

# REACTOR<sup>®</sup> A-25

PLURAL COMPONENT PROPORTIONER

3A1570A  
EN

## Air operated, electrically heated, plural component proportioner

For spraying or dispensing 1:1 ratio polyurethane foam formulations and other 1:1 fast setting materials.

**Not for use in explosive atmospheres or hazardous locations.**

This model is field-configurable to the following supply voltages:

230 V, 1 Phase

230 V, 3 Phase

380 V, 3 Phase

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

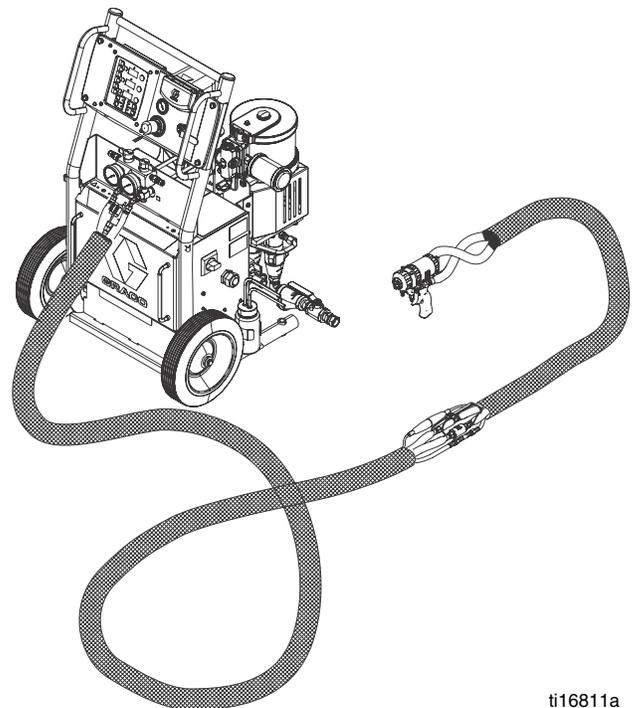
*80 psi (550 kPa, 5.5 bar) Maximum Air Working Pressure*



### Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.

See page 3 for model information, including maximum working pressure and approvals.



ti16811a



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## Proportioner Models

All proportioners can be configured to operate on 380V (4 wire), 230V (3 wire), or 230V 1Ø.

Part No.	Maximum Fluid Working Pressure psi (MPa, bar)	Maximum Air Working Set Pressure psi (kPa, bar)	Includes:		Approvals
			DataTrak (cycle count only)	Wheels	
262572★	2000 psi (14, 138)	80 psi (550, 5.5)	---	---	
262614	2000 psi (14, 138)	80 psi (550, 5.5)	24A592	✓	

★ Only available in Asia.

## Systems

All systems include a proportioner, spray gun, and 60 ft (18.3 m) of heated hose.

Part	Maximum Working Pressure psi (MPa, bar)	Proportioner	Heated Hose		Gun	
			50 ft (15 m)	10 ft (3 m)	Model	Part
P22614	2000 (14, 138)	262614	246678	246050	Probler P2	GCP2R1
AP2614	2000 (14, 138)	262614	246678	246050	Fusion™ AP	246101
CS2614	2000 (14, 138)	262614	246678	246050	Fusion™ CS	CS01RD
P22572★	2000 (14, 138)	262572	246678	246050	Probler P2	GCP2R1
AP2572★	2000 (14, 138)	262572	246678	246050	Fusion™ AP	246101
CS2572★	2000 (14, 138)	262572	246678	246050	Fusion™ CS	CS01RD

## Related Manuals

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

Component manuals in English:

Manual	Description
3A1569	Reactor A-25 Proportioner, Operation
309577	Proportioning Pump, Repair-Parts
309815	Feed Pump Kit, Instructions-Parts
309827	Feed Pump Air Supply Kit, Instructions-Parts

Manual	Description
309852	Circulation and Return Tube Kit, Instructions-Parts
309572	Heated Hose, Instructions-Parts
309550	Fusion™ AP Spray Gun, Instructions-Parts
312666	Fusion™ CS Spray Gun, Instructions-Parts
313213	Probler P2 Spray Gun, Instructions-Parts
313541	DataTrak Kits, Installation-Parts
312796	NXT® Air Motor, Instructions-Parts

# Warnings

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

 <b>WARNING</b>	
 	<p><b>ELECTRIC SHOCK HAZARD</b></p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> <li>• Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment.</li> <li>• Connect only to grounded power source.</li> <li>• All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.</li> </ul>
	<p><b>TOXIC FLUID OR FUMES HAZARD</b></p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> <li>• Read MSDSs to know the specific hazards of the fluids you are using.</li> <li>• Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.</li> <li>• Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.</li> </ul>
	<p><b>PERSONAL PROTECTIVE EQUIPMENT</b></p> <p>You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> <li>• Protective eyewear, and hearing protection.</li> <li>• Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.</li> </ul>
	<p><b>BURN HAZARD</b></p> <p>Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> <li>• Do not touch hot fluid or equipment.</li> </ul>

# WARNING



## FIRE AND EXPLOSION HAZARD

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

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately**. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



## 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 fluid outlet.
- 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.



# WARNING



## EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

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



## PRESSURIZED ALUMINUM PARTS HAZARD

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

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



## THERMAL EXPANSION HAZARD

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.

- Open a valve to relieve the fluid expansion during heating.
- Replace hoses proactively at regular intervals based on your operating conditions.



## MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

# Important Two-Component Material Information

## Isocyanate Conditions

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

## Material Self-ignition

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

## Keep Components A and B Separate

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

## Moisture Sensitivity of Isocyanates

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

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

To prevent exposing ISO to moisture:

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Keep the ISO lube pump reservoir (if installed) filled with Graco Throat Seal Liquid (TSL), Part 206995. The lubricant creates a barrier between the ISO and the atmosphere.
- Use moisture-proof hoses specifically designed for ISO, such as those supplied with your system.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always lubricate threaded parts with ISO pump oil or grease when reassembling.

## 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**

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

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.

## DataTrak Diagnostic Codes

DataTrak can diagnose several problems with the pump. When the monitor detects a problem, the LED will flash and a diagnostic code will appear on the display.

To acknowledge the diagnosis and return to the normal operating screen, press **X** once to wake up the display, and once more to clear the diagnostic code screen.

Symbol	Code	Code Name	Diagnosis	Cause
 E2	E-2	Diving Down	Leak during downstroke.	Worn intake valve.
 E3	E-3	Low Battery	Battery voltage too low to stop runaway.	Low battery. Replace battery; see page 38.
 E6 Fuse 250mA	E-6	Blown Fuse	Fuse is blown. Replace fuse; see page 38.	<ul style="list-style-type: none"> <li>Faulty solenoid or solenoid wiring.</li> <li>Extreme temperatures (above 140°F [60°C]).</li> </ul>

## Temperature Control Diagnostic Codes

Temperature control diagnostic codes appear on temperature display.

These alarms turn off heat. E99 clears automatically when communication is regained. Codes E03 through

E06 can be cleared by pressing . For other codes,

turn main power OFF  then ON  to clear.

Code	Code Name	Alarm Zone
01	High fluid temperature	Individual
02	High zone current	Individual
03	No zone current	Individual
04	FTS or thermocouple disconnected	Individual
05	Control board over temperature	Individual
06	Communication cable unplugged	Individual
30	Momentary loss of communication	All
99	Loss of communication	All

**NOTE:** For hose zone only, if FTS is disconnected at startup, display will show hose current 0A.

# E01: High fluid temperature

## Causes of E01 Errors

- Thermocouple A or B (361) senses a fluid temperature above 230°F (110°C).
- Fluid temperature sensor (FTS) senses a fluid temperature above 230°F (110°C).
- Overtemperature switch (359) senses a fluid temperature above 230°F (110°C) and opens. At 190°F (87°C) the switch closes again.
- Thermocouple A or B (361) fails, is damaged, is not touching the heater element (358), or has a poor connection to the temperature control module.
- Overtemperature switch (359) fails in the open position.
- The temperature control module fails to turn off any heat zone.
- Zone power wires or thermocouples are switched from one zone to another.
- Failed heater element where thermocouple is installed.
- Loose wire
- Jumper wire covered in heat shrink in the wiring harness near the single over temperature switch connectors on the heater, is loose or incorrectly wired

## Checks

					
<p>Troubleshooting this equipment requires access to parts that may cause electric shock or other serious injury if work is not performed properly. Have a qualified electrician perform all electrical troubleshooting. Be sure to shut off all power to the equipment before repairing.</p>					

Check which zone is displaying the E01 error.

1. Check that connector B is firmly plugged into temperature control module (see Fig. 6, page 26).
2. Clean and re-plug connections.
3. Check connections between the temperature control module and overtemperature switch (359), and

between temperature control module and thermocouples A and B (361) or FTS (21) [depending on which zone is displaying E01]. See Table 2, page 26. Ensure that all wires are securely connected to connector B.

4. Remove connector B from temperature control module, and check continuity of overtemperature switch, thermocouples A and B, or FTS by measuring resistance across the pins on the plug end; see Table 1.

**Table 1: Sensor Connector Continuity Checks**

Pins	Description	Reading
1 & 2	OT switch	nearly 0 ohms
3 & 4	Jumpered	nearly 0 ohms
5 & 6	Thermocouple A	4-6 ohms
8 & 9	Thermocouple B	4-6 ohms
11 & 12	FTS	approximately 35 ohms per 50 ft (15.2 m) of hose, plus approximately 10 ohms for FTS at 70°F (21°C)
10 & 12	FTS	open

**NOTE:** Before doing the following checks, note which zone (A, B, FTS, or all) has high fluid temperature.

5. Verify fluid temperature, using an external temperature sensing device.
  - **If temperature is too high (sensor reading is 229°F [109°C] or above):**
6. Check if thermocouples A and B are damaged, or not contacting the heater element, page 30.
7. To test that temperature control module turns off when equipment reaches temperature setpoint:
  - a. Set temperature setpoints far below displayed temperature.
  - b. Turn zone on. If temperature rises steadily, power module is failing.
  - c. Verify by swapping with another power module. See **Replacing Temperature Control Assembly Modules**, page 27.

- d. If the swapped module does not fix the problem, the power module is not the cause.
8. Verify continuity of heater elements with an ohmmeter, see page 28.

## E02: High zone current

1. Turn main power OFF 
2. Relieve pressure, page 13.

**NOTE:** Disconnect whip hose.

3. Disconnect hose connector (D) at Reactor.
4. Using an ohmmeter, check between the two terminals of the connector (D). There should be no continuity.
5. Exchange zone module with another one. Turn zone on and check for error (see page 27). If error disappears, replace faulty module.

