

T-Max 405™ Texture Sprayer

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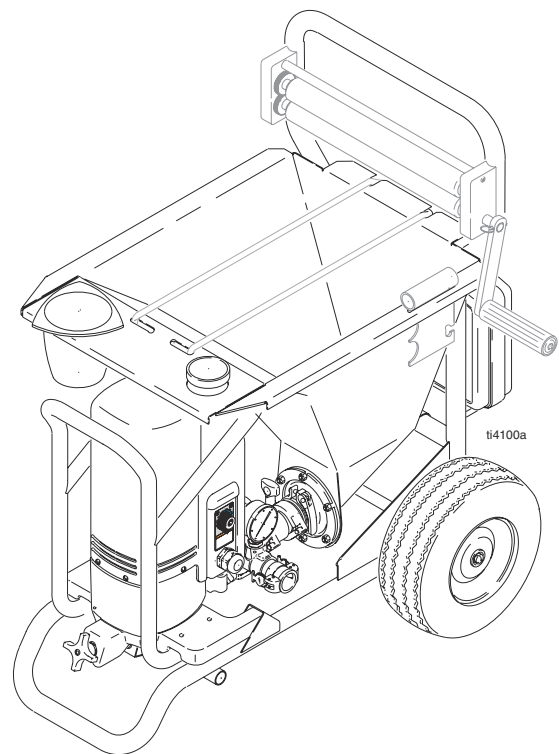
For water-based materials only. For professional use only. Not approved for use in European explosive atmosphere locations.

Model 248195, Series A
Model 248269, Series A
Model 249075, Series A

580 psi (4 MPa, 40 bar) Maximum Working Pressure



IMPORTANT SAFETY INSTRUCTIONS
Read all warnings and instructions in this manual. Save these instructions.



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Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

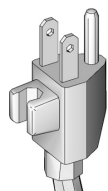
⚠️ WARNING



GROUNDING

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

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







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




Extension Cords:

- Use only a 3-wire extension cord that has a 3-blade grounding plug and a 3-slot receptacle that accepts the plug on the product.
- Make sure your extension cord is not damaged. If an extension cord is necessary, use 12 AWG (2.5 mm²) minimum to carry the current that the product draws.
- An undersized cord results in a drop in line voltage and loss of power and overheating.

! WARNING

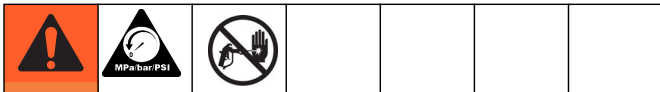
	<p>FIRE AND EXPLOSION HAZARD Flammable fumes, such as solvent, in work area can ignite or explode. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • Use equipment in well ventilated area. • Sprayer generates sparks. When flammable liquids are used near the sprayer or for flushing or cleaning, keep sprayer at least 20 feet (6 meters) away from explosive vapors. • Keep work area free of debris, including solvent, rags and gasoline. • Ground equipment in the work area. See 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 This equipment must be grounded. 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 power and extension cords. • Do not expose to rain. Store indoors.
	<p>PRESSURIZED EQUIPMENT HAZARD Fluid from the gun/dispense valve, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.</p> <ul style="list-style-type: none"> • Follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.
	<p>EQUIPMENT MISUSE HAZARD Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Always wear appropriate gloves, eye protection, and a respirator or mask when painting. • Do not operate or spray near children. Keep children away from equipment at all times. • Do not overreach or stand on an unstable support. Keep effective footing and balance at all times. • Stay alert and watch what you are doing. • Do not leave the unit energized or under pressure while unattended. When the unit is not in use, turn off the unit and follow the Pressure Relief Procedure for turning off the unit. • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not kink or over-bend the hose. • Do not expose the hose to temperatures or to pressures in excess of those specified by Graco. • Do not use the hose as a strength member to pull or lift the equipment.

 **WARNING**

 	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none">• Keep clear of moving parts.• Do not operate equipment with protective guards or covers removed.• Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.
	<p>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, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:</p> <ul style="list-style-type: none">• Protective eyewear, and hearing protection.• Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

General Repair Information

Pressure Relief



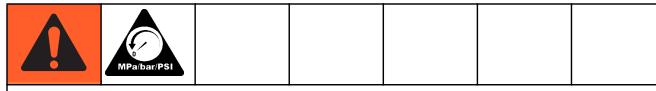
The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. To reduce the risk of an injury from accidental spray from the applicator, splashing fluid, or moving parts, follow the Pressure Relief Procedure whenever you:

- Are instructed to relieve the pressure
- Stop spraying
- Check or service any of the system equipment
- Install or clean the spray nozzle

Pressure Relief Procedure

1. Turn control off (0).
2. Point applicator into hopper. Turn applicator on.
3. Open the applicator air valve (handle parallel with valve body).
4. Unplug the electrical power cord.
5. Hold hose firmly in one hand and slowly open on cam arm at a time. Remove hose from pump outlet.

Grounding and Electrical Requirements



Improper installation or alteration of the grounding plug will result in a risk of electric shock, fire or explosion that could cause serious injury or death.

Voltage Requirements

- Fig. 1. 220-240 Vac models require a 50Hz, 16A circuit with a grounding receptacle. 100-120 Vac models require a 50/60 Hz, 16A circuit with a grounding receptacle.

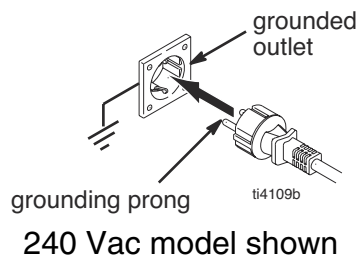


FIG. 1

- Do not alter the ground prong or use an ungrounded adapter.


Extension Cords

- Use only an extension cord with an undamaged, 3-prong plug.
- 120 Vac: A 12 AWG, 3 wires with grounding prong, 300 ft (90m) extension cord may be used.
220-240 Vac: You may use a 3-wire, 1.0 mm (12 AWG) (minimum) extension cord up to 90m long. Long lengths reduce sprayer performance.

General Repair Information

Auxiliary Air Compressor

An external air compressor may be connected to the applicator air line fitting. This may be useful for the application of decorative or hard-to-spray materials.

						
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Over pressurizing the system may cause component rupture and result in serious injury. To reduce risk of over pressurizing system:


- Do not use a compressor with an output pressure greater than 250 psi (1.7MPa, 17 bar).
- Attach Graco 25mm x 5m hose to pump outlet.

- Use shortest fluid hose length required for the spray application [(25mm x 5m) minimum, see Warning].
- Unnecessary hose length decreases sprayer performance.
- Maximum fluid hose lengths:
15m of 25mm ID
-or-
10m of 25mm ID combined with a 3m of 19mm ID fluid hose.

Hose Size and Lengths

The system comes with the following hoses:


Hose Type	Inside Diameter (ID) mm (in.)	Length m (ft)
Fluid	25mm (1.0)	5 (16)
Fluid	19mm (.75)	3 (10)
Air	9.5mm (.375)	15 (49)

						
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The motor has a thermal overload switch that shuts down the motor if it overheats. To reduce risk of serious bodily injury due to the system restarting unexpectedly, always turn the pressure control to OFF (0).

Hose Usage

Always attach the 25mm x 5m hose to the pump outlet. Other hoses may then be added up to the maximum fluid hose lengths:

						
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Quick-set materials can harden, plug passage ways and cause the sprayer to become over pressurized. An over-pressurized system can cause components to burst and cause bodily injury. To reduce the risk of bodily injury due to over pressurization of the system, do not use quick set materials.

Troubleshooting



Relieve pressure; page 6.

MOTOR WON'T OPERATE.

TYPE OF PROBLEM	WHAT TO CHECK If check is OK, go to next check	WHAT TO DO When check is not OK, refer to this column
Basic Fluid Pressure Problems	1. Pressure control knob setting. Motor will not run if at minimum setting (fully counterclockwise).	1. Slowly increase pressure setting to see if motor starts.
	2. Spray tip or fluid filter may be clogged.	2. Relieve pressure and clear clog or clean filter; refer to separate gun or tip instruction manual.
Basic Mechanical Problems	1. Pump (31) for frozen or hardened paint.	1. Thaw sprayer if water or water-based paint has frozen in the sprayer. Place sprayer in warm area to thaw. Do not start sprayer until thawed completely. If paint hardened (dried) in sprayer, replace pump packing. See Pump Repair, page 20.
	2. Displacement pump connecting rod pin (75). Pin must be completely pushed into connecting rod (45) and retaining spring (76) must be firmly in groove of pump pin. See Fig. 9.	2. Push pin into place and secure with spring retainer.
	3. Motor (33). Remove drive housing assembly (37). See page 15. Try to rotate fan by hand.	3. Replace motor (33) if fan won't turn. See page 15.
Basic Electrical Problems	1. Motor control board. Board shuts down and displays error.	1. See Motor Control Board Diagnostics, page 17.
	2. Electrical supply. Meter must read: 210-255 Vac for 220-240 Vac models; 85-130 Vac for 100-120 Vac models.	2. Reset building circuit breaker; replace building fuse. Try another outlet.
	3. Extension cord. Check extension cord continuity with volt meter.	3. Replace extension cord.
	4. Sprayer power supply cord. Inspect for damage such as broken insulation or wires.	4. Replace power supply cord.
	5. That motor leads are securely fastened and properly mated.	5. Replace loose terminals; crimp to leads. Be sure terminals are firmly connected. Clean circuit board terminals, Securely reconnect leads.
	6. For loose motor brush lead connections and terminals. See page 14.	6. Tighten terminal screws. Replace brushes if leads are damaged. See page 15.

