

# REACTOR<sup>®</sup> E-8p

Portable Plural Component Sprayer

3A1602L

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.**

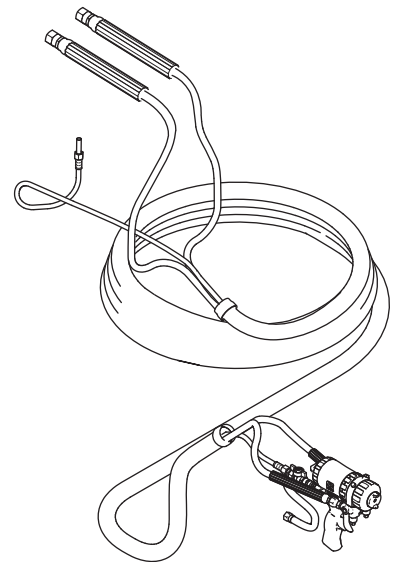
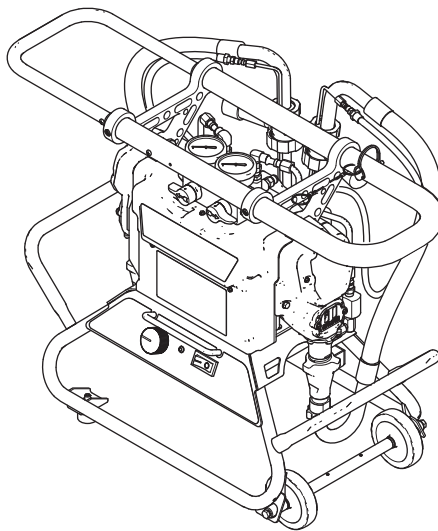
2000 psi (14 MPa, 138 bar) Maximum Working Pressure

See page 3 for a list of models.



## Important Safety Instructions

Read all warnings and instructions in this manual before using this equipment.  
Save these instructions.



T117120a

# Contents

<b>Systems</b> .....	<b>3</b>	<b>Spraying</b> .....	<b>20</b>
<b>Proportioners</b> .....	<b>3</b>	<b>Pressure Relief Procedure</b> .....	<b>21</b>
<b>Related Manuals</b> .....	<b>3</b>	<b>Shutdown</b> .....	<b>22</b>
<b>Warnings</b> .....	<b>4</b>	<b>Maintenance</b> .....	<b>23</b>
<b>Important Isocyanate (ISO) Information</b> .....	<b>7</b>	<b>Flushing</b> .....	<b>24</b>
Material Self-ignition .....	8	<b>Troubleshooting</b> .....	<b>26</b>
Keep Components A and B Separate .....	8	Status Codes .....	26
Moisture Sensitivity of Isocyanates .....	8	Troubleshooting Chart .....	29
Foam Resins with 245 fa Blowing Agents .....	8	<b>Repair</b> .....	<b>32</b>
Changing Materials .....	8	Before Beginning Repair .....	32
<b>Overview</b> .....	<b>9</b>	Recirculation/Spray Valves .....	32
<b>Component Identification</b> .....	<b>10</b>	Displacement Pump .....	33
<b>Controls and Indicators</b> .....	<b>11</b>	Replace Function Knob/Potentiometer .....	34
<b>Setup</b> .....	<b>12</b>	Control Board .....	35
Location .....	12	Pressure Transducers .....	37
Electrical Requirements .....	12	Drive Housing .....	38
Grounding .....	12	Cycle Counter Switch Replacement .....	40
Lock/Unlock Handle .....	13	Electric Motor .....	41
Install 38 mm Spout Adapter .....	13	Motor Brushes .....	42
Install Desiccant Dryers .....	13	Fan .....	42
Install Optional Recirculation Kit .....	14	Spout Adapter .....	43
Connect Fluid Hoses .....	15	<b>Parts</b> .....	<b>44</b>
Connect Gun to Air Hose		<b>Suggested Spare Replacement Parts</b> .....	<b>53</b>
(Air Operated Guns Only) .....	15	<b>Accessories</b> .....	<b>53</b>
Connect Main Air Supply .....	15	<b>Dimensions</b> .....	<b>54</b>
Flush Before Using Equipment .....	15	<b>Technical Data</b> .....	<b>55</b>
Fill Wet-cups .....	17	<b>Graco Standard Warranty</b> .....	<b>56</b>
Install Pail Heaters .....	17		
Recirculate Material .....	17		
Purge Air and Flush Fluid .....	18		
Connect Fluid Inlet Tubes .....	19		

# Systems

Part	Maximum Working Pressure, psi (MPa, bar)	Proportioner (see Proportioners)	Hose		Gun Model	
			Part	Length ft (m)	Model	Part
AP9082	2000 (14, 140)	259082	24M653	50 (15.2)	Fusion <sup>®</sup> 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 <sup>®</sup> 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<sup>™</sup>.

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

\* See page 12 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
311076	Displacement Pump Repair-Parts
309550	Fusion Air Purge Spray Gun Instruction-Parts
312666	Fusion CS Spray Gun Instruction-Parts
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.

 <h2 style="margin: 0;">WARNING</h2>	
 	<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>• Connect only to 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 Safety Data Sheets (SDSs) for handling instructions and to know the specific hazards of the fluids you are using, including the effects of long-term exposure.</li> <li>• When spraying, servicing equipment, or when in the work area, always keep work area well-ventilated and always wear appropriate personal protective equipment. See <b>Personal Protective Equipment</b> warnings in this manual.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>Always wear appropriate personal protective equipment and cover all skin when spraying, servicing equipment, or when in the work area. Protective equipment helps prevent serious injury, including long-term exposure; inhalation of toxic fumes, mists or vapors; allergic reaction; burns; eye injury and hearing loss. This protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• A properly fitting respirator, which may include a supplied-air respirator, chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority.</li> <li>• Protective eyewear and hearing protection.</li> </ul>

# ! WARNING

	<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>
	<p><b>FIRE AND EXPLOSION HAZARD</b></p> <p>Flammable fumes, such as solvent and paint fumes, in <b>work area</b> can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> <li>• Use equipment only in well-ventilated area.</li> <li>• Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).</li> <li>• Ground all equipment in the work area. See <b>Grounding</b> instructions.</li> <li>• Never spray or flush solvent at high pressure.</li> <li>• Keep work area free of debris, including solvent, rags and gasoline.</li> <li>• Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.</li> <li>• Use only grounded hoses.</li> <li>• Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.</li> <li>• <b>Stop operation immediately</b> if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.</li> <li>• Keep a working fire extinguisher in the work area.</li> </ul>
	<p><b>PRESSURIZED ALUMINUM PARTS HAZARD</b></p> <p>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.</p> <ul style="list-style-type: none"> <li>• Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.</li> <li>• Do not use chlorine bleach.</li> <li>• Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.</li> </ul>

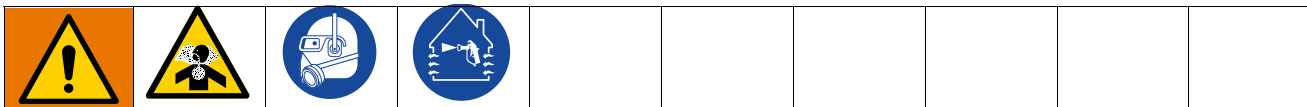
# **WARNING**

 	<p><b>EQUIPMENT MISUSE HAZARD</b></p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> <li>• Do not operate the unit when fatigued or under the influence of drugs or alcohol.</li> <li>• Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See <b>Technical Specifications</b> in all equipment manuals.</li> <li>• Use fluids and solvents that are compatible with equipment wetted parts. See <b>Technical Specifications</b> in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.</li> <li>• Do not leave the work area while equipment is energized or under pressure.</li> <li>• Turn off all equipment and follow the <b>Pressure Relief Procedure</b> when equipment is not in use.</li> <li>• Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.</li> <li>• Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.</li> <li>• Make sure all equipment is rated and approved for the environment in which you are using it.</li> <li>• Use equipment only for its intended purpose. Call your distributor for information.</li> <li>• Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.</li> <li>• Do not kink or over bend hoses or use hoses to pull equipment.</li> <li>• Keep children and animals away from work area.</li> <li>• Comply with all applicable safety regulations.</li> </ul>
 	<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>

# Important Isocyanate (ISO) Information

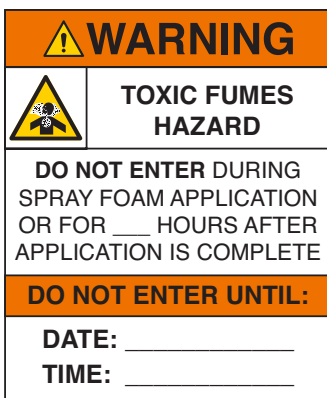
Isocyanates (ISO) are catalysts used in two component materials.

## Isocyanate Conditions



Spraying or dispensing fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates.

- Read and understand the fluid manufacturer’s warnings and Safety Data Sheets (SDSs) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with this equipment unless you are trained, qualified, and have read and understood the information in this manual and in the fluid manufacturer’s application instructions and SDSs.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material, which could cause off gassing and offensive odors. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocyanate mists, vapors and atomized particulates, everyone in the work area must wear appropriate respiratory protection. Always wear a properly fitting respirator, which may include a supplied-air respirator. Ventilate the work area according to instructions in the fluid manufacturer’s SDSs.
- Avoid all skin contact with isocyanates. Everyone in the work area must wear chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority. Follow all fluid manufacturer recommendations, including those regarding handling of contaminated clothing. After spraying, wash hands and face before eating or drinking.
- Hazard from exposure to isocyanates continues after spraying. Anyone without appropriate personal protective equipment must stay out of the work area during application and after application for the time period specified by the fluid manufacturer. Generally this time period is at least 24 hours.
- Warn others who may enter work area of hazard from exposure to isocyanates. Follow the recommendations of the fluid manufacturer and local regulatory authority. Posting a placard such as the following outside the work area is recommended:



## Material Self-ignition



Some materials may become self-igniting if applied too thick. Read material manufacturer’s warnings and Safety Data Sheets (SDSs).

## Keep Components A and B Separate



Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination:

- **Never** interchange component A and component B wetted parts.
- Never use solvent on one side if it has been contaminated from the other side.

## Moisture Sensitivity of Isocyanates

Exposure to moisture (such as humidity) will cause ISO to partially cure, forming small, hard, abrasive crystal that becomes suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity.

### NOTICE

Partially cured ISO will reduce performance and the life of all wetted parts.

- 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 ISO pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere.
- Use only moisture-proof hoses compatible with ISO.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

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

## 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. To reduce frothing, minimize preheating in a circulation system.

## Changing Materials

### NOTICE

Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. 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 11, for further information.

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

## Slow Recirculation

- Use for pump priming.

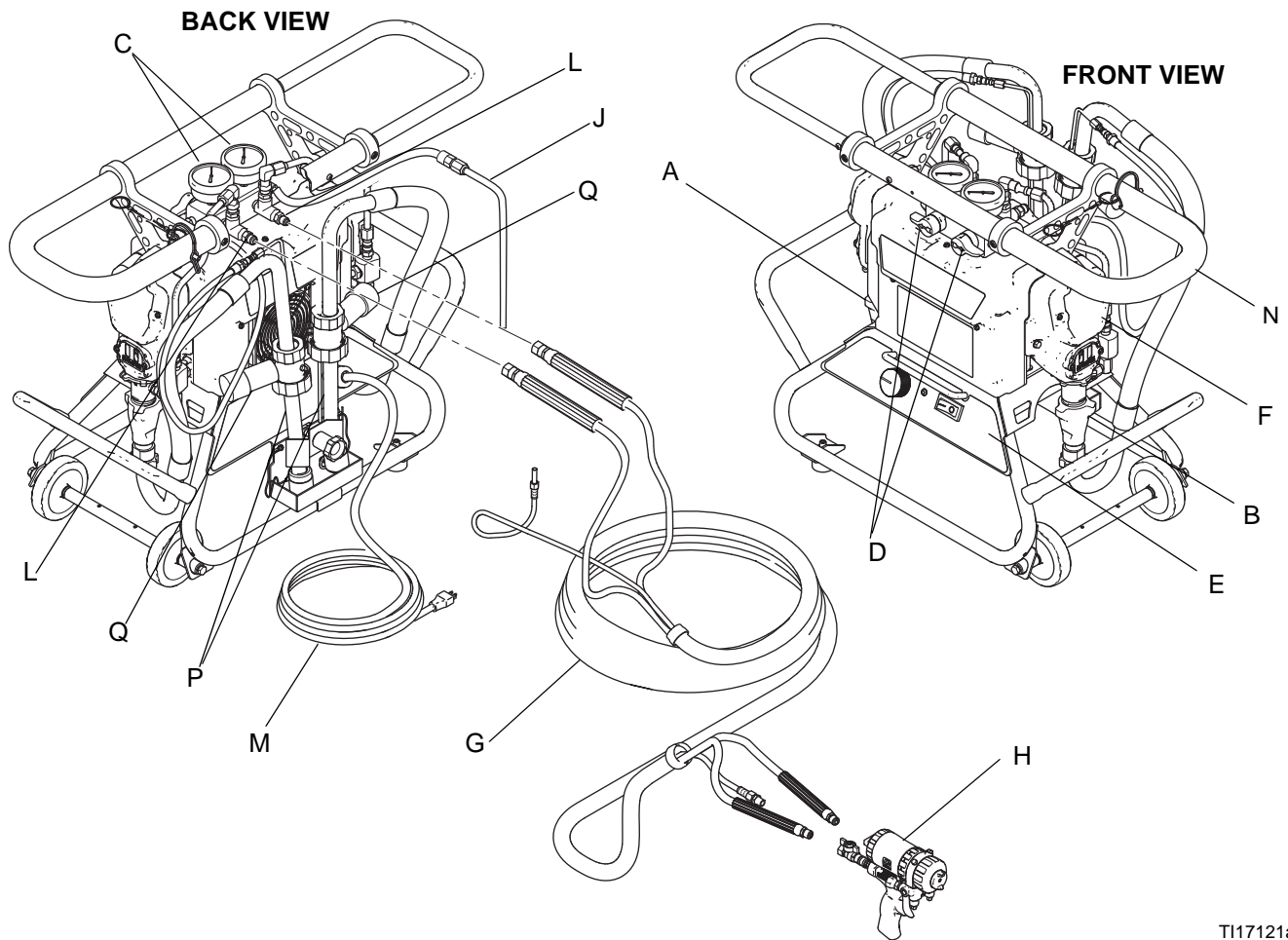
## Fast Recirculation

- Use for flushing.
- Use for pump priming.

