

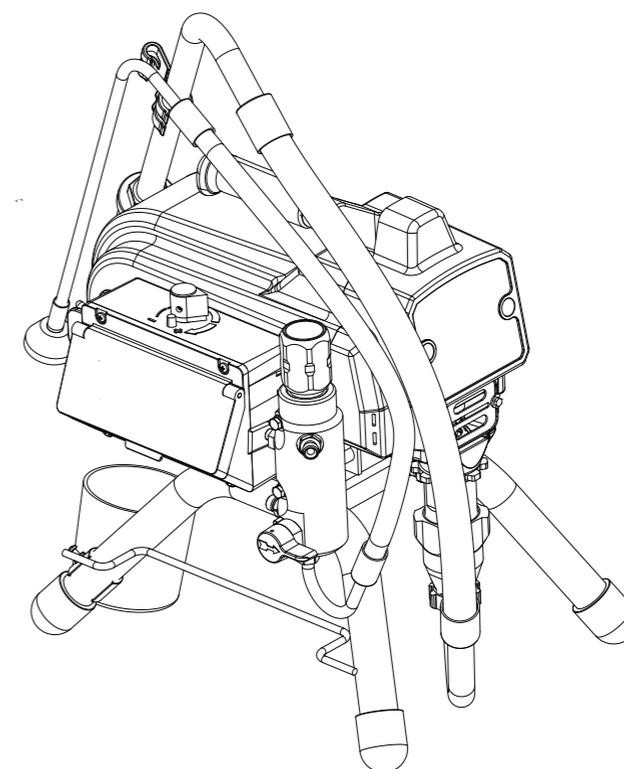
# User Manual

EP 205/210/230/270/310/7240/7240-2  
A1/A2/A3

## Electric Airless Sprayer



**Important Safety Instructions.** Read all warnings and instructions in this manual. Save these instructions.



HVBAN<sup>®</sup>

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# Warnings

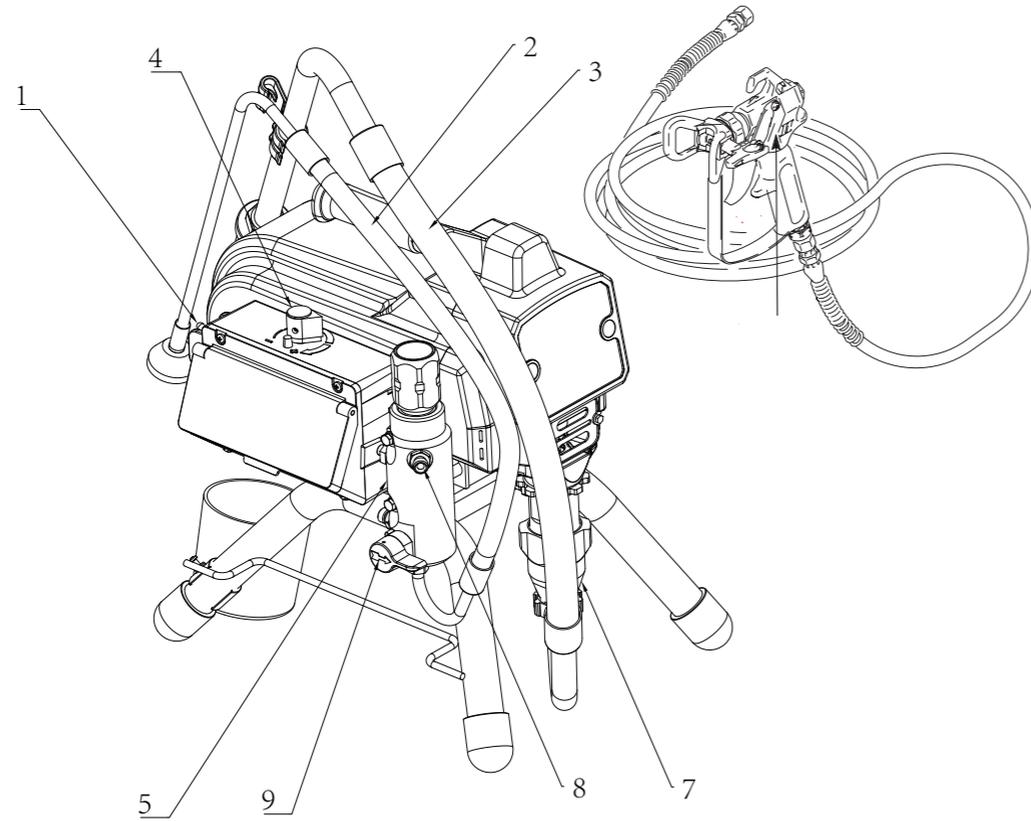
The following are general warnings related to the setup, use, grounding, maintenance, and repair of this equipment. Additional, more specific warnings may be found throughout the body of this manual where applicable. Symbols appearing in the body of the manual refer to these general warnings. When these symbols appear throughout the manual, refer back to these pages for a description of the specific hazard.

 <b>WARNING</b>	
	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well ventilated area.</li> <li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).</li> <li>• Sprayer generates sparks. When flammable liquid is used in or near the sprayer or for flushing or cleaning, keep sprayer at least 20 feet (6 m) away from explosive vapors.</li> <li>• Keep work area free of debris, including solvent, rags, and gasoline.</li> <li>• Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.</li> <li>• Ground equipment and conductive objects in work area. Read <b>Grounding</b> instructions.</li> <li>• If there is static sparking or you feel a shock, <b>stop operation immediately</b>. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a fire extinguisher in the work area.</li> </ul>
	<p><b>ELECTRIC SHOCK HAZARD</b></p> <p>Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power cord before servicing equipment.</li> <li>• Use only grounded electrical outlets.</li> <li>• Use only 3-wire extension cords.</li> <li>• Ensure ground prongs are intact on sprayer and extension cords.</li> <li>• Do not expose to rain. Store indoors.</li> </ul>
	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not point gun at anyone or at any part of the body.</li> <li>• Do not put your hand over the spray tip.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Engage trigger lock when not spraying.</li> <li>• Follow <b>Pressure Relief Procedure</b> in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.</li> </ul>

	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. Read <b>Technical Data</b> in all equipment manuals.</li> <li>• Use fluids and solvents that are compatible with equipment wetted parts. Read <b>Technical Data</b> in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately.</li> <li>• Do not alter or modify equipment.</li> <li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not kink or overbend hoses or use hoses to pull equipment.</li> <li>• Comply with all applicable safety regulations.</li> <li>• Keep children and animals away from work area.</li> <li>• Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li> </ul>
	<p><b>PRESSURIZED ALUMINUM PARTS HAZARD</b></p> <p>Do not use 1,1,1-trichloroethane, methylene chloride, and/or other halogenated hydrocarbon solvents or fluids containing such solvents in pressurized aluminum equipment. Such use can cause serious chemical reaction and equipment rupture, and result in death, serious injury, and/or property damage.</p>
	<p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> <li>• Read MSDS's to know the specific hazards of the fluids you are using.</li> <li>• Store hazardous fluid in approved containers and dispose of it according to applicable guidelines.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes, but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eye wear</li> <li>• Clothing and respirator as recommended by the fluid and solvent manufacturer</li> <li>• Gloves</li> <li>• Hearing protection</li> </ul>