*For hose zone:* If error still occurs, perform **Transformer Primary Check** and **Transformer Secondary Check**, starting on page 33.

**NOTE:** When there is a high current error, the LED on that zone's module will turn red while the error is displayed.

## E03: No zone current

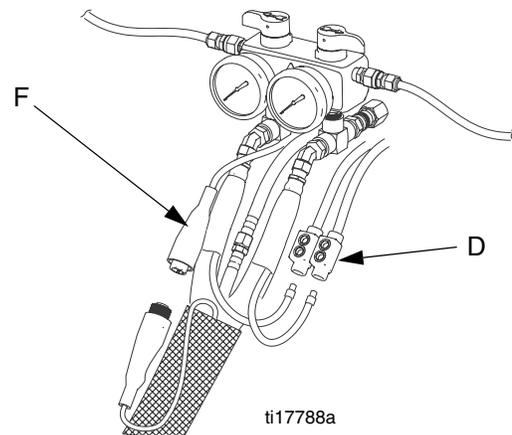
1. Check for tripped circuit breaker inside electrical cabinet or at power source for that zone. Replace circuit breaker if it trips habitually.
2. Check for loose or broken connection at that zone.
3. Exchange zone module with another one. Turn zone on and check for error (see page 27). If error disappears, replace faulty module.
4. If E03 occurs for all zones, the 238CR contactor may not be closing. Verify wiring from heater control to contactor coil.
  - a. *Hose zone:* test hose continuity, page 31.

- b. Perform **Transformer Primary Check** and **Transformer Secondary Check**, starting on page 33.

**NOTE:** When a no current error occurs, the LED on this specific zone's module turns red when the error is displayed.

## E04: Fluid Temperature Sensor (FTS) or thermocouple disconnected

1. Check temperature sensor connections to long green connector (B) on temperature control module, page 26. Unplug and re-plug sensor wires.
2. Test fluid temperature sensor continuity with ohmmeter, page 10.
3. If an error occurred for the hose zone, check FTS connections at each section of hose.
4. If an error occurred for the hose zone, test FTS by plugging directly into machine.



5. To verify heater control module is not causing the problem, use a wire to short-circuit the two pins corresponding to the FTS (red and yellow for A or B zone, red and purple for hose). The display will show the control heater module temperature.
6. If an error occurred for the hose zone, temporarily use the current control mode. Refer to Reactor Operation manual.

## E05: Control board over temperature

**NOTE:** Each module has an on-board temperature sensor. Heat is turned off if module temperature exceeds 185°F (85°C) within the heater module.

1. Check that fan above electrical cabinet is operating.
2. Check that electrical cabinet door is properly installed.
3. Check for obstructions blocking cooling holes in bottom of electrical cabinet.
4. Clean heatsink fins behind heater control modules.
5. Ambient temperature may be too high. Allow Reactor to cool by moving to a cooler location.

## E06: Communication cable unplugged

1. Unplug and re-plug cable that connects heater control module to heater module.
2. Replace communication cable if problem persists.

## Communication Diagnostic Codes

### E30: Momentary loss of communication

Communications between the display and the motor control board or the temperature control module have been momentarily lost. Normally, when communication is lost, the corresponding display will show E99. The corresponding control board will register E30 (The red LED will flash 30 times). If communications are reconnected, the display can show the E30 for a small time (no more than about two seconds). It should not be possible for E30 to be shown continuously, unless there is a loose connection causing the display and the board to continuously lose and regain communication.

Check all wiring between the display and the control board.

### E99: Loss of communication

Communications between the display and the temperature control module has been lost. When communication is lost, the display will show E99.

1. Check all wiring between the display and the temperature control module. Pay close attention to the wire crimping on plug J13 for temperature display and connector for control module.



Step 2 measures line voltage and should be done by a qualified electrician. If work is not performed properly it may cause electric shock or other serious injury.

2. Measure the incoming voltage to the module (it should be ~ 230Vac).
3. If it was only receiving 1 leg of the 230Vac the board may light up, and still not function properly. Correct the incoming voltage problem.

# Before Beginning Repair

						
<p>Repairing this equipment requires access to parts that may cause electric shock or other serious injury if work is not performed properly. Electrical troubleshooting must be done by a qualified electrician. Be sure to shut off all power to equipment and lock out power at the source before repairing.</p>						

1. Flush if necessary. See **Flushing**, page 14.
2. Turn main heater power OFF .
3. Relieve pressure. See **Pressure Relief Procedure**.

# Pressure Relief Procedure

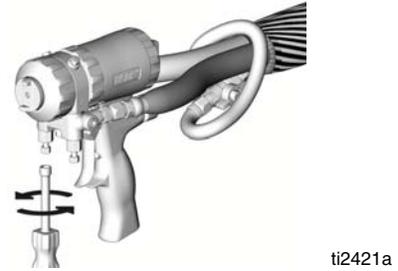
						
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The Fusion AP gun is shown.

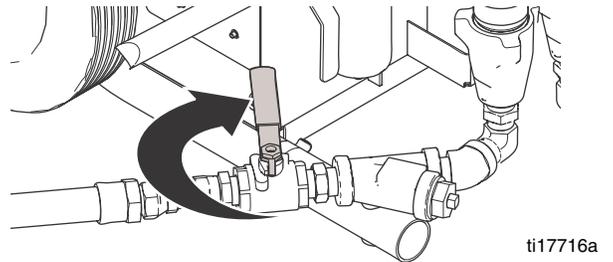
1. Turn off feed pumps and agitator if used.
2. Park component A pump. Follow **Park**; see page 14.
3. Close the air inlet valve.
4. Engage gun piston safety lock.



5. Close gun fluid inlet valves A and B.

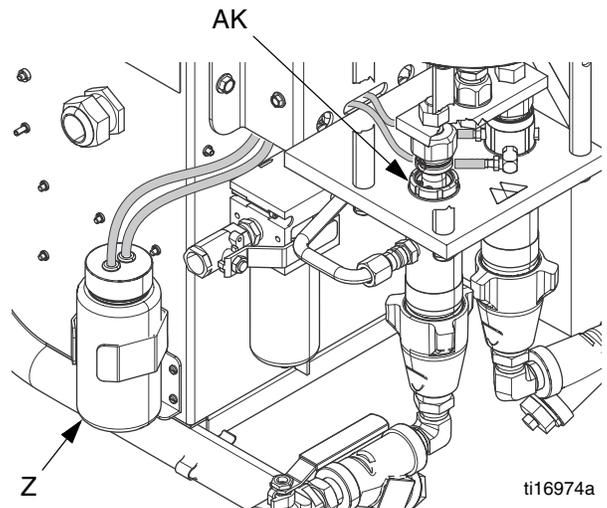


6. Close pump inlet supply valves.



# Shutdown

1. Turn main heater power OFF .
2. Follow **Park**.
3. Check and fill wet-cups (AK, Z).

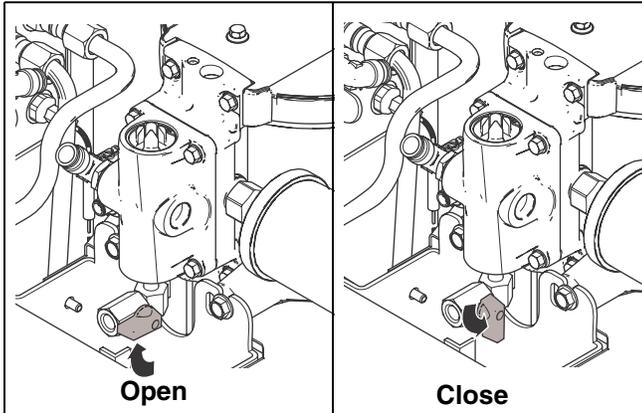


4. Follow gun shutdown procedure. See gun manual.

## Park

Park the pumps at the end of the day to cycle component A pump to home position, submerging displacement rod.

1. Open the park valve.

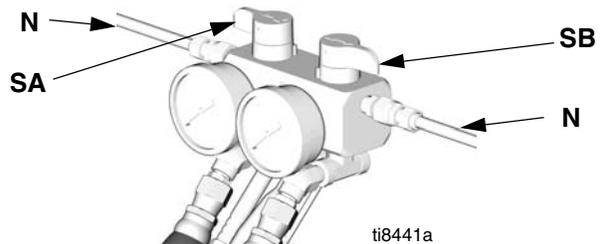


2. Trigger the gun until pumps stop at the bottom and relieve pressure.
3. Close the air motor shutoff valve.
4. Close the park valve.

## Flushing

Flush equipment only in a well-ventilated area. Do not spray flammable fluids. Do not turn on heaters while flushing with flammable solvents.					

- Flush out old fluid with new fluid, or flush out old fluid with a compatible solvent, such as toluene, naphtha, or mineral spirits before introducing new fluid.
- Use lowest possible pressure when flushing.
- To flush feed hoses, pumps, and the heater separately from the heated hoses, set PRESSURE RELIEF/SPRAY valves (SA, SB) to PRESSURE RELIEF/CIRCULATION. Flush through bleed lines (N).



- To flush entire system, circulate through gun fluid manifold (with manifold removed from gun).
- Always leave hydraulic oil or a non-water based, non-water absorbent fluid in system. Do not use water.

Only use flush solvents that are compatible with Fluoroelastomer seals. Non-compatible solvents will damage seals and cause hazardous conditions, such as high pressure leaks and pressure switch failure.					

# Troubleshooting



Before performing any troubleshooting procedures:

1. Relieve pressure, page 13.

2. Turn main power OFF



3. Allow equipment to cool.

## Problems

Try the recommended solutions in the order given for each problem, to avoid unnecessary repairs. Also, determine that all circuit breakers, switches, and controls are properly set and wiring is correct before assuming there is a problem.

