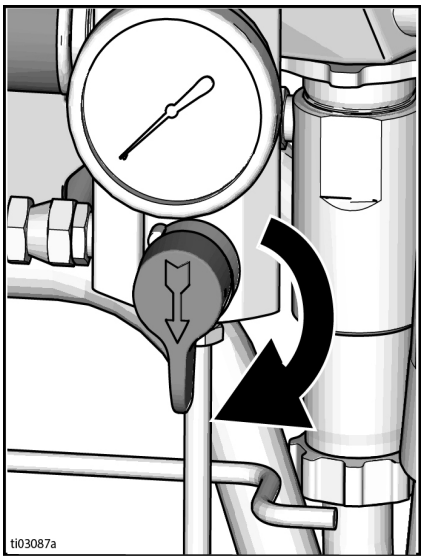
8. Make certain ON/OFF switch is **OFF**.



9. Plug power supply cord into a properly grounded electrical outlet.



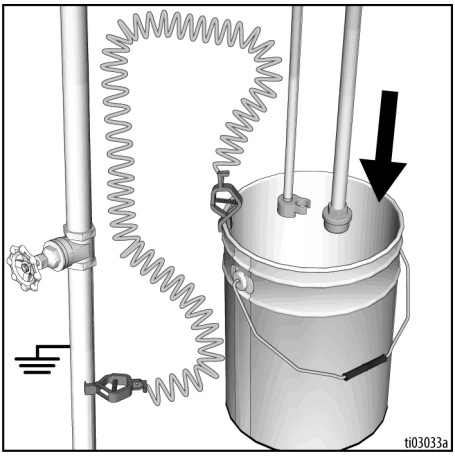
10. Turn prime valve down to prime position.



11. Place fluid intake with drain tube in grounded metal pail partially filled with flushing fluid. See **Grounding**, page 11.

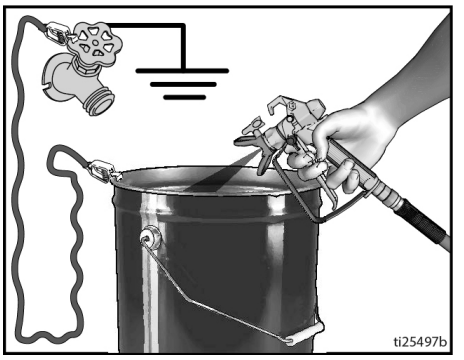
NOTE: New sprayers are shipped with storage fluid that must be flushed out with non-flammable solvents prior to using the sprayer.

Check flushing fluid for compatibility with material that is to be sprayed. A secondary flush with a compatible fluid may be necessary. Water for latex paint or non-flammable solvents for oil-based paint.

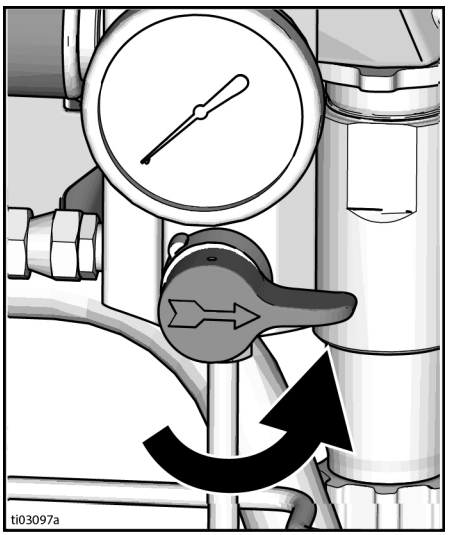


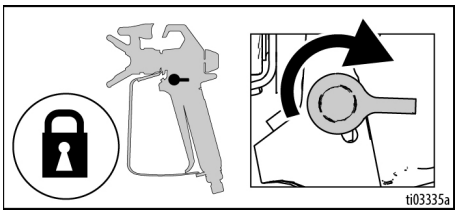
12. Turn pressure control to lowest setting.
13. Turn ON/OFF switch to **ON** position.
14. Increase pressure 1/2 turn to start motor. Allow fluid to flush through sprayer for one minute.

15. Hold a metal part of the gun firmly to a grounded metal pail. Disengage trigger lock and trigger gun.

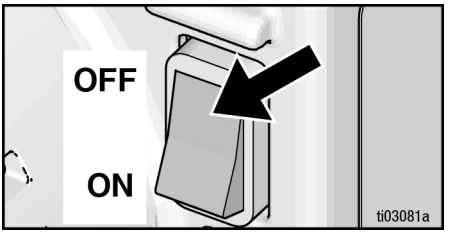


16. While holding gun trigger, turn prime valve forward to the spray position. Flush until clean. Release gun trigger and engage trigger lock



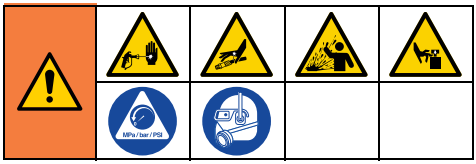


17. Turn ON/OFF switch to **OFF** position.

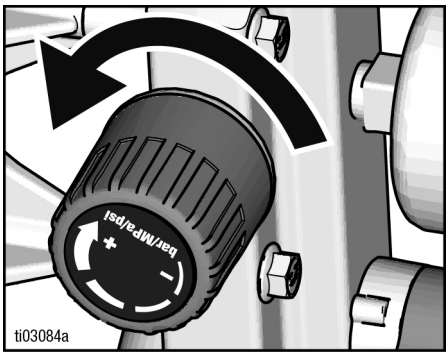


18. If the initial flushing fluid is not compatible with the paint that is to be sprayed, a second flush is needed. Repeat steps 11-18.
19. Sprayer is now ready to start up and spray.

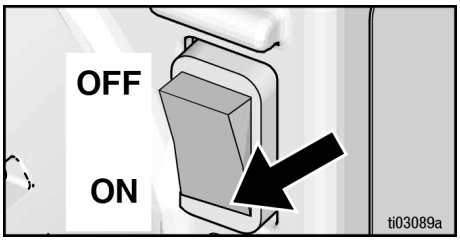
Startup



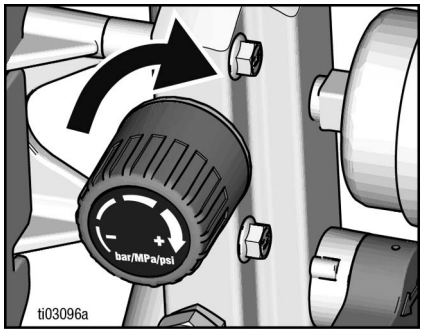
1. Perform **Pressure Relief Procedure**, page 12.
2. Remove spray tip and tip guard.
3. Turn pressure control to lowest pressure.



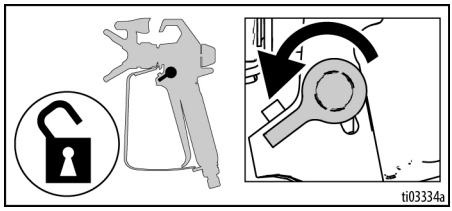
4. Place fluid intake in paint pail. Place drain tube in waste pail.
5. Turn ON/OFF switch to **ON** position.



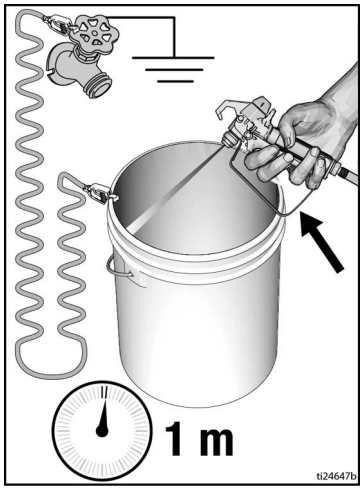
6. Increase pressure 1/2 turn to start motor. Allow paint to circulate through sprayer until paint flows out the drain tube.



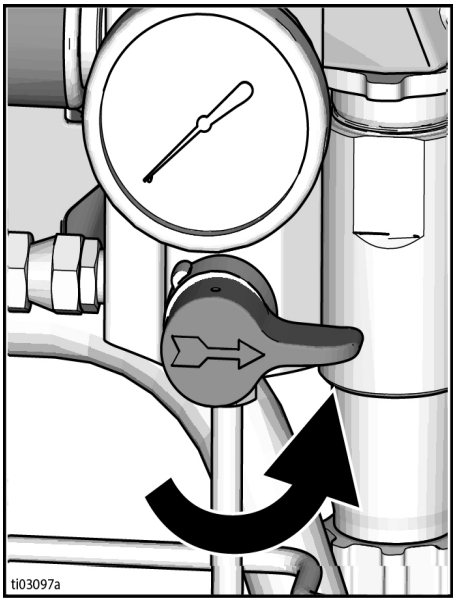
7. Disengage trigger lock.