# Component Identification

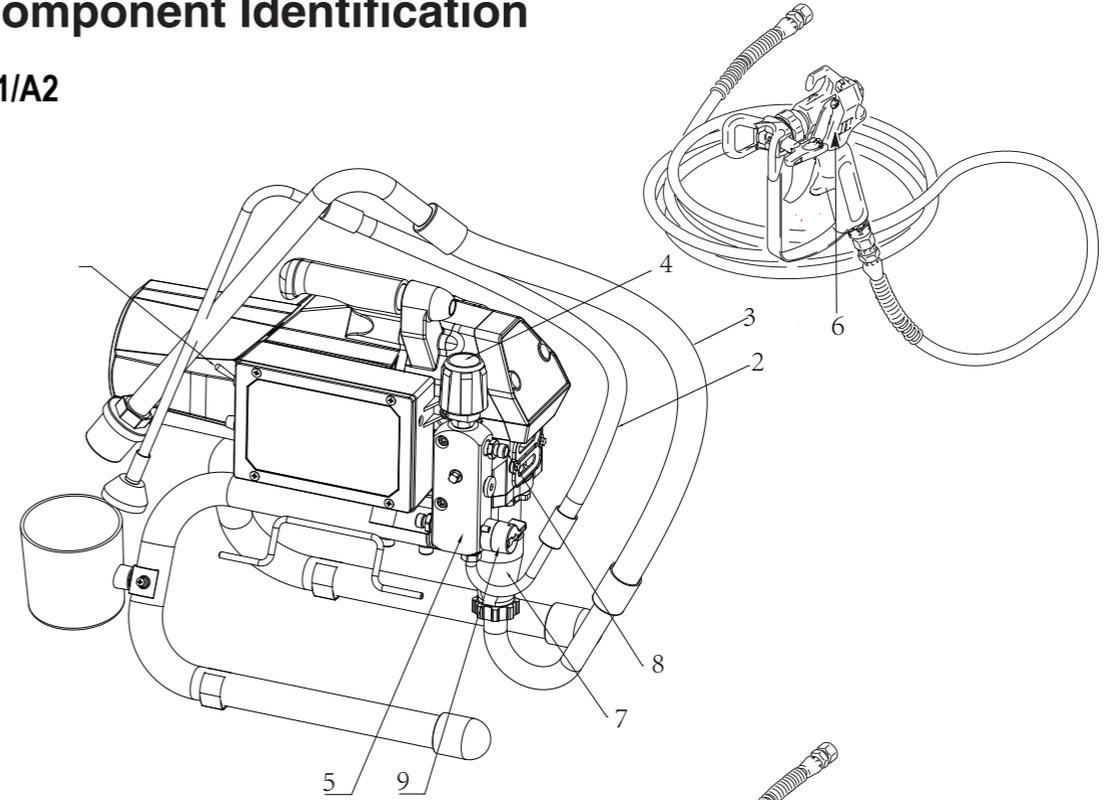
EP 230/270/310



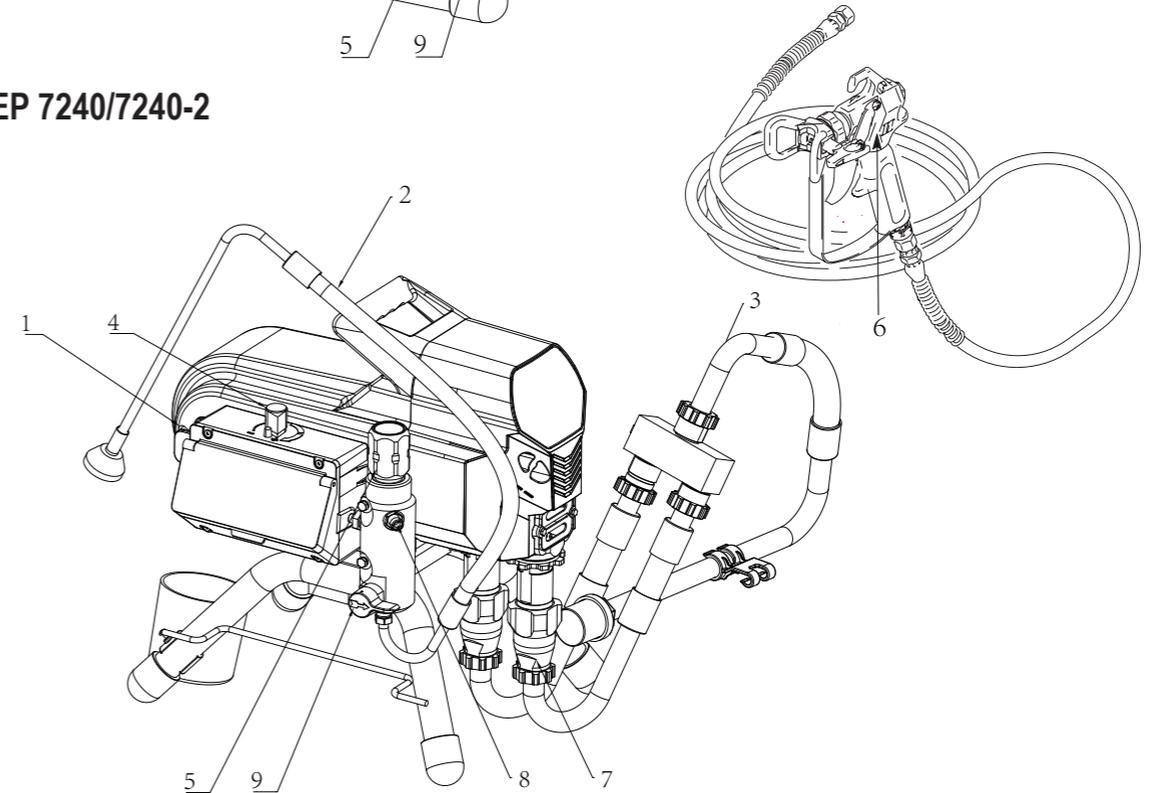
FN	Component
1	ON/OFF switch
2	Prime tube
3	Suction tube
4	Pressure control knob
5	Manifold
6	Trigger lock
7	Pump
8	Fluid Outlet
9	Prime valve

# Component Identification

A1/A2

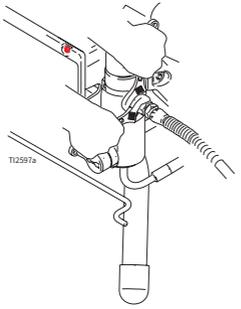
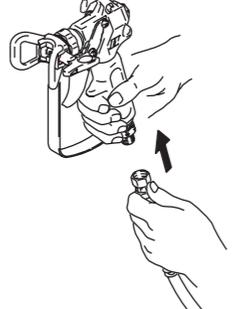
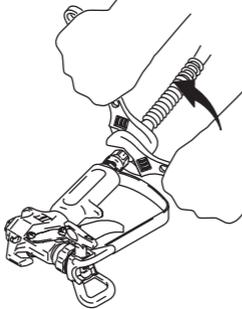
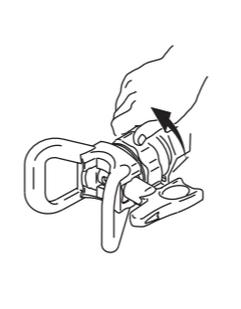
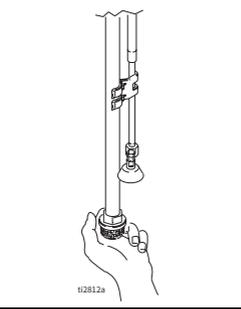
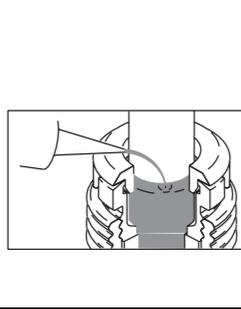
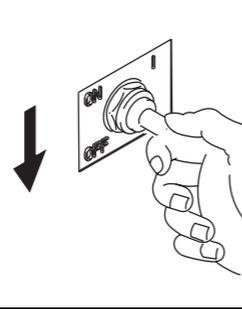
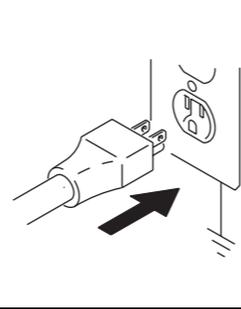
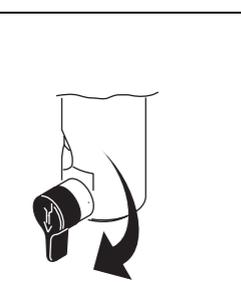
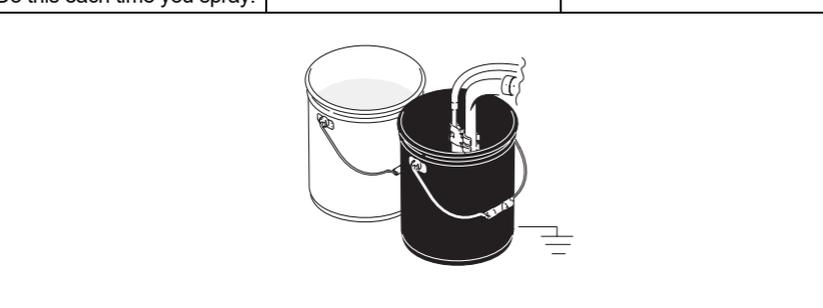


EP 7240/7240-2

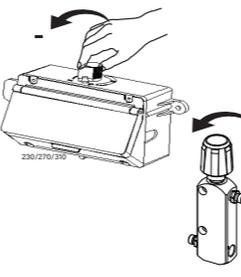
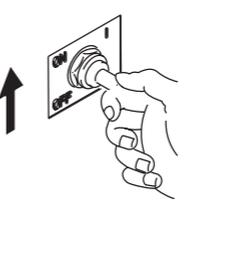
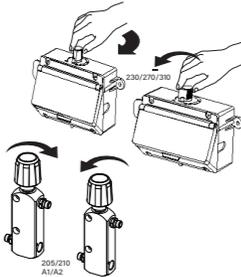
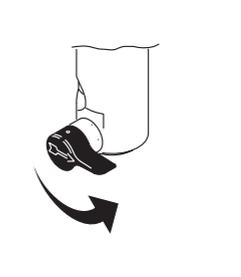
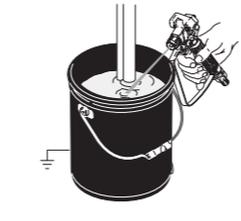
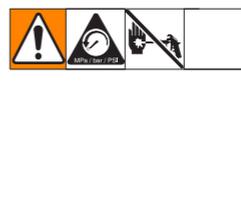
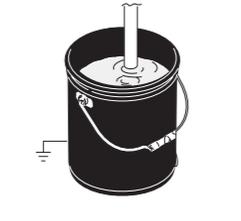
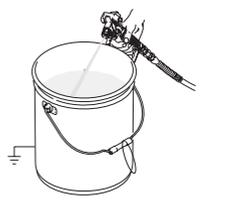


# Setup/Installation

Your sprayer model may be slightly different in appearance from the picture.

