

REACTOR™ E-10

PLURAL COMPONENT PROPORTIONER

311075ZAD

EN

For spraying or dispensing 1:1 mix ratio materials, including epoxies, polyurethane foam, polyurea coatings, and joint fill materials. For professional use only. Not approved for use in European explosive atmosphere locations.

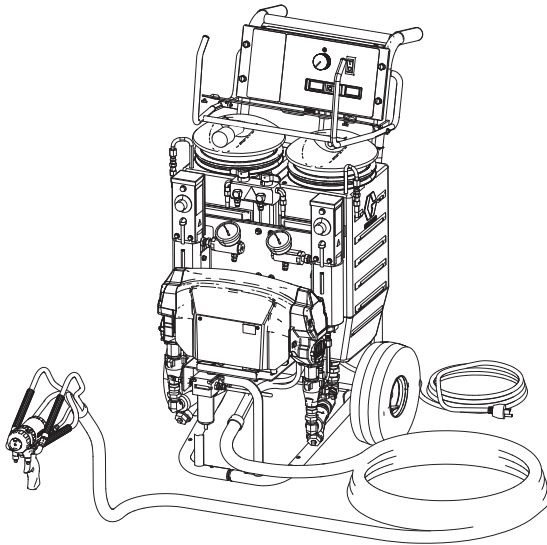


Important Safety Instructions

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

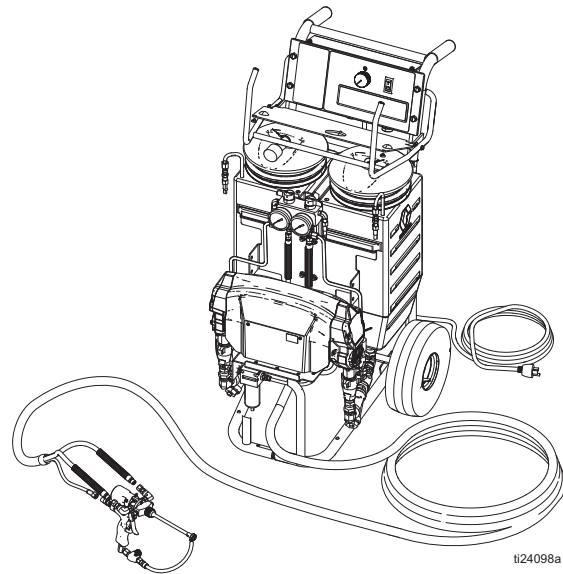
See page 4 for a list of models and maximum working pressures.

Heated Package, with Fusion™ Gun



ti24095a

Nonheated Package, MD2 Cold Spray Gun



ti24098a

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Related Manuals

The following manuals are for Reactor E-10 components and accessories. Some are supplied with your package, depending on its configuration. Manuals are also available at www.graco.com.

Manual in English	Description
311076	Displacement Pump Instruction-Parts Manual
311210	Fluid Heater Instruction-Parts Manual
309550	Fusion® Air Purge Spray Gun Instruction-Parts Manual
309856	Fusion Mechanical Purge Spray Gun Instruction-Parts Manual

Manual in English	Description
3A7314	Fusion Pro Connect Spray Gun Instruction Manual
312666	Fusion CS Spray Gun Instruction-Parts Manual
312185	MD2 Dispense Valve Instruction-Parts Manual
3A2910	MD2 Cold Spray and Joint Fill Kits
332198	2K Manual Dispense Valve Instruction-Parts Manual

Systems



Part	Maximum Working Pressure, psi (MPa, bar)	Proportioner (see page 4)	Unheated Hose 35 ft (10.6 m)	Gun	
				Model	Part
AP9570	2000 (14, 140)	249570	249499	Fusion Air Purge	249810
AP9571	2000 (14, 140)	249571	249499	Fusion Air Purge	249810
AP9572	2000 (14, 140)	249572	249499	Fusion Air Purge	249810
CS9570	2000 (14, 140)	249570	249499	Fusion CS	CS22WD
CS9571	2000 (14, 140)	249571	249499	Fusion CS	CS22WD
CS9572	2000 (14, 140)	249572	249499	Fusion CS	CS22WD
249806	2000 (14, 140)	249576	249633	MD2 Gun	255325
249808	2000 (14, 140)	249577	249633	MD2 Gun	255325
24R984	2000 (14, 140)	249576	24R823	2K Manual	24R021
24R985	2000 (14, 140)	249577	24R823	2K Manual	24R021

Systems

Part	Maximum Working Pressure, psi (MPa, bar)	Proportioner (see page 4)	Unheated Hose 35 ft (10.6 m)	Gun	
				Model	Part
FP9082	2000 (14, 140)	259082	24M563	Fusion Pro Connect	25P587
FP9083	2000 (14, 140)	259083	24M653	Fusion Pro Connect	25P587

Models






The model number, series letter, and serial number are located on the back of the Reactor E-10. For faster assistance, please have that information ready before calling Customer Service.

Bare Proportioner Part, Series	Volts	* Electrical Connection	Application	Maximum Working Pressure, psi (MPa, bar)	Approvals
249570, A	120 V	15 A cord (motor) 15 A cord (heaters)	<ul style="list-style-type: none"> • Polyurethane Foam • Hot Polyureas 	2000 (14, 140)	 Intertek 9902471 Conforms to ANSI/UL Std. 499 Certified to CAN/CSA Std. C22.2 Number88
249571, A	240 V	10 A cord (motor) 10 A cord (heaters)	<ul style="list-style-type: none"> • Polyurethane Foam • Hot Polyureas 	2000 (14, 140)	
249572, A	240 V	20 A cord (motor and heaters)	<ul style="list-style-type: none"> • Polyurethane Foam • Hot Polyureas 	2000 (14, 140)	
249576, A	120 V	15 A cord (motor only)	<ul style="list-style-type: none"> • Self-leveling Joint Fillers • Cold Polyureas 	2000 (14, 140)	 Intertek 9902471 Conforms to ANSI/UL Std. 73 Certified to CAN/CSA Std. C22.2 Number 68
249577, A	240 V	10 A cord (motor only)	<ul style="list-style-type: none"> • Self-leveling Joint Fillers • Cold Polyureas 	2000 (14, 140)	

* See page 17 for detailed electrical requirements.

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 or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
 	<p>ELECTRIC SHOCK HAZARD</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"> • Turn off and disconnect power cord before servicing equipment. • Connect only to grounded electrical outlets. • Use only 3-wire extension cords. • Ensure ground prongs are intact on power and extension cords. • Do not expose to rain. Store indoors.
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled or swallowed.</p> <ul style="list-style-type: none"> • Read 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. • When spraying, servicing equipment, or when in the work area, always keep work area well-ventilated and always wear appropriate personal protective equipment. See Personal Protective Equipment warnings in this manual. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	<p>PERSONAL PROTECTIVE EQUIPMENT</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"> • 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. • Protective eyewear and hearing protection.

! WARNING



SKIN INJECTION HAZARD

High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**



- Engage trigger lock when not spraying.
- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.



FIRE AND EXPLOSION HAZARD







Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:







- Use equipment only in well-ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).
- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



WARNING

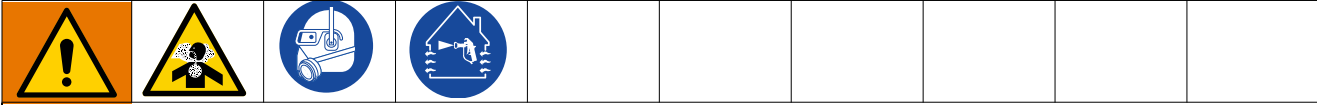
  	<p>THERMAL EXPANSION HAZARD</p> <p>Fluids subjected to heat in confined spaces, including hoses, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.</p> <ul style="list-style-type: none"> • Open a valve to relieve the fluid expansion during heating. • Replace hoses proactively at regular intervals based on your operating conditions.
	<p>PRESSURIZED ALUMINUM PARTS HAZARD</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"> • Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents. • Do not use chlorine bleach. • Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.
 	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Specifications in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See 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. • Do not leave the work area while equipment is energized or under pressure. • Turn off all equipment and follow the Pressure Relief Procedure when equipment is not in use. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only. • Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards. • Make sure all equipment is rated and approved for the environment in which you are using it. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.

 <h1 style="margin: 0;">WARNING</h1>	
 	<p>MOVING PARTS HAZARD Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> Keep clear of moving parts. Do not operate equipment with protective guards or covers removed. Equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.
	<p>BURN HAZARD Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> Do not touch hot fluid or equipment.

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:

WARNING	
	TOXIC FUMES HAZARD
DO NOT ENTER DURING SPRAY FOAM APPLICATION OR FOR ___ HOURS AFTER APPLICATION IS COMPLETE	
DO NOT ENTER UNTIL:	
DATE: _____ TIME: _____	

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:				
<ul style="list-style-type: none"> • 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 become 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.	
<ul style="list-style-type: none"> • 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.	
<ul style="list-style-type: none"> • 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-10 is a portable, electric-powered, 1:1 mix ratio proportioner, for use with a wide variety of coatings, foams, sealants, and adhesives. Materials must be self-leveling and pourable, and may be applied with impingement mix spray guns, disposable mixer guns, or flush-type mix manifolds.

The Reactor E-10 is gravity-fed from 7 gal. (26.5 liter) supply tanks mounted on the unit. The tanks are translucent to allow monitoring of fluid level.

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-10 will circulate fluids back to the supply tanks.

Heated models include separate thermostatically controlled heaters for each fluid, and an insulated hose bundle with circulation return hoses. This allows the hoses and gun to be preheated to the desired temperature before spraying. Digital displays show the temperatures of the two fluids.

An electronic processor controls the motor, monitors fluid pressures, and alerts the operator if errors occur. See **STATUS Indicator (ST)**, page 14, for further information.

The Reactor E-10 has two recirculation speeds, slow and fast, and an adjustable pressure output.

Slow Recirculation

- Slow circulation results in a higher temperature transfer in the heater, so hoses and gun heat up quicker.
- Good for touchup or low flow spraying, up to moderate temperature.
- Not used to circulate full tanks up to temperature.
- Use with 245 fa blowing agent foams, to minimize heat returned to tank and reduce frothing.

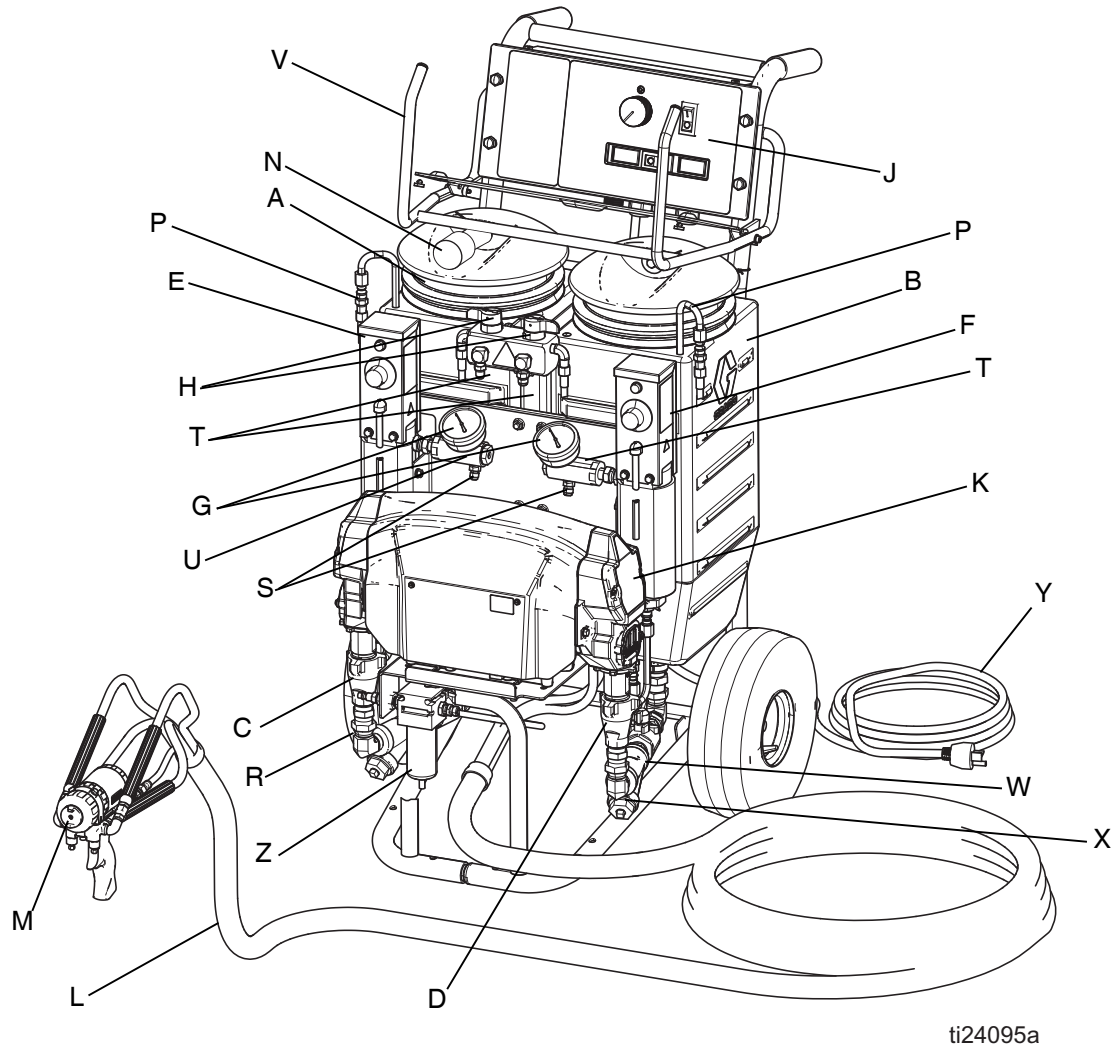
Fast Recirculation

- Use to support higher flow rates or higher temperatures by preheating the tanks.
- Agitates fluid within tanks, to avoid heating only the fluid at the top of the tank.
- Use for flushing.

Pressure Adjust

Automatically maintains selected pressure output for dispensing or spraying.

Component Identification



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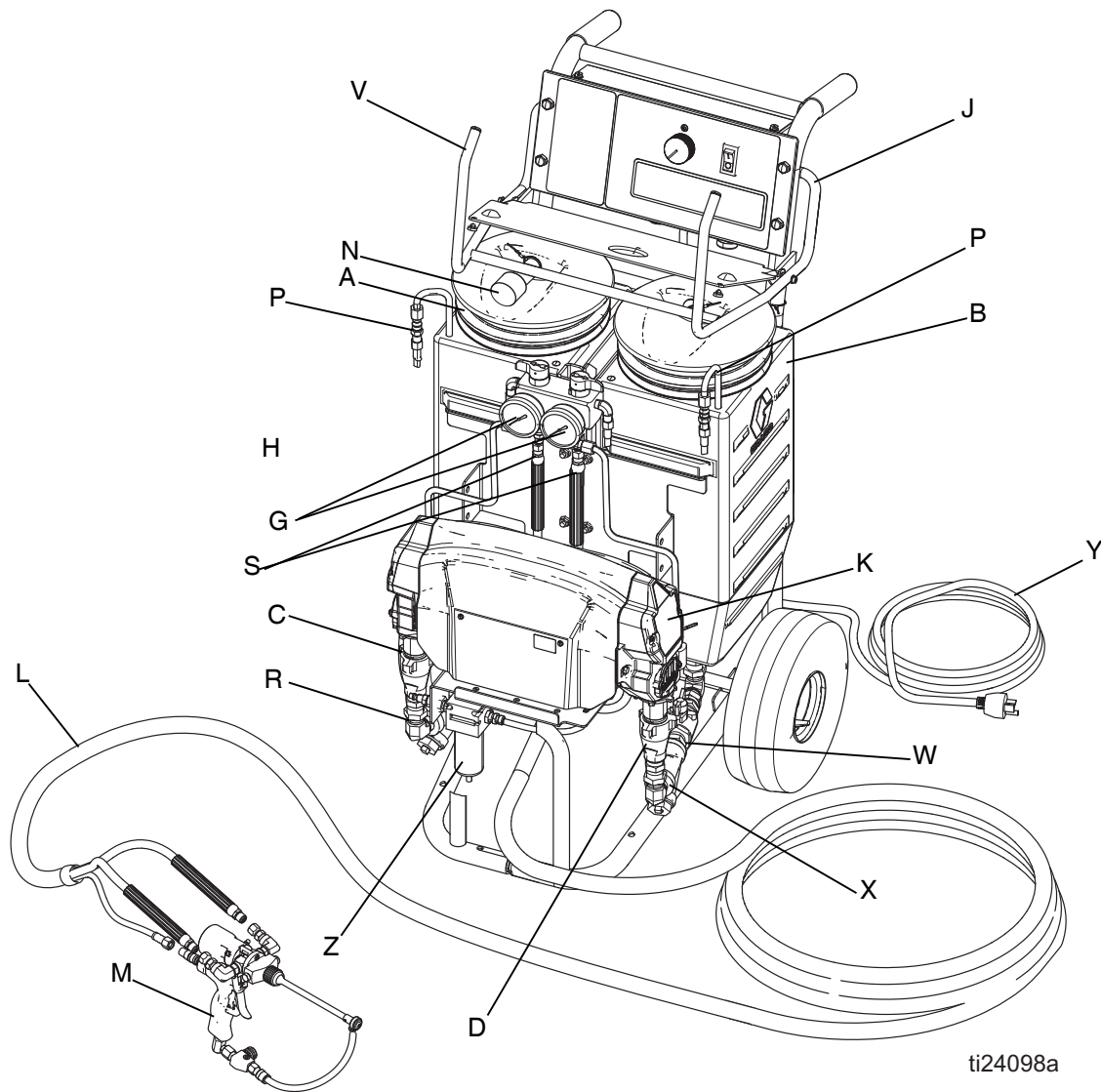
FIG. 1: Component Identification, Heated Packages (Part Number AP9572 Shown)

Key

A	Supply Tank A
B	Supply Tank B
C	Pump A
D	Pump B
E	Heater A
F	Heater B
G	Fluid Pressure Gauges
H	Spray and Overpressure Relief Valves
J	Control Panel; see FIG. 3, page 14
K	Electric Motor and Drive Housings
L	Insulated Hose Bundle (includes circulation return hoses)
M	Fusion Air Purge Spray Gun

Key

N	Desiccant Dryer (mounts on supply tank A)
P	Recirculation Tubes
R	Air Line Inlet (quick-disconnect fitting)
S	Outlet Hose Connections
T	Return Hose Connections
U	Fluid Temperature Sensors
V	Hose Rack and Control Shield
W	Fluid Inlet Ball Valves (1 on each side)
X	Fluid Inlet Strainers (1 on each side)
Y	Power Cord
Z	Air Filter/Moisture Separator



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FIG. 2: Component Identification, Nonheated Packages (Part Number 249808 Shown)

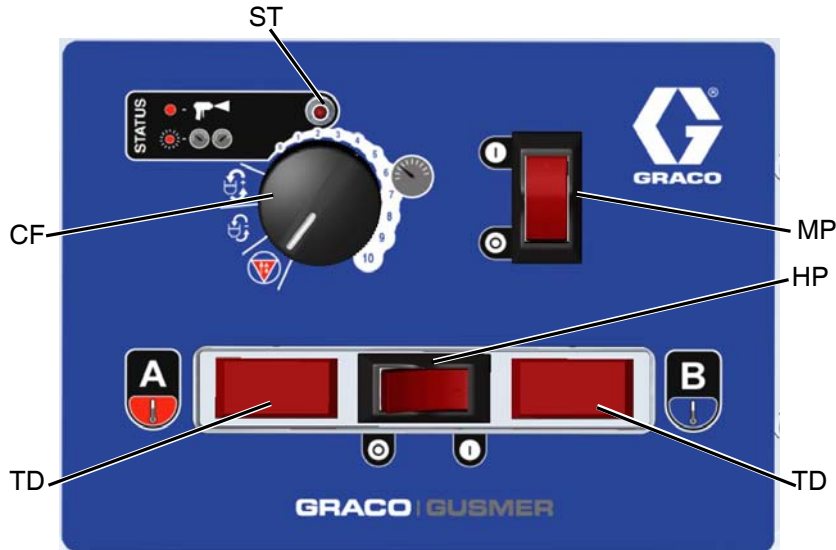
Key

- A Supply Tank A
- B Supply Tank B
- C Pump A
- D Pump B
- E Heater A
- F Heater B
- G Fluid Pressure Gauges
- H Spray and Overpressure Relief Valves
- J Control Panel; see FIG. 3, page 14
- K Electric Motor and Drive Housings
- L Hose Bundle
- M MD2 Cold Spray Gun (with disposable static mixer) or 2K Manual Gun

Key

- N Desiccant Dryer (mounts on supply tank A)
- P Recirculation Tubes
- R Air Line Inlet (quick-disconnect fitting)
- S Outlet Hose Connections
- V Hose Rack and Control Shield
- W Fluid Inlet Ball Valves (1 on each side)
- X Fluid Inlet Strainers (1 on each side)
- Y Power Cord
- Z Air Filter/Moisture Separator

Controls and Indicators



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FIG. 3 Controls and Indicators (heated unit shown)

Motor/Pump Control Function Knob

Use knob (CF) to select desired function.