## Power

PROBLEM	CAUSE	SOLUTION
Heat zones do not operate	No power	Connect power cord Turn Main Disconnect Switch ON
	Power cord not connected properly	Check connections
No power when disconnect switch is turned on; using 230V, 1 phase or 230V, 3 phase power	Power terminal jumper still at 380V, 3 phase position, as shipped from factory	Place jumpers in correct position; see Operation manual and label inside front lower cabinet.
External main supply power circuit breaker trips and Reactor disconnect switch fails when switch is turned on.	Power terminal jumper was left in 230V, 1 phase position. When using 230V, 3 phase or 380V, 3 phase power	Place jumpers in correct position; see Operation manual. Replace main power disconnect switch; see page 40.
No temperature display lights at startup	No power	Connect power cord Turn Main Disconnect Switch ON
	Control power fuses blown	Check and replace fuses on long terminal strip

## Pumps and Pressures

PROBLEM	CAUSE	SOLUTION
Pump does not run up and down	Motor control valve closed	Open air motor shutoff valve
	No air supply	Air supply line not connected
		Open inlet air ball valve
	Air pressure regulators set at 0 psi	Turn up air pressure regulators
Air motor shuttle valve is centered.	Push button on top of air motor shuttle valve.	
Pump runs but no fluid pressure	Fluid inlet ball valves closed	Open fluid inlet ball valves

PROBLEM	CAUSE	SOLUTION
Fluid pressure low or dropping	Air supply pressure low when spraying	Increase inlet air pressure
		Increase air compressor size to meet flow requirements
Remove airline quick disconnects		
Use 3/8 in. (0.95 cm) ID or larger air supply hose. Use 1/2 in. (12.7 mm) if longer than 25 ft (7.6 m).		
	Icing in air motor exhausts or mufflers	Check inlet filter water separator; see page 25. Stop spraying while ice melts.
Pump output low, but pressure is normal	Obstructed gun impingement ports or filters	Flush and clean gun; see gun manual
One pressure gauge drops when pumps are stalled on both the upstroke and the downstroke	Leaking pump throat	Repair pump; see 309577
	Leak between pump and gun	Check fluid tubes, heater, and hoses
		Pressure Relief/Spray valve leaking back to supply
Spray gun is leaking on one side or plugged on the other side	Clean and repair spray gun	
One pressure gauge drops when pumps are stalled on the downstroke, but not the upstroke	Inlet ball check not sealing	Clean or replace; see 309577
	Inlet check seat o-ring not sealing	Repair pump; see 309577
One pressure gauge drops when pumps are stalled on the upstroke, but not the downstroke	Piston check ball not sealing	Repair pump; see 309577
	Piston packing not sealing	Repair pump; see 309577
	Loose piston stud in pump	Repair pump; see 309577
	Bad inside sleeve seal	Repair o-ring; see 309577
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.
		A side impingement port is worn.
	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.
		A side restriction downstream of gauge. Check gun check valve screen, mix module, or mix manifold restrictor.
	B side gauge is low	B side impingement port is worn.

PROBLEM	CAUSE	SOLUTION
Fluid pressures not balanced between A and B side	Fluid viscosities not equal	Adjust A and B temperature settings to balance viscosity. Sometimes normal if pressure offset is below 200 psi (14 bar) Preheat material in drums by recirculating; see Operation manual
	Inlet Y-strainer screen plugged on low pressure side	Clean inlet filter screen
	Gun port or filter plugged on high pressure side	Clean or replace; see gun manual
	Pump inlet ball not seating or sticking	Clean seating; see pump manual
	Drum fluid outlet supply hose too small	Use 3/4 in. (1.9 cm) ID hose with short length
	Low side feed pump not working	Turn on or repair feed pump
	Pressure Relief/Spray valve leaking back to supply	
Pump does not reverse direction	Obstruction of air motor or pumps	Check and clear obstruction
Unequal fluid pressure between UP/DOWN stroke	Feed pumps boost pressure on up stroke.	Reduce feed pump pressures
Air motor doesn't move with air pressure applied	Damaged air valve	Replace or service air valve. See Air Motor manual.
	Damaged pilot valve	Replace valve. See Air Motor manual.
	Park valve left open or leaking	
Pump movement speed is erratic	Worn air motor seals	Replace seals. See Air Motor manual.
	Worn pump seals	Replace seals; see Pump manual.

## Electronics

Problem	Cause	Solution
Display does not illuminate.	No power.	Plug in power cord. Turn disconnect ON 
	Low voltage.	Ensure input voltage is within specifications, page 36.
	Loose wire.	Check connections, page 36.
	Display disconnected.	Check cable connections, page 36.
Temperature display does not illuminate.	Display disconnected.	Check cable connections, page 36.
	Display cable damaged or corroded.	Clean connections; replace cable if is damaged.

Problem	Cause	Solution
Erratic display; display turns on and off.	Low voltage.	Ensure input voltage is within specifications, page 36.
	Poor display connection.	Check cable connections, page 36. Replace damaged cable.
	Display cable damaged or corroded.	Clean connections; replace cable if is damaged.
	Display cable not grounded.	Ground cable, page 37.
	Display extension cable too long.	Must not exceed 100 ft (30.5 m)
Hose display reads OA at startup.	FTS disconnected or not installed.	Verify proper installation of FTS (see Operation manual), or adjust FTS to desired current setting.
Display does not respond properly to button pushes.	Poor display connection.	Check cable connections, page 36. Replace damaged cable.
	Display cable damaged or corroded.	Clean connections; replace cable if is damaged.
	Ribbon cable on display circuit board disconnected or broken.	Connect cable (page 36) or replace.
	Broken display button.	Replace, page 36.
No hose heat.	Loose hose electrical connections.	Check connections. Repair as necessary.
	Circuit breakers tripped.	Reset breakers (CB1 or CB2), page 34.
	Hose zone not turned on.	Press  zone  key.
	A and B temperature setpoints too low.	Check. Increase if necessary.
	Failed temperature control module.	Open cabinet. Check if board LED is blinking. If not, check power wiring connections to ensure module has power. If board has power and LED is not blinking, replace module, page 26.
Low hose heat.	A and B temperature setpoints too low.	Increase A and B setpoints. Hose designed to maintain temperature, not increase temperature.
	Hose temperature setpoint too low.	Check. Increase if necessary to maintain heat.
	Flow too high.	Use smaller mix chamber. Decrease pressure.
	Low current; FTS not installed.	Install FTS, see operation manual.
	Hose heat zone not turned on long enough.	Allow hose to heat up, or preheat fluid.
	Loose hose electrical connections.	Check connections. Repair as necessary.

## Heater

PROBLEM	CAUSE	SOLUTION
Primary heater(s) does not heat.	Heat turned off.	Press <b>A</b> or <b>B</b> zone  keys.
	Temperature control alarm.	Check temperature display for diagnostic code, page 9.
	Signal failure from thermocouple.	See <b>E04: Fluid Temperature Sensor (FTS) or thermocouple disconnected</b> , page 11.
Control of primary heat is abnormal; high temperature overshoots or E01 error occurs intermittently.	Dirty thermocouple connections.	Examine connection of thermocouples to long green plug on heater control board. Unplug and re-plug thermocouple wires, cleaning off any debris. Unplug and re-plug long green connector.
	Thermocouple not contacting heater element.	Loosen ferrule nut (N), push in thermocouple (361) so tip (T) contacts heater element (358). Holding thermocouple tip (T) against heater element, tighten ferrule nut (N) 1/4 turn past tight. See page 30 for illustration.
	Failed heater element.	See <b>Primary Heater</b> , page 28.
	Signal failure from thermocouple.	See <b>E04: Fluid Temperature Sensor (FTS) or thermocouple disconnected</b> , page 11.
	Thermocouple wired incorrectly.	See <b>E04: Fluid Temperature Sensor (FTS) or thermocouple disconnected</b> , page 11. Power up zones one at a time and verify that temperature for each zone rises.

## Hose Heat System

PROBLEM	CAUSE	SOLUTION
Hose heats but heats slower than usual or it does not reach temperature.	Ambient temperature is too cold.	Use auxiliary hose heat system.
	FTS failed or not installed correctly.	Check FTS, page 11.
	Low supply voltage.	Verify line voltage. Low line voltage significantly reduces power available to hose heat system, affecting longer hose lengths.
Hose does not maintain temperature while spraying.	A and B setpoints too low.	Increase A and B setpoints. Hose is designed to maintain temperature, not to increase it.
	Ambient temperature is too cold.	Increase A and B setpoints to increase fluid temperature and keep it steady.
	Flow too high.	Use smaller mix chamber. Decrease pressure.
	Hose was not fully preheated.	Wait for hose to heat to correct temperature before spraying.
	Low supply voltage.	Verify line voltage. Low line voltage significantly reduces power available to hose heat system, affecting longer hose lengths.
Hose temperature exceeds setpoint.	A and/or B heaters are overheating material.	Check primary heaters for either a thermocouple problem or a failed element attached to thermocouple, page 11.
	Faulty thermocouple connections.	Verify that all FTS connections are snug and that pins of connectors are clean. Examine connection of thermocouples to long green plug on heater control board. Unplug and re-plug thermocouple wires, cleaning off any debris. Unplug and re-plug long green connector on heater control board.
Erratic hose temperature.	Faulty thermocouple connections.	Verify that all FTS connections are snug and that pins of connectors are clean. Examine connection of thermocouples to long green plug on heater control board. Unplug and re-plug thermocouple wires, cleaning off any debris. Unplug and re-plug long green connector.
	FTS not installed correctly.	FTS should be installed close to end of hose in same environment as gun. Verify FTS installation, page 32.

PROBLEM	CAUSE	SOLUTION
Hose does not heat.	FTS failed or is not contacting correctly.	Check FTS, page 11.
	FTS not installed correctly.	FTS should be installed close to end of hose in same environment as gun. Verify FTS installation, page 32.
	Temperature control alarm.	Check temperature display or diagnostic code, page 32.
Hoses near Reactor are warm, but hoses downstream are cold.	Shorted connection or failed hose heating element.	<p>With hose heat on and temperature setpoint above displayed hose zone temperature, verify voltage between connectors at each section of hose.</p> <p>Voltage should drop incrementally for each section of hose further from Reactor. Use safety precautions when hose heat is turned on.</p>

# Repair

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Unless otherwise noted, all repair procedures must be completed with incoming power switched OFF and locked out at the source. Any electrical repair or troubleshooting required beyond the scope of this manual must be performed by a qualified electrician. Shut off air inlet ball valve and shut off all air supply pressure.

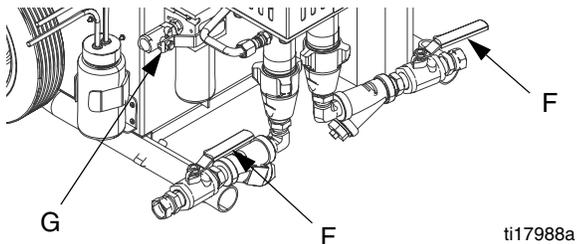
## Disconnect Pump

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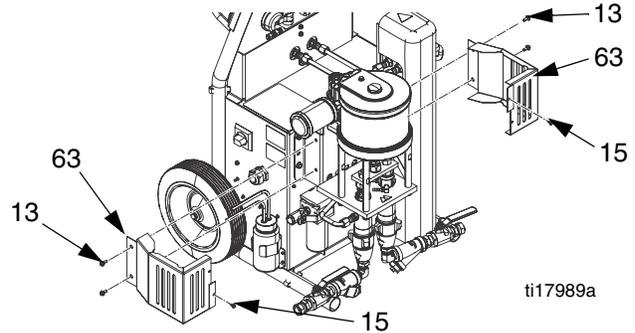
Air motor shaft, yoke, pump rod and connecting rod move during operation. Moving parts can cause serious injury such as pinching or amputation. Keep hands and fingers away from connecting rod during operation.