8. Hold gun against grounded metal waste pail.

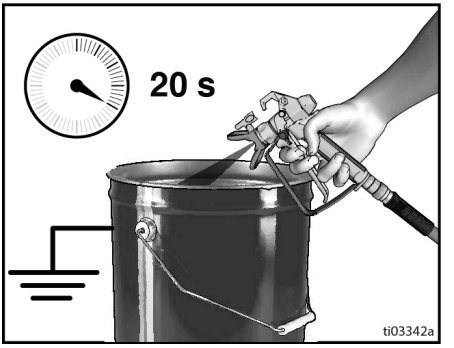


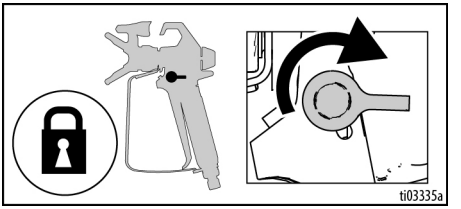
9. While holding gun trigger, turn prime forward to spray position. Keep gun triggered until paint appears.



10. Move gun to paint pail and trigger for 20 seconds. Release trigger and allow sprayer to build pressure. Engage trigger lock.

High-pressure spray is able to inject toxins into the body and cause serious bodily injury. Do not stop leaks with hand or rag.





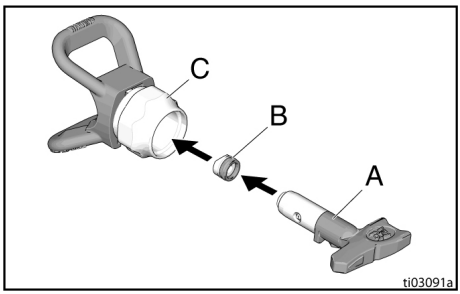
11. Inspect Airless Hose and hose connections for leaks. If leaks occur, perform **Pressure Relief Procedure**, page 12, then tighten all fittings and repeat **Startup** procedure. If there are no leaks, continue with **Operation**, page 19.

Operation

Spray Tip Installation

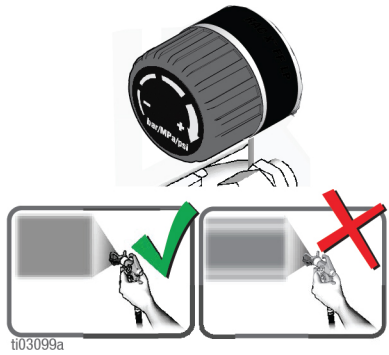
To avoid serious injury from skin injection, do not put your hand in front of the Spray Tip when installing or removing the Spray Tip and Spray Tip Guard.

1. Perform **Pressure Relief Procedure**, page 12.
2. Use Spray Tip (A) to insert OneSeal™ (B) into Tip Guard (C).
3. Insert Spray Tip.
4. Screw assembly onto gun. Tighten.



Spray

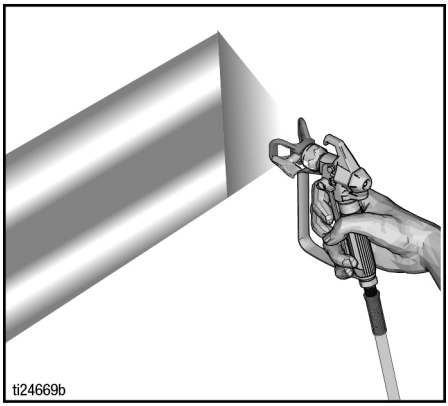
Spraying at a lower pressure results in less overspray and reduces spray tip wear. Adjust the sprayer pressure to minimize overspray.



Atomized, evenly distributed fan pattern

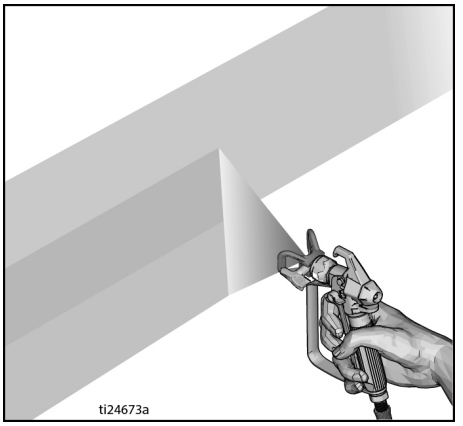
Tails

1. Spray test pattern. Adjust pressure to eliminate heavy edges.



2. Use smaller tip size if pressure adjustment cannot eliminate heavy edges.

3. Hold gun perpendicular, 10-12 in. (25-30 cm) from surface. Spray back and forth; overlap by 50%.

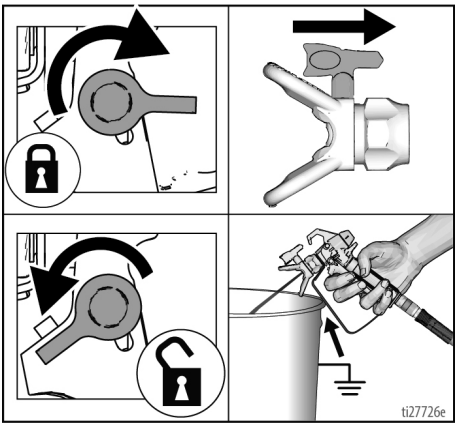


4. Trigger gun after moving. Release trigger before stopping. For additional spraying information, see separate gun manual.

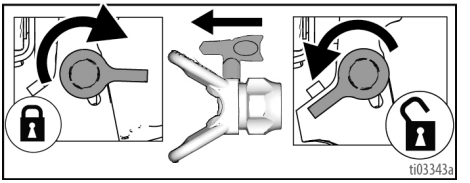
Clear Tip Clog

To avoid injury, never point gun at your hand or into a rag!

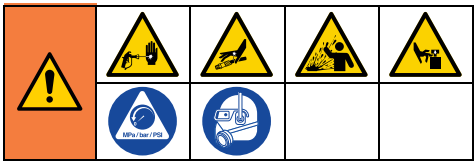
1. Release trigger. Engage trigger lock. Rotate Spray Tip. Disengage trigger lock. Trigger gun at waste area to clear clog.



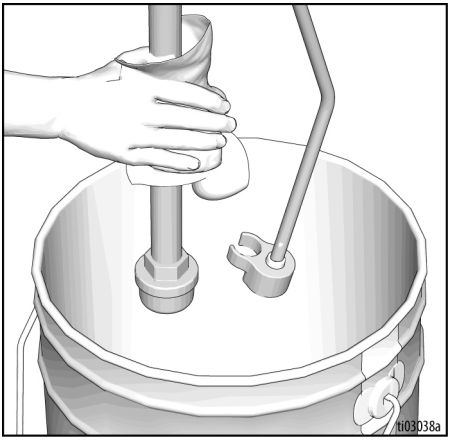
2. Engage trigger lock. Return Spray Tip to original position. Disengage trigger lock and spray.



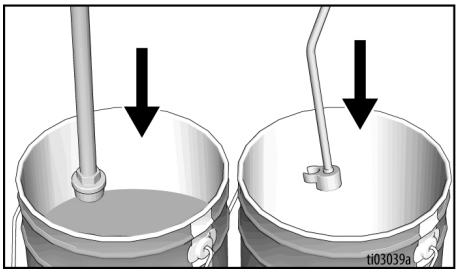
Cleanup



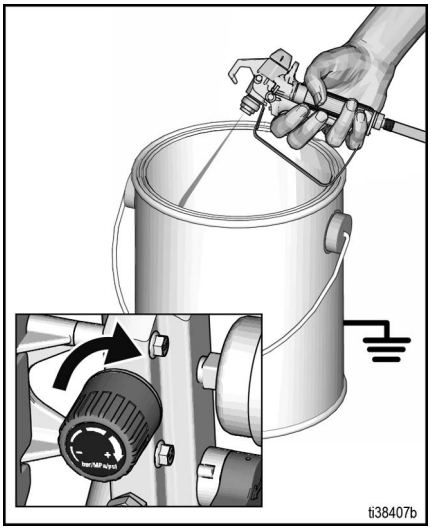
1. Perform **Pressure Relief Procedure**, page 12.
2. Remove tip guard and Spray Tip.
3. Remove fluid intake and drain tube from paint, wipe excess paint off outside.