TYPE OF PROBLEM	WHAT TO CHECK If check is OK, go to next check	WHAT TO DO When check is not OK, refer to this column
Basic Electrical Problems (continued)	7. Brush length which must be 1/4 in, minimum. See page 14. NOTE: Brushes do not wear at the same rate on both sides of motor. Check both brushes.	7. Replace brushes. See page 14.
	8. For broken or misaligned motor brush springs. Spring must rest squarely on top of brush. See page 14.	8. Replace brush if spring is broken. See page 15.
	9. Motor brushes may be binding in brush holders. See page 15.	9. Clean brush holders. Remove carbon with small cleaning brush. Align brush leads with slot in brush holder to assure free vertical brush movement.
	10. Motor armature commutator for burn spots, gouges and extreme roughness. See page 14.	10. Remove motor and have motor shop resurface commutator, if possible. See page 15.
	11. Motor armature for shorts using armature tester (growler) or perform spin test. See page 13.	11. Replace motor. See page 15.
Refer to wiring diagram on page 29 to identify test points (TP).	1. Power supply cord. Connect volt meter between TP1 (L1, 240 Vac) and TP2 (L2, Neutral). Plug in sprayer. Meter must read: 210-235 Vac for 220-240 Vac models; 85-130 Vac for 100-120 Vac models. Unplug sprayer.	1. Replace power supply cord.
	2. Motor thermal cutoff switch. Turn sprayer OFF. Check for continuity between TO1 and TO2 with ohmmeter.	2. If thermal switch is open (no continuity), allow motor to cool. If switch remains open after motor cools, replace motor. If thermal switch closes after motor cools, correct cause of overheating.
	3. All terminals for damage or loose fit.	3. Replace damaged terminals and reconnect securely.

LOW OR FLUCTUATING OUTPUT

TYPE OF PROBLEM	WHAT TO CHECK If check is OK, go to next check	WHAT TO DO When check is not OK, refer to this column
Low Output	1. For worn spray tip.	1. Follow Pressure Relief Procedure , page 6, then replace tip. See separate gun or tip manual.
	2. Verify pump does not continue to stroke when gun trigger is released.	2. Service pump. Check piston and intake valves for wear or obstructions. See 20.
	3. Filter clogged (If optional filter is installed).	3. Relieve pressure. Check and clean filter.
	4. Material hose length. Longer hose length reduces sprayer performance.	4. Replace with hose length less than specified maximum.
	5. Pump hopper adapter connections.	5. Tighten any loose connections. Replace pump hopper adapter if cracked or punctured.
	6. Electrical supply with volt meter. Meter must read: 210-255 Vac for 220-240 Vac models; 85-130 Vac for 100-120 Vac models Low voltages reduce sprayer performance.	6. Reset building circuit breaker; replace building fuse. Repair electrical outlet or try another outlet.
	7. Extension cord size and length; must be at least 1.0mm ² (12awg) wire and no longer than 90m (295 ft). Longer cord lengths reduce sprayer performance.	7. Replace with a correct, grounded extension cord.
	8. Leads from motor to pressure control circuit board (38) for damaged or loose wires or connectors. Inspect wiring insulation and terminals for signs of overheating.	8. Be sure male terminal blades are centered and firmly connected to female terminals. Replace any loose terminal or damaged wiring. Securely reconnect terminals.
	9. For loose motor brush leads and terminals. See page 14.	9. Tighten terminal screws. Replace brushes if leads are damaged. See page 14
	10. For worn motor brushes which must be 1/4 in. minimum. See page 14.	10. Replace brushes. See page 14.
	11. For broken and misaligned motor brush springs. Spring must rest squarely on top of brush.	11. Replace brush if spring is broken. See page 14.
	12. Motor brushes for binding in brush holders. See page 14.	12. Clean brush holders, remove carbon dust with small cleaning brush. Align brush lead with slot in brush holder to assure free vertical brush movement.

TYPE OF PROBLEM	WHAT TO CHECK If check is OK, go to next check	WHAT TO DO When check is not OK, refer to this column
Low Output continued	13. Low stall pressure.	13. Do either or both: 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.
	14. Motor armature for shorts by using an armature tester (growler) or perform spin test. See page 13.	14. Replace motor. See page 15.
Motor runs and pump strokes	1. Material supply	1. Refill hopper and reprime pump.
	2. Loose fittings.	2. Tighten; use thread sealant or sealing tape on threads if necessary.
	3. Intake valve ball and piston ball are seating properly. See page 20.	3. Remove intake and piston valves and clean. Check balls and seats for nicks or obstructions; replace if necessary, page 20. Clean hopper before using to remove particles that could clog pump.
	4. Leaking around throat packing nut which may indicate worn or damaged packings. See page 20.	4. Replace packing, page 20. Also check piston valve seat for hardened paint or nicks and replace if necessary. Tighten packing nut.
	5. Pump rod damage.	5. Repair pump, page 20.
	6. Capacitor failure. Visually inspect capacitor near terminals. Ensure that orange safety relief plug is intact.	6. Replace capacitor.
Motor runs but pump does not stroke	1. Displacement pump pin (75) (damaged or missing), page 20.	1. Replace pump pin if missing. Be sure retainer spring (76) is fully in groove all around connecting rod, page 20.
	2. Connecting rod assembly (45) for damage, page 23.	2. Replace connecting rod assembly, page 23.
	3. Gears or drive housing, page 24.	3. Inspect drive housing assembly and gears for damage and replace if necessary, page 24.

MOTOR IS HOT AND RUNS INTERMITTENTLY

TYPE OF PROBLEM	WHAT TO CHECK If check is OK, go to next check	WHAT TO DO When check is not OK, refer to this column
Motor is hot and runs intermittently	1. Determine if sprayer was operated at high pressure with small tips, which causes low motor RPM and excessive heat build up.	1. Decrease pressure setting or increase tip size.
	2. Be sure ambient temperature where sprayer is located is no more than 90°F and sprayer is not located in direct sun.	2. Move sprayer to shaded, cooler area if possible.

ELECTRICAL SHORT

TYPE OF PROBLEM	WHAT TO CHECK If check is OK, go to next check	WHAT TO DO When check is not OK, refer to this column
<p>Building circuit breaker opens as soon as sprayer switch is turned on.</p> <p>CAUTION 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>1. All electrical wiring for damaged insulation, and all terminals for loose fit or damage. Also wires between pressure control and motor. See page 15.</p>	<p>1. Repair or replace any damaged wiring or terminals. Securely reconnect all wires.</p>
	<p>2. Bent terminal folks or other metal to metal contact points which could cause a short.</p>	<p>2. Correct faulty conditions.</p>
	<p>3. Motor armature for shorts. Use an armature tester (growler) or perform spin test. See page 14. Inspect windings for burns.</p>	<p>3. Replace motor. See page 15.</p>
	<p>4. Motor control board (38) by performing motor control board diagnostics on page 17. 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>4. Replace with a new pressure control board (38). See page 17.</p>
<p>Building circuit breaker opens as soon as sprayer is plugged into outlet and sprayer is NOT turned on.</p>	<p>1. Basic Electrical Problems on page 8.</p>	<p>1. Perform necessary procedures.</p>
	<p>2. For damaged or pinched wires in pressure control. See page 17.</p>	<p>2. Replace damaged parts. See page 17.</p>
<p>Sprayer quits after sprayer operates for 5 to 10 minutes.</p>	<p>1. Basic Electrical Problems on page 8.</p>	<p>1. Perform necessary procedures.</p>
	<p>2. Electrical supply with volt meter. Meter must read: 210-255 Vac for 220-240 Vac models; 85-130 Vac for 100-120 Vac models.</p>	<p>2. If voltage is too high, do not operate sprayer until corrected.</p>
	<p>3. Tightness of pump packing nut. Over tightening tightens packings on rod, restricts pump action, and damages packings.</p>	<p>3. Loosen packing nut. Check for leaking around throat. Replace pump packings, if necessary. See page 20.</p>

Spin Test

Setup



To check armature, motor winding and brush electrical continuity:

1. Relieve pressure; page 6.
2. Remove motor, page 15.
3. Fig. 3. Remove six screws (12) and motor cover (18).
4. Fig. 2. Disconnect wire harness (155) from control board.

Armature Short Circuit Test

Quickly turn motor fan by hand. If no electrical shorts, motor coasts two or three revolutions before complete stop. If motor does not spin freely, armature is shorted. Replace motor; page 15.

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

1. Connect wire harness (155) leads together with test lead (A). Turn motor fan by hand at about two revolutions per second.
2. If uneven or no resistance, check for: broken brush springs, brush leads, motor leads; loose brush ter-

minal screws, motor lead terminals; worn brushes. Repair as needed; page 14.

