

# REACTOR<sup>®</sup> E-8p

Portable Plural Component Sprayer

3A1602G  
EN

**For spraying 1:1 mix ratio formulated no-heat polyurethane foams and dispensing 1:1 mix ratio polyurea joint-fill materials. For professional use only. Not approved for use in European explosive atmosphere locations.**

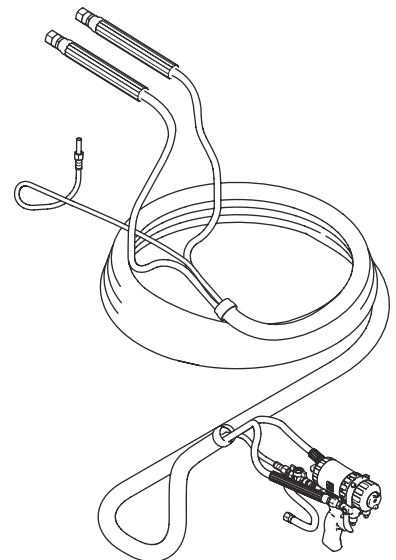
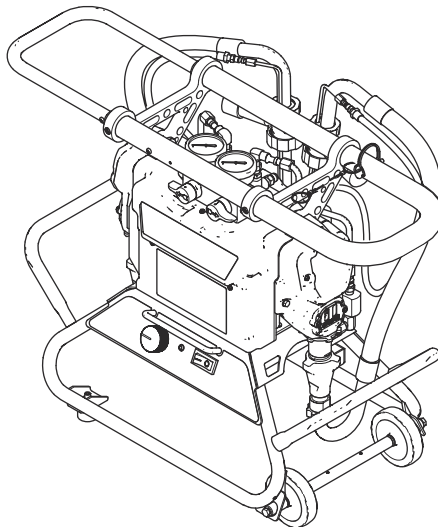
*2000 psi (14 MPa, 138 bar) Maximum Working Pressure*

*See page 3 for a list of models.*



## **Important Safety Instructions**

Read all warnings and instructions in all supplied manuals. Save all instructions.



T117120a



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# Systems

Part	Maximum Working Pressure, psi (MPa, var)	Proportioner (see Proportioners)	Hose		Gun Model	
			Part	Length	Model	Part
AP9082	2000 (14, 140)	259082	24M653	50 (15.2)	Fusion™ Air Purge	246100
CS9082	2000 (14, 140)	259082	24M653	50 (15.2)	Fusion™ CS	CS00RD
P29082	2000 (14, 140)	259082	24M653	50 (15.2)	Probler P2	GCP2R0
AP9083	2000 (14, 140)	259083	24M653	50 (15.2)	Fusion™ Air Purge	246100
CS9083	2000 (14, 140)	259083	24M653	50 (15.2)	Fusion™ CS	CS00RD
P29083	2000 (14, 140)	259083	24M653	50 (15.2)	Probler P2	GCP2R0
24R151	2000 (14, 140)	259082	24R823	35 (10.7)	Manual 2K	24R021
24R154	2000 (14, 140)	259083	24R823	35 (10.7)	Manual 2K	24R021

## Proportioners

The model no., series letter, and serial no. are located on the back of the Reactor E-8p™.

Part	Volts	* Electrical Connection (motor only)	Application	Maximum Working Pressure, psi (MPa, bar)
★259082	120 V	15 A cord	No-heat polyurethane foam. Polyurea joint-fill materials.	2000 (14, 140)
259083	240 V	10 A cord		

\* See page 11 for detailed electrical requirements.

★ Approvals:



## Related Manuals

Manuals are available at [www.graco.com](http://www.graco.com).






Manual	Description
313123	Displacement Pump Repair-Parts
309550	Fusion™ Air Purge Spray Gun Instruction-Parts
312666	Fusion™ CS Spray Gun Instruction-Parts

Manual	Description
313213	Probler® P2 Spray Gun Instruction-Parts
332198	Joint Fill Gun Instructions-Parts

**NOTE:** The pail heaters are shipped with the manual supplied by their manufacturer.

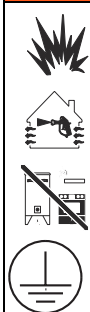
# Warnings

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.

 <b>WARNING</b>	
	<p><b>ELECTRIC SHOCK HAZARD</b></p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power cord before servicing equipment.</li> <li>• Use only grounded electrical outlets.</li> <li>• Use only 3-wire extension cords.</li> <li>• Ensure ground prongs are intact on power and extension cords.</li> <li>• Do not expose to rain. Store indoors.</li> </ul>
	<p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> <li>• Read MSDSs to know the specific hazards of the fluids you are using.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> <li>• Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eyewear, and hearing protection.</li> <li>• Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.</li> </ul>
	<p><b>SKIN INJECTION HAZARD</b></p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. <b>Get immediate surgical treatment.</b></p> <ul style="list-style-type: none"> <li>• Do not spray without tip guard and trigger guard installed.</li> <li>• Engage trigger lock when not spraying.</li> <li>• Do not point gun at anyone or at any part of the body.</li> <li>• Do not put your hand over the spray tip.</li> <li>• Do not stop or deflect leaks with your hand, body, glove, or rag.</li> <li>• Follow the <b>Pressure Relief Procedure</b> when you stop spraying and before cleaning, checking, or servicing equipment.</li> <li>• Tighten all fluid connections before operating the equipment.</li> <li>• Check hoses and couplings daily. Replace worn or damaged parts immediately.</li> </ul>



# WARNING



## FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- 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).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- 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.



## PRESSURIZED ALUMINUM PARTS HAZARD

Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.





- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.



## EQUIPMENT MISUSE HAZARD






Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **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.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.



 <b>WARNING</b>	
 	<p><b>MOVING PARTS HAZARD</b></p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> <li>• Keep clear of moving parts.</li> <li>• Do not operate equipment with protective guards or covers removed.</li> <li>• Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the <b>Pressure Relief Procedure</b> and disconnect all power sources.</li> </ul>
	<p><b>BURN HAZARD</b></p> <p>Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> <li>• Do not touch hot fluid or equipment.</li> </ul>

# Important Two-Component Material Information




## Isocyanate Conditions

						
<p>Spraying or dispensing materials containing isocyanates creates potentially harmful mists, vapors, and atomized particulates.</p> <p>Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to isocyanates.</p> <p>Prevent inhalation of isocyanate mists, vapors, and atomized particulates by providing sufficient ventilation in the work area. If sufficient ventilation is not available, a supplied-air respirator is required for everyone in the work area.</p> <p>To prevent contact with isocyanates, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons, and goggles, is also required for everyone in the work area.</p>						

## Material Self-ignition

						
<p>Some materials may become self-igniting if applied too thickly. Read material manufacturer's warnings and material MSDS.</p>						

## Keep Components A and B Separate

						
<p>Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination of the equipment's wetted parts, <b>never</b> interchange component A (isocyanate) and component B (resin) parts.</p>						

## Moisture Sensitivity of Isocyanates

Isocyanates (ISO) are catalysts used in two component foam and polyurea coatings. ISO will react with moisture (such as humidity) to form small, hard, abrasive crystals, which become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity. If used, this partially cured ISO will reduce performance and the life of all wetted parts.

**NOTE: NOTE:** The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

To prevent exposing ISO to moisture:

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Keep the felt washers in the pump wet cups saturated with Graco ISO pump oil, Part No. 217374. The lubricant creates a barrier between the ISO and the atmosphere.
- Use moisture-proof hoses specifically designed for ISO, such as those supplied with your system.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Never use solvent on one side if it has been contaminated from the other side.
- Always lubricate threaded parts with ISO pump oil or grease when reassembling.
- Always park pumps when you shutdown. See page 20.

## Foam Resins with 245 fa Blowing Agents

Some foam blowing agents will froth at temperatures above 90°F (33°C) when not under pressure, especially if agitated.

## Changing Materials

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Check with your material manufacturer for chemical compatibility.
- Most materials use ISO on the A side, but some use ISO on the B side.
- Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.

## Overview

The Reactor E-8p is a portable, electric-powered, 1:1 mix ratio proportioner. It is for use with formulated no-heat polyurethane foams that may be applied with impingement mix spray guns and for use with polyurea joint fill materials that may be applied with static mix guns.

Severe duty, positive displacement reciprocating piston pumps meter fluid flow to the gun for mixing and applying. When set to recirculation mode, the Reactor E-8p will circulate fluids back to the supply pails.

An electronic processor controls the motor, monitors fluid pressures, and alerts the operator if errors occur. See **STATUS Indicator**, page 10, for further information.

The Reactor E-8p has two recirculation speeds: slow and fast, and an adjustable pressure output.

### Slow Recirculation

- Use for pump priming.

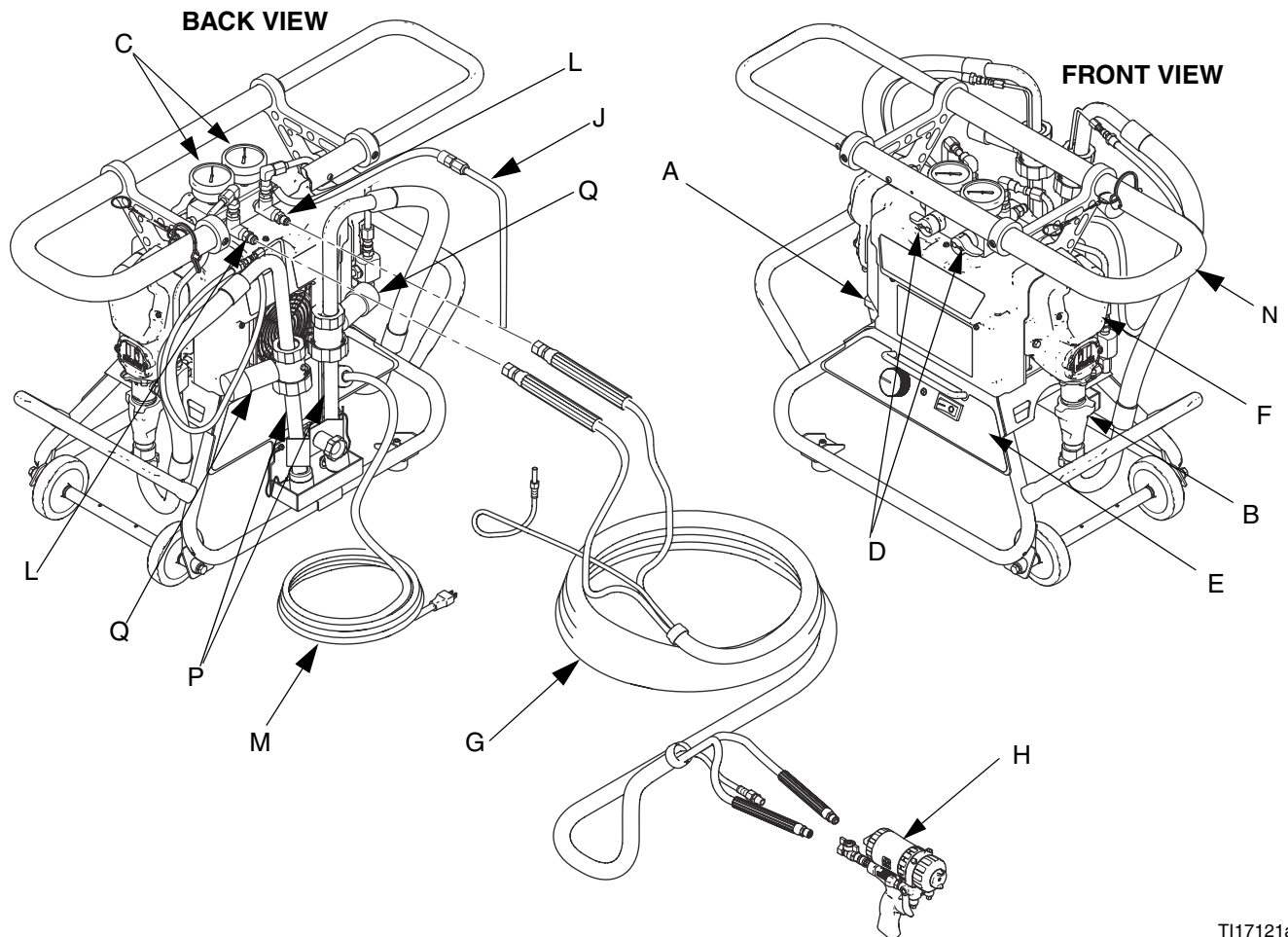
### Fast Recirculation

- Use for flushing.
- Use for pump priming.

### Pressure Adjust

Automatically maintains selected pressure output for spraying.

# Component Identification



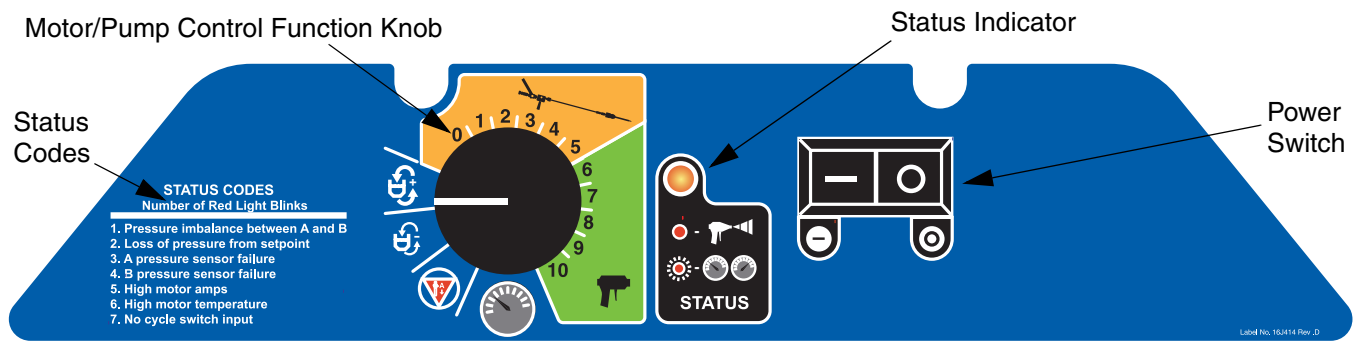
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**FIG. 1: Component Identification**

**Key:**

- A Pump A
- B Pump B
- C Fluid Pressure Gauges
- D Recirc/Spray and Overpressure Relief Valves
- E Control Panel
- F Electric Motor and Drive Housings
- G Hose Bundle
- H Spray Gun
- J Recirculation Tubes
- K Air Line Inlet (quick-disconnect fitting)
- L Outlet Hose Connections
- M Power Cord
- N Lift Ring/Handle/Hose Rack
- P Fluid Inlet Tubes
- Q Desiccant Dryers

# Controls and Indicators



TI17123b

FIG. 2: Controls and Indicators

## Power Switch

Powers the Reactor E-8p on and off.

## Motor/Pump Control Function Knob

Use knob to select desired function.

Icon	Setting	Function
	Stop/Park	Stops motor and automatically parks pumps.
	Slow Recirc	Slow recirculation speed.
	Fast Recirc	Fast recirculation speed.
	Static Mix	Use fluid pressure settings 1-5 to dispense polyurea joint-fill materials through a static mixer.
	Spray	Use fluid pressure settings 6-10 to spray polyurethane foam.

## STATUS Indicator

Indicates system status, including power and error codes.

- Indicator steady on: power switch is turned on.
- Indicator blinking: If an error occurs, the status indicator light will blink one to seven times to indicate a specific status code, pause, and then repeat. The following table provides a brief description of each status code. For more detailed information and corrective action, see **Status Codes** on page 24.

**Table 1: Status Codes**  
(also located on front of Reactor)

Code	Code Name
1	Pressure imbalance between A and B sides
2	Unable to maintain pressure setpoint
3	Pressure transducer A failure
4	Pressure transducer B failure
5	Excessive current draw
6	High motor temperature
7	No cycle counter switch input

**NOTE:** The default is to shut down if a status code indication occurs. Codes 1 and 2 may be set to disable automatic shutdown if desired; see page 25. You cannot set the other codes.

# Setup

## Location

- The Reactor E-8p should always be used on a level surface.
- Do not expose the Reactor E-8p to rain.

## Electrical Requirements

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Improper wiring may cause electric shock or other serious injury if work is not performed properly. Have a qualified electrician perform any electrical work. Be sure your installation complies with all National, State and Local safety and fire codes.

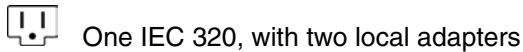
- Required power source: single dedicated circuit that is rated at a minimum of 15A.

**NOTE:** Cords must be 3-conductor grounded, rated for your environment.

- Power cord connector (120V):



- Power cord connector (240 V):



- Extension cord requirements:

Required Wire Size	
Up to 50 ft (15 m)	Up to 100 ft (30 m)
AWG 14	AWG 12

## Grounding

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The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.

**Reactor E-8p:** grounded through power cord.

**Generator (if used):** follow your local code and manufacturer's recommendations. Start and stop the generator with power cord(s) disconnected.

**Spray gun:** ground through connection to a properly grounded fluid hose and grounded Reactor E-8p. Do not operate without at least one grounded fluid hose.

**Fluid supply container:** follow local code.

**Object being sprayed:** follow local code.

**Solvent pails used when flushing:** follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

**To 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.

## Lock/Unlock Handle

Lock the handle when the sprayer is moved, laid on its side, or turned upside down.

### Unlock

To unlock the handle, remove lanyard and locking pin from cart handle. Pull on handle to extend cart handle and move sprayer.

