

Electric Airless Sprayers

312496H

EN

- For portable spray application of architectural paints and coatings. For professional use only.-

Maximum Working Pressure: 3300 psi (227 bar, 22.7 MPa)



IMPORTANT SAFETY INSTRUCTIONS

Read all warnings and instructions. Save these instructions. Contact ASM Customer Service or your local ASM distributor to obtain a manual in your language.



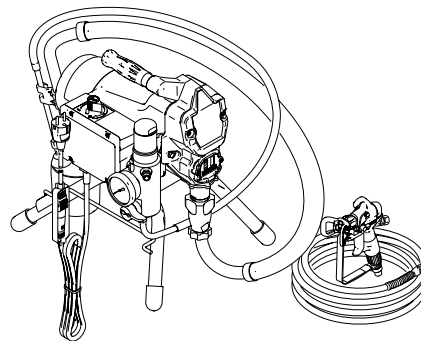
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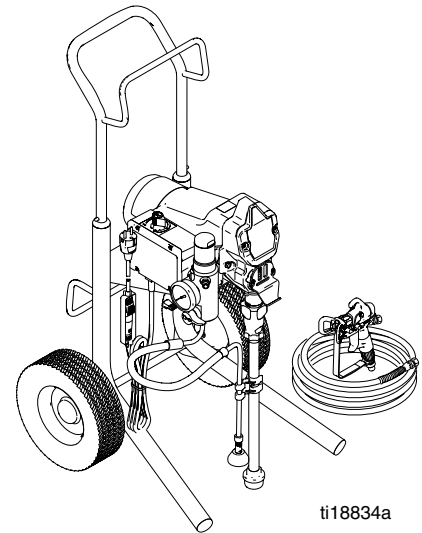
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312364 (Spanish)
312365 (French)



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ASM Zip-Spray™ 2300 Plus 240V: 247533

ASM M2300 Plus 110V: 247534





ASM M2300 Plus 240V: 247535





ASM Zip-Spray™ 2300 Plus 2400: 24M722



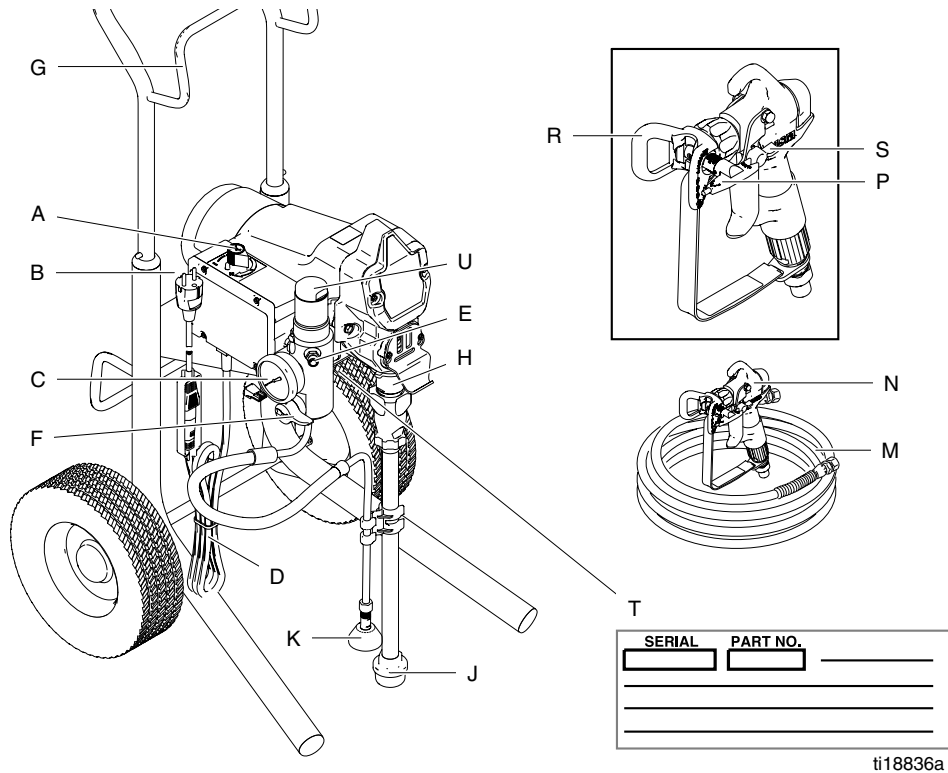
Warning

The following warnings are for the setup, use, grounding, maintenance and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risks. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

 WARNING	
	<p>FIRE AND EXPLOSION HAZARD</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"> • Use equipment only in well ventilated area. • Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc). • 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. • Keep work area free of debris, including solvent, rags and gasoline. • Do not plug or unplug power cords or turn lights on or off when flammable fumes are present. • Ground equipment and conductive objects in work area. Read Grounding instructions. • If there is static sparking or you feel a shock, stop operation immediately. Do not use equipment until you identify and correct the problem. • Keep a working fire extinguisher in the work area.
	<p>ELECTRIC SHOCK HAZARD</p> <p>Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power cord before servicing equipment. • Use only grounded electrical outlets. • Use only 3-wire extension cords. • Ensure ground prongs are intact on sprayer and extension cords. • Do not expose to rain. Store indoors.
	<p>SKIN INJECTION HAZARD</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. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not point gun at anyone or at any part of the body. • Do not put your hand over the spray tip. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Engage trigger lock when not spraying. • Follow Pressure Relief Procedure in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.

	WARNING
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. Read Technical Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. Read Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine ASM replacement parts only. • Do not alter or modify equipment. • Use equipment only for its intended purpose. Call your ASM distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or overbend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations. • Keep children and animals away from work area. • Do not operate the unity when fatigued or under the influence of drugs or alcohol.
	<p>PRESSURIZED ALUMINUM PARTS HAZARD</p> <p>Do not use 1,1,1-trichloroethane, methylene chloride, 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 property damage.</p>
	<p>BURN HAZARD</p> <p>Equipment surfaces can become very hot during operation. To avoid severe burns, do not touch hot equipment. Wait until equipment has cooled completely.</p>
	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure in this manual. Disconnect power or air supply.
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read MSDS's to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>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"> • Protective eye wear • Clothing and respirator as recommended by the fluid and solvent manufacturer • Gloves • Hearing protection

Component Identification

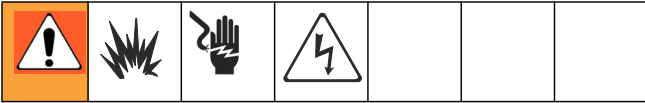


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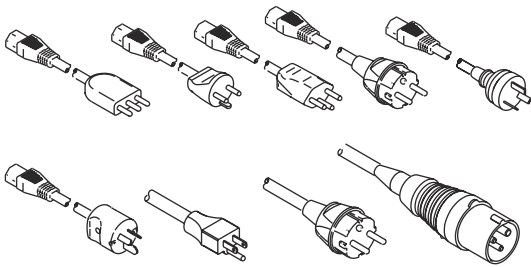
Item	Component
A	Pressure Control
B	ON/OFF switch
C	Pressure Gauge (not on all models)
D	Power Cord
E	Fluid Outlet
F	Prime Valve
G	Hose Wrap
H	Pump
J	Suction Hose
K	Drain Hose
M	Fluid Hose
N	Gun
P	Tip
R	Guard
S	Trigger Safety Lock
T	Serial Number ID Label
U	Filter Cover
V	Pail Hook (Not used on 24M722 - Stand Unit)

Installation

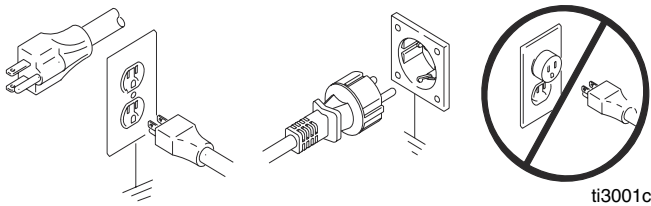
Grounding and Electric Requirements



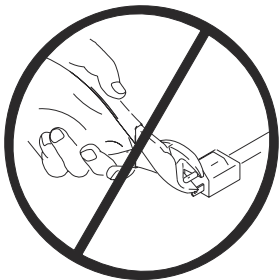
The sprayer cord includes a grounding wire with an appropriate grounding contact.



The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not use an adaptor.



Do not use the sprayer if the electrical cord has a damaged ground prong. Do not modify plug. If it will not fit in the outlet, have a grounded outlet installed by a qualified electrician.



Power Requirements

- 100-120V units require 100-120VAC, 50/60 Hz, 15A, 1 phase
- 230V units require 230VAC, 50/60 Hz, 7.5A, 1 phase
- Never use an outlet that is not grounded or an adapter

Only use an **extension cord** with an undamaged ground contact. If an extension cord is necessary, use a 3-wire, 12 AWG (2.5 mm²) minimum.