			
1. Connect HVBAN airless hose to sprayer. Tighten securely.	2. Connect other end of hose to gun.	3. Tighten securely.	4. Remove tip guard.
			
5. Check inlet strainer for clogs and debris.	6. Fill throat packing nut with TSL to prevent premature packing wear. Do this each time you spray.	7. Turn power OFF.	8. Plug power supply cord into a properly grounded electrical outlet.
			
9. Turn prime valve down.	10. Place siphon tube set in grounded metal pail partially filled with flushing fluid. Attach ground wire to pail and to true earth ground. Do 1.-5. of Startup to flush out storage oil shipped in sprayer. Use water to flush water-base paint and mineral spirits to flush oil-base paint and storage oil.		

# Startup

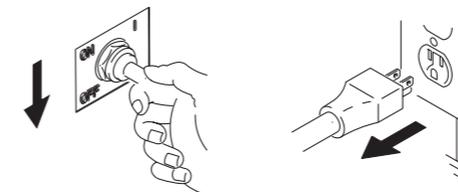
			
1. Turn pressure control to lowest pressure.	2. Turn power ON.	3. Increase pressure to start motor and allow fluid to circulate through drain tube for 15 seconds; turn pressure down.	4. Turn prime valve horizontal. Take spray gun trigger safety OFF.
			
5. Hold gun against grounded metal flushing pail. Trigger the gun and turn the pressure control to 1/2. Flush 1 minute.	Inspect for leaks. Do not stop leaks with hand or a rag! If leaks occur, do Pressure Relief. Tighten fittings. Do Startup, 1.-5. If no leaks, proceed to 6.	6. Place siphon tube in paint pail.	7. Trigger gun again into flushing pail until paint appears. Move gun to paint pail and trigger for 20 seconds. Set gun safety ON. Assemble tip and guard.

# Pressure Relife Procedure

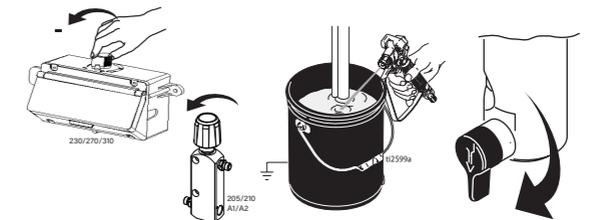
To reduce risk of injury from injection, follow this procedure whenever you are instructed to relieve pressure, stop spraying, service equipment or install or clean spray tip. Read warnings.



1. Turn power switch OFF and unplug power cord.



2. Turn pressure to lowest setting. Hold gun to side of grounded metal flushing bucket. Trigger gun to relieve pressure, turn prime valve down.

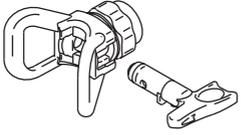
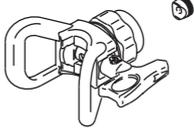
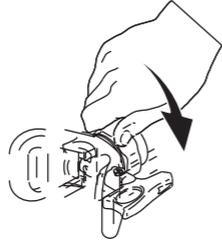


3. Engage gun trigger lock if unit is being shut down or left unattended.

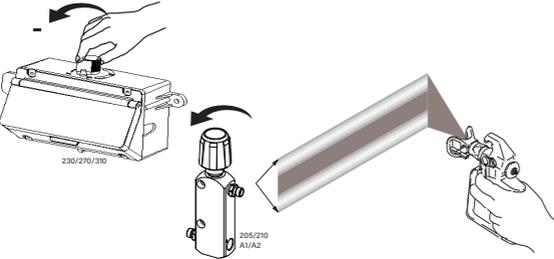
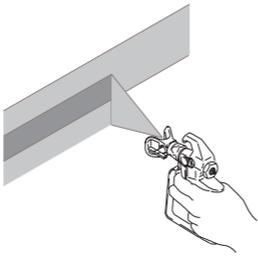
Leave Spray-Prime/Drain valve in the PRIME/DRAIN position until you are ready to spray again.

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

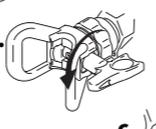
## Tip and Tip Guard

			
1. Insert Switch Tip.	2. Insert metal seal and One Seal.	3. Screw assembly onto gun. Tighten.	

## Spray

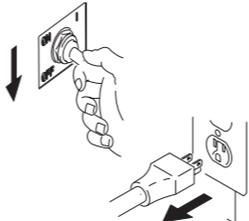
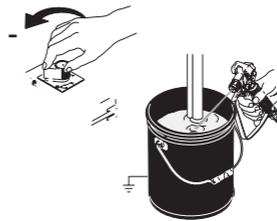
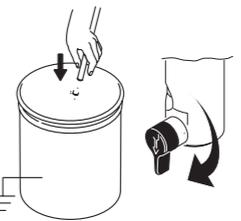
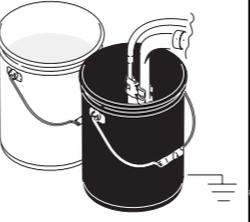
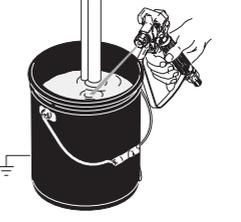
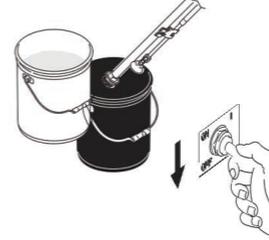
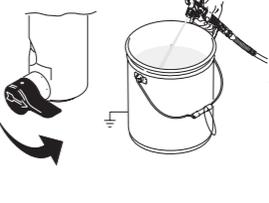
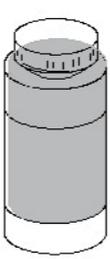
	
1. Spray test pattern. First adjust pressure to the lowest, then increase pressure gradually until fine pattern appears without heavy edges. Use smaller tip size if pressure adjustment can not eliminate heavy edges.	2. Hold gun perpendicular 25-30cm from surface. Spray back and forth. Overlap by 50%. To avoid thick spots, before trigger gun, move gun back and forth. Before stopping spray, continue to trigger gun back and forth for some seconds after releasing.

## Clear Clog

					
					
1. Release trigger, put safety ON. Rotate Switch Tip. Take safety OFF. Trigger gun to clear clog. Never point gun at your hand or into a rag!			2. Put safety ON. Return Switch Tip to original position. Take safety OFF and continue spraying.		

## Cleanup



			
1. Turn power down and unplug sprayer.	2. Adjust to the lowest pressure. Trigger spray gun and relieve the pressure.	3. Put the drain tube into the pail. Turn prime valve down.	4. Take the guard and tip off.
			
5. Remove siphon tube set from paint and place in flushing fluid. Use water for water-base paint and mineral spirits for oil-base paint.	6. Turn power on. Turn prime valve horizontal.	7. Increase pressure to 1/2. Hold gun against paint pail. Take trigger safety OFF. Trigger gun until flushing fluid appears.	8. Move gun to wastepail, hold gun against pail, trigger gun to thoroughly flush and put trigger safety ON.
			
9. Rotate the pressure relief valve downwards, then Rinse the solution and cycle for 1 to 2 minutes Cleaning.	10. Raise siphon tube above flushing fluid and run sprayer for 15 to 30 seconds to drain fluid.	11. Close drain valve. Trigger gun into flushing pail to purge fluid from hose.	12. Open prime valve.
			
13. Remove filters from gun and sprayer, if installed. Clean and inspect. Install filters.	14. If flushing with water, flush again with mineral spirits, or Pump Armor, to leave a protective coating to prevent freezing or corrosion.	15. Wipe sprayer, hose and gun with a rag soaked in water or mineral spirits.	

## General Repair Information

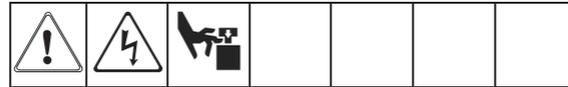


Flammable materials spilled on hot, bare motor could cause fire or explosion. To reduce risk of burns, fire or explosion, do not operate sprayer with cover removed.

### CAUTION

To reduce risk of pressure control malfunction:

- Use needle nose pliers to disconnect wire. Never pull on wire, pull on connector.
- Mate wire connectors properly. Center flat blade of insulated male connector in female connector.
- Route wires carefully to avoid interference with other connections or pressure control. Do not pinch wires between cover and control box.
- Keep all screws, nuts, washers, gaskets, and electrical fittings removed during repair procedures. These parts usually are not provided with replacement kits.
- Test repairs after problems are corrected.
- If sprayer does not operate properly, review repair procedure to verify you did it correctly. See **Troubleshooting**
- Install motor shroud before operation of sprayer and replace if damaged. Motor shroud directs cooling air around motor to prevent overheating. It can reduce risk of burns, fire or explosion, or cut fingers.