Icon	Setting	Function
	Park	Stops motor and automatically parks pumps
	Slow Recirc	Slow recirculation speed
	Fast Recirc	Fast recirculation speed
	Pressure Adjust	Adjusts fluid pressure to gun in spray mode

STATUS Indicator (ST)

When steady on, Motor Power switch is turned on and control board is working.

If error occurs, STATUS indicator will blink 1 to 7 times to indicate status code, pause, then repeat. See TABLE 1 for a brief description of status codes. For more detailed information and corrective action, see **Status Codes**, page 29.

Table 1: Status Codes

(see also the label on back of the control enclosure)

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 **Status Code 1 and 2 Settings**, page 29. The other codes are not settable.

Motor Power Switch/Circuit Breaker (MP)

Turns power on to control board and function knob. The switch includes a 20 A circuit breaker.

Heater Power Switch/Circuit Breaker (HP)

Turns power on to heater thermostats. The switch includes a 20 A circuit breaker. Present on heated units only.

Fluid Temperature Sensors and Displays

See FIG. 3. Fluid temperature sensors (T) monitor actual temperature of component A and B fluid going to spray gun. Temperatures are then displayed (TD). Present on heated units only.

NOTE: The unit is shipped set to °F. To change to °C, see **Change Display Temperature Units (°F/°C)**, page 38.

Heater Temperature Controls (HC)

Sets temperature of component A and B heaters. Indicator lights (HL) turn on when thermostats are heating, and off when heater reaches setpoint. Present on heated units only.

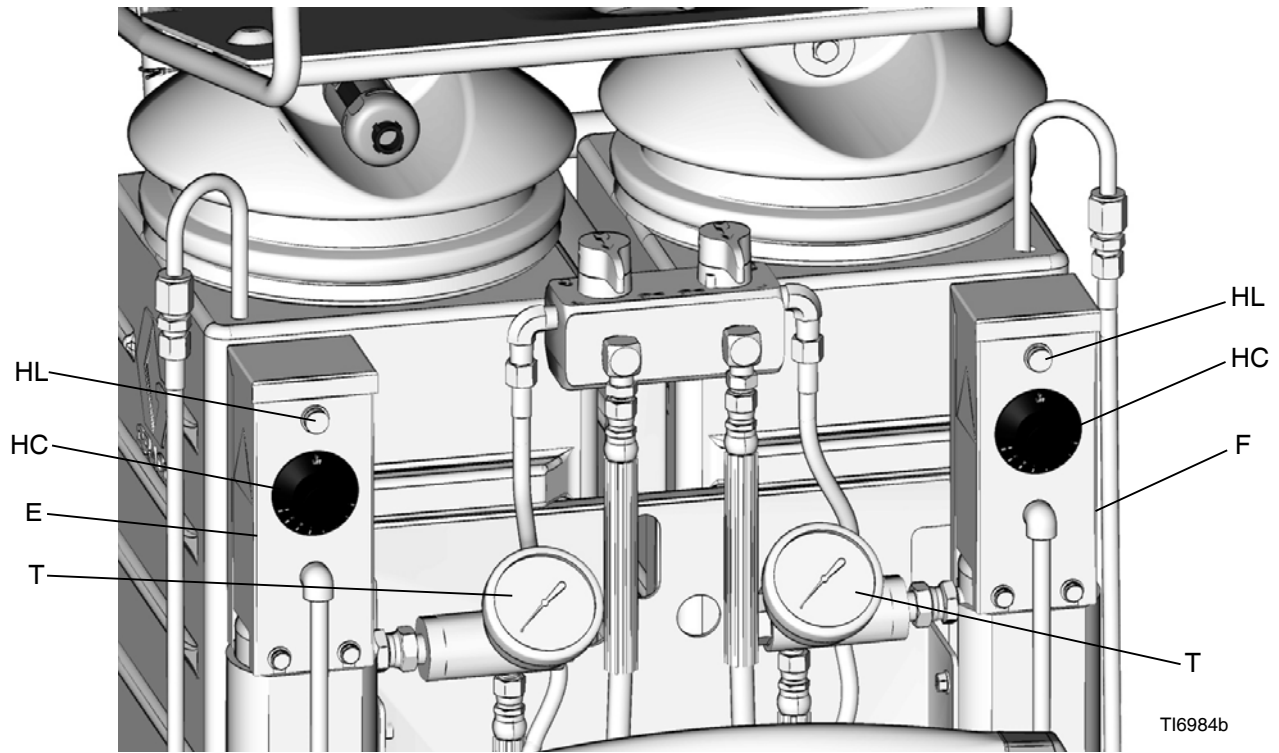


FIG. 4 Heater Temperature Controls

Installation

Location

- Place the Reactor E-10 on a level surface.
- Do not expose the Reactor E-10 to rain.

Grounding

<p>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.</p>				

Reactor E-10: ground through the power cord.

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

Spray gun: grounded through the supplied fluid hoses, connected to a properly grounded Reactor E-10. Do not operate without at least one grounded fluid hose.

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, plastic, or cardboard, which interrupts grounding continuity.

To maintain grounding continuity when flushing or relieving pressure: hold metal part of the spray gun/dispense valve firmly to the side of a grounded metal pail, then trigger the gun.

Connect to a Power Source

<p>Improper wiring may cause electric shock or other serious injury if work is not performed properly. All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.</p>				

Connect Reactor E-10 to the correct power source for your model. See TABLE 2, page 17. Models with two power cords must be connected to two separate, dedicated circuits. See FIG. 5, page 17.

NOTE: Some models include cord adapters (55, 56) for use outside North America. Connect the appropriate adapter to the unit's power cord before connecting to your power source.

Table 2: Electrical Requirements










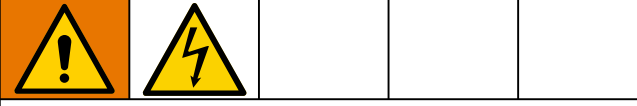


Model	Required Power Source	Power Cord Connector
120 V, 1 phase, 50/60 Hz, two 15 ft (4.5 m) power cords, Heated	Two separate, dedicated circuits rated at minimum of 15 A each	  Two NEMA 5-15T
240 V, 1 phase, 50/60 Hz, two 15 ft (4.5 m) power cords, Heated	Two separate, dedicated circuits rated at minimum of 10 A each	  Two IEC 320, with two local adapters:  Euro CEE74 Adapter  Australia/China Adapter
240 V, 1 phase, 50/60 Hz, one 15 ft (4.5 m) power cord, Heated	Single dedicated circuit rated at minimum of 16 A	 One NEMA 6-20P
120 V, 1 phase, 50/60 Hz, one 15 ft (4.5 m) power cord, Nonheated	Single dedicated circuit rated at minimum of 15 A	 One NEMA 5-15T
240 V, 1 phase, 50/60 Hz, one 15 ft (4.5 m) power cord, Nonheated	Single dedicated circuit rated at minimum of 8 A	 One NEMA 6-20P

Table 3: Extension Cord Requirements

Model	Required Wire Size	
	Up to 50 ft (15 m)	Up to 100 ft (30 m)
Nonheated and two cord heated models	AWG 14	AWG 12
Single cord heated model	AWG 12	AWG 10
NOTE: Cords must be 3-conductor grounded, rated for your environment.		



To avoid electric shock, always unplug both cords before servicing Reactor E-10.

-  Ensure no other high amp loads are connected while running Reactor E-10.
-  To verify separate circuits, plug in Reactor E-10 or a worklight and cycle breakers on and off.

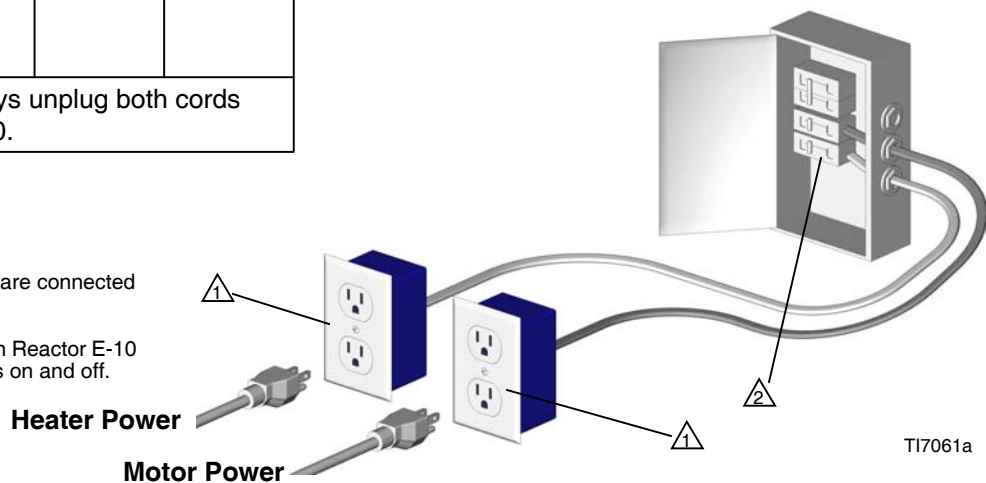
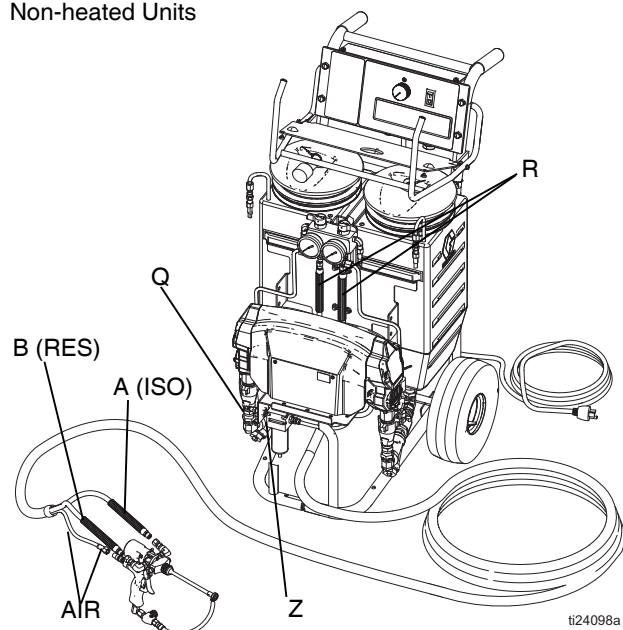


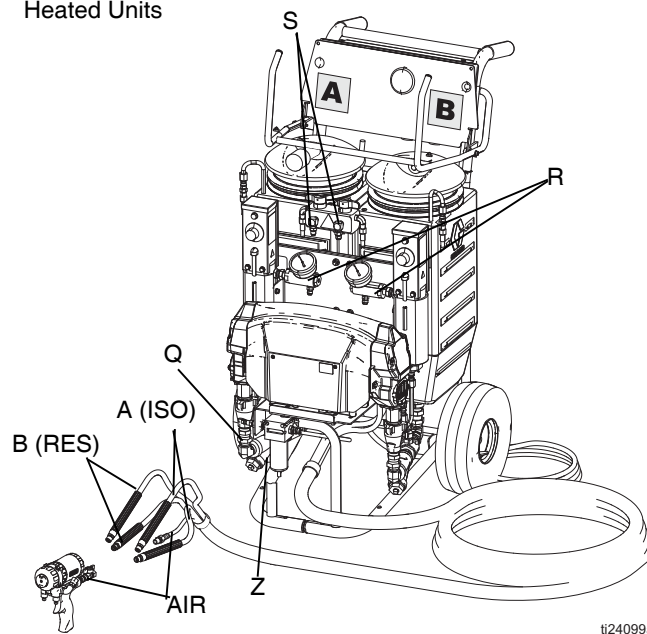
Fig. 5 Use Two Separate Circuits for Two Cord Models

Non-heated Units



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Heated Units



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FIG. 6 Hose Connections

Connect the Fluid Hoses

1. Connect the fluid supply hoses to the outlet hose connections (R).

NOTE: Use the red hoses for component A (ISO), and the blue hoses for component B (RES). The fittings are sized to prevent connection errors.

2. Connect the other end of the hoses to the A and B inputs of the gun.
3. **Heated units only:** connect the recirculation hoses from gun recirculation ports to the connections (S).

Connect the Air Hoses

1. **For air operated guns:** connect the gun air hose to the gun air input and to the air filter outlet (Z).

NOTE: If you are using more than one hose bundle, join the air hoses with the nipple (305) provided with the hose bundle.

2. **For heated units with Fusion guns:** connect the supplied ball valve and quick-disconnect coupler to the gun air hose. Connect the coupler to the gun air fitting.

Connect the Main Air Supply

Connect the main air supply to the quick disconnect fitting (Q) 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).




NOTE: The Air Filter/Moisture Separator (Z) is equipped with an automatic moisture drain.

Flush Before First Use

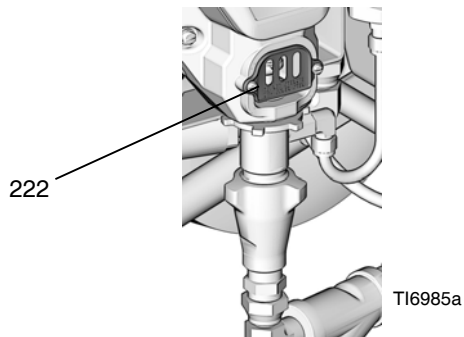
The Reactor E-10 is tested with a plasticizer oil at the factory. Flush out the oil with a compatible solvent before spraying. See **Flushing**, page 27.

Fill the Wet-Cups

Keep the felt washers in the pump wet-cups saturated with ISO pump oil. The lubricant creates a barrier between the ISO and the atmosphere.

				
<p>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 wet-cup during operation. Shut off Motor Power before filling wet-cup.</p>				

Fill the wet-cups through slots in the plate (222). Alternatively, loosen screws and swing the plate (222) aside.



Fill the Fluid Tanks

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

1. Mix the filled or separated materials in the pail with a drill and mixing blade before adding to the tanks.

NOTE: Material left in the tanks overnight may need to be remixed in the tanks.

2. Lift the hose rack to expose tank A and tank B.

3. Remove tank A cover and pour ISO into tank A (red side, with desiccant filter in cover). See FIG. 7.

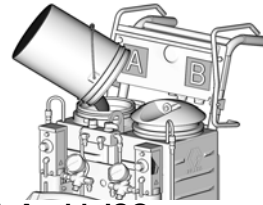





FIG. 7 Fill Tank A with ISO

4. Replace the cover .

NOTE: Desiccant filter is blue when fresh, and turns pink when saturated. Be sure shipping plugs are removed from openings on desiccant filter.

5. Remove tank B cover and pour resin into tank B (blue side). See FIG. 8.

6. Replace the cover .

 Add thin coating of grease lubricant to tank o-ring if lid is difficult to assemble to tank.

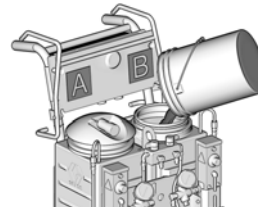


FIG. 8 Fill Tank B with Resin

NOTICE

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

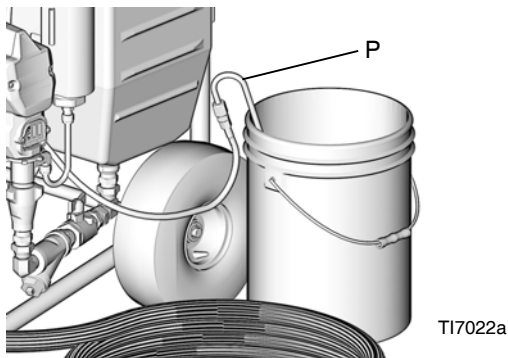
Have at least two 5 gal. (19 liter) pails to transfer fluid from drums to supply tanks. Label one pail "A" and the other "B", using the red and blue labels provided. Always doublecheck which material you have before pouring it in the supply tanks. Pouring is easier if pails are not filled to the top.


Open only one supply tank at a time, to avoid splashing material from one tank into the other when filling.

Purge Air and Flush the Fluid Lines



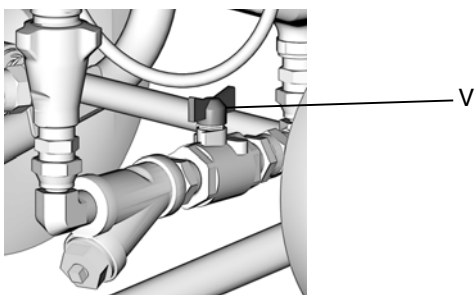
1. Remove both recirculation tubes (P) from the tanks and secure each one in a dedicated waste container.



2. Set function knob to Park .



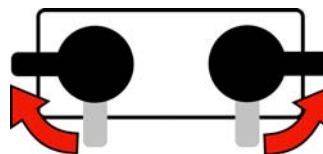
3. Plug in the power cord(s). See TABLE 2, page 17.
4. Open both pump fluid inlet valves (V).





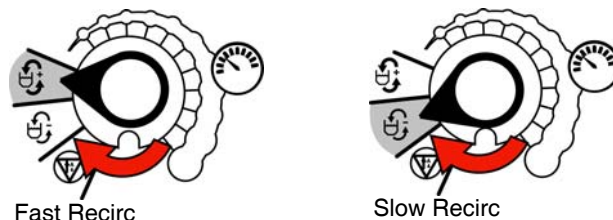
5. Turn on Motor Power.




6. Set Spray valves to Recirc.



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



8. When clean fluids exit both recirculation tubes (P), set function knob to Park .



9. Replace the recirculation tubes in the supply tanks.
10. On non-heated units, purge the hoses through the gun without a static mixer installed.

NOTE: For heated units, continue with **Startup of Heated Units**, page 21.

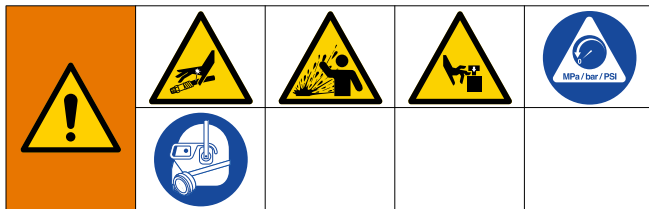
For non-heated units, continue with **Spraying/Dispensing**, page 24.

Operation

Pressure Relief Procedure

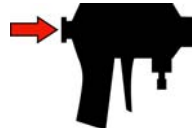


Follow the Pressure Relief Procedure whenever you see this symbol.



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. Engage the piston safety lock or trigger safety lock.



Fusion

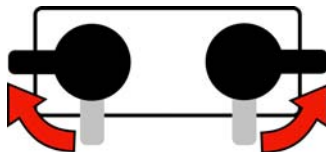


MD2

2. Set the function knob to Park



3. Turn the Spray valves to Recirc. Fluid will be dumped to the supply tanks. The pumps will move to the bottom of their stroke. Ensure that the gauges drop to 0.



Startup of Heated Units



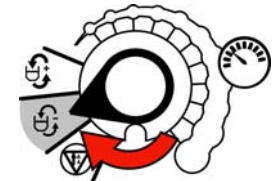
Some models heat the fluid, which can cause equipment surfaces to become very hot. To avoid severe burns:

- Do not operate Reactor E-10 without all covers and shrouds in place.
- Do not touch hot fluid or equipment.
- Allow equipment to cool completely before touching it.
- Wear gloves if fluid temperature exceeds 110 °F (43 °C).

1. Perform **Installation**, page 16.
2. Set function knob to Slow Recirc or Fast Recirc . See **Heatup Guidelines**, page 22, before continuing to step 3.

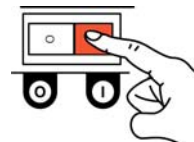


Fast Recirc

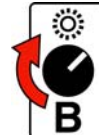


Slow Recirc

3. Turn on Heater Power.



4. Temporarily set the heater control knobs to the maximum setting.



5. Circulate through the heaters until the temperature readouts display desired temperature. Refer to TABLE 4, page 22.
6. Adjust the heater control knobs as necessary for a stable spray temperature.