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

Spray gun: Ground through connection to a properly grounded fluid hose and pump.

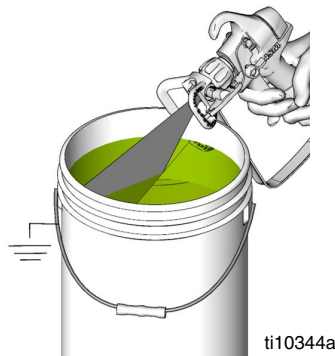
Fluid supply container: Follow local code.

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

Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

Grounding the metal pail: Connect a ground wire to the pail by clamping one end to pail and other end to ground such as a water pipe.

Maintain grounding continuity when flushing or relieving pressure: Hold metal part of the spray gun firmly to the side of a grounded metal pail, then trigger the gun.



Operation

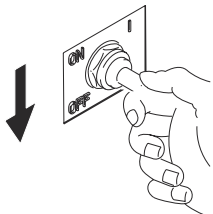
Pressure Relief Procedure

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.

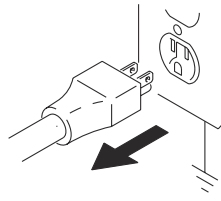
Read Warnings, page 2.



1. Turn power switch OFF and unplug power cord.

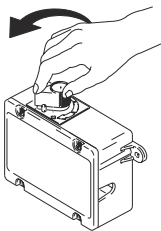


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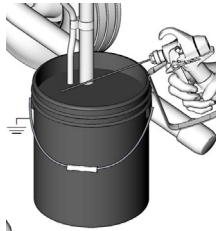


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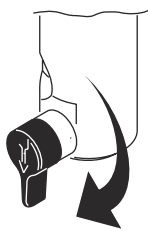
2. Turn pressure to lowest setting. Hold gun to side of grounded metal flushing bucket. Trigger gun to relieve pressure, turn prime valve down.



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

NOTE: 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 the tip guard retaining nut or hose end coupling to relieve pressure gradually, then loosen completely. Then clear the hose or tip obstruction.

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.

NOTICE

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**, page 13.
- 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.
- Overspray may build up in the air passages. Remove any overspray and moisture from air passages and openings in the enclosure whenever you service sprayer.

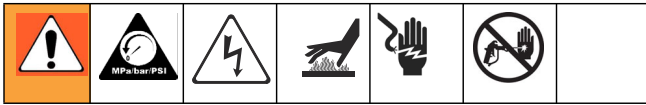
To reduce risk of serious injury, including electric shock:

- 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.

NOTICE

- 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 <i>(if check is OK, go to next)</i>	What to Do <i>(When check is not OK, refer to this column)</i>
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 13, Displacement Pump Replacement .
	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 13.	Push pin into place and secure with spring retainer.
	Motor. Remove drive housing assembly. See page 15. Try to rotate fan by hand.	Replace motor if fan won't turn. See page 17.
	Motor control board. Board shuts down and displays error code.	See Motor Control Board Diagnostics , page 22.
Basic Electrical Problems	Electric supply. Meter must read: <ul style="list-style-type: none"> • 210-255 VAC for 220-240V models • 85-130 VAC for 100-120V models. 	Reset building circuit breaker. Replace building fuse. Try another outlet.
	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, page 25.
	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.

Type of Problem	What to Check <i>(if check is OK, go to next)</i>	What to Do <i>(When check is not OK, refer to this column)</i>
Basic Electric Problems	Motor armature for shorts using armature tester (growler) or perform spin test. See page 16.	Replace motor. See page 24.
	For loose motor brush lead connections and terminals.	Tighten terminal screws. Replace brushes if leads are damaged.
	Brush length which must be 1/2 in. minimum. NOTE: Brushes do not wear at the same rate on both sides of motor. Check both brushes.	Replace brushes, page 18.
	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. See page 24.
Note: for the following electric problems, refer to wiring diagram, page 21 to identify Test Points (TP).	Power supply cord. Connect volt meter between TP1 (neutral) and TP2. Plug in sprayer. Meter must read: <ul style="list-style-type: none"> • 210-255 VAC for 220-240V models • 85-130 VAC for 100-120V models. Unplug sprayer.	Replace power supply cord, page 25.
	ON/OFF Switch. Connect volt meter between L1 and L2 terminal on ON/OFF switch. Plug in sprayer and turn ON. Meter must read: <ul style="list-style-type: none"> • 210-255 VAC for 220-240V models • 85-130 VAC for 100-120V models. 	Replace ON/OFF switch. See pages 21.
	All terminals for damage or loose fit.	Replace damaged terminals and reconnect securely.

Type of Problem	What to Check <i>(if check is OK, go to next)</i>	What to Do <i>(When check is not OK, refer to this column)</i>
Low Output	For worn spray tip.	Relieve pressure , page 6. Then replace tip. See your separate gun manual for additional instruction.
	Verify pump does not continue to stroke when gun trigger is released.	Service pump. See page 13.
	Filter clogged.	Relieve pressure , page 6. Check and clean filter.
	Prime valve leaking.	Relieve pressure , page 6. Repair prime valve. See Drain Valve Replacement , page 26.
	Suction hose kinks and/or loose connection.	Correct kink and/or tighten any loose connections.
	Electric supply with volt meter. Low voltages reduce sprayer performance. Meter must read: <ul style="list-style-type: none"> • 210-255 VAC for 220-240V models • 85-130 VAC for 100-120V models. 	Reset building circuit breaker; replace building fuse. Repair electrical outlet or try another outlet.
	Extension cord size and length; must be at least 12 gauge wire and no longer than 300 ft. Longer cord lengths reduce sprayer performance.	Replace with a correct, grounded, extension cord.
Low Output	Leads from motor to pressure control circuit board for damaged or loose wires or connectors. Inspect wiring insulation and terminals for signs of overheating.	Be sure male terminal blades are centered and firmly connected to female terminals. Replace any loose terminal or damaged wiring. Securely reconnect terminals.
	Low stall pressure.	Do either or both: <ol style="list-style-type: none"> a. Turn pressure control knob fully clockwise. Make sure pressure control knob is properly installed to allow full clockwise position. b. Try a new transducer.

Type of Problem	What to Check <i>(if check is OK, go to next)</i>	What to Do <i>(When check is not OK, refer to this column)</i>
Electrical Problems	Motor armature for shorts by using an armature tester (growler) or perform spin test. See page 16.	Replace motor. See page 24.
	Loose motor brushes and terminals.	Tighten terminal screws. Replace brushes if leads are damaged.
	Worn motor brushes. (Brushes must be 1/2 in. minimum.)	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 small cleaning brush. Align brush lead with slot in brush holder to assure free vertical brush movement.
Motor runs and pump strokes	Low paint supply.	Refill and reprime pump.
	Intake strainer clogged.	Remove and clean, then reinstall.
	Suction tube or fittings loose.	Tighten; use thread sealant or sealing tape on threads if necessary.
	See if intake valve ball and piston ball are seating properly. 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 13.
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 13.
	Connecting rod assembly damaged.	Replace connecting rod assembly. See pump manual.
	Gears or drive housing, page 15.	Inspect drive housing assembly and gears for damage and replace if necessary, page 15.
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 sprayer is located is not more than 90°F (32.22°C) and sprayer is not located in direct sun.	Move sprayer to shaded, cooler area if possible.

<p>Type of Problem</p>	<p>What to Check <i>(if check is OK, go to next)</i></p>	<p>What to Do <i>(When check is not OK, refer to this column)</i></p>
<p>Building circuit breaker opens as soon as sprayer switch is turned on</p> <p style="text-align: center;">CAUTION</p> <p>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.</p>	<p>All electrical wiring for damaged insulation and all terminals for loose fit or damage. Also, wires between pressure control and motor. See pages 23 and 25.</p>	<p>Repair or replace any damaged wiring or terminals. Securely reconnect all wires.</p>
	<p>For missing inspection plate gasket, see pages 21 and 25, bent terminal forks or other metal to metal contact points which case a short.</p>	<p>Correct faulty conditions.</p>
	<p>Motor control board by performing control board diagnostics. See page 16. If diagnostics indicate, substitute with a good board.</p> <p>CAUTION: Do not perform this check until motor armature is determined to be good. A bad motor armature can burn out a good board.</p>	<p>Replace with a new pressure control board. See page 21.</p>
<p>Building circuit breaker opens as soon as sprayer switch is turned on.</p>	<p>Motor armature for shorts. Use an armature tester (growler) or perform spin test. See page 16. Inspect windings for burns.</p>	<p>Replace motor. See page 24.</p>
<p>Building circuit breaker opens as soon as sprayer is plugged into outlet and sprayer is NOT turned on.</p>	<p>Basic Electric Problems, page 8 of Troubleshooting.</p>	<p>Perform necessary procedures.</p>
	<p>ON/OFF switch. See page 20. Be sure sprayer is unplugged! Disconnect wires from switch. Check switch with ohmmeter. Reading must be infinity with ON/OFF switch OFF, and zero when switch is ON.</p> <p>For damaged or pinched wires in pressure control. See page 21.</p>	<p>Replace ON/OFF switch. See page 20.</p> <p>Replace damaged parts. See page 21.</p>
<p>Sprayer quits after sprayer operates for 5 to 10 minutes.</p>	<p>Basic Electric Problems, page 8 of Troubleshooting.</p>	<p>Perform necessary procedures.</p>
	<p>Electrical supply volt meter. Meter must read:</p> <ul style="list-style-type: none"> • 210-255 VAC for 220-240V models • 85-130 VAC for 100-120V models. 	<p>If voltage is too high, do not operate sprayer until corrected.</p>
	<p>Tightness of pump packing nut. Over tightening tightens packings on rod, restricts pump action, and overloads motor.</p>	<p>Loosen packing nut. Check for leaking around throat. Replace pump packings, if necessary. See pump manual.</p>