To reduce risk of serious injury, including electric shock:

- Do not touch moving or electric parts with fingers or tools while testing repair.
- Unplug sprayer when power is not required for testing.
- Install all covers, gaskets, screws and washers before you operate sprayer.

### CAUTION

- Do not run sprayer dry for more than 30 seconds. Doing so could damage pump packings.
- Protect the internal drive parts of this sprayer from water. Openings in the cover allow for air cooling of the mechanical parts and electronics inside. If water gets in these openings, the sprayer could malfunction or be permanently damaged.
- Prevent pump corrosion and damage from freezing. Never leave water or water-base paint in sprayer when its not in use in cold weather. Freezing fluids can seriously damage sprayer. Store sprayer with Pump Armor to protect sprayer during storage.

## Troubleshooting



Type of Problem	What to Check (if check is OK, go to next)	What to Do (When check is not OK, refer to this column)
Basic fluid pressure problems	Pressure control knob setting. Motor will not run if at minimum setting (fully counter-clockwise).	Slowly increase pressure to see if motor starts.
	Spray tip or fluid filter may be clogged.	Relieve pressure, page 6 and clear clog, or clean filter; refer to separate gun or tip instruction manual.
Basic Mechanical Problems	Pump frozen or paint hardened in pump.	Thaw sprayer if water or water-based paint has frozen in sprayer. Place sprayer in warm area to thaw. Do not start sprayer until thawed completely. If paint hardened (dried) in sprayer, replace pump packings. See page 12, <b>Displacement Pump Replacement</b> .
	Displacement pump connecting rod pin must be completely pushed into connecting rod and retaining spring must be firmly in groove of pump pin. See page 12.	Push pin into place and secure with spring retainer.
	Motor. Remove drive housing assembly. See page 14. Try to rotate fan by hand.	Replace motor if fan won't turn. See page 17.
	Control board. Board shuts down and displays error code. (not for A1/A2)	See <b>Motor Control Board Diagnostics</b> , page 19.
Basic Electrical Problems	Extension cord. Check extension cord continuity with volt meter.	Replace extension cord.
	Sprayer power supply cord. Inspect for damage such as insulation or wires.	Replace power supply cord.
	Motor leads are securely fastened and properly mated.	Replace loose terminals; crimp to leads. Be sure terminals are firmly connected. Clean circuit board terminals. Securely reconnect leads.
Low Output capacity	Check for spray tip wear..	Pressure Relife Procedure on page 6. Then replace the spray tip..
	Check if the voltage is too low.	Using the correct voltage.
	Inspect the inlet and outlet valves for wear.	Replace the inlet or outlet valves. Refer to page 12 for piston pump replacement.
	Check if the pump stops running after releasing the trigger of the spray gun.	Perform maintenance on the pump. Refer to page 12.
	Filter clogging.	Pressure Relife Procedure on page 6. Inspect and clean the filter.
	Prime valve leaking.	Pressure Relife Procedure on page 6. Repair the prime valve.
	Suction tube tangled and/or connections loose.	Correct tangled suction tube and/or tighten all loose connections.
	Size and length of extended cable: Must be at least 3.5mm wire gauge and no longer than 91 meters.	Switch to a correctly sized, grounded extended cable.
	Check for damage to the leads from the motor to the pressure control circuit board, or any loose wiring or connectors. Inspect wire insulation and terminals for signs of overheating.	Ensure the terminal plugs are inserted correctly and securely into the terminal sockets. Replace any loose terminal plugs or damaged wires. Reconnect the terminal plugs securely.
	Low stall pressure.	Do either or both: <ol style="list-style-type: none"> <li>Turn pressure control knob fully clockwise. Make sure pressure control knob is properly instacked to allow full clockwise position.</li> <li>Try a new transducer.</li> </ol>

Type of Problem	What to Check (if check is OK, go to next)	What to Do (When check is not OK, refer to this column)
Motor runs and pump strokes	Low paint supply.	Refill and reprime pump.
	Suction strainer clogged.	Remove and clean, then reinstall.
	Suction tube or fittings loose.	Tighten; use thread sealant or sealing tape on thread if necessary.
	See if intake valve ball and piston ball are placed properly. Check whether the ball and valve are pasted. See pump manual.	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. See pump manual.
	Leaking around throat packing nut which may indicate worn or damaged packings. See pump manual.	Replace packings. Also check piston valve seat for hardened paint or nicks and replace if necessary. Tighten packing nut/wet-cup. See pump manual.
Pump rod damage.	Replace pump, page 12.	
Motor runs but pump does not stroke	Displacement pump pin damaged or missing.	Replace pump pin if missing. Be sure retainer spring is fully in groove all around connecting rod, page 12.
	Connecting rod assembly damaged.	Replace connecting rod assembly. See pump manual.
	Gears or drive housing, page 14.	Inspect drive housing assembly and gears for damage and replace if necessary, page 14.
Motor is hot and runs intermittently	Determine if sprayer was operated at high pressure with small tips, which causes low motor RPM and excessive heat buildup.	Decrease pressure setting or increase tip size.
	Be sure ambient temperature where the sprayer is located does not exceed 90 °F (32.22 °C) and sprayer is not located in direct sunlight.	Move sprayer to shaded, cooler area if possible.
Building circuit breaker opens as sprayer switch is turned on  <b>CAUTION</b> Any short in any part of the motor power circuit will cause the control circuit to inhibit sprayer operation. Correctly diagnose and repair all shorts before checking and replacing control board.	Check all electrical connections for insulation damage, loose connections, or damage to terminals. Also, inspect the wiring between the pressure controller and the electric motor.	Repair or replace any damaged wiring or terminals. Securely reconnect all wires.
	For missing inspection plate gasket, bent terminal forks or other metal to metal contact points which cause a short.	Correct faulty conditions.
	Motor control board by performing control board diagnostics. See page 19. If diagnostics indicate, substitute with a good board. (not for A1/A2)  <b>CAUTION:</b> Do not perform this check until motor armature is determined to be good. A bad motor armature can burn out a good board.	Replace with a new pressure control board.
Building circuit breaker opens as soon as sprayer is plugged into outlet and sprayer is NOT turned on.	Basic Electric Problems, page 9 of <b>Troubleshooting</b>	Electrician checks electrical circuit.
	ON/OFF switch. <b>Be sure sprayer is unplugged!</b> Disconnect wires from switch. Check switch with ohmmeter. Reading must be infinity with ON/OFF switch OFF, and zero when switch is ON.	Replace ON/OFF switch.
	Check the wiring on the pressure controller for damage or pinching.	Replace damaged parts.

## Displacement Pump Replacement

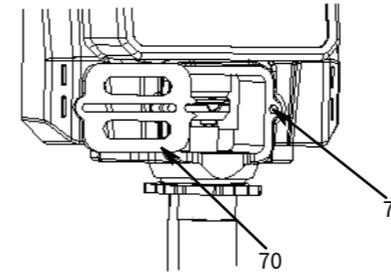
See manual for pump repair instructions.

### Removal

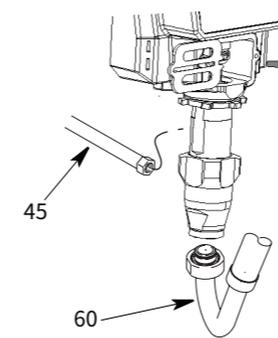


Relieve pressure, page 6.

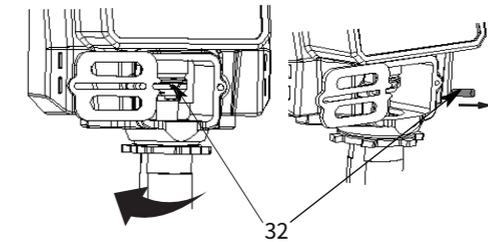
1. Loosen (73) and rotate cover (70).



2. Remove suction tube (60) and hose (45).

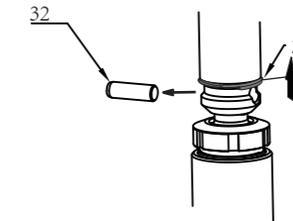


3. Cycle motor until pump pin (32) is in position to be removed.

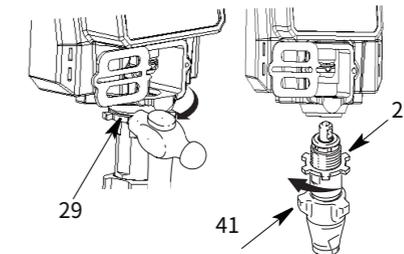


4. Disconnect power cord from outlet.

5. Using a flat screwdriver, push retaining spring (31) up. Push out pump pin (32).



6. Loosen pump jam nut (29). Unscrew and remove pump (41).



## Installation

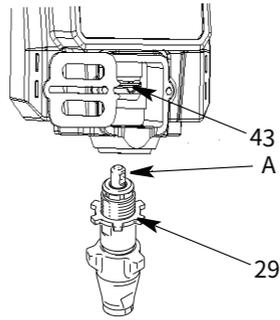
### WARNING

If pump pin works loose, parts could break off due to force of pump operation. Parts could shoot onto air and result in serious injury or property damage.