## Output Adjust

Automatically maintains selected pressure/flow output for spraying.

# Component Identification



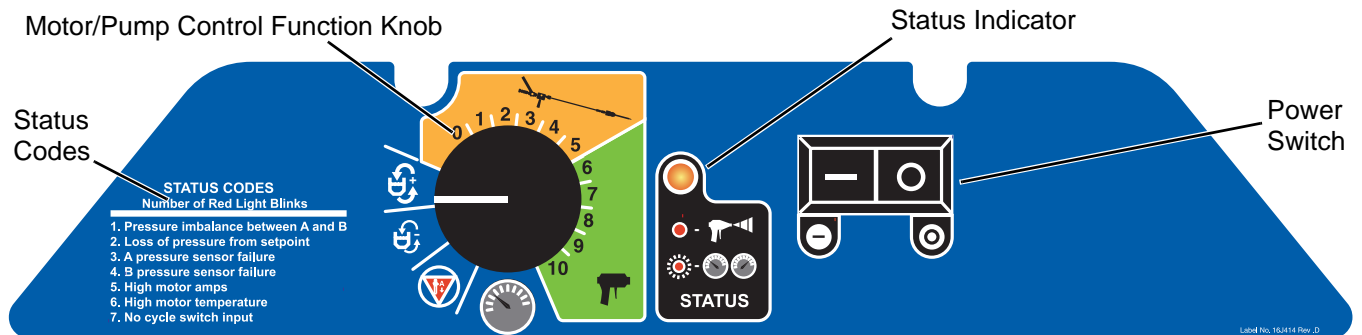
TI17121a

**FIG. 1: Component Identification**

**Key:**

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

# Controls and Indicators



T117123b

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 flow 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 26.

**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 27. 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

				
---	---	--	--	--

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):



One NEMA 5-15P

- Power cord connector (240 V):



One IEC 320, with two local adapters



Euro CEE74 Adapter







Australia/China Adapter

- Extension cord requirements:

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

## Grounding

				
---	--	---	---	--

The equipment must be grounded to reduce the risk of static sparking and electric shock. Electric or static sparking can cause fumes to ignite or explode. Improper grounding can cause electric shock. Grounding provides an escape wire for the electric current.

**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.

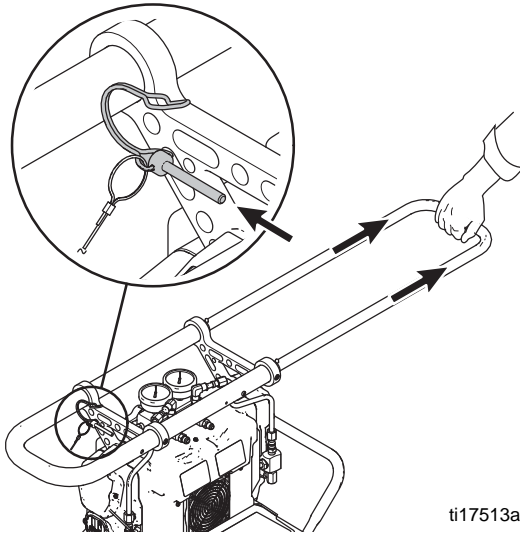


FIG. 3

### Lock

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

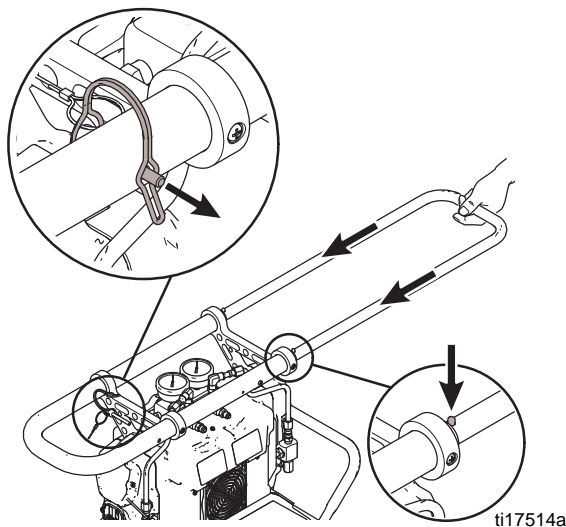


FIG. 4

## 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 43.

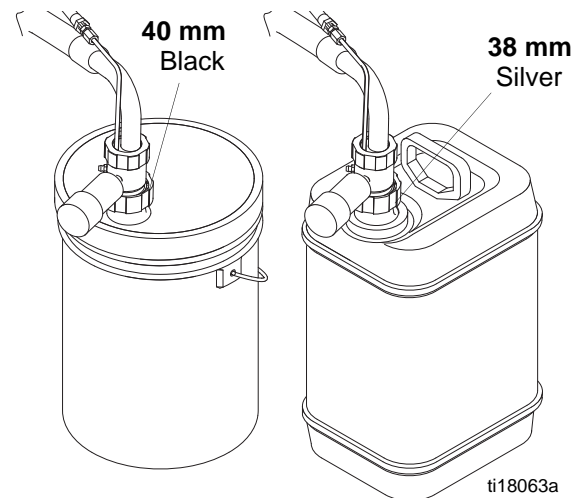


FIG. 5: Spout Adapters

## 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) handtight only. Do not overtighten.

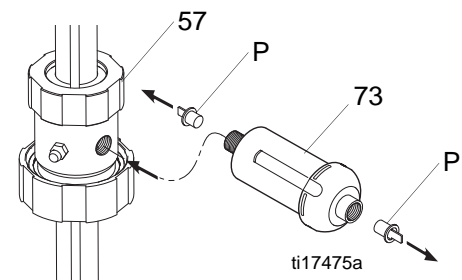


FIG. 6: Desiccant Dryer Installation

## 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 53.

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 21.
2. Flush. See page **Flushing**, page 24.
3. Remove fluid tubes (36).

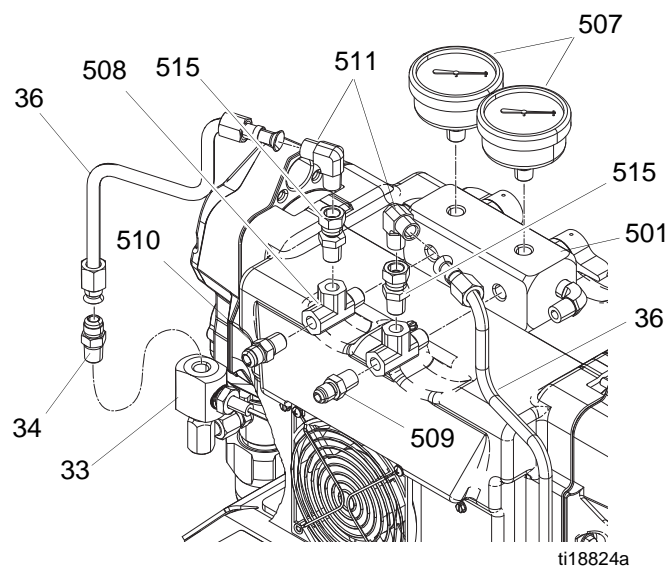
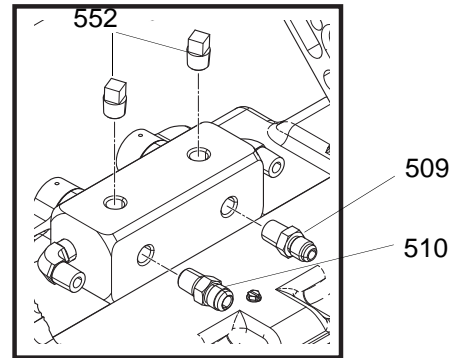


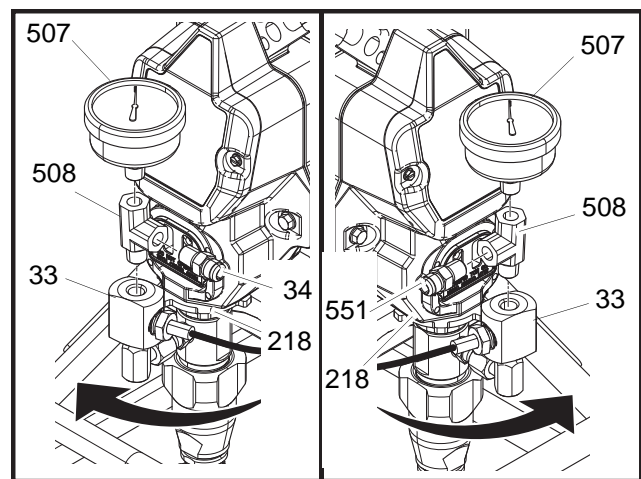
FIG. 7

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



ti18825a

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. 54, page 34.
  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.

### NOTICE

To prevent pressure fluctuations and equipment damage, only operate equipment with fluid supply hoses longer than 25 ft.