Displacement Pump Replacement

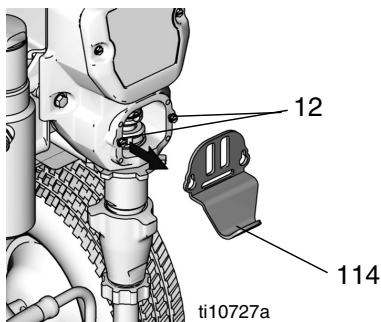
See manual 312362 for pump repair instructions.

Removal

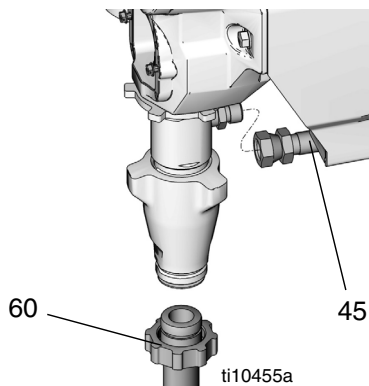
1. Flush pump (13).



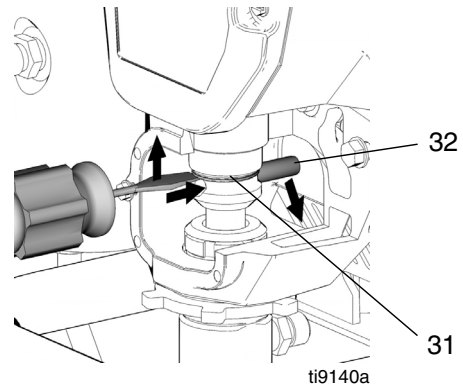
2. Loosen screws (12). Push cover (114) up and pull off sprayer.



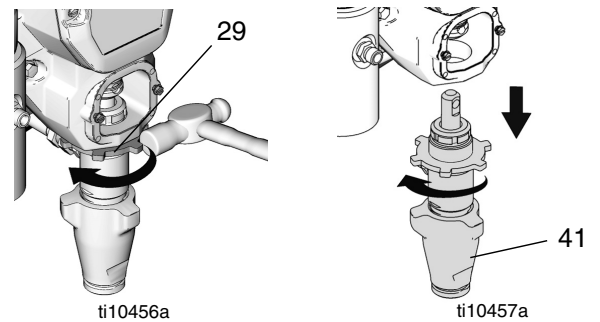
3. Remove suction tube (60) and hose (45).





4. Cycle motor until pump pin (32) is in position to be removed.
5. Disconnect power cord from outlet.
6. Using a flat screwdriver, push retaining spring (31) up. Push out pump pin (32).



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



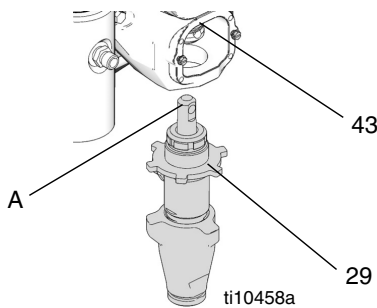
Installation

						
<p>If pump pin 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.</p>						

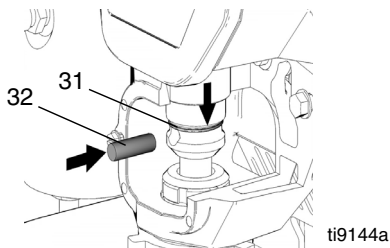
NOTICE

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

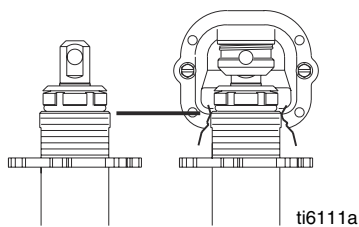
1. Fully extend pump piston rod. Apply grease to top of pump rod at (A) or inside connecting rod (43). Install jam nut (29) on pump threads.



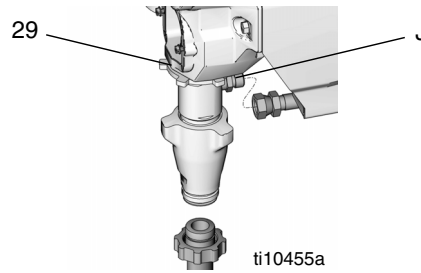
2. Install pump rod (A) into connecting rod (43).
3. Install pump pin (32). Verify retainer spring (31) is in groove over pump pin.



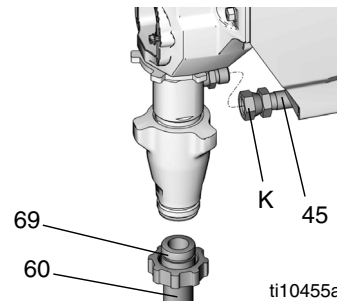
4. Push pump (41) up until pump threads engage.
5. Screw in pump until threads are flush with top of drive housing opening.



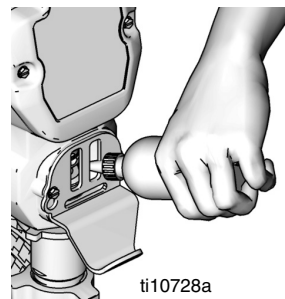
6. Align pump outlet (J) to back.



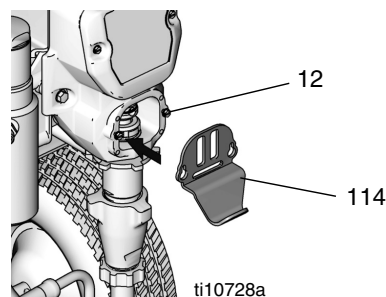
7. Screw jam nut (29) counter-clockwise until nut stops. Tighten jam nut by hand, then tap 1/8 to 1/4 turn with a 20 oz (maximum) hammer to approximately 75 ft-lb (102 N•m) torque.
8. Install high pressure hose (45) and tighten nut (K) to approximately 35 ft-lb (47 N•m) torque. Install suction tube (60) and hand-tighten nut (69).



9. Fill packing nut with ASM Packing Seal[®] until fluid flows onto top of seal.



10. Replace cover (114) over screws. Push cover down into place. Tighten screws (12).



Drive Housing Replacement

NOTICE

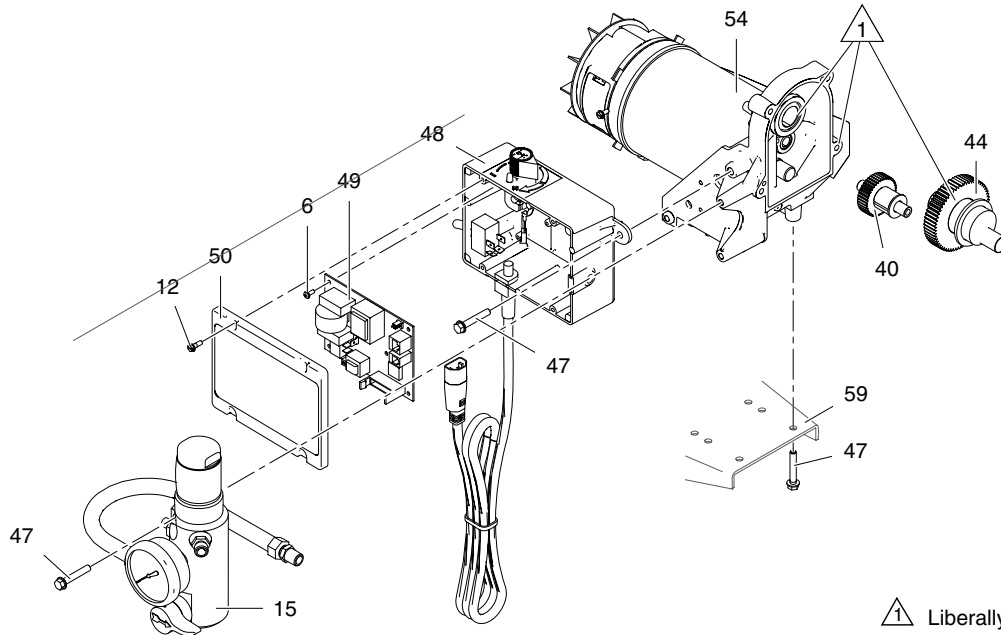
Do not drop gear cluster (44) and (40) when removing from drive housing (42). Gear cluster may stay engaged in motor front end bell or drive housing.