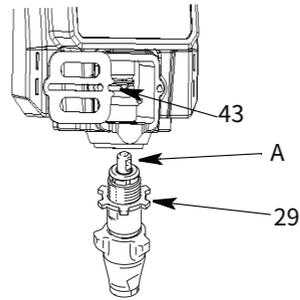
### CAUTION

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

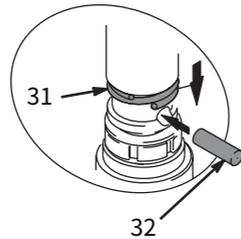
1. Extend pump piston rod full. Apply grease to top of pump rod at (A) or inside connecting rod (43). Install jam nut (29) on pump threads.



2. Install pump rod (A) into connecting rod (43).

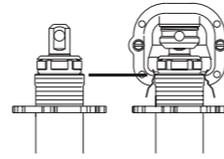


3. Install pump pin (32). Slide retainer spring (31) down into groove and cover pump pin.

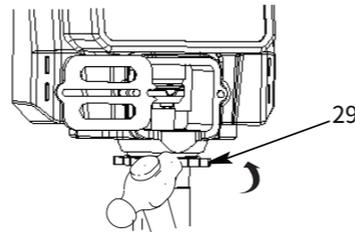


4. Push pump (41) up until pump threads engage.

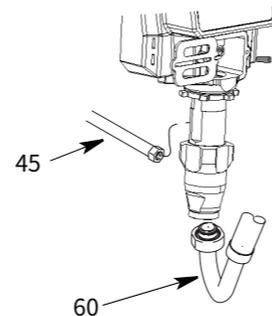
5. Screw the pump in until the end of pump thread is close to the bottom of pump housing.



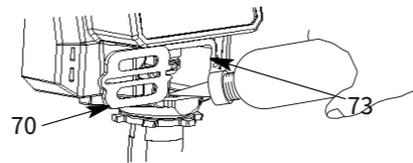
6. Align pump outlet to painting short hose nut.
7. Turn jam nut (29) counter-clockwise until it stops. Tighten jam nut by hand, then tap with a 20 oz (maximum) hammer from 1/8 to 1/4, torque force approximately 75ft-lb (102N•m).



8. Install suction tube (60) and high pressure hose (45). Tighten fittings.



9. Fill packing nut with (TSL) until fluid flows onto top of seal.



10. Rotate cover (70). Tighten screws (73).

## Drive Housing Replacement

### EP 230/270/310

### CAUTION

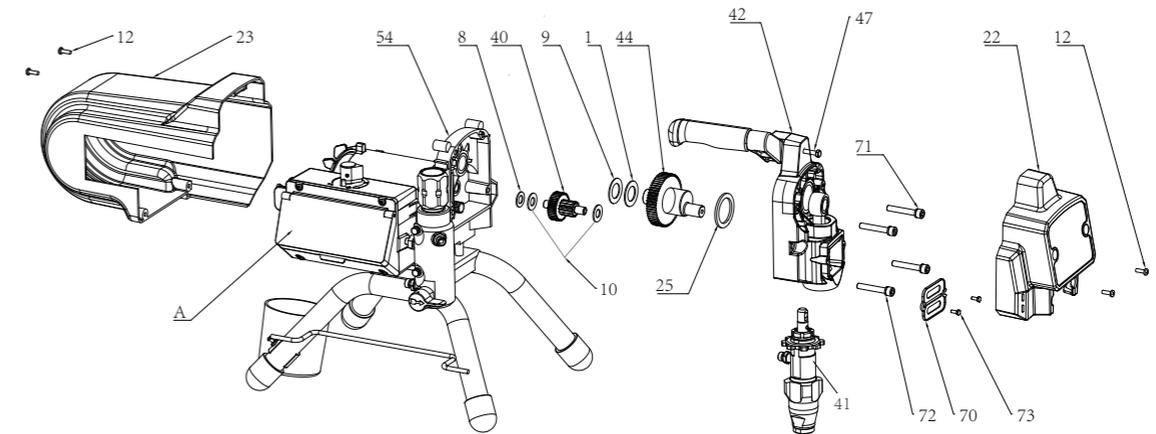
When disassembling the drive housing (42), take care to prevent the gear cluster (44) and (40) falling off. The gear cluster can be kept inside the motor housing (54) or the drive housing.

### Removal



Relieve pressure, page 6.

1. Disconnect the power cord from the socket.
2. Remove screws (73) and pump rod cover (70).
3. Uninstall the pump (41), as detailed in the **Displacement Pump Replacement** on page 12.
4. Remove screws (12) from the shroud (23).
5. Remove screws (12) from the front cover (22).
6. Remove screws (47, 71, 80).
7. Pull the drive housing (42) out of the motor Base (54).
8. Remove the gear cluster (44) and (40) and thrust washers (1, 8, 9, 10, 25) from the drive housing (42).



### Installation

1. Apply a heavy coat of grease to the surfaces of the gears and needle bearings.
2. Install washers (8, 10) on the back of gear (40). Insert the gear into the motor base and apply grease for retention.
3. Install washers (1, 9) on the back of gear (44). Insert into the motor base (54).
4. Install thrust washer (25) onto gear (44). Place washer (10) onto the front of gear (40).

5. Insert the gear crankshaft (44) into the needle bearings of the drive housing and into the bearing holes of the connecting rod (43). Then, push the drive housing (42) into the motor base (54) to close.
6. Install screws (47, 71, 80).
7. Install the housing cover (23) and screws (12).
8. Install the front cover (22) and screws (12).
9. Install the pump (41), as detailed in the **Displacement Pump Replacement** on page 12.
10. Secure the pump rod cover (70) with screws (73).

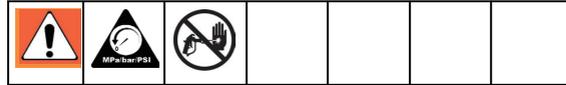
# Drive Housing Replacemnt

EP 205/210 A1/A2

## CAUTION

When disassembling the drive housing (42), take care to prevent the gear cluster (44) and (40) from falling off. The gear cluster can be kept inside the motor housing (54) or within the drive housing itself.

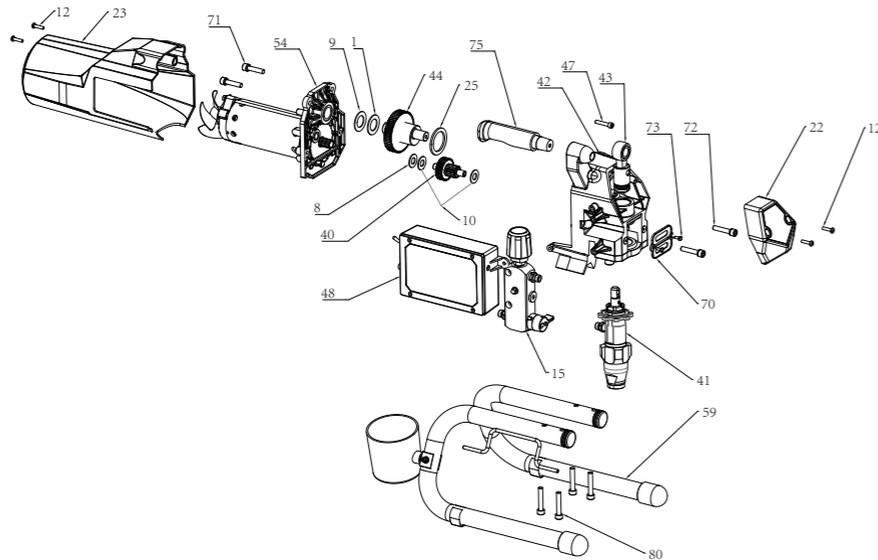
## Removal



### Relieve pressure, page 6.

1. Disconnect the power cord from the socket.
2. Remove screws (73) and pump rod cover (70).
3. Remove pump (41), refer to page 12 for **Displacement Pump Replacement**.

4. Unscrew screws (12) from the housing cover (23).
5. Unscrew screws (12) from the front cover (22).
6. Remove screws (71, 72).
7. Pull the drive housing (42) out of the motor base (54), along with the washers (9, 1, 8, 25, 10) and gears (44, 40).
8. Unscrew bolt (47) and pull out the handle (75).
9. Pull the connecting rod (43) out of the piston hole in the drive housing (42).
10. Disconnect the wiring between the motor and the control box (48), unscrew the fixed control box (48), and remove it along with the filter (15) by unscrewing their bolts.
11. Unscrew the bolts (80) securing the frame (59) to complete the disassembly of the drive housing (42).