**NOTE:** See manual 309577 for pump repair instructions.

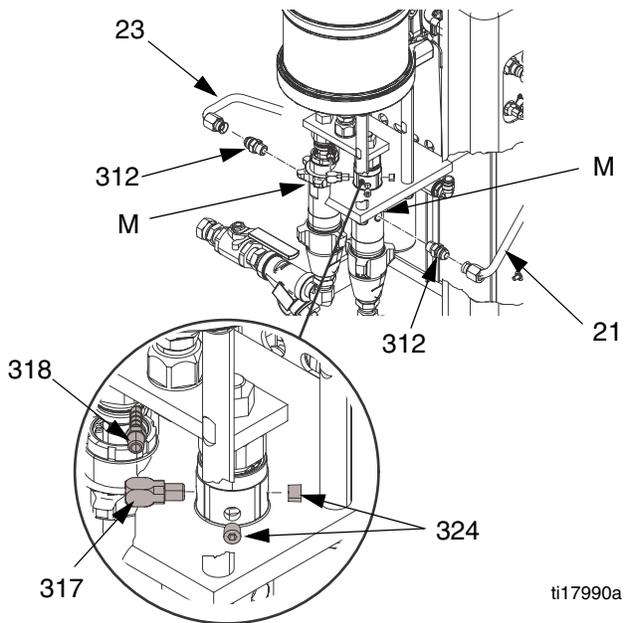
- Turn main heater power OFF .
- Follow **Flushing**, page 14.
- Follow **Pressure Relief Procedure**, page 13.
- Follow **Park** instructions, page 14.
- Shut off both feed pumps and close both inlet supply valves (F).



- Shut off inlet air ball valve (G)
- Remove screws (13, 15) and pump covers (63).



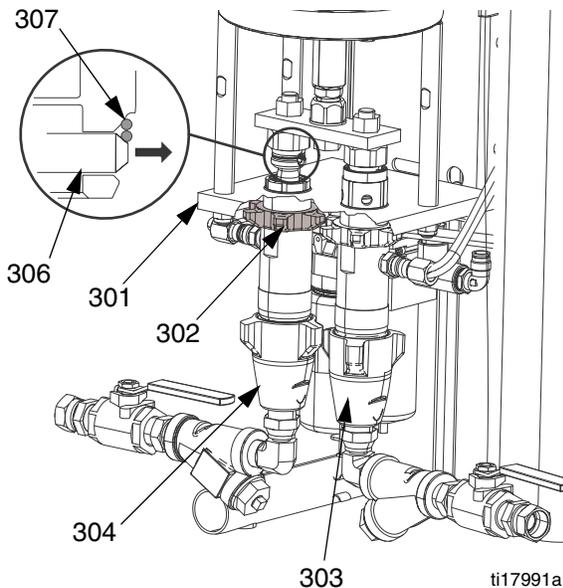
- Disconnect A side (21) and B side (23) steel outlet tubes from adapters (312).



- Remove adapter (312) from fluid outlet (M).
- For A Side pump, disconnect barb fitting (318), elbow fitting (317), and two pipe plugs (324).

**NOTE:** It is not necessary to cut tubes connected to barb fittings.

11. Push retaining wire clip (307) up. Push retaining pin (306) out.



5. For Iso A pump only:
  - a. Install two pipe plugs (324).
  - b. Reconnect two tubing lines (N) from ISO Pump Lube reservoir. Flush and refill reservoir with TSL 206995.
6. Refill Resin B pump wet cup with TSL 206995.

12. Loosen lock nut (302) by hitting firmly with a non-sparking hammer.
13. Unscrew pump out of pump mounting plate (301).
14. See pump manual for repair procedures and replacement parts.

## Connect Pump

1. Ensure locknut (302) is screwed on pump with flat side up. Grease pump mounting threads in plate and pump cylinders (303, 304) with lithium grease. Screw pump into pump mounting plate (301) until top of pump thread is above mounting plate 1/2 to 1 1/2 threads above flush.

**NOTE:** Pump rod connecting links (302) should be positioned so that pins (306) are in line with each other.

2. Align pump rod hole with link hole. Push retaining pin (306) in. Pull retaining wire clip (307) down to cover pin ends.
3. Tighten locknut (302) by hitting firmly with a non-sparking hammer.
4. Install adapter (312) in fluid outlet. Connect A side (21) and B side (23) steel outlet tubes.

## Remove Air Motor

1. Press in tube fitting ferrules and pull out tubing (65) to disconnect air line.
2. Disconnect DataTrak communication cable, if installed.
3. Place wrench on adapter (315) and a another wrench on lock nut (313). Remove lock nut (313).

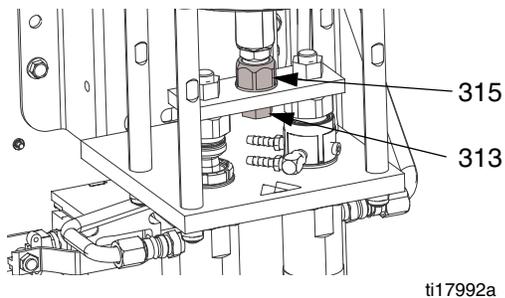


FIG. 1

4. Remove four nuts (310) from tie rods (309).

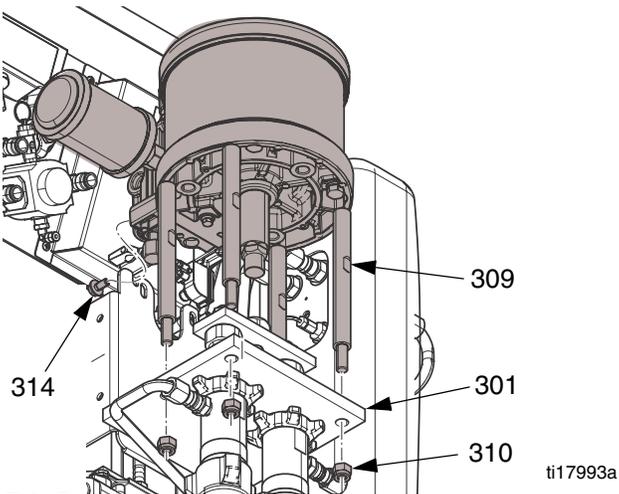


FIG. 2

5. Loosen two screws (314) behind air motor bracket. Carefully lift air motor and tie rods away from the proportioner frame and plate (301).

6. Lay air motor on a clean flat work space. Place a wrench on the tie rod flats (309) and hold one of other tie rods with your hand to keep the air motor (308) in place. Remove the tie rods from the air motor.

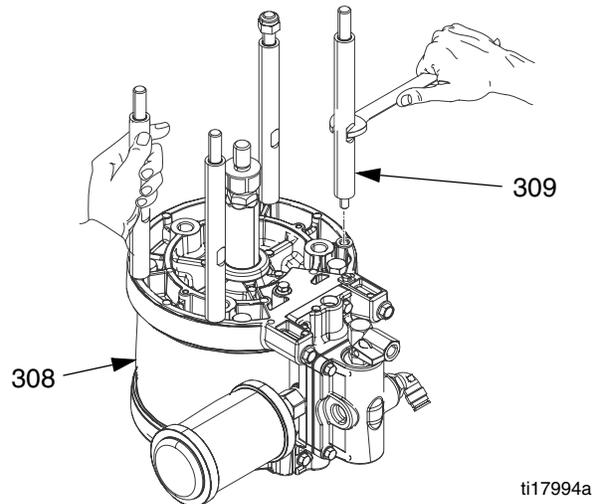


FIG. 3

7. Use a wrench to hold the piston rod in place and remove the adapter (315) with another wrench. See FIG. 1.
8. See air motor manual for repair instructions.

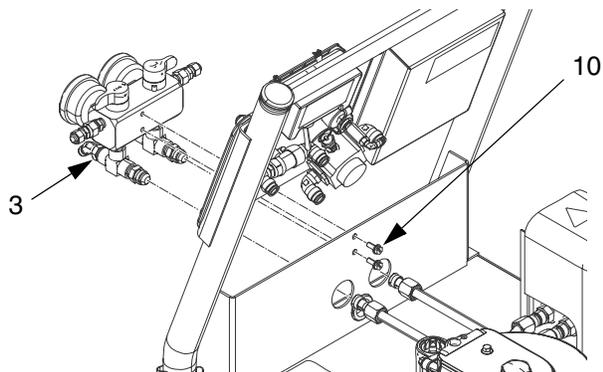
## Install Air Motor

1. Apply medium blue thread lock on adapter (315). Use a wrench to hold the piston rod in place and install the adapter (315) with another wrench. Torque to 32-38 ft-lbs (43-51 N•m). See FIG. 1.
2. Install tie rods (309) in the bottom of the air motor (308). See FIG. 3.
3. Install tie rods through plate (301). Ensure screws (314) fit in the bracket slots (311). Install screws (314). See FIG. 2.
4. Tighten nut (313) to 32-38 ft-lbs (43-51 N•m).
5. Evenly torque four tie rod nuts (310) in small increments to 27-32 ft-lbs (37-43N•m). See FIG. 2.

## Recirculation / Over Pressure Relief Block

Valves can be serviced with the block on the machine (see page 46 for parts view). For thorough cleaning, remove the block assembly as follows.

1. Disconnect two fluid tubes connected to back of recirculation block (3).
2. Loosen and remove two screws (10) in back of recirculation block.



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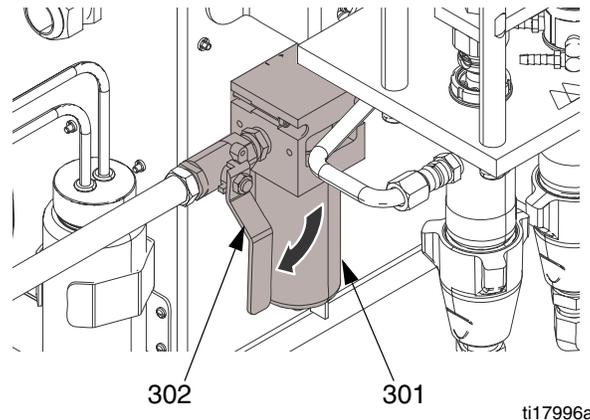
FIG. 4

3. See **Fluid Manifold**, page 46. Clean and inspect all parts for damage. Ensure that the seat (8a) and gasket (8b) are positioned inside each valve cartridge (8).
4. Apply PTFE pipe sealant to all tapered pipe threads before reassembling.
5. Reassemble in reverse order, following all notes on page 46.