Removal



1. **Relieve Pressure**, page 6.
2. Disconnect power cord from outlet.

3. Remove screws (12) and pump rod cover (114).
4. Remove pump, **Displacement Pump Replacement**, page 13.
5. Remove screws (12) from shroud (23).
6. Remove screws (12) from front cover (22).
7. Remove screws (47).
8. Pull drive housing (42) off motor (54).
9. Remove gear cluster (44) and (40) and thrust washer (25) from drive housing.



 Liberally Apply grease

Installation

1. Apply a heavy coat of grease to gears and bearing surfaces.
2. Install washers (8, 10) on back of gear (40). Install gear in motor end bell. Using grease for retention, place washer (10) over bearing inside housing (42).
3. Install washers (1, 9) on back of gear (44). Install in motor endbell.
4. Install thrust washer (25) on gear (44).
5. Push drive housing (42) on motor endbell as you guide gear crank (44) through hole in connecting rod (43).
6. Install screws (47).
7. Install cover (22) and screws (12).
8. Install shroud (23) and screws (12).
9. Install pump (41); **Displacement Pump Replacement**, page 13.
10. Install pump rod cover (114) with screws (12).

Motor Diagnostics

See **Wiring Diagram**, page 25.

Spin Test



Check for electrical continuity in motor armature, windings and brush as follows:

If Motor Diagnostics reveal a damaged motor or if motor brushes are shorter than 1/2 in. (12.7 mm) or if the motor shaft cannot turn, replace the motor, page 24.

Setup

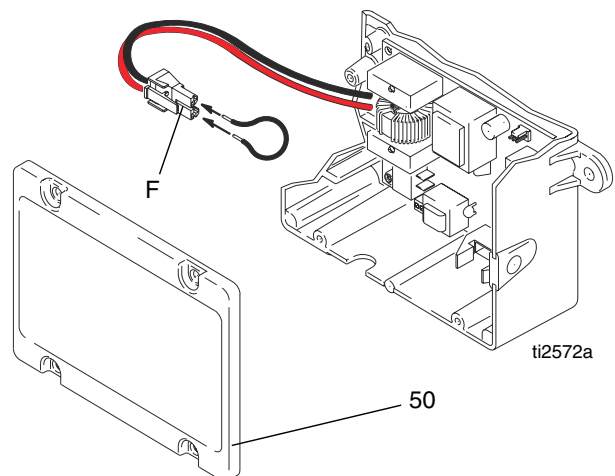
1. **Relieve Pressure**, page 6.
2. Unplug electric cord.
3. Remove drive housing, **Drive Housing Replacement**, page 15.
4. Remove pressure control cover (50). Disconnect connector F.
5. Remove four screws (12) and motor shroud (23) and inspection covers.

Armature Short Circuit Test

Quickly turn motor fan by hand. If not shorted, motor will coast two or three revolutions before complete stop. If motor does not spin freely, armature is shorted. Replace motor, page 24.

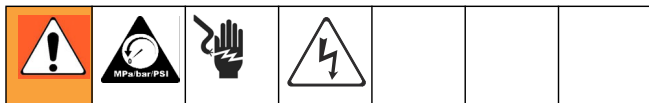
Armature, Brushes, and Motor Wiring Open Circuit Test (Continuity)

1. Connect red and black motor leads with test lead. Turn motor fan by hand at about two revolutions per second.
2. If uneven or no resistance, check for missing brush caps, broken brush springs, brush leads, and worn brushes. Repair as needed, page 18.
3. If there is an uneven resistance or no resistance, check for broken brush springs*, brush leads*, loose brush terminal screws*, worn brushes*, or motor lead terminals. Repair as needed, page 18.
4. If still uneven, or no resistance, replace motor using **Motor Kit**, page 24.



Fan Replacement

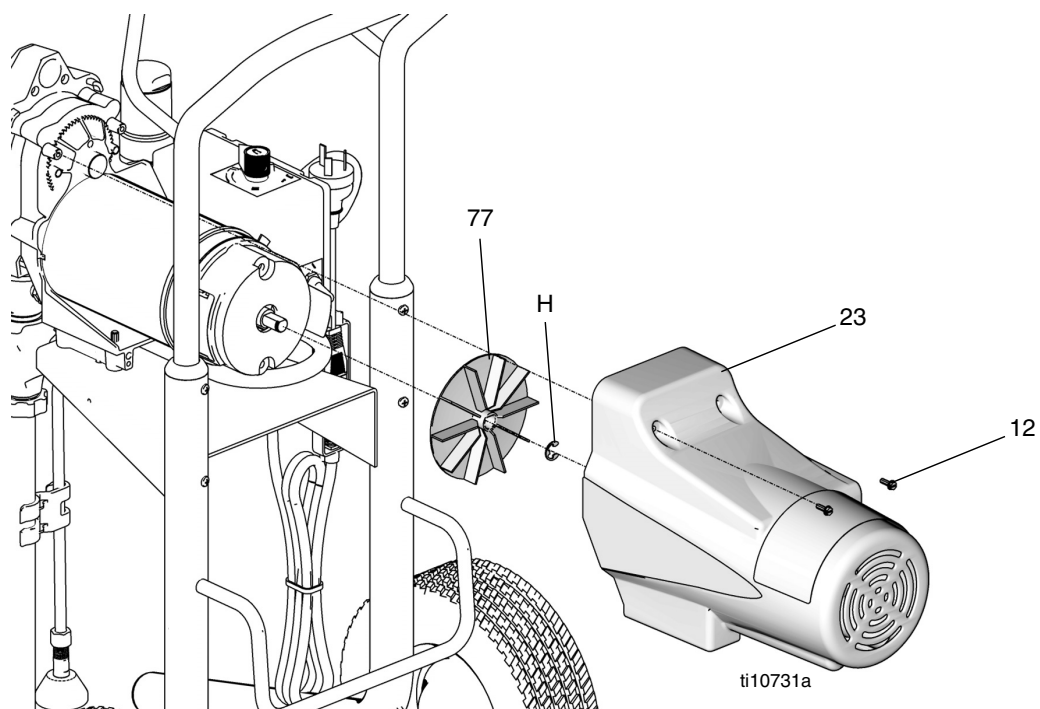
Removal



1. **Relieve Pressure**, page 6. Disconnect power cord from outlet.
2. Remove four screws (12) and shroud (23).
3. Remove spring clip (H) on fan (77).
4. Pull off fan (77).

Installation

1. Slide new fan (77) in place on back of motor. Be sure blades of fan face motor as shown.
2. Install spring clip (H).
3. Replace shroud (23) and four screws (12).



Motor Brush Replacement

See **Wiring Diagram**, page 25.

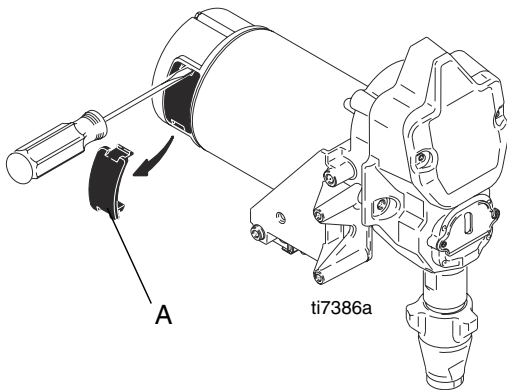
Motor Brush Removal

Replace brushes worn to less than 1/2 in. Brushes wear differently on each side of motor, check both sides. Brush Repair Kit 287735 is available.

1. Read General Repair Information, page 7.

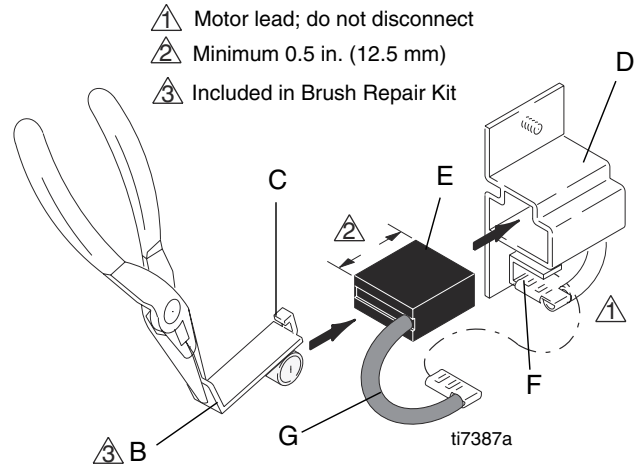


2. **Relieve Pressure**, page 6.
3. Remove motor shroud and two inspection covers (A).