## 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.

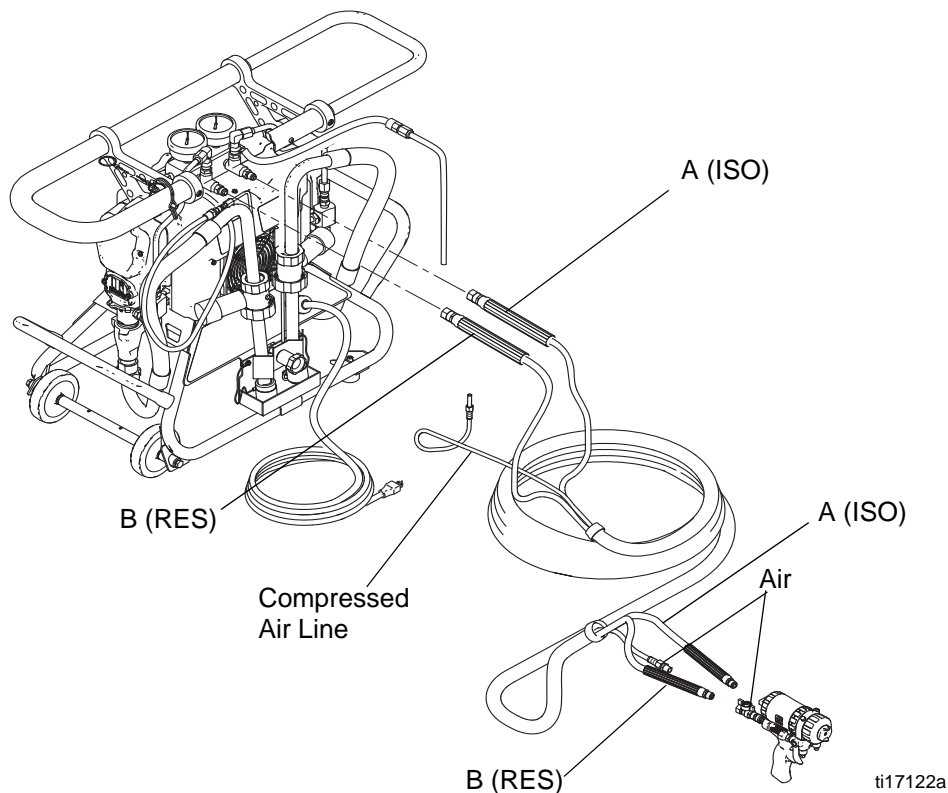
## Connect Main Air Supply

**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.

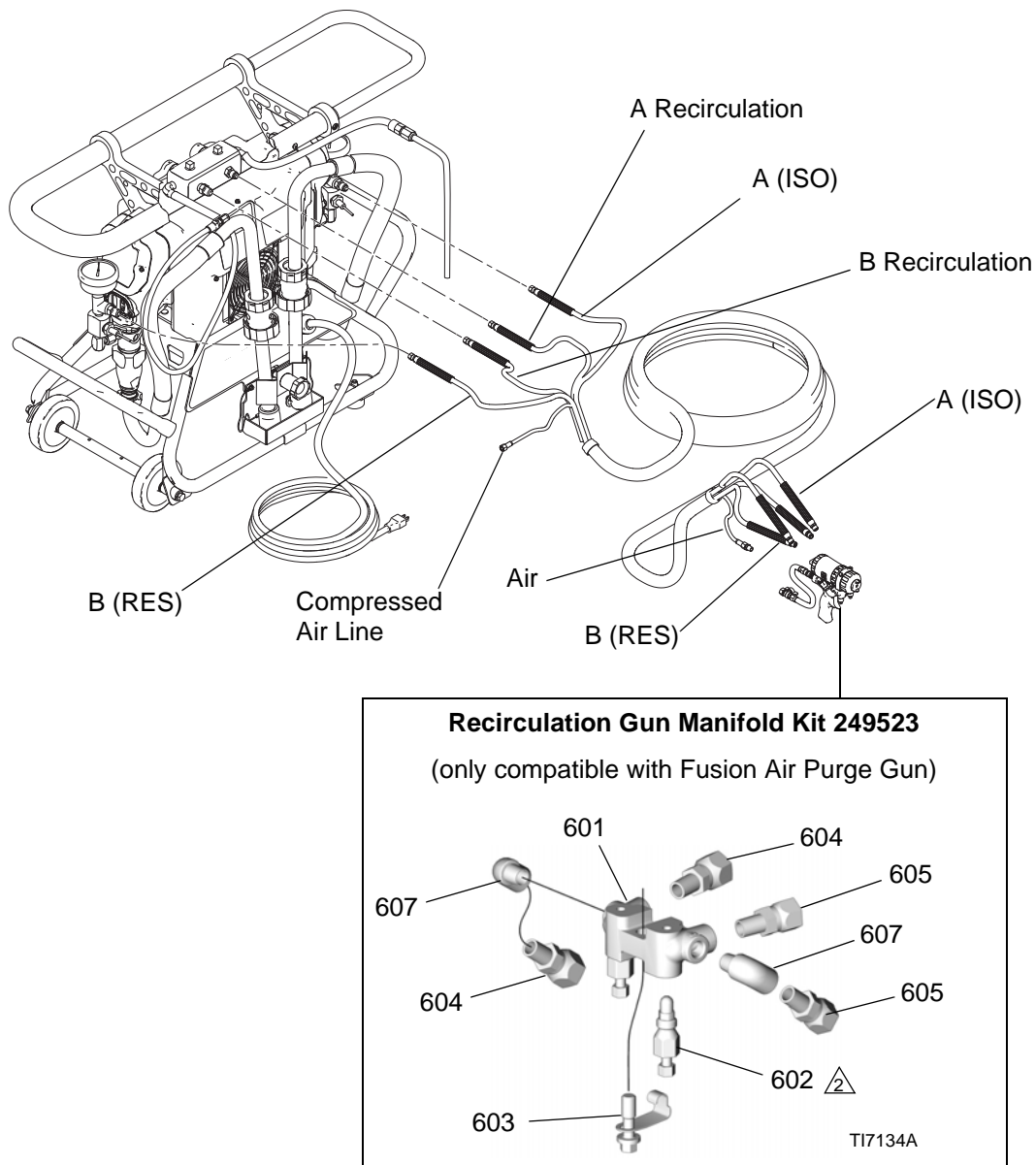
Connect the main air supply to the quick disconnect fitting on the unit. The air supply hose must be at least 5/16 in. (8 mm) ID up to 50 ft (15 m) or 3/8 in. (10 mm) ID up to 100 ft (30 m).

## 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 24.



**FIG. 9: Hose and Air Connections**





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

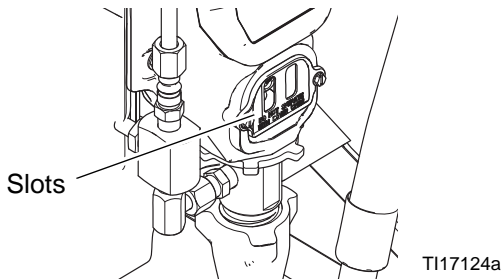


## Fill Wet-cups

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.

				
<p>The pump rod and connecting rod move during operation. Moving parts can cause serious injury such as pinching or amputation. Keep hands and fingers away from the wet-cup during operation. Shut off power before filling the wet-cup.</p>				



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



T117124a

FIG. 11: Fill Wet Cup

## Install Pail Heaters

				
<p>Follow all warnings and instructions from both the fluid manufacturer technical data sheet and the pail heater installation manual.</p>				

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 53.

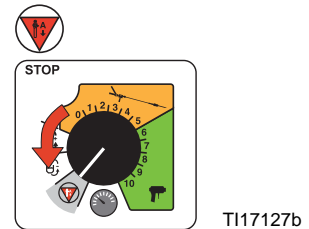
Install and operate according to the included pail heater manufacturer's installation manual.

## 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 14.



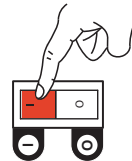
1. Insert inlet tubes into pails. See **Connect Fluid Inlet Tubes**, page 19.
2. Set function knob to Stop/Park.



T117127b

FIG. 12

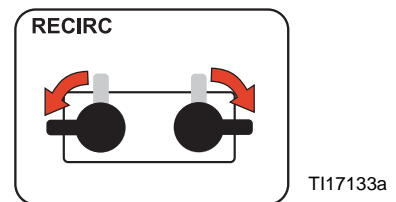
3. Plug in power cord.
4. Turn on power.



T117134a



FIG. 13

5. Set the Recirc/Spray valves to Recirc.




T117133a

FIG. 14

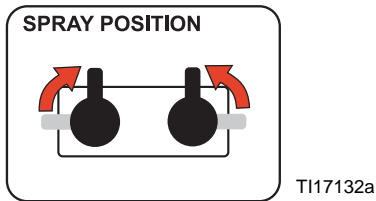
6. Set function knob to Slow Recirc  or Fast Recirc .



**FIG. 15**

7. When material exits both recirculation tubes, set the function knob to Stop/Park .

8. Set the Recirc/Spray valves to Spray.

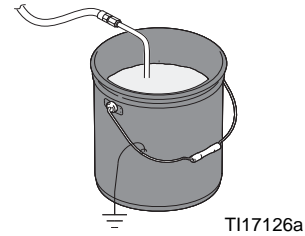


**FIG. 16**

## Purge Air and Flush Fluid

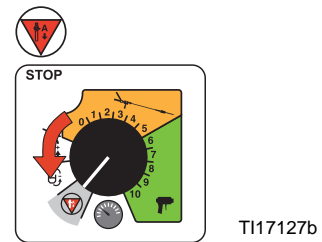


1. Insert inlet tubes into pails of solvent.



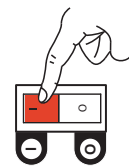
**FIG. 17**

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**

- Set the Recirc/Spray valves to Recirc.

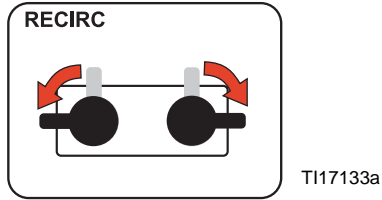


FIG. 20




- Set function knob to Slow Recirc  or Fast Recirc .



FIG. 21

- When clean solvent exits both recirculation tubes, set the function knob to Stop/Park .
- Insert inlet tubes into pails. See **Connect Fluid Inlet Tubes**, page 19.
- Set the Recirc/Spray valves to Spray.

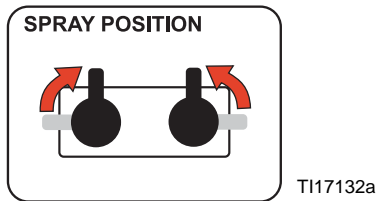


FIG. 22

- Run until material exits gun manifold.

## Connect Fluid Inlet Tubes



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

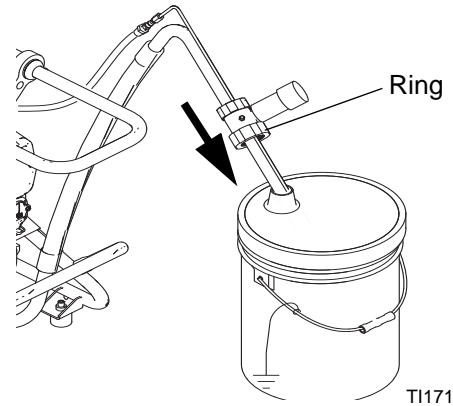


FIG. 23

### 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.

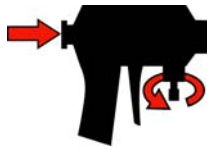
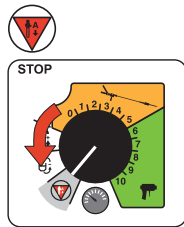


FIG. 24

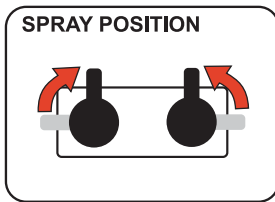
1. Set function knob to Stop/Park.



T117127b

FIG. 25

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

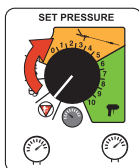


T117132a

FIG. 26

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

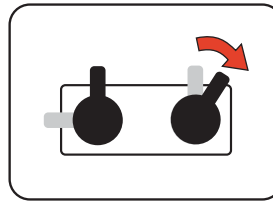
**NOTE:** It is desirable to use lower pressure for joint filling applications.



T117129b

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.

T117137a

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

## NOTICE

On impingement guns, never open the fluid manifold valves or trigger the gun while pressures are imbalanced. Opening the valves or triggering the gun during a pressure imbalance can cause material crossover in the gun, leading to equipment damage.

8. Disengage piston safety lock.

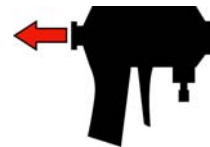



FIG. 30

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

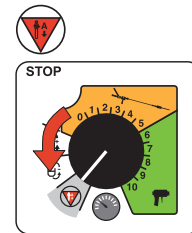
 Follow the Pressure Relief Procedure whenever you see this symbol.

This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Perform the gun pressure relief procedure. Refer to your separate spray gun manual.

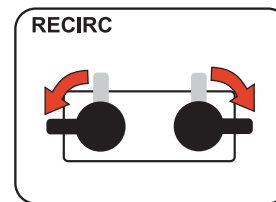
2. Set function knob to Stop/Park.



T117127b

**FIG. 31**

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.



T117133a

**FIG. 32**

# 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 24, first.

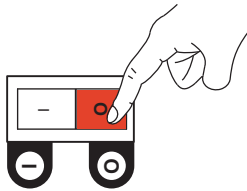
**NOTE:** If using the Manual 2K gun, refer to the Manual 2K gun instruction manual.

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. 33**

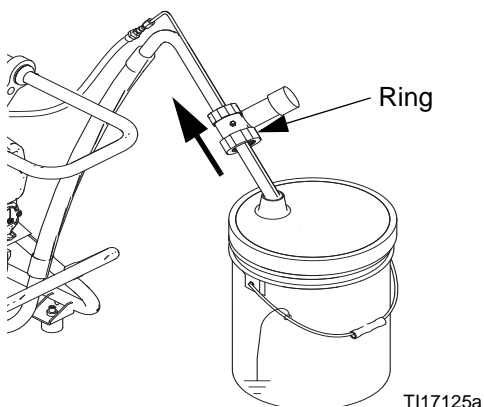
3. Shut off power.



T117135a

**FIG. 34**

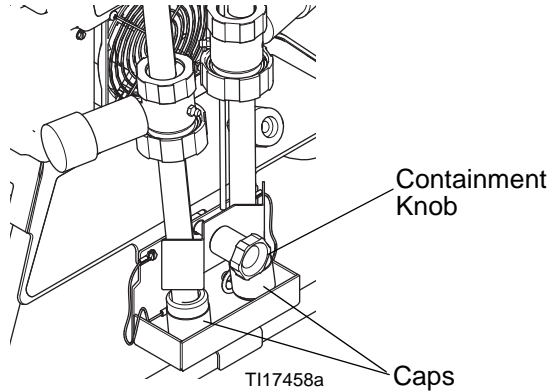
4. Loosen rings from pour spouts and remove fluid inlet tubes from pails. Allow residual fluid to drain into the appropriate pail.



T117125a

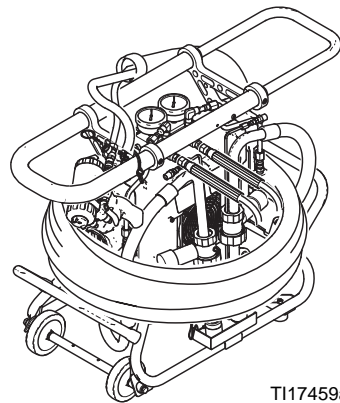
**FIG. 35**

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. 36**

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.

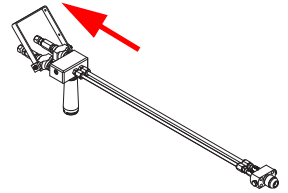


**FIG. 37**

# Maintenance

- Check pump wet-cups fluid level daily. Refer to **Fill Wet-cups**, page 17.
- 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.

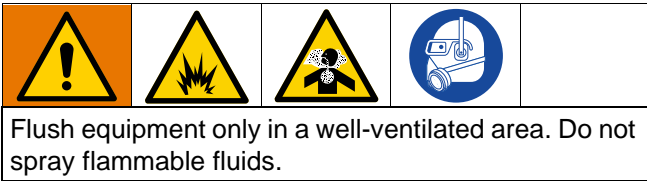
- Close gun fluid valves A and B when not spraying. Doing this will keep the internal parts of the gun cleaner and prevent crossover. Clean gun mix chamber ports and check valve screens regularly. See spray gun manual.



**FIG. 38**

- 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 Lanxess-brand Mesamoll<sup>®</sup> 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.

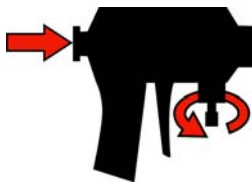
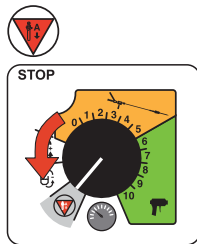


FIG. 39

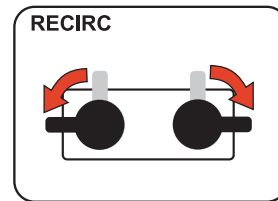
2. Set function knob to Stop/Park.