3. If still uneven or no resistance, replace motor; page 15.

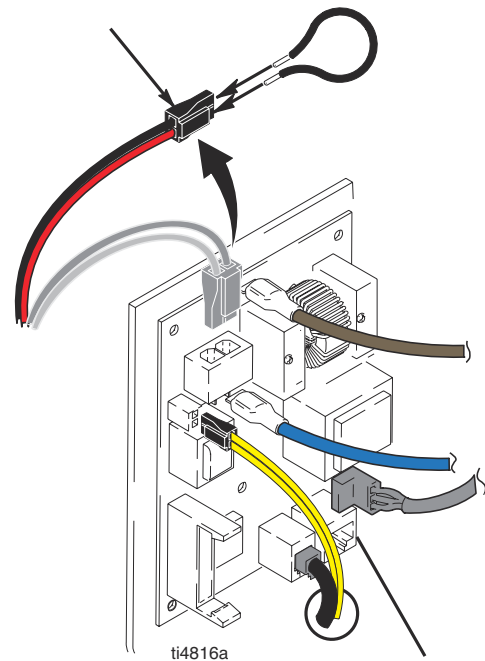
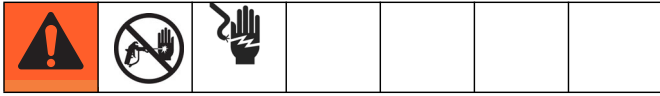


FIG. 2

Motor Brush Replacement

Motor Brush Removal



Replace brushes worn to less than 1/2 in. Check both sides. Order Brush Repair Kit 243642 for 220-240 Vac motors and 243215 for 100-120 Vac motors with external capacitor.

1. Read General Repair Information; page 6.
2. Relieve pressure; page 6.
3. Fig. 6. Remove six screws (12) and motor cover (18).
4. Fig. 3. Discharge any residual capacitor voltage with a resistive load across terminal screws (41).

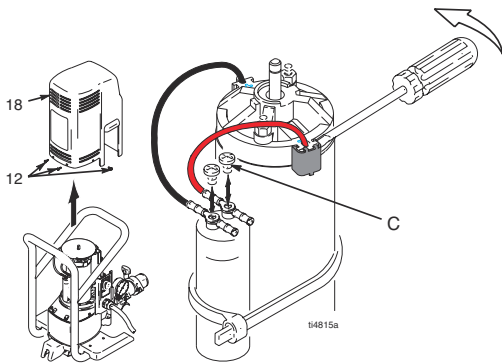


FIG. 3

5. Fig. 4. Pry off two brush caps (A). Tag locations of red (+) and black (-) motor leads.
6. Fig. 5. Remove screws (41) and discard brushes (B) for motor with capacitor attached.

NOTICE

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

7. Fig. 4. Insert brush (B). Push clip (A) until it snaps into place and secures brush.
8. Install red brush lead (+) and black brush lead (-) according to markings on the motor and capacitor. Install brush lead end to capacitor with screw (41).

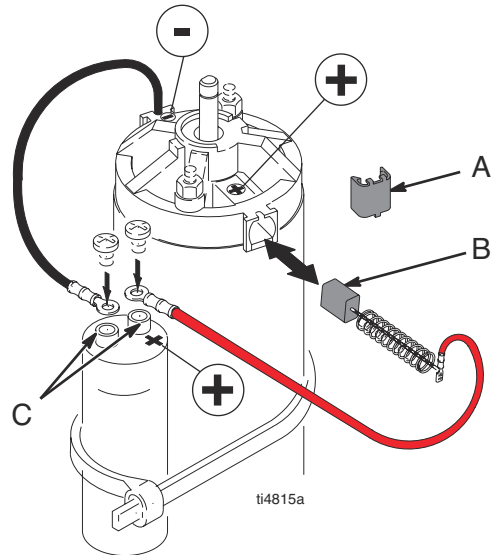


FIG. 4

9. 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.
10. Test brushes.
 - a. Disconnect pump (31); Pump Repair, Removal, steps 8 and 9, page 20.
 - b. With sprayer OFF, turn pump control knob fully counterclockwise to minimum pressure. Plug in sprayer.
 - c. Turn sprayer ON. Slowly increase pressure until motor is at full speed.
11. Break in brushes.
 - a. Operate sprayer 1 hour with no load.
 - b. Connect pump (31); Pump Repair, Installation, step 4, page 20.

Motor Replacement



Removal

1. Relieve pressure; page 6.
2. Fig. 5. Remove pump module (A).
 - a. Loosen clamp rod (20).
 - b. Release hopper quick-release clamp (28).
 - c. Disconnect pump module (A) from frame (35).

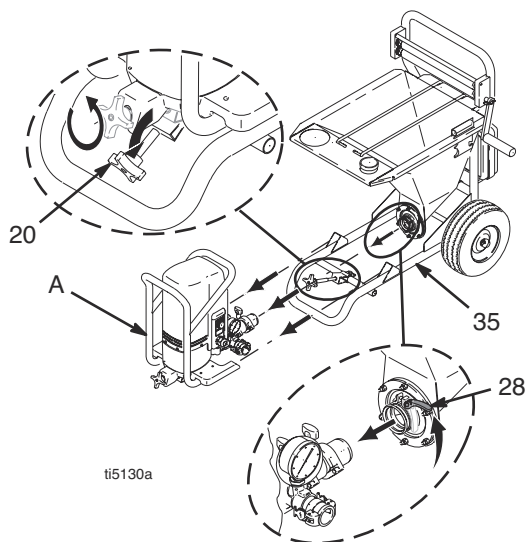


FIG. 5

3. Fig. 6. Remove six screws (12) and motor cover (18).
4. Remove two screws (41) and disconnect leads from capacitor (42) to control board (38).
5. Disconnect two yellow leads (B) from control board (38).
6. Pull strain relief (49) out of bracket and thread yellow leads connector through bracket.
7. Remove four screws (90) and washers (71) from gear housing base (25), Parts Drawing, page 26.

8. Tip motor and drive housing assembly back and remove two screws (86) and washers (84).

NOTICE

Do not drop gear cluster (D) when removing drive housing (37). Gear cluster may stay engaged in motor front end bell or drive housing.

9. Return motor and drive housing assembly to vertical position.
10. Remove screws (85) and washers (84). Remove motor (33) from drive housing (37).

Installation

NOTICE

When installing motor, carefully align gears to avoid damaging mating parts.

1. Fig. 6. Place new motor (33) on drive housing (37). Rotate fan (C). When gears are felt to mesh, install four washers (84) and screws (85).
2. Tip motor and drive housing assembly back and install two washers (84) and screws (86).
3. Install motor and drive housing to gear housing base (25) with four screws (90) and washers (71).
4. Thread yellow lead (B) through strain relief (49) and connect to control board (38). Install strain relief in bracket.
5. Connect red brush lead (+) and black brush lead (-) according to markings on the motor and capacitor. Install brush lead ends and wire harness (155) lead ends to capacitor with screw (41). See Wiring Diagram, page 29 to verify polarity is correct.
6. Install motor cover (18) with five screws (12).

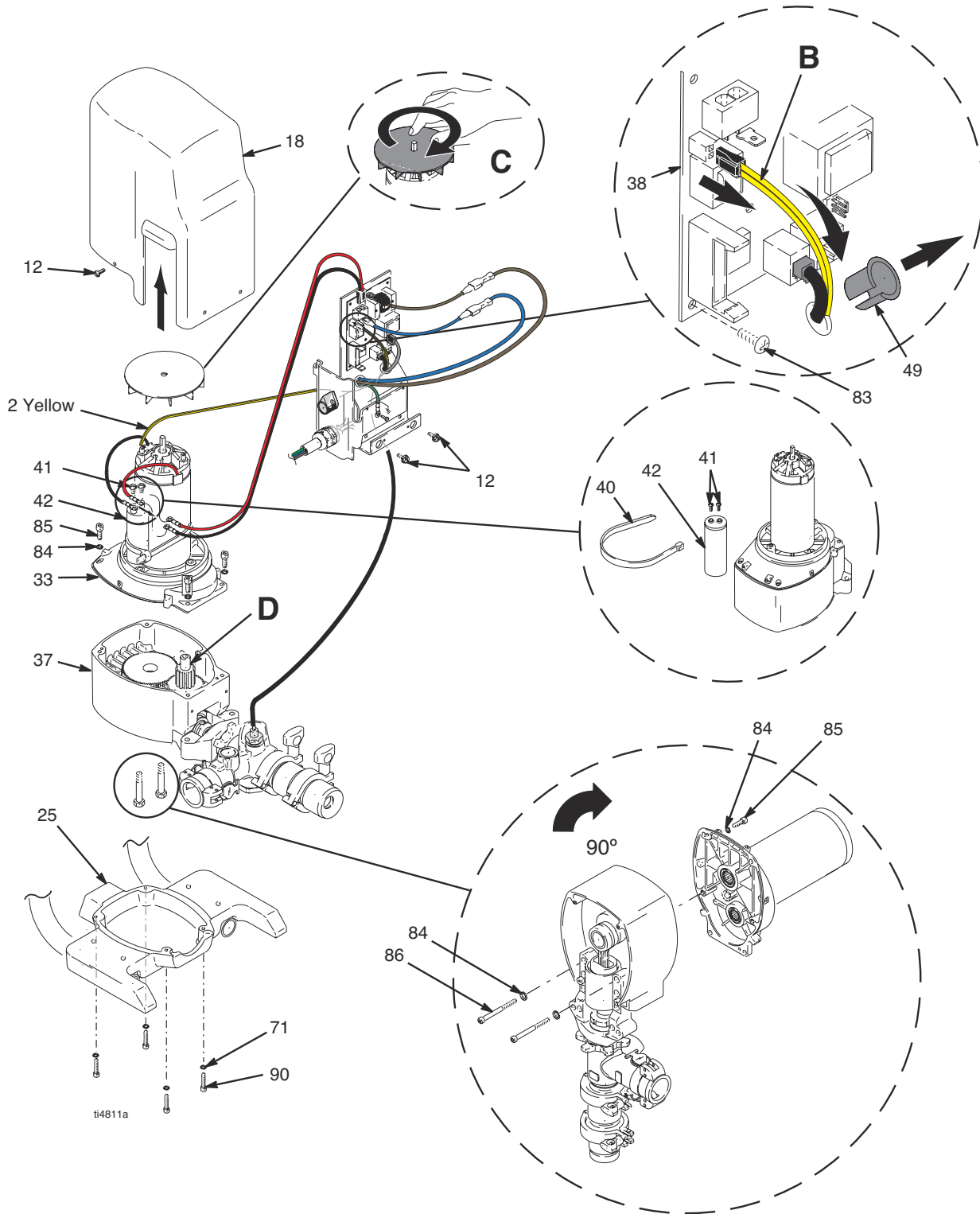


FIG. 6

Pressure Control Repair

Motor Control Board Diagnostics

Note: Keep a new transducer on hand to use for test.