4. Push clip spring (B) to release hook (C) from brush holder (D). Pull out spring clip (B).

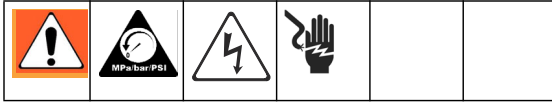
5. Pull brush lead (G) off terminal (F). Remove brush (E).



6. Inspect commutator for excessive pitting, burning, or gouging. A black color on commutator is normal. Have commutator resurfaced by a motor repair shop if brushes wear too fast.
7. While rotating fan by hand, using compressed air, blow air into positive (top) brush holder to remove brush dust.

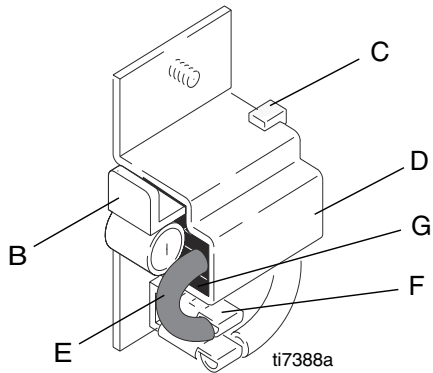
NOTE: To contain the dust, turn on your shop vac. Place the end of a vacuum over the negative (lower) brush holder while blowing compressed air into the positive (top) brush holder.

Motor Brush Installation



NOTICE

When installing brushes, follow all steps carefully to avoid damaging parts.



NOTE: Use all new parts included in your brush kit. Do not reuse old parts if new replacement parts are provided.

1. Install new brush (G) with lead into brush holder (D).
2. Slide brush lead (E) onto terminal (F).

3. Install spring clip (B). Push down to set hook (C) into brush holder (D).
4. Repeat for other side.
5. Test brushes.
 - a. Remove pump. **Displacement Pump Replacement**, page 13.
 - b. With sprayer OFF, turn pressure control knob fully counter-clockwise to minimum pressure. Plug in sprayer.
 - c. Turn sprayer ON. Slowly increase pressure until motor is at full speed.

NOTICE

Do not run sprayer dry for more than 30 seconds while checking brushes to avoid damaging displacement pump packings.

6. Install brush inspection covers (A) and gaskets.
7. Break in brushes.
 - a. Operate sprayer 1 hour with no load.
 - b. Install pump. **Displacement Pump Replacement**, page 13.

On/Off Switch Replacement

100/120 VAC and 220/240 VAC



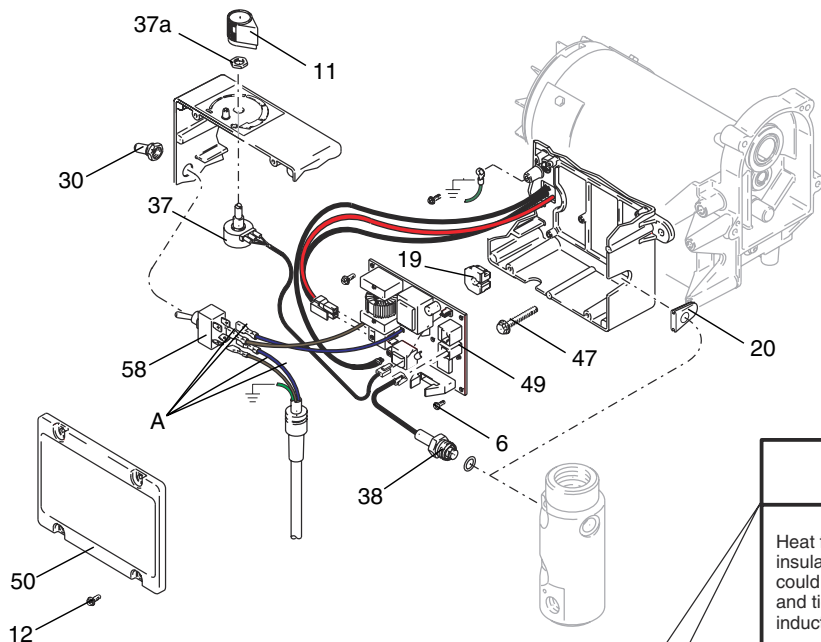
Removal

1. **Relieve Pressure**, page 6.
2. Remove four screws (12) and pressure control cover (50).

3. Disconnect four wires (A) from ON/OFF switch (58).
4. Remove toggle boot (30) and locking ring. Remove ON/OFF switch (58).

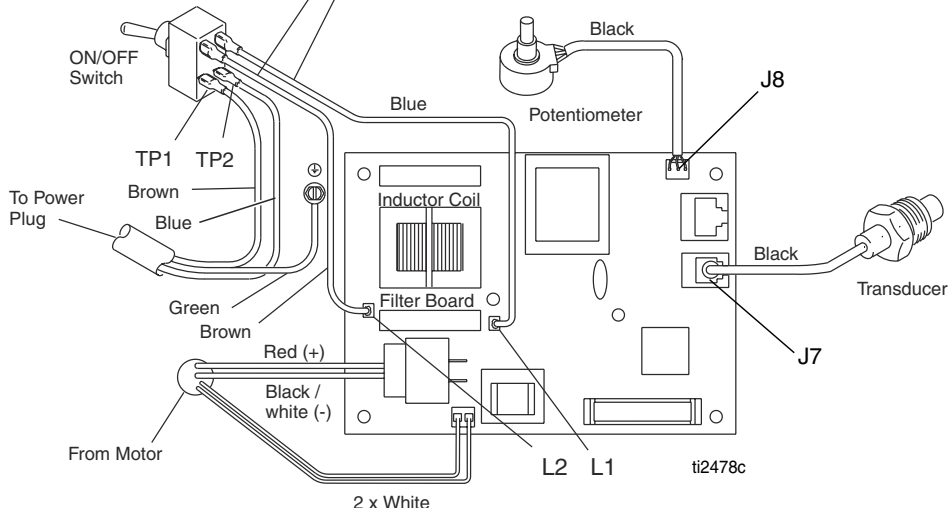
Installation

1. Install new ON/OFF switch (58). Install locking ring and toggle boot (30).
2. Connect four wires (A) to ON/OFF switch (58).
3. Install pressure control cover (50) with four screws (12).



CAUTION

Heat from inductor coil of filter board may destroy wire insulation that comes in contact with it. Exposed wires could cause shorts and component damage. Bundle and tie all loose wires so none lay in contact with inductor coil of filter board.



Pressure Control Repair

Motor Control Board

Refer to Wiring Diagram for your sprayer shown on page 25.

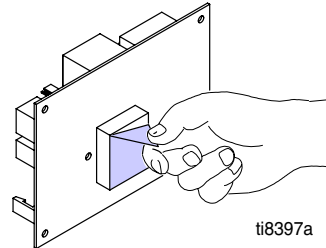
Removal



1. **Relieve Pressure**, page 6, and unplug sprayer.
2. Remove screws (12) and cover (50).
3. Disconnect all leads to motor control board (49).
4. Remove screws (6) and circuit board (49).

Installation

1. Remove old thermal paste from control box. Remove cover from thermal pad on new motor control board.



2. Install motor control board (49) with screws (6).
3. Connect all leads to motor control board (49). See wiring diagram for your sprayer on pages 25.
4. Bundle and tie all loose wires so none touch inductor coil (does not apply to 120V model sprayers).
5. Install cover (50) with screws (12).

Motor Control Board Diagnostics



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.