Table 4: Heatup Time Guidelines for starting a cold machine with 5 gal. (19 l) per side (see Notes below)

Fluid Spray Target Temperature	35 ft (10.7 m) Hose (1 bundle)	70 ft (21 m) Hose (2 bundles)
125°F (52°C)	20 minutes	25 minutes
150°F (65°C)	40 minutes	50 minutes

NOTE: Use fast circulation until temperature is within 20 °F (11 °C) of target, then use slow circulation to reach final temperature.

Different fluids will absorb heat at different rates. When refilling a warm machine, heatup times will be less.

Heatup Guidelines

NOTE: The fluids must be circulated from the pumps through the heaters, hoses, and back to the tanks to ensure warm fluids are supplied to the gun.

Slow Recirculation

- Slow Recirc results in a higher temperature transfer in the heater, so hoses and gun heat up quicker.
- Good for touchup or low flow spraying, up to moderate temperature.
- Not used to circulate full tanks up to temperature.
- Use with 245 fa blowing agent foams, to minimize heat returned to tank and reduce frothing.




Fast Recirculation

- Fast Recirc keeps heaters on fulltime to bring fluid tanks up to temperature. The higher your usage rate, the more heat needed in the tanks before spraying.
 - **For normal usage rates:** Use Fast Recirc to get tanks to approximately 50°F (28°C) below desired spray temperature, then use Slow Recirc to raise hose and gun to desired temperature.
 - **For higher flow rates or continuous spraying:** Use Fast Recirc to bring temperature of tanks to approximately 20°F (11°C) below desired spray temperature, then use Slow Recirc to raise hose and gun to desired temperature.

- **Volume in tanks:** Use only what you need. For example, 2.5 gal. (10 l) in each tank will heat up almost twice as fast as 5 gal. (20 l).

- Mixes fluid within tanks, to avoid heating only the fluid at the top of the tank.
- Use for flushing.

Heat Management Tips




- Heaters perform better with lower flow rates or smaller mix modules.
- Triggering the gun for short periods helps maintain efficient heat transfer, keeping material at the desired temperature. Triggering the gun for a long period does not allow enough heating time, and cold material will enter the hose.
- If the temperature displays fall below acceptable limits, set the function knob to Slow Recirc  and circulate again to bring temperatures back up.
- Each 35 ft (10.7 m) hose bundle adds about 5 minutes to heatup time with most materials. Water-based materials take longer to heat up. Maximum recommended hose length is 105 ft (32 m).
- Use Fast Recirc  until the tanks are warm to the touch, then use Slow Recirc  until the displays read desired temperature.
- For a quicker start, do initial heatup circulation with the tanks 1/4 to 1/3 filled, then add more material.

Heating Foam Resins with 245 fa Blowing Agents

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

Never fill the 7 gal. (26 l) supply tanks beyond the 5 gal. (19 l) line on the tanks, to leave room for some frothing.

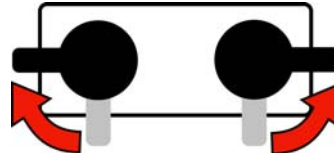
At High Ambient Temperature (above 75°F/24°C)


- Pour resins slowly to avoid frothing.
- Only use Slow Recirc , to avoid heating and agitating the tank. If temperature doesn't keep up, set the function knob to Park , then set to Slow Recirc  again.
- When you stop to refill the tanks, avoid boiling off fluid in the heaters by following these steps:
 1. Shut off Heater Power.



2. Leave the hoses under pressure.
3. **Refill the Tanks**, page 25.

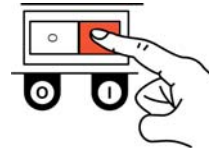
4. Set the Spray valves to Recirc.






5. Set the function knob to Slow Recirc .



6. Turn on Heater Power.



At Cool Ambient Temperature (below 75°F/24°C)

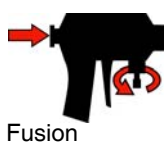
- Use Fast Recirc  to heat the tanks to 75-90°F. (24-32°C), then use Slow Recirc  to raise the hose and gun to desired spray temperature.
- If the top of the resin in tank starts frothing, do not use Fast Recirc  any more.

Spraying/Dispensing



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


If using 2K Manual Dispense Valve, see dispense valve instruction manual.



Fusion




MD2

1. Set the function knob to Stop Park .



2. Set the Spray valves to Spray.



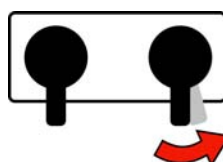
3. Turn the function knob to Pressure Adjust .

Keep turning to the right until the fluid pressure gauges show desired pressure.



NOTE: Use lower pressures for joint filling applications.

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



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

NOTE: Watch the gauges for 10 seconds to be sure the pressure holds on both sides and the pumps are not moving.

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



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

6. Disengage the piston safety lock or the trigger safety lock.

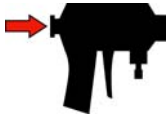


7. Test spray onto cardboard or plastic sheet. Verify that material fully cures in the required length of time, and is the correct color. Adjust the pressure and temperature to get desired results. The equipment is ready to spray.

Pause (Heated Units)

To bring the hose and gun back to spray temperature after a brief break, use the following procedure.


1. Engage the piston safety lock or trigger safety lock.

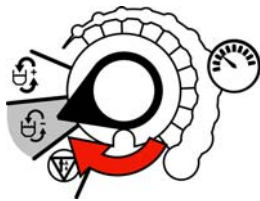


Fusion

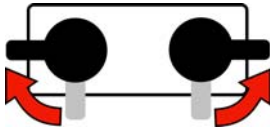


MD2

2. Set the function knob to Slow Recirc .



3. Set Spray valves to Recirc until the temperature readouts come back up.



NOTE: If you stop spraying for more than two minutes when using an impingement mix gun, close fluid valves A and B to keep the internal parts of the gun cleaner and prevent crossover.



Fusion



MD2

Refill the Tanks

Material can be added to the tanks at any time. See **Fill the Fluid Tanks**, page 19.

NOTE: If you are operating at high temperatures or flow rates, follow instructions under **Pause (Heated Units)**, page 25, to bring the tanks up to temperature.

NOTICE

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

Have at least two 5 gal. (19 liter) pails to transfer fluid from drums to supply tanks. Label one pail "A" and the other "B", using the red and blue labels provided. Always double check which material you have before pouring it in the supply tanks. Pouring is easier if pails are not filled to the top.

Open only one supply tank at a time, to avoid splashing material from one tank into the other when filling.

Shutdown



For longer breaks (more than 10 minutes), use the following procedure. If you will be shut down for more than 3 days, first see **Flushing**, page 27.

1. Follow the **Pressure Relief Procedure**, page 21.
2. **If using impingement mix gun**, close gun fluid valves A and B to keep the internal parts of the gun cleaner and prevent crossover.



3. **Heated units only:** shut off Heater Power.



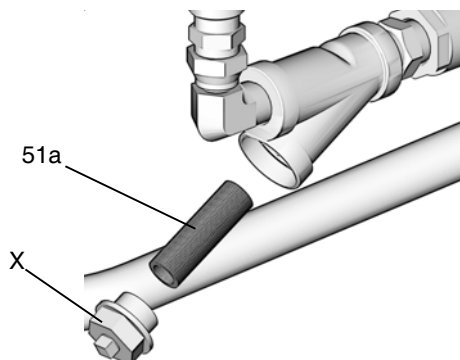
4. Shut off Motor Power.



5. Follow Shutdown procedure in your gun manual.

Maintenance

- Check the pump wet-cups fluid level daily, **Fill the Wet-Cups**, page 19.
- Do not overtighten the packing nut/wet-cup. The throat u-cup is not adjustable.
- Keep component A from exposure to moisture in atmosphere to prevent crystallization.
- Wipe the supply tank lid o-ring and inner rim daily to prevent ISO crystallization. Keep a film of grease on o-ring and inside of lid.
- Check the desiccant filter weekly. The filter is blue when fresh, and turns pink when saturated.
- Remove plug (X) and clean fluid inlet strainer (51a) as needed. Always clean the fluid inlet strainers after flushing.
- 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.
- **If using an impingement mix gun**, 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 the gun mix chamber ports and check valve screens regularly. See your gun manual.



- **If using an Fusion Air Purge impingement mix gun**, always grease the gun after use until purge air carries grease mist out the front of the gun. See your gun manual.

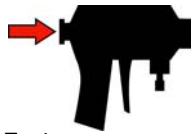
Flushing



To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure. Hot solvent may ignite. To avoid fire and explosion:

- Flush equipment only in a well-ventilated area
- Ensure main power is off and heater is cool before flushing
- Do not turn on heater until fluid lines are clear of solvent

- 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 the system. Do not use water.
 - For long term storage, flush out the solvent with a storage fluid or, at minimum, clean motor oil.
1. Engage the piston safety lock or trigger safety lock. Close fluid valves A and B. Leave air on.

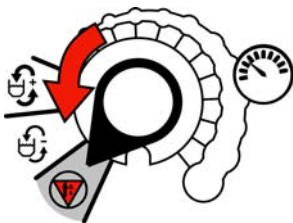


Fusion



MD2

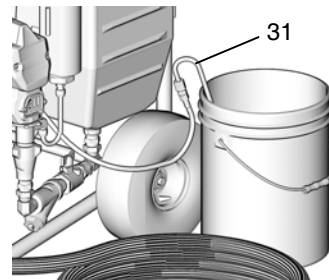
2. Set the function knob to Park



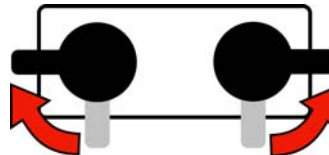
3. **For heated units:** shut off Heater Power. Allow the system to cool.



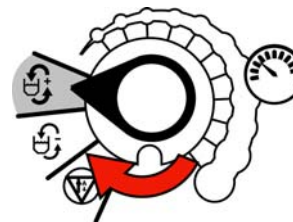
4. Remove the recirculation tubes (31) from the supply tanks and place in the original containers or waste containers.



5. Turn the Spray valves to Recirc.




6. Set the function knob to Fast Recirc . Pump material from supply tanks until no more comes out.

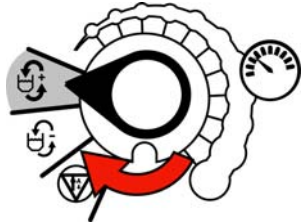



7. Set the function knob to Park




- Wipe out any remaining material from the supply tanks. Fill each supply tank with 1-2 gal. (3.8-7.6 l) of solvent recommended by your material manufacturer.

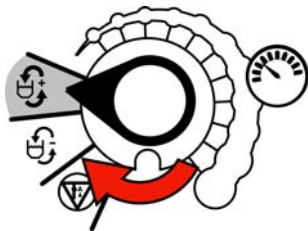
- Set the function knob to Fast Recirc . Pump solvent through system to waste containers.




- When nearly clear solvent comes from the recirculation tubes, set function knob to Park . Return the recirculation tubes to the supply tanks.

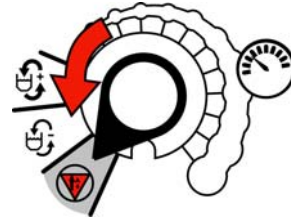


- Set the function knob to Fast Recirc . Circulate solvent through the system for 10-20 minutes to ensure thorough cleaning.



- If using a non-heated unit, purge the gun hose. Follow **Purge the Gun Hoses (Nonheated Units Only)**.

- Set the function knob to Park .



- Solvent flushing is a two step process. Go back to step 4, drain solvent, and flush again with fresh solvent.



- Leave the unit filled with solvent, plasticizer, clean motor oil, or refill the supply tanks with new material and reprime.

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 causing diminished performance and damage to the system.

Purge the Gun Hoses (Nonheated Units Only)

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

Disconnect hoses from the gun and secure back into the tanks for thorough cleaning with solvent.

- Turn Spray valve A to Spray.
- Open the gun into waste container A.
- Set the function knob to Slow Recirc  until the hose is flushed.
- Set the function knob to Park .
- Repeat for side B.

Troubleshooting

Status Codes

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

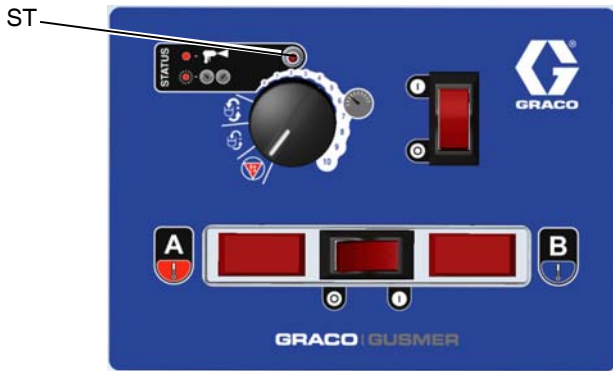


FIG. 9 The Status Indicator

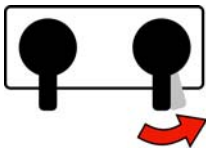
Status Code 1: Pressure Imbalance

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

NOTE: The unit does not check for pressure imbalance for 10 seconds after entering pressure mode.

The 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**, page 29.

1. Check the fluid supply of the lower pressure component and refill if necessary.
2. Reduce the pressure of the higher component by **slightly** turning the Spray valve for that component toward Recirc until the gauges show balanced pressures.



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

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

3. Check the fluid inlet strainers (51a, page 26) and the fluid filters at gun.
4. Clean or change the restrictor at the mixer manifold if using disposable mixer gun kit.

Status Code 2: Pressure Deviation from Setpoint

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

The unit senses pressure deviation from setpoint, and warns or shuts down, depending on settings of DIP switches 3 and 4. If the equipment cannot maintain enough pressure for a good mix with an impingement mix 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**, page 29.

Status Code 1 and 2 Settings

1. Locate switch SW2 on the control board. See FIG. 14, page 41.
2. Set the four DIP switches to the desired positions. See FIG. 10, page 29, and TABLE 5, page 30.

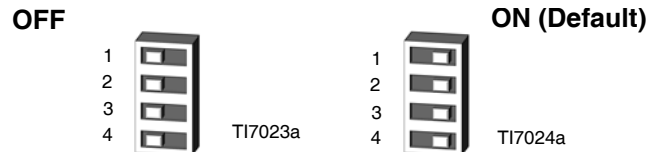


FIG. 10 DIP Switch (SW2) Settings

Table 5: Status Code 1 and 2 Settings

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

Status Code 3: Transducer A Failure

1. Check transducer A electrical connection (J3) at the board. See FIG. 14, page 41.
2. Reverse A and B transducer electrical connections at the board, page 41. If the error moves to transducer B (Status Code 4), replace transducer A. See **Pressure Transducers**, page 42.

Status Code 4: Transducer B Failure

1. Check transducer B electrical connection (J8) at the board. See FIG. 14, page 41.
2. Reverse A and B transducer electrical connections at the board, page 41. If the error moves to transducer A (Status Code 3), replace transducer B. See **Pressure Transducers**, page 42.

Status Code 5: Excessive Current Draw

Shut off the unit and contact distributor before resuming operation.

1. Locked rotor; motor unable to turn. Replace the motor. See **Electric Motor**, page 45.
2. Short on control board. Replace the board. See **Control Board**, page 40.

3. Worn or hung up motor brush causing arcing of brush at commutator. Replace the brushes. See **Motor Brushes**, page 45.

Status Code 6: High Motor Temperature

The motor is running too hot.


1. The motor temperature too high. Reduce the pressure duty cycle, gun tip size, or move Reactor E-10 to a cooler location. Allow 1 hour for cooling.
2. Check the fan operation. Clean the 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 Recirc mode.

1. Check the cycle counter switch connection to the board (J10, pins 5, 6). See FIG. 14, page 41.
2. Check that the magnet (224) and cycle counter switch (223) are in place under the B side motor end cover (227). Replace if necessary.

Troubleshooting Chart

PROBLEM	CAUSE	SOLUTION
Reactor E-10 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 Park  , then select desired function.
	Loose connection on control board.	Check connection at J11 (120 V) or J4 (240 V). See Control Board , page 40.
	Worn brushes.	Check both sides. Replace brushes worn to less than 1/2 in. (13 mm), see Motor Brushes , page 45.
	Broken or misaligned brush springs.	Realign or replace, see Motor Brushes , page 45.
	Brushes or springs binding in brush holder.	Clean brush holder and align brush leads for free movement.
	Shorted armature.	Replace motor, see Electric Motor , page 45.
	Check motor commutator for burn spots, black pitting, or other damage.	Remove motor. Have motor shop resurface commutator, or replace motor, see Electric Motor , page 45.
	Failed control board.	Replace board. See Control Board , page 40.
Fan not working.	Loose fan cable.	Check that cable is connected at fan and at J9 on control board. See Fan , page 46 and Control Board , page 40.
	Defective fan.	Test and replace if necessary, see Fan , page 46.
Pump output low.	Plugged fluid inlet strainer.	Clear, see Maintenance , page 26.
	Plugged disposable mixer.	Clean or replace.
	Leaking or plugged piston valve or intake valve in displacement pump.	Check valves. See your pump manual.

PROBLEM	CAUSE	SOLUTION
One side doesn't come up to pressure in spray mode.	Dirty or damaged Spray valve.	Clean or repair, see Recirculation/Spray Valves , page 36.
	Plugged fluid inlet strainer.	Clear, see Maintenance , page 26.
	Pump intake valve plugged or stuck open.	Clean pump intake valve. See step , page 37.
	Material is too viscous to pump with unheated unit.	Warm material before adding to tanks.
Pressure is higher on one side when setting pressure with function knob.	Pump intake valve partially plugged.	Clean pump intake valve. See step , page 37.
	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.	Change temperature setting to balance viscosities.
		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 your pump manual.
Pressure doesn't hold when stalled against gun in spray mode.	Leaking Spray valve.	Repair, see Recirculation/Spray Valves , page 36.
	Leaking piston valve or intake valve in displacement pump.	Repair. See your pump manual.
	Leaking gun shutoff.	Repair. See your 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.
Resin froths and overflows tank after refilling hot equipment.	Agitation from pouring. Hot material in heaters and hoses froths when not under pressure.	Turn heaters off before refilling. Leave hoses pressurized. See At High Ambient Temperature (above 75°F/24°C) , page 23.
One gauge shows half as many pulses as the other when pumps are cycling.	Loss of pressure on downstoke.	Intake valve is leaking or not closing. Clean or replace valve; see step , page 37.
	Loss of pressure on upstoke.	Piston valve is leaking or not closing. Clean or replace valve or packings; see Displacement Pump , page 37.

PROBLEM	CAUSE	SOLUTION
Status indicator (red LED) not lit.	Motor Power switch off.	Cycle the 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 Control Board , page 40.
	Failed control board.	Replace board. See Control Board , page 40.
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.
No temperature display (heated units only).	Loose display cables on control board.	Check cable connections to each display, see Control Board , page 40.
	Failed control board (displays get power from control board).	Remove access panel. Check if board LED is lighted. If not, replace board, see Control Board , page 40.
	Inadequate power to control board.	Check that power supply meets requirements.
	Loose power cable.	Check cable connections, see Control Board , page 40.
	Motor Power switch circuit breaker tripped.	Display is powered from Motor Power circuit breaker. Cycle motor power off, then on, to reset breaker.
Wrong temperature displayed.	°F/°C switch in wrong position.	Set switch, see Change Display Temperature Units (°F/°C) , page 38.
Temperature displays do not match at ambient temperature.	Displays need calibration.	Turn calibration screw on back of displays to correct reading, see Calibrate Temperature Displays , page 38.

PROBLEM	CAUSE	SOLUTION
No heat, and heater indicator light is off.	Heater Power shut off, or circuit breaker tripped.	Cycle heater power off, then on to reset circuit breaker.
	Bad thermostat.	With power on, check for continuity at clicks of heater control knob. To replace thermostat, see your heater manual.
	Bad overtemperature sensor (this is a high temperature limit fuse and must be replaced if blown).	With power on, check for continuity at overtemperature sensor. To replace sensor, see your heater manual.
	Loose heater cable connections.	Check connections at Heater Power switch. See FIG. 14, page 41.
No heat, but heater indicator light is on.	Bad heater cartridge.	Check for continuity at heater cartridge connections: 16-18.6 ohms for 120 V, 64-75 ohms for 240 V.
Heater on one side shuts off early or continuously during recirculation.	Y-strainer is plugged on that side.	Clean or replace strainer, see Maintenance , page 26.
	Fluid inlet valve (52) closed.	Open valve.