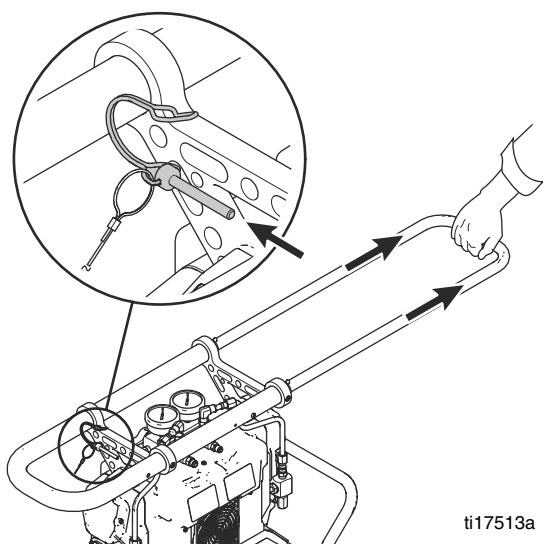


FIG. 3

### Lock

To lock the handle, press down handle pins and slide cart handle through tubes. Insert pin through cart handle and lock with lanyard.

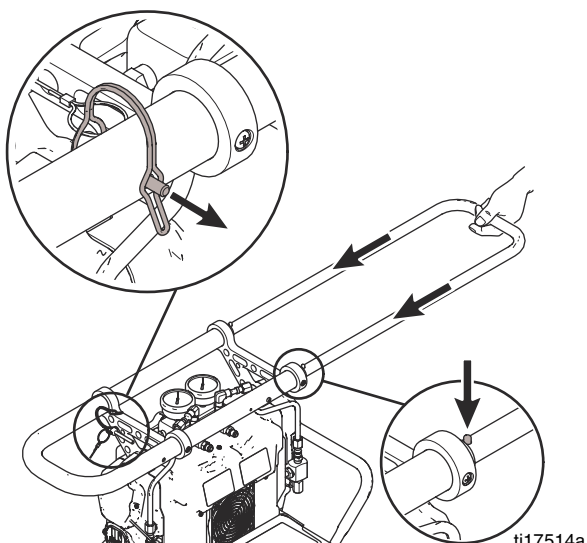


FIG. 4

## Install 38 mm Spout Adapter

The sprayer is supplied with a 40 mm spout adapter. Install 38 mm spout adapters if necessary.

1. Loosen containment knob.
2. Remove suction tube caps and place in containment tray.
3. For installation instructions, see **Spout Adapter**, page 40.

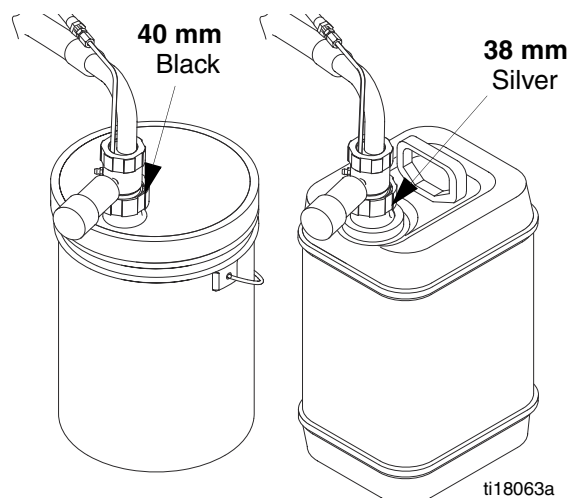


FIG. 5: Spout Adapters

## Install Desiccant Dryers

1. Use needle nose pliers to remove two plugs (P) from the dryer (73).
2. Remove plug from adapter housing (57).
3. Screw the dryer into the adapter housing (57) hand-tight only. Do not overtighten.

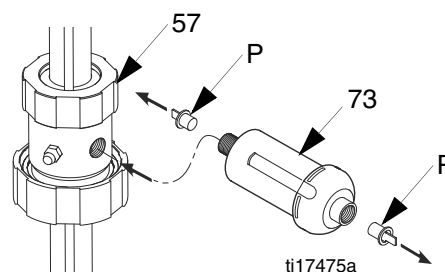


FIG. 6: Desiccant Dryer Installation



## Install Optional Recirculation Kit

Use Hose Recirculation Kit 24M654 to help evenly distribute heat when using supplemental heaters and circulate material through the fluid manifold, out to the gun, and back to the material supply container. See **Accessories**, page 50.

Apply thread sealant to all non-swiveling pipe threads.

### NOTICE

To prevent cross-contamination of fluids and equipment parts, **never** interchange component A (isocyanate) and component B (resin) parts or containers.

1. Relieve pressure. See **Pressure Relief Procedure**, page 20.
2. Flush. See page **Flushing**, page 22.
3. Remove fluid tubes (36).

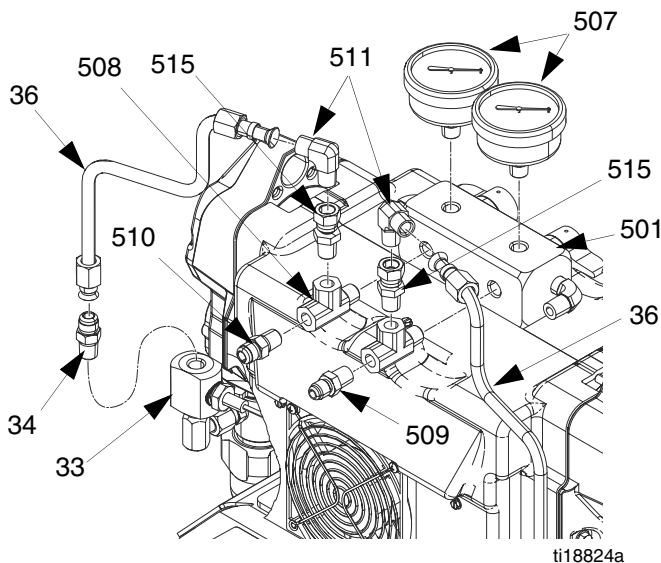
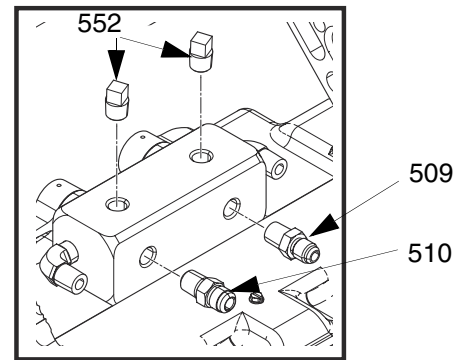


FIG. 7

4. Place a wrench on the pressure transducer manifold (33) and remove the adapters (34). Set A and B side adapters aside.
5. Remove fittings (509) and (510). Remove two swivel fittings (515) and elbow fittings (511) from tee fitting (508). Remove tee fittings and gauges (507) from manifold (501). Set A and B side parts aside. Elbow fittings (511) are not used with recirculation setup.
6. Install 1/4 npt x -6 JIC adapter fitting (510) in the B side fluid manifold outlet port. Install 1/4 npt x -5 JIC fitting (509) in the A side fluid manifold outlet port.



B Side

A Side

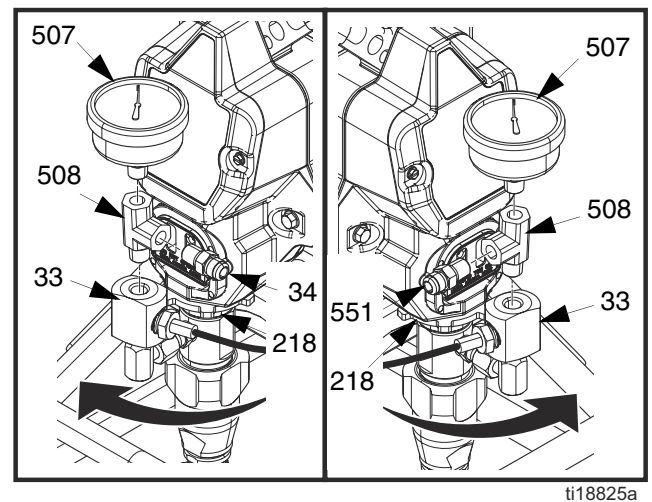


FIG. 8

7. Install plugs (552).
  8. Loosen pump lock nut (218) by hitting firmly with right-to-left with a non-sparking hammer. Rotate pump until there is enough space to install pressure gauges. If the transducer cable is tight, remove bottom cover and cut cable ties. See FIG. 56, page 32.
  9. Install A and B side tee fittings (508) in the pressure transducer manifolds (33). Install adapter fitting (551) and adapter fitting (34) in tee fittings (508).
  10. Install gauges (507) in tee fittings (508).
- NOTE:** Ensure that there is enough space to dispense Graco ISO pump oil in the wet cup through the pump cover.
11. Tighten locknut (218) by hitting firmly with a non-sparking hammer.
  12. Install fluid tubes (36).

## Connect Fluid Hoses

Connect fluid supply hoses to outlet hose connections (FIG. 9 and FIG. 10). Red hoses for component A (ISO), blue for component B (RES). Fittings are sized to prevent connection errors. Connect other end of hoses to A and B inputs of gun.

**NOTE:** If using the Recirculation Hose Kit 24M654, connect hoses to Recirculation Gun Manifold Kit 249523. See FIG. 10.

## Connect Gun to Air Hose (Air Operated Guns Only)

Connect gun air hose to the gun air input and to the air filter outlet. If you are using more than one hose bundle, join the air hoses with the nipple provided with the hose bundle.

## Connect Main Air Supply

**NOTE:** The Reactor E-8p requires 4 scfm (0.112 m<sup>3</sup>/min) compressed air for the air operated spray guns to work correctly.

Connect the main air supply to the quick disconnect fitting on the unit. The air supply hose must be at least 5/16 in. (8 mm) ID up to 50 ft (15 m) or 3/8 in. (10 mm) ID up to 100 ft (30 m).

## Flush Before Using Equipment

The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment. See **Flushing**, page 22.

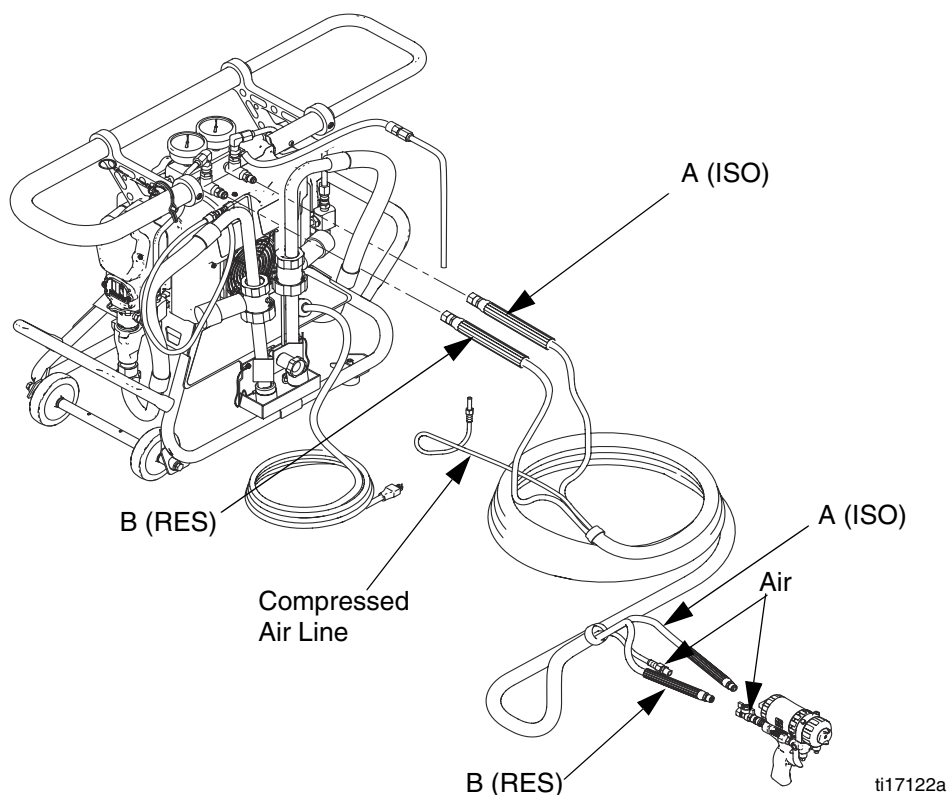
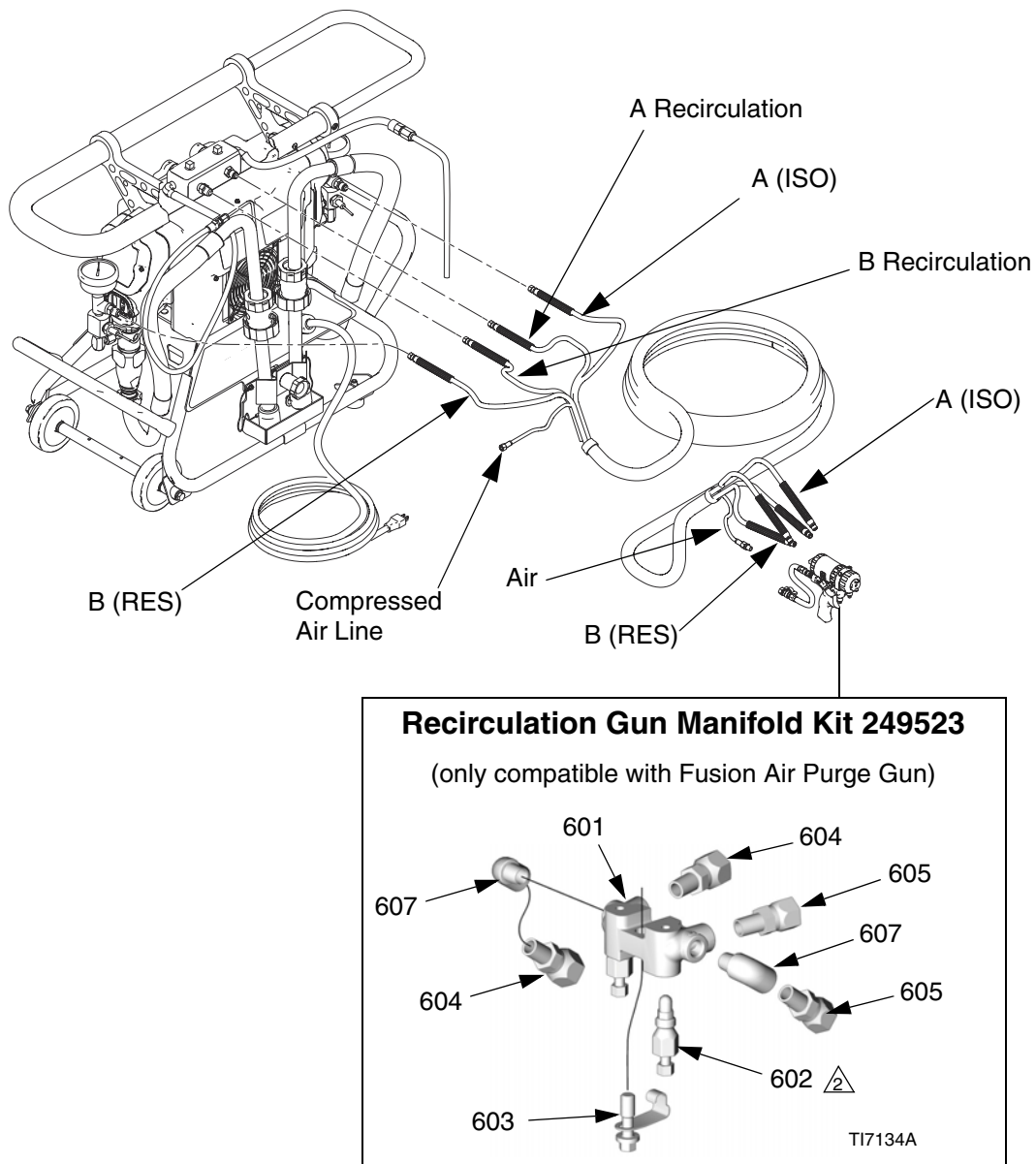


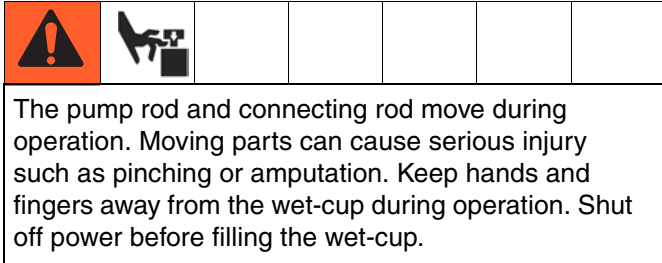
FIG. 9: Hose and Air Connections



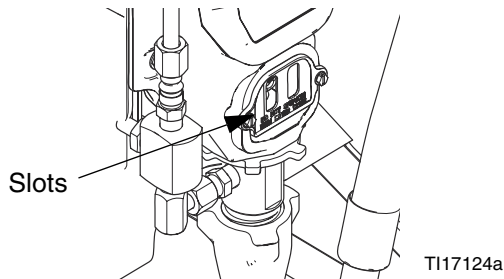
**FIG. 10: Hose and Air Connections - Recirculation Hose Kit 24M654**

## Fill Wet-cups

Keep the felt washers in the pump wet-cups saturated with Graco ISO pump oil, Part No. 217374. The lubricant creates a barrier between the ISO and the atmosphere.

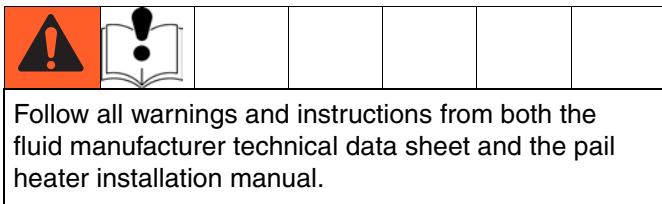


Fill wet-cups through the slots in the plate, or remove a screw and swing the plate to the side.