1. Relieve pressure; page 6.

2. Remove five screws (12) and motor cover (18).

NOTICE

Do not allow sprayer to develop fluid pressure without transducer installed.

3. Plug in power cord.

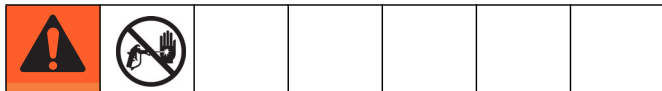
4. Observe LED operation and reference following table:

LED BLINKS	SPRAYER OPERATION	INDICATES	WHAT TO DO
Once	Sprayer runs	Normal operation	Do nothing
Once and stays ON	Sprayer shuts down and LED stays ON	Motor open circuit or bad control board	Check motor brushes and armature. If OK, replace motor control board.
Two times repeatedly	Sprayer shuts down and LED continues to blink two times repeatedly	Run away pressure. Pressure greater than 57 bar (5.7 MPa, 830 psi).	Replace pressure transducer or motor control board. See following Motor Control Board procedure.
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	Line voltage is too high	Check for voltage supply problems
Five times repeatedly	Sprayer shuts down and LED continues to blink five times repeatedly	Too much current	Check for locked rotor, shorted wiring or motor. Repair or replace failed parts.
Six times repeatedly	Sprayer shuts down and LED continues to blink six times repeatedly	Motor thermal switch open circuit	Check for binding in pump or drive. Check for bad motor.

Pressure Control Repair

Motor Control Board

Removal



Refer to Wiring Diagram, page 29.

1. Relieve pressure; page 6.
2. Remove five screws (12) and motor cover (18).
3. Cut wire tie holding wiring to motor control board (38).
4. Disconnect at motor control board (38):
 - Motor wire harness: brown (+), blue (-).
 - Two line voltage leads: brown (+), blue (-).
 - Lead (D) from potentiometer.
 - Lead (E) from transducer.
 - Two leads (F) from motor thermal switch.
5. Remove six screws (83) and circuit board (38).

Installation

NOTICE

Electrostatic discharges can damage components on motor control board. Use a ground strap when handling or installing motor control board.

1. Fig. 7. Remove old thermal paste from control box. Remove protective cover from thermal pad on new motor control board.

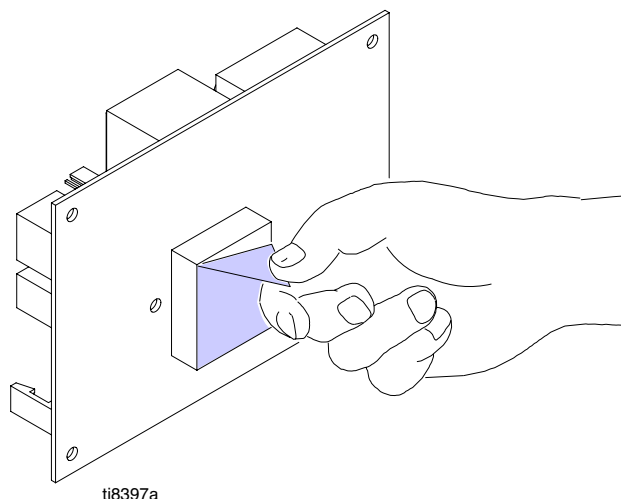
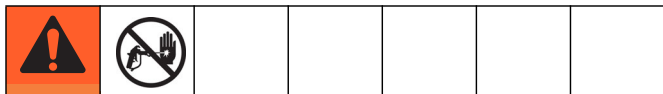


FIG. 7

2. Fig. 6. Install motor control board (38) with six screws (83).
3. Connect to motor control board (38):
 - Two leads (F) from motor thermal switch.
 - Lead (E) from transducer.
 - Lead (D) from potentiometer.
 - Two line voltage leads: brown (+), blue (-).
 - Motor wire harness: brown (+), blue (-).
4. Bundle and tie all loose wires together.
5. Install motor cover (18) with five screws (12).

Pressure Control Transducer

Removal



Refer to Wiring Diagram, page 29.

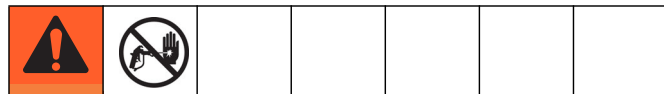
1. Relieve pressure; page 6.
2. Remove five screws (12) and motor cover (18).
3. Disconnect lead (E) from motor control board (38).
4. Remove strain relief (49) from circuit board bracket (21). Thread transducer connector through bracket.
5. Remove pressure control transducer (43) and packing o-ring (89) from pump housing (202).

Installation

1. Install packing o-ring (89) and pressure control transducer (43) in pump housing (202). Torque to 30-35 ft-lb.
2. Thread transducer connector through circuit board bracket (21). Install strain relief (49) in circuit board bracket.
3. Connect lead (E) to motor control board (38).
4. Install motor cover (18) with five screws (12).

Pressure Adjust Potentiometer

Removal



Refer to Wiring Diagram, page 29.

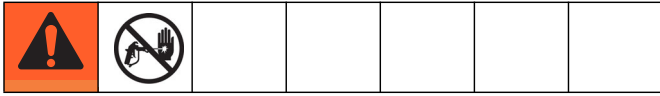
1. Relieve pressure; page 6.
2. Remove five screws (12) and motor cover (18).
3. Disconnect potentiometer lead (47) from motor control board (38).
4. Remove potentiometer knob (16), gasket (88) and pressure adjust potentiometer (47).

Installation

1. Install pressure adjust potentiometer (47), gasket (88) and potentiometer knob (16).
 - a. Turn potentiometer full clockwise.
 - b. Install knob at full clockwise position.
2. Connect potentiometer lead (47) to motor control board (38).
3. Install motor cover (18) with five screws (12).

Pump Repair

Removal



1. Relieve pressure; page 6.
2. Perform **Storage More than 24 hours** procedure in Operation Manual 309973, 309974 or 309975.
3. Fig. 8. Loosen clamp rod (20).

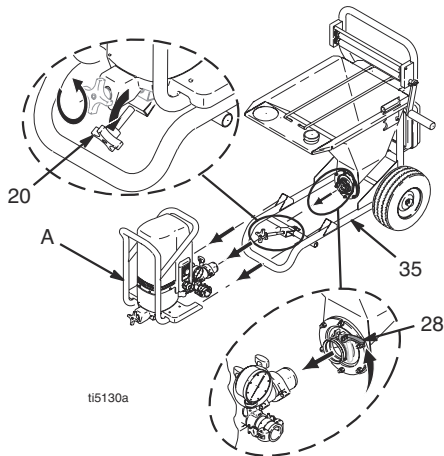


FIG. 8

4. Release hopper quick-release clamp (28).
5. Disconnect pump module (A) from frame (35).
6. Remove five screws (12) and motor cover (18).
7. Fig. 10. Disconnect transducer connector (B) from control board (38). Pull strain relief from bracket. Thread transducer connector through bracket.
8. Fig. 9. Slowly rotate fan blade on back of motor until connecting rod (45) near bottom of stroke.

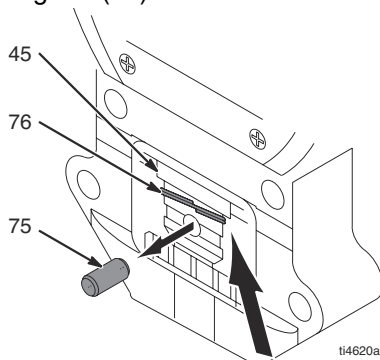


FIG. 9

9. Pry retaining spring (76) up on connecting rod (45). Push pin (75) out with a screwdriver.

10. Fig. 10. Loosen retaining nut (27).

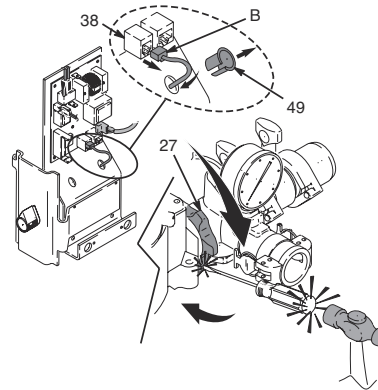


FIG. 10

11. Fig. 11. Unscrew pump (31) from bearing housing (34).

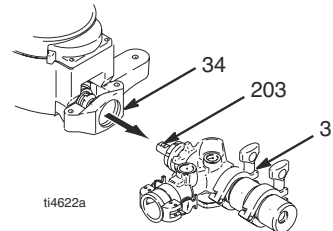


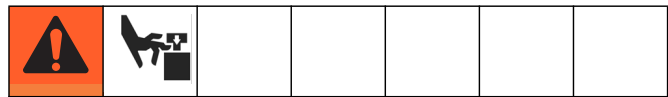
FIG. 11

Repair

See page 20 for pump repair instructions.