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 the system if possible. See **Flushing**, page 27. If not possible, clean all parts with solvent immediately after removal, to prevent isocyanate from crystallizing due to moisture in the atmosphere.

2. Set the function knob to Park .



3. Shut off Motor Power. Disconnect the power supply.



4. Shut off the Heater Power. Allow the equipment to cool before repairing.



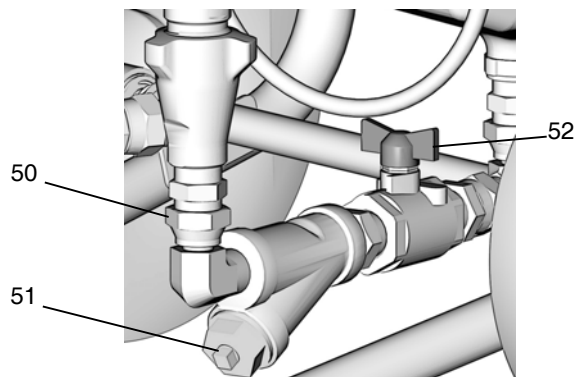
5. Follow the **Pressure Relief Procedure**, page 21.

Remove Supply Tanks



Refer to your displacement pump manual for repair and parts information.

1. Follow **Before Beginning Repair**, page 35.
2. Follow the **Pressure Relief Procedure**, page 21.
3. Close both fluid inlet ball valves (52).



NOTE: Use dropcloth or rags to protect Reactor E-10 and surrounding area from spills.

4. Open the filter drain plug on Y-strainer (51).
5. Disconnect the swivel elbow (50) at the pump fluid inlet.
6. Remove the screws (4) holding the tank to the cart frame.
7. Pivot the top of the tank to the side and lift it and the fluid inlet fittings off of the cart.

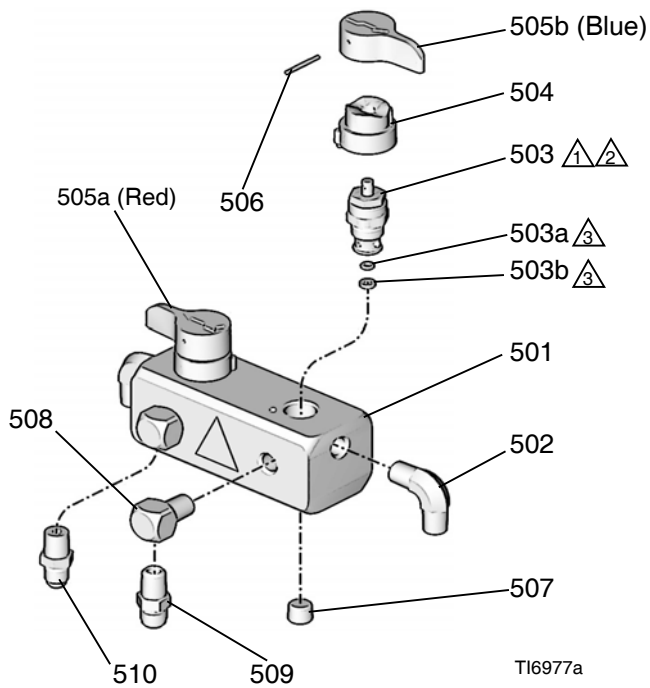
Recirculation/Spray Valves



1. Follow **Before Beginning Repair**, page 35.
2. Follow the **Pressure Relief Procedure**, page 21.
3. Disassemble the Spray valves. See FIG. 11, page 36.

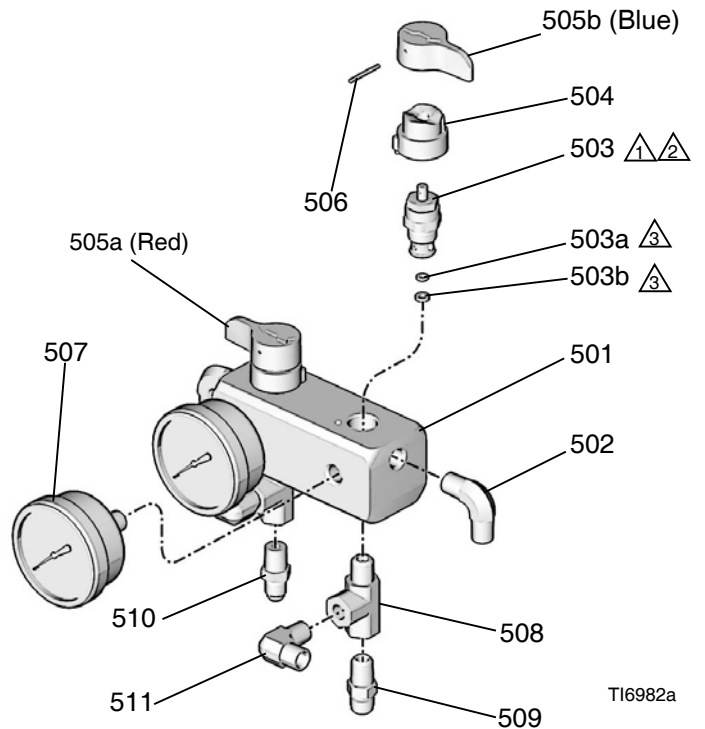
4. Clean and inspect all parts for damage. Ensure that the seat (503a) and gasket (503b) are positioned inside each valve cartridge (503).
5. Apply PTFE pipe sealant to all tapered pipe threads before reassembling.
6. Reassemble in reverse order, following all notes in FIG. 11, page 36.

Heated Models



T16977a

Nonheated Models



T16982a

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

FIG. 11 Spray Valves

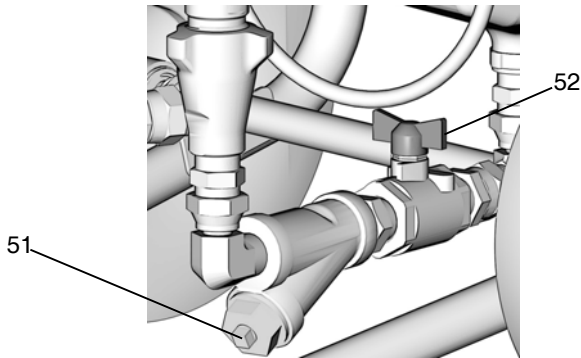
Displacement Pump



Refer to your displacement pump manual for repair and parts information.

NOTE: Use a dropcloth or rags to protect the Reactor E-10 and surrounding area from spills.

1. Follow **Before Beginning Repair**, page 35.
2. Follow **Pressure Relief Procedure**, page 21.
3. Close both fluid inlet ball valves (52).
4. Open the filter drain plug on Y-strainer (51).



Remove the Intake Valve

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

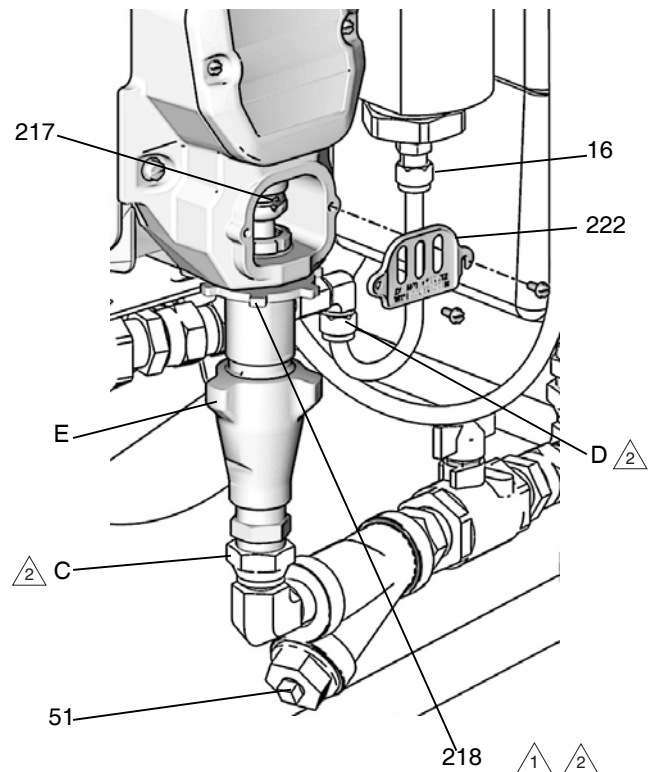
If the pump is not generating pressure on the downstroke, intake ball check may be stuck open.

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

1. Disconnect the fluid inlet (C) and swing it aside.
2. Remove the intake valve by hitting the ears (E) firmly right-to-left with a non-sparking hammer. Unscrew from pump. Refer to your displacement pump manual for repair and parts information.

Remove the Pump Assembly

1. Disconnect the fluid inlet (C) and outlet (D) lines. Disconnect the steel outlet tube (16) from the heater inlet.
2. Remove the pump rod cover (222). Push clip up in back and push pin (217) out.
3. Loosen locknut (218) by hitting firmly right-to-left with a non-sparking hammer.
4. Unscrew the pump. See your pump manual for repair and parts information.
5. Install the pump in reverse order of disassembly, following all notes in FIG. 12. Clean the strainer (51). Reconnect fluid inlet (C) and outlet (D) lines.
6. Tighten fluid outlet fitting (D), then tighten locknut (218) by hitting firmly with a non-sparking hammer.
7. Open fluid inlet valve (52). Set function knob to Slow Recirc . Purge air and prime. See **Purge Air and Flush the Fluid Lines**, page 20.



Flat side faces up. Tighten by hitting firmly with non-sparking hammer.

Lubricate threads with ISO oil or grease.

FIG. 12 Displacement Pump

Control Module

Change Display Temperature Units (°F/°C)



The unit is shipped with the temperature displays set to °F.

1. Shut off Motor Power. Disconnect the power supply.



2. Remove the access cover (39) from the back of the control module.
3. See FIG. 13, page 39. Locate the slide switch (FC) at the right edge of each temperature display board. The unit is shipped set to °F (down). To change to °C, move both switches to the up position.

Calibrate Temperature Displays



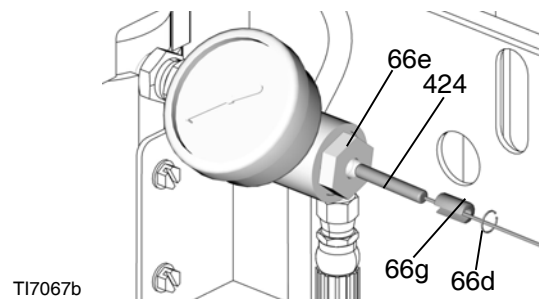
1. Remove the access cover (39) from the back of the control module.
2. See FIG. 13, page 39. Locate the calibration screw (CS) at the upper right corner of each temperature display board. Turn the screw slightly to correct the temperature display.

NOTE: The temperature displays do not read lower than 50°F (10°C).

Replace Temperature Display and Sensor (Heated Units Only)

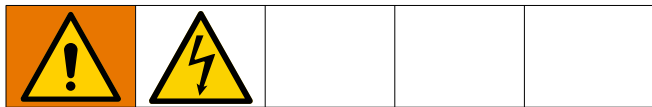


1. Follow **Before Beginning Repair**, page 35.
2. Follow the **Pressure Relief Procedure**, page 21.
3. Remove the temperature sensor (424):
 - a. Remove the snap ring (66d) in the thermowell housing (66e).
 - b. Pull the sensor (424) and the spacer (66g) out of the thermowell housing.
 - c. Work the sensor and wire out of the cable channel between the tanks. It may be easier to remove one tank. See **Remove Supply Tanks**, page 35.
4. Remove the access cover (39) from the back of the control module.
5. Disconnect the temperature display power cable from J14 or J15 at the bottom left of the control board (406).
6. Remove four screws from the rear panel studs and remove the temperature display (403) from the front plate (401).
7. Remove the screw and nut (409) holding the display to plate (403).
8. Pull the sensor cable through the split in the bushing (411).
9. Reassemble in reverse order. Mount the temperature display so the heater power switch off (0) position is at the left when facing the control panel.



TI7067b

Replace Function Knob/Potentiometer



1. Follow **Before Beginning Repair**, page 35.
2. Follow the **Pressure Relief Procedure**, page 21.
3. Remove the access cover (39) from the back of the control module.
4. Disconnect the potentiometer wires from J2 on the control board (406). See FIG. 14, page 41.
5. See FIG. 13. Remove the two setscrews (416a) and pull the function knob (416) off of the potentiometer (404) shaft.
6. Remove the nut (N, part of 404) and the detent plate (415).
7. Install the new potentiometer (404) in reverse order. Position the potentiometer so the slot (S) is horizontal. Position the knob (416) so the pointer (P) faces up. Install the knob on the shaft so the slot (S) engages the alignment pin in knob. Push the knob onto the shaft against the detent spring before tightening the setscrews (416a).
8. Reconnect the potentiometer wires to J2 as shown in FIG. 14, page 41.

Detail of Function Knob/Potentiometer

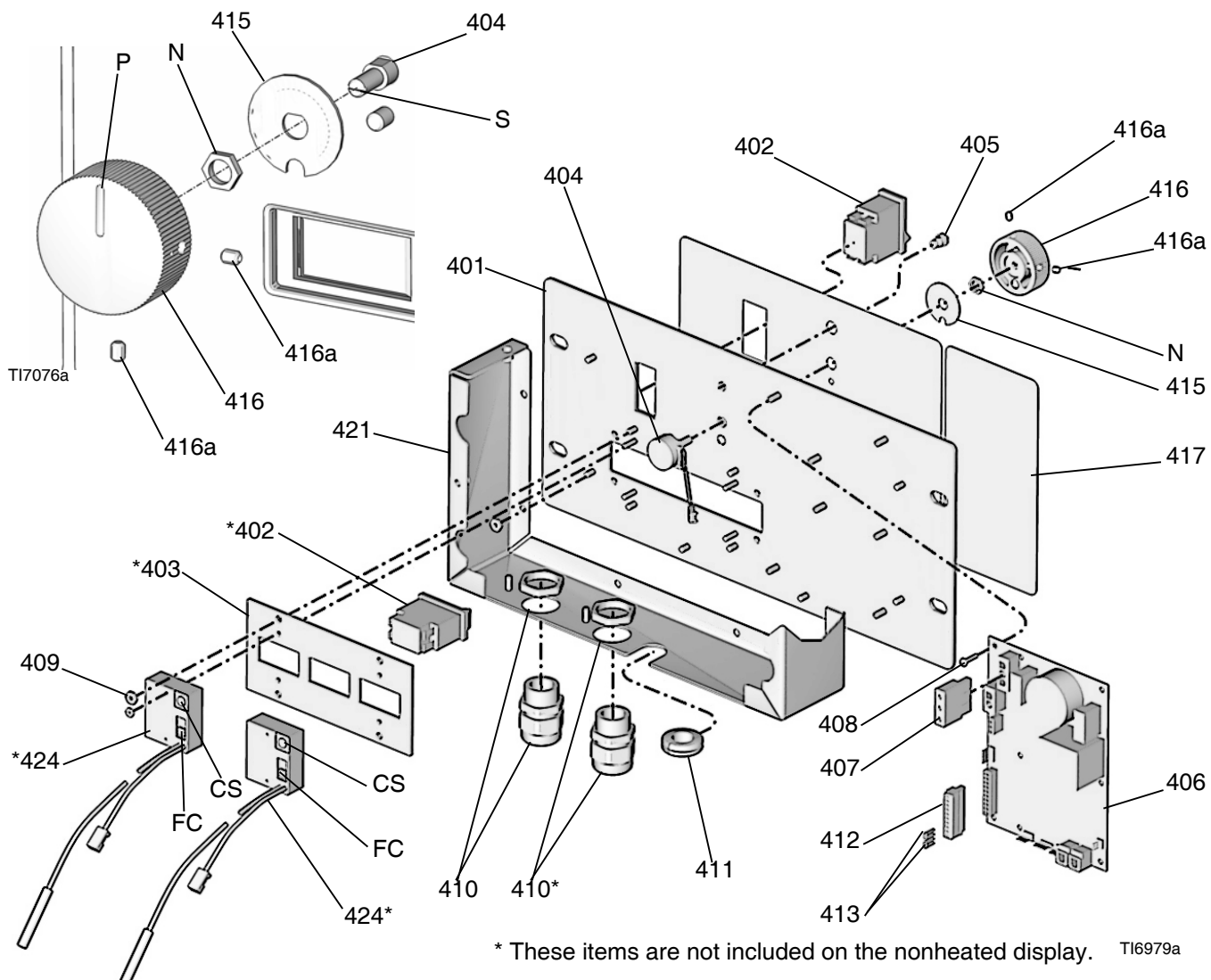


FIG. 13 Control Module (Heated Model Shown)

Control Board

Power Bootup Check



There is one red LED (D11) on the board. Power must be on to check. See FIG. 14 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



1. Check the motor before replacing the board. See **Electric Motor**, page 45.
2. See **Before Beginning Repair**, page 35.
3. Relieve the pressure. Follow the **Pressure Relief Procedure**, page 21.
4. Remove the access cover (39) at the back of the control module to expose the control board (406).

5. Disconnect all cables and connectors from the board. Remove two jumper wires (413) from J10 pins 7-8 and 9-10.
6. Remove the screws (408) and remove the board from the control module.
7. Install the 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.

Table 6: Control Board Connectors
(see FIG. 14)

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)
J14	n/a	B temperature display
J15	n/a	A temperature display

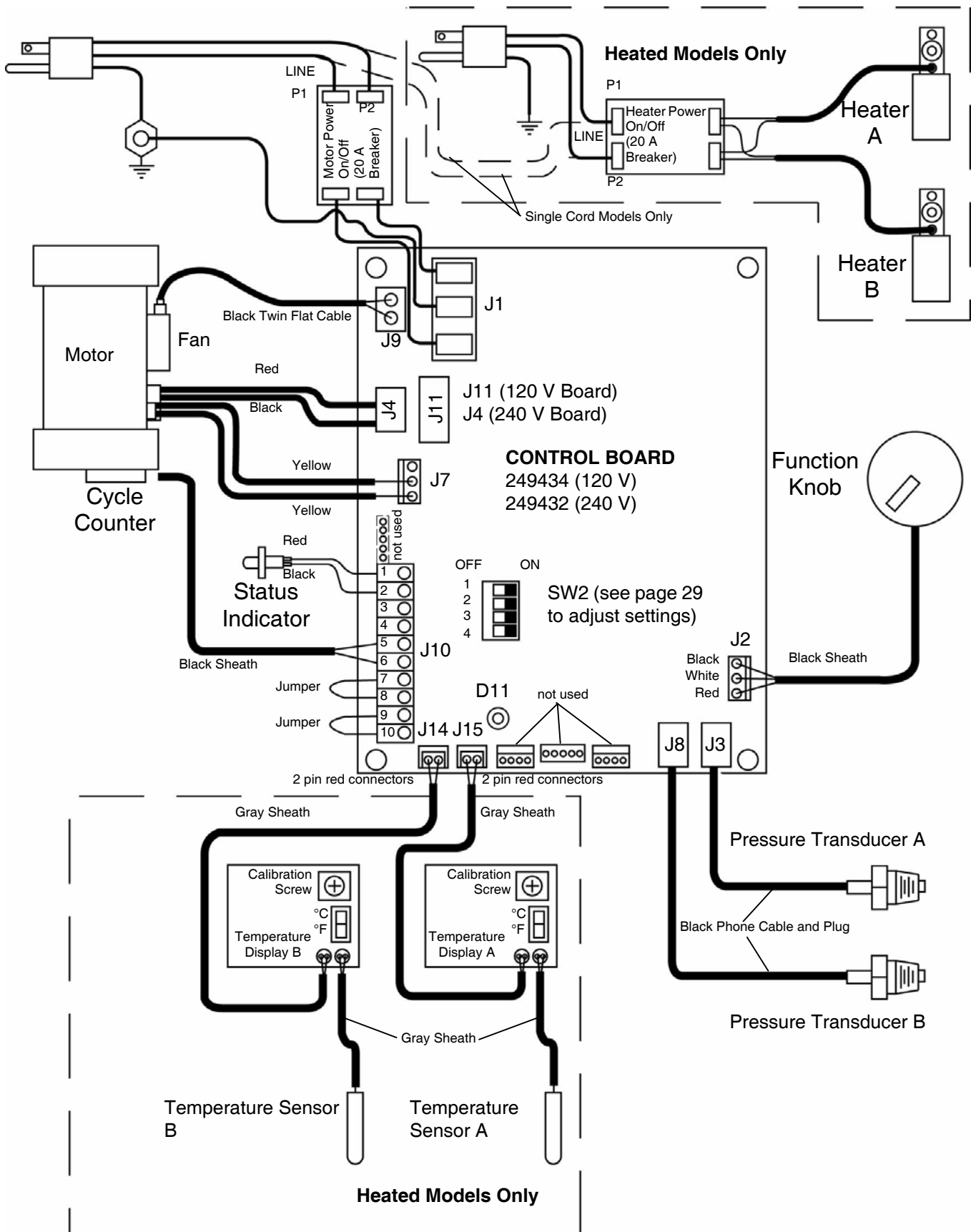


FIG. 14 Control Module Wiring Connections

Fluid Heaters (if supplied)



See your heater manual for repair and parts information, which is supplied with heated units.