T117127b


FIG. 40

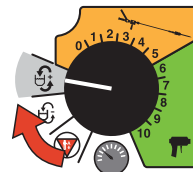
3. Remove both recirculation tubes from material containers and secure each one to a dedicated waste container.
4. In the material containers, pull the fluid inlet tubes out of the material.
5. Turn Recirc/Spray valves to Recirc.



T117133a




FIG. 41

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



T117130b

FIG. 42

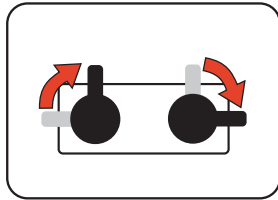
7. Set function knob to Stop/Park .
8. Remove the fluid inlet tubes from the material containers and place the tubes in the solvent containers.
9. Set function knob to Fast Recirc . Pump solvent through system into waste containers.
10. When nearly clear solvent exits the fluid inlet tubes, set function knob to Stop/Park .

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




## 11. 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. 43**

- 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.

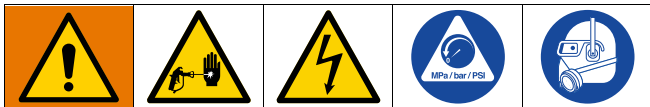
12. Set function knob to Stop/Park .

13. Solvent flushing is a two step process. Go back to step 3, drain solvent, and flush again with fresh solvent.

14. Place fluid inlet tubes in a pail of plasticizer or clean motor oil and circulate fluid through the system. Leave fluid in the unit.

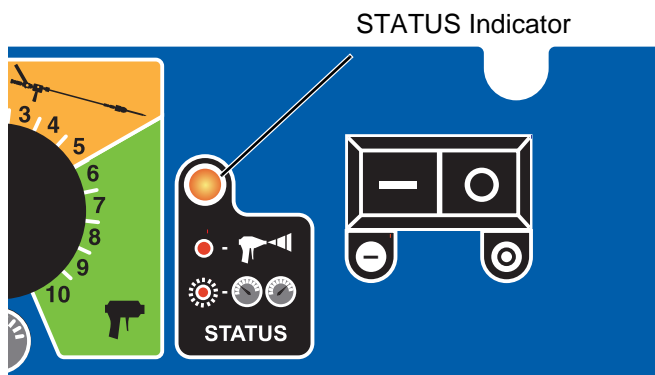
**NOTE:** Never leave the unit dry unless it has been disassembled and cleaned. If fluid residue dries in the pumps, the ball checks may stick the next time you use the unit.

# Troubleshooting



## Status Codes

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



TI17123b1

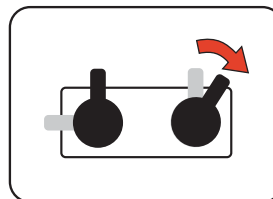
FIG. 44

### 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.



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

TI17137a

FIG. 45

**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

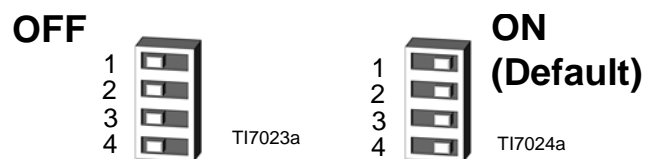
**NOTE:** The unit does not check for pressure deviation at setpoint less than 400 psi (2.8 MPa, 28 bar).

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. 46 and Table 2.



**FIG. 46. 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 an advisory if the pressure imbalance exceeds selection made in DIP Switch 2	ADVISORY	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>advisory</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 an advisory due to deviation of pressure from setpoint exceeds selection made in DIP Switch 4	ADVISORY	SHUTDOWN
<b>DIP Switch 4</b> Causes advisory 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 36.
2. Reverse A and B transducer electrical connections at board, page 36. If error moves to transducer B (Status Code 4), replace transducer A, page 35.

## Status Code 4: Transducer B Failure

1. Check transducer B electrical connections (J8) at board, page 36.
2. Reverse A and B transducer electrical connections at board, page 36. If error moves to transducer A (Status Code 4), replace transducer B, page 35.

## 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 41.
2. Short on control board. Replace board, page 35.
3. Worn or hung up motor brush causing arching of brush at commutator. Replace brushes, page 42.

## **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 36 (figure control module wiring connections).
2. Check that magnet (224) and cycle counter switch (223) are in place under B side motor end cover (221). 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 35.
	Worn brushes.	Check both sides. Replace brushes worn to less than 1/2 in. (13 mm), see page 42.
	Broken or misaligned brush springs.	Realign or replace, page 42.
	Brushes or springs binding in brush holder.	Clean brush holder and align brush leads for free movement.
	Shorted armature.	Replace motor, page 41.
	Check motor commutator for burn spots, black pitting, or other damage.	Remove motor. Have motor shop resurface commutator, or replace motor, page 41.
	Failed control board.	Replace board. See page 35.
Fan not working.	Loose fan cable.	Check that cable is connected at fan and at J9 on control board. See pages 42 and 35.
	Defective fan.	Test and replace if necessary, page 42.
Pump output low.	Plugged fluid inlet strainer.	Clear, see page 23.
	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 32.
	Plugged fluid inlet strainer.	Clear, see page 23.
	Pump intake valve plugged or stuck open.	Clean pump intake valve. See page 33.
	Material is too viscous to siphon feed.	Warm the material feed pails with flexible band heaters. See <b>Accessories</b> on page 53.

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 33.
	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 32.
	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 33.
	Loss of pressure on upstroke.	Piston valve is leaking or not closing. Clean or replace valve or packings; see page 33.
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 35.
	Failed control board.	Replace board. See page 35.

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.

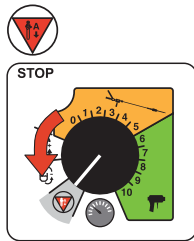
# Repair

## Before Beginning Repair



Repairing this equipment requires access to parts which may cause electric shock or other serious injury if work is not performed properly. Be sure to shut off all power to the equipment before repairing.

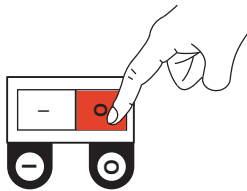
1. Flush if possible, see page 24. If not possible, clean all parts with solvent immediately after removal, to prevent isocyanate from crystallizing due to moisture in the atmosphere.
2. Set function knob to Stop/Park.



TI17127b

FIG. 47

3. Shut off power.



TI17135a

FIG. 48

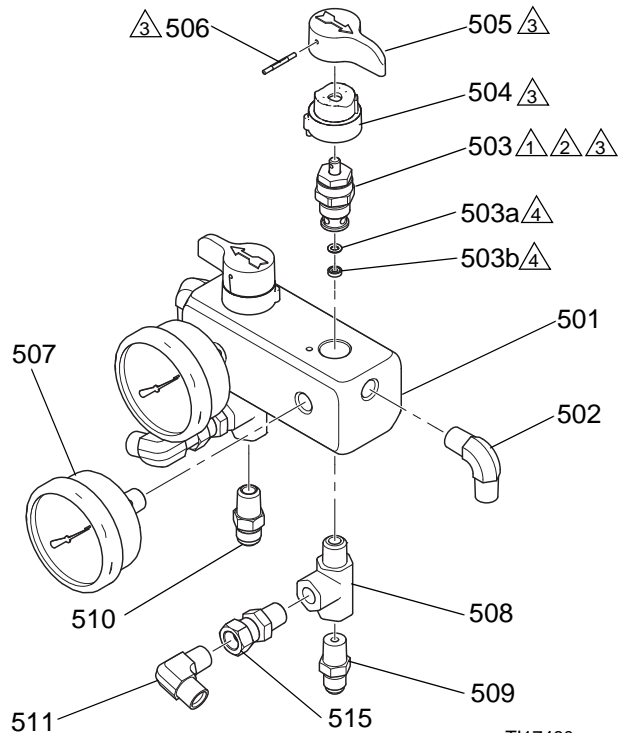
4. Relieve pressure, page 21.

## Recirculation/Spray Valves

1. See **Before Beginning Repair**, page 32. Relieve pressure, page 21.



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. 49.



TI17460a

- 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.

FIG. 49: Recirculation/Spray Valves



## Displacement Pump

**NOTE:** 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 32. Relieve pressure, page 21.

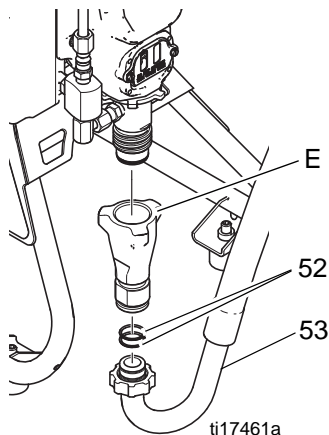
### To remove intake valve only

**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 downstroke, intake ball check may be stuck open.

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

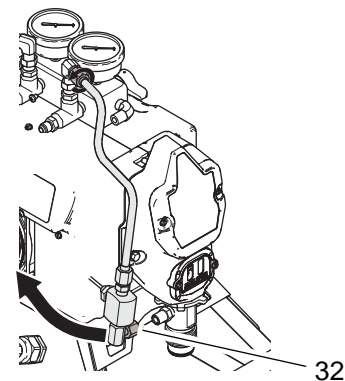
1. Loosen nut and press the inlet tube down away from the pump intake valve. Inspect the two o-rings (52) for damage and replace if necessary. Move the inlet tube (53) aside.
2. Remove intake valve by hitting ears (E) firmly right-to-left with a non-sparking hammer. Unscrew from pump. See manual 313123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



**FIG. 50: Fluid Inlet Tube**

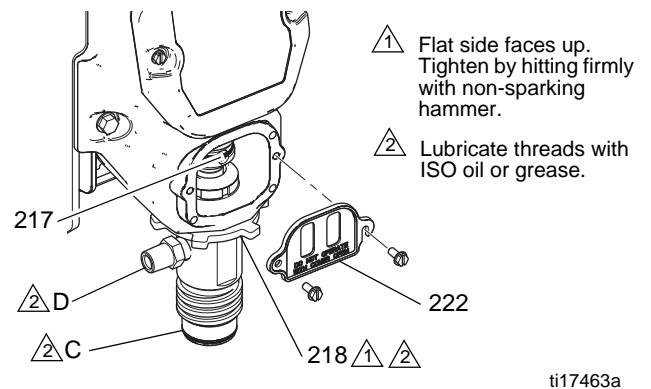
### To remove entire pump assembly

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.




**FIG. 51: 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.



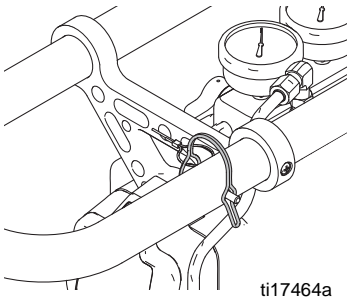
**FIG. 52**

4. Install pump in reverse order of disassembly, following all notes in FIG. 52. 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 18.

## Replace Function Knob/Potentiometer



1. See **Before Beginning Repair**, page 32. Relieve pressure, page 21.
2. Insert pin through cart handle and lock with lanyard.



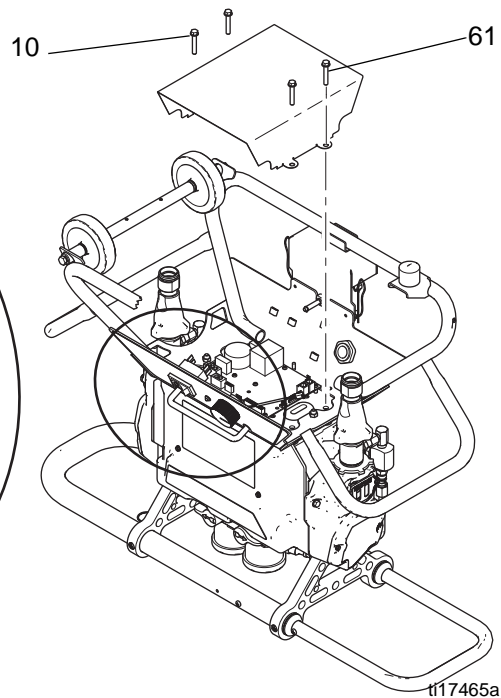
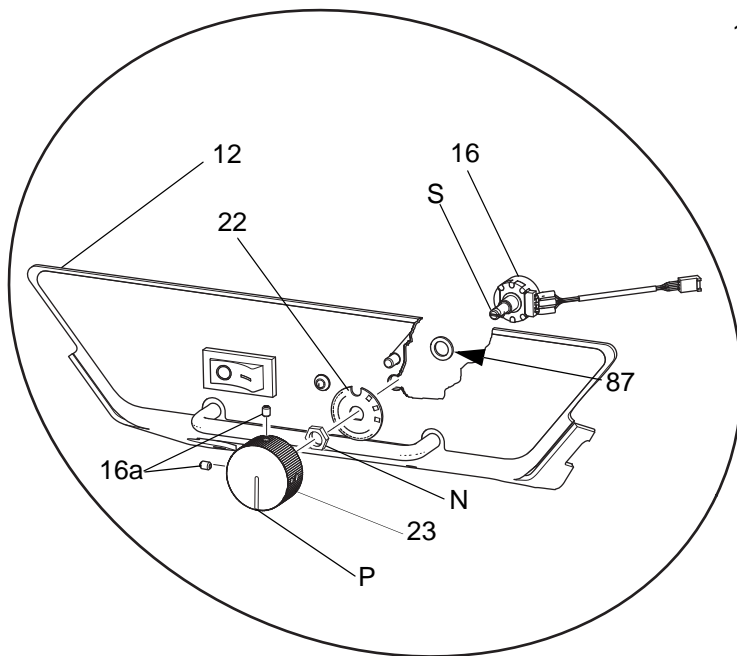
**FIG. 53**

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

4. 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.