**FIG. 11: Fill Wet Cup**

## Install Pail Heaters

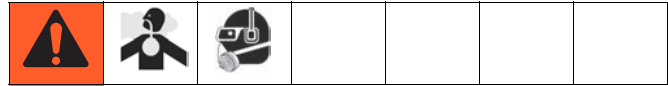


If the material viscosity at room temperature is greater than 2000 centipoise the pump may not siphon feed on-ratio. Purchase and install the optional flexible pail heaters so the material can be warmed, resulting in a lower viscosity and enabling the pump to properly siphon feed. See **Accessories** on page 50.

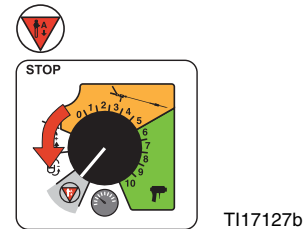
Install and operate according to the included pail heater manufacturer's installation manual.

## Recirculate Material

The standard system circulates material from the fluid manifold back to the supply container. To circulate material from the gun back to the material supply container, purchase and install Hose Recirculation Kit 24M654. See **Install Optional Recirculation Kit** on page 13.



1. Insert inlet tubes into pails. See **Connect Fluid Inlet Tubes**, page 18.
2. Set function knob to Stop/Park.



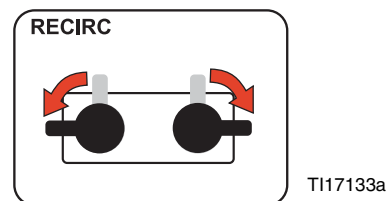
**FIG. 12**

3. Plug in power cord.
4. Turn on power.



**FIG. 13**

5. Set the Recirc/Spray valves to Recirc.



**FIG. 14**




6. Set function knob to Slow Recirc  or Fast Recirc .



FIG. 15

7. When material exits both recirculation tubes, set the function knob to Stop/Park .
8. Set the Recirc/Spray valves to Spray.

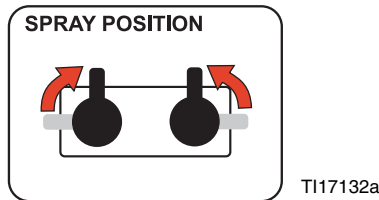


FIG. 16

## Purge Air and Flush Fluid



1. Insert inlet tubes into pails of solvent.

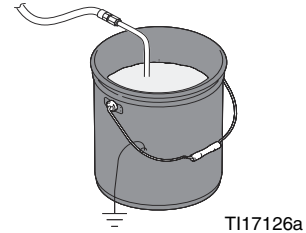


FIG. 17

2. Insert recirculation tubes into waste containers.
3. Set function knob to Stop/Park.

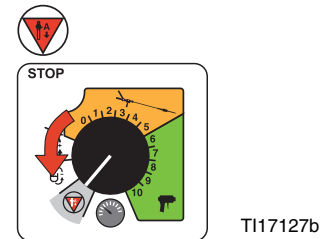


FIG. 18

4. Plug in power cord.
5. Turn on power.

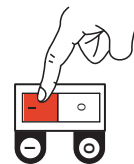


FIG. 19

6. Set the Recirc/Spray valves to Recirc.

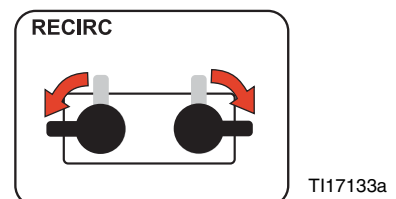


FIG. 20



7. Set function knob to Slow Recirc  or Fast Recirc .



FIG. 21

8. When clean solvent exits both recirculation tubes, set the function knob to Stop/Park .
9. Insert inlet tubes into pails. See **Connect Fluid Inlet Tubes**, page 18.
10. Set the Recirc/Spray valves to Spray.

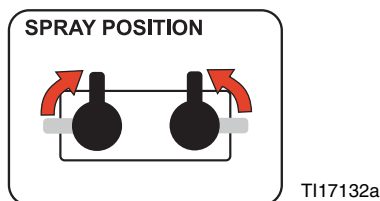
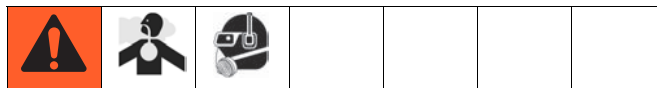


FIG. 22

11. Run until material exits gun manifold.

## Connect Fluid Inlet Tubes



1. Loosen containment knob.
2. Remove suction tube caps and place in containment tray.
3. Insert each fluid inlet tube through the pour spout on the appropriate five-gallon pail. Tighten the ring to the pour spout.

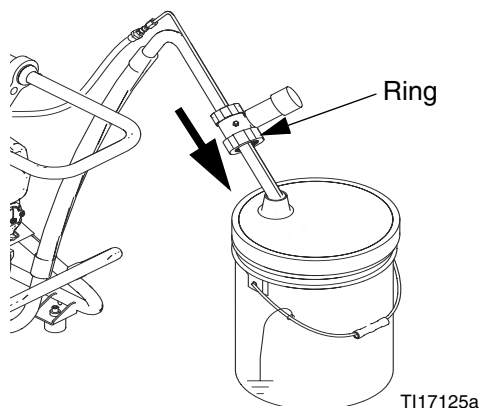


FIG. 23

### NOTICE

To prevent cross-contamination of fluids and equipment parts, **never** interchange component A (isocyanate) and component B (resin) parts or containers.

Label one pail "A" and the other "B", using the red and blue labels provided. Always double check which material you have before placing fluid inlet tube into the pail.

**NOTE:** Use a drill and mixing blade to mix filled or separated materials in the pail before placing fluid inlet tube into the pail.

# Spraying



**NOTE:** For air operated guns, air is supplied to spray gun with gun piston safety lock engaged and gun fluid manifold valves A and B closed (if present).

**NOTE:** If using the Manual 2K gun, refer to the Manual 2K gun instruction manual.

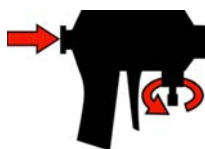
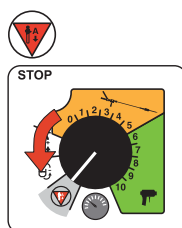


FIG. 24

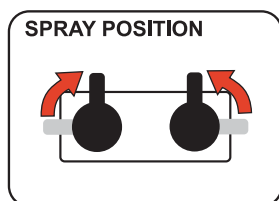
1. Set function knob to Stop/Park.



TI17127b

FIG. 25

2. Engage piston safety lock.
3. Open gun manifold.
4. Set Recirc/Spray valves to Spray.

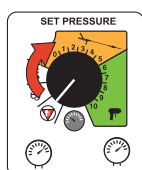


TI17132a

FIG. 26

5. Turn the pressure control knob to the right until fluid pressure gauges show desired pressure.

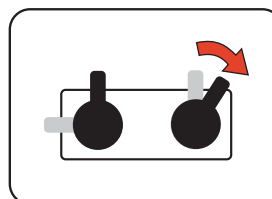
**NOTE:** It is desirable to use lower pressure for joint filling applications.



TI17129b

FIG. 27

6. Check fluid pressure gauges to ensure proper pressure balance. If imbalanced, reduce pressure of higher component by **slightly** turning Recirc/Spray valve for that component toward Recirc, until gauges show balanced pressures. The pressure imbalance alarm (Status Code 1) is inactive for 10 seconds after entering spray pressure mode, to allow time to balance pressures.



In this example, the B side pressure is higher, so use the B side valve to balance pressures.

TI17137a

FIG. 28

**NOTE:** Watch gauges for 10 seconds to ensure pressure holds on both sides and pumps are not moving.

7. Open gun fluid manifold valves A and B (impingement mix guns only).



FIG. 29

**NOTE:** On impingement guns, **never** open fluid manifold valves or trigger gun if pressures are imbalanced.

8. Disengage piston safety lock.

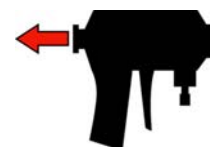






FIG. 30

9. Test spray onto cardboard or plastic sheet. Verify that material fully cures in the required length of time, and is the correct color. Adjust pressure and temperature to get desired results. Equipment is ready to spray.

# Pressure Relief Procedure

						
<p>Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing or moving parts.</p>						

**NOTE:** If using the Manual 2K gun, refer to the Manual 2K gun instruction manual.

1. Engage piston safety lock.

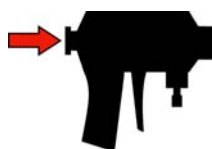


FIG. 31

2. Set function knob to Stop/Park.

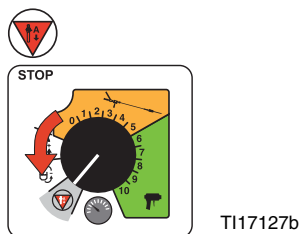


FIG. 32

3. Turn Recirc/Spray valves to Recirc. Fluid will be returned to material pails. Pumps will move to the bottom of their stroke. Ensure gauges drop to 0.

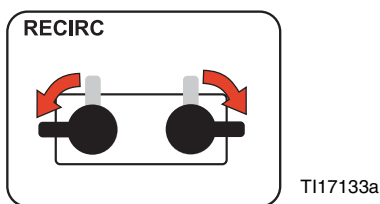


FIG. 33

# Shutdown

**NOTE:** For longer breaks (more than 10 minutes), use the following procedure. If you will be shut down for more than three days, perform the **Flushing** procedure, page 22, first.

**NOTE:** If using the Manual 2K gun, refer to the Manual 2K gun instruction manual.

1. Follow **Pressure Relief Procedure**.
2. Close gun fluid valves A and B. Doing this will keep the internal parts of the gun cleaner and prevent crossover.



FIG. 34

3. Shut off power.

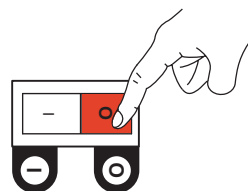


FIG. 35

4. Loosen rings from pour spouts and remove fluid inlet tubes from pails. Allow residual fluid to drain into the appropriate pail.

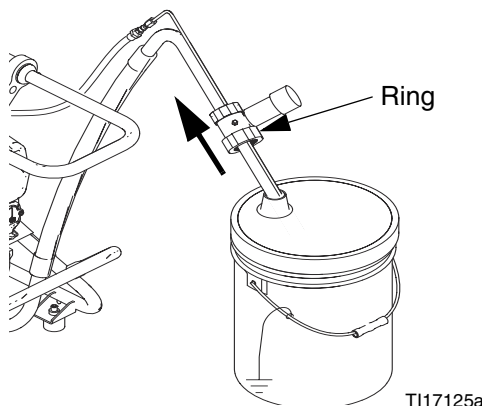
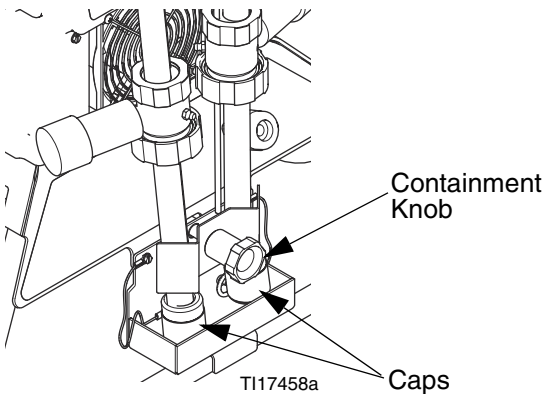


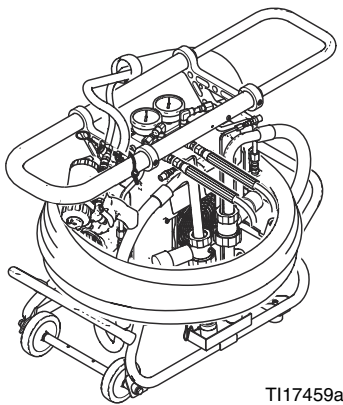
FIG. 36



5. Use solvent to wipe down fluid inlet tubes.
6. Install suction tube caps on each fluid inlet tube and rest in the containment tray. Tighten the containment knob to press the bracket against the fluid inlet tubes.

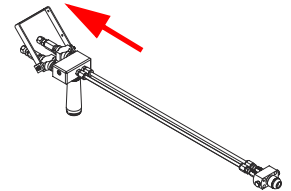
**FIG. 37**

7. Refer to your separate spray gun manual to perform the gun shutdown procedure.
8. Wrap hoses around sprayer.
9. Disconnect power cord before moving.

**FIG. 38**

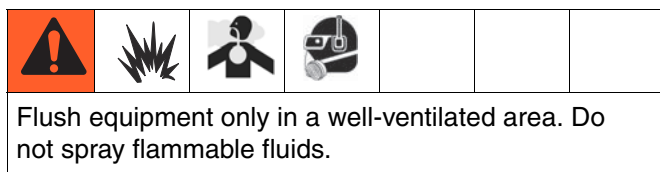
## Maintenance

- Check pump wet-cups fluid level daily. Refer to **Fill Wet-cups**, page 16.
- Do not overtighten packing nut/wet-cup. Throat u-cup is not adjustable.
- Keep component A from exposure to moisture in atmosphere, to prevent crystallization.
- Check desiccant filters weekly. Filter is blue when fresh, and turns pink when saturated.
- Generally, flush if you will shutdown for more than three days. Flush more often if material is moisture sensitive and humidity is high in the storage area, or if material may separate or settle out over time.
- Close gun fluid valves A and B when not spraying. Doing this will keep the internal parts of the gun cleaner and prevent crossover. Clean gun mix chamber ports and check valve screens regularly. See spray gun manual.

**FIG. 39**

- Always grease the gun after use until purge air carries grease mist out the front of the gun. Use Part No. 117773 Grease. See spray gun manual.
- Always grease the inlet tube spout adapters after use. Use Part No. 117773 Grease and grease gun supplied with spray gun.
- Remove any material from containment tray with solvent.

# Flushing



- Generally, flush if you will be shut down for more than 3 days. Flush more often if material is moisture sensitive and humidity is high in the storage area, or if material may separate or settle out over time.
  - Flush out old fluid with new fluid, or flush out old fluid with a compatible solvent before introducing new fluid.
  - Use the lowest possible pressure when flushing.
  - Always leave some type of fluid in system. Do not use water.
  - For long term storage, flush out the solvent with a storage fluid such as Bayer Mesamoll plasticizer or, at minimum, clean motor oil.
1. Engage piston safety lock or trigger safety lock. Close fluid valves A and B. Leave air on.

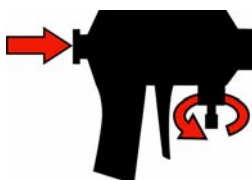


FIG. 40

2. Set function knob to Stop/Park.

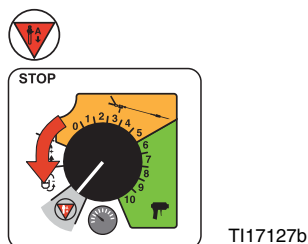


FIG. 41

3. Remove both recirculation tubes from material pails and secure each one to a dedicated waste container.

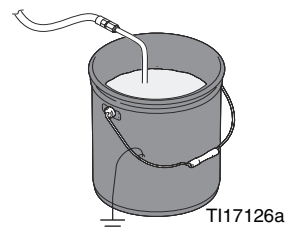


FIG. 42

4. Turn Recirc/Spray valves to Recirc.

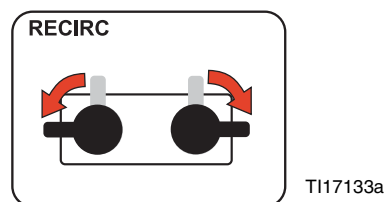


FIG. 43

5. Set function knob to Fast Recirc . Pump material from fluid inlet tubes until no more comes out.

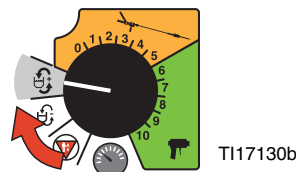
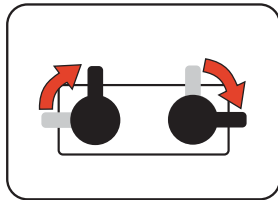


FIG. 44

6. Set function knob to Stop/Park .
7. Set function knob to Fast Recirc . Pump solvent through system into waste containers.
8. When nearly clear solvent exits the fluid inlet tubes, set function knob to Stop/Park .




**NOTE:** To flush the spray gun, refer to your separate spray gun instruction manual.

9. Purge gun hoses.
  - a. Disconnect hoses from gun and secure to a pail of solvent.
  - b. Turn Recirc/Spray valve A to Spray.



T117136a

**FIG. 45**

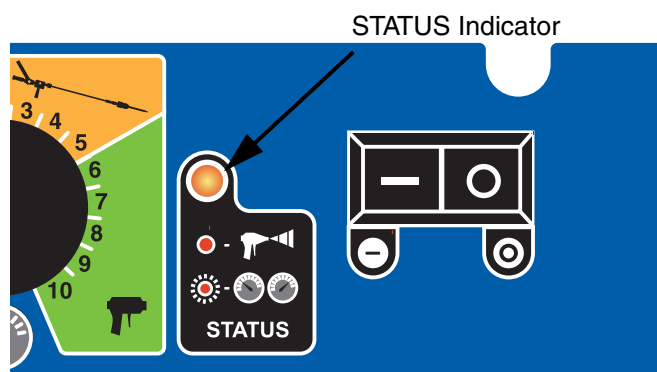
- c. Open gun into waste container A.
  - d. Set function knob to Slow Recirc  until hose is flushed.
  - e. Set function knob to Stop/Park .
  - f. Repeat for B side.
10. Set function knob to Stop/Park .
11. Solvent flushing is a two step process. Go back to step 3, drain solvent, and flush again with fresh solvent.
12. Place fluid inlet tubes in a pail of plasticizer or clean motor oil and circulate fluid through the system. Leave fluid in the unit.

**NOTE:** Never leave the unit dry unless it has been disassembled and cleaned. If fluid residue dries in the pumps, the ball checks may stick the next time you use the unit.