## Air Inlet Filter / Water Separator (Auto Drain)

### Air Filter Element Removal

1. Close air inlet valve (302) on filter (301).
2. Hold in metal spring clip and twist black cover counterclockwise to remove.



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FIG. 5

3. Unscrew clear drain cover by hand.
4. Unscrew black filter element retainer to remove element.
5. Inspect filter element. Clean or replace.

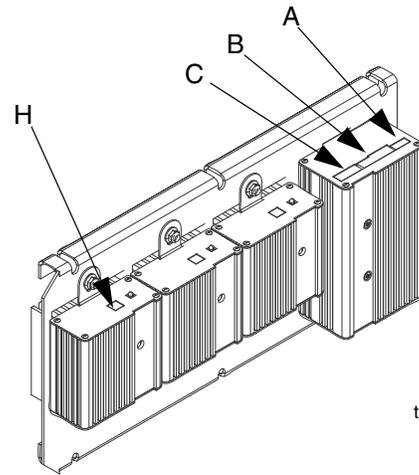
### Air Filter Element Installation

1. Insert cleaned or replacement filter (114228).
2. Hand-screw filter retainer into place.
3. Hand-screw clear drain cover until tight.
4. Reposition black cover and turn. Make sure it "snaps" back into place.

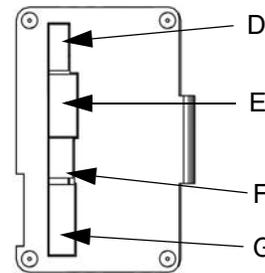
# Temperature Control Module

**Table 2: Temperature Control Module Connections**

Connector	Description	
DATA (A)	Data reporting	
SENSOR (B)	PIN	
	12	HOSE T/C P; FTS (purple)
	11	HOSE T/C R; FTS (red)
	10	HOSE T/C S; FTS (silver (unshielded bare wire))
	9	HEATER T/C B, Y; Thermocouple (yellow)
	8	HEATER T/C B, R; Thermocouple (red)
	7	Not used
	6	HEATER T/C A, Y; Thermocouple (yellow)
	5	HEATER T/C A, R; Thermocouple (red)
	4, 3	OVERTEMPERATURE B; Overtemperature switch B
2, 1	OVERTEMPERATURE A; Overtemperature switch A	
DISPLAY (C)	Display	
COMMUNICATION (D)	Communication to power boards	
PROGRAM (E)	Software programming	
BOOT (F)	Software bootloader	
POWER/RELAY (G)	Circuit board power input and contactor control output	

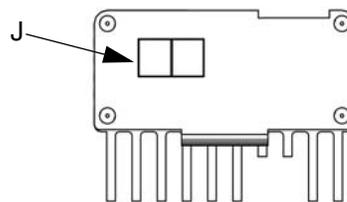


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**Right Side of Control Heater Module**



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**Bottom of Power Modules**

**Table 3: Temperature Control Module Connections**

Connector	Description
COMMUNICATION (H)	Communication to control board
POWER (J)	Power to heater

**FIG. 6: Temperature Control Module Connections**

## Test SCR Circuit

1. Test the SCR circuit in the on position:

- a. Make sure everything is connected, including the hose.

- b. Turn main power ON



- c. Adjust the hose heat setpoint **above** the ambient hose temperature.

- d. Turn on  heat zone by pressing .

- e. Hold down  to view electrical current.

Hose current should ramp up to 45A. If there is no hose current, see **E03: No zone current**, page 11. If hose current exceeds 45A, see **E02: High zone current**, page 11. If hose current stays several amps below 45A, hose is too long or voltage is too low.

2. Test the SCR circuit in the off position:

- a. Make sure everything is connected, including the hose.

- b. Turn main power ON



- c. Adjust the hose heat setpoint **below** the ambient hose temperature.

- d. Turn on  heat zone by pressing .

Using a voltmeter, carefully measure the voltage at the hose connector. You should not get a voltage reading. If you do, the SCR on the temperature control module is bad. Replace the temperature control assembly.

## Replacing Temperature Control Assembly Modules



### NOTICE

Before handling assembly, put on static conductive wrist strap to protect against static discharge which can damage assembly. Follow instructions provided with wrist strap.

1. Turn main power off . Disconnect power supply.
2. Relieve pressure, page 13.
3. Refer to electrical diagrams. See **Reactor A-25 Wiring Schematic**, page 51. Temperature control assembly is on left side inside cabinet.
4. Remove bolts that secure transformer assembly and slide assembly to side in cabinet.
5. Put on static conductive wrist strap.
6. Disconnect all cables and connectors from assembly. See **Temperature Control Module**, page 26.
7. Remove nuts and take entire temperature control assembly to workbench.
8. Replace defective module.
9. Install assembly in reverse order.

## Primary Heater

						
Read <b>Warnings</b> on page 4. Wait for heater to cool before repairing.						

## Line Voltage

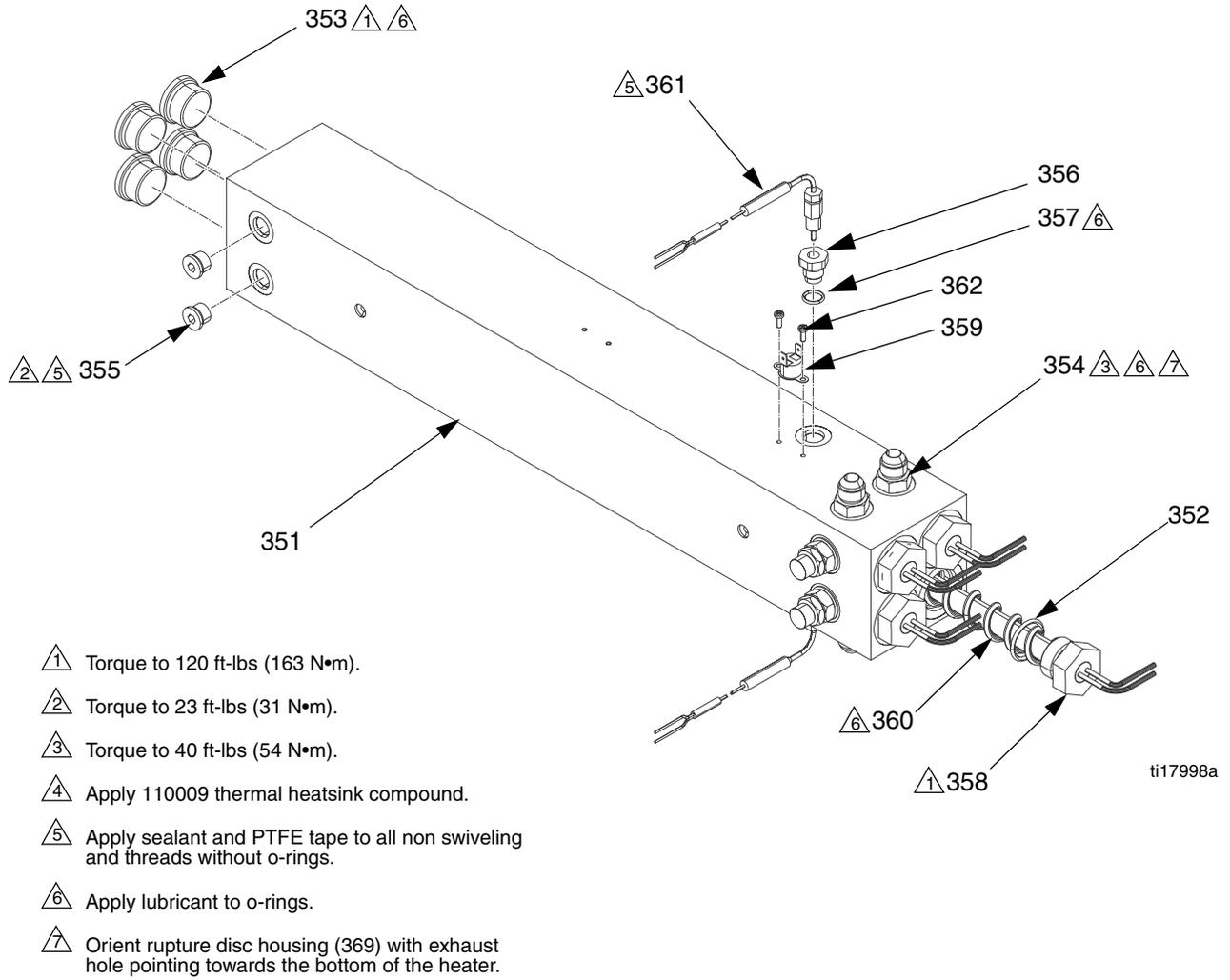
The primary heaters output their rated wattage at 230 Vac. Low line voltage will reduce power available and the heaters will not perform at full capability.

## Heater Element

1. Turn main power OFF  . Disconnect power supply.
2. Relieve pressure, page 13.
3. Wait for heaters to cool.
4. Remove heater shroud.
5. See FIG. 7. Disconnect heater element wires from heater wire connector. Test with ohmmeter.

Heater Rod Element Wattage	Ohms
1500	30-35

6. To remove heater element, first remove thermocouple (361) to avoid damage, see step 7, page 30.
7. Remove heater element (358) from housing (351). Be careful not to spill any fluid left in housing.
8. Inspect element. It should be relatively smooth and shiny. If there is a crusted, burnt, ash-like material adhered to element or sheath shows pitting marks, replace element.
9. Install new heater element (358), holding mixer (360) so it does not block thermocouple port (P).
10. Reinstall thermocouple, page 30.
11. Reconnect heater element leadwires to heater wire connector.
12. Replace heater shroud.