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.



**FIG. 54. 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. 56 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 41.

1. See **Before Beginning Repair**, page 32. Relieve pressure, page 21.
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.

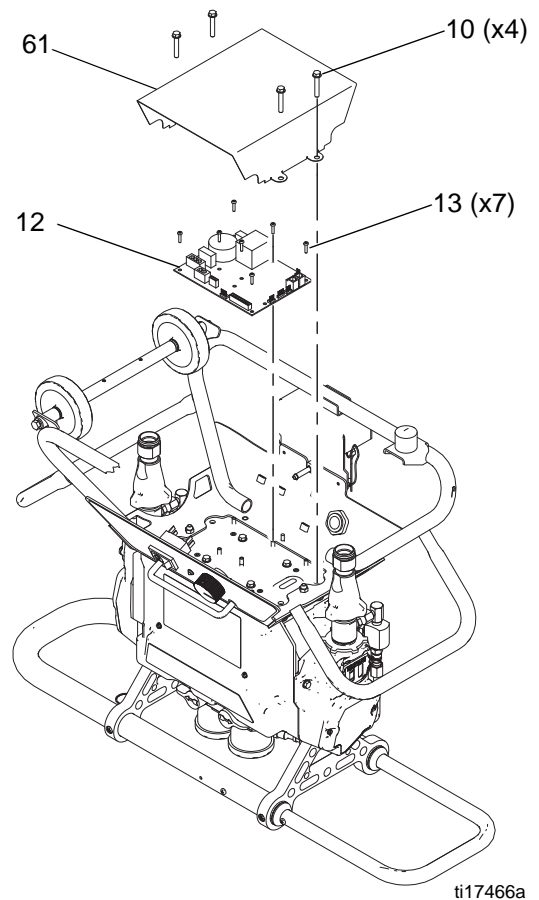
**NOTE:** Always use two people when lifting the sprayer up on to a workbench.

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.

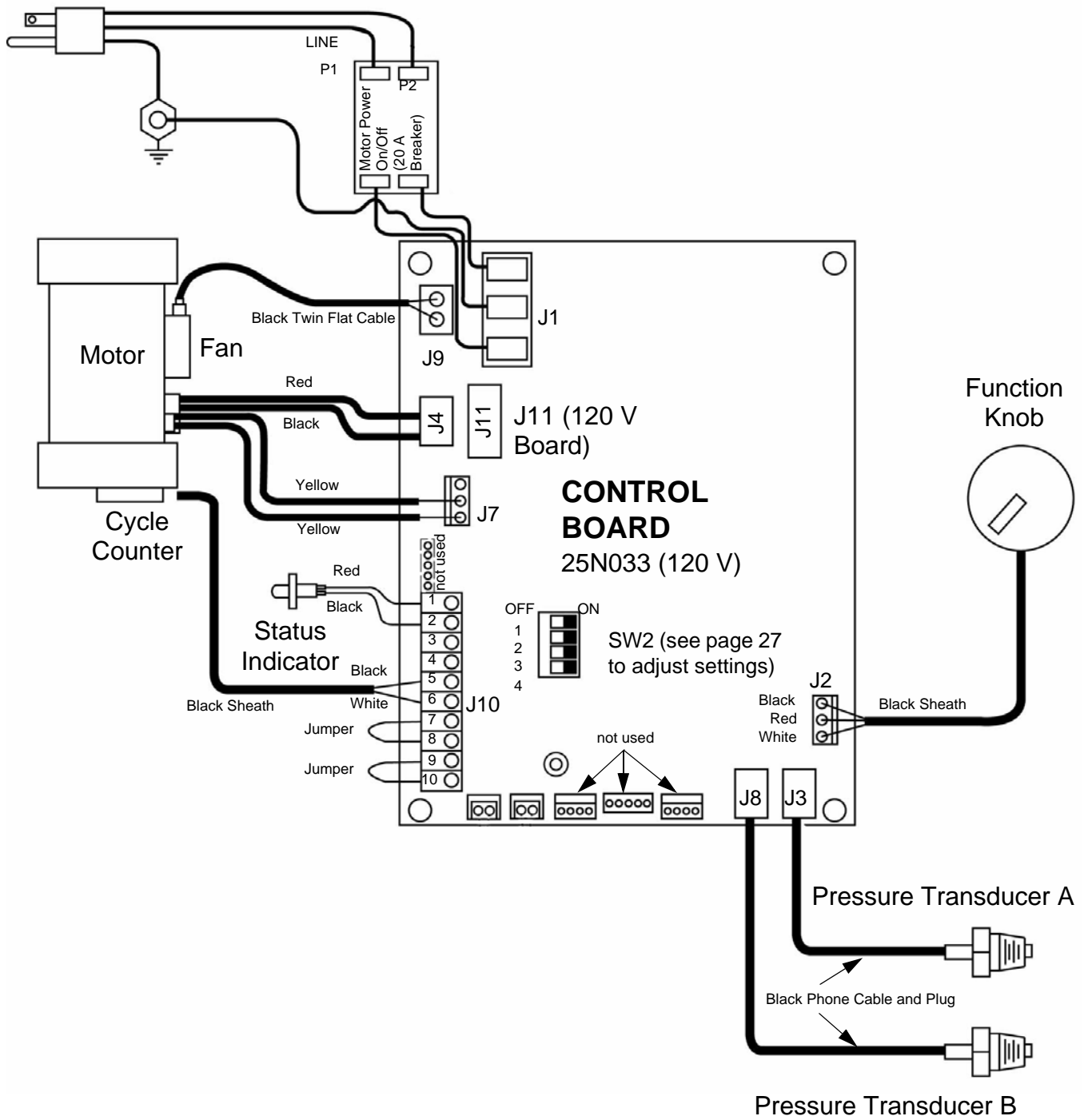
**NOTE:** Apply thermal compound between the square steel piece on the back of the board and the main aluminum plate. Order Part No. 110009 Thermal Compound.

**Table 3: Control Board Connectors (see FIG. 56)**

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. 55: Control Board Removal**



**FIG. 56: Control Module Wiring Connections**

## Pressure Transducers

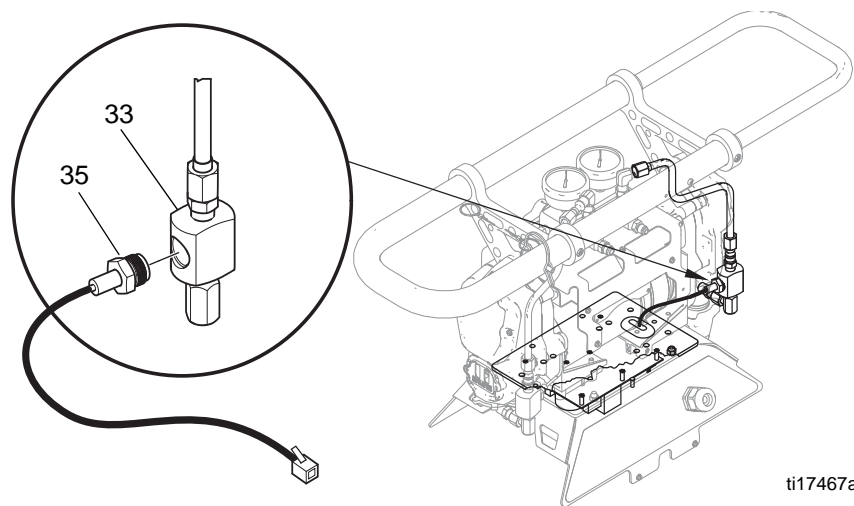


1. See **Before Beginning Repair**, page 32. Relieve pressure, page 21.
2. Insert pin through cart handle and lock with lanyard.
3. Carefully lay sprayer on it's side on a level surface. Rotate sprayer and rest upside down on cart handle.

**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. 56. page 36. Reverse A and B connections and check if status code follows the bad transducer, page 27.
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. 56. page 36.



ti17467a

**FIG. 57: Pressure Transducer Connection**

# Drive Housing

## Removal



1. See **Before Beginning Repair**, page 32. Relieve pressure, page 21.
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), FIG. 59, page 39.

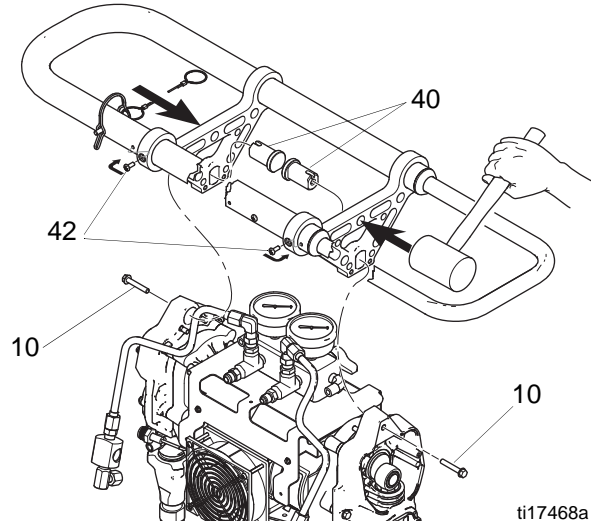
**NOTE:** Examine connecting rod (216). If rod needs replacing, first remove the pump (219), page 33.

**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. 58: 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. 59, page 39.

## 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. 59, page 39.

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

**NOTE:** If connecting rod (216) or pump (219) were removed, reassemble rod in housing and install pump, page 33.

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

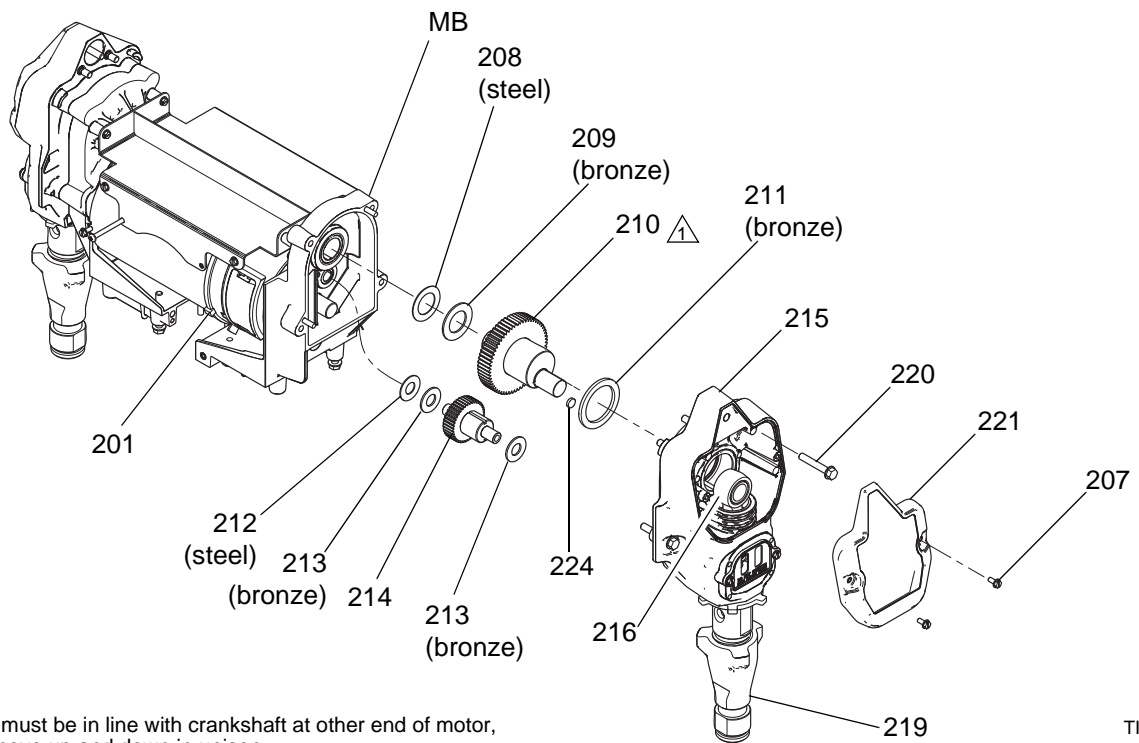
drive housing if entire cart handle assembly was removed. See FIG. 58.

- 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) and screws (207). Pumps must be in phase (both at same position in stroke).



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

TI17469a

**FIG. 59: Drive Housing**

## Cycle Counter Switch Replacement

**NOTE:** The cycle counter switch (223) must be mounted in the B-side drive housing cover (221). When reassembling, be sure to install cover and the switch on the B side.