# Troubleshooting

## Status Codes

Determine the status code by counting the number of times the status indicator blinks.



TI17123b1

FIG. 46

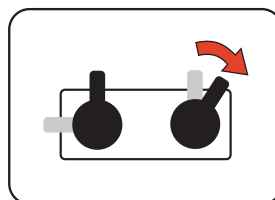
### Status Code 1: Pressure Imbalance

**NOTE:** The unit does not check for pressure imbalance at setpoints less than 250 psi (1.75 MPa, 17.5 bar). The unit does not check for pressure imbalance for 10 seconds after entering pressure mode.

Unit senses pressure imbalance between components A and B, and warns or shuts down, depending on settings of DIP switches 1 and 2. To turn off automatic shutdown and/or tighten pressure tolerances for status code 1, see **Status Code 1 and 2 Settings**.

1. Check fluid supply of lower pressure component and refill if necessary.

2. Reduce pressure of higher component by **slightly** turning Recirc/Spray valve for that component toward Recirc, until gauges show balanced pressures.



TI17137a

FIG. 47

In this example, B side pressure is higher, so use the B side valve to balance pressures.

**NOTE:** Turn Recirc/Spray valve only enough to balance pressure. If turned completely, all pressure will bleed off.

3. Check fluid inlet strainers and fluid filters at gun.

### Status Code 2: Pressure Deviation from Setpoint

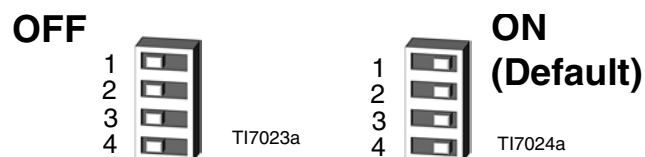
**NOTE:** The unit does not check for pressure deviation at setpoint less than 400 psi (2.8 MPa, 28 bar).

Unit senses pressure deviation from setpoint, and warns or shuts down, depending on settings of DIP switches 3 and 4. If equipment cannot maintain enough pressure for a good mix at the gun, try using a smaller mix chamber or nozzle.

To turn off automatic shutdown and/or tighten pressure tolerances for status code 2, see **Status Code 1 and 2 Settings**.

## Status Code 1 and 2 Settings

1. Locate switch SW2 on the control board.
2. Set the four DIP switches to the desired positions. See FIG. 48 and Table 2.



**FIG. 48. DIP Switch (SW2) Settings**

**Table 2: Status Code 1 and 2 Settings**

DIP Switch and Function	Left	Right (default setting)
<b>DIP Switch 1</b> If selected, causes shutdown or displays a warning if the pressure imbalance exceeds selection made in DIP Switch 2	WARNING	SHUTDOWN
<b>DIP Switch 2</b>  If selected, causes <i>shutdown</i> if A and B pressure imbalance is greater than  If selected, causes <i>warning</i> if A and B pressure imbalance is greater than	500 psi (3.5 MPa, 35 bar) (60% if < 800 psi [5.6 MPa, 56 bar] running)	800 psi (5.6 MPa, 56 bar) (70% if < 800 psi [5.6 MPa, 56 bar] running)
	300 psi (2.1 MPa, 21 bar) (50% if < 800 psi [5.6 MPa, 56 bar] running)	500 psi (3.5 MPa, 35 bar) (60% if < 800 psi [5.6 MPa, 56 bar] running)
<b>DIP Switch 3</b> If selected, causes shutdown or displays a warning due to deviation of pressure from setpoint exceeds selection made in DIP Switch 4	WARNING	SHUTDOWN
<b>DIP Switch 4</b> Causes warning if deviation of pressure from setpoint is greater than	300 psi (2.1 MPa, 21 bar) (25% if < 800 psi [5.6 MPa, 56 bar])	500 psi (3.5 MPa, 35 bar) (40% if < 800 psi [5.6 MPa, 56 bar])

## Status Code 3: Transducer A Failure

1. Check transducer A electrical connections (J3) at board, page 34.
2. Reverse A and B transducer electrical connections at board, page 34. If error moves to transducer B (Status Code 4), replace transducer A, page 33.

## Status Code 4: Transducer B Failure

1. Check transducer B electrical connections (J8) at board, page 34.
2. Reverse A and B transducer electrical connections at board, page 34. If error moves to transducer A (Status Code 4), replace transducer B, page 33.

## Status Code 5: Excessive Current Draw

Shut off unit and contact distributor before resuming operation.

1. Locked rotor: motor unable to turn. Replace motor, page 38.
2. Short on control board. Replace board, page 33.
3. Worn or hung up motor brush causing arching of brush at commutator. Replace brushes, page 39.

## **Status Code 6: High Motor Temperature**

Motor is running too hot.




1. Motor temperature too high. Reduce pressure duty cycle, gun tip size, or move Reactor E-8p to a cooler location. Allow 1 hour for cooling.
2. Check fan operation. Clean fan and motor housing.



## **Status Code 7: No Cycle Counter Switch Input**

Have not received input from cycle counter switch for 10 seconds after selecting Recirculation Mode.

1. Check cycle counter switch connection to board (J10, pins 5, 6), page 34 (figure control module wiring connections).
2. Check that magnet (224) and cycle counter switch (223) are in place under B side motor end cover (227). Replace if necessary.

## Troubleshooting Chart

Problem	Cause	Solution
Reactor E-8p does not operate.	No power.	Plug in power cord.
		Cycle Motor Power off  , then on  to reset breaker.
Motor does not operate.	Power turned on with function knob set to a run position.	Set function knob to Stop/Park  , then select desired function.
	Loose connection on control board.	Check connection at J11 (120V models) or J4 (240V models). See page 33.
	Worn brushes.	Check both sides. Replace brushes worn to less than 1/2 in. (13 mm), see page 39.
	Broken or misaligned brush springs.	Realign or replace, page 39.
	Brushes or springs binding in brush holder.	Clean brush holder and align brush leads for free movement.
	Shorted armature.	Replace motor, page 38.
	Check motor commutator for burn spots, black pitting, or other damage.	Remove motor. Have motor shop resurface commutator, or replace motor, page 38.
	Failed control board.	Replace board. See page 33.
Fan not working.	Loose fan cable.	Check that cable is connected at fan and at J9 on control board. See pages 39 and 33.
	Defective fan.	Test and replace if necessary, page 39.
Pump output low.	Plugged fluid inlet strainer.	Clear, see page 21.
	Plugged disposable mixer.	Clean or replace.
	Leaking or plugged piston valve or intake valve in displacement pump.	Check valves. See pump manual.
One side doesn't come up to pressure in spray mode.	Dirty or damaged Recirc/Spray valve.	Clean or repair, page 30.
	Plugged fluid inlet strainer.	Clear, see page 21.
	Pump intake valve plugged or stuck open.	Clean pump intake valve. See page 31.
	Material is too viscous to siphon feed.	Warm the material feed pails with flexible band heaters. See <b>Accessories</b> on page 50.

Problem	Cause	Solution
Pressure is higher on one side when setting pressure with function knob.	Pump intake valve partially plugged.	Clean pump intake valve. See page 31.
	Air in hose. Fluid is compressible.	Purge air from hose.
	Unequal size hoses or unequal hose construction.	Use matching hoses, or balance pressures before spraying.
Pressures are not balanced when running, but pressure is generated and holds on both strokes.	Unequal viscosities.	Check that A and B chemicals are within the chemical manufacturer's specified application temperature range.
		Change restrictor at mix point to balance back pressure.
	Restriction on one side.	Clean mix module or restrictor at mix manifold.
		Clean gun check valve screens.
Fluid leak in pump packing nut area.	Worn throat seals.	Replace. See pump manual.
Pressure doesn't hold when stalled against gun in spray mode.	Leaking Recirc/Spray valve.	Repair, page 30.
	Leaking piston valve or intake valve in displacement pump.	Repair. See pump manual.
	Leaking gun shutoff.	Repair. See gun manual.
Pressure is higher on B side during startup of recirculation, especially in High Recirc mode.	This is normal. Component B is typically higher viscosity than component A until the material is heated during recirculation.	No action required.
One gauge shows half as many pulses as the other when pumps are cycling.	Loss of pressure on downstroke.	Intake valve is leaking or not closing. Clean or replace valve; see page 31.
	Loss of pressure on upstroke.	Piston valve is leaking or not closing. Clean or replace valve or packings; see page 31.
Status indicator (red LED) not lit.	Motor Power switch off.	Cycle Motor Power off  , then on  to reset breaker.
	Loose indicator cable.	Check that cable is connected at J10 pins 1 (red) and 2 (black) on control board. See page 33.
	Failed control board.	Replace board. See page 33.



Problem	Cause	Solution
A side rich; lack of B side.	A side gauge is low.	B side restriction downstream of gauge. Check gun check valve screen, mix module, or mix manifold restrictor.
	B side gauge is low.	B side material supply problem. Check B side inlet strainer and pump intake valve.
B side rich; lack of A side.	A side gauge is low.	A side material supply problem. Check A side inlet strainer and pump intake valve.
	B side gauge is low.	A side restriction downstream of gauge. Check gun check valve screen, mix module, or mix manifold restrictor.

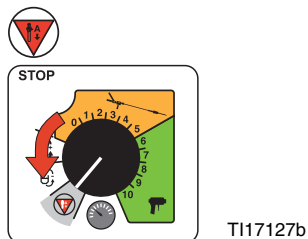
# Repair

## Before Beginning Repair

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Repairing this equipment requires access to parts which may cause electric shock or other serious injury if work is not performed properly. Have a qualified electrician connect power and ground to main power switch terminals, see page 11. Be sure to shut off all power to the equipment before repairing.

1. Flush if possible, see page 22. If not possible, clean all parts with solvent immediately after removal, to prevent isocyanate from crystallizing due to moisture in the atmosphere.
2. Set function knob to Stop/Park.



**FIG. 49**

3. Shut off power.



**FIG. 50**

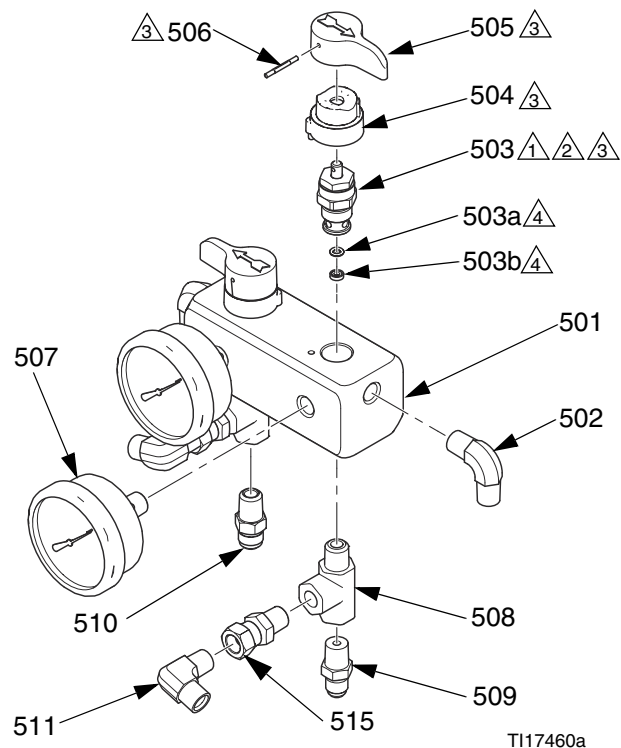
4. Relieve pressure, page 20.

## Recirculation/Spray Valves

1. See **Before Beginning Repair**, page 30. Relieve pressure, page 20.



2. Clean and inspect all parts for damage. Ensure that the seat (503a) and gasket (503b) are positioned inside each valve cartridge (503).
3. Apply PTFE pipe sealant to all tapered pipe threads before reassembling.
4. Reassemble in reverse order, following all notes in FIG. 51.



- Torque to 250 in-lb (28 N•m).
- Use blue threadlocker on valve cartridge threads into manifold.
- Apply lubricant to mating surfaces.
- Part of item 503.

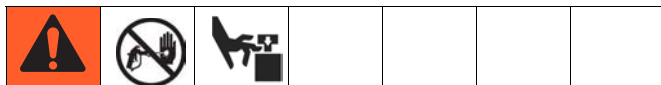
**FIG. 51: Recirculation/Spray Valves**

## Displacement Pump



Displacement pump repair and parts information is included in manual 311076, which is supplied with your unit.

**NOTE:** Use drop cloth or rags to protect Reactor E-8p and surrounding area from spills.



See **Before Beginning Repair**, page 30. Relieve pressure, page 20.

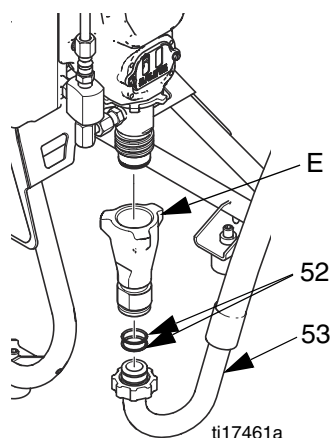
### To remove intake valve only

**NOTE:** If pump is not generating any pressure, the intake ball check may be stuck closed with dried material.

If the pump is not generating pressure on the down-stroke, intake ball check may be stuck open.

Either of these conditions can be serviced with the pump in place.

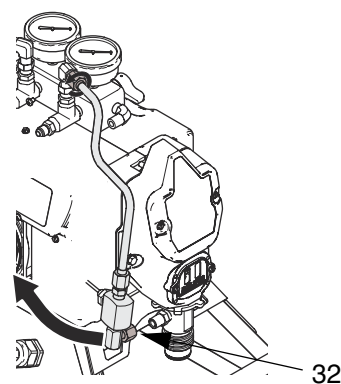
1. Loosen nut and press the inlet tube down away from the pump intake valve. Inspect the two o-rings (52) for damage and replace if necessary. Move the inlet tube (53) aside.
2. Remove intake valve by hitting ears (E) firmly right-to-left with a non-sparking hammer. Unscrew from pump. See manual 313123 for repair and parts.



**FIG. 52: Fluid Inlet Tube**

### To remove entire pump assembly

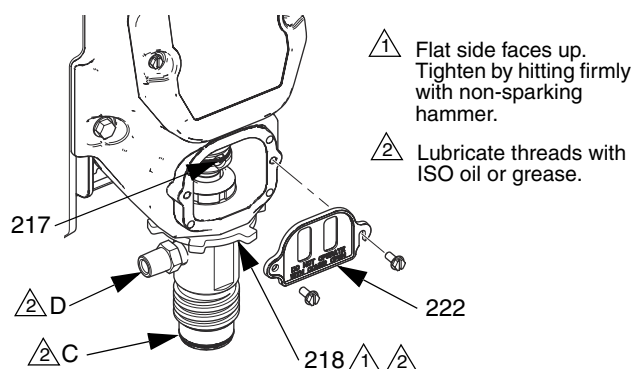
1. Loosen nut and press the inlet tube down away from the pump intake valve.
2. Disconnect swivel (32) from pump outlet and loosen swivel at the fluid manifold. Turn the fluid outlet line out of the way of the sprayer.



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**FIG. 53: Fluid Outlet Line**

3. Remove pump rod cover (222). Push clip up in back and push pin (217) out. Loosen locknut (218) by hitting firmly right-to-left with a non-sparking hammer. Unscrew pump. See manual 311076 for pump repair and parts.



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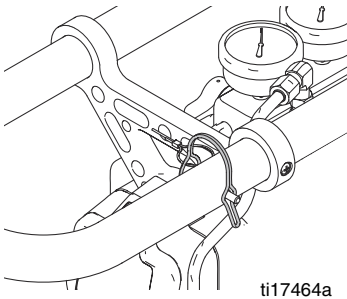
**FIG. 54**

4. Install pump in reverse order of disassembly, following all notes in FIG. 54. Reconnect fluid inlet (C) and outlet (D) lines.
5. Tighten fluid outlet fitting (D), then tighten locknut (218) by hitting firmly with a non-sparking hammer.
6. Set function knob to Slow Recirc . Purge air and prime. See page 17.

## Replace Function Knob/Potentiometer



1. See **Before Beginning Repair**, page 30. Relieve pressure, page 20.
2. Insert pin through cart handle and lock with lanyard.