1. Follow **Before Beginning Repair**, page 35.
2. Follow the **Pressure Relief Procedure**, page 21.



3. The control section of the heater can be repaired in place. Remove the heater to clean the fluid section. See your manual for repair and parts information.

Pressure Transducers



1. Follow **Before Beginning Repair**, page 35.
2. Follow the **Pressure Relief Procedure**, page 21.
3. Remove the access cover (39) at the back of the control module to expose control board (406).
4. Disconnect the transducer cables from J3 and J8 at the board. See FIG. 14, page 41. Reverse A and B connections and check if the status code follows the bad transducer. See **Status Code 3: Transducer A Failure**, page 30.
5. Reconnect the good transducer to the proper connector. Disconnect the failed transducer from the board, and unscrew from the base of the fluid heater (heated units) or transducer manifold (nonheated units).
6. Install the o-ring (60) on the new transducer (58), FIG. 15, page 42.
7. Install the transducer in the heater or manifold. Mark the board end of cable with tape (red= transducer A, blue= transducer B).
8. Route the cable through the channel to the control module.
9. Connect the transducer cable at the board; see FIG. 14, page 41.

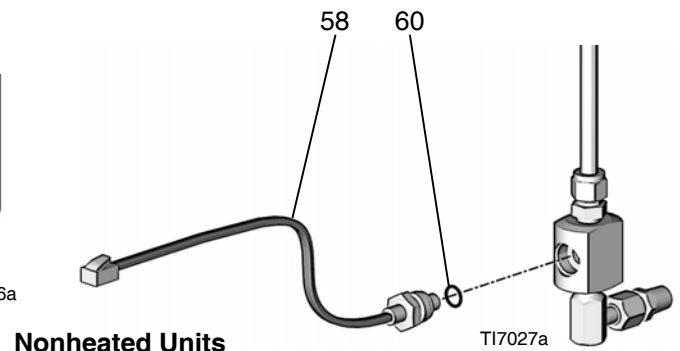
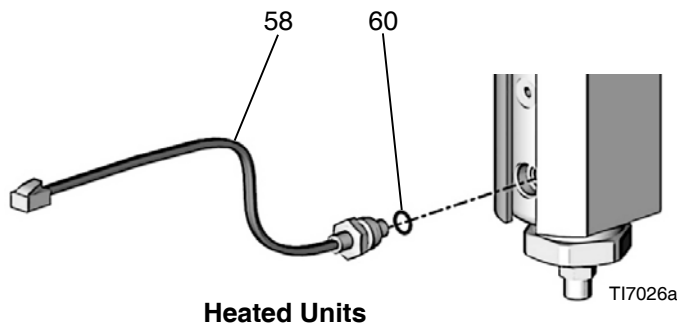


FIG. 15 Transducers

Drive Housing

Removal



1. See **Before Beginning Repair**, page 35.
1. Relieve the pressure. Follow the **Pressure Relief Procedure**, page 21.
2. Remove the screws (207) and end covers (221, 227), FIG. 16, page 44.

NOTE: Examine the connecting rod (216). If the rod needs replacing, first remove the pump (219). See **Displacement Pump**, page 37

NOTICE

Do not drop the gear reducer (214) and crankshaft (210) when removing the drive housing (215). These parts may stay engaged in the motor end bell (MB) or may pull away with the drive housing. Dropping the gear reducer and crankshaft can damage or break teeth on the gear. Damaged teeth can cause further damage to the gear and to the mating components. The performance of the system could be diminished or the system could function improperly.

3. Disconnect the pump inlet and outlet lines. Remove the screws (220) and pull the drive housing (215) off of the motor (201). The connecting rod (216) will disengage from the crankshaft (210).
4. Examine the crankshaft (210), gear reducer (214), thrust washers (208, 212), and bearings (209, 211, 213).

Installation

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

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

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

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

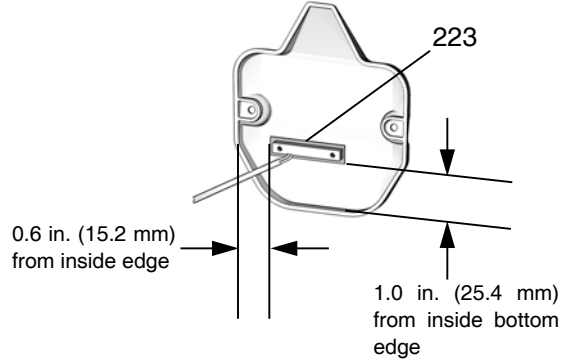
NOTE: The crankshaft (210) must be in line with the crankshaft at other end of the motor. The pumps will move up and down together.

NOTE: If the connecting rod (216) or pump (219) were removed, reassemble the rod in the housing and install the pump. See **Displacement Pump**, page 37.

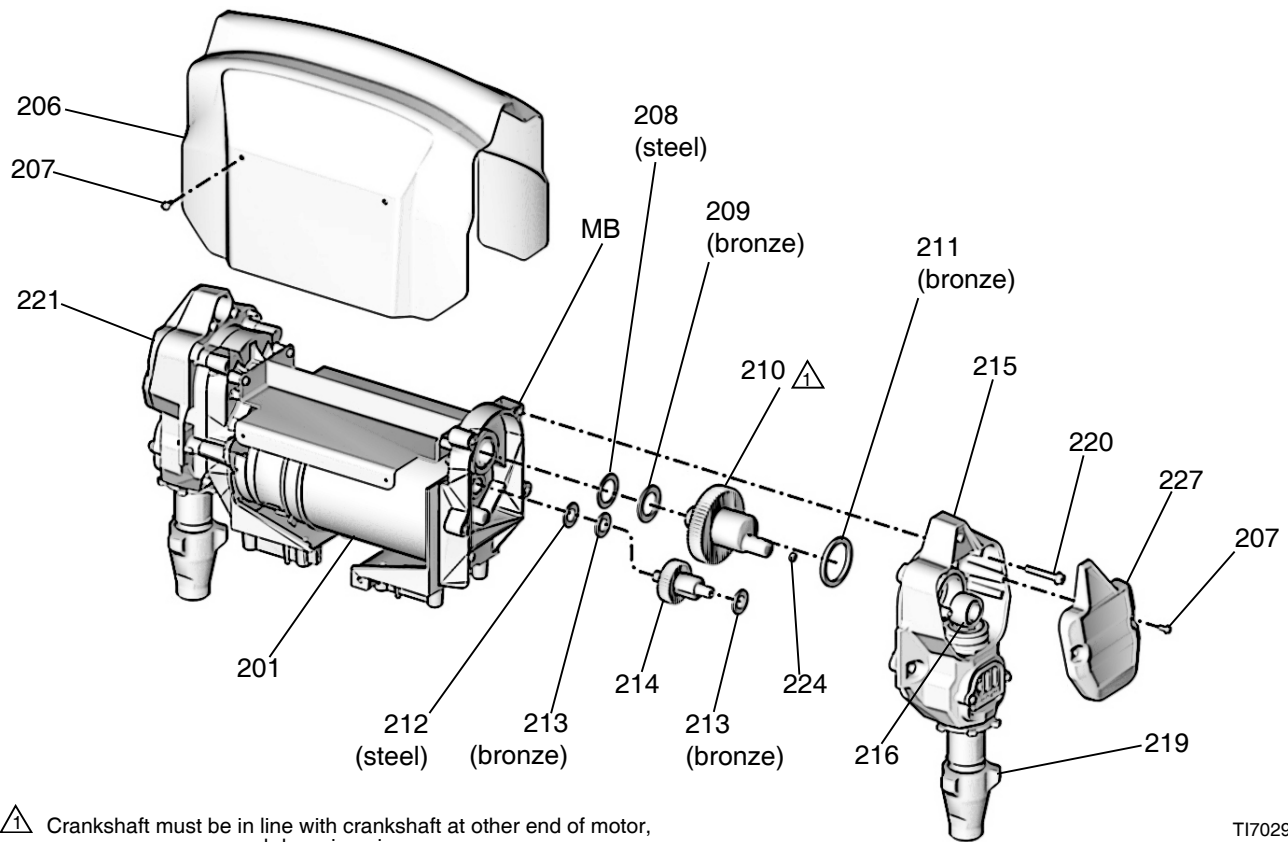
5. Push the drive housing (215) onto the motor (201). Install the screws (220).
6. Install the drive housing covers (221 on A side, 227 on B side) and the screws (207). The pumps must be in phase (both at same position in stroke).

Cycle Counter Switch Replacement

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



T17028a



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

T17029a

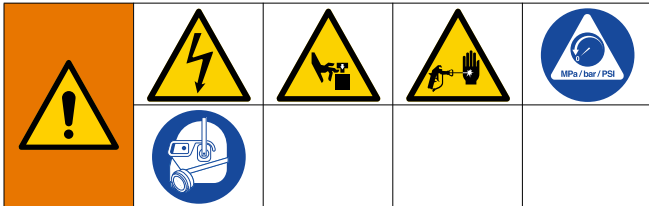
Fig. 16 Drive Housing

Electric Motor

Test Motor

If the motor is not locked up by pumps, it can be tested using a 9 V battery. Open the recirculating valves, disconnect J4 or J11 from the control board, see FIG. 14, page 41. Touch jumpers from battery to the motor connections. The motor should turn slowly and smoothly.

Removal



NOTE: If replacing a component with electrical cabling, remove one supply tank. See **Remove Supply Tanks**, page 35.

1. See **Before Beginning Repair**, page 35.
1. Relieve the pressure. Follow the **Pressure Relief Procedure**, page 21.
2. Remove four screws (207) and the shroud (206). See FIG. 16, page 44.
3. Remove the drive housing. See **Drive Housing**, page 43.
4. Disconnect the motor cables as follows:
 - a. Find the control board at the back of the control module, see FIG. 14, page 41.
 - b. Unplug the motor power connector from J4 (240 V units) or J11 (120 V units).
 - c. Unplug the motor temp switch harness from connector J7.
 - d. Unplug the cable (37) from the fan (202). See FIG. 17, page 46.
 - e. Thread the motor power switch harness out of the bottom of the control module and cable channel, to free the motor.

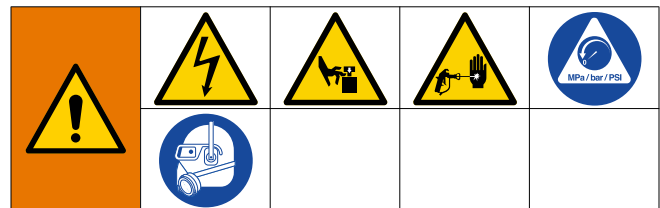
NOTE: The motor is heavy and may require two people to lift.

5. Remove the screws holding the motor to bracket. Lift the motor off unit.

Installation

1. If replacing the motor, install the fan assembly and fan mount threaded bushing on the new motor.
2. Place the motor and fan on the unit. Thread the motor switch harness into the control module.
3. Fasten the motor with screws underneath. Do not tighten yet.
4. Plug 3-pin connector J7 to the board.
5. Plug the motor power switch harness to the connector J4 (240 V units) or J11 (120 V units).
6. Install the drive housing. See **Drive Housing**, page 43. Reconnect the inlet assemblies to the pumps.
7. Tighten the motor mounting screws.
8. Return to service.

Motor Brushes



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

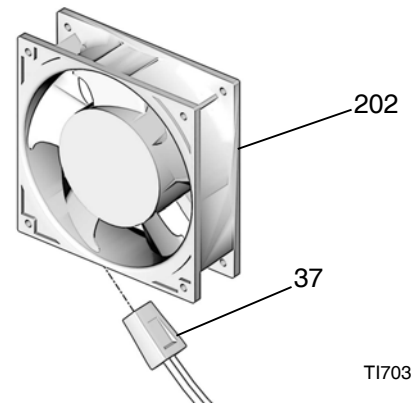
NOTE: The motor commutator should be smooth. If not, resurface the commutator or replace motor.

1. See **Before Beginning Repair**, page 35.
2. Relieve the pressure. Follow the **Pressure Relief Procedure**, page 21.
3. See your brush repair kit instruction sheet. Remove the old brushes and install new ones supplied in kit.

Fan



1. Disconnect the fan cable (37) from the fan (202). With Motor Power on, test the cable connector for line voltage (120 V or 240 V).
2. **If voltage is correct:** the fan is defective. Remove the screws holding the fan to the shield (206). Install the new fan in reverse order.
3. **If voltage is not correct:** check the fan cable connection at J9 on the control board; see FIG. 14, page 41.



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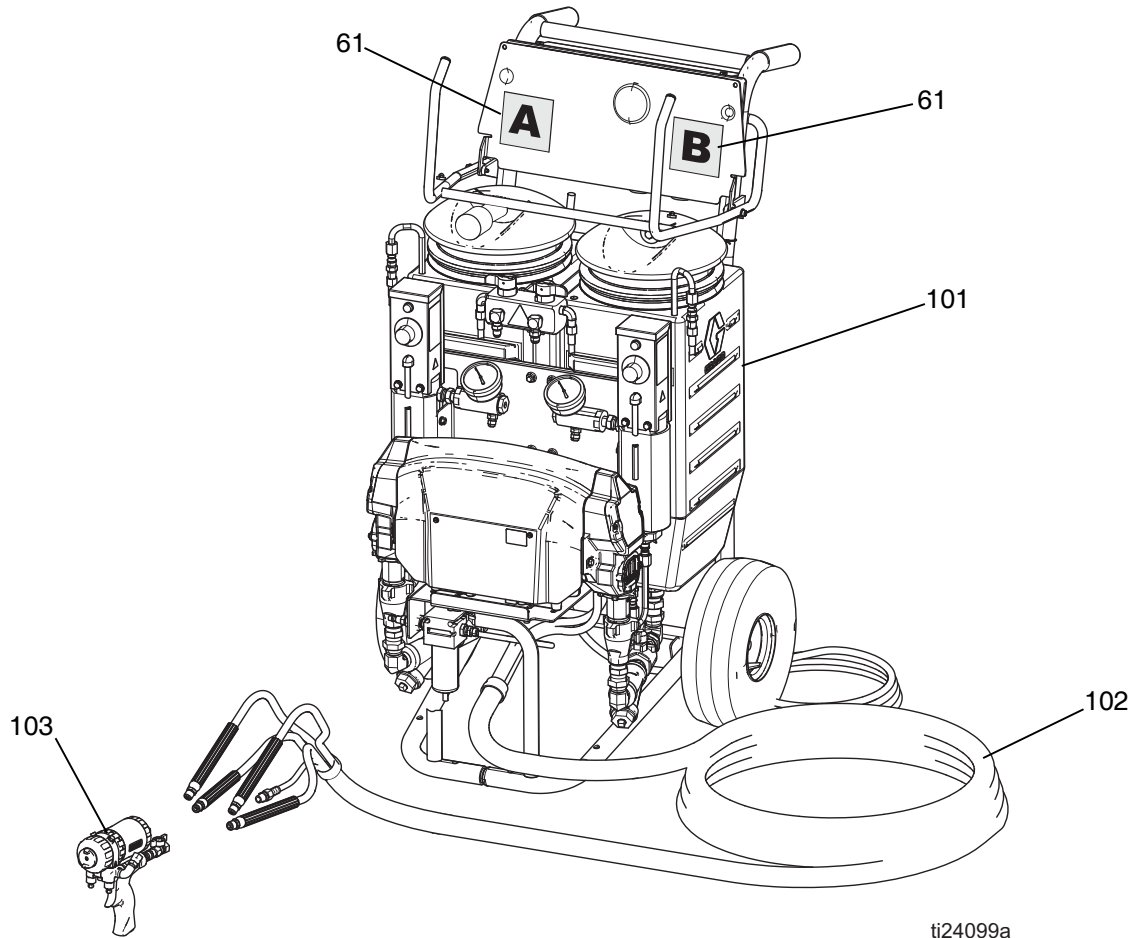
FIG. 17

Parts

Part AP9570 or CS9570, 120 V, 15 A, Heated Package

Part AP9571 or CS9571, 240 V, 10 A, Heated Package

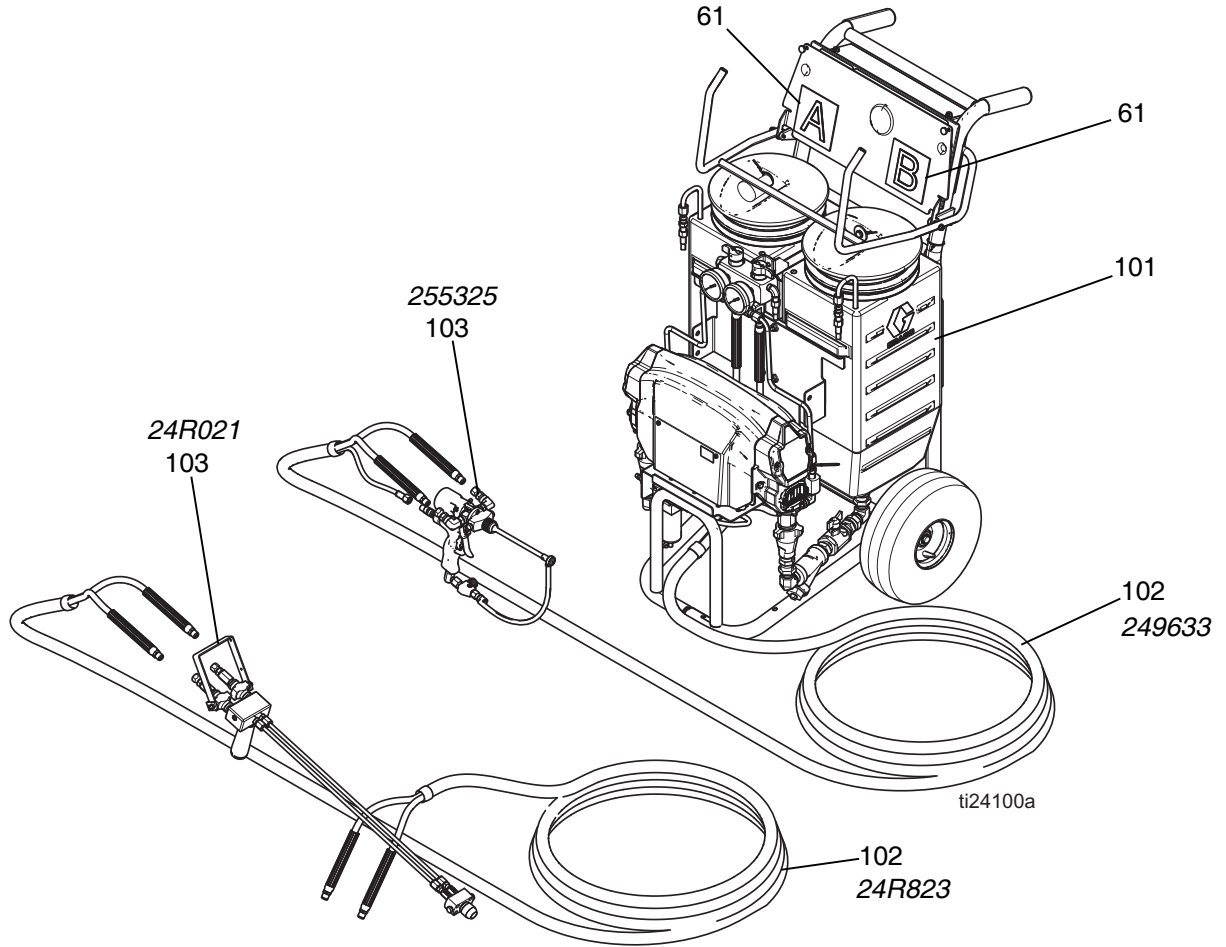
Part AP9572 or CS9572, 240 V, 20 A, Heated Package



ti24099a

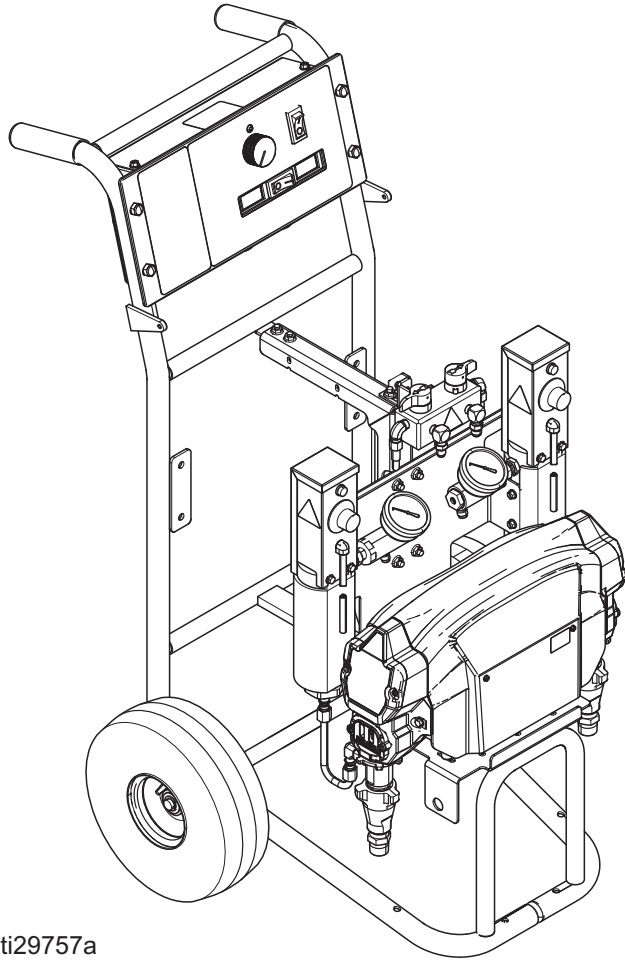
Proportioner	Description	101	102	103
AP9570	120 V, 15 A, Heated Package	249570 see page 54	249499 see page 58	249810 see 309550
CS9570				CS22WD see 312666
AP9571	240 V, 10 A, Heated Package	249571 see page 54	249499 see page 58	249810 see 309550
CS9571				CS22WD see 312666
AP9572	240 V, 20 A, Heated Package	249572 see page 54	249499 see page 58	249810 see 309550
CS9572				CS22WD see 312666