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

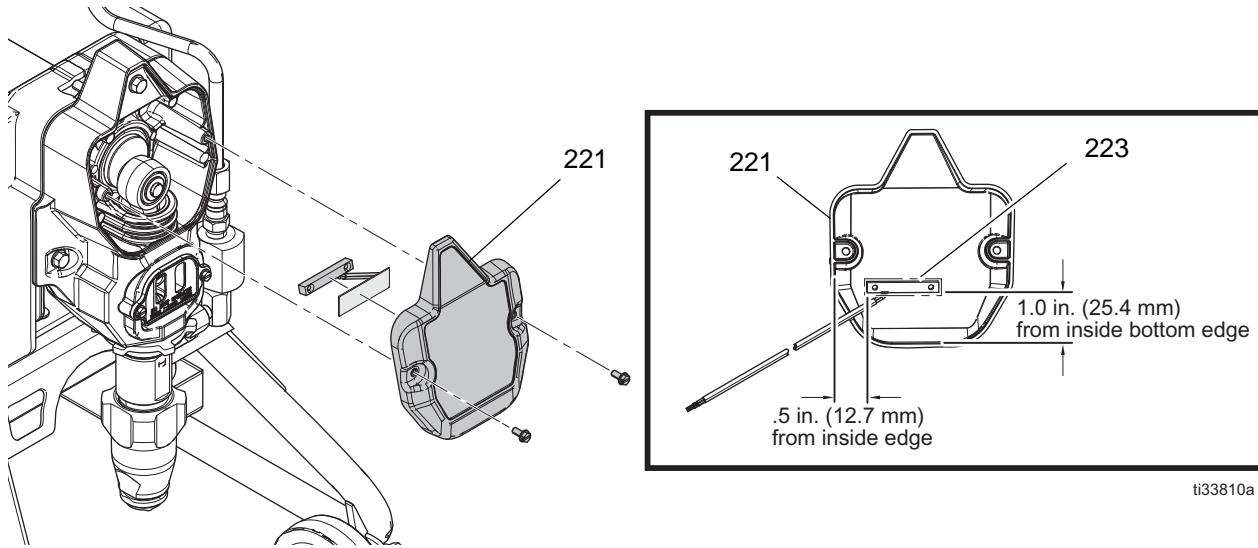


FIG. 60

ti33810a



## 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. 56, page 36.
2. Touch jumpers from battery to motor connections. Motor should turn slowly and smoothly.

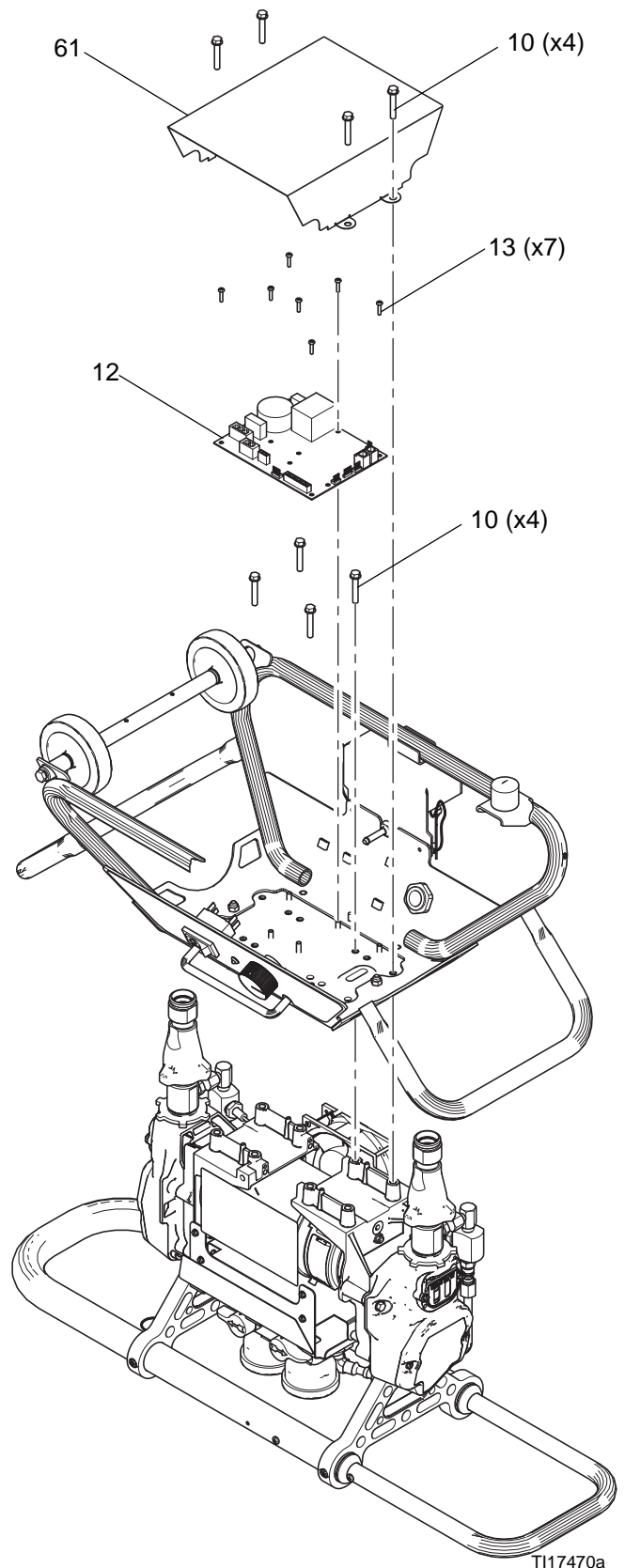
### Removal



1. See **Before Beginning Repair**, page 32. Relieve pressure, page 21.
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. 62, page 42.
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 38.



**FIG. 61: Electric Motor Removal**

## Installation

See FIG. 61, page 41.

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. 56, page 36.
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 38. 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.

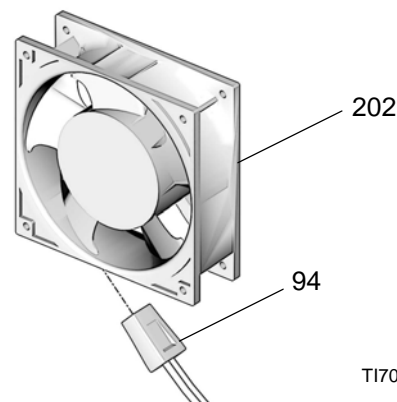
Motor commutator should be smooth. If not, resurface commutator or replace motor.



1. See **Before Beginning Repair**, page 32. Relieve pressure, page 21.
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 (94) 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. 56, page 36.



T17030a

**FIG. 62: 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 52 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).
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 (406, 407) in grooves of housing (403).
  - f. Tighten nut cap (402) on housing (403).

### NOTICE

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

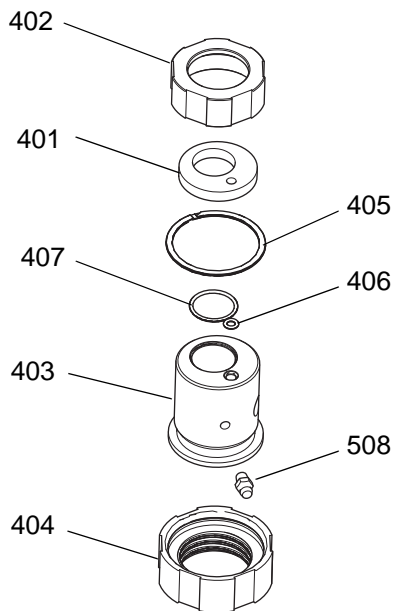


FIG. 63

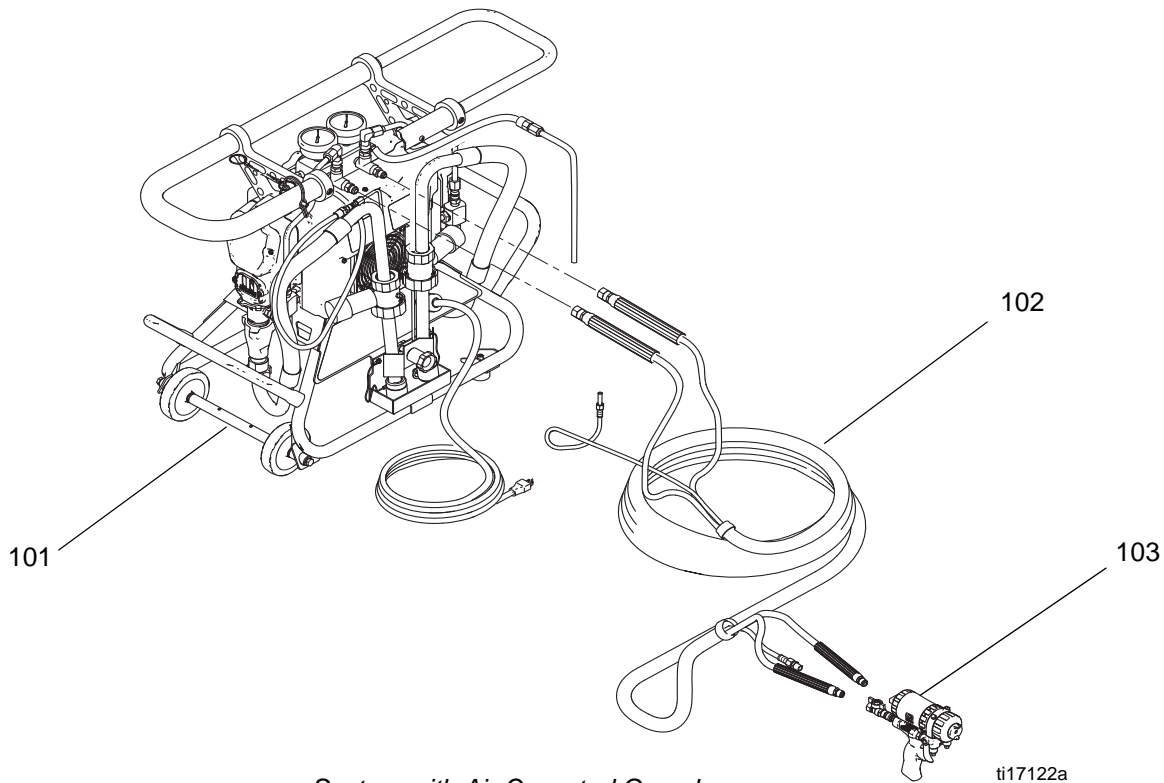
# Parts

**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 240 V Manual 2K System Packages**

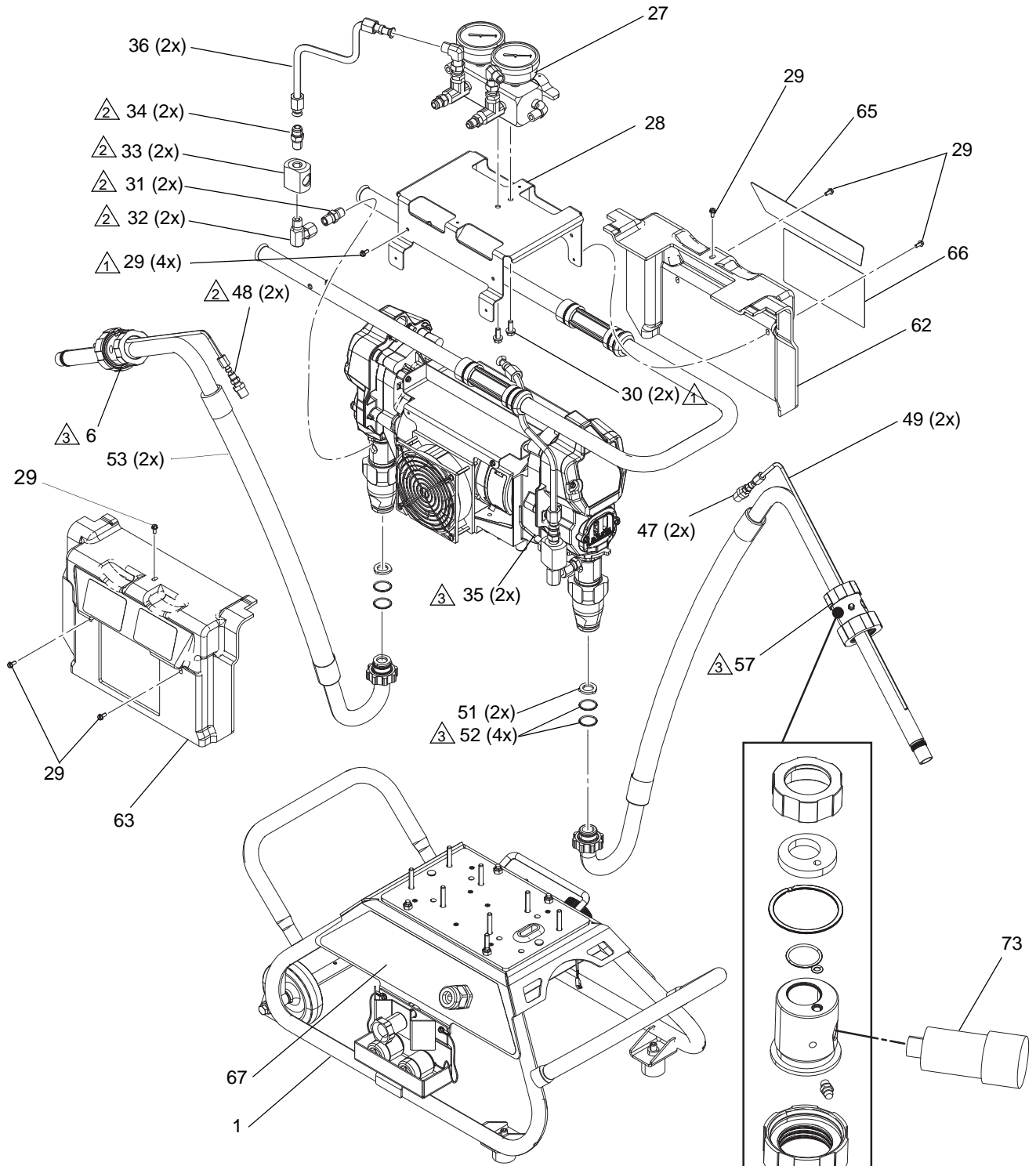


*System with Air Operated Gun shown*

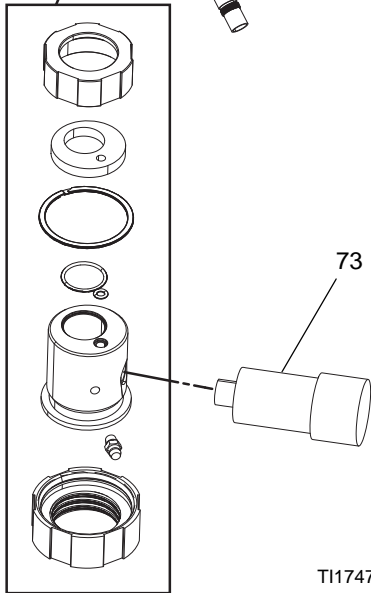
ti17122a

<b>System Package</b>	<b>Volts</b>	<b>Description</b>	<b>Bare Proportioner (101)</b> see page 45	<b>Hose (102)</b> see page 50	<b>Gun (103)</b> 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**