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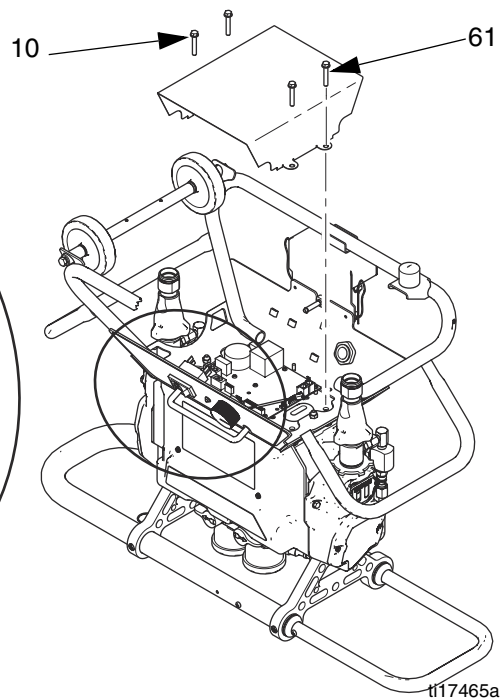
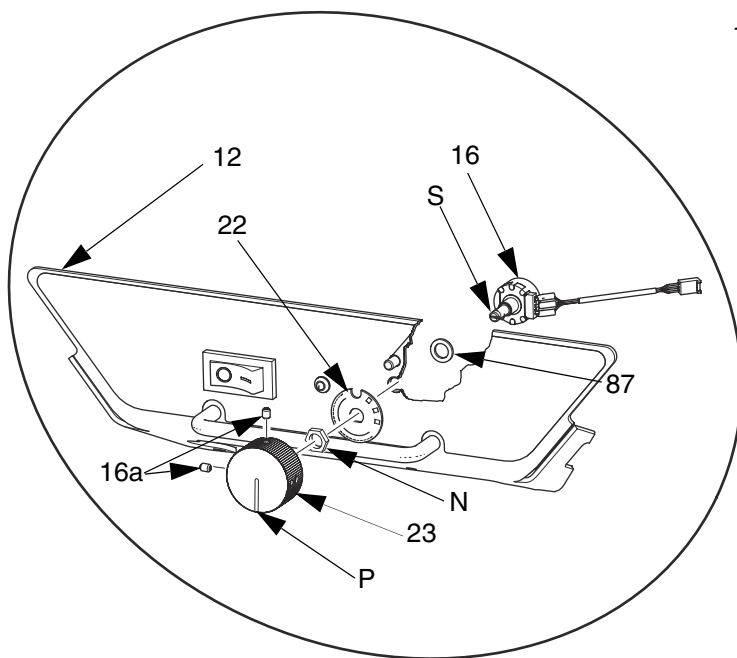
FIG. 55

3. Carefully lay sprayer on its side on a level surface.

4. Carefully lay sprayer on its side on a level surface. Rotate sprayer and rest upside down on cart handle.

**NOTE:** Always use two people when lifting the sprayer up on to a workbench.

5. Remove four screws (10) and control board cover (61) to expose the control board (12).
6. Disconnect potentiometer wires from J2 on control board (12). See Fig 12.
7. See Fig 11. Remove two setscrews (16a) and pull function knob (23) off potentiometer (16) shaft.
8. Remove nut (N, part of 16) and detent plate (22). Remove potentiometer (16) and washer (87).
9. Install new potentiometer (16) in reverse order. Position potentiometer so slot (S) is horizontal. Position knob (16) so pointer (P) faces toward the top. Install knob on shaft so slot (S) engages alignment pin in knob. Push knob onto shaft against detent spring before tightening setscrews (16a).
10. Reconnect potentiometer wires to J2 as shown in Fig 12.



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FIG. 56. Function Knob/Potentiometer

## Control Board

### Power Bootup Check

**NOTE:** There is one red LED (D11) on the board. Power must be on to check. See FIG. 58 for location. Function is:

- Startup: 1 blink for 60 Hz, 2 blinks for 50 Hz.
- Motor running: LED on.
- Motor not running: LED off.
- Status code (motor not running): LED blinks status code

### Control Board Replacement

**NOTE:** Check motor before replacing board. See **Electric Motor**, page 38.

1. See **Before Beginning Repair**, page 30. Relieve pressure, page 20.
2. Insert pin through cart handle and lock with lanyard.
3. Carefully lay sprayer on it's side on a level surface. Rotate sprayer and rest upside down on cart handle.

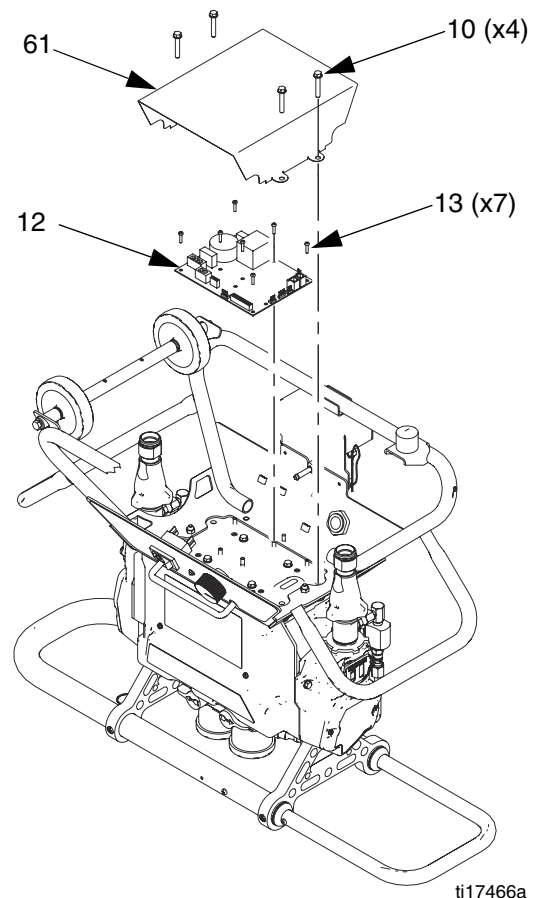
**NOTE:** Always use two people when lifting the sprayer up on to a workbench.

4. Remove four screws (10) and control board cover (61) to expose the control board (12).
5. Disconnect all cables and connectors from board.
6. Remove seven screws (13) and remove board.
7. Install new board in reverse order.

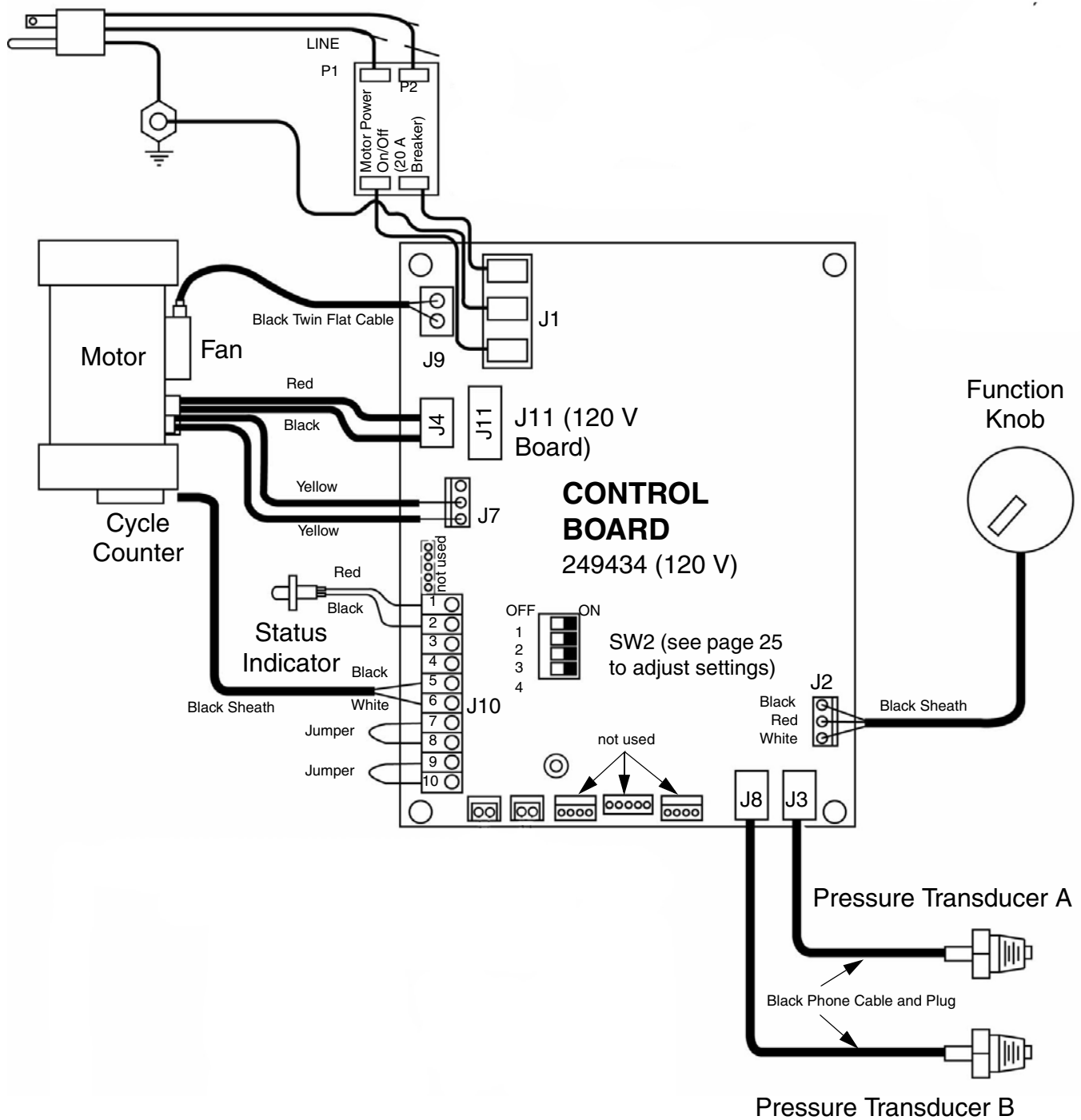
**NOTE:** Apply thermal compound between the square steel piece on the back of the board and the main aluminum plate. Order Part No. 110009 Thermal Compound.

**Table 3: Control Board Connectors  
(see FIG. 58)**

Board Jack	Pin	Description
J1	n/a	Main power from breaker
J2	n/a	Function knob
J3	n/a	Transducer A
J4	n/a	Motor power (230 V units)
J7	1, 2	Motor thermal overload signal
J8	n/a	Transducer B
J9	n/a	Fan
J10	1, 2	Status Indicator
	3, 4	Not used
	5, 6	Cycle switch signal
	7, 8	Jumpered
	9, 10	Jumpered
J11	n/a	Motor power (120 V)



**FIG. 57: Control Board Removal**



**FIG. 58: Control Module Wiring Connections**

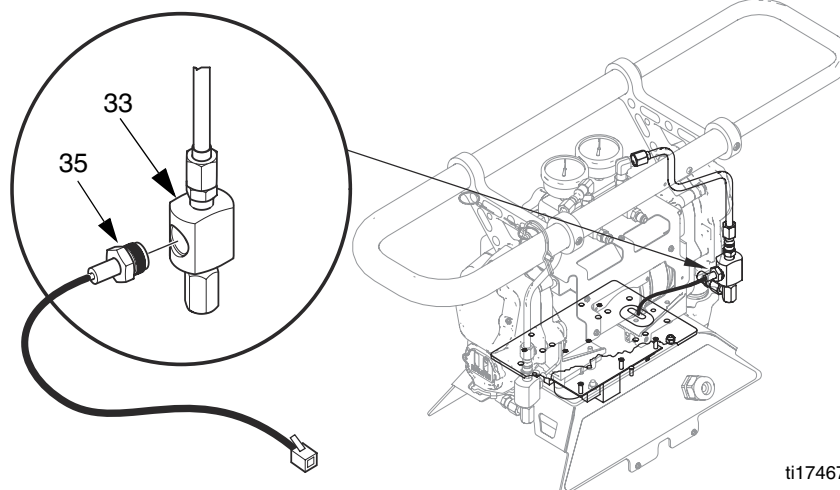
## Pressure Transducers



1. See **Before Beginning Repair**, page 30. Relieve pressure, page 20.
2. Insert pin through cart handle and lock with lanyard.
3. Carefully lay sprayer on it's side on a level surface. Rotate sprayer and rest upside down on cart handle.

**NOTE:** Always use two people when lifting the sprayer up on to a workbench.

4. Remove four screws (10) and control board cover (61) to expose the control board (12).
5. Disconnect transducer cables from J3 and J8 at board; see FIG. 58. page 34. Reverse A and B connections and check if status code follows the bad transducer, page 25.
6. Reconnect good transducer to proper connector. Disconnect failed transducer from board, and unscrew from base of transducer manifold.
7. Install new transducer (35) in manifold (33). Mark board end of cable with tape (red=transducer A, blue =transducer B).
8. Route cable under the electric motor and through grommet to control board (12).
9. Connect transducer cable at board; see FIG. 58. page 34.



**FIG. 59: Pressure Transducer Connection**

## Drive Housing

### Removal



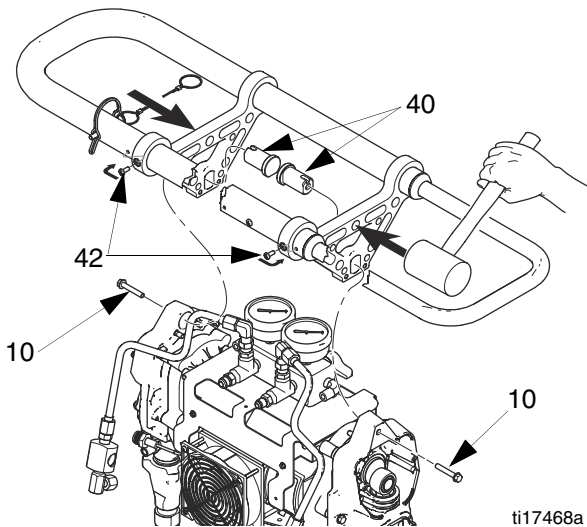
1. See **Before Beginning Repair**, page 30. Relieve pressure, page 20.
1. Loosen nut and press the fluid inlet tube down away from the pump intake valve.
2. Disconnect swivel (32) from pump outlet and loosen swivel at the fluid manifold. Turn the fluid outlet line toward the center of the sprayer.
3. Disconnect pressure transducer (35) from manifold.
4. Disconnect swivel (32) from pump outlet and loosen fluid outlet line swivel (36) at the fluid manifold. Turn the fluid outlet lines toward the center of the sprayer.
5. Remove screws (207) and end covers (221, 227), FIG. 61, page 37.

**NOTE:** Examine connecting rod (216). If rod needs replacing, first remove the pump (219), page 31.

### NOTICE

Do not drop gear reducer (214) and crank shaft (210) when removing drive housing (215). These parts may stay engaged in motor end bell (MB) or may pull away with drive housing.

6. Disconnect cart handles.
  - a. Remove screws (42) from handle (37).
  - b. Hold pin (40) and remove screw (10).
  - c. Gently tap the top-center of the handle with a rubber mallet until the handle is disengaged from the drive housing.
  - d. If removing both drive housings, complete steps 6a-6c on the other handle to remove the entire cart handle assembly.



**FIG. 60: Cart Handle Removal**

7. Remove screws (220) and pull drive housing (215) off motor (201). Connecting rod (216) will disengage from crankshaft (210).
8. Examine crankshaft (210), gear reducer (214), thrust washers (208, 212), and bearings (209, 211, 213). See FIG. 61, page 37.

## Installation

1. Apply grease liberally to washers (208, 212), bearings (209, 211, 213), gear reducer (214), crankshaft (210), and inside drive housing (215). Grease is supplied with replacement parts kits. See FIG. 61, page 37.

**NOTE:** B side crankshaft (210) includes the cycle counter magnet (224). When reassembling, be sure to install crankshaft with magnet on B side.

If replacing crankshaft, remove magnet (224). Reinstall magnet in center of offset shaft on new crankshaft. Position shaft in Park position.

2. Install bronze bearings (211, 213) in drive housing (215), as shown.
3. Install bronze bearings (209, 211) and steel washer (208) on crankshaft (210). Install bronze bearing (213) and steel washer (212) on gear reducer (214).
4. Install gear reducer (214) and crankshaft (210) into motor end bell (MB).

**NOTE:** Crankshaft (210) must be inline with crankshaft at other end of motor. Pumps will move up and down together.

If connecting rod (216) or pump (219) were removed, reassemble rod in housing and install pump, page 31.

5. Push drive housing (215) onto motor (201). Install screws (220).
6. Install cart handle assembly.
  - a. Engage handle through back of drive housing. Install screws in driver housing. Repeat for other drive housing if entire cart handle assembly was removed. See FIG. 60.
  - b. Gently tap the handle (39) and align holes of handle (37) and tube (38).
  - c. Apply medium strength anaerobic thread sealant on screw threads (42) and install in handle (37).

### NOTICE

To prevent stripping threads inside handle tube (38), do not overtighten screws (42).

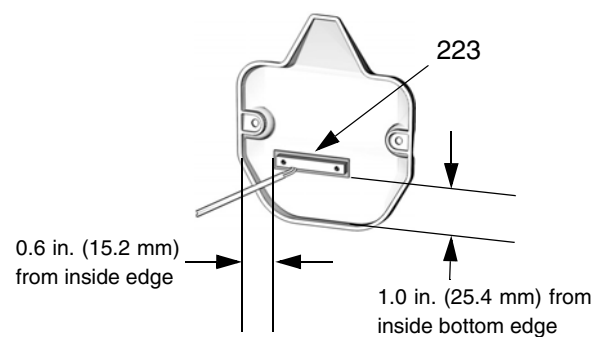
7. Install drive housing covers (221 on A side, 227 on B side) and screws (207). Pumps must be in phase (both at same position in stroke).



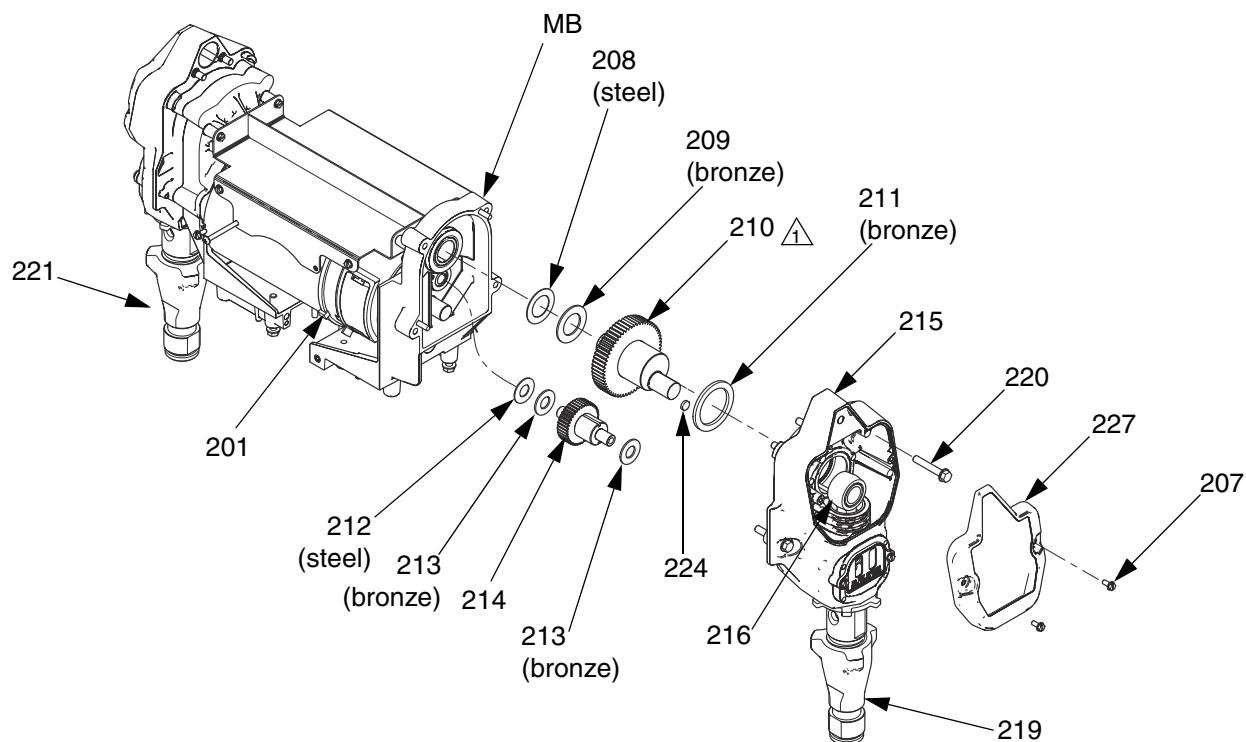
## Cycle Counter Switch Replacement

**NOTE:** B side drive housing cover (227) includes the cycle counter switch (223), mounted in the cover. When reassembling, be sure to install cover with switch on B side.