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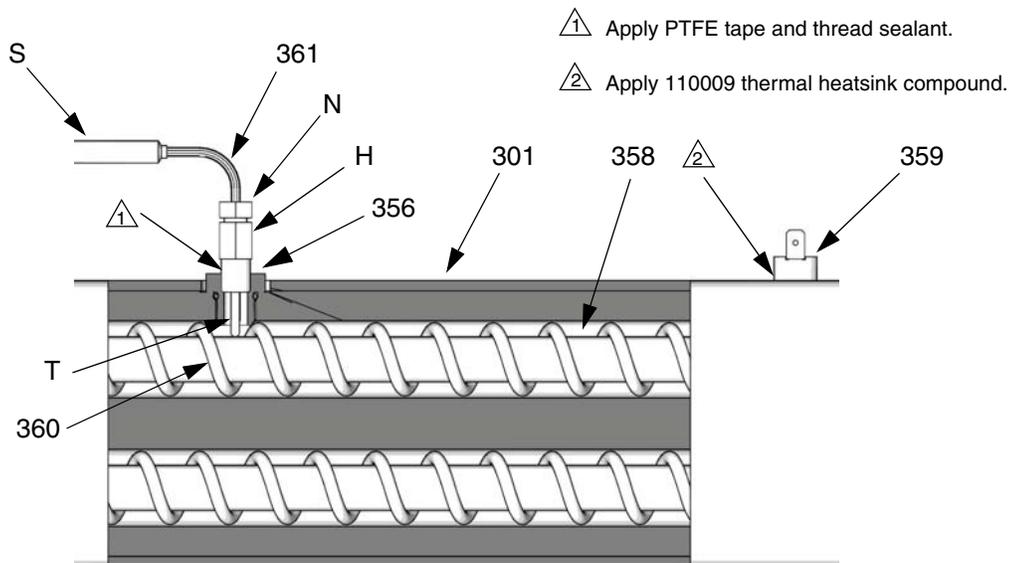
**FIG. 7. 6 kW Dual Zone Heater**

## Thermocouple



1. Turn main power OFF . Disconnect power supply.
2. Relieve pressure, page 13.
3. Wait for heaters to cool.
4. Remove heater shroud.
5. Disconnect thermocouple wires from B on temperature control module. See Table 2, page 26 and FIG. 6, page 26.
6. Feed thermocouple wires out of cabinet. Note path as wires must be replaced in the same way.
7. See FIG. 8. Loosen ferrule nut (N). Remove thermocouple (361) from heater housing (351), then remove thermocouple housing (H). Do not remove the thermocouple adapter (356) unless necessary. If adapter must be removed, ensure that mixer (360) is out of the way when replacing the adapter.

8. Replace thermocouple, FIG. 8.
  - a. Remove protective tape from thermocouple tip (T).
  - b. Apply PTFE tape and thread sealant to male threads and tighten thermocouple housing (H) into adapter (356).
  - c. Push in thermocouple (361) so tip (T) contacts heater element (358).
  - d. Holding thermocouple (T) against heater element, tighten ferrule nut (N) 1/4 turn past tight.
9. Route wires (S) into cabinet and thread into bundle as before. Reconnect wires to board.
10. Replace heater shroud.
11. Turn on heaters A and B simultaneously to test. Temperatures should rise at same rate. If one heater is low, loosen ferrule nut (N) and tighten thermocouple housing (H) to ensure thermocouple tip (T) contacts element (358).



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FIG. 8. Thermocouple

## Overtemperature Switch

Read <b>Warnings</b> on page 4. Wait for heater to cool before repairing.						

1. Turn main power OFF . Disconnect power supply.
2. Relieve pressure, page 13.
3. Wait for heaters to cool.
4. Remove heater shroud.
5. Disconnect one leadwire from overtemperature switch (359), FIG. 8. Test across switch with ohmmeter. Resistance must be approximately 0 ohms.
6. If switch fails test, remove wires and screws. Discard failed switch. Apply thermal compound 110009, install new switch in same location on housing (351), and secure with screws (311). Reconnect wires.

**NOTE:** If wires need replacement, disconnect temperature control module. See Table 2, page 26 and FIG. 6, page 26

## Heated Hose

Refer to the heated hose manual for hose replacement parts.

### Check Hose Connectors

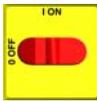
1. Turn main power OFF . Disconnect power supply.
2. Relieve pressure, page 13.

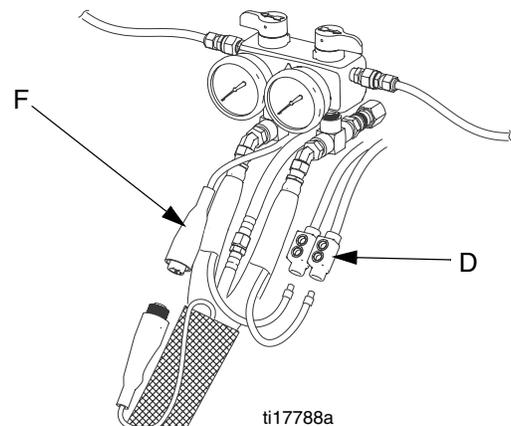
**NOTE:** Whip hose must be connected.

3. Disconnect hose connector (D) at Reactor, FIG. 9.
4. Using an ohmmeter, check between the two terminals of the connector (D). There should be continuity.

5. If hose fails test, retest at each length of hose, including whip hose, until failure is isolated.

### Check FTS Cables

1. Turn main power OFF . Disconnect power supply.
2. Relieve pressure, page 13.
3. Disconnect FTS cable (F) at Reactor, FIG. 9.



**FIG. 9. Heated Hose**

4. Test with ohmmeter between pins of cable connector.

Pins	Result
1 to 2	approximately 35 ohms per 50 ft (15.2 m) of hose, plus approximately 10 ohms for FTS
1 to 3	infinity

5. If cable fails test, retest at FTS, page 32.

## Fluid Temperature Sensor (FTS)

### Test/Removal

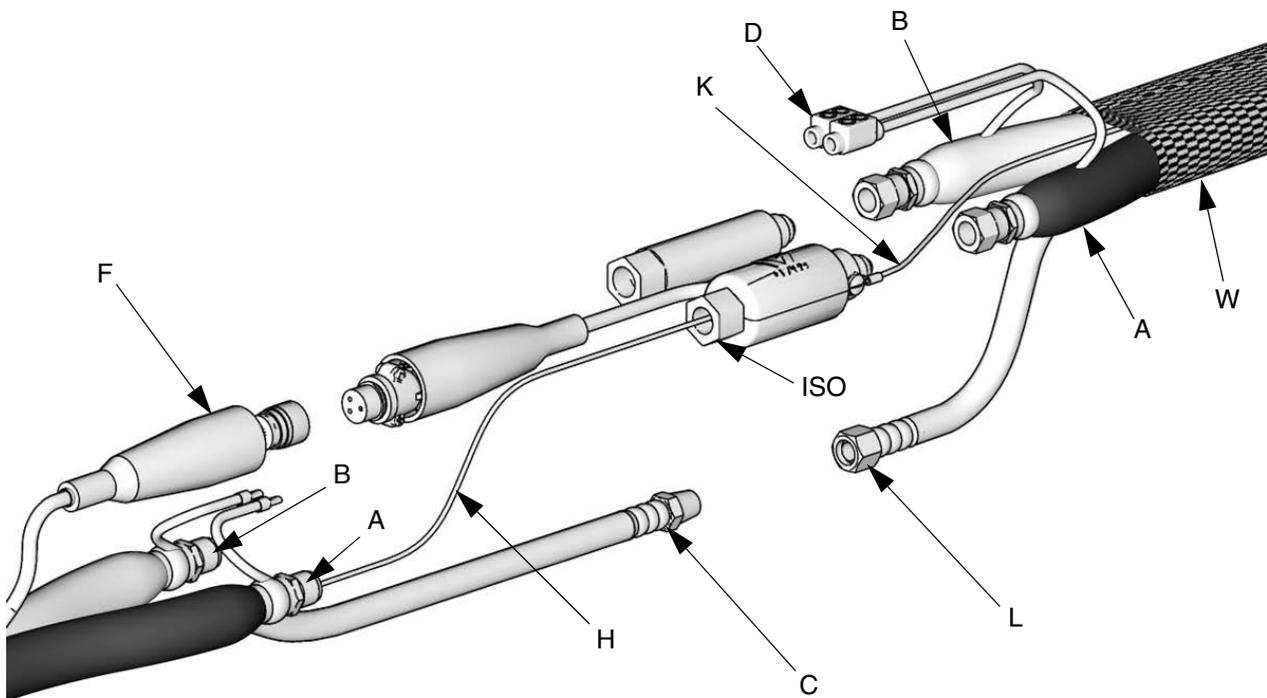
1. Turn main power OFF . Disconnect power supply.
2. Relieve pressure, page 13.
3. Remove tape and protective covering from FTS. Disconnect hose cable (F). Test with ohmmeter between pins of cable connector.

Pins	Result
1 to 2	approximately 10 ohms
1 to 3	infinity
3 to FTS groundscrew	0 ohms
1 to FTS component A fitting (ISO)	infinity

4. If FTS fails any test, replace FTS.
5. Disconnect air hoses (C, L), and electrical connectors (D).
6. Disconnect FTS from whip hose (W) and fluid hoses (A, B).
7. Remove ground wire (K) from ground screw on underside of FTS.
8. Remove FTS probe (H) from component A (ISO) side of hose.

### Installation

The Fluid Temperature Sensor (FTS) is supplied. Install FTS between main hose and whip hose. See Heated Hose manual 309572 for instructions.



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FIG. 10: Fluid Temperature Sensor and Heated Hoses

### Transformer Primary Check

1. Turn main power OFF  .
2. Locate the two smaller (10 AWG) wires coming out of transformer. Trace these wires back to contactor and circuit breaker (911). Use an ohmmeter to test for continuity between two wires; there should be continuity.

### Transformer Secondary Check

1. Turn main power OFF  .
2. Locate the two larger (6 AWG) wires coming out of transformer. Trace these wires back to large green connector under hose control module and circuit breaker (909). Use an ohmmeter to test for continuity between two wires; there should be continuity.

If you are not sure which wire in green plug under hose module connects to transformer, test both wires. One wire should have continuity with the other transformer wire in breaker (909) and the other wire should not.

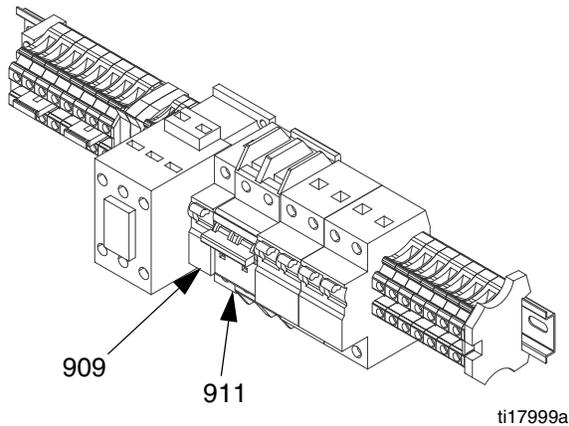


FIG. 11: Circuit Breaker Module

3. To verify transformer voltage, turn on hose zone. Measure voltage from 178CB-2 to HPOD-1; see **Reactor A-25 Wiring Schematic**, page 51.