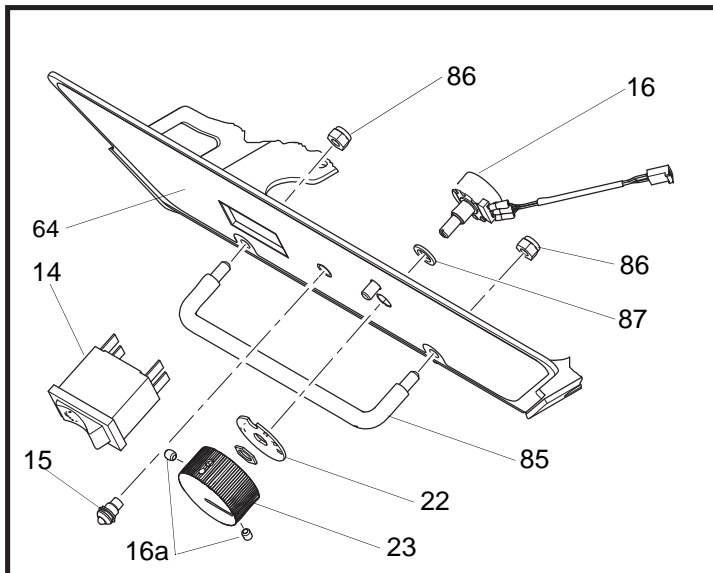
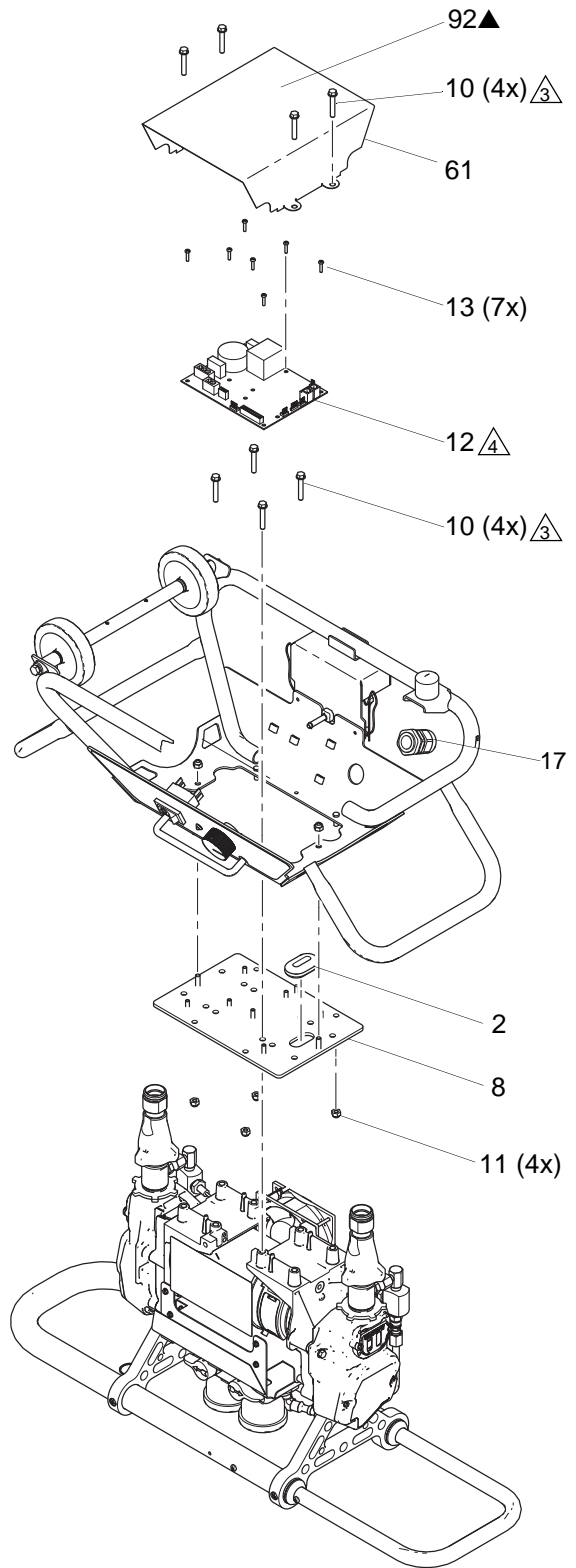
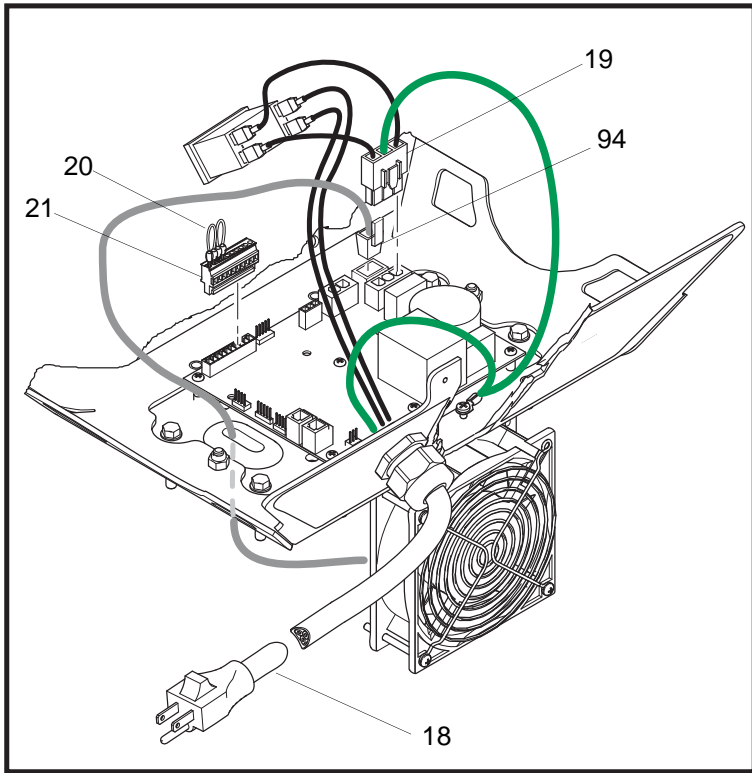


- ⚠ Apply sealant to threads.
- ⚠ Apply sealant to all non-swiveling pipe threads.
- ⚠ Apply lubricant to all o-rings and bolt-wheel connection (3, 91).
- ⚠ Cover entire surface of sensor probe with lubricant before assembling onto motor plate (8).
- ⚠ Torque to 5-6 ft-lbs (6.7-8 N•m).



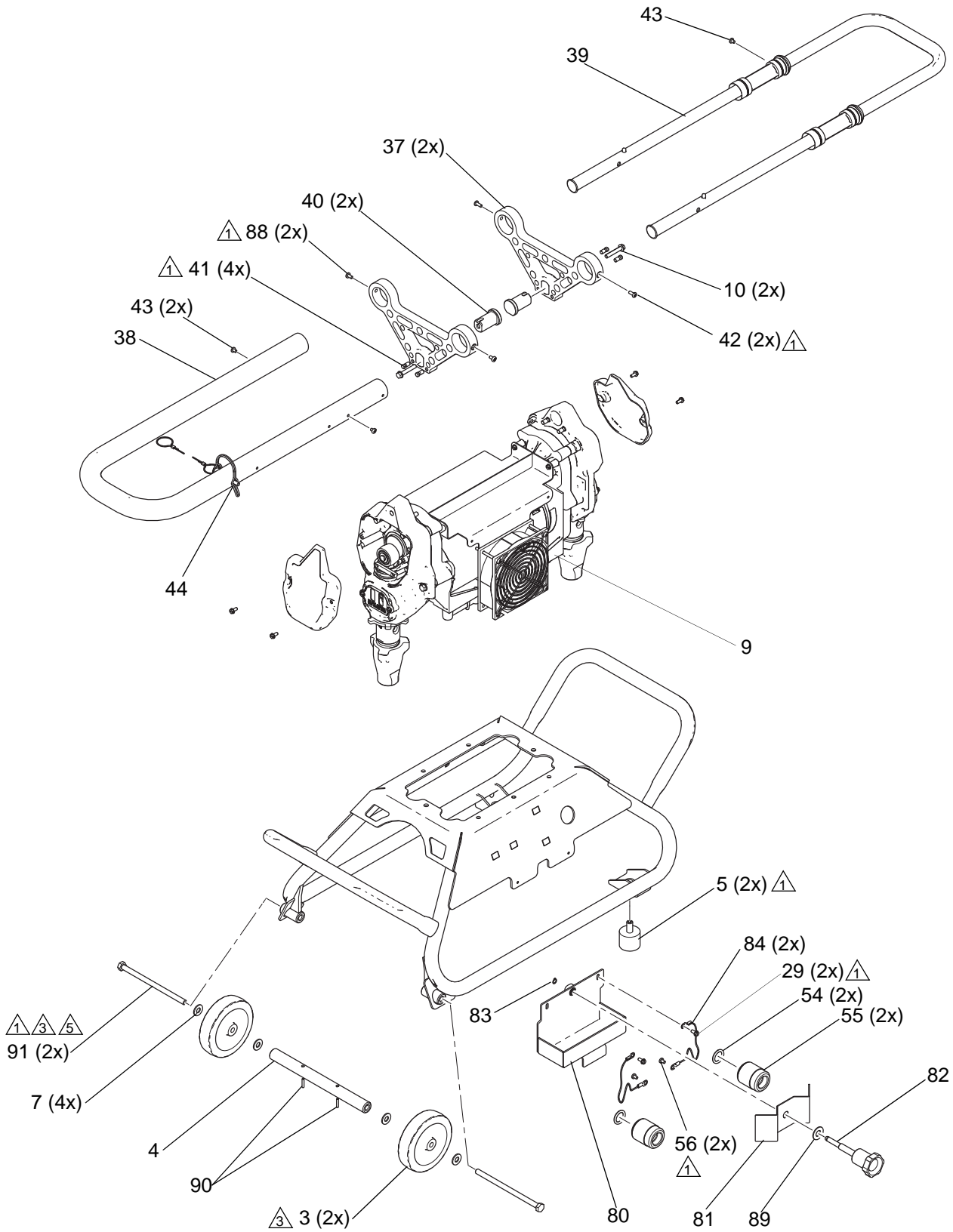
T117471b

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



T117472a

### 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	1	46	249630	1
2	16H888	1			
3	16F820	2			
4	16H352	1	47	100030	2
5	121573	2	48	125212	2
			49	16H615	2
6	24J766	1	51	115099	2
			52	117559	4
7	120454	4	53	246010	2
8	16G939	1	54	113575	2
9	◆24L885,	1	55	15W249	2
	✖24L979		56	112144	2
10	117493	10	57	24J155	1
11	102040	6			
12	◆25N033,	1	58	103473	4
	✖25E067		61	24J141	1
13	107156	7	62	24J151	1
14	24K983	1	63	24J152	1
			64	16J414	1
15	119930	1	65	16H202	1
16	24L002	1	66	16J415	1
			67▲	16H569	1
17	119897	1	73	24K984	2
18	◆24K995,	1	80	16H809	1
	✖15G220		81	16H810	1
19	15G230	1	82	16H811	1
20	15C866	2	84	125321	2
21	116773	1	85	16H543	1
			86	121114	2
22	15G053	1	87	261866	1
23	24L001	1	88	104859	2
27	24J147	1	89	111743	1
28	24J140	1	90	112154	2
29	115492	12	91	15M314	2
30	108296	2	92▲	189930	1
31	156971	2	93	◆16H902,	1
32	155541	2		✖16M900	
33	15G292	2			
34	116704	2			
35	24K999	2	94	15G458	1
36	16H530	2	95	16H984	1
37	16G943	2	96	✖242001	1
38	16G945	1			
39	24J244	1	97	✖242005	1
40	16H546	2			
41	16H547	4			
42	110037	2			
43	109032	3			
44	24J154	1			
45	249629	1			