Installation

1. Fig. 17. Push piston rod (203) out of pump (31) 50 to 75 mm (2 to 3 inches).
2. Fig. 11. Screw retaining nut (27) onto pump until it stops. Screw pump (31) into bearing housing (34) until pump stops. Unscrew pump until pump outlet is 13° from horizontal, but no more than one turn.



If pin works loose, parts could break off due to force of pumping action. Parts could project through the air and result in serious injury or property damage. Make sure pin and retaining spring are properly installed.

3. Tighten retaining nut (27).
4. Push pin (75) in with a screwdriver. Push retaining spring (76) down on connecting rod (45).
5. Fig. 10. Connect transducer connector (B) to motor control board (38).

Disassemble Pump



TIP: It may be easier to leave the pump connected to the connecting rod and bearing housing if the only assemblies to be cleaned and inspected is the intake housing or piston valve.

1. Relieve pressure; page 6.
2. See **Pump Repair, Removal** on page 20 to remove pump.
3. Fig. 13. Remove clamp (209) and intake housing (204).

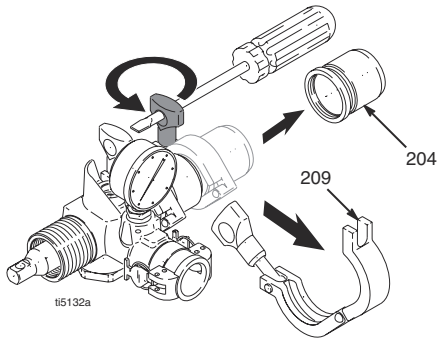


FIG. 12

4. Remove clamp (209) and pump cylinder (201).

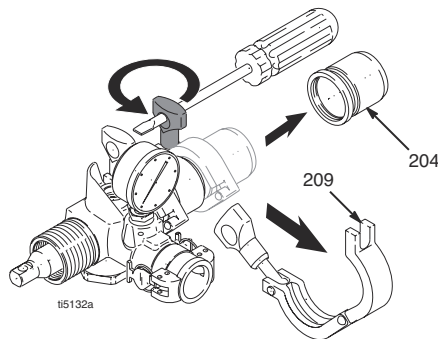


FIG. 13

5. Fig. 14. Remove packing nut (216). Push piston rod (203) from outlet housing (202).

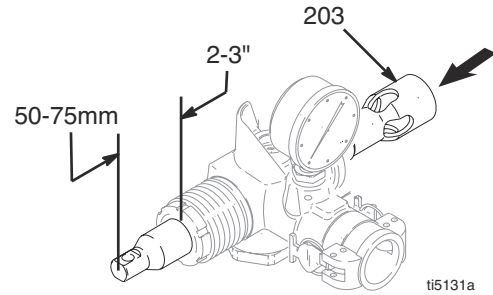


FIG. 14

6. Place end of piston rod in vise and remove piston valve (217). Remove piston seal (222).

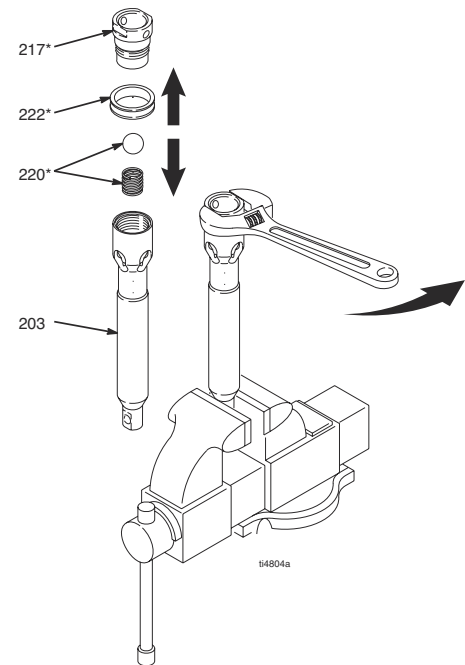


FIG. 15

7. Inspect all parts for nicks and scratches. Replace worn or damaged parts as they may result in poor pump performance.

Repair Kit

Piston Seal Repair Kit 248530 is available. Replace all parts in kit for best results.

Parts included in kit are marked with an asterisk in text and drawings. For example, 208*.

Assemble Pump

1. Fig. 16. Place end of piston rod (203) in vise. Install new piston seal (222). Torque piston valve to 27 ft-lb (36.6 N⋅m).

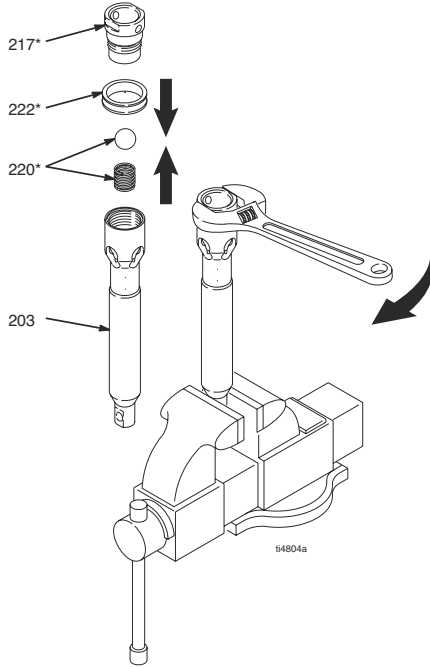


FIG. 16

2. Fig. 17. Install packing nut (216). Hand tighten and then tap screw driver. Push piston rod (203) into outlet housing (202) and extending 50-75mm out of outlet housing.

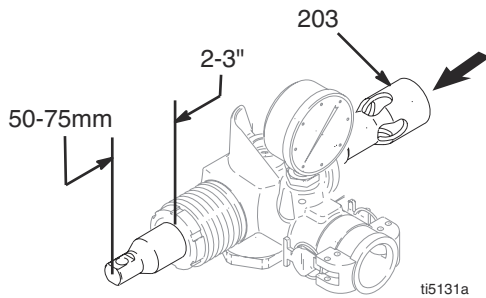


FIG. 17

3. Install clamp (209) on pump cylinder (201). Torque clamp to 25 in-lb (2.82 N⋅m).

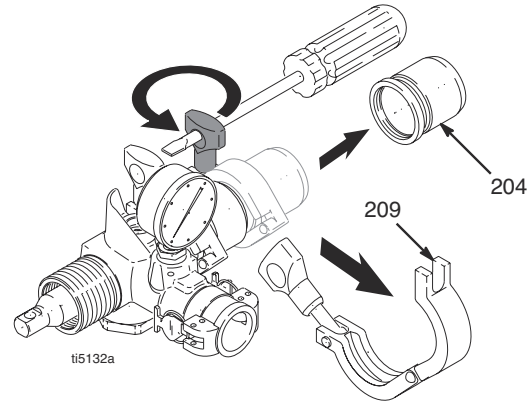


FIG. 18

4. Install clamp (209) on intake housing (204). Torque clamp to 25 in-lb.

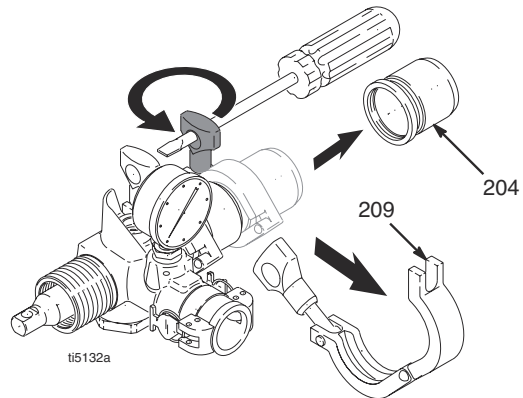
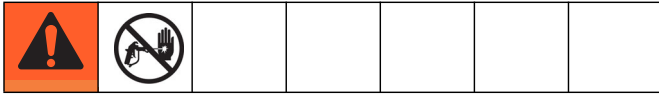


FIG. 19

5. See **Pump Repair, Installation** on page 20 to install pump.

Bearing Housing and Connecting Rod

Removal



1. Relieve pressure; page 6.
2. Fig. 20. Do Pump Repair Removal, page 20.
3. Tip motor/drive housing assembly horizontal. Remove four screws (90), washers (71) and gear housing base (25).
4. Remove four screws (7) and lock washers (6) from bearing housing (34).
5. Pull connecting rod assembly (45) and lightly tap lower rear of bearing housing (34) with a plastic mallet to loosen it from drive housing (37). Pull bearing housing and connecting rod assembly off drive housing.
6. Inspect crank (A) for excessive wear and replace drive housing, if necessary, page 24.