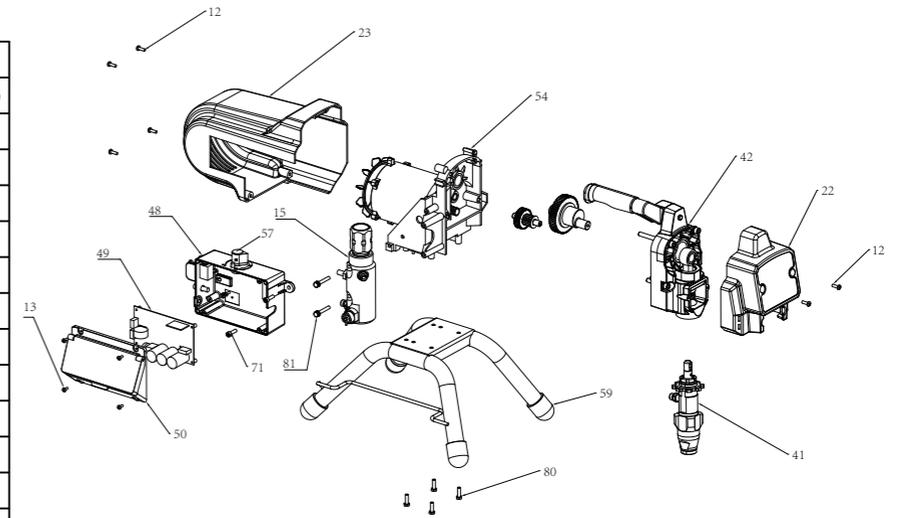
## Installation

1. Align the holes of the frame (59) with the holes of the replaced drive housing (42), insert bolt (80) into the drive housing (42), and tighten.
2. Insert the handle (75) into the hole of the drive housing (42), screw in bolt (47), and tighten.
3. Install washers (9, 1, 25) onto gear (44), washers (8, 10) onto gear (40); insert the connecting rod (43) into the piston hole of the drive housing (42), then insert gear shaft (44) into the needle bearing of the drive housing (42) and the bearing hole of the connecting rod (43), and then place gear (40) into the drive housing (42).
4. Close the motor base (54) with the drive housing (42), screw in bolts (71, 72), and tighten.
5. Align the holes of the control box (48) and filter (15) with the holes of the drive housing (42), insert bolts and tighten.
6. Install the pump (41), refer to page 12 for Installing the Piston Pump.
7. Align the holes of the pump rod cover (70) with the holes of the drive housing (42), insert bolts (73), and tighten.
8. Align the holes of the front cover (22) with the holes of the drive housing (42), insert bolts (12), and tighten.
9. Align the holes of the housing cover (23) with the holes of the motor base (54), insert bolts (12), and tighten to complete the installation of the drive housing.

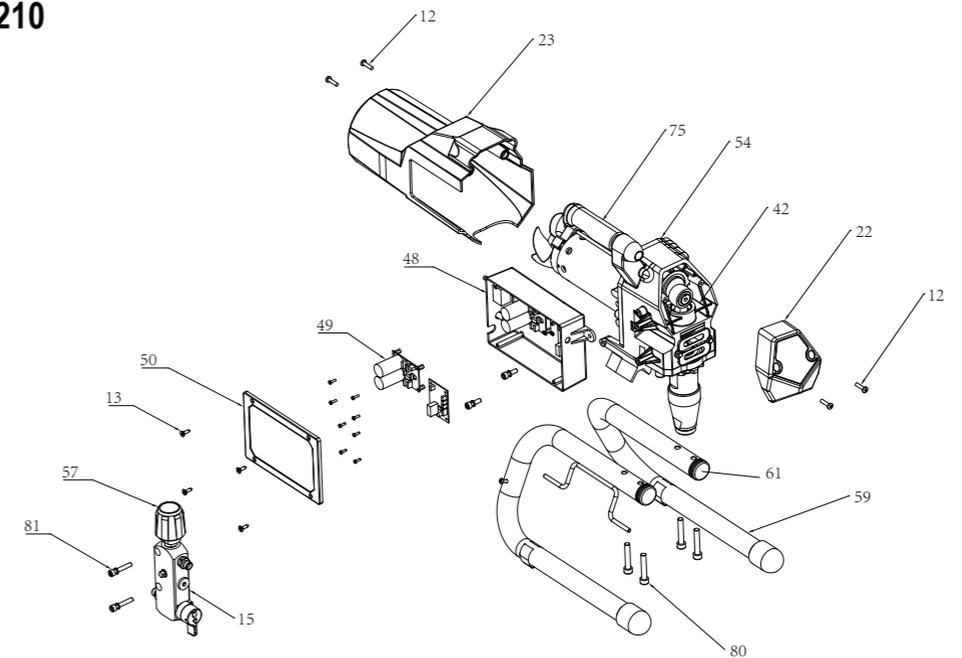
# Parts Drawing - Drive Housing

EP 230/270/310

NO	Name
4	Pressure control knob
12	Bolt
13	Bolt
15	Filter
22	Front cover
23	Housing cover
48	Control box
49	Circuit board
50	Control box cover
54	Motor base
59	Frame
80	Bolt
81	Bolt



EP 205/210  
A1/A2



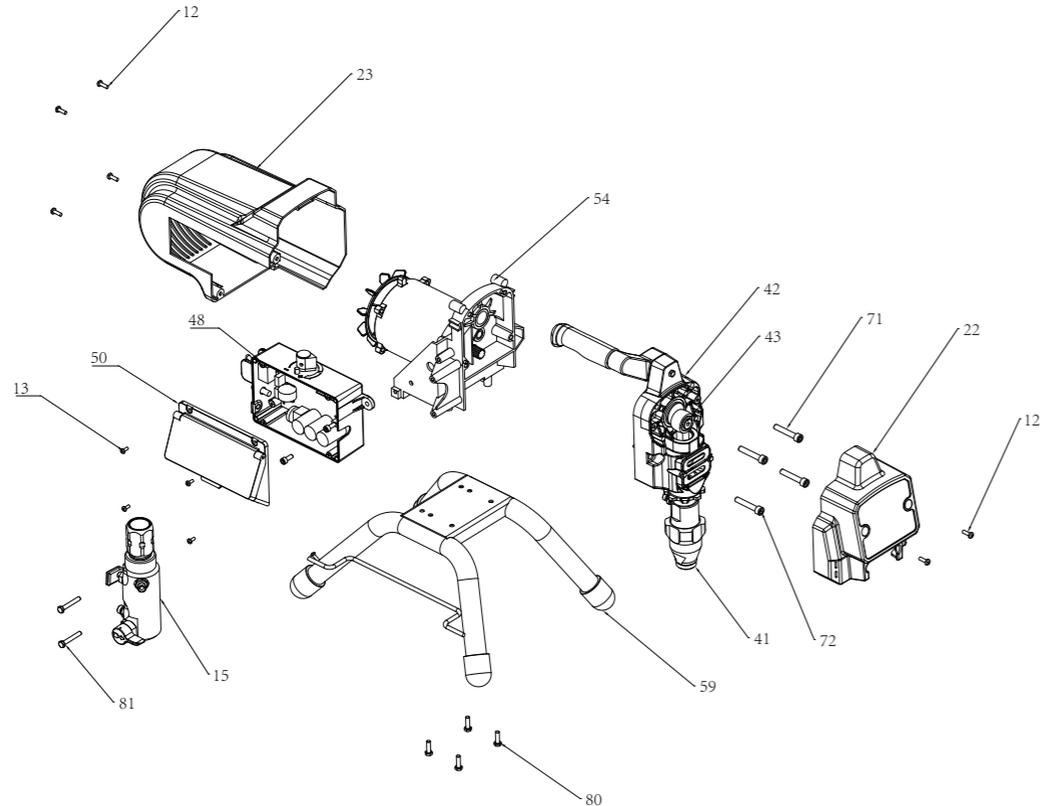
# Replacing the electric motor

**CAUTION**  
When removing the drive housing (42), take care not to let the gear cluster (44) and (40) fall out. Keep the gear cluster inside the drive housing (42).

## Removal



1. Relieve pressure, page 6.
2. Unscrew bolt (12) and remove the front cover (22).
3. Unscrew bolts (71, 72) and pull out the entire drive housing (42) from the motor base (54) along with the gear cluster (44, 40), washers (25, 10, 9, 8, 1), pump (41), and connecting rod (43).
4. Unscrew bolt (12) and remove the housing cover (23).
5. Unscrew bolt (81) and remove the filter (15).
6. Unscrew bolt (13) and remove the control box cover (50). Disconnect the motor from the circuit board.
7. Unscrew bolt to remove the control box (48).
8. Unscrew bolt (80) to separate the motor base (54) from the frame (59). The replacement of the motor base is complete.