Feed the cable under the electric motor and through the grommet and connect to the control board.



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⚠ Crankshaft must be in line with crankshaft at other end of motor, so pumps move up and down in unison.

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**FIG. 61: Drive Housing**

## Electric Motor

### Test Motor

If motor is not locked up by pumps, it can be tested using a 9 V battery.

1. Open recirculating valves, disconnect J4 or J11 from control board, see FIG. 58, page 34.
2. Touch jumpers from battery to motor connections. Motor should turn slowly and smoothly.

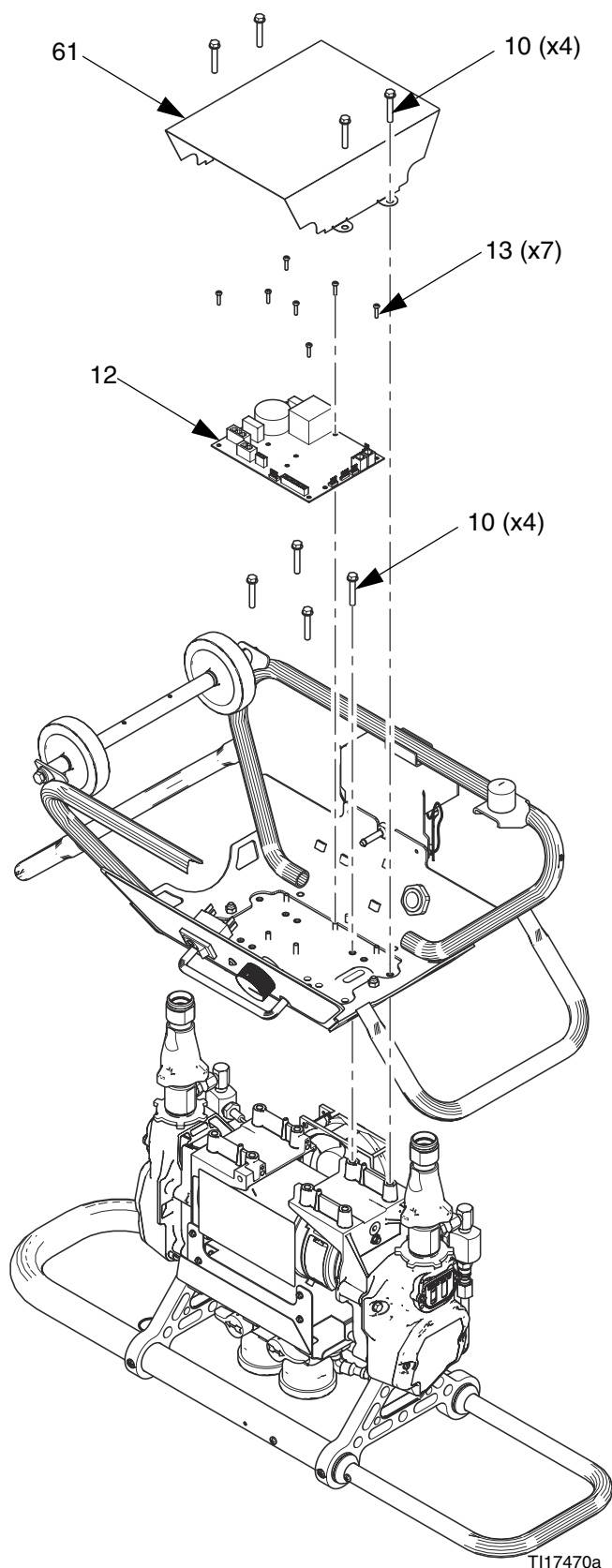
### Removal



1. See **Before Beginning Repair**, page 30. Relieve pressure, page 20.
2. Carefully lay sprayer on it's side on a level surface. Rotate sprayer and rest upside down on cart handle assembly.

**NOTE:** Always use two people when lifting the sprayer up on to a workbench.

3. Remove screws (10) and control board cover (61) to expose the control board (12).
4. Disconnect all cables and connectors from board (12).
5. Unplug cable (94) from fan (202). See FIG. 63, page 39.
6. Remove screws (13) and board (12).
7. Remove screws (10).
8. Feed proportioner cables out of grommet in the cart (1) and lift the cart off of the motor.
9. Remove drive housing/pump assemblies and cart handle assembly, page 35.



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**FIG. 62: Electric Motor Removal**

## Installation

See FIG. 62, page 38.

1. If replacing motor, install fan assembly and fan mount threaded bushing on new motor.
2. Place cart (1), with motor plate (8) installed, on bottom of the motor and fan. Feed motor cables through grommet.
3. Fasten motor to cart with four screws (10).
4. Fasten board to cart with seven screws (13). Connect all cables. See FIG. 58, page 34.
5. Install cover (61) with screws (10).

**NOTE:** Apply thermal compound between the square steel piece on the back of the board and the main aluminum plate. Order Part No. 110009 Thermal Compound.

6. Carefully rotate cart to the upright position.
7. Install bracket (28) and screws (29).
8. Install drive housing/pump assemblies, page 35. Reconnect inlet assemblies to pumps.
9. Connect fluid inlet and outlet lines.
10. Return to service.

## Motor Brushes

**NOTE:** Replace brushes worn to less than 1/2 in. (13 mm). Brushes wear differently on each side of motor; check both sides. Brush Repair Kit 287735 is available; kit includes instruction sheet 406582.

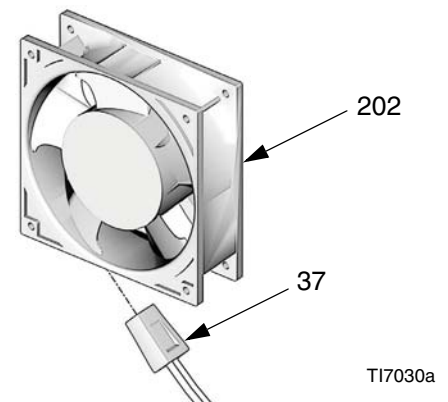
Motor commutator should be smooth. If not, resurface commutator or replace motor.



1. See **Before Beginning Repair**, page 30. Relieve pressure, page 20.
2. See instruction sheet 406582, included with Brush Repair Kit 287735. Remove old brushes and install new ones supplied in kit.

## Fan

1. Disconnect fan cable (37) from fan (202). With Motor Power on, test cable connector for line voltage (120 V or 240 V).
2. *If voltage is correct*, fan is defective. Remove screws holding fan to shield (206). Install new fan in reverse order.
3. *If voltage is not correct*, check fan cable connection at J9 on control board; see FIG. 58, page 34.



**FIG. 63: Fan**

## Spout Adapter

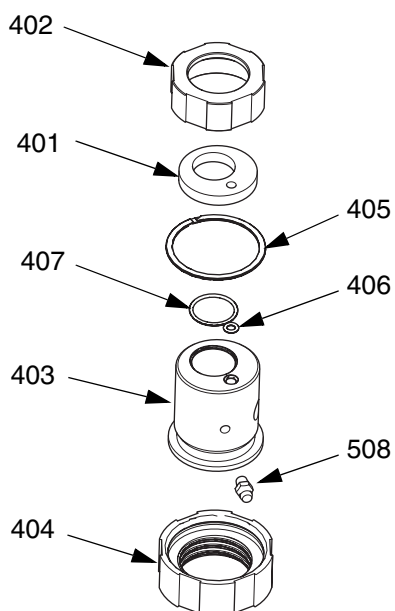
The sprayer is supplied with a 40 mm spout adapter. Follow these instructions to install 38 mm spout adapters or repair the A and B side spout adapters.

See **Pour Spout Adapter**, page 49 for parts.

1. Loosen containment knob.
2. Remove adapter.
  - a. Use a small flat head screwdriver to remove retaining ring (405) from adapter.
  - b. Loosen housing (403) from nut cap (402).
  - c. Slide spout adapter (404), housing (403), plate (401), and nut cap (402), off fluid tube (P).
  - d. Remove spout adapter (404) from housing. Remove nut cap (402).

### NOTICE

To prevent damage to spout adapter o-ring, gently remove adapter housing from fluid tube.



**Fig. 64**

3. Connect 38 mm or 40 mm spout adapter.
  - a. Place spout adapter (404) on a flat level surface. Place retaining ring (405) above housing base (403) and insert the bottom of the housing in the spout adapter (404).
  - b. Use two flat head screwdrivers to insert the bottom of the retaining ring (405) in the groove. After the bottom has gotten started in the groove, continue to press down on the retaining ring with one screwdriver and rotate the spout adapter (404) with your other hand until the retaining ring snaps in the groove.
  - c. Install nut cap (402) and plate (AP) on fluid tube (P).
  - d. Apply grease on o-rings (406, 407) and slide over fluid tube threads and recirculation tube.
  - e. Slide housing (403) on fluid tube (P) and align orings (4067, 407) in grooves of housing (403).
  - f. Tighten nut cap (402) on housing (403).

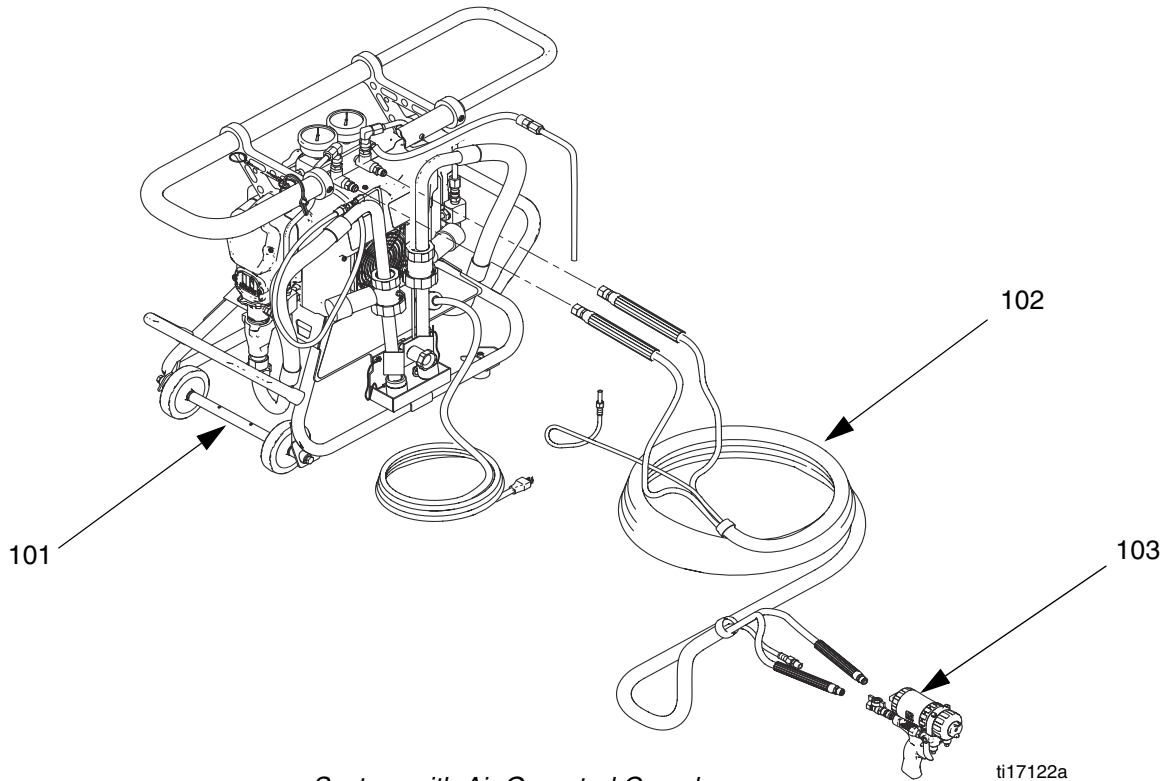
# Parts

**120 V and 240 V Fusion Air Purge System Packages**

**120 V and 240 V Fusion CS System Packages**

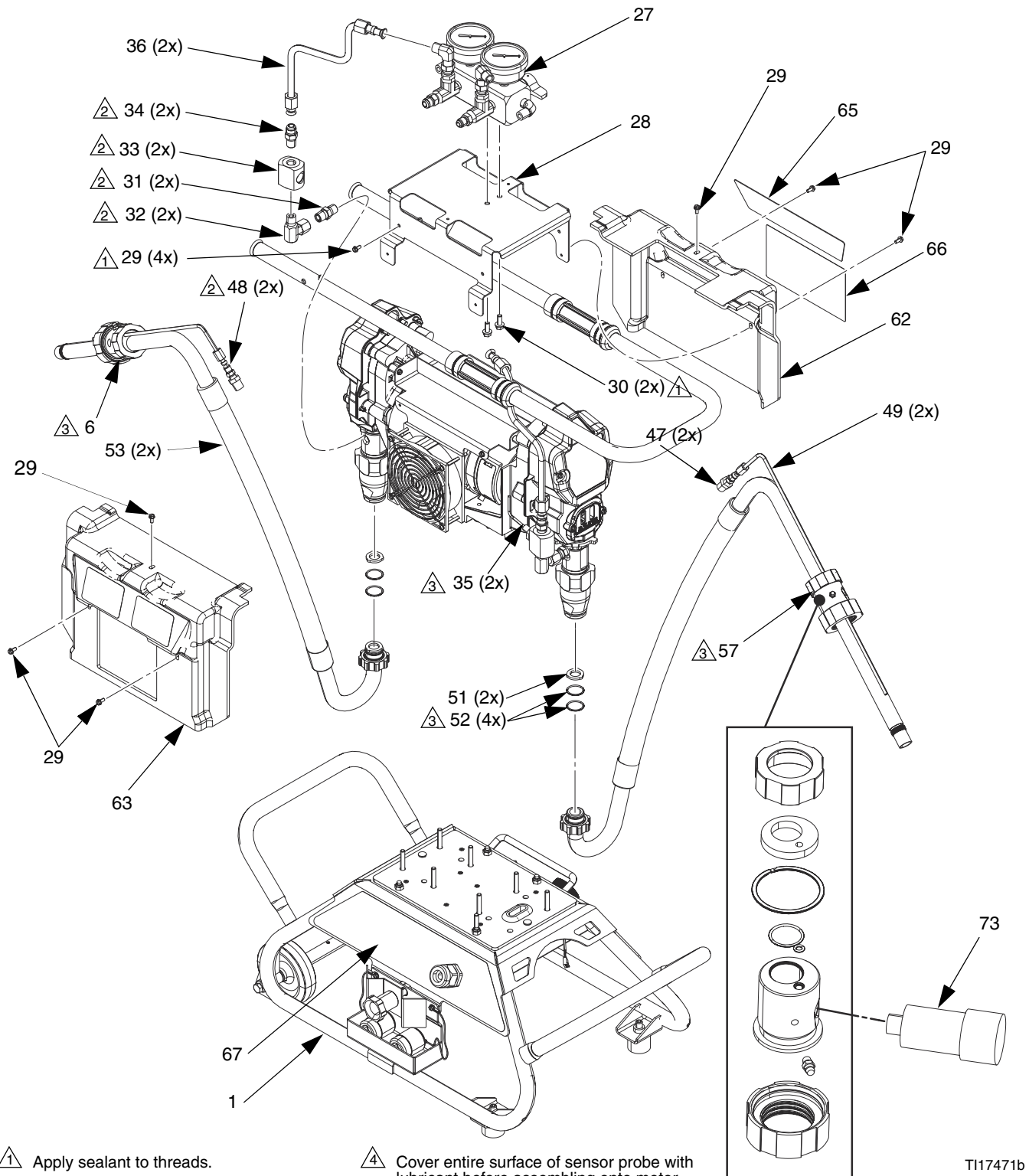
**120 V and 240 V P2 System Packages**

**120 V and 230 V Manual 2K System Packages**



System Package	Volts	Description	Bare Proportioner (101) see page 42	Hose (102) see page 47	Gun (103) see gun manual
AP9082	120V	Fusion Air Purge Proportioner Package	259082	24M653	246100
AP9083	240V	Fusion Air Purge Proportioner Package	259083	24M653	246100
CS9082	120V	Fusion CS Proportioner Package	259082	24M653	CS00RD
CS9083	240V	Fusion CS Proportioner Package	259083	24M653	CS00RD
P29082	120V	P2 Proportioner Package	259082	24M653	GCP2R0
P29083	240V	P2 Proportioner Package	259083	24M653	GCP2R0
24R151	120V	Manual 2K Proportioner Package	259082	24R823	24R021
24R154	240V	Manual 2K Proportioner Package	259083	24R823	24R021