Installation

1. Evenly lubricate inside of bronze bearing (E) in bearing housing (34) with high-quality motor oil. Liberally pack top roller bearing (B), lower bearing (C) inside connecting rod assembly (45) with bearing grease.
2. Assemble connecting rod (45) and bearing housing (34).
3. Clean mating surfaces of bearing housing (34) and drive housing (37).

NOTICE

Do not use bearing housing screws (7) to align or seat bearing housing with drive housing. Align these parts with locating pins (D), to avoid premature bearing wear.

4. Align connecting rod with crank (A) and carefully align locating pins (D) in drive housing (37) with holes in bearing housing (34). Push bearing housing onto drive housing or tap it into place with a plastic mallet.
5. Install four screws (7) and lock washers (6) on bearing housing (34). Torque screws evenly to 25 ft-lb (34 N·m).
6. Tip motor/drive housing assembly horizontal. Install gear housing base (25) with four washers (71) and screws (90).
7. Do **Pump Repair, Installation** page 20.

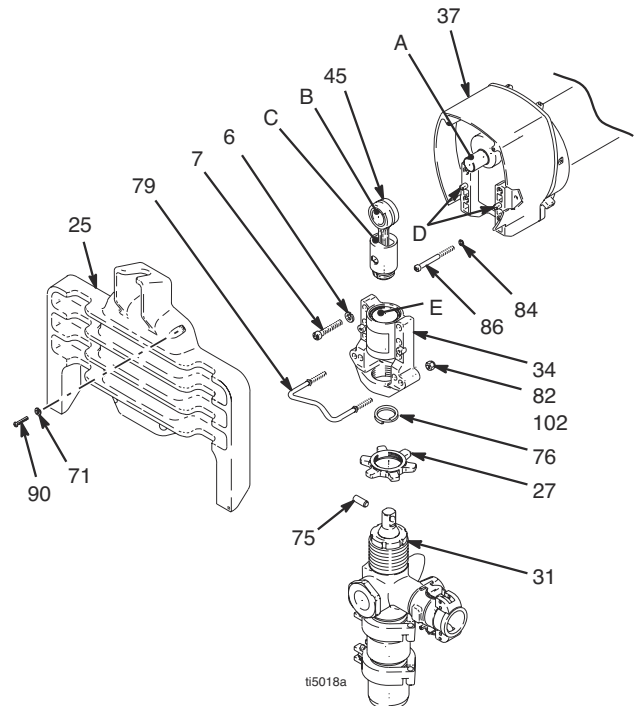
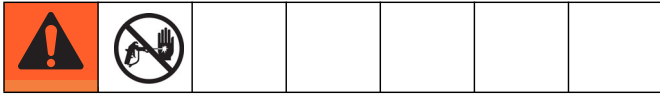


FIG. 20

Drive Housing

Removal



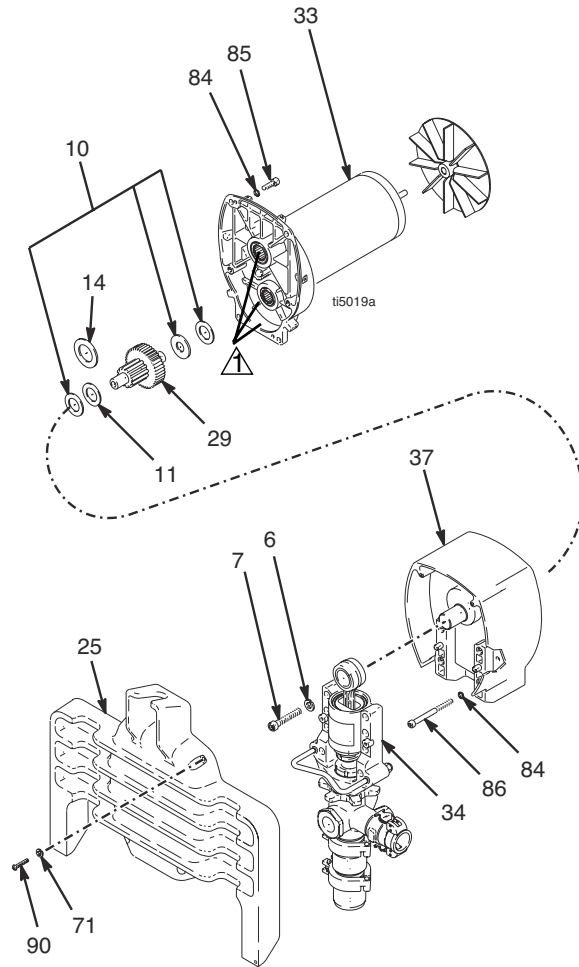
1. Relieve pressure; page 6.
2. Fig. 5. Remove pump module (A).
 - a. Loosen clamp rod (20).
 - b. Release hopper quick-release clamp (28).
 - c. Disconnect pump module (A) from frame (35).
3. Fig. 6. Remove Five screws (12) and motor cover (18).
4. Fig. 21. Lay pump module horizontal. Remove four screws (90) and washers (71) and gear housing base (25).
5. Remove two screws (86) and washers (84) from front of drive housing.
6. Disconnect transducer lead (E) from control board (38). Pull strain relief bushing (49) from circuit board bracket (21). Thread transducer connector through circuit board bracket.
7. Remove bearing housing and pump assembly.
 - a. Remove four screws (7) and lock washers (6) from bearing house (34)
 - b. Pull connecting rod assembly (45) and lightly tap lower rear of bearing housing with a plastic mallet to loosen bearing housing from drive housing (37). Pull bearing housing and pump assemblies from drive housing.
 - c. Inspect crank (G) for excessive wear and replace drive housing, if necessary.
8. Return motor and drive housing assembly to vertical position.
9. Remove two screws (12) and circuit board bracket (21) from drive housing (37).

10. Remove four screws (85) and washers (84).

NOTICE

Do not drop combination gear (29) and thrust washers (10, 11, 14) when removing drive housing (37). Combination gear and thrust washers may stay engaged in motor front end bell or drive housing.

11. Lightly tap around drive housing (37) to loosen from motor (33). Pull drive housing straight off motor. Be prepared to support combination gear (29) and thrust washers (10, 11, 14) which may also come out.
12. Remove combination gear (29) and thrust washers (10, 11, 14) that do not come out.



▲ Liberally apply bearing grease

FIG. 21

Drive Housing

Installation

1. Fig. 21. Install thrust washers (10, 11, 14) on combination gear (29). Install combination gear in drive housing (37).
2. Liberally apply bearing grease (supplied with combination gear) to all gear teeth and to drive housing areas called out by note 1.

NOTICE

When installing motor, carefully align gears to avoid damaging mating parts.

3. Align gears and push new drive housing straight onto motor (33).
4. Install four screws (85) and washers (84).
5. Install circuit board bracket (21) on drive housing (37) with two screws (12).