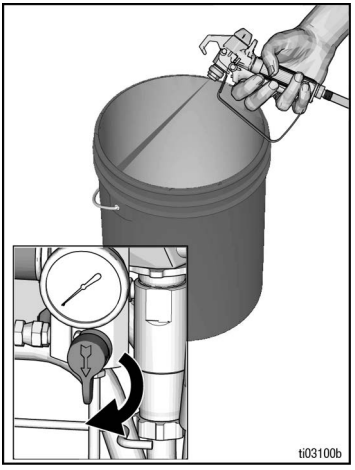
4. Place fluid intake in flushing fluid. Use water for water-based paint and non-flammable solvents for oil-based paint. Place drain tube in waste pail.



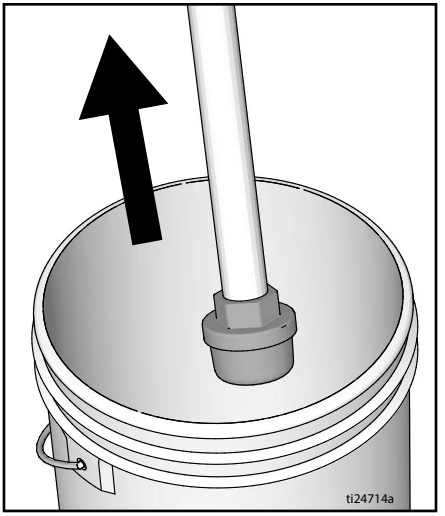
5. Turn prime valve to the spray position.
6. Increase pressure 1/2 turn to start motor. Hold gun against paint pail. Disengage trigger lock. Trigger gun and increase pressure until the pump runs steady and flushing fluid appears.



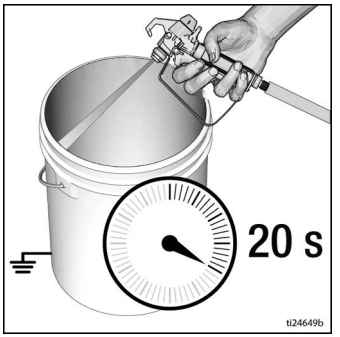
7. Stop triggering gun. Move gun to waste pail, hold gun against pail, trigger gun to thoroughly flush system.
8. While continuing to trigger gun, turn prime valve down to the prime position. Then, release gun trigger. Allow flushing fluid to circulate until fluid comes out of drain tube clear.

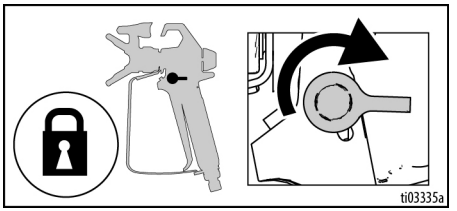


9. Raise fluid intake above flushing fluid.

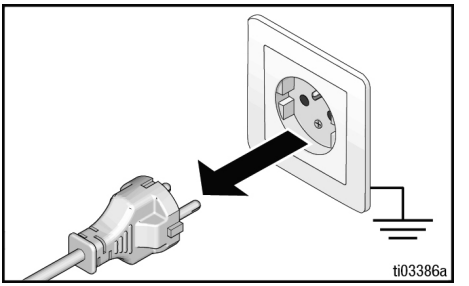


10. Turn prime valve forward to the spray position. Trigger gun into flushing pail for 20 seconds to purge fluid from hose.
11. Engage trigger lock.

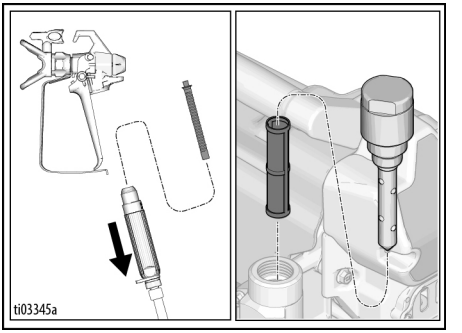




12. Turn pressure control knob to the lowest pressure setting and turn ON/OFF switch to **OFF** position. Disconnect power to sprayer.



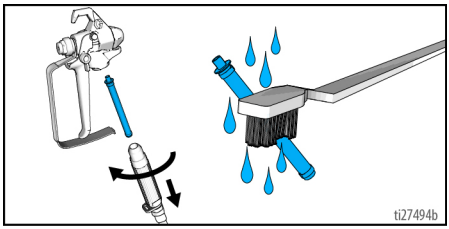
13. Remove filter from gun and sprayer if installed. Clean and inspect. Install Manifold Filter.



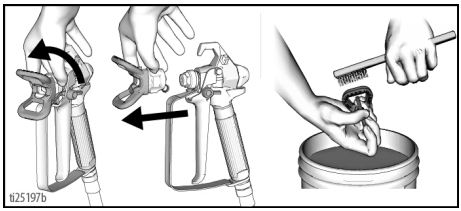
14. If flushing with water, flush again with pump flushing fluid to leave a protective coating to prevent freezing or corrosion.
15. Wipe sprayer, hose and gun with a rag soaked in water or non-flammable solvents.

Clean the Gun and Gun Filter

1. Perform the **Pressure Relief Procedure**, page 12.
2. Remove the gun handle by unscrewing the handle from the gun head.
3. Clean gun filter with water or flushing fluid and a brush every time you flush the system. Replace gun filter if damaged.



4. Remove Spray Tip Guard assembly and clean with water or flushing fluid and a brush.



5. See **Spray Tip Installation**, page 19 to properly reinstall Spray Tip Guard assembly.
6. Wipe paint off outside of gun using a soft cloth moistened with water or flushing fluid.

Maintenance

Routine maintenance is important to ensure proper operation of your sprayer. Maintenance includes performing routine actions which keep your sprayer in operation and prevents trouble in the future.

Activity	Interval
Inspect/clean sprayer filter, fluid inlet strainer, and gun filter.	Daily or each time you spray
Inspect motor shield vents for blockage.	Daily or each time you spray
Fill seal lubricant by adding through seal lubricant fill point.	Daily or each time you spray
Inspect motor brushes for wear. Brushes must be 1/2 in. (13mm) minimum length. NOTE: Brushes do not wear at the same rate on both sides of motor. Check both brushes.	Every 1000 gallons (3785 liters)
Check sprayer stall. With sprayer gun NOT triggered, sprayer motor should stall and not restart until gun is triggered again. If sprayer starts again with gun NOT triggered, inspect pump for internal/external leaks and check prime valve for leaks.	Every 1000 gallons (3785 liters)
Throat packing adjustment When pump packing begins to leak after extended use, tighten packing nut down until leakage stops or lessens. This allows approximately 100 gallons of additional operation before a repacking is required. Packing nut can be tightened without O-ring removal.	As necessary based on usage

Recycling and Disposal at End of Life

At the end of the product's useful life, dismantle and recycle it in a responsible manner.

Preparation:

- Perform the **Pressure Relief Procedure**, page 12.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.

Dismantle and recycle:

- Remove motors, circuit boards, displays, and other electronic components. Remove the coin-cell battery from the battery holder on the control board. Recycle according to applicable regulations.
- Do not dispose of electronic components with household or commercial waste.
- Deliver remaining product to a recycling facility.

Troubleshooting

Mechanical/Fluid Flow

1. Follow **Pressure Relief Procedure**, page 12, before checking or repairing.
2. Check all possible problems and causes before disassembling the unit.

Problem	What to Check If check is OK, go to next check	What to Do When check is not OK, refer to this column
Pump fluid output is low, poor spray pattern, or low fluid pressure	Spray tip worn.	Follow **Pressure Relief Procedure**, page 12, then replace tip.
	Spray tip clogged.	Relieve pressure. Check and clean spray tip.
	Paint supply.	Refill and reprime pump.
	Intake strainer clogged.	Remove and clean, then reinstall.
	Intake valve ball and piston ball are not seating properly.	Remove intake valve and clean. Check balls and seats for nicks; replace if necessary. Strain paint before using to remove particles that could clog pump.
	Fluid filter or tip filter is clogged or dirty.	Clean filter.
	Prime valve leaking.	Follow **Pressure Relief Procedure**, page 12, then repair prime valve.
	Verify pump does not continue to stroke when gun trigger is released. (Prime valve not leaking.)	Service pump.
	Leaking around throat packing nut which may indicate worn or damaged packings.	Replace packings. Also check piston valve seat for hardened paint or nicks and replace if necessary. Tighten packing nut/wet-cup.