## 259082 (120V) and 259083 (240V), Bare Proportioner

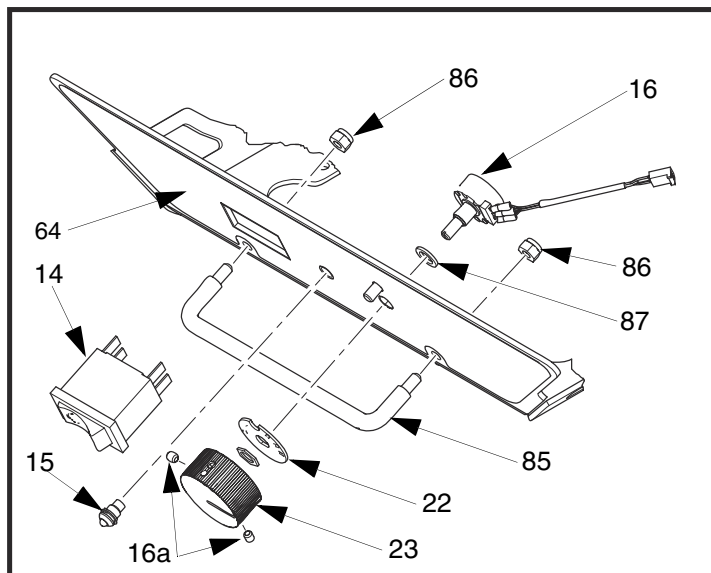
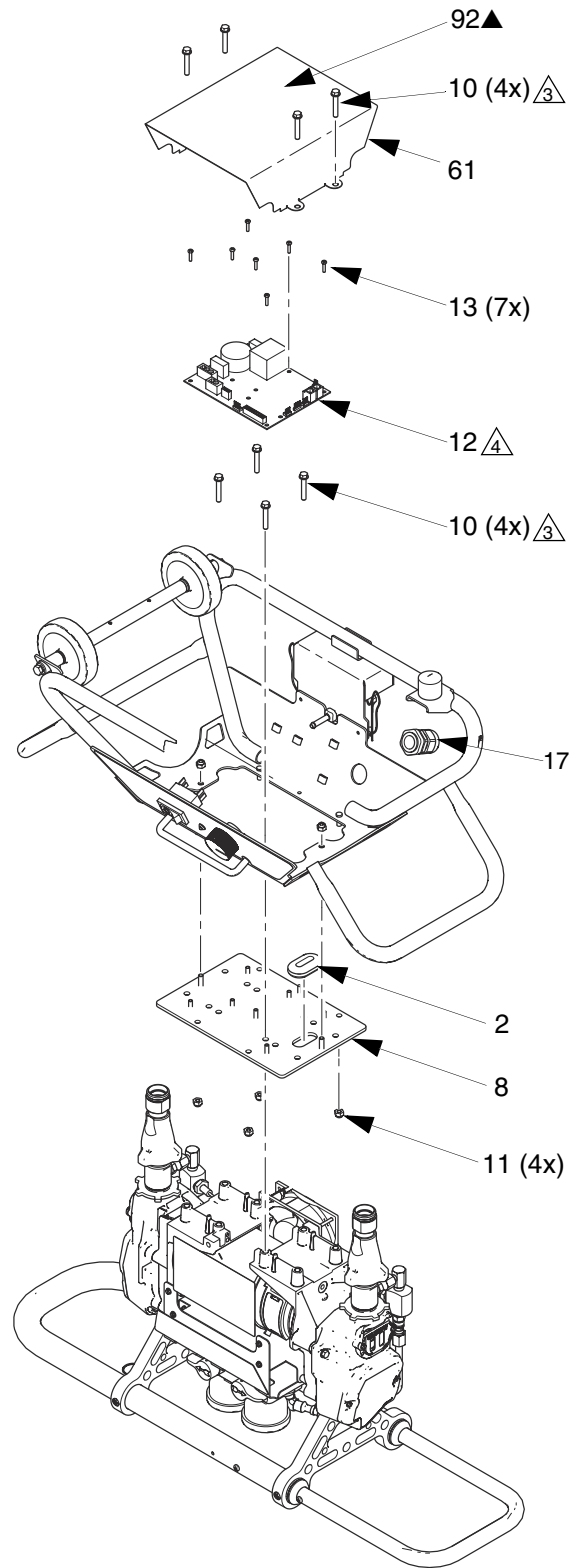
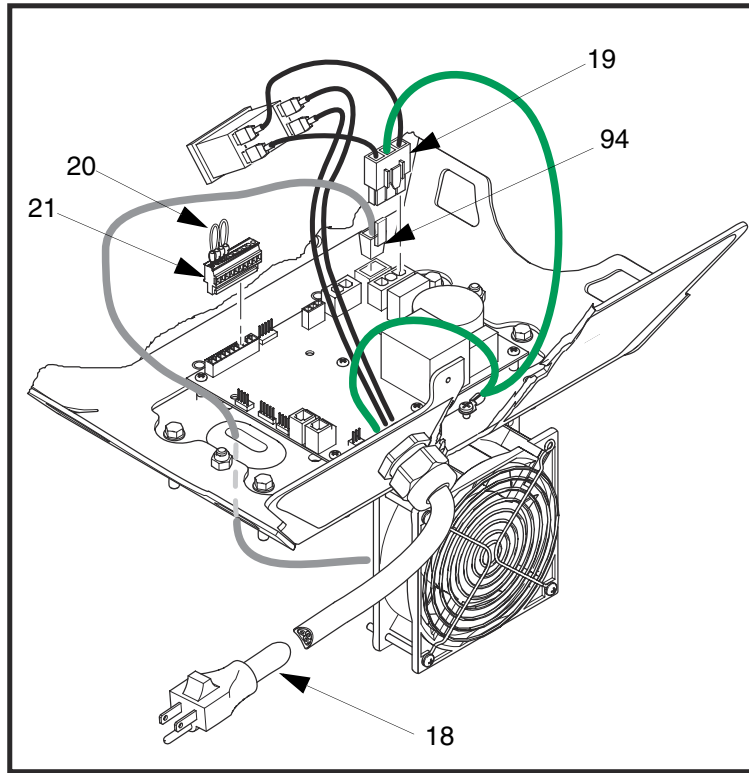


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- 1 Apply sealant to threads.
- 2 Apply sealant to all non-swiveling pipe threads.
- 3 Apply lubricant to all o-rings and bolt-wheel connection (3, 91).

- 4 Cover entire surface of sensor probe with lubricant before assembling onto motor plate (8).
- 5 Torque to 5-6 ft-lbs (6.7-8 N·m).

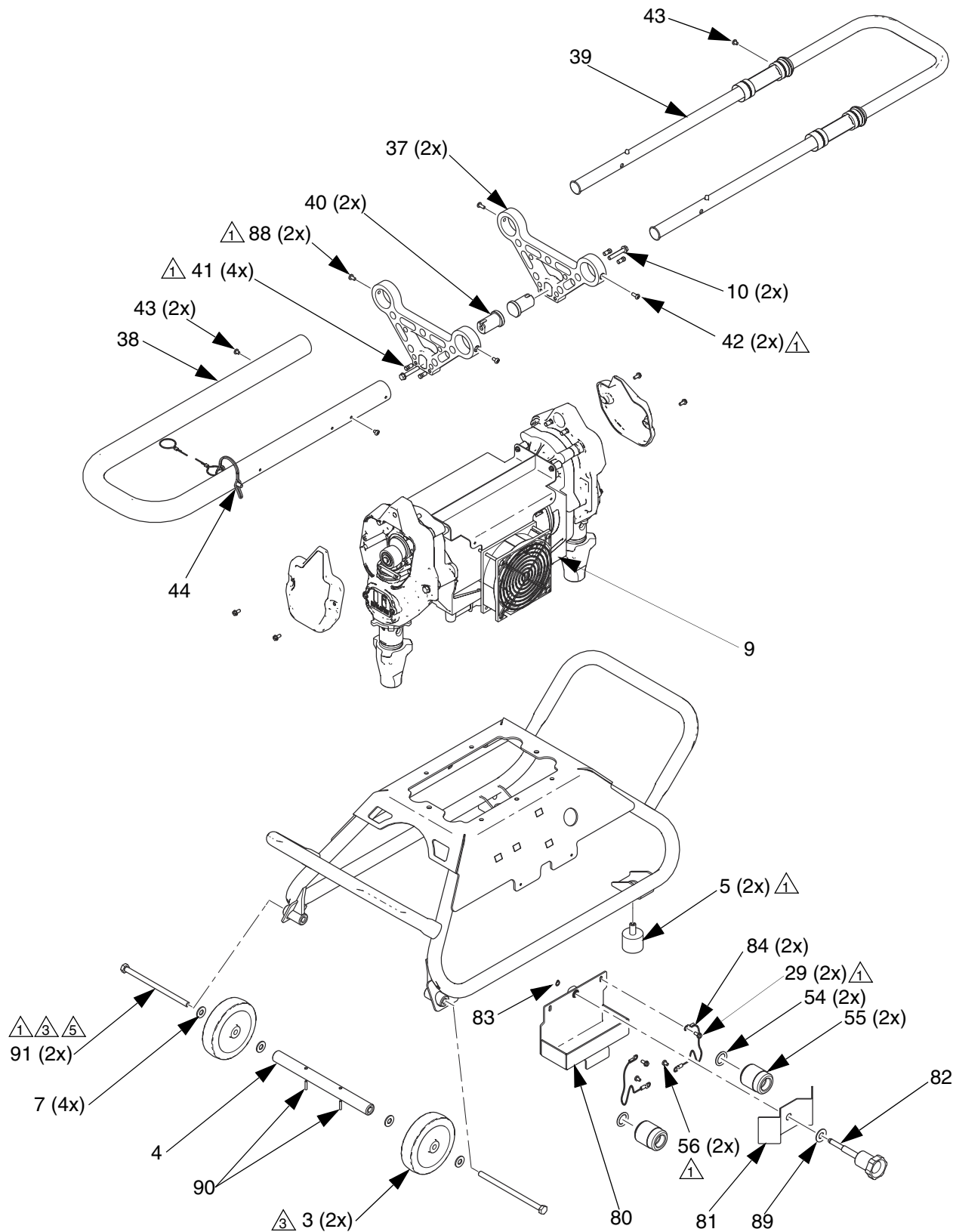
# 259082 (120V) and 259083 (240V), Bare Proportioner (continued)



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## 259082 (120V) and 259083 (240V), Bare Proportioner (continued)

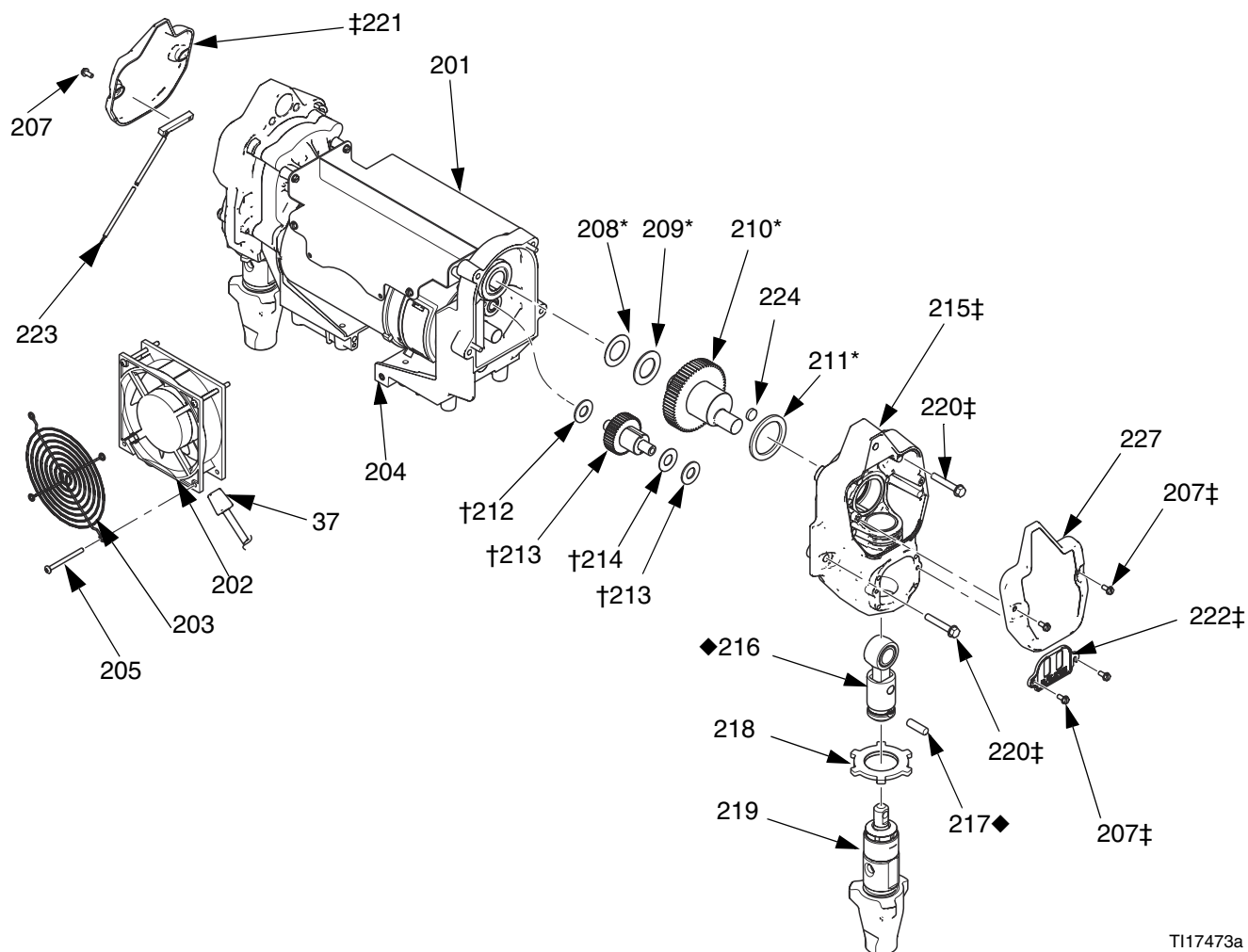




**259082 (120V) and 259083 (240V), Bare Proportioner (continued)**

Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
1 24J139	CART	1	46 249630	HOSE, component B (resin), 1/4 in. (6 mm) ID; thermoplastic hose; 1/4 npsm(f) x 48 in. (1219 mm)	1
2 16H888	GROMMET, 7/8 in. ID	1			
3 16F820	WHEEL, caster	2	47 100030	BUSHING	2
4 16H352	SPACER, axle	1	48 125212	FITTING, -3 JIC x 1/8 npt(m)	2
5 121573	BUMPER, urethane, 3/8-16, 80-90 dur	2	49 16H615	TUBE, recirculation	2
6 24J766	ADAPTER, spout, pour, 40 mm assembly, B; see page 49	1	51 115099	WASHER, garden hose	2
7 120454	WASHER, flat	4	52 117559	O-RING	4
8 16G939	PLATE, motor mount	1	53 246010	HOSE, suction	2
9 ◆24L885	PROPORTIONER, 120V; see page 46	1	54 113575	O-RING	2
✱24L979	PROPORTIONER, 240V; see page 46	1	55 15W249	CAP, tube, suction	2
10 117493	SCREW, mach, hex washer hd	10	56 112144	SCREW, mach, pan hd	2
11 102040	NUT, lock, hex	6	57 24J155	ADAPTER, spout, pour, 40 mm assembly, A; see page 49	1
12 ◆249434	BOARD, circuit (115V)	1	58 103473	STRAP, TIE, WIRE	4
✱249432	BOARD, circuit (230V)	1	61 24J141	COVER, electronics	1
13 107156	SCREW, mach, pan hd	7	62 24J151	COVER, shroud, front	1
14 24K983	SWITCH, rocker, w/breaker, 240V, 20A	1	63 24J152	COVER, shroud, back	1
15 119930	DIODE, light-emitting	1	64 16J414	LABEL, control	1
16 24L002	POTENTIOMETER, adjustment, pressure	1	65 16H202	LABEL, branding	1
17 119897	FITTING, bulkhead, cable, 0.250	1	66 16J415	LABEL, quick start	1
18 ◆24K995	CORD SET, power, 125V	1	67▲ 16H569	LABEL, warning	1
✱15G220	CORD SET, power, 240V	1	73 24K984	DRYER, desiccant, mini in-line	2
19 15G230	CABLE, harness, power	1	80 16H809	TRAY, containment	1
20 15C866	WIRE, jumper	2	81 16H810	BRACKET, containment	1
21 116773	CONNECTOR, plug, 3.81 mm (10 position)	1	82 16H811	KNOB, containment	1
22 15G053	PLATE, detent, display	1	84 125321	CABLE, sst lanyard, 10 in.	2
23 24L001	KNOB, control	1	85 16H543	HANDLE, pull	1
27 24J147	MANIFOLD, recirculation	1	86 121114	NUT, hex, self locking	2
28 24J140	BRACKET, recirculation manifold	1	87 261841	WASHER, flat	1
29 115492	SCREW, mach, slot hex wash hd	12	88 104859	SCREW, tapping pan hd	2
30 108296	SCREW, mach, hex wash hd	2	89 111743	WASHER, flat	1
31 156971	NIPPLE, short	2	90 112154	PIN, straight, slotted	2
32 155541	SWIVEL, 90°	2	91 15M314	SCREW, cap	2
33 15G292	MANIFOLD, pressure transducer	2	92▲ 189930	LABEL, caution	1
34 116704	ADAPTER, #6 JIC x 1/4 npt	2	93 ◆16H902	TAG, informational (120V); not shown	1
35 24K999	TRANSDUCER, pressure, control	2	✱16M900	TAG, informational (240V); not shown	1
36 16H530	TUBE, fluid	2	94 15G458	CABLE, fan	1
37 16G943	BRACKET, lift handle	2	95 16H984	CAP, adapting cap, 38 mm	1
38 16G945	TUBE, lift handle, fixed	1	96 242001	CORD SET, adapter, Europe (240V); not shown	1
39 24J244	HANDLE, lift, sliding	1	97 242005	CORD SET, adapter, Australia (240V); not shown	1
40 16H546	PIN, mounting, lift handle	2	▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.		
41 16H547	PIN, alignment, lift handle	4	◆ Only used with proportioner 259082.		
42 110037	SCREW, mach, pnh	2	✱ Only used with proportioner 259083.		
43 109032	SCREW, mach, pnh	3			
44 24J154	PIN, W/LANYARD	1			
45 249629	HOSE, component A; 1/4 in. (6 mm) ID; thermoplastic hose with moisture guard; 1/4 npsm(f) x 48 in. (1219 mm)	1			