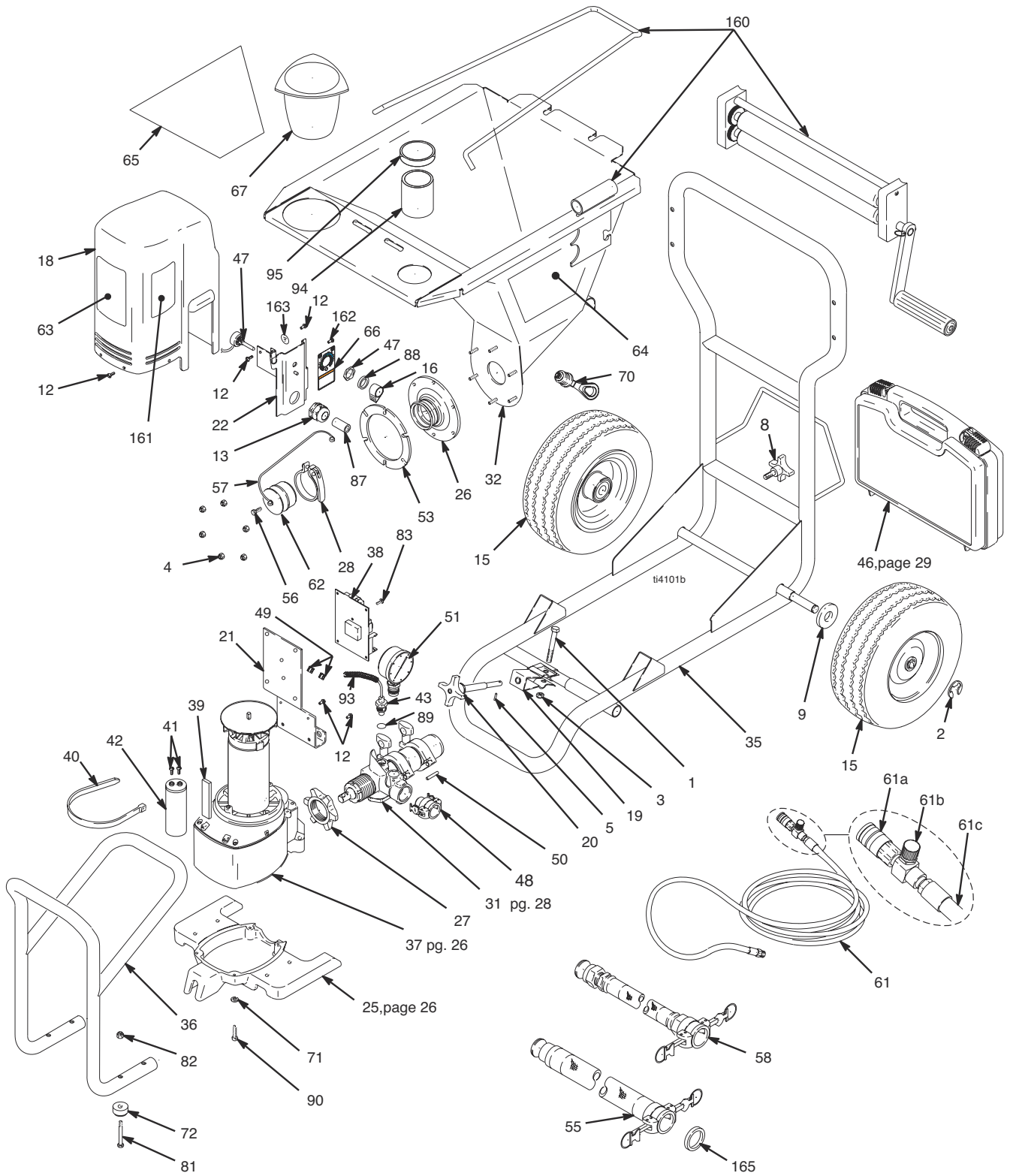
NOTICE

Do not use bearing housing screws (7) to align or seat bearing housing with drive housing. Align these parts with locating pins (H), to avoid premature bearing wear.

6. Install bearing housing and pump assembly.

- a. Align connecting rod with crank (G) and carefully align pins (H) in drive housing (37) with holes in bearing housing (34).
 - b. Push bearing housing and pump assemblies onto drive housing. Push connecting rod assembly (45) and lightly tap lower front of bearing housing with a plastic mallet to seat bearing housing to drive housing (37).
 - c. Install bearing housing (34) with four screws (7) and lock washers (6).
7. Thread transducer connector through circuit board bracket. Push strain relief bushing (49) into circuit board bracket (21). Connect transducer lead (E) to control board (38).
 8. Install two screws (86) and washers (84) into front of drive housing.
 9. Fig. 21. Lay pump module horizontal. Install gear housing base (25) with four washers (71) and screws (90).
 10. Fig. 6. Install motor cover (18) with five screws (12).
 11. Fig. 5. Install pump module (A).
 - a. Connect pump module (A) onto frame (35).
 - b. Secure hopper quick-release clamp (28).
 - c. Tighten clamp rod (20).

Parts Drawing

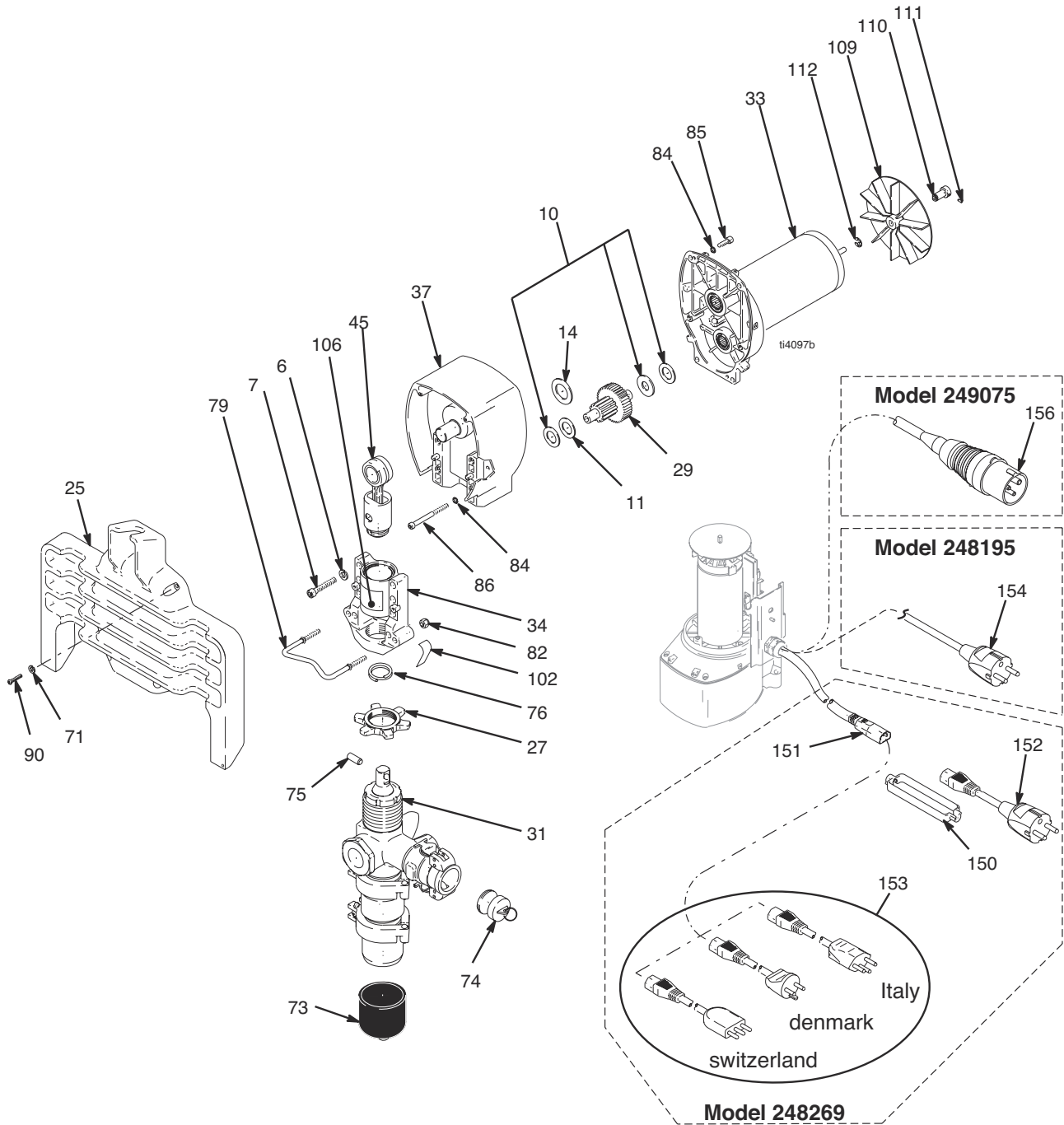


Parts List

Models 248195, 248269, 249075; Series A

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	100004	SCREW, cap, hex hd	1	53	15D151	RING, retainer, hopper	1
2	101242	RING, retaining, ext.	2	*55	248519	HOSE, fluid 25mm x 5m (includes 165)	1
3	101566	NUT, lock	1	56	100333	SCREW, cap, hex hd	1
4	102040	NUT, lock, hex	6	57	118751	TIE, lanyard	1
5	104430	PIN, cotter	1	*58	248520	HOSE, fluid, 19mm x 3m cpld (includes 165)	1
8	111145	KNOB, pronged	1	61	248557	KIT, replacement, hose (includes 61a, 61b, 61c)	1
9	111841	WASHER, plain, 5/8	2	61a	114558	COUPLER, line, air	1
12PM	115492	SCREW, mch, slot hex wash hd	9	61b	112779	VALVE, needle	1
13PM	116171	BUSHING, strain relief	1	61c	15C899	HOSE, cpld, air, 9,5mm x 15m	1
15	116478	WHEEL, pneumatic	2	62	15D306	PLUG, adapter, hopper, texture	1
16PM	116167	KNOB, potentiometer	1	63PM	15D896	LABEL, TMAX, pump	1
18PM	15C730	COVER, motor	1	64	15D895	LABEL, TMAX, left	2
19	15C797	BRACKET, swivel	1	65	15D894	LABEL, TMAX, right	1
20	15C799	ROD, clamp	1	66PM	15D898	LABEL, TMAX, pump	1
21PM	15D308	BRACKET, circuit board	1	67	551390	SIGHTGLASS, beaker, grad	1
22PM	15D309	BRACKET, control	1	70	119347	PLUG, hopper, texture	1
26	15D865	ADAPTER, pump, hopper	1	71PM	100020	WASHER, lock	4
27PM	193031	NUT, retaining	1	72PM	113817	BUMPER	4
28	234188	CLAMP, quick release	1	81PM	119365	SCREW, cap, hex head	4
31PM	248764	PUMP, displacement, texture	1	82PM	111040	NUT, lock	6
32	248256	HOPPER, weldment	2	83PM	111839	SCREW, mach, pn hd, sems	6
35	287273	FRAME, weldment	1	87PM	116307	HOSE, strain relief	1
36PM	287317	FRAME, pump	1	88PM	15C973	GASKET	1
37PM	287319	HOUSING, drive	1	89PM	111457	O-RING	1
38PM	248760	KIT, repair, board, control, 240V	1	90PM	101888	SCREW, cap, sch	4
	249475	KIT, repair, board, control, 110V	1	93PM	198586	CONDUIT, corrugated	1
39PM	115711	TAPE, foam, 1/2 in. wide	1	94	119293	JAR, 6 oz	1
40PM	116028	TIE, wire	1	95	119316	LID, 6 oz	1
41PM	115762	SCREW, plastic head	2	160		ACCESSORY, Bag Roller, not included See Manual 309976	
42PM		KIT, repair, capacitor (includes 39, 40, 41)		161PM	15D939	LABEL, safety	1
	248765	Models 248195, 248269	1	162PM	111593	SCREW, grounding	1
	243415	Model 249075	1	163PM	186620	LABEL, symbol, ground	1
43PM	246320	TRANSDUCER, pressure	1	164	119390	TOOL, scraper (not shown)	1
44	290340	LABEL, designation, artwork, CE	1	165	15G352	GASKET, Coupler, T-Max	1
46	248405	TOOL BOX, applicator	1	PM		Included in pump module kits 248634, 248651, 249519	
47PM	256219	POTENTIOMETER, assembly	1			* Includes 165 (15G352)	
*48PM	118506	COUPLER, male, 1 in. npt (includes 165)	1				
49PM	114678	BUSHING, strain relief	2				
50PM	119284	PIN, straight, slotted	1				
51PM	248391	GAUGE, pressure, pump, texture	1				