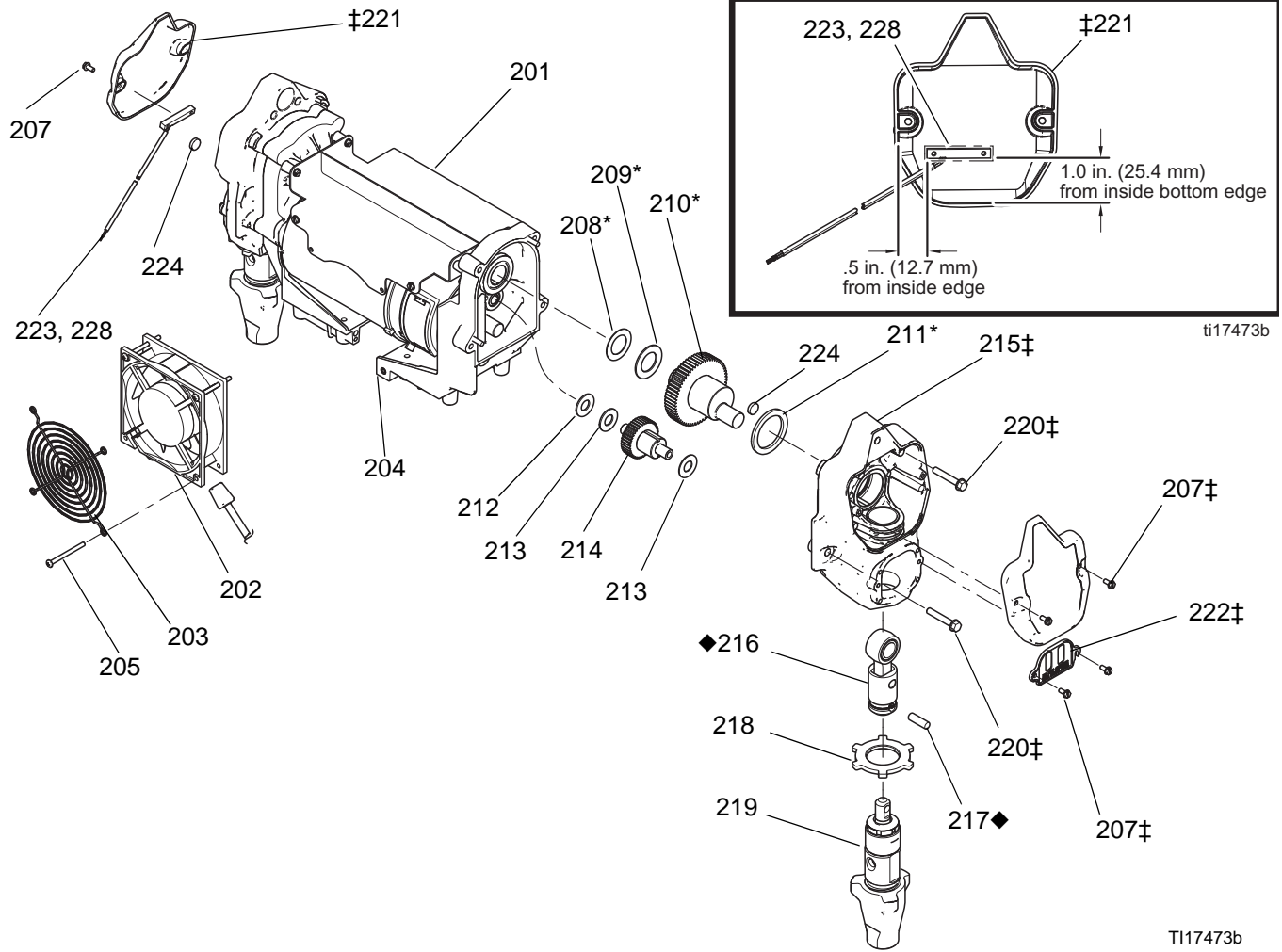
▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

◆ Only used with proportioner 259082.

✖ Only used with proportioner 259083.



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



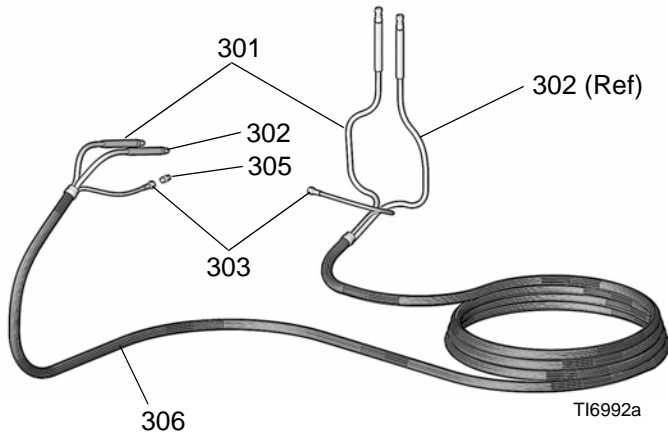
Ref.	Part	Description	Qty	Ref.	Part	Description	Qty
201	24E355	MOTOR, electric, 120V (24L885 only)	1	214	249194	GEAR REDUCER KIT	2
	24E356	MOTOR, electric, 240V (24L979 only)	1	215‡	287000	DRIVE HOUSING KIT	2
202	24K985	FAN, cooling, 120V (24L885 only)	1	216◆	287053	CONNECTING ROD KIT	2
	24K986	FAN, cooling, 240V (24L979 only)	1	217◆	196762	PIN, straight	2
203	115836	GUARD, finger	1	218	195150	NUT, jam, pump	2
204	103646	RIVET, blind; 5/32 x 3/8 grip	1	219	24L006	PUMP, displacement	2
205	120094	SCREW, machine, slotted hd; 8-32 x 2 in. (51 mm)	3	220‡	117493	SCREW, machine, hex washer hd; 1/4-20 x 1-1/2 in. (38 mm)	8
207‡	115492	SCREW, machine, hex washer hd; 8-32 x 3/8 in. (10 mm)	8	221‡	15B254	COVER, drive housing	2
208*	116074	WASHER, thrust; steel	2	222‡	15B589	COVER, pump rod	2
209*	107434	BEARING, thrust; bronze	2	223	117770	SWITCH, reed, w/cable	1
210*	248231	CRANKSHAFT KIT	2	224	24K982	MAGNET	1
211*	180131	BEARING, thrust; bronze	2	228	115711	TAPE, mounting, reed switch; not shown	1
212	116073	WASHER, thrust; steel	2				
213	116079	BEARING, thrust; bronze	4				

\* Included in 248231 Crankshaft 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**

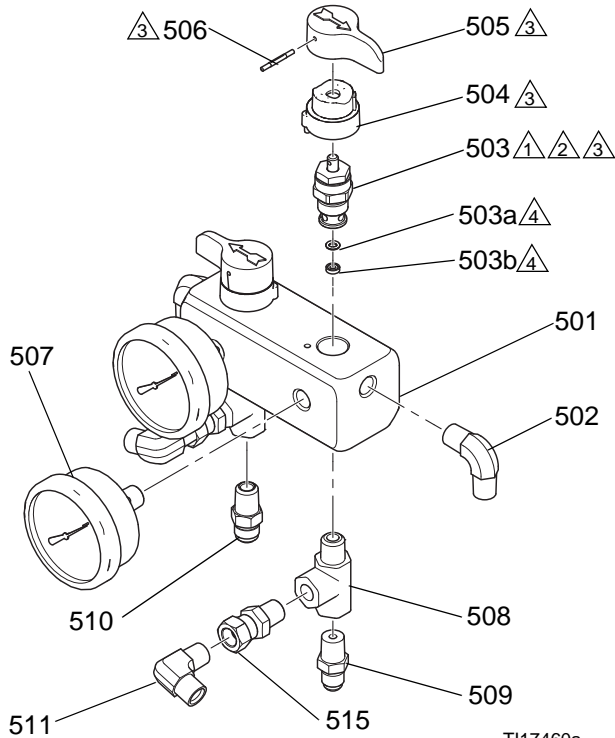


Ref.	Part	Description	Qty
301	16V331	HOSE, fluid (component A), moisture guard; grounded, 3/8 in. (9.5 mm) ID; no. 5 JIC fittings (mxf); 50 ft (15 m)	1
302	24M671	HOSE, fluid (component B); 3/8 in. (9.5 mm) ID; no. 6 JIC fittings (mxf); 50 ft (15 m)	1
303	261535	HOSE, air; 3/8 in. (9.5 mm) ID; 3/4 npsm (fbe); 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



T117460a

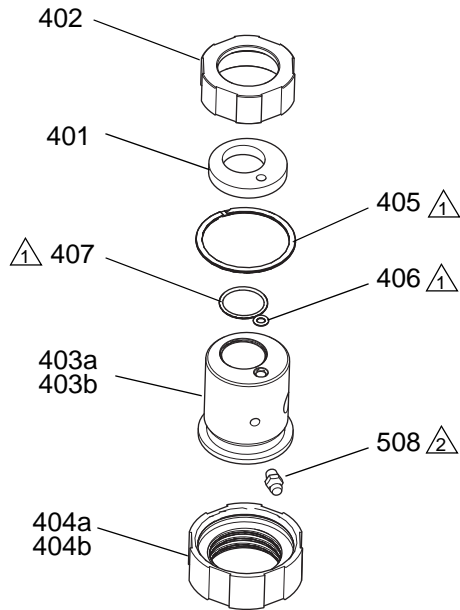
- ① Torque to 250 in-lb (28 N•m).
- ② Use blue threadlocker on valve cartridge threads into manifold.
- ③ Apply lubricant to mating surfaces.
- ④ Part of item 503.

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

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



△1 Lubricate o-rings and retaining ring with grease.

△2 Apply sealant to threads.

# 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
24K999	TRANSDUCER, pressure
24L006	PUMP, displacement; fits either side (E-8p only)
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

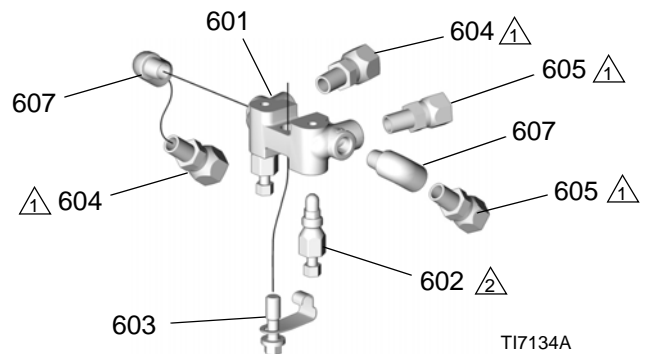
3/8 in. (9.5 mm), 50 ft. (15 m)

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.

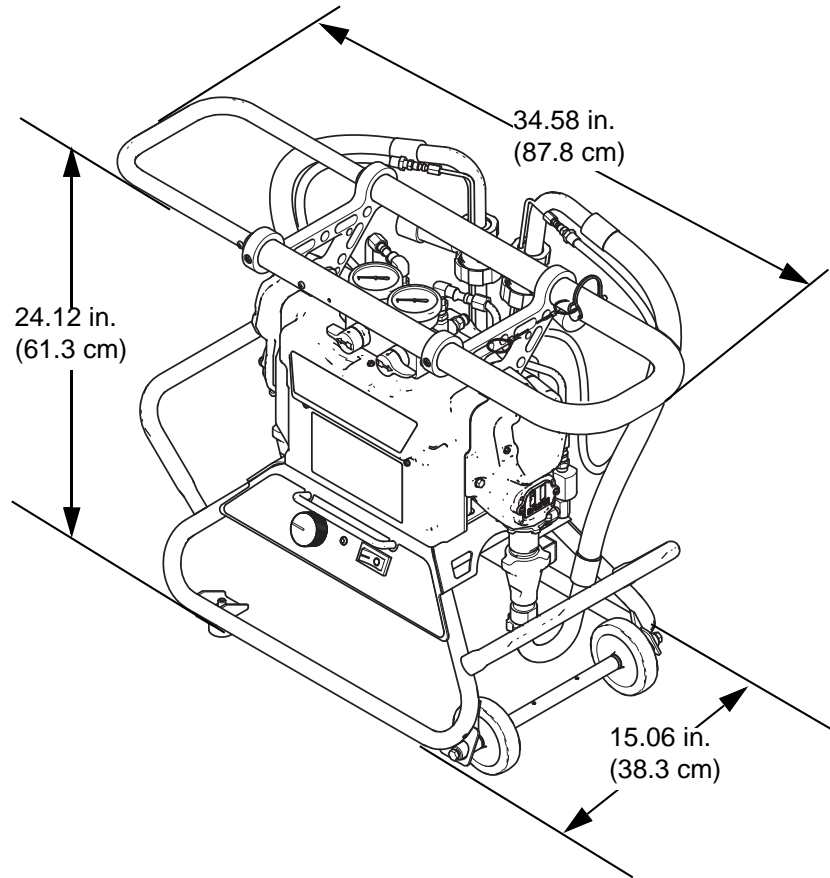
Ref.	Part	Description	Qty
601	---	MANIFOLD	1
602	246356	VALVE, fluid	2
603	15B221	BOLT; 5/16-24	1
604	117634	SWIVEL, B side; 1/8 npt(m) x # 6 JIC(f)	2
605	117635	SWIVEL, A side, 1/8 npt(m) x #5 JIC(f)	2
606	15B993	SPRING, ring, lock	1
607	112307	ELBOW, street; 1/8 npt (m x f); round and flat pattern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



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

△2 Torque to 32-40 ft-lb (43-54 N•m).

# Dimensions



T117120a

# Technical Data

<b>Reactor E-8p</b>		
	<b>US</b>	<b>Metric</b>
Maximum fluid working pressure	2000 psi	14 MPa, 138 bar
Electrical requirements	<i>Model 259082</i> : 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	
<b>Sound Pressure</b>		
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)	
<b>Sound Pressure per ISO 9614-2</b>		
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)	
<b>Inlet/Outlet Sizes</b>		
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)	
<b>Hose Markings</b>		
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

# 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](http://www.graco.com).

For patent information, see [www.graco.com/patents](http://www.graco.com/patents).

**TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.**

**Phone: 612-623-6921 or Toll Free: 1-800-328-0211 Fax: 612-378-3505**

*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 3A1602

**Graco Headquarters:** Minneapolis

**International Offices:** Belgium, China, Japan, Korea

**GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA  
Copyright 2018, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.**

[www.graco.com](http://www.graco.com)  
Revision L, May 2018