Troubleshooting

Problem	What to Check If check is OK, go to next check	What to Do When check is not OK, refer to this column
Pump fluid output is low, poor spray pattern, or low fluid pressure	Pump rod damage.	Repair pump.
	Low stall pressure.	Turn pressure knob fully clockwise. Make sure pressure control knob is properly installed to allow full clockwise position. If problem persists, replace pressure control.
	Piston packings are worn or damaged.	Replace packings.
	O-ring in pump is worn or damaged.	Replace o-ring.
	Intake valve ball is packed with material.	Clean intake valve.
	Large pressure drop in hose with heavy materials.	Reduce overall length of hose.
	Check extension cord for correct size.	See **Extension Cords**, page 11.
	Loose motor brushes and terminals.	Tighten terminal screws. Replace brushes if leads are damaged.
	Worn motor brushes. (Brushes must be 1/2 in. [13mm] minimum length).	Replace brushes.
	Broken and misaligned motor brush springs. Rolled portion of spring must rest squarely on top of brush.	Replace spring if broken. Realign spring with brush.
	Motor brushes are binding in brush holders.	Clean brush holders, remove carbon dust with a small cleaning brush. Align brush lead with slot in brush holder to assure free vertical brush movement.
Motor runs but pump does not stroke	Connecting rod assembly damaged.	Replace connecting rod assembly.
	Gears or drive housing damaged.	Inspect drive housing assembly and gears for damage and replace if necessary.

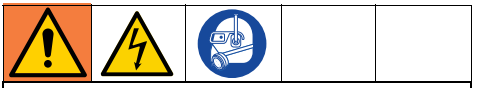
Problem	What to Check If check is OK, go to next check	What to Do When check is not OK, refer to this column
Excessive paint leakage into throat packing nut	Throat packing nut is loose.	Remove throat packing nut spacer. Tighten throat packing nut just enough to stop leakage.
	Throat packings are worn or damaged.	Replace packings.
	Displacement rod is worn or damaged.	Replace rod.
Fluid is spitting from gun	Air in pump or hose.	Check and tighten all fluid connections. Cycle pump as slowly as possible during priming.
	Spray tip is partially clogged.	Clear tip. See **Clear Tip Clog**, page 20.
	Fluid supply is low or empty.	Refill fluid supply. Prime pump. Check fluid supply often to prevent running pump dry.
Pump is difficult to prime	Air in pump or hose.	Check and tighten all fluid connections. Cycle pump as slowly as possible during priming.
	Intake valve is leaking.	Clean intake valve. Be sure ball seat is not nicked or worn and that ball seats well. Reassemble valve.
	Pump packings are worn.	Replace pump packings.
	Paint is too thick.	Thin the paint according to supplier recommendations.
Sprayer operates for 5 to 10 minutes then stops	Pump packing nut too tight. When pump packing nut is too tight the packings on the pump rod restrict pump action and overloads the motor.	Loosen pump packing nut. Check for leaks around throat. If necessary, replace pump packings.

Electrical

Symptom: Sprayer does not run, stops running, or will not shut off.

Perform **Pressure Relief Procedure**, page 12.

1. Plug sprayer into correct voltage, grounded outlet.
2. Turn the ON/OFF switch **OFF,** wait 30 seconds and then turn power back **ON** again (this ensures sprayer is in normal run mode).
3. Turn pressure control knob clockwise 1/2 turn.



To avoid electrical shock hazards when covers are removed for troubleshooting, wait 7 seconds after disconnecting power cord for stored electricity to dissipate.

Problem	What to Check	How to check
Sprayer does not run at all.	Check electrical supply.	Make certain that there is AC voltage. 210-255V for 230VAC models.
	Check pressure control connections.	Make certain connector is clean and firmly connected.
	Check pressure control.	Connect known good pressure control. If the motor runs, replace pressure control.
	Check replaceable fuse.	With sprayer unplugged (no power applied), make certain there is continuity through the fuse. If no continuity is present, replace with 250V, 10A slow acting fuse.
	Check motor leads.	Make certain terminals are clean and firmly connected.
Sprayer will not shut off after reaching or exceeding maximum pressure.	Check pressure control.	Disconnect pressure control. If sprayer still runs, replace control board. If the sprayer stops, replace pressure control.

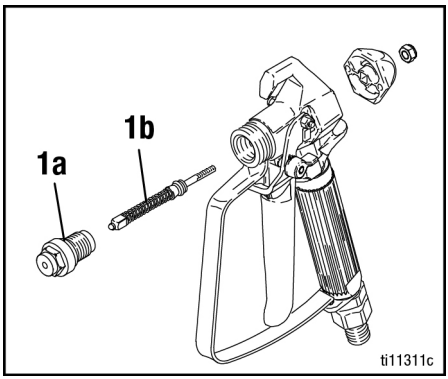
Problem	What to Check	How to check
Basic electrical problems	Motor leads are securely fastened and properly mated.	Replace loose terminals; crimp to leads. Be sure terminal are firmly connected. Clean circuit board terminals. Securely reconnect leads.
	For loose motor brush lead connections and terminals.	Tighten terminal screws. Replace brushes if leads are damaged.
	Brushes must be 1/2 in. [13mm] minimum. NOTE: Brushes do not wear at the same rate on both sides of motor. Check both brushes.	Replace brushes.
	Broken or misaligned motor brush springs. Rolled portion of spring must rest squarely on top of brush.	Replace spring if broken. Realign spring with brush.
	Motor brushes may be binding in brush holders.	Clean brush holders. Remove carbon with small cleaning brush. Align brush leads with slot in brush holder to assure free vertical brush movement.
	Motor armature commutator for burn spots, gouges or extreme roughness.	Remove motor and have motor shop resurface commutator if possible.
	Check motor rotation.	Perform a spin test by connection a 9-12 volt battery to the motor leads. Motor leads may vary in style and size. Locate the two wires going to the carbon brushes normally red and black. Motor should spin when battery is connected to the motor leads.
	Check motor thermal switch.	Motor should be at ambient temperature for this test. Connect the black leads from the thermal switch to an Ohm meter. Meter should indicate continuity.

Troubleshooting

Problem	What to Check	How to check
Basic electrical problems	Check motor armature resistance.	Connect the red and black leads from the motor to an Ohm meter. Rotate the motor while checking for opens. Meter should read 10-20 Ohms. If an open is found, replace the motor.
	Check motor for shorts.	Use an Ohm meter to check motor for shorts. Connect (-) meter lead to motor case. Move the (+) meter lead to each motor wire. Meter should read open all wires.

Repair

Replace Needle



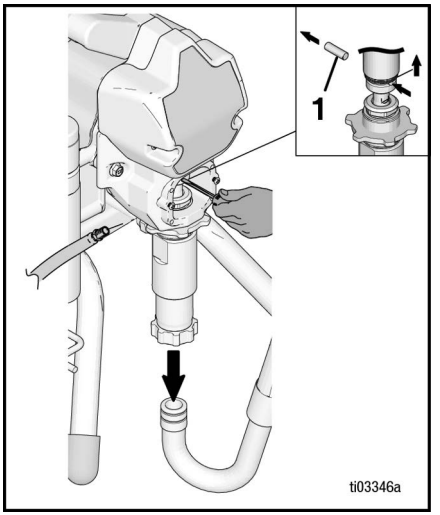
1. Perform the **Pressure Relief Procedure**, page 12.
2. Engage **Trigger Lock**, page 13.
3. Unscrew guard (1a) and remove. Remove tip (1b) from gun.
4. Disconnect fluid hose from gun at swivel.
5. Squeeze trigger while unscrewing diffuser.
6. Remove locknut and end cap.
7. Tap out needle.
8. Use a soft brush to clean out internal passages of gun.
9. Grease o-rings of new needle using a non-silicone grease.
10. Guide new needle (1b) through the front of the gun.
11. Install end cap and locknut, loosely.
12. Apply medium strength (blue) thread sealant to threads of needle housing.
13. Squeeze trigger while installing needle housing. Torque to 26-32 ft-lb. (35-43 N•m).
14. Hold gun with nozzle facing up.
15. Set trigger lock.
16. Turn locknut counterclockwise until you see and feel trigger raise slightly.
17. Turn locknut 3/4 turn counterclockwise.