Part 249806, 120 V, 15 A, Nonheated Package, MD2
 Part 249808, 240 V, 10 A, Nonheated Package, MD2
 Part 24R984, 120 V, 15 A, Nonheated Package, 2K Dispense
 Part 24R985, 240 V, 10 A, Nonheated Package, 2K Dispense



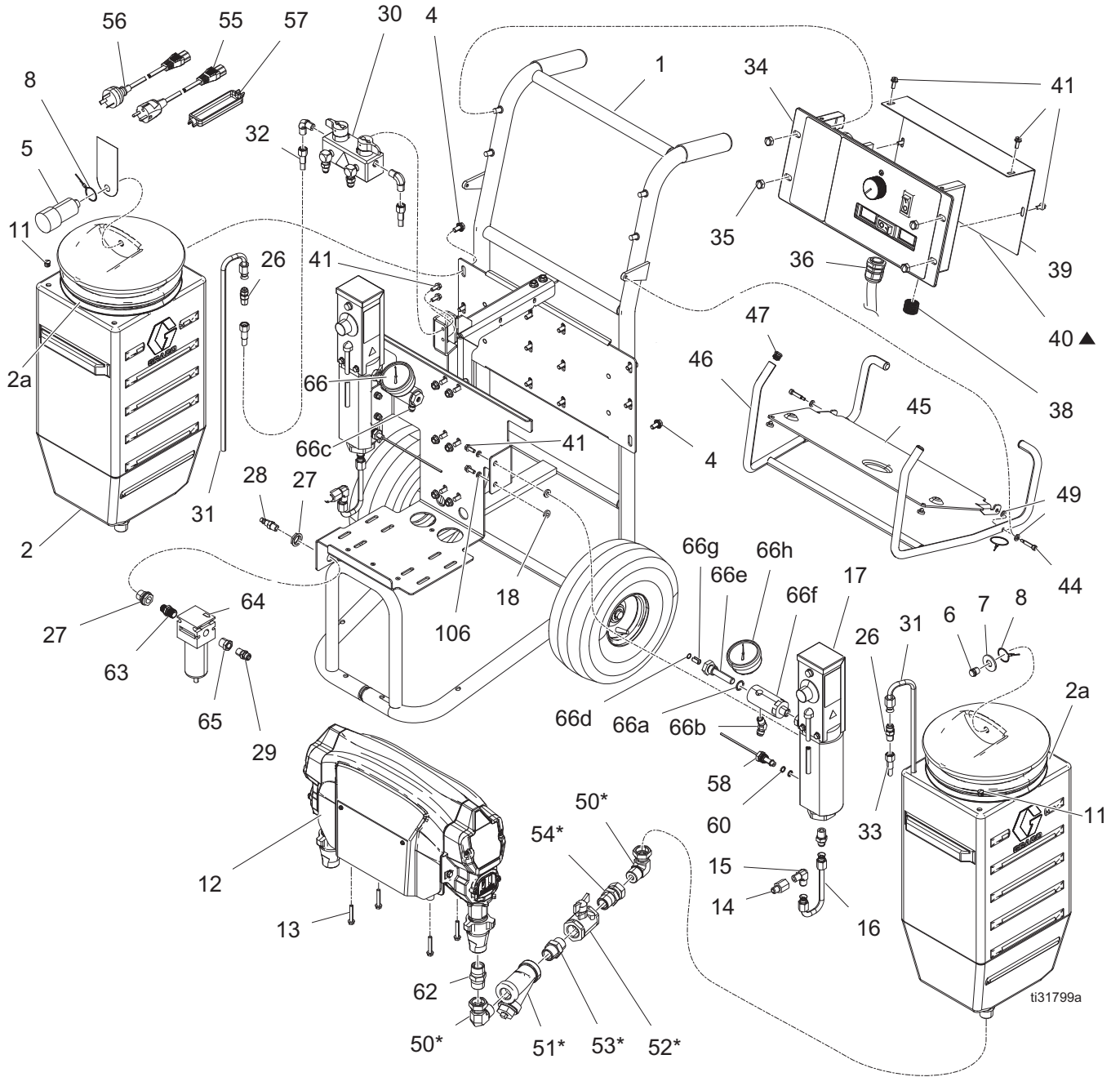
Ref.	Part	Description	Quantity			
			249806	249808	24R984	24R985
101	249576	PROPORTIONER, nonheated, 120 V, 15 A; see page 56; 249806 only	1		1	
	249577	PROPORTIONER, heated, 240 V, 10 A; see page 56; 249808 only		1		1
102	249633	HOSE BUNDLE, non-insulated; see page 58	1	1		
	24R823	HOSE BUNDLE; see page 58			1	1
103	255325	GUN, MD2 Cold Spray; see 312185 and 3A2910	1	1		
	24R021	VALVE, dispense, 2K			1	1

Part 25C350, 240 V, 20 A, OEM Package



ti29757a

Part 249570, 120 V, 15 A, Heated Proportioner
Part 249571, 240 V, 10 A, Heated Proportioner
Part 249572, 240 V, 20 A, Heated Proportioner



Heated Proportioners

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	24R382	CART; see page 62	1	34	24L004	DISPLAY, heated, 120 V; Model 249570; see page 59	1
2	24L000	TANK, with lid and outlet fitting; LDPE; includes item 2a	2		24L005	DISPLAY, heated, 240 V; Models 249571 and 249572; see page 59	1
2a	15F895	O-RING, lid, tank	1				
4	111800	SCREW, cap, hex hd; 5/16-18 x 5/8 in. (16 mm)	12	35	117623	NUT, cap; 3/8-16	4
5	24K984	DRYER, desiccant	1	36	24K995	CORD, 120 V; Model 249570	2
6	24K976	MUFFLER, vent	1		24K997	CORD, 240 V; Model 249571	2
7	101044	WASHER, plain; 1/2 in. (13 mm)	1		24K996	CORD, 240 V; Model 249572	1
8	119973	LANYARD; 14 in. (356 mm); sst	2	37	15G458	CABLE, fan; see page 58	1
11	119993	PLUG	2	38		CONDUIT, flexible; non-metallic	1
12	287655	PROPORTIONER, bare, 120 V; Model 249570; see page 58	1	39	15G385	COVER, access, display	1
	287656	PROPORTIONER, bare, 240 V; Models 249571 and 249572; see page 53	1	40▲	15G280	LABEL, warning	1
13	117493	SCREW, machine, hex washer hd; 1/4-20 x 1-1/2 in. (38 mm)	4	41	108296	SCREW, machine, hex washer hd; 1/4-20 x 5/8 in. (16 mm)	10
14	116393	ADAPTER; 1/4 npt (m x f)	2	43	217374	LUBRICANT, ISO pump; not shown	1
15	556765	ELBOW; 1/4 npt(m) x 3/8 JIC	2	44		BOLT; 10-24 x 1 in. (25 mm)	2
16	24K998	TUBE, fluid	2	45	15G119	GUARD, splash	1
17	24L007	HEATER, fluid, 120 V; Model 249570; includes items 58 and 60; see 311210	2	46	15G461	RACK, hose	1
	24L008	HEATER, fluid, 240 V; Models 249571 and 249572; includes items 58 and 60; see 311210	2	47		PLUG	4
18	167002	INSULATOR, heat	4	48	109510	STRAP, bungee; 25 in. (635 mm)	2
26	116704	ADAPTER, B side; 3/8 JIC x 1/4 npt(m)	2	49		WASHER, flat; 1/4 in.; nylon	4
27	104641	BULKHEAD FITTING	1	50*	160327	ELBOW, swivel; 3/4 npt(m) x 3/4 npsm(f)	2
28	169970	FITTING, air line; 1/4 npt(m)	1	51*	101078	Y-STRAINER; includes item 51a	2
29	162453	NIPPLE; 1/4 npt x 1/4 npsm	1	51a	26A349	KIT, filter, replacement (2 pack)	1
30	24L009	MANIFOLD, recirculation, with valves; see page 61	1		26A350	KIT, filter, replacement (10 pack)	1
31	15V421	TUBE, recirculation; 3/8 (10 mm) OD; sst	2	52*	119882	VALVE, ball; 3/4 npt (fbe), t-handle	2
32	249629	HOSE, component A (ISO); 1/4 in. (6 mm) ID; thermoplastic hose with moisture guard; 1/4 npsm(f) x 48 in. (1219 mm)	1	53*	C20487	NIPPLE; 3/4 npt	2
33	249630	HOSE, component B (RES); 1/4 in. (6 mm) ID; thermoplastic hose; 1/4 npsm(f) x 48 in. (1219 mm)	1	54*	157785	UNION, swivel; 3/4 npt(m) x 3/4 npsm(f)	2
				55	242001	ADAPTER, cord; Europe; Model 249571 only	2
				56	242005	ADAPTER, cord; Australia; Model 249571 only	2
				57	195551	RETAINER, plug, adapter; Model 249571 only	2
				58	24K999	TRANSDUCER, pressure; included with item 17	2
				60	111457	O-RING; ptfе; included with item 17	2

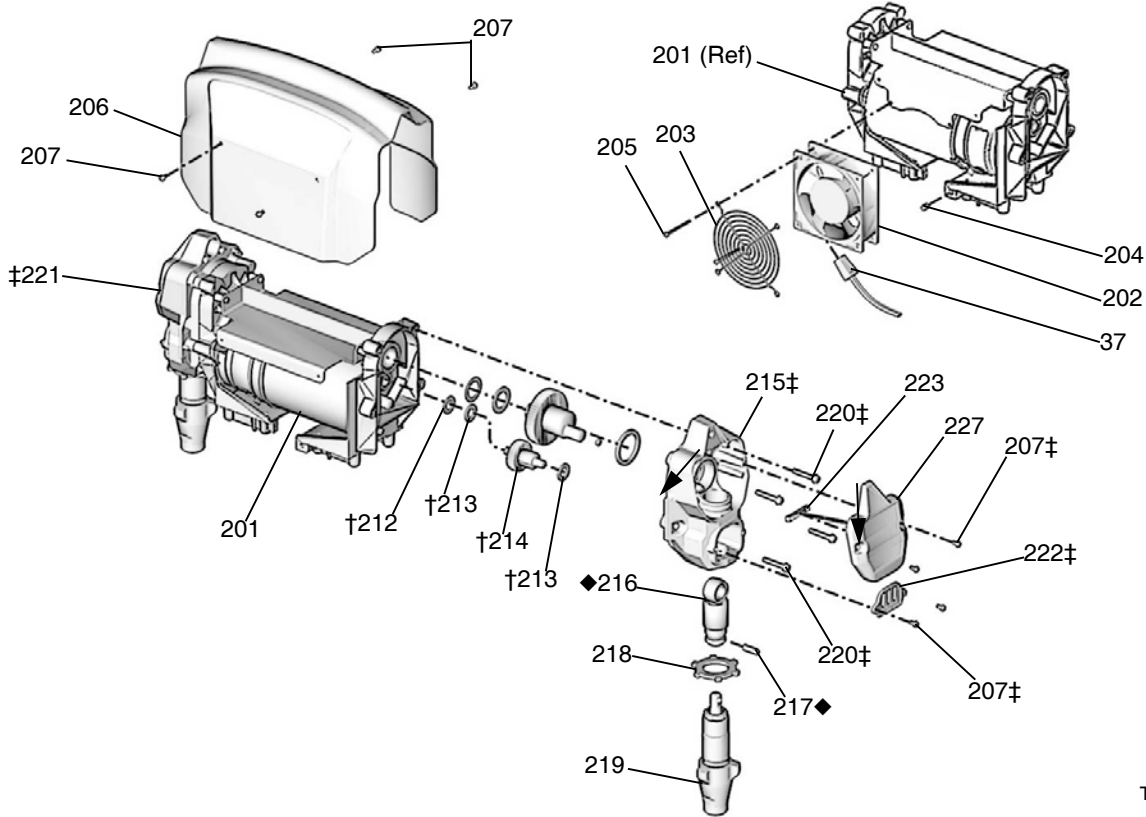
Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
61	15G476	LABEL, components A and B; see page 47	2	66	24E555	KIT, temperature sensor	2
62	119992	NIPPLE, pump inlet; 3/4 npt	2	66a‡	121063	O-RING, fluroelastomer	1
63	157350	NIPPLE; 1/4 npt x 3/8 npt	1	66b‡	123787	FITTING, elbow, 45°; 3/8 jic x 1/4-18 npt	1
64	24K977	AIR FILTER/SEPARATOR, with 3/8 npt auto drain; includes item 2a	1	66c‡	123788	FITTING, elbow, 45°; 5/16 jic x 1/4-18 npt	1
64a	114228	. ELEMENT, 5 micron; polypropylene; not shown	1	66d‡	555561	RING, retaining, 3/8	1
65	100176	BUSHING; 3/8 npt(m) x 1/4 npt(f)	1	66e‡	16C785	HOUSING, thermowell	1
				66f‡	16C786	MANIFOLD, fluid	1
				66g‡	16C787	SPACER, sensor	1
				66h‡	113641	GAUGE, pressure, fluid; sst	1
				106	100016	WASHER, lock	4

* Included in 287718 Pump Inlet Kit (one side).

‡ 24E555 Kit includes "A" and "B" side adapters. Install required fittings as needed.

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

Part 287655, 120 V Bare Proportioner
Part 287656, 240 V Bare Proportioner



T16978a

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
201	24E355	MOTOR, electric; 120 V	1	217◆	196762	PIN, straight	2
	24E356	MOTOR, electric; 240 V		218	195150	NUT, jam, pump	2
202	24K985	FAN, cooling; 120 V	1	219	24L006	PUMP, displacement; see 311076	2
	24K986	FAN, cooling; 240 V	1	220†	117493	SCREW, machine, hex washer hd; 1/4-20 x 1-1/2 in. (38 mm)	8
203	115836	GUARD, finger	1	221‡	15B254	COVER, drive housing, A side	1
204		RIVET, blind; 5/32 x 3/8 grip	1	222‡	15B589	COVER, pump rod	2
205		SCREW, machine, slotted hd; 8-32 x 2 in. (51 mm)	3	223	117770	SWITCH, reed, w/cable	1
206	24L003	SHIELD, proportioner	1	224	24K982	MAGNET	1
207‡	115492	SCREW, machine, hex washer hd; 8-32 x 3/8 in. (10 mm)	12	227	249854	COVER, drive housing, B side; includes item 223 and 228	1
208*	116074	WASHER, thrust; steel	2	228	115711	TAPE, mounting, reed switch; not shown	1
209*	107434	BEARING, thrust; bronze	2				
210*	248231	CRANKSHAFT KIT	2				
211*	180131	BEARING, thrust; bronze	2				
212†	116073	WASHER, thrust; steel	2				
213†	116079	BEARING, thrust; bronze	4				
214†	287057	GEAR REDUCER KIT	2				
215‡	287055	DRIVE HOUSING KIT	2				
216◆	287053	CONNECTING ROD KIT	2				

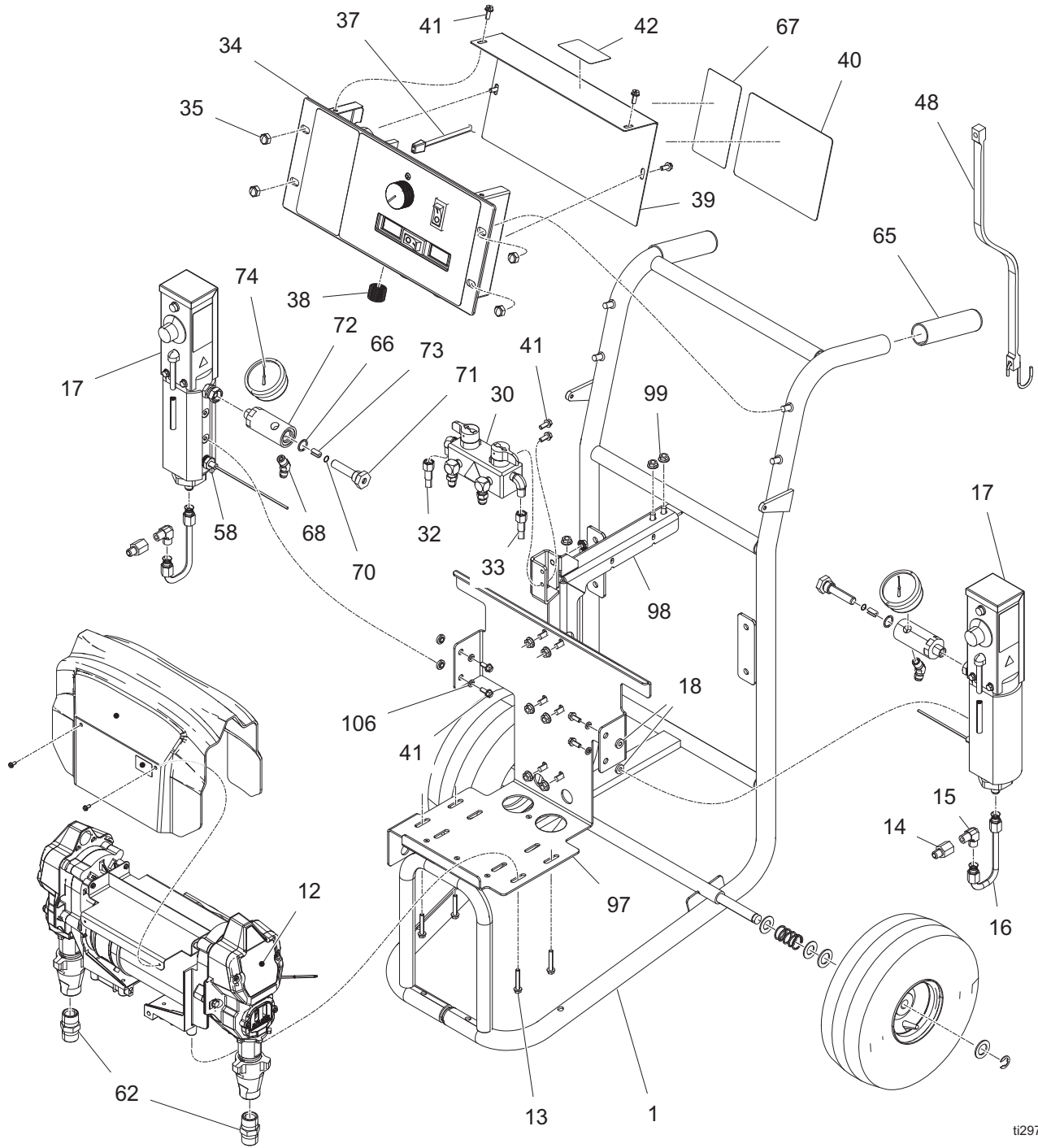
* Included in 248231 Crankshaft Kit.