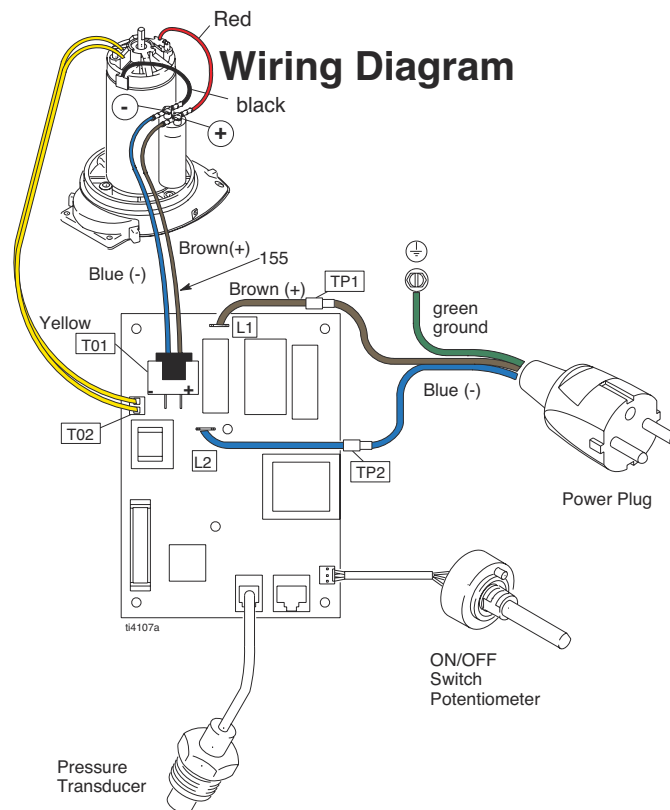
Parts Drawing



Parts List

Models 248195, 248269, 249075; Series A

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
6PM	106115	WASHER, lock spring (hi-collar)	4	84PM	105510	WASHER, lock, spring (hi-collar)	6
7PM	107210	SCREW, cap, socket hd	4	85PM	100644	SCREW, cap, sch	4
10PM	114672	WASHER, thrust	3	86PM	107218	SCREW, cap, sch	2
11PM	114699	WASHER, thrust	1	90PM	101888	SCREW, cap, sch	4
14PM	116191	WASHER, thrust	1	102PM	192840	LABEL, warning	1
25PM	15D708	BASE, gear housing	1	106PM	187436	LABEL, torque	1
27PM	193037	NUT, retaining	1	109PM	118715	FAN, motor	1
29PM	243870	GEAR, combination	1	110PM	15E287	BUSHING, shaft, fan	1
31PM	248764	PUMP, displacement, texture	1	111PM	103253	SCREW, set, hex soc	1
33PM	248759	KIT, repair, motor, 240V	1	112PM	113983	RING, retaining, ext	1
	249476	KIT, repair, motor, 110V	1	150*	195551	RETAINER, adapter, cord	1
34PM	248633	HOUSING, bearing	1	151*	15E259	Euro Multi cord	1
37PM	248558	HOUSING, drive	1	152*	242001	CEE 7/7	1
45PM	241008	KIT, repair, connecting rod, includes 76	1	153*	287121	Italy, Denmark, Switzerland	1
				154†	15E257	CEE 7/7	1
71PM	100020	WASHER, lock	4	155PM	15E271	HARNESS, wire	1
73	118768	CAP, pump	1	156±	15F233	UK	1
74PM	119283	ADAPTER, plug, dust	1	*		Included in Model 248269 and pump module kit 248651	
75PM	176818	PIN	1	†		Included in Model 248195 and pump module kit 248634	
76PM	176817	SPRING, retaining	1	±		Included in Model 249075 and pump module kit 249519	
79	15E107	LEG, support, pump	1	PM		Included in pump module kits 248634, 248651, 249519	
82	111040	NUT, lock	6				



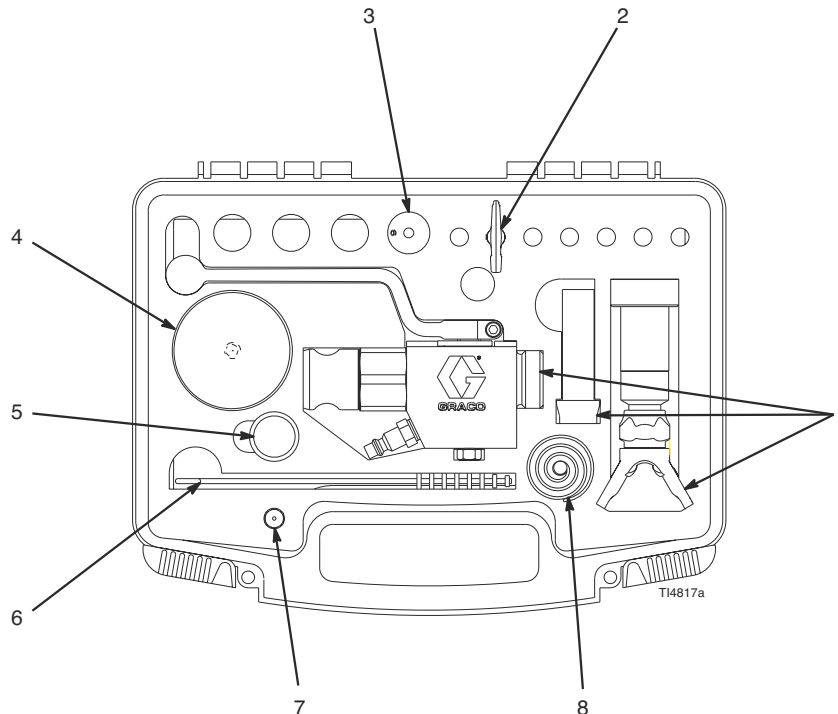
Parts - Pump 248764

Models 248764; Series A

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
201	15D113	CYLINDER, pump	1	211	248304	SPRING, intake ball, plunger	1
202	15D108	HOUSING, outlet	1	216	248529	KIT, repair, seal throat	1
203	15D532	ROD, piston	1	217*	248232	VALVE, piston	1
204	248769	KIT, repair, housing, intake includes PTFE o-ring	1	220*	101822	BALL, bearing	1
206	15D115	GUIDE, ball	1	222*	15D116	SEAL, piston	1
207	193395	SEAT, carbide	1	228	107098	O-RING	1
208	107167	BALL, sst	1	229*	501095	SPRING, ball check	1
209	118598	CLAMP	2	230	15D740	PLUG, disc, rupture	1
210	248162	SPRING, intake ball	1	231	107563	O-RING	2

* These parts are also included in Repair Kit 248530, which may be purchased separately.

248405 Applicator Tool Box



Ref.	Part	Description	Qty.
301		Included with Applicator 248164 See Manual 309978 for parts	1
94	119293	JAR, 6 oz.	1
95	119316	LID, 6 oz.	1
304	248515	BALL, sponge, 30 mm	1
305	M70613	BRUSH, cleaning	1
306	248395	TOOL, cleaning applicator	1
307	248326	TOOL BOX. texture	1

Technical Data

Maximum air working pressure	250 psi (1.7 MPa, 17 bar)
Maximum working pressure	580 psi (4.0 MPa, 40 bar)
Generator required	7 kW
Hopper capacity	
Maximum	12 gallons (45 liters)
Operating	10 gallons (38 liters)
Maximum delivery with texture material	1 to 1.5 gpm (3.8 to 5.7 lpm)
Fluid outlet size	1.0 in. (f) cam and groove
Dimensions	
Length	23 in. (584 mm) with handle
Width	24 in. (610 mm)
Height	40 in. (1016 mm)
Weight	
Without hoses or applicator	113 lb (51 kg)
With hoses and applicator	125 lb (57 kg)
Wetted parts	Buna-N, aluminum, brass, polyethylene, neoprene, stainless steel, chrome-plated stainless steel, nickel-plated carbon steel, fluoroelastomer, nickel-plated iron, inconel, wool felt, tungsten carbide, PTFE
Sound data	
Sprayer	
Sound pressure level*	79 dB(A)
Sound power level †	87.5 dB(A)
* Measured while spraying at 1m.	
† Measured per ISO-3744.	
Applicator	Manual 309978

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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

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

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

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

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

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.

TO PLACE AN ORDER, contact your Graco distributor or call 1-800-690-2894 to identify the nearest distributor.

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.*

Original instructions. This manual contains English. MM 309977

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