# Motor Replacement

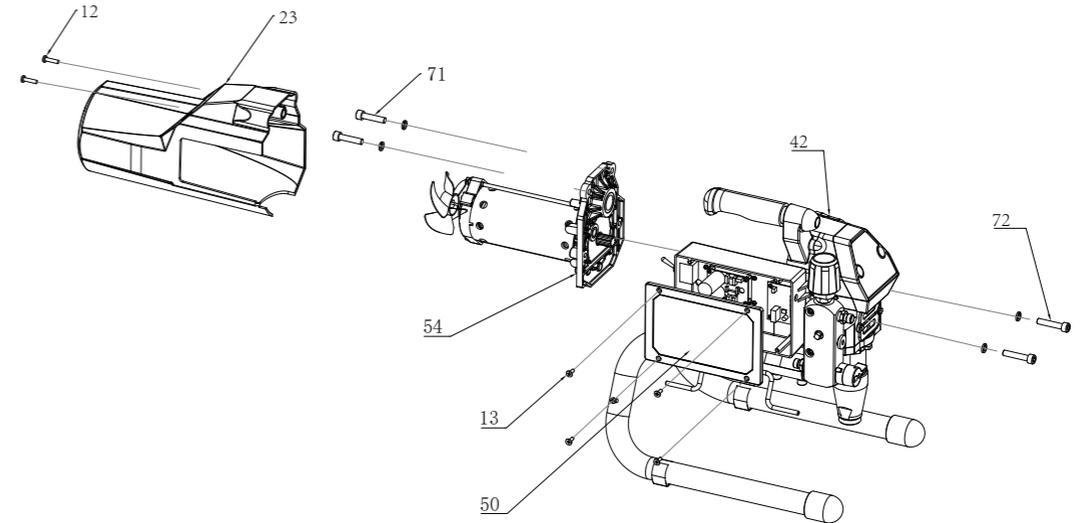
## A1/A2

**CAUTION**  
When removing the drive housing (42), take care not to let the gear cluster (44) and (40) fall out. Keep the gear cluster inside the drive housing (42).

## Removal



1. Unscrew bolt (12) and remove the housing cover (23).
2. Unscrew bolt (13) and remove the control box cover (50).
3. Disconnect the motor and the circuit board.
4. Unscrew bolts (71, 72) to separate the motor base (54) from the drive housing (42), completing the motor removal.



## Installation

1. Align the new motor base (54) with the drive housing (42) and join them together.
2. Insert bolt (71) through the motor base (54) into the threaded hole of the drive housing (42) and tighten it securely.
3. Insert bolt (72) through the drive housing (42) into the threaded hole of the motor base (54) and tighten it securely.
4. Connect the motor wires to the circuit board.
5. Close the control box cover (50), insert bolt (13), and tighten it securely.
6. Close the housing cover (23), insert bolt (12), and tighten it securely to complete the motor replacement.

## Motor Control Board Diagnostics



### CAUTION

Do not allow sprayer to develop fluid pressure without transducer installed. Leave drain valve open if test transducer is used.

### NOTE:

- Keep a new transducer on hand to use for test.
- NO display does not mean the sprayer is not pressurized. Before repair, relieve pressure, page 6

1. For sprayers with digital display, see "Digital Display Information".
2. Turn ON the ON/OFF power switch.

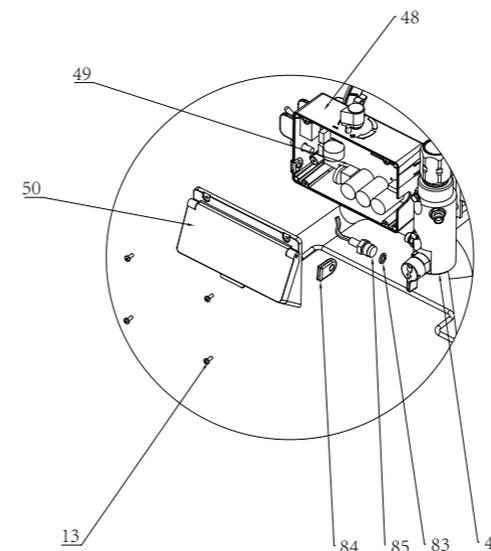
DISPLAYED	NIXIE DISPLAY	WHAT TO DO
No display		
psi/bar/MPa	Sprayer pressurized. Power connected.	
E=01	IPM temperature is high (4KW).	Clean the debris from the radiator and wait for the drive to cool down before resuming normal operation.
E=02	Communication fault.	Check the communication signal lines between the sensor board and the motor drive. If the signal lines are fault-free, contact the manufacturer for repair.
E=03	Sensor fault.	Check if the sensor is poorly connected or replace it.
E=04	Motor or drive controller connection or mechanical fault.	Inspect the connection between the motor and the drive, and check for any mechanical jamming. After confirming everything is normal, replace the drive for testing. Differentiate between motor or drive faults, then repair the corresponding components!
E=05	Motor or drive overcurrent fault.	Same as E-04.
E=06	IPM alarm	Same as E-05.
E=07	Cleaning status pressure greater than 7Mpa.	Open the spray gun or adjust the pressure control potentiometer to the normal position.
E=08	Power supply undervoltage.	Check if the power supply voltage or socket is faulty.
E=10	Motor overheating temperature protection.	
E=11	Power input protection.	Check if the power supply is connected to AC380V or if there is a problem with the input power supply. After resolving the issue, wait for the machine to discharge (generally indicated by the display screen turning off) before restarting the machine for use.

## Pressure Control Transducer

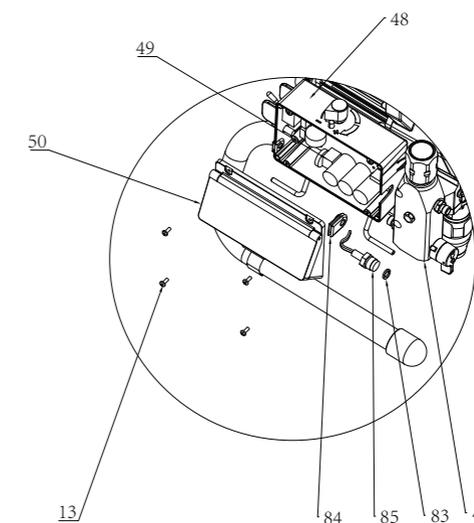
### Removal



1. Relieve pressure, page 6.
2. Remove screw (13) and control box cover (50).
3. Disconnect the lead wires of pressure sensor (85) from the motor control board (49).
4. Extract sensor sleeve (84) from the control box (48).
5. Detach pressure control sensor (85) and sealing O-ring (83) from the filter (41).



EP 270



A3

### Installation

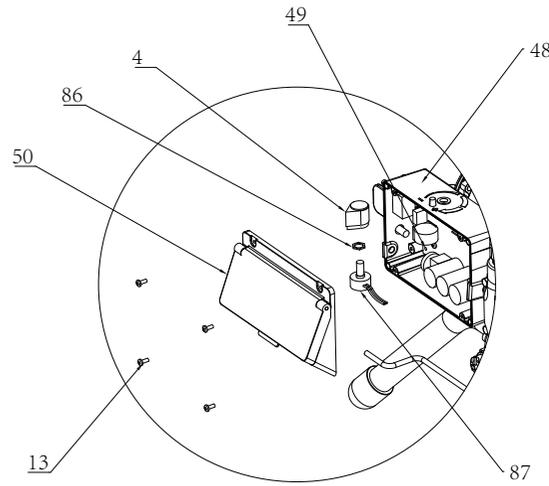
1. Place the pressure sensor (85) and the O-ring seal (83) into the filter (41). Tighten with a torque of 30 to 35 pound-feet.
2. Thread the wires of the pressure sensor (85) through the sensor sleeve (84) and insert the sensor sleeve (84) into the slot of the control box (48).
3. Connect the wires of the pressure sensor (85) to the motor control board (49).
4. Secure the control box cover (50) with screws (13).

# Pressure Adjust Potentiometer

## Removal



1. Relieve pressure, page 6.
2. Remove screw (13) and control box cover (50).
3. Disconnect the lead wires of pressure adjustment potentiometer (87) from the motor control board (49).
4. Unscrew pressure control knob (4), nut (86), and pressure adjustment potentiometer (87).



## Installation

1. Install pressure adjustment potentiometer (87) and nut (86).
  - a. Rotate the pressure adjustment potentiometer (87) clockwise to its lowest position.
  - b. Install pressure control knob (4) in the position where the pressure adjustment potentiometer (87) is rotated clockwise to its lowest position.
2. Connect the lead wires of pressure adjustment potentiometer (87) to the control board (49).
3. Attach control box cover (50) using screw (13).