NOTE: When needle is properly adjusted, trigger will move freely.

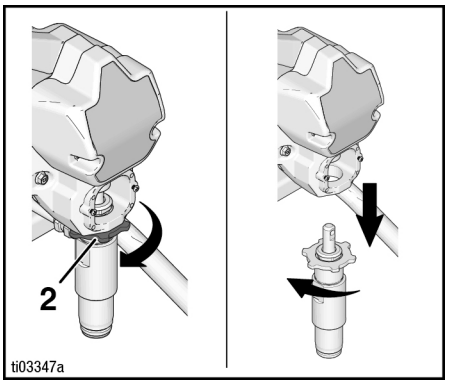
18. Connect fluid hose. Install tip and guard.
19. Prime sprayer. See **Startup**, page 17.
20. Trigger fun into bucket until fluid flows from gun.
21. Release trigger. Fluid flow should stop immediately.
22. Set trigger lock, see **Trigger Lock**, page 13.
23. Aim gun into bucket. Trigger gun. No fluid should flow.
24. If the gun fails this test, repeat steps 20 and/or 22, relieve pressure and disconnect hose. Readjust needle. Repeat tests.

Pump Removal

1. Perform the **Pressure Relief Procedure**, page 12.
2. Turn off and unplug the power cord.
3. Stop pump with piston rod in the lowest position.
4. If necessary, remove guard or pail hook to gain access to the pump.
5. Disconnect outlet hose and suction hose from pump.

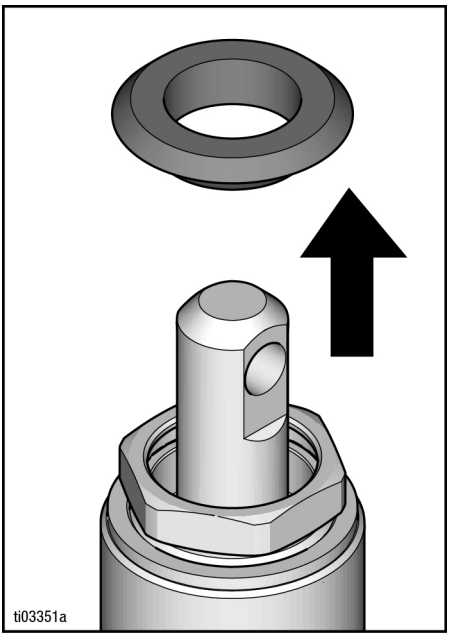


6. Use a screwdriver to push retaining spring up then push pump pin (1) out.
7. Loosen pump jam nut (2) by hitting firmly with a hammer. Unscrew pump.

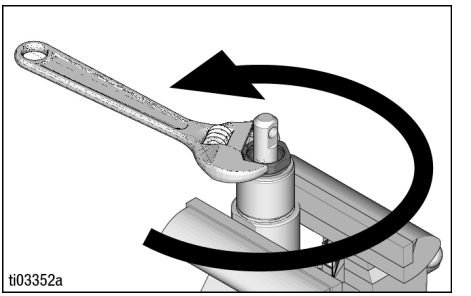


Disassemble Pump

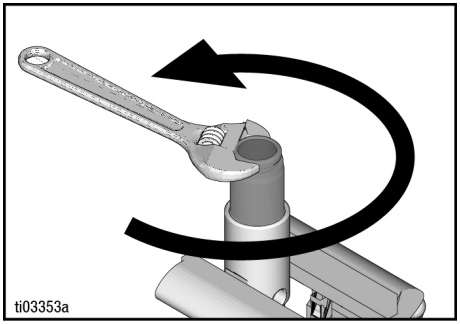
1. Pry the bottom plug off the top of the pump.



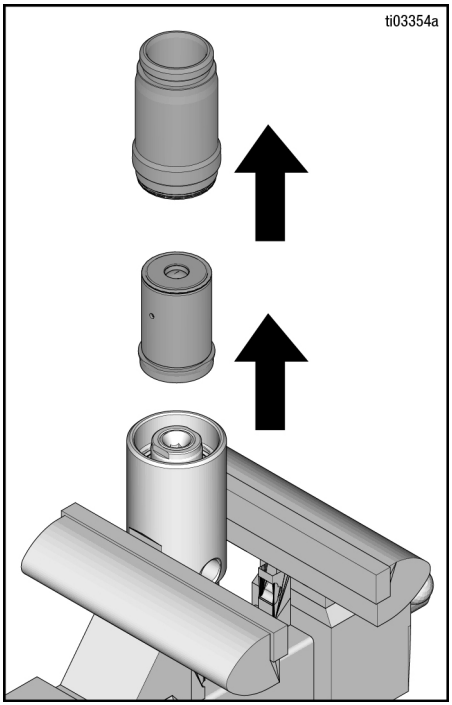
2. Unscrew packing nut from cylinder. Pump retaining nuts are not removable and not sold separately.



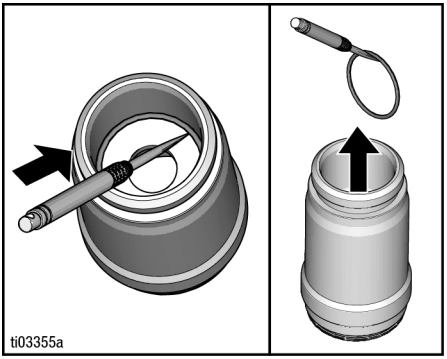
3. Unscrew cylinder from intake valve.



4. Disassemble intake valve. Clean and inspect.



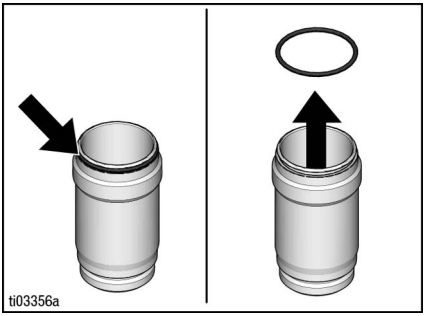
5. O-ring at the bottom may require a pick for removal.



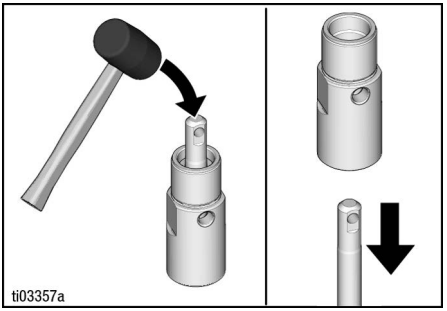
NOTICE

If using a pick to remove the o-ring, use care to avoid damage to the machined surfaces.

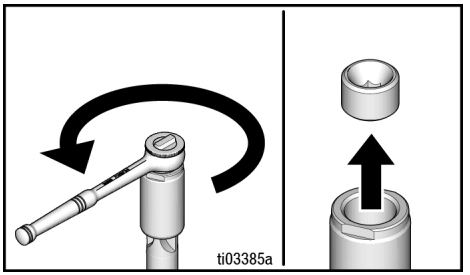
6. Remove the o-ring from the intake valve.



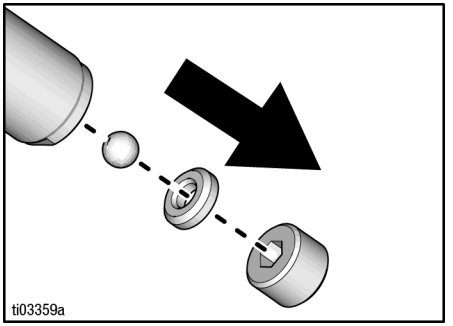
7. Tap piston rod out of cylinder with a soft hammer or flip over and tap piston rod out against a hard surface.



8. Inspect and clean parts.
9. Use a 1/4 in. hex driver to unscrew piston seat retainer from the piston.

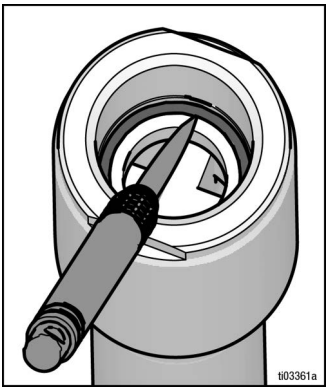


10. Remove, clean, and inspect ball and seat. Replace if necessary. O-ring at the bottom may require a pick for removal.

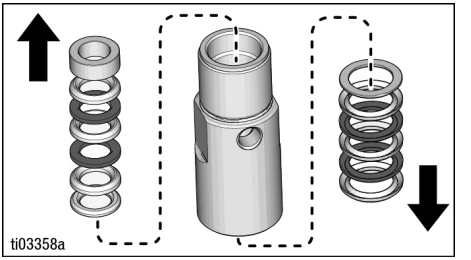


NOTICE

If using a pick to remove the o-ring, use care to avoid damage to the machined surfaces.