NOTICE

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

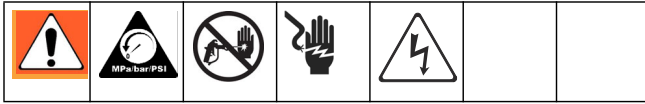
1. Remove screws (12) and cover (50).
2. Turn ON/OFF switch ON.
3. Observe LED operation and reference following table:

LED BLINKS	SPRAYER OPERATION	INDICATES	WHAT TO DO
Never blinks	Sprayer stops. Power is not applied. Sprayer must be pressurized.	Loss of power.	Check power source. Relieve pressure before repair or disassembly.
Once	Sprayer is pressurized. Power is applied. (Pressure varies with tip size and pressure control setting.)	Normal operation	Do nothing
Two times repeatedly	Sprayer may continue to run. Power is applied.	Run away pressure. Pressure greater than 4500 psi (310 bar, 31 MPa) or damaged pressure transducer	Replace motor control board or pressure transducer
Three times repeatedly	Sprayer shuts down and LED continues to blink three times repeatedly	Pressure transducer is faulty or missing	Check transducer connection. Open drain valve. Substitute new transducer for transducer in sprayer. If sprayer runs, replace transducer
Four times repeatedly	Sprayer shuts down and LED continues to blink four times repeatedly. Power is applied.	Line voltage is too high	Check for voltage supply problems
Five times repeatedly	Sprayer does not start or stops and LED continues to blink five times repeatedly. Power is applied.	Motor fault	Check for locked rotor, shorted wiring or disconnected motor. Repair or replace failed parts.
Six times repeatedly	Sprayer stops and LED blinks six times repeatedly. Power is applied.	Motor is too hot or there is a fault in motor thermal device	Allow sprayer to cool. If sprayer runs correctly when cool, check motor fan function and air flow. Keep sprayer in cool location. If sprayer does not run when cool and continues to blink six times, replace motor.
	Power is applied.	Pressure less than 200 psi (14 bar, 1.4 MPa).	Increase pressure if desired. Drain valve may be open.
	Sprayer stops. Power is applied.	Empty paint pail. Loss of pressure.	Refill paint pail. Check for leaks or clogged pump inlet. Repeat Startup procedure.

Pressure Control Transducer

See **Wiring Diagram**, page 25.

Removal



1. **Relieve Pressure**, page 6.
2. Remove screws (12) and cover (50).
3. Disconnect transducer lead from motor control board (49).
4. Slide transducer transducer grommet (20) out of control box (48).
5. Remove pressure control transducer (38) and o-ring (3) from filter housing.

Installation

1. Install o-ring (3) and pressure transducer (38) in filter housing (15). Torque to 30-35 ft-lb.
2. Thread transducer lead plastic connector through transducer grommet (20) and slide grommet into slot in control box housing (48).
3. Install filter housing (15) with screws (47).
4. Connect transducer lead (J7) to motor control board (49).
5. Install cover (50) with screws (12).

Pressure Adjust Potentiometer

See **Wiring Diagram**, page 25.

Removal



1. **Relieve Pressure**, page 6.
2. Remove screws (12) from cover (50).
3. Disconnect potentiometer lead from motor control board (49).
4. Loosen set screw and remove potentiometer knob (11), nut (37a) and pressure adjust potentiometer (37).

Installation

1. Install pressure adjust potentiometer (37) and nut (37a).
 - a. Turn potentiometer fully clockwise.
 - b. Install knob (11) at full clockwise position and secure by tightening set screw.
2. Connect potentiometer lead (J8) to motor control board (49). See **Wiring Diagram**, page 25, for your sprayer model.
3. Install cover (50) with screws (12).

Motor Replacement

See **Wiring Diagram**, page 25.

NOTICE

Do not drop gear cluster (44) and (40) when removing from drive housing (42). Gear cluster may stay engaged in motor front end bell or drive housing.



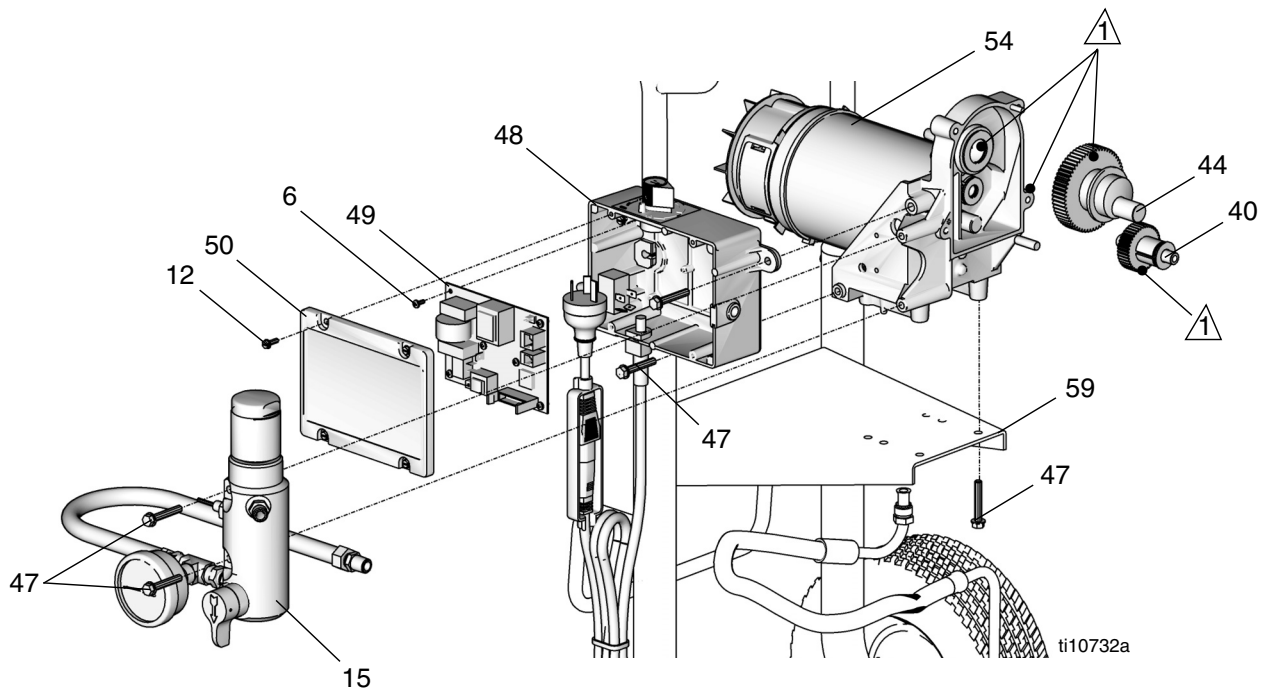
Removal

1. **Relieve Pressure**, page 6.
2. Remove pump (41); **Displacement Pump Replacement**, page 13.
3. Remove drive housing (42); **Drive Housing Replacement**, page 15.
4. Remove screws (12) from cover (50).
5. Disconnect all leads from board (49). Remove screws (6) and board.

6. Remove screws (47) and control box (48).
7. Remove screws (47) and manifold (15).
8. Remove screws (47) and motor (54) from frame (59).

Installation

1. Install new motor (54) on frame (59) with screws (47).
 2. Install manifold (15) with screws (47).
 3. Install control housing (48) with screws (47).
 4. Install board (49) with screws (6). Connect all leads to board. See **Wiring Diagram** on page 25 for your sprayer model.
 5. Install drive housing (42); **Drive Housing Replacement**, page 15.
1. Install pump (41); **Displacement Pump Replacement**, page 13.

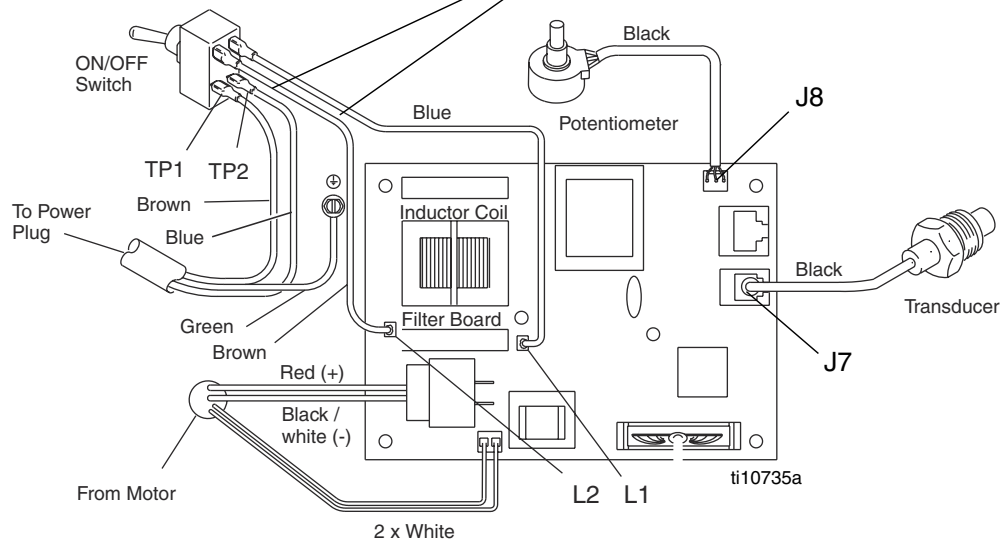


1 Liberaally apply grease

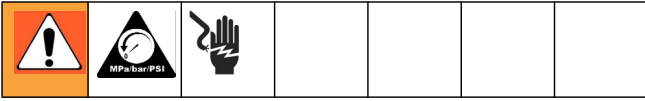
Wiring Diagram

NOTICE
 Heat from inductor coil of filter may destroy wire insulation that comes in contact with it. Exposed wires could cause shorts and component damage. Bundle and tie all loose wires so none lay in contact with inductor coil of filter board.