† Included in 244242 Gear Reducer Kit.

‡ Included in 287055 Drive Housing Kit.

◆ Included in 287053 Connecting Rod Kit.

Part 25C350, 240 V, 20 A, OEM Proportioner



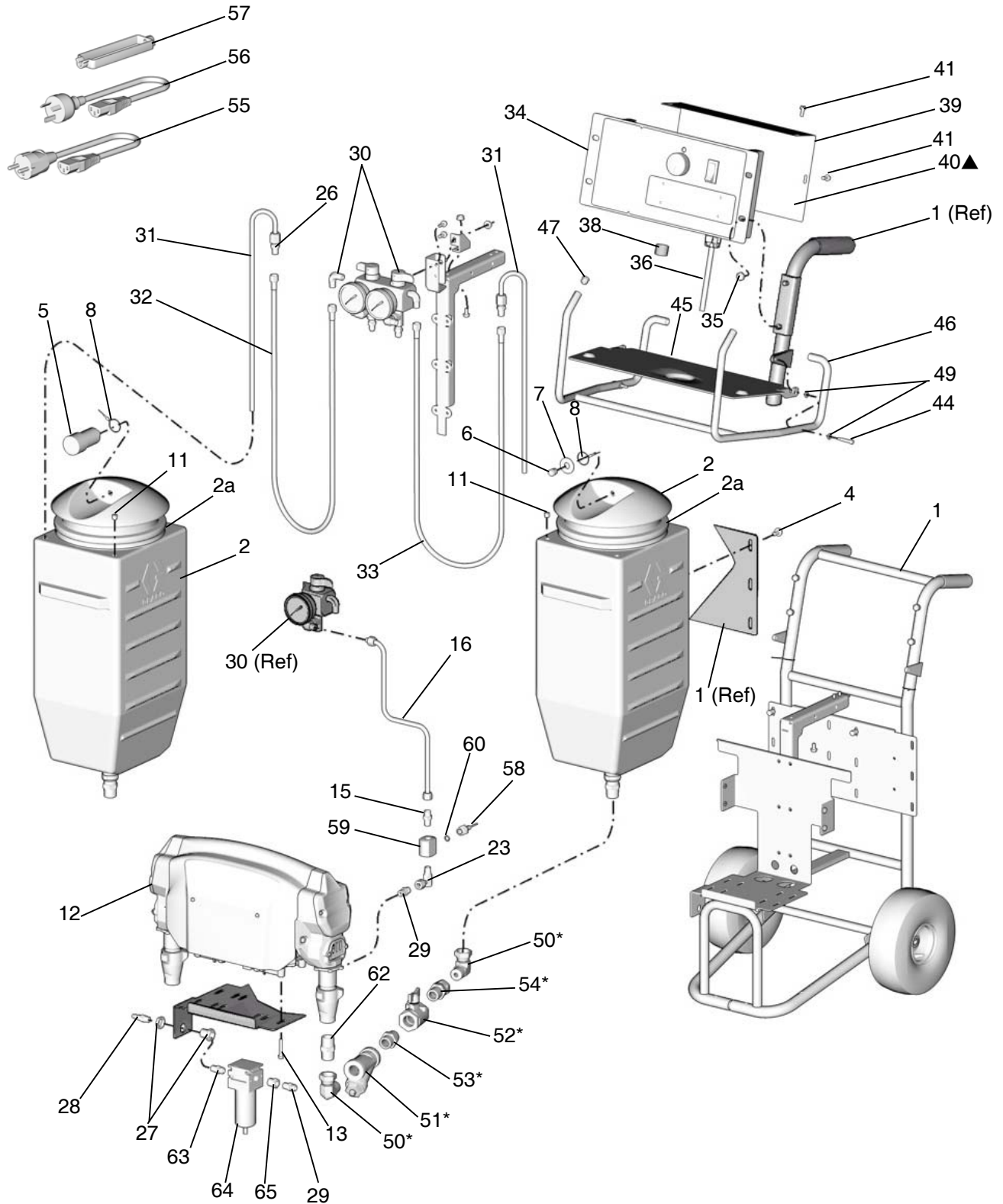
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OEM Proportioner

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	24R382	CART, painted, E-10, see page 62	1	36	24K997	CORD, 240 V-20A	1
12	287656	PROPORTIONER, 240V, E10, see page 50	1	37	15G458	CABLE, fan, 46 in. with plug/board conn, see page 50	1
13	117493	SCREW, mach, hex washer hd	4	38	114601	CONDUIT, flexible, non-metallic	1
14	116393	FITTING, straight 1/4 npt	2	39	15G385	COVER, access, display, E10, paint	1
15	556765	FITTING, elbow, 3/8 t x 1/4 mp	2	40▲	15G280	LABEL, safety, warning, multiple	1
16	24K998	TUBE, fluid, inlet	2	41	108296	SCREW, mach, hex wash hd	10
17	24L008	HEATER, fluid, 240V, E10, (see manual 311210)	2	43	217374	LUBRICANT, iso pump	1
18	167002	INSULATOR, heat	4	48	109510	STRAP, rubber	2
19	121063	O-RING, 908 FKM	2	58	24K999	TRANSDUCER, pressure	2
20	16C786	MANIFOLD, fluid	2	66	121063	O-RING, fluoroelastomer	1
21	16C785	HOUSING, thermo sensor	2	67	15G719	LABEL, status codes, E-10	1
22	16C787	SPACER, sensor	2	68	123787	FITTING, elbow, 45°; 3/8 jic x 1/4-18 npt	2
23	123787	FITTING, elbow, 45 deg, 3/8 jic x 1/4 npt	1	70	555561	RING, retaining, 3/8	1
24	113641	GAUGE, pressure, fluid, sst	2	71	16C785	HOUSING, thermowell	1
25	123788	FITTING, elbow, 45 deg, 5/16 jic x 1/4 np	1	72	16C786	MANIFOLD, fluid	1
30	287712	MANIFOLD, recirc, w/valves	1	73	16C787	SPACER, sensor	1
32	249629	HOSE, cpld, 1/4 in. x 48 in., moistguard	1	74	113643	GAUGE, pressure, fluid, sst	1
33	249630	HOSE, cpld, 1/4 in. x 48 in., resin	1	77	15W625	LABEL, cord	1
34	24L005	DISPLAY, E-10, heated, 240V	1	82	555561	RING, retainer -37 basic int	2
35	117623	NUT, cap (3/8-16)	4	106	100016	WASHER, lock	4

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

Part 249576, 120 V, Nonheated Proportioner
Part 249577, 240 V, Nonheated Proportioner



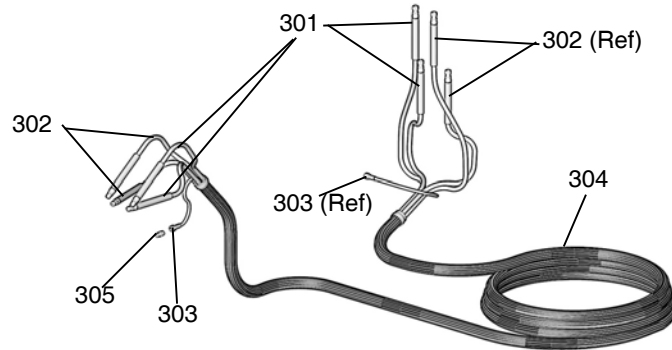
Nonheated Proportioners

Ref. Part	Description	Qty.	Ref. Part	Description	Qty.	
1	24R382	CART; see page 62	1	37 15G458	CABLE, fan; see page 58	1
2	24L000	TANK, with lid and outlet fitting; LDPE; includes item 2a	2	38	CONDUIT, flexible; non-metallic	1
2a	15F895	O-RING, lid, tank	1	39 15G385	COVER, access, display	1
4	111800	SCREW, cap, hex hd; 5/16-18 x 5/8 in. (16 mm)	12	40▲ 15G280	LABEL, warning	1
5	24K984	DRYER, desiccant	1	41 108296	SCREW, machine, hex washer hd; 1/4-20 x 5/8 in. (16 mm)	6
6	24K976	MUFFLER, vent	1	43 217374	LUBRICANT, ISO pump; not shown	1
7	101044	WASHER, plain; 1/2 in. (13 mm)	1	44	BOLT; 10-24 x 1 in. (25 mm)	2
8	119973	LANYARD; 14 in. (356 mm); sst	2	45 15G119	GUARD, splash	1
11	119993	PLUG	2	46 15G461	RACK, hose	1
12	287655	PROPORTIONER, bare, 120 V; Model 249576; see page 58	1	47	PLUG	4
	287656	PROPORTIONER, bare, 240 V; Model 249577; see page 53	1	48 109510	STRAP, bungee; 25 in. (635 mm)	2
13	117493	SCREW, machine, hex washer hd; 1/4-20 x 1-1/2 in. (38 mm)	4	49	WASHER, flat; 1/4 in.; nylon	4
15	116702	UNION; 1/4 npt(m) x 3/8 JIC	2	50* 160327	ELBOW, swivel; 3/4 npt(m) x 3/4 npsm(f)	2
16	15V420	TUBE, fluid	2	51* 101078	Y-STRAINER; includes item 51a	2
23	126960	ELBOW, swivel; 1/4 npt(m) x 1/4 npsm(f)	2	51a 26A349	KIT, filter, replacement (2 pack)	1
				26A350	KIT, filter replacement (10 pack)	1
25	119998	ADAPTER, A side; 1/2 JIC x 1/4 npt(m)	1	52* 119882	VALVE, ball; 3/4 npt (fbe), t-handle	2
26	116704	ADAPTER, B side; 3/8 JIC x 1/4 npt(m)	3	53* C20487	NIPPLE; 3/4 npt	2
27	104641	BULKHEAD FITTING	1	54* 157785	UNION, swivel; 3/4 npt(m) x 3/4 npsm(f)	2
28	169970	FITTING, air line; 1/4 npt(m)	1	55 242001	ADAPTER, cord; Europe; Model 249577 only	1
29	C20479	NIPPLE; 1/4 npt x 1/4 npsm	3	56 242005	ADAPTER, cord; Australia; Model 249577 only	1
30	287755	MANIFOLD, recirculation, with valves; see page 61	1	57 195551	RETAINER, plug, adapter; Model 249577 only	1
31	15V421	TUBE, recirculation; 3/8 (10 mm) OD; sst	2	58 24K999	TRANSDUCER, pressure	2
32	249629	HOSE, component A (ISO); 1/4 in. (6 mm) ID; thermoplastic hose with moisture guard; 1/4 npsm(f) x 48 in. (1219 mm)	1	59 15G292	MANIFOLD, pressure transducer	2
33	249630	HOSE, component B (RES); 1/4 in. (6 mm) ID; thermoplastic hose; 1/4 npsm(f) x 48 in. (1219 mm)	1	60 111457	O-RING; ptfе	2
34	249537	DISPLAY, nonheated, 120 V; Model 249576; see page 60	1	61 15G476	LABEL, components A and B; see page 48	2
	249538	DISPLAY, nonheated, 240 V; Model 249577; see page 60	1	62 119992	NIPPLE; 3/4 npt	2
35	117623	NUT, cap; 3/8-16	4	63 157350	NIPPLE; 1/4 npt x 3/8 npt	1
36	24K995	CORD, 120 V; Model 249576	1	64 24K977	AIR FILTER/SEPARATOR, with 3/8 npt auto drain; includes item 2a	1
	24K997	CORD, 240 V; Model 249577	1	64a 15D909	ELEMENT, 5 micron; polypropylene; not shown	1
				65 100176	BUSHING; 3/8 npt(m) x 1/4 npt(f)	1

* Included in 287718 Pump Inlet Kit (one side).

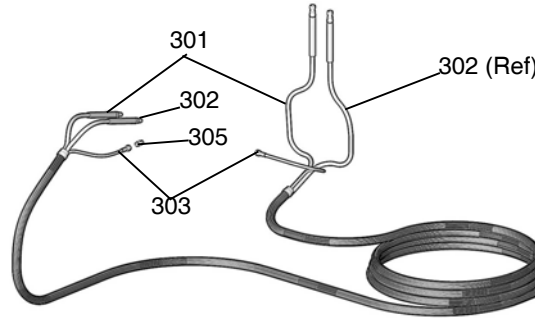
▲ Replacement safety labels, tags, and cards are available at no cost.

Part 249499, Insulated Hose Bundle With Recirculation Lines



Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
301 249508	HOSE, fluid (component A), moisture guard; 1/4 in. (6 mm) ID; number 5 JIC fittings (mxf); 35 ft (10.7 m)	2	303 15G342	HOSE, air; 1/4 in. (6 mm) ID; 1/4 npsm (fbe); 35 ft (10.7 m)	1
302 249509	HOSE, fluid (component B); 1/4 in. (6 mm) ID; number 6 JIC fittings (mxf); 35 ft (10.7 m)	2	304 buy locally	TUBE, foam, insulated; 1-3/8 in. (35 mm) ID; 31 ft (9.5 m)	1
			305 156971	NIPPLE; 1/4 npt; for joining air line to another hose bundle	1

Part 249633, Non-insulated Hose Bundle Without Recirculation Lines

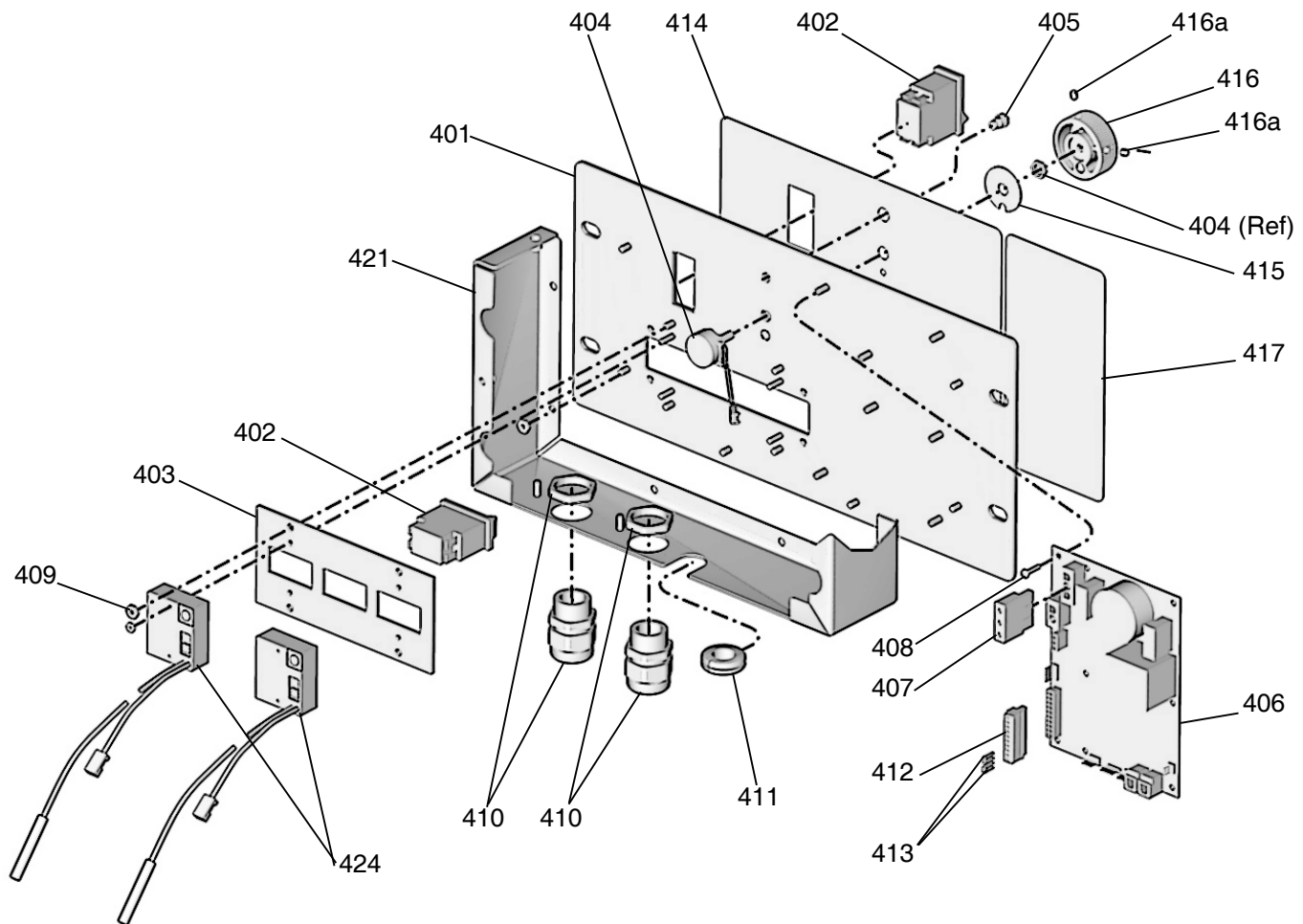


Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
301 249508	HOSE, fluid (component A), moisture guard; 1/4 in. (6 mm) ID; number 5 JIC fittings (mxf); 35 ft (10.7 m)	1	303 15G342	HOSE, air; 1/4 in. (6 mm) ID; 1/4 npsm (fbe); 35 ft (10.7 m)	1
302 249509	HOSE, fluid (component B); 1/4 in. (6 mm) ID; number 6 JIC fittings (mxf); 35 ft (10.7 m)	1	305 156971	NIPPLE; 1/4 npt; for joining air line to another hose bundle	1

Part 24R823, 1/4 in. (6 mm) ID x 35 ft (10.7 m) Non-insulated Hose Bundle Without Recirculation Lines and Air Hose

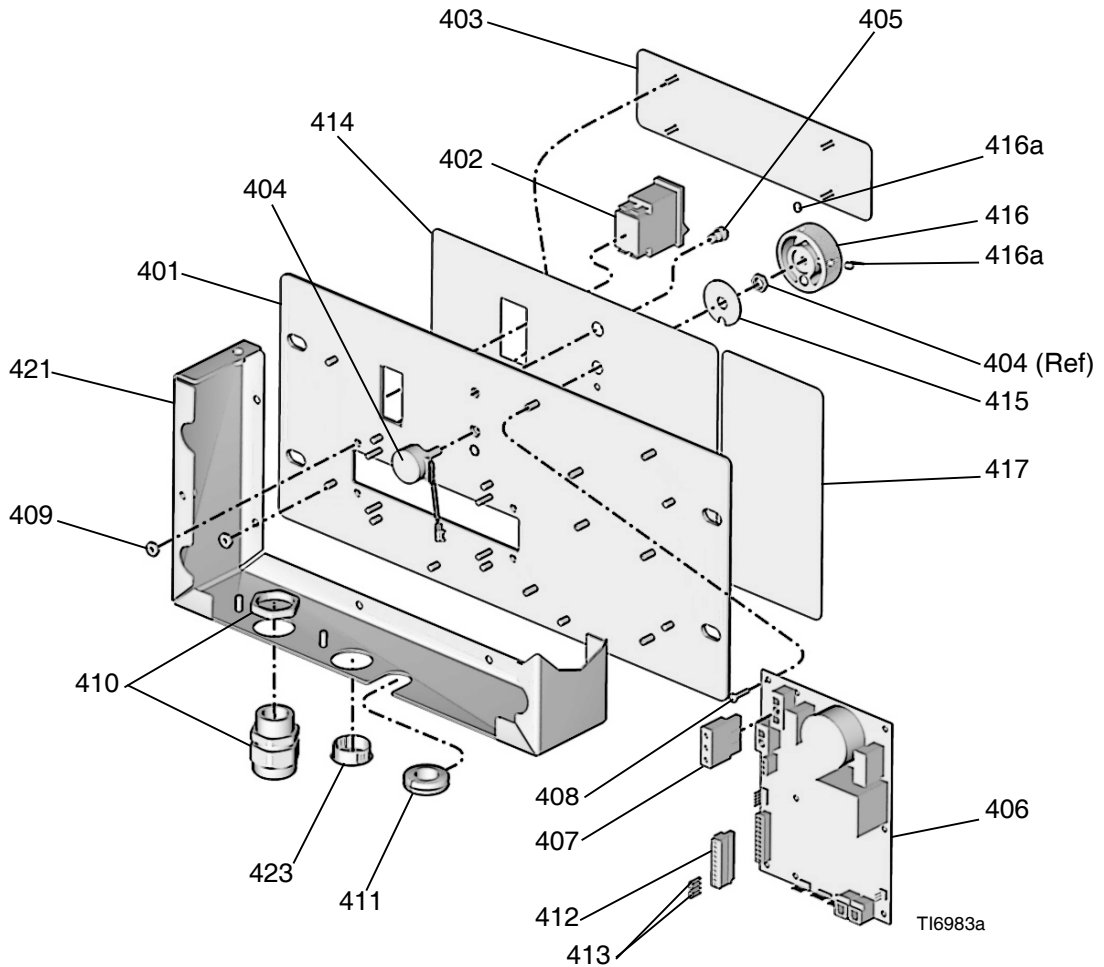
Ref. Part	Description	Qty.
301 249508	HOSE, fluid (component A); 1/4 in. (6 mm) ID, 35 ft (10.7 m), 1/2-20 UNF, moisture guard, static dissipative	1
302 249509	HOSE, fluid (component B); 1/4 in. (6 mm) ID, 35 ft (10.7 m), 9/16-18 UNF, moisture guard, static dissipative	1