## Technology Data

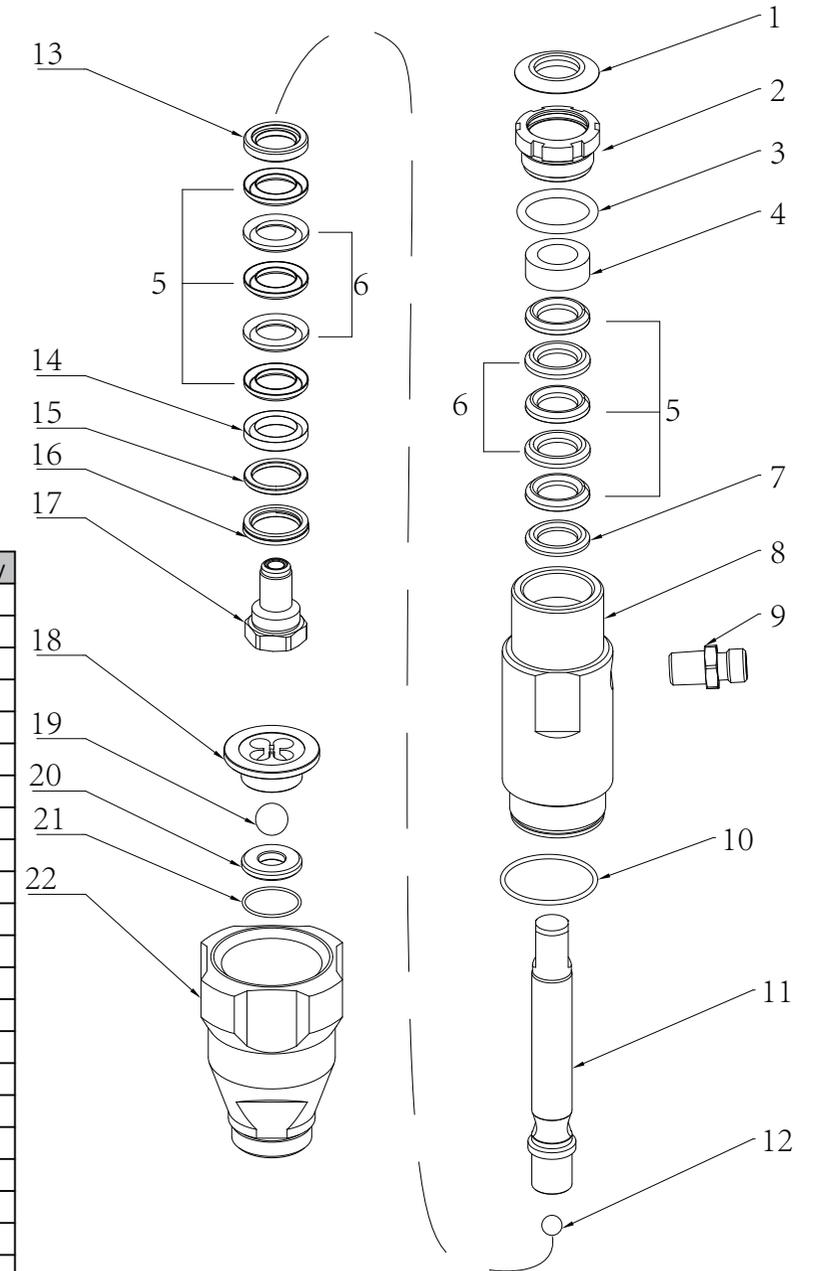
Model	Max Power HP (W)	Flow Rate GPM(LPM)	Max Tip Size	Fluid Outlet Size npsm	Box Dimension cm
EP205	1 (750)	0.48(1.8)	0.019	1/4 in.	50×41×54
EP210	1 (750)	0.48(1.8)	0.019	1/4 in.	50×41×54
EP230	1.7 (1300)	0.60(2.3)	0.021	1/4 in.	50×41×54
EP270	2 (1500)	0.71(2.7)	0.025	1/4 in.	50×41×54
EP310	3 (2200)	0.82(3.1)	0.029	1/4 in.	50×41×54
A1	1 (750)	0.50(1.9)	0.019	1/4 in.	50×41×54
A2	1.2 (900)	0.55(2.1)	0.021	1/4 in.	50×41×54
A3	1.7 (1300)	0.60(2.3)	0.023	1/4 in.	50×41×54
EP7240	3(2200)	1.06(4)	0.033	1/4 in.	50×41×54
EP7240-2	3(2200)	1.06(4)	1/gun 0.033 2/guns 0.019	1/4 in.	50×41×54

Basic fluid components of sprayer:

Galvanized carbon steel, nylon, stainless steel, PTFE, chrome plated, leather, UHMWPE, aluminum, tungsten carbide

# Pump assembly

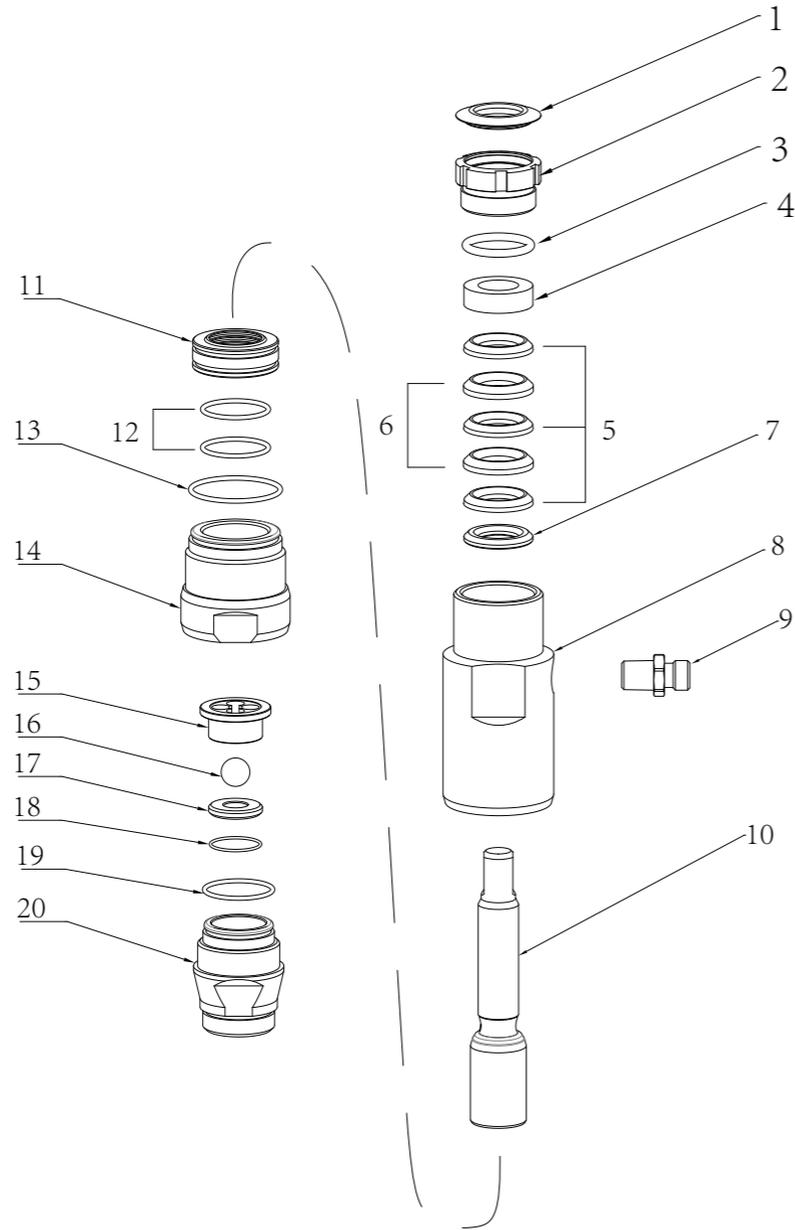
## EP 230/270/310 A1/A2/A3



NO	Name	Quantity
1	SEAL,throat	1
2	Nut	1
3	O-ring	1
4	GLAND,female	1
5	V-packing	6
6	Leather V-ring	4
7	GLAND,male	1
8	Cylinder	1
9	FITTING	1
10	PTFE O-ring	1
11	Piston Rod	1
12	Tungsten steel ball	1
13	GLAND,male,piston	1
14	GLAND,female,piston	1
15	WASHER	1
16	WIPER	1
17	PISTON VALVE	1
18	Ball guide	1
19	Tungsten steel ball	1
20	BALL SEAT	1
21	PTFE O-ring	1
22	Intake Housing	1

## 7250 Pump assembly

NO	Name	Quantity
1	SEAL,throat	1
2	Nut	1
3	O-ring	1
4	GLAND,female	1
5	V-packing	3
6	Leather V-ring	2
7	GLAND,male	1
8	Cylinder	1
9	FITTING	1
10	Piston Rod	1
11	Lower seal ring	1
12	O-ring	2
13	O-ring	1
14	Middle cylinder	1
15	ball guide	1
16	Tungsten steel ball	1
17	BALL SEAT	1
18	PTFE O-ring	1
19	PTFE O-ring	1
20	Intake Housing	1



## Customized style-Pump assembly

NO	Name	Quantity
1	SEAL, throat	1
2	Nut	1
3	O-ring	1
4	GLAND,female	1
5	V-packing	3
6	Leather V-ring	2
7	GLAND,male	1
8	Cylinder	1
9	FITTING	1
10	Piston Rod	1
11	Tungsten steel ball	1
12	gasket	1
13	valve	1
14	nut	1
15	PTFE O-ring	1
16	seal	1
17	O-ring	1
18	PTFE O-ring	1
19	ball guide	1
20	Tungsten steel ball	1
21	BALL SEAT	1
22	PTFE O-ring	1
23	Intake Housing	1