110V and 240V Models



Drain Valve Replacement



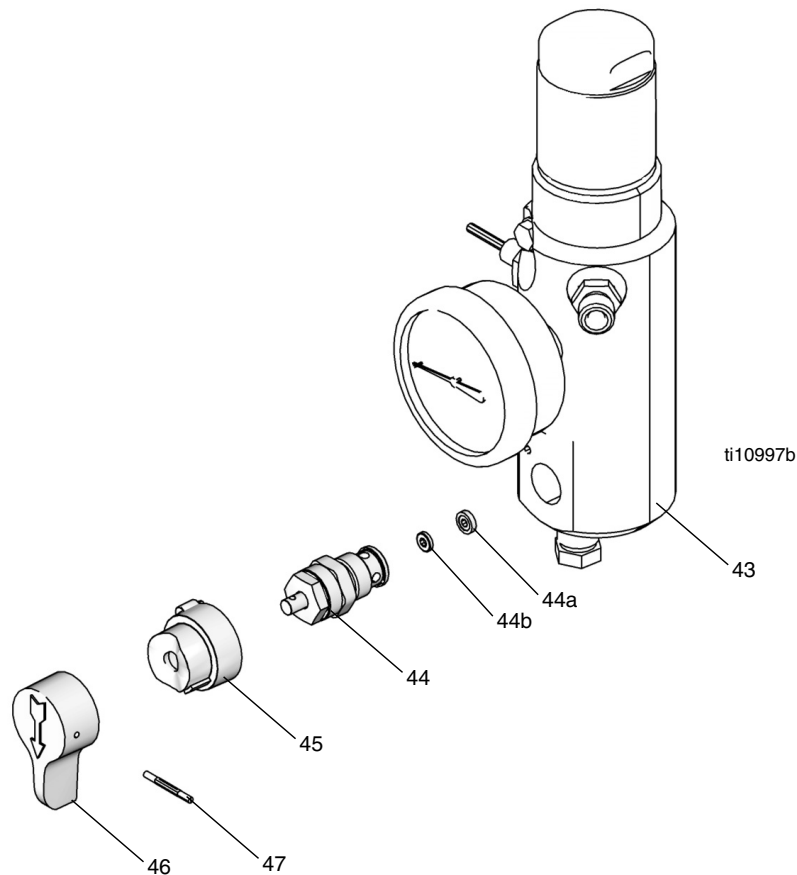
Removal

1. **Relieve Pressure**, page 6. Disconnect power cord from outlet.
2. Using a punch and hammer, tap pin (4) out of drain handle (27).
3. Pull drain handle (27) and base (36) off drain valve (35).
4. Using a wrench, loosen drain valve (35) and remove it from manifold (15).

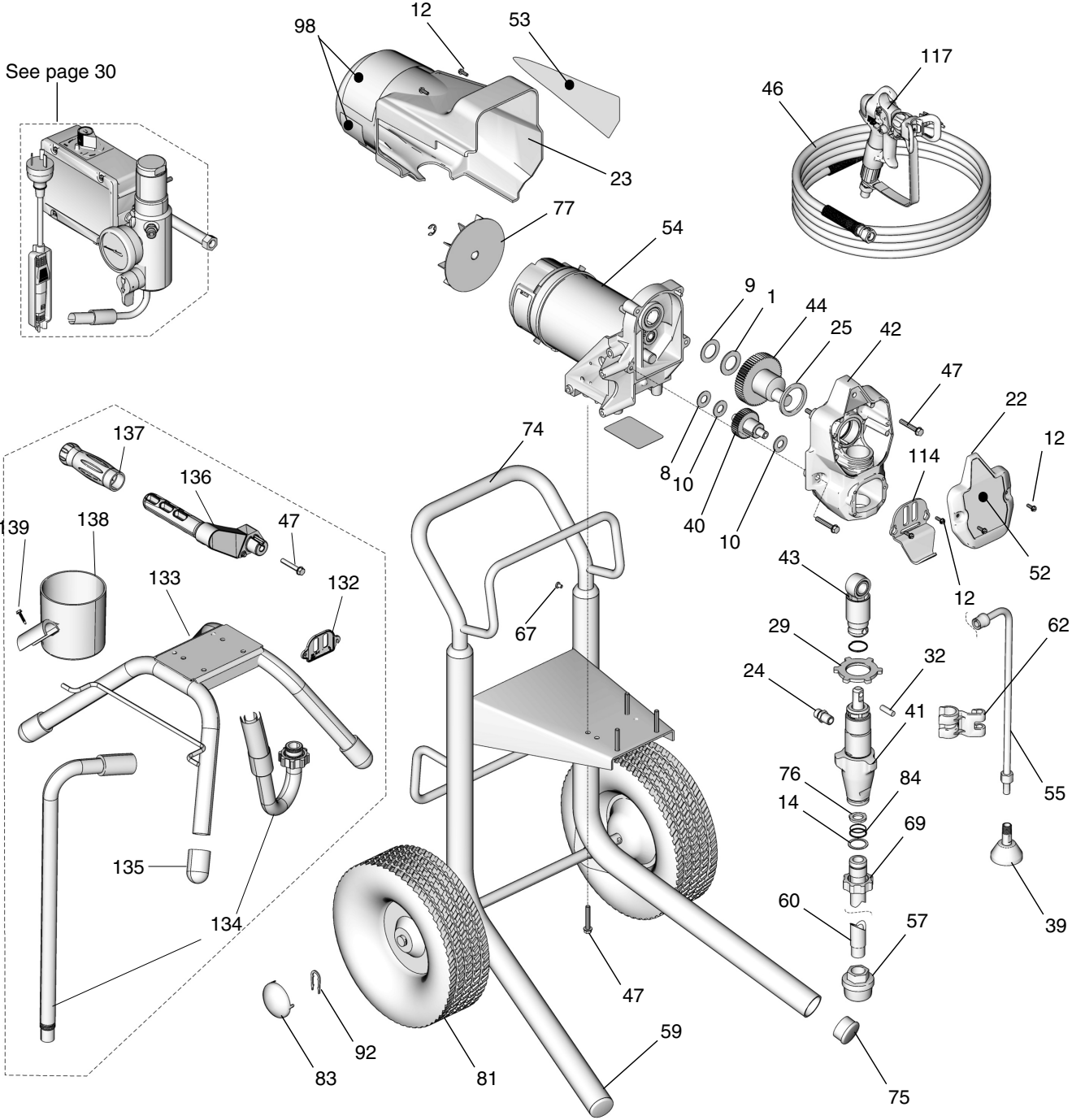
Installation

NOTE: Before installing new drain valve, be sure old gasket (5) and seat (26) are not still inside manifold.

1. Thread drain valve (35) into manifold (15) opening.
2. Hand tighten securely. Using a wrench, torque to 120 to 130 in-lb.
3. Turn valve stem so hole for pin (4) is positioned at 12 o'clock (pin can be temporarily inserted to turn valve stem).
4. Push base (36) over drain valve (35) and then drain handle (27) over base (36).
5. Replace pin (4) in drain handle (27). If necessary, use a hammer to tap it in place completely.