Model	Secondary Voltage
310 ft.	90 Vac*
210 ft.	62 Vac*

\* For 230 Vac line voltage.

### Replace Transformer



1. Turn main power OFF  . Disconnect power supply.
2. Open Reactor cabinet.
3. Remove bolts holding transformer to cabinet floor. Slide transformer forward.
4. Disconnect the transformer wires; see **Reactor A-25 Wiring Schematic**, page 51.
5. Remove transformer from cabinet.
6. Install new transformer in reverse order.

## Replace Circuit Breaker Module



1. Turn main power OFF . Disconnect power supply. Turn circuit breakers on to test.
2. Relieve pressure, page 13.
3. Using an ohmmeter, check for continuity across circuit breaker (top to bottom). If no continuity, trip breaker, reset, and retest. If still no continuity, replace breaker as follows:
  - a. Refer to electrical diagrams and table below. Disconnect wires and remove bad breaker.

**NOTE:** To reference cables and connectors, see the electrical diagrams and parts drawings on page 49 and 51.

- b. Install new breaker and reconnect wires.

Ref.	Size	Component
CB1	50 A	Hose Secondary (single)
CB2	40 A	Hose Primary (double)
CB3	25 A	Heater A (double)
CB4	25 A	Heater B (double)

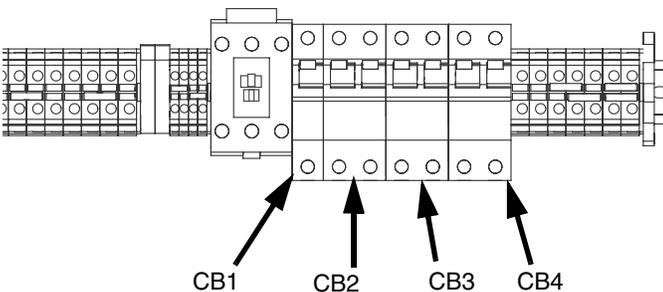


FIG. 12

## Pump Lubrication System



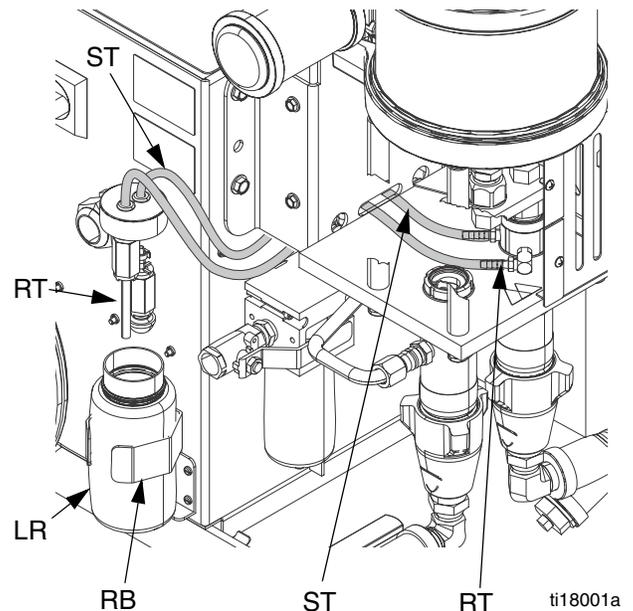
Check the condition of the ISO pump lubricant daily. Change the lubricant if it becomes a gel, its color darkens, or it becomes diluted with isocyanate.

Gel formation is due to moisture absorption by the pump lubricant. The interval between changes depends on the environment in which the equipment is operating. The pump lubrication system minimizes exposure to moisture, but some contamination is still possible.

Lubricant discoloration is due to continual seepage of small amounts of isocyanate past the pump packings during operation. If the packings are operating properly, lubricant replacement due to discoloration should not be necessary more often than every 3 or 4 weeks.

To change pump lubricant:

1. Relieve pressure, page 13.
2. Lift the lubricant reservoir (LR) out of the bracket (RB) and remove the container from the cap. Holding the cap over a suitable container, remove the check valve and allow the lubricant to drain. Reattach the check valve to the inlet hose (ST). See FIG. 13.
3. Drain the reservoir and flush it with clean lubricant.
4. When the reservoir is flushed clean, fill with fresh lubricant.
5. Thread the reservoir onto the cap assembly and place it in the bracket.
6. The lubrication system is ready for operation. No priming is required.



**FIG. 13. Pump Lubrication System**

## Fluid Inlet Strainer Screen

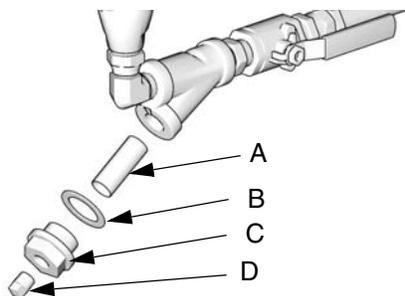


The inlet strainers filter out particles that can plug the pump inlet check valves. Inspect the screens daily as part of the startup routine, and clean as required.

Isocyanate can crystallize from moisture contamination or from freezing. If the chemicals used are clean and proper storage, transfer, and operating procedures are followed, there should be minimal contamination of the A-side screen.

**NOTE:** Clean the A-side screen only during daily startup. This minimizes moisture contamination by immediately flushing out any isocyanate residue at the start of dispensing operations.

1. Close the fluid inlet valve at the pump inlet and shut off the appropriate feed pump. This prevents material from being pumped while cleaning the screen.
2. Place a container under the strainer base to catch drain off when removing the strainer plug (C).
3. Remove the screen (A) from the strainer manifold. Thoroughly flush the screen with compatible solvent and shake it dry. Inspect the screen. No more than 25% of the mesh should be restricted. If more than 25% of the mesh is blocked, replace the screen. Inspect the gasket (B) and replace as required.
4. Ensure the pipe plug (D) is screwed into the strainer plug (C). Install the strainer plug with the screen (A) and gasket (B) in place and tighten. Do not over-tighten. Let the gasket make the seal.
5. Open the fluid inlet valve, ensure that there are no leaks, and wipe the equipment clean. Proceed with operation.



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FIG. 14. Fluid Inlet Strainer

## Temperature Display

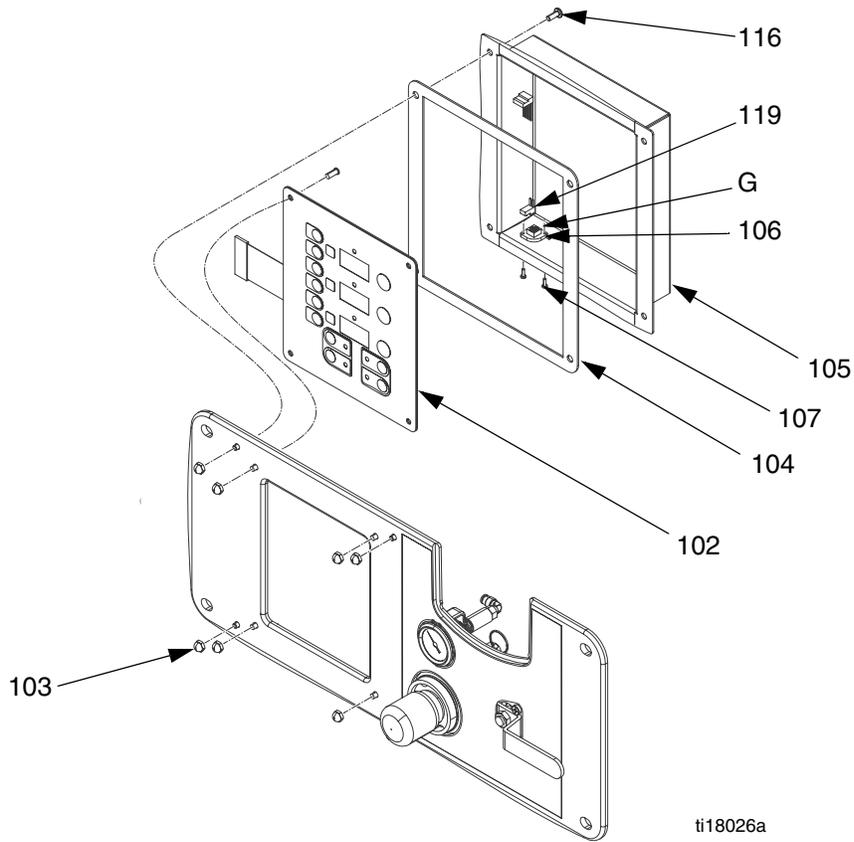


### NOTICE

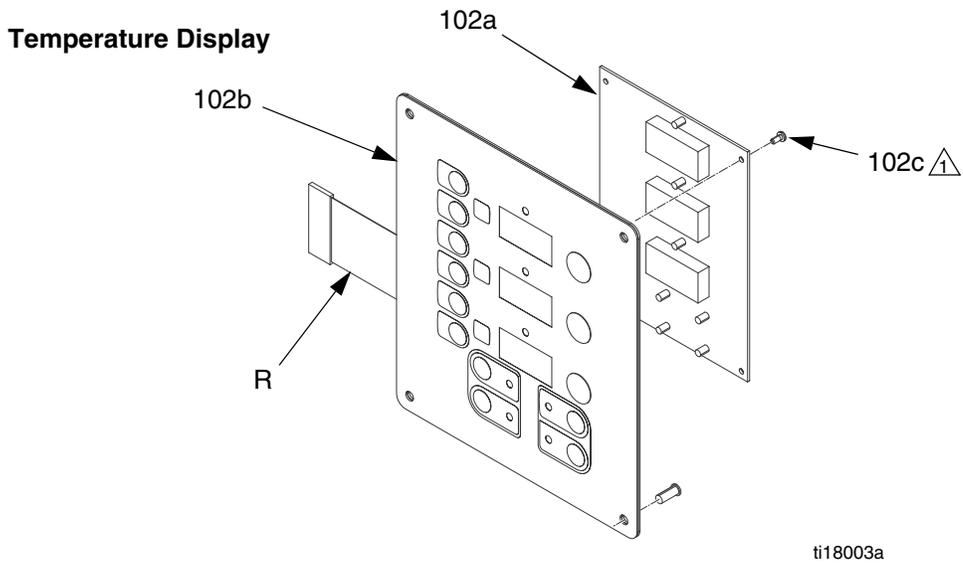
Before handling board, put on static conductive wrist strap to protect against static discharge which can damage assembly. Follow instructions provided with wrist strap.