**24L885, 120 V Bare Proportioner**  
**24L979, 240 V Bare Proportioner**

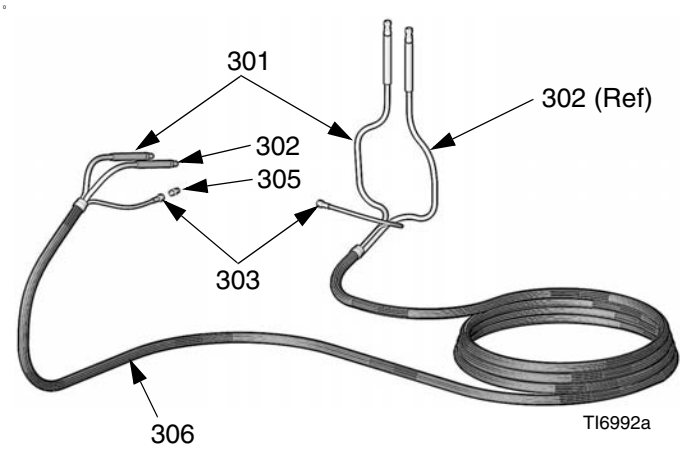


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Ref.	Part	Description	Qty	Ref.	Part	Description	Qty
201	24E355	MOTOR, electric; 120 V	1	217◆	196762	PIN, straight	2
	24E356	MOTOR, electric; 240 V	1	218	195150	NUT, jam, pump	2
202	24K985	FAN, cooling; 120 V	1	219	256767	PUMP, displacement; see 313123	2
	24K986	FAN, cooling; 240 V	1	220‡	117493	SCREW, machine, hex washer hd; 1/4-20 x 1-1/2 in. (38 mm)	8
203	115836	GUARD, finger	1	221‡	15B254	COVER, drive housing, A side	1
204		RIVET, blind; 5/32 x 3/8 grip	1	222‡	15B589	COVER, pump rod	2
205		SCREW, machine, slotted hd; 8-32 x 2 in. (51 mm)	3	223	117770	SWITCH, reed, w/cable	1
207‡	115492	SCREW, machine, hex washer hd; 8-32 x 3/8 in. (10 mm)	8	224	24K982	MAGNET	1
208*	116074	WASHER, thrust; steel	2	227	249854	COVER, drive housing, B side; includes item 223 and 228	1
209*	107434	BEARING, thrust; bronze	2	228	115711	TAPE, mounting, reed switch; not shown	1
210*	248231	CRANKSHAFT KIT	2				
211*	180131	BEARING, thrust; bronze	2				
212†	116073	WASHER, thrust; steel	2				
213†	116079	BEARING, thrust; bronze	4				
214†	287057	GEAR REDUCER KIT	2				
215‡	24L979	DRIVE HOUSING KIT	2				
216◆	287053	CONNECTING ROD KIT	2				

\* Included in 248231 Crankshaft Kit.  
† Included in 287057 Gear Reducer Kit.  
‡ Included in 287055 Drive Housing Kit.  
◆ Included in 287053 Connecting Rod Kit.

**3/8 in. ID x 50 ft Insulated Hose Bundle without Recirculation Lines with Air Hose, 24M653**

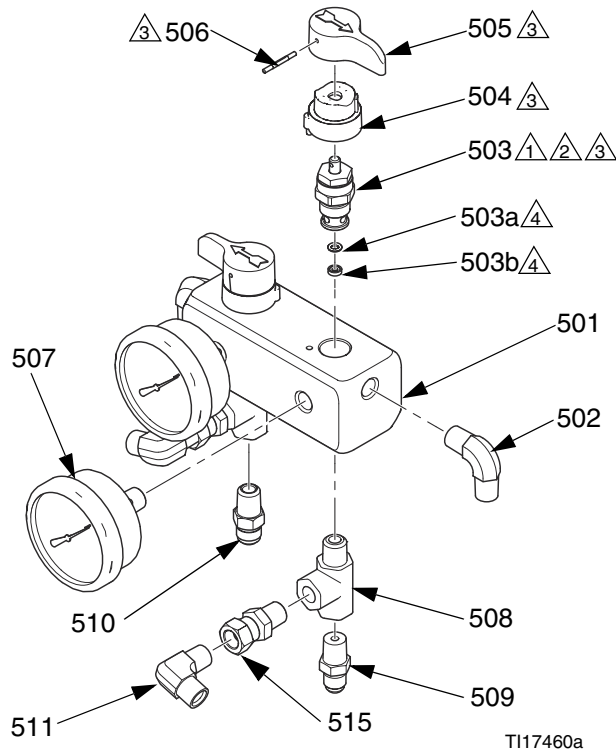


Ref.	Part	Description	Qty
301	16V331	HOSE, fluid (component A), moisture guard; grounded, 3/8 in. (9.5 mm) ID; no. 5 JIC fittings (mx); 50 ft (15 m)	1
302	24M671	HOSE, fluid (component B); 3/8 in. (9.5 mm) ID; no. 6 JIC fittings (mx); 50 ft (15 m)	1
303	261535	HOSE, air; 3/8 in. (9.5 mm) ID; 3/4 npsm (f); 50 ft (15 m)	1
305	156971	NIPPLE; 3/8 npt; for joining air line to another hose bundle	1
306	---	INSULATION	1

**1/4 in. ID x 35 ft Non-Insulated Hose Bundle without Recirculation Lines and No Air Hose, 24R823**

Ref.	Part	Description	Qty
351	249508	HOSE, coupled, 35 ft x 1/4 in., 1/2-20 UNF, moisture guard, static dissipative	1
352	249509	HOSE, coupled, 35 ft, x 1/4 in., 9/16-18 UNF, static dissipative	1

## Recirculation Manifold, 24J147



① Torque to 250 in-lb (28 N•m).

② Use blue threadlocker on valve cartridge threads into manifold.

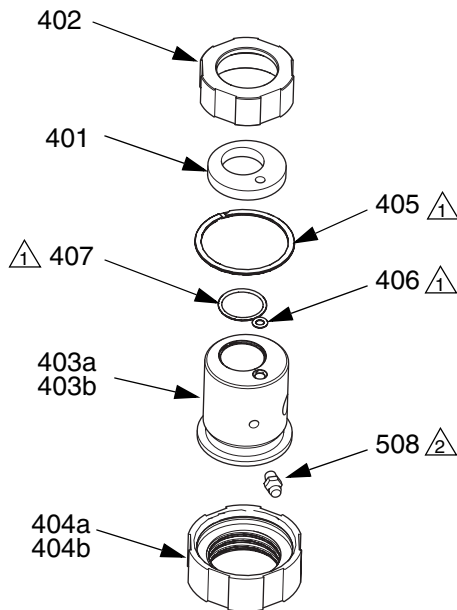
③ Apply lubricant to mating surfaces.

④ Part of item 503.

Ref.	Part	Description	Qty
501	24K993	MANIFOLD, recirculation	1
502	111763	ELBOW; 1/4 npt (mbe)	4
503	239914	VALVE, recirc/spray; includes items 503a, 503b	2
503a	15E022	. SEAT	1
503b	111699	. GASKET	1
504	224807	BASE, valve	2
505	187625	HANDLE, valve, drain	2
506	111600	PIN, grooved	2
507	113641	GAUGE, pressure, fluid	2
508	116504	TEE; 1/4 npt(m) x 1/4 npt(f) run; 1/4 npt(f) branch	2
509	119998	ADAPTER; 5/16 JIC x 1/4 npt(m)	1
510	116704	ADAPTER; 3/8 JIC x 1/4 npt(m)	1
511	556765	ELBOW, tube; 1/4 npt(m) x 3/8 in. (10 mm) OD tube	2
515	156823	UNION, swivel; 1/4-18 npt	2

## Pour Spout Adapter

Part	Description
24J155	40 mm A Side Pour Spout Adapter
24J766	40 mm B Side Pour Spout Adapter
24M052	38 mm B Side Pour Spout Adapter
24M053	38 mm A Side Pour Spout Adapter



△<sub>1</sub> Lubricate o-rings and retaining ring with grease.

△<sub>2</sub> Apply sealant to threads.

Ref.	Part	Description	Qty
401	16H539	PLATE, crush, inlet	1
402	16H540	CAP, spout, pour	1
403		HOUSING, inlet tube, 403a or 403b	1
403a	15H541	HOUSING, inlet tube, A side	1
403b	16H882	HOUSING, inlet tube, B side	1
404		CAP, adapting, 40 mm; 404a or 404b	1
	16H542	CAP, adapting, 40 mm; black	1
	16H984	CAP, adapting, 38mm; silver	1
405	125179	RING, retaining	1
406	112319	PACKING, o-ring	1
407	117559	O-RING	1
408	100846	FITTING, lubrication	1

## Suggested Spare Replacement Parts

Part	Description
24K984	DRYER, desiccant
246385	STRAINER, pump inlet
24K983	SWITCH, motor power, with circuit breaker
113641	GAUGE, pressure, fluid; sst
239914	VALVE, recirc/spray; includes seat and gasket
24L002	POTENTIOMETER, control knob
24G886	BOARD, control; 120 V units only
24G887	BOARD, control; 240 V units only
24K999	TRANSDUCER, pressure
24L006	PUMP, displacement; fits either side
249855	REPAIR KIT, displacement pump; includes seals, balls, bearings, intake valve seat)
246010	SUCTION HOSE, pump to 5 gallon pail
24M115	ADAPTER, spout, pour, assembly A; 40 mm
24M114	ADAPTER, spout, pour, assembly B; 40 mm
24M052	ADAPTER, spout, pour, assembly A; 38 mm
24M053	ADAPTER, spout, pour, assembly B; 38 mm
16H615	TUBE, recirculation

### Unheated Hoses with Scuff Guard, 2000 psi (138 bar, 13.8 MPa)

24R823	HOSE BUNDLE, 1/4 in. (6.4 mm), 35 ft (10 m), no air hose, uninsulated
249633	HOSE BUNDLE, 1/4 in. (6.4 mm), 35 ft (10 m), air, uninsulated
24R137	HOSE BUNDLE, 3/8 in. (9.5 mm), 50 ft (15 m), no air hose, uninsulated
24M653	HOSE BUNDLE, 3/8 in. (9.5 mm), 50 ft (15 m), air, insulated

## Accessories

### Fusion Air Purge Gun

Air purge gun, available in round or flat patterns. See manual 309550.

### Fusion ClearShot™

Air purge gun with ClearShot Liquid Technology, available in round or flat patterns. See manual 312666.

### Probler® P2

Air purge gun, available in round or flat patterns. See manual 313213.

### Manual 2K Gun

Manually opened and closed, two-component gun. See manual 332198.

### Pail Heater, 16U623

Flexible band heaters for 5 gallon pails.

### Recirculation Hose Kit, 24M654

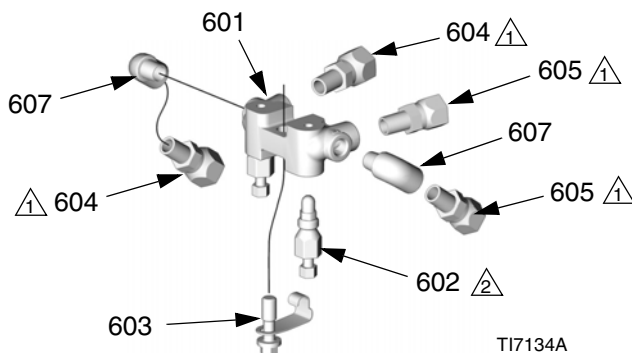
3/8 in. (9.5 mm), 50 ft. (15 m)


Ref.	Part	Description	Qty
550	24M939	HOSE, non-heated, insulated, recirculation, quad, 2000 psi (14 MPa, 138 bar), 3/8 in. (9.5 mm), 50 ft. (15 m)	1
551	111697	ADAPTER, #5 JIC x 1/4 NPT	1
552	119998	PLUG, pipe	2
553	249523	MANIFOLD, gun, assembly, 4-hose	1


### Recirculation Gun Manifold Kit, 249523

Only compatible with Fusion Air Purge Gun.

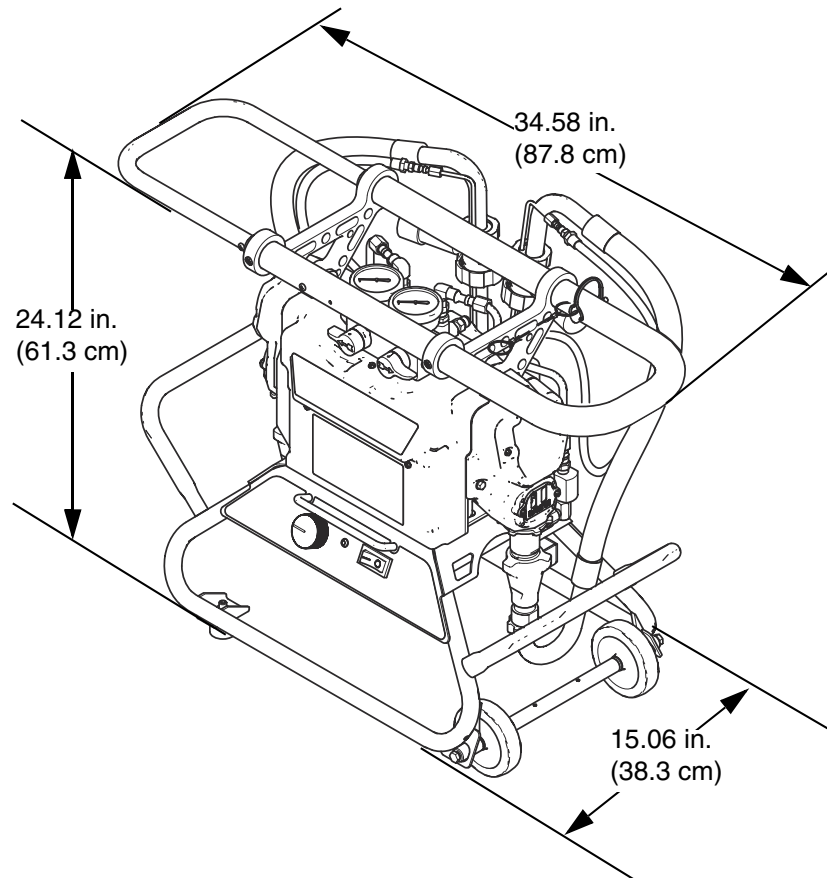
Ref.	Part	Description	Qty
601	---	MANIFOLD	1
602	246356	VALVE, fluid	2
603	15B221	BOLT; 5/16-24	1
604	117634	SWIVEL, B side; 1/8 npt(m) x # 6 JIC(f)	2
605	117635	SWIVEL, A side, 1/8 npt(m) x #5 JIC(f)	2
606	15B993	SPRING, ring, lock	1
607	112307	ELBOW, street; 1/8 npt (m x f); round and flat pattern guns only	2



 Torque to 235-245 in.-lb (26.6-27.7 N•m).

 Torque to 32-40 ft-lb (43-54 N•m).

# Dimensions



TI17120a





# Technical Data

Reactor E-8p		
	US	Metric
Maximum fluid working pressure	2000 psi	14 MPa, 138 bar
Electrical requirements	Model 259082: 120 Vac, 1 phase, 50/60 Hz, 1800 W; requires a single dedicated 15 A circuit	
Generator Size	2500 W minimum	
Maximum Ambient Temperature	110°F	43°C
Maximum Output at 340 cycles/min	12 lb/min	5.4 kg/min
Output per Cycle (A and B)	.00352 gal.	(.0133 liter)
Overpressure Relief	Recirc/Spray valves automatically relieve excessive fluid pressure back to supply tanks	
Sound Pressure		
In fast circulation mode	78.7 dB(A)	
At 2000 psi (14 MPa, 138 bar), 0.72 gpm (2.7 lpm)	84.5 dB(A)	
Sound Pressure per ISO 9614-2		
In fast circulation mode	88.6 dB(A)	
At 2000 psi (14 MPa, 138 bar), 0.72 gpm (2.7 lpm)	94.4 dB(A)	
Inlet/Outlet Sizes		
Fluid Outlet - Component A (ISO)	-5 JIC male	
Fluid Outlet - Component B(RES)	-6 JIC male	
Fluid Circulation Return - Component A (ISO)	-5 JIC male	
Fluid Circulation Return - Component B(RES)	-6 JIC male	
Air Inlet	1/4 in. quick-disconnect industrial type pin fitting	
Air Outlet	1/4 npsm(m)	
Hose Markings		
A Side	Red	
B Side	Blue	
Weight (empty), without gun and hose	95 lbs.	43.1 kg
Wetted Parts	Aluminum, stainless steel, carbon steel, brass, carbide, chrome, chemically resistant o-rings, PTFE, ultra-high molecular weight polyethylene	
Maximum Hose Length	105 ft	32 m

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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.

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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.

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Original instructions. This manual contains English. MM 3A1602

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