Parts Drawing



ti10733b

Parts List

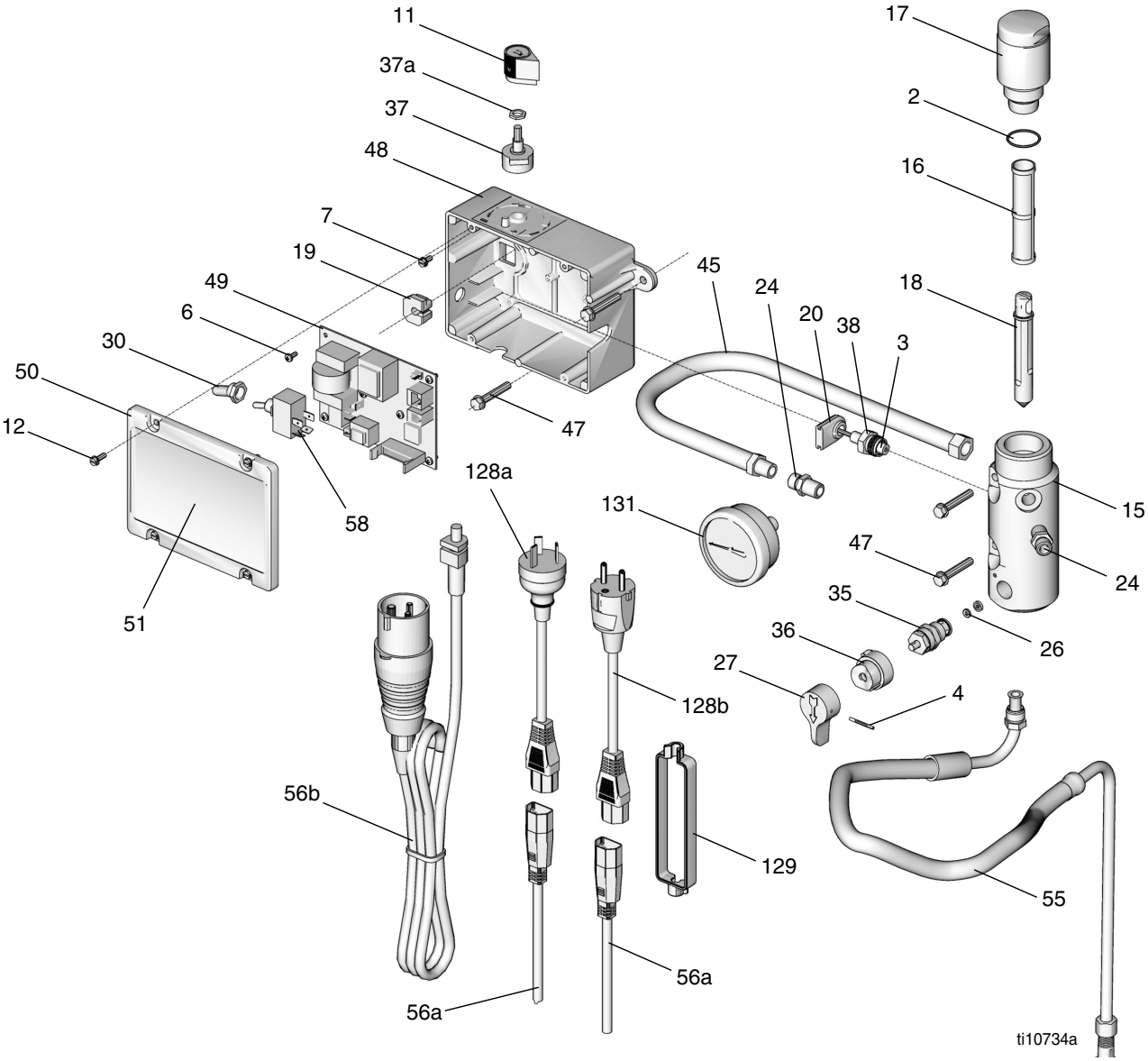
Ref	Part	Description	Qty	Ref	Part	Description	Qty
1	107434	BEARING, thrust	1		287060	240V, MODELS 247533, 247535	1
2	117828	KIT, o-ring	1		287014	110V, MODEL 247534	1
3	111457	PACKING, wiring	1	55		KIT, return line (includes 39)	
4	111600	PIN, grooved	1		244240	Model 247533	1
5	111699	GASKET, valve seat	1		287668	Models 247534, 247535	1
8	116073	WASHER, thrust	1	57	246385	KIT, strainer	1
9	116074	WASHER, thrust	1	59	245984	FRAME, cart	1
10	116079	BEARING, thrust	2	60	246387	KIT, stringer tube	1
12	117501	SCREW, machine slot hex head	6			(includes 14, 57, 69, 84)	
14	103413	PACKING, o-ring	1	62	276888	CLIP, drain line	1
15	15G455	MANIFOLD, fluid	1	67	109032	SCREW, machine pan head	4
16†	246384	KIT, filter	1	69	15E813	NUT, jam	1
17	287902	KIT, filter cap (includes 18)	1	74	287489	HANDLE, cart	1
18		INSERT, filter	1	75		PLUG, tubing	
20	15B120	GROMMET, transducer	1		108691	MODEL 247533	2
22	276883	KIT, Front Cover	1		277091	MODELS 247534, 247535	2
23	255482	KIT, motor shield (includes 12, 63)	1	76	115099	WASHER, garden hose	1
24	162453	FITTING	3	77	239912	KIT, motor fan	1
25	180131	BEARING, thrust	1	81		WHEEL, semi pneumatic	
26	15E022	SEAT, valve	1		106062	MODEL 247533	2
27		HANDLE, drain valve			119730	MODELS 247534, 247535	2
	187625	MODEL 247533	1	83	104811	CAP, hub	2
	277089	MODELS 247534, 247535	1	84	15B652	WASHER, suction	1
29	195150	JAM NUT, pump	1	92	15B999	CLIP, retaining	2
31	196750	SPRING, retaining	1	98◆	243301	LABEL, international set	1
32	196762	PIN	1	114	15C146	HOOK, pail	1
33	245651	FLUID, starter kit (not shown)	1	117	289316	GUN, 500 2 finger	1
35	235014	KIT, drain valve	1	131	115523	GAUGE, pressure, fluid	1
36	224807	BASE, valve	1	132	15B589	COVER, Pump Rod, model 24M722	1
38	244984	KIT, transducer (includes 3)	1	133	15E823	FRAME, standmount, model 24M722	1
39		DEFLECTOR		134	246386	KIT, Repair, Suction Set, model 24M722	1
	241920	MODEL 247533	1	135	15G857	CAP. leg, model 24M722	1
	287614	MODELS 247534, 247535	1	136	276864	HANDLE, model 24M722	1
40	287057	KIT, combination gear (includes 8, 10)	1	137	16F422	HANDLE, grip, model 24M722	1
41	255475	KIT, pump	1	138	15G838	CUP, model 24M722	1
42	255436	KIT, drive housing (includes 12, 47)	1	139	122667	SCREW, model 24M722	1
43	287053	KIT, connecting rod (includes 31, 32)	1				
44	287054	KIT, crankshaft (includes 1, 9, 25)	1				
45	15M670	HOSE, cpld	1				
46	HSE1450	HOSE	1				
47	117493	SCREW, machine hex washer head	12				
52		LABEL, front					
	15M776	MODEL 247533	1				
	15R614	MODELS 247534, 247535	1				
53		LABEL, side					
	15R230	MODEL 247533	1				
	15R413	MODEL 247534, 247535	1				
54*		KIT, motor					

◆ Replacement Danger and Warning labels, tags, and cards are available at no cost.

† Other filters available: 246382, 100 mesh; 246383, 200 mesh; 246425, 30 mesh.

*Motor Brush Kit 287735 is available.

Parts Drawing



Parts List

Ref	Part	Description	Qty	Ref	Part	Description	Qty
6	115494	SCREW, machine phillips PHd	6	50	15R133	CONTROL COVER	1
7	115498	SCREW, machine slot HWHd	1	51		LABEL, control	
11		KNOB, potentiometer			15R231	Model 247533	1
	116167	MODEL 247533	1		15R615	Models 247534, 247535	1
	15F537	MODELS 247534, 247535	1	56a	15B471	CORD, ST IEC jumper	1
12	117501	SCREW, machine slot HWHd	4	56b	15B469	CORD, ST UK	1
19	15B118	BUSHING, motor wire	1	58	117492	SWITCH, ON/OFF	1
30	195428	BOOT, toggle	1	128a	242005	CORD SET, adapter, Australia	1
37	256219	POTENTIOMETER, assembly (includes 37a)	1	128b	242001	CORD SET, adapter, Europe	1
		NUT, shaft sealing	1	128c	287121	CORD SET, Italy, Denmark, Switzerland	1
47	117493	SCREW, machine HWHd	2	129	195551	RETAINER, plug adapter	1
48	276868	BOX, control	1				
49		KIT, control board					
	246378	Model 247534	1				
	246380	Models 247533, 247535	1				

Technical Data

Power requirements	100/120V AC, 50/60 hz, 11A, 1 phase 240V AC, 50/60 hz, 7.0A, 1 phase
Generator required	3000 w minimum
Motor HP (W)	3/4 (560)
Maximum working pressure	3300 psi (22.7 MPa, 227 bar)
Cycles per gallon (liter).....	700 (185)
Maximum delivery gpm (lpm)	0.54 (2.0)
Maximum tip size	0.023
Fluid outlet npsm	1/4 in.
Dimensions	
Length	21.0 in. (53.3 cm)
Width	20.5 in. (52.1 cm)
Height.....	29.5 in. (74.9 cm)
Weight	66.0 lb (30.0 kg)
Weight (with gauge)	67.0 lb (30.4 kg)
Wetted parts	zinc and nickel-plated carbon steel, nylon, stainless steel, PTFE, Acetal, chrome plating, leather, UHMWPE, aluminum, tungsten carbide
Noise level*	
Sound power (ISO 3744)	100dBa*
Sound pressure (ISO 3744)	90 dBa*

**Measured 3 feet (1 meter) from equipment.*

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

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized ASM distributor for verification of the claimed defect. If the claimed defect is verified, ASM will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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