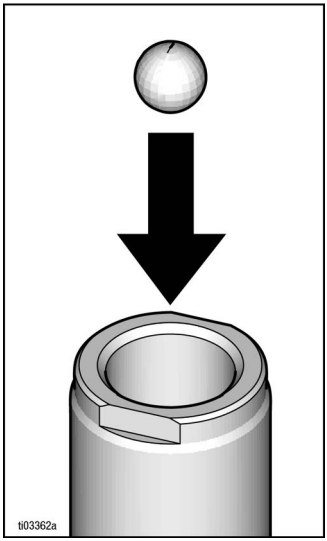


11. Remove and discard the upper throat packing and glands from the cylinder. Remove and discard the lower packing with glands from the cylinder.

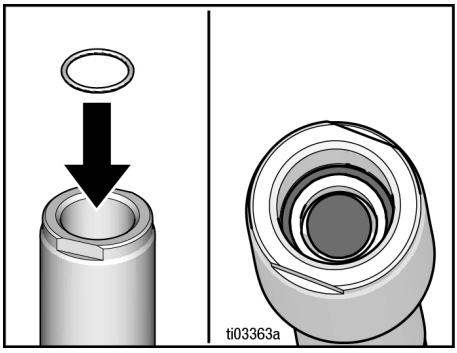


Assemble Pump

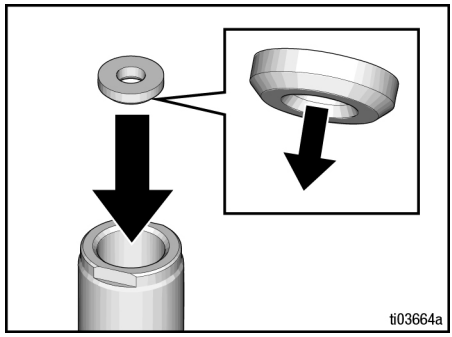
1. Soak leather packings in SAE 30W oil for one hour before assembly.
2. Install ball with new o-ring and seat in piston rod.
   a. Drop the ball into the piston.



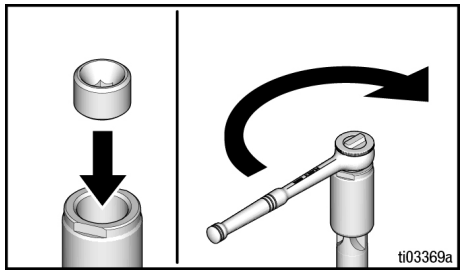
   b. Insert o-ring into piston body.



   c. Insert seat into piston. Make certain sear chamfer faces ball and o-ring.

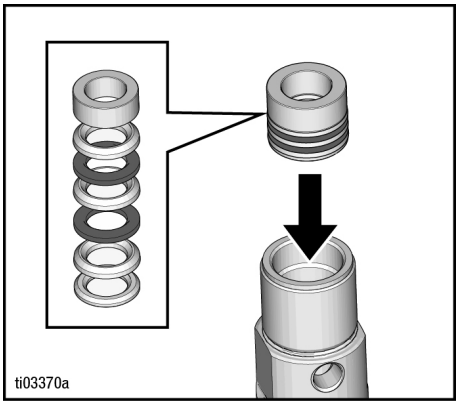


   d. Apply medium strength threadlocker to threads of seat retainer and install in piston. When thread sealant is applied to piston valve threads, ensure that none gets on the ball.

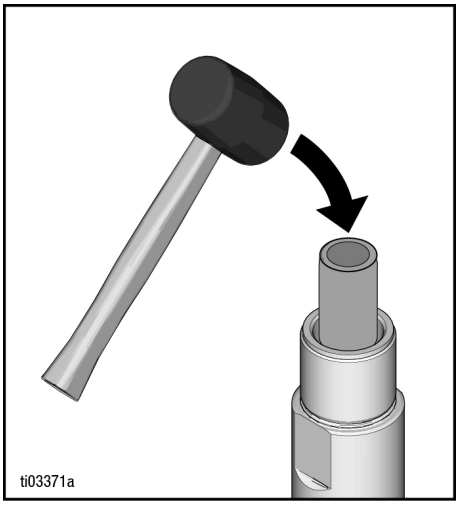


   e. Torque to 175 +/- 15 in-lbs. (20 +/- 2 N•m).

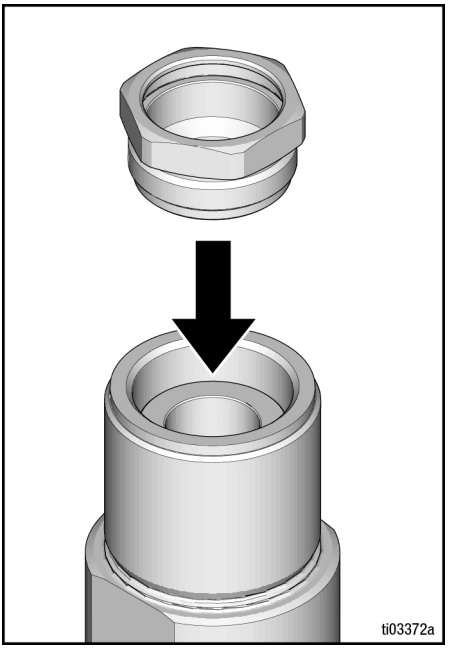
3. Assemble upper-throat packing stack. Use leather throat packing soaked earlier alternating with white C-packings. Install from the top of the cylinder (lips face in).



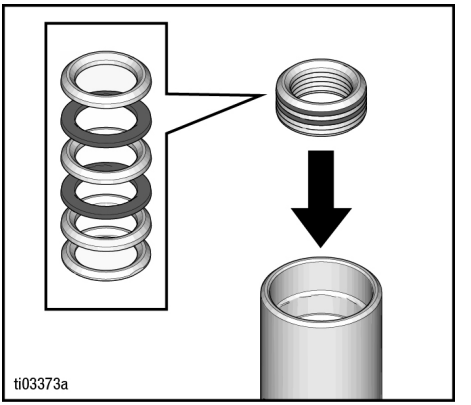
4. Using a hammer with a socket or round bar stock to tap upper throat packing into pump cylinder.



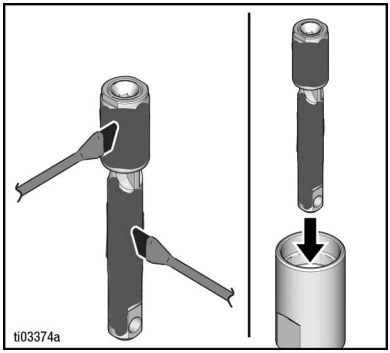
5. Loosely install packing nut into top of cylinder.

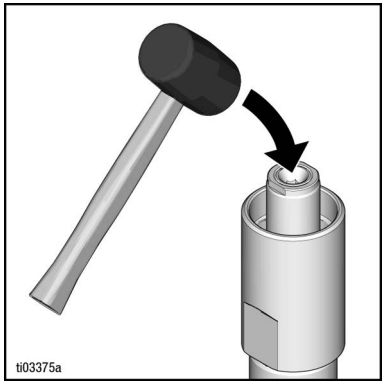


6. Assemble lower piston packing stack. Install from the bottom of the cylinder (lips face). Alternate white and brown V-packings.

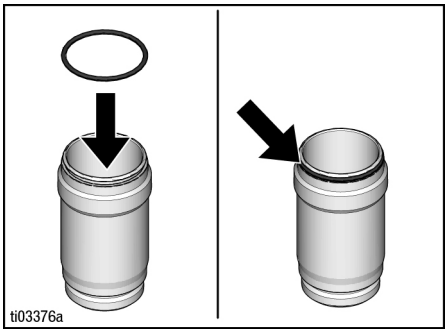


7. Grease both piston rod diameters that will through the packings. Gently guide displacement rod up through packings. Tap bottom of piston valve as necessary with a leather or plastic hammer.