Part 24L004, 120 V Heated Display
Part 24L005, 240 V Heated Display



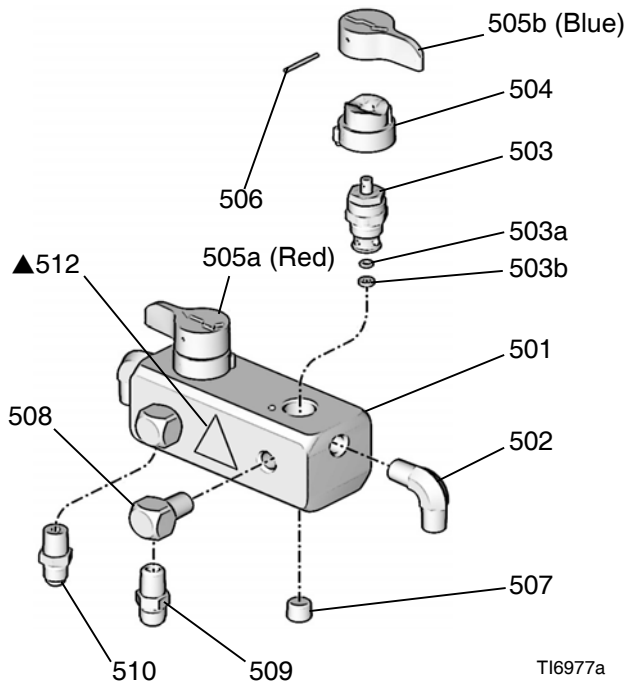
Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
401	15F984 PLATE	1	412	116773 CONNECTOR, plug	1
402	24K983 SWITCH, motor or heater power, with circuit breaker	2	413	15C866 WIRE, jumper	2
403	15G386 PLATE, display, temperature	1	414	15G279 LABEL, display	1
404	24L002 POTENTIOMETER	1	415	15G053 PLATE, detent	1
405	119930 INDICATOR, status, LED	1	416	24L001 KNOB, function; includes item 416a	1
406	24G886 BOARD, control; 120 V units only 24G887 BOARD, control; 240 V units only	1	416a	101118 . SCREW, set; number 10 x 1/4 in. (6 mm)	2
407	15G230 CABLE, harness	1	417	15G454 LABEL, startup, heated	1
408	107156 SCREW, machine, pan hd	7	421	15G384 ENCLOSURE	1
409	113505 NUT, keps, hex hd	10	424	24K981 DISPLAY, temperature, with sensor	2
410	119898 BULKHEAD FITTING, cable	2	425	DUAL TERMINAL; not shown	2
411	101765 GROMMET	1			

Part 249537, 120 V Nonheated Display
Part 249538, 240 V Nonheated Display



Ref. Part	Description	Qty.	Ref. Part	Description	Qty.
401	15F984 PLATE	1	411	101765 GROMMET	1
402	24K983 SWITCH, motor power, with circuit breaker	1	412	116773 CONNECTOR, plug	1
403	15G408 COVER, display	1	413	WIRE, jumper	2
404	24L002 POTENTIOMETER	1	414	15G279 LABEL, display	1
405	119930 INDICATOR, status, LED	1	415	15G053 PLATE, detent	1
406	24G886 BOARD, control; 120 V units only	1	416	24L001 KNOB, function; includes item 416a	1
	24G887 BOARD, control; 240 V units only	1	416a	. SCREW, set; number 10 x 1/4 in. (6 mm)	2
407	15G230 CABLE, harness	1	417	15G281 LABEL, startup, unheated	1
408	107156 SCREW, machine, pan hd	7	421	15G384 ENCLOSURE	1
409	113505 NUT, keps, hex hd	10	423	PLUG	1
410	119897 BULKHEAD FITTING, cable	1			

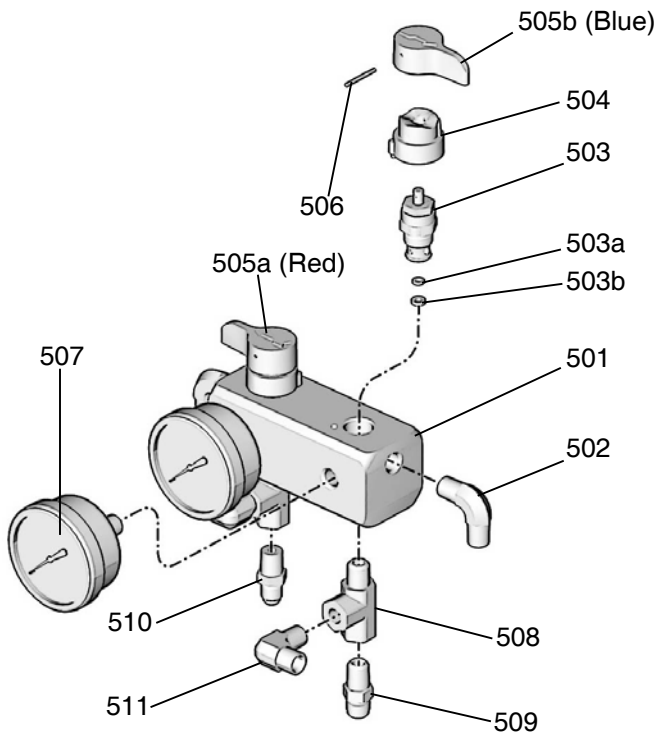
Part 24L009 Recirculation Manifold, Heated Models



Ref.	Part	Description	Qty.
501	24K993	MANIFOLD, recirculation	1
502	111763	ELBOW; 1/4 npt (mbe)	2
503	239914	VALVE, Spray; includes items 503a, 503b	2
503a	15E022	. SEAT	1
503b	111699	. GASKET	1
504	224807	BASE, valve	2
505a	17X499	HANDLE, valve, drain, red	1
505b	17X521	HANDLE, valve, drain, blue	1
506	111600	PIN, grooved	2
507	100721	PLUG, pipe; 1/4 npt(m)	2
508	100840	ELBOW, street; 1/4 npt(m) x 1/4 npsm(f)	2
509	116704	ADAPTER; 3/8 JIC x 1/4 npt(m)	1
510	119998	ADAPTER; 5/16 JIC x 1/4 npt(m)	1
512▲	189285	LABEL, warning	1

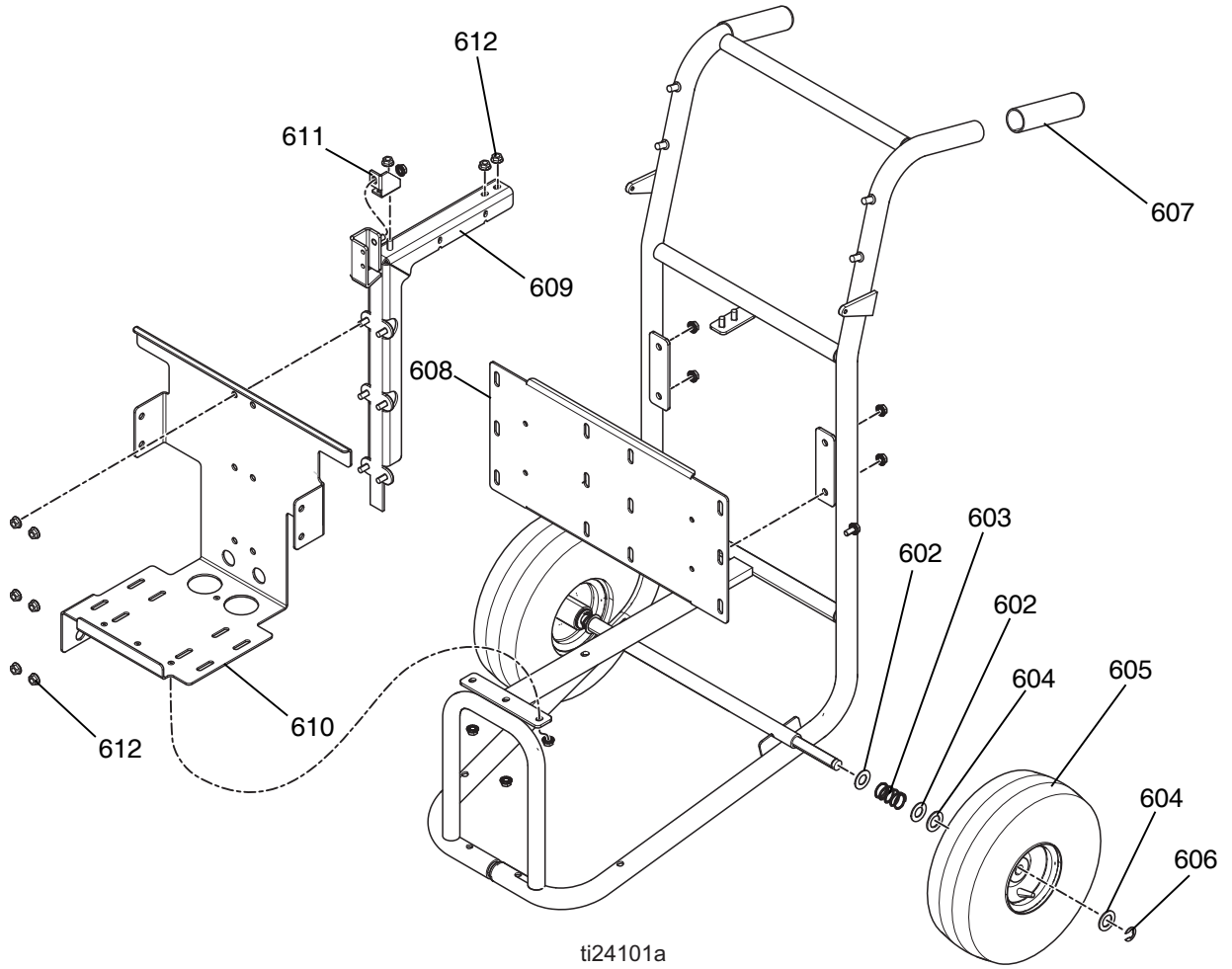
▲ Replacement Danger and Warning labels, tags, and cards are available at no cost.

Part 287755 Recirculation Manifold, Nonheated Models



Ref.	Part	Description	Qty.
501	24K993	MANIFOLD, recirculation	1
502	111763	ELBOW; 1/4 npt (mbe)	4
503	239914	VALVE, Spray; includes items 503a, 503b	2
503a	15E022	. SEAT	1
503b	111699	. GASKET	1
504	224807	BASE, valve	2
505a	17X499	HANDLE, valve, drain, red	1
505b	17X521	HANDLE, valve, drain, blue	1
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	116704	ADAPTER; 3/8 JIC x 1/4 npt(m)	1
510	119998	ADAPTER; 5/16 JIC x 1/4 npt(m)	1
511	556765	ELBOW, tube; 1/4 npt(m) x 3/8 in. (10 mm) OD tube	2

Part 249582, Cart



Ref.	Part	Description	Qty.
602	154636	WASHER, flat	4
603	116411	SPRING	2
604	116477	WASHER, flat; nylon	4
605	116478	WHEEL, pneumatic	2
606	101242	RING, retaining	2
607		GRIP, handle	2
608	24U760	BRACKET, tank mount	1
609	24U761	BRACKET, crossbar	1
610	24U762	BRACKET, motor mount	1
611	24T150	GUSSET	1
612	110996	NUT, hex, flange head	18

Suggested Spare Replacement Parts

Keep the following spare parts on hand to reduce downtime.

All Units

Part	Description
24K984	DRYER, desiccant
15F895	O-RING, lid, tank
24K983	SWITCH, motor or heater power, with circuit breaker
113641	GAUGE, pressure, fluid; sst
101078	Y-STRAINER
26A349	KIT, filter, replacement (2 pack)
26A350	KIT, filter, replacement (10 pack)
15D909	ELEMENT, air filter, 5 micron; polypropylene
239914	VALVE, Spray; includes seat and gasket
24L002	POTENTIOMETER, control knob
24G886	BOARD, control; 120 V units only
24G887	BOARD, control; 240 V units only
24K999	TRANSDUCER, pressure
24L006	PUMP, displacement; fits either side
287718	INLET KIT, tank to pump
249855	REPAIR KIT, displacement pump; includes seals, balls, bearings, intake valve seat)

Heated Units Only

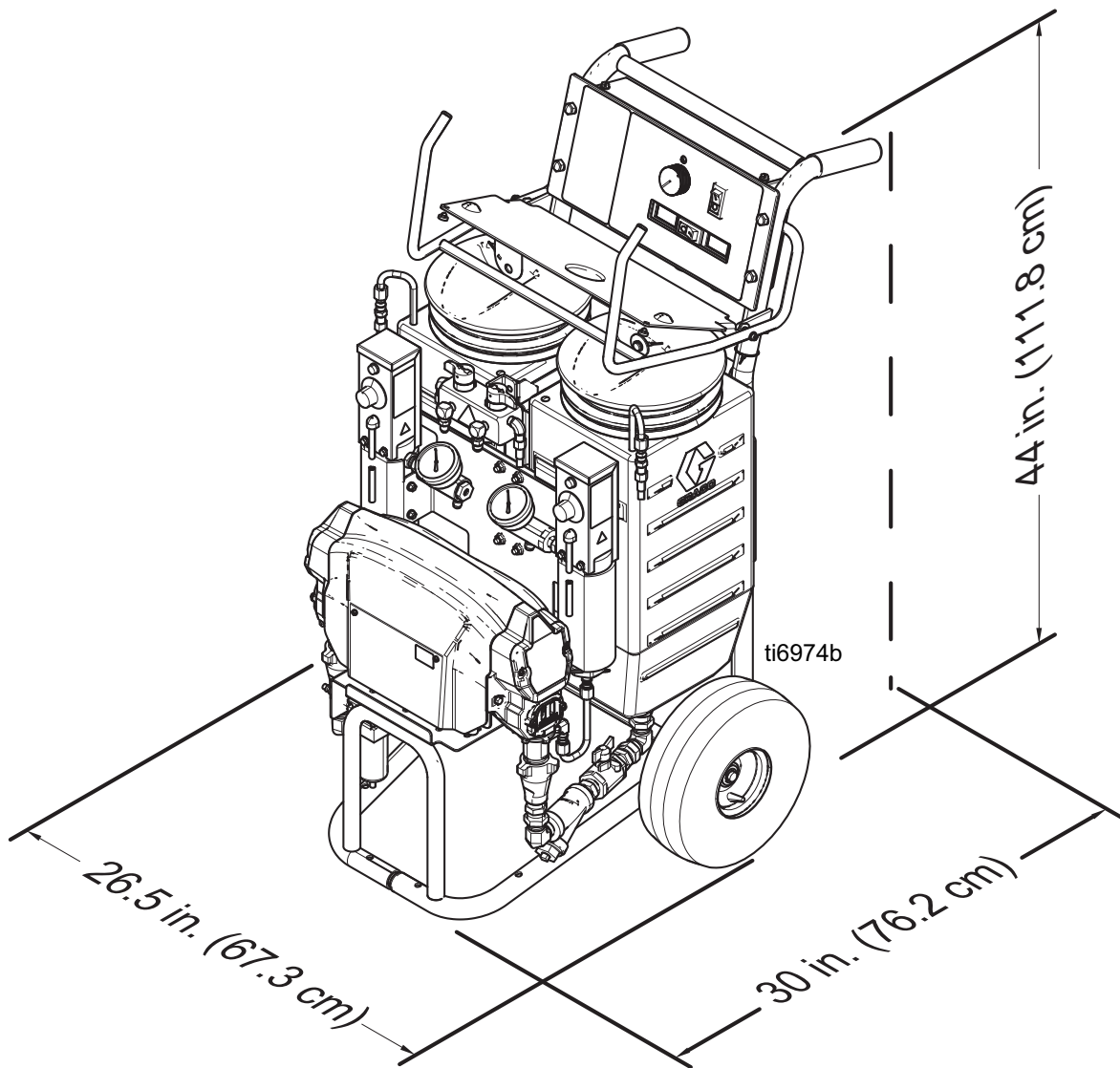
Part	Description
24K981	DISPLAY, temperature, with sensor
24K980	FUSE, heater over-temperature
24K978	THERMOSTAT, heater
24K989	HEATER ELEMENT; 120 V units only
24K990	HEATER ELEMENT; 240 V units only

Accessories

Part	Description
249815	GUN, Fusion MP with 4-hose manifold
255325	GUN, MD2 Cold Spray
24P765	KIT, Joint Fill Extension
25M269	KIT, DataTrak control
25P193	KIT, DataTrak control (for sale in Europe)

Dimensions

All Models



Technical Specifications

Reactor E-10 Plural Component Sprayer		
	US	Metric
Maximum fluid working pressure	2000 psi	14 MPa, 140 bar
Maximum fluid temperature	160°F	71°C
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)	0.00352 gal.	0.0133 liter
Overpressure Relief	Spray valves automatically relieve excessive fluid pressure back to supply tanks	
Tank Capacity*	7 gal	26.5 liters
Electrical requirements		
Model AP9570, CS9570	120 Vac, 1 phase, 50/60 Hz, 3500 W; requires two separate, dedicated 15 A circuits	
Model AP9571, CS9571	240 Vac, 1 phase, 50/60 Hz, 3800 W; requires two separate, dedicated 10 A circuits	
Model AP9572, CS9572	240 Vac, 1 phase, 50/60 Hz, 3800 W; requires a single dedicated 16 A circuit	
Model 249806, 24R984	120 Vac, 1 phase, 50/60 Hz, 1800 W; requires a single dedicated 15 A circuit	
Model 249808, 24R985	240 Vac, 1 phase, 50/60 Hz, 1800 W; requires a single dedicated 8 A circuit	
Wetted Parts		
Wetted Parts	Aluminum, stainless steel, carbon steel, brass, carbide, chrome, chemically resistant o-rings, PTFE, ultra-high molecular weight polyethylene	
Hose Markings		
A Side	Red	
B Side	Blue	
Heater Power		
120V Models	850W each; 1700W total	
240V Models	1000W each; 2000W total	
Generator Size		
Heated	5000W minimum	
Nonheated	2500W minimum	
Gun Compressed Air Requirements		
Fusion Gun (purge air and operating air)	4 scfm	0.112 m ³ /min
MD2 Gun with disposable mixer kit	14 scfm	0.392 m ³ /min
MD2 Gun with joint fill kit	2 scfm	0.056 m ³ /min
Sound Power		
Measured in fast circulation mode	88.6 dB(A)	
Measured at 2000 psi (14 MPa, 140 bar), 0.72 gpm (2.7 lpm)	94.4 dB(A)	
<i>Sound Power measured per ISO-9614-2.</i>		

Reactor E-10 Plural Component Sprayer		
	US	Metric
Sound Pressure		
Measured in fast circulation mode		78.7 dB(A)
Measured at 2000psi (14 MPa, 140 bar), 0.72 gpm (2.7 lpm)		84.5 dB(A)
Air Inlet/Outlet Sizes		
Air inlet size	1/4 in. quick-disconnect industrial type pin fitting	
Air outlet size	1/4 npsm (m)	
Fluid Outlets		
Component A (ISO)	-5 JIC male	
Component B (RES)	-6 JIC male	
Fluid Circulation Returns		
Component A (ISO)	-5 JIC male	
Component B (RES)	-6 JIC male	
Weight		
Empty	Approximately 160 lb (72 kg), depending on model	
Notes		
* <i>Not applicable on 25C350.</i>		
<i>All trademarks or registered trademarks are the property of their respective owners.</i>		

California Proposition 65

CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

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.

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

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For patent information, see www.graco.com/patents.

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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 311075

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