1. Turn main power OFF . Disconnect power supply.
2. Relieve pressure, page 13.
3. Refer to **Reactor A-25 Wiring Schematic**, page 51.
4. Put on static conductive wrist strap.
5. Disconnect main display cable (106) at lower left corner of display module; see FIG. 15.
6. Remove screws (116) and cover (105); see FIG. 15.
7. Disconnect cable connector from back of temperature display (102). See FIG. 15.
8. Disconnect ribbon cable(s) (R) from back of display; see FIG. 15.
9. Remove nuts (103) and plate (101).
10. Disassemble display, see detail in FIG. 15.
11. Replace board (102a) or membrane switch (102b) as necessary.
12. Reassemble in reverse order, see FIG. 15. Apply medium strength thread sealant where shown. Be sure display cable ground wire (G) is secured between cable bushing and cover (105) with screws (107).



**Detail of Membrane Switches and Temperature Display Board**



**FIG. 15. Display Module**

## Replace DataTrak Battery or Fuse

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

The battery and fuse must be replaced in a non-hazardous location.

Use only the following approved replacement batteries. Use of an unapproved battery will void Graco's warranty and FM and Ex approvals.

- Ultralife lithium # U9VL
- Duracell alkaline # MN1604
- Energizer alkaline # 522
- Varta alkaline # 4922

Use only a Graco-approved replacement fuse. Order Part 24C580.

### Replace Battery

1. Unscrew cable from the back of the reed switch assembly. See FIG. 16.
2. Remove the cable from the two cable clips.

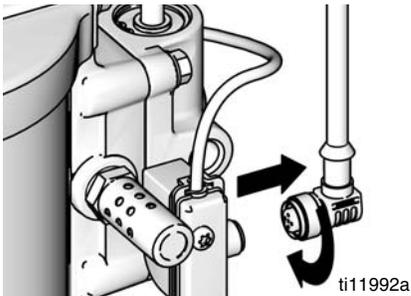


FIG. 16. Disconnect DataTrak

3. Remove DataTrak module from bracket. See FIG. 17. Take module and attached cable to a non-hazardous location.

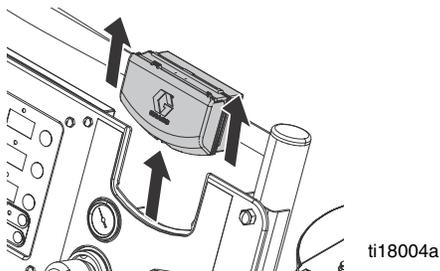


FIG. 17. Remove DataTrak

4. Remove two screws on back of module to access battery.
5. Disconnect the used battery and replace with an approved battery. See FIG. 18.

### Replace Fuse

1. Remove the screw, metal strap, and plastic holder.
2. Pull the fuse away from the board.
3. Replace with a new fuse.

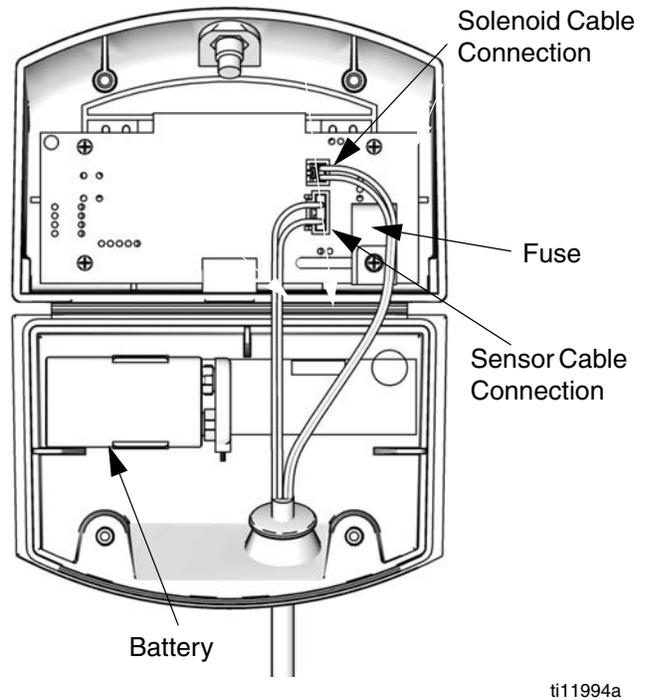


FIG. 18. DataTrak Battery and Fuse Location

# Accessories

## Feed Pump Kits

Pumps, hoses, and mounting hardware to supply fluids to Reactor. Includes 246483 Air Supply Kit. See 309815.

### 246483 Air Supply Kit

Hoses and fittings to supply air to feed pumps, agitator, and gun air hose. Included in feed pump kits. See 309827.

### 246978 Circulation Kit

Return hoses and fittings to make circulation system. Includes two 246477 Return Tube Kits. See 309852.

### 246477 Return Tube Kit

Desiccant dryer, return tube, and fittings for one drum. Two included in 246978 Circulation Kit. See 309852.

## TSL (Throat Seal Liquid)

206995 1 qt (1 liter) bottle

206996 1 gal. (3.8 liter) container

### 24A592 DataTrak with Cycle Count Only Kit

DataTrack and reed switch for NXT Air Motor. See manual 313541.

## Heated Hoses

50 ft (15.2 m) and 25 ft (7.6 m) lengths, 1/4 in. (6 mm), 3/8 in. (10 mm), or 1/2 in. (13 mm) diameter, 2000 psi (14 MPa, 140 bar) or 3500 psi (24 MPa, 241 bar). See 309572.

## Heated Whip Hoses

10 ft (3 m) whip hose, 1/4 in. (6 mm) or 3/8 in. (10 mm) diameter, 2000 psi (14 MPa, 140 bar) or 3500 psi (24 MPa, 241 bar). See 309572.

## Fusion Spray Gun

Air Purge Gun available in round or flat pattern. See 309550. Mechanical Purge Gun available in round or flat pattern. See manual 309856. Clear Shot Gun available in round or flat patten. See manual 312666.

## P2 Spray Gun

Probler P2 Gun available in round or flat pattern. See 313213.

## Y-Strainer Screen

Replacement strainer screen for fluid Y-strainer; 20 mesh.

Part	Description
180199	20 mesh; as shipped
255082	80 mesh (2 pack)
255083	80 mesh (10 pack)

## 114228 Air Filter Element

Replacement air filter element; 5 micron.

## 262695 Wheel Kit

All hardware and wheels to convert model 262572.

# Recommended Spare Parts

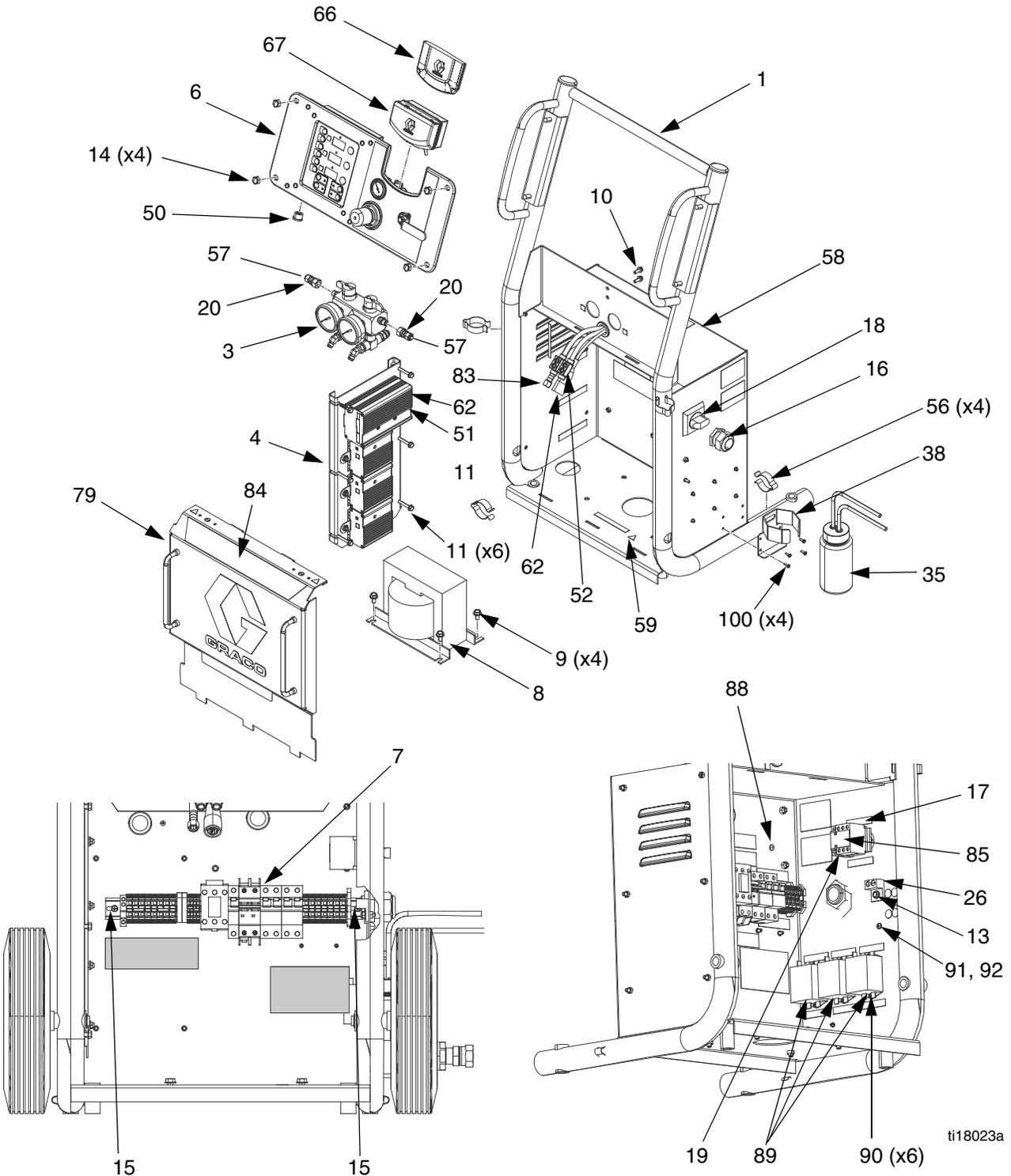
Keep the following spare parts on hand to reduce down-time.

Part No.	Description
262648	Pump, Resin (B) side
246421	Resin (B) Pump Repair Kit for 262648 pump
262647	Pump, ISO (A) side
15C851	ISO (A) Pump Repair Kit for 262647 pump
246963	Wet Cup Kit for 262647 pump
206995	TSL bottle, 1 qt (1 liter)
101078	Y-Strainer; includes 180199 element
180199	Element, Y-Strainer, 20 mesh
114228	Element, air filter, 5 micron
239914	Valve, recirc/spray; includes seat and gasket