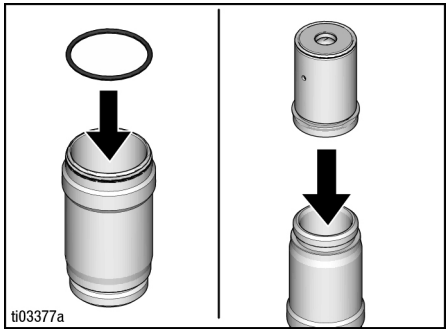




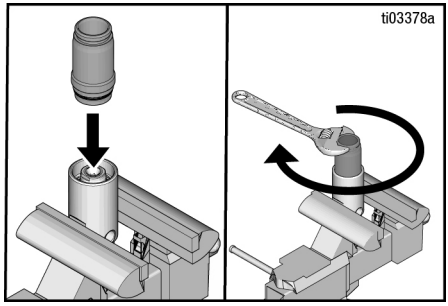
8. Grease o-ring and place on outside diameter ring groove of the intake valve housing.



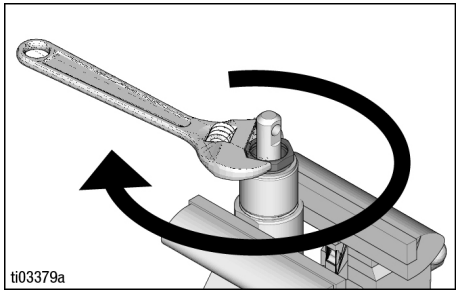
9. Reassemble intake valve placing a new o-ring inside the intake valve body.



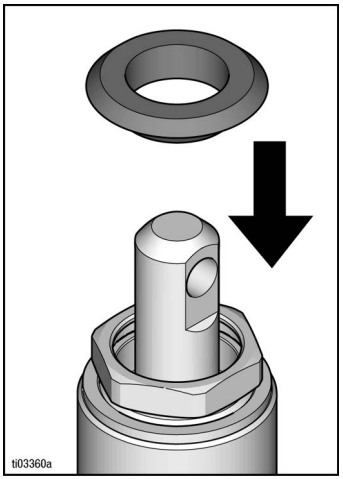
10. Apply medium strength threadlocker to threads. Thread housing into cylinder.
11. Torque to 140 +/- 10 in-lbs. (16 +/- 1 N•m) or additional 3/4 turn from hand tight.



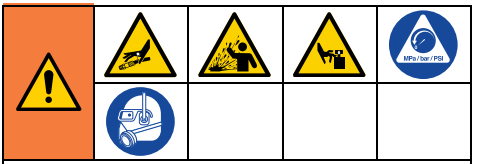
12. Tighten packing nut. Torque to 70 +/- 10 in-lbs. (8 +/- 1 N•m) or additional 1/2 turn from hand tight.



13. Install the bottom plug on the piston rod at the top of the pump.



Throat and Piston Packing Adjustment



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashed fluid and moving parts, follow the **Pressure Relief Procedure** whenever sprayer is stopped and before sprayer is cleaned or checked, and before equipment is serviced.

1. When pump packings begin to leak after much use, perform the **Pressure Relief Procedure**, page 12.
2. Turn sprayer OFF and unplug from power source.
3. Tighten packing nut and intake valve housing down an additional 1/2-1 turn. This should stop or lessen leakage. This allows approximately 50 gallons of additional operation before a repacking is required.

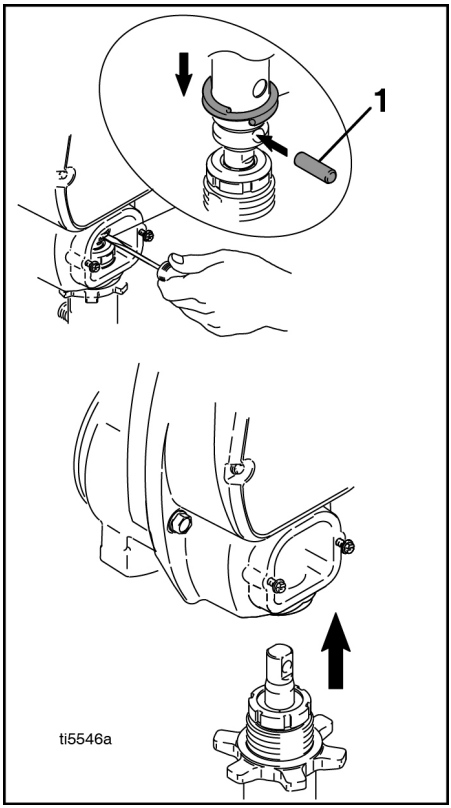
Pump Installation

If pump pin (1) works loose, parts could break off due to force of pumping action. Parts could project through air and result in serious injury or property damage. Make certain pin is properly installed.

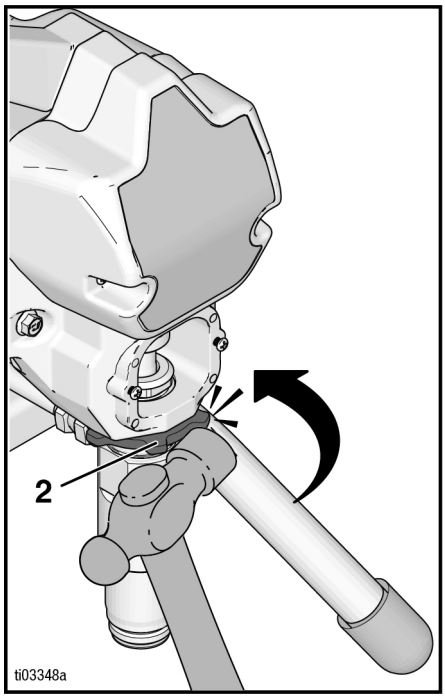
NOTICE

If pump jam nut (2) loosens during operation, the threads of the drive housing will be damaged.

1. Pull pump pin (1) out. Screw in pump until holes in connecting rod and piston rod align.

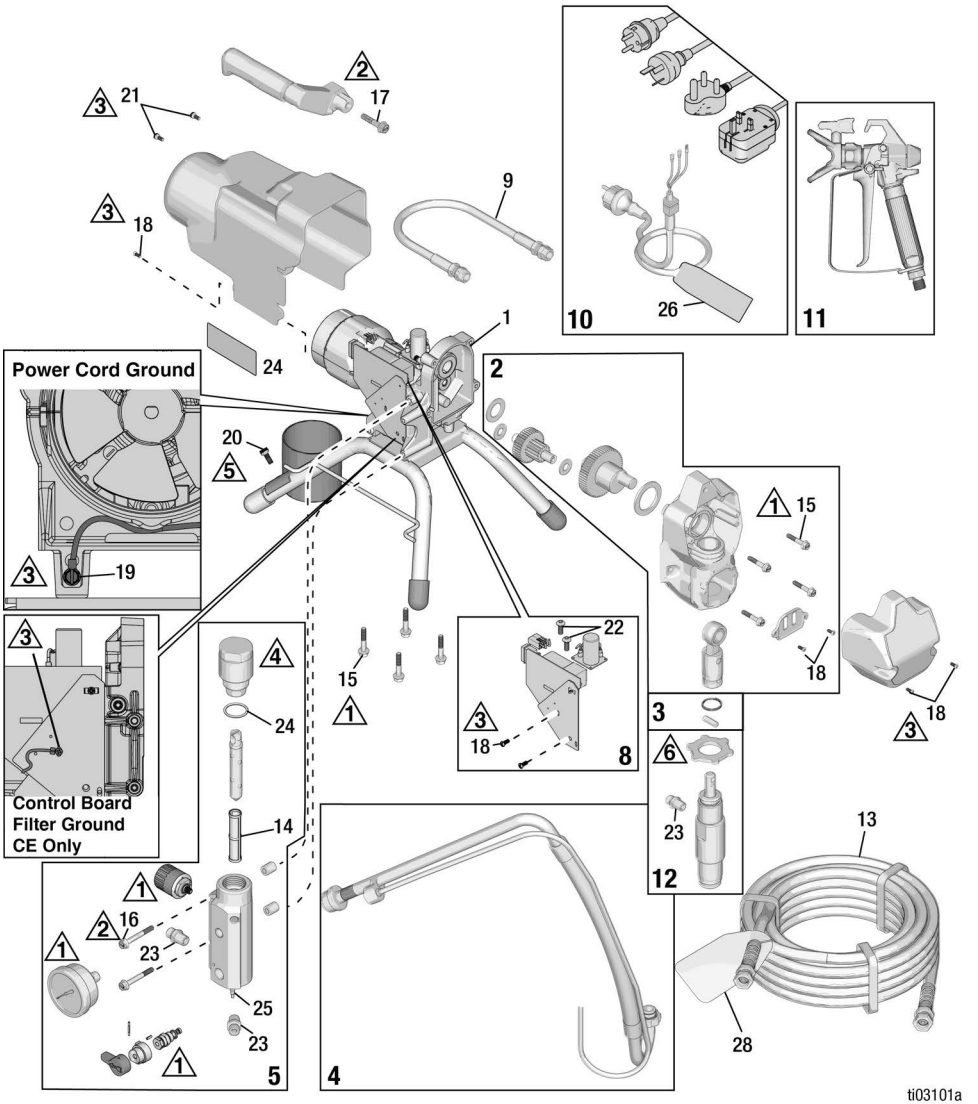


2. Push pump pin (1) into hole. Push retaining ring spring into groove all the way around connecting rod. If the retaining ring spring is not completely in the connecting rod groove, adjust the pump pin (1) until the spring is completely seated inside the groove.
3. Screw jam nut (2) onto pump until nut stops. Screw pump up into drive housing until top threads of pump are flush with drive housing face. Back off pump and jam nut to align pump outlet to side. Tighten jam nut by hand, then tap 1/8 to 1/4 turn with a hammer to approximately 75 +/- 5 ft-lbs. (102 N•m).



4. Connect outlet and suction hose to pump.

Parts



Ref.	Torque	Ref.	Torque
1	140-160 in-lb (15.8-18.1 N•m)	4	48-72 in-lb (5.4-8.1 N•m)
2	95-105 in-lb (10.7-11.9 N•m)	5	12-14 in-lb (1.4-1.6 N•m)
3	18-22 in-lb (2.0-2.5 N•m)	6	Hammer Tight

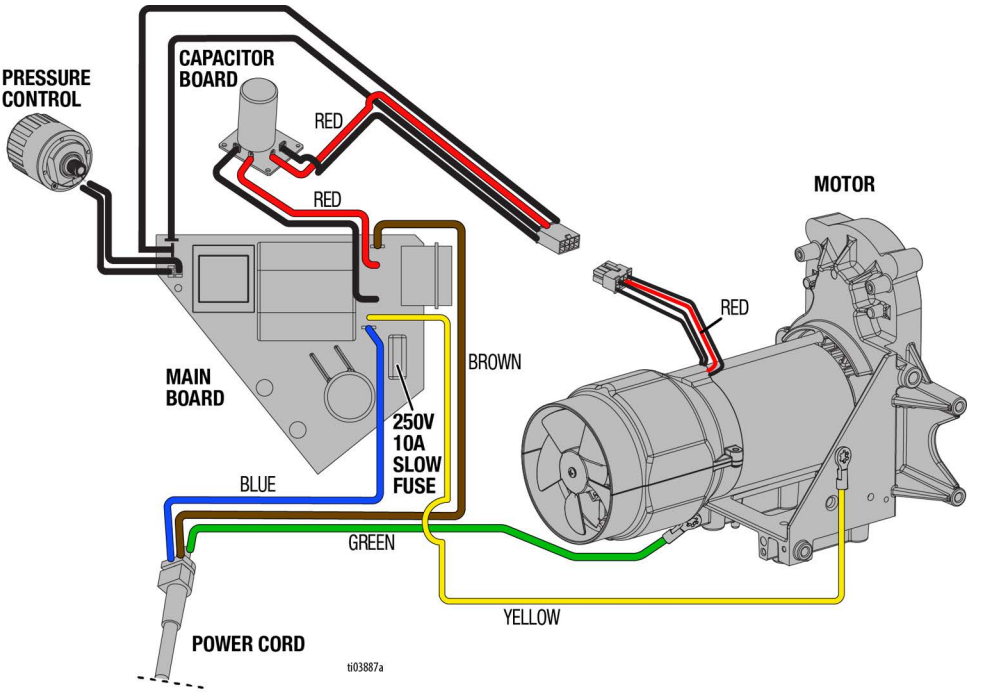
Parts List

Ref.	Part	Description	Qty.
1	GBM0401	KIT, 230V motor replacement	1
2	GBM0402	KIT, drive housing / gear / connection rod	1
3	GBM0403	KIT, retaining ring and pin	1
4	GBM0404	KIT, suction / drain hose	1
5	GBM0405	KIT, filter manifold	1
8*		KIT, 230V control and capacitor board assembly	1
	GBM0408	EU / Asia / ANZ	
	GBM0409	India	
9	GBM0410	KIT, pump hose	1
10		KIT, power cord,	1
	GBM0411	EMEA (CEE 7/7) and UK (BS-1363-5)	
	GBM0412	Asia / ANZ (Type I)	
	GBM0416	India (BS 546)	
11	GBM0413	KIT, spray gun	1
12	17J556	KIT, pump	1
12a	17K690	KIT, pump packing repair (throat/rod)	1
12b	17K693	KIT, piston pump repair	1
12c*	17K986	KIT, guide, ball	
13	GBM0414	KIT, hose, paint, 1/4 in. x 15m	1
14		FILTER, fluid	1
	246425	30 mesh (gray)	
	246384	60 mesh, original (black)	
	246382	100 mesh (blue)	
	246383	200 mesh (red)	
15		SCREW, M6-1.0 x 35mm hex, flange hd.	
16		SCREW, M6-1.0 x 50mm hex, flange hd.	
17		SCREW, M8-1.25 x 40mm hex, flange hd.	
18		SCREW, M4-0.7 x 10mm pan hd.	
19		SCREW, M4-0.7 x 8mm hex flange hd.	
20		SCREW, M5-0.8 x 16mm socket hd.	
21		SCREW, M5-0.8 x 10mm socket hd.	
22		SCREW, M3.5-0.7 x 8mm pan hd.	
23		FITTING, 1/4 in. NPT x 1/4 in. NPSM	
24		PACKING, PTFE, O-ring	
25		FITTING, 1/8 in., NPT x 1/4 ID barbed	
26▲	GBM0507	LABEL, electrical warning	
	GBM0502	LABEL, warning, EMEA / UK	
	GBM0516	LABEL, warning, Asia / ANZ	
	GBM0515	LABEL, warning, India	
27▲		CARD, medical alert	
	GBM0503	Dutch / German / Italian	
	GBM0504	English / Spanish / Portuguese	
	GBM0506	English / French / Spanish	
	GBM0511	English / Chinese / Korean	
	GBM0512	English / Indonesian / Hindi	
28▲	2008775	LABEL, warning, hose tag	

▲ *Replacement safety labels, tags, and cards are available at no cost from your distributor.*

* *Includes 250V/10A slow acting fuse.*

Wiring Diagram



Technical Specifications

Sprayer	Metric
Maximum fluid working pressure	207 bar, 20.7 MPa
Maximum Delivery	1.8 lpm
Maximum Tip Size	0.021
Fluid Outlet	1/4 in. npsm
Cycles	185 per liter
Generator Minimum	3000 W
220–240V, A, Hz	1Ø, 8, 50/60
Dimensions	
Height	47 cm
Length	40.6 cm
Width	35.6 cm
Weight	15.4 kg
Noise**	
Sound pressure	90 dBa
Sound power	100 dBa
Materials of Construction	
Wetted materials on all models	Zinc- and nickel-plated carbon steel, nylon, stainless steel, PTFE, Acetal, leather, UHMWPE, aluminum, tungsten carbide, polyethylene, fluoroelastomer, urethane
Notes	
*** Sound pressure measured 3 feet (1 meter) from equipment.* *Sound power measured per ISO-3744.*	

DuroPro Warranty

DuraPro warrants all equipment referenced below in this document which is marketed by DuraPro and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. DuraPro will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by DuraPro to be defective. This warranty applies only to the original purchaser and only when the equipment is installed, operated and maintained in accordance with DuraPro's written instructions. Proof of purchase is required to file a warranty claim.

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

This warranty is conditioned upon the return of the equipment claimed to be defective to an authorized DuraPro distributor for verification of the claimed defect. If the claimed defect is verified, DuraPro will repair or replace free of charge any defective parts. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will not be covered by DuraPro.

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.

DuraPro'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.

DURAPRO 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 DURAPRO.

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Original instructions. This manual contains English. MM 3B0396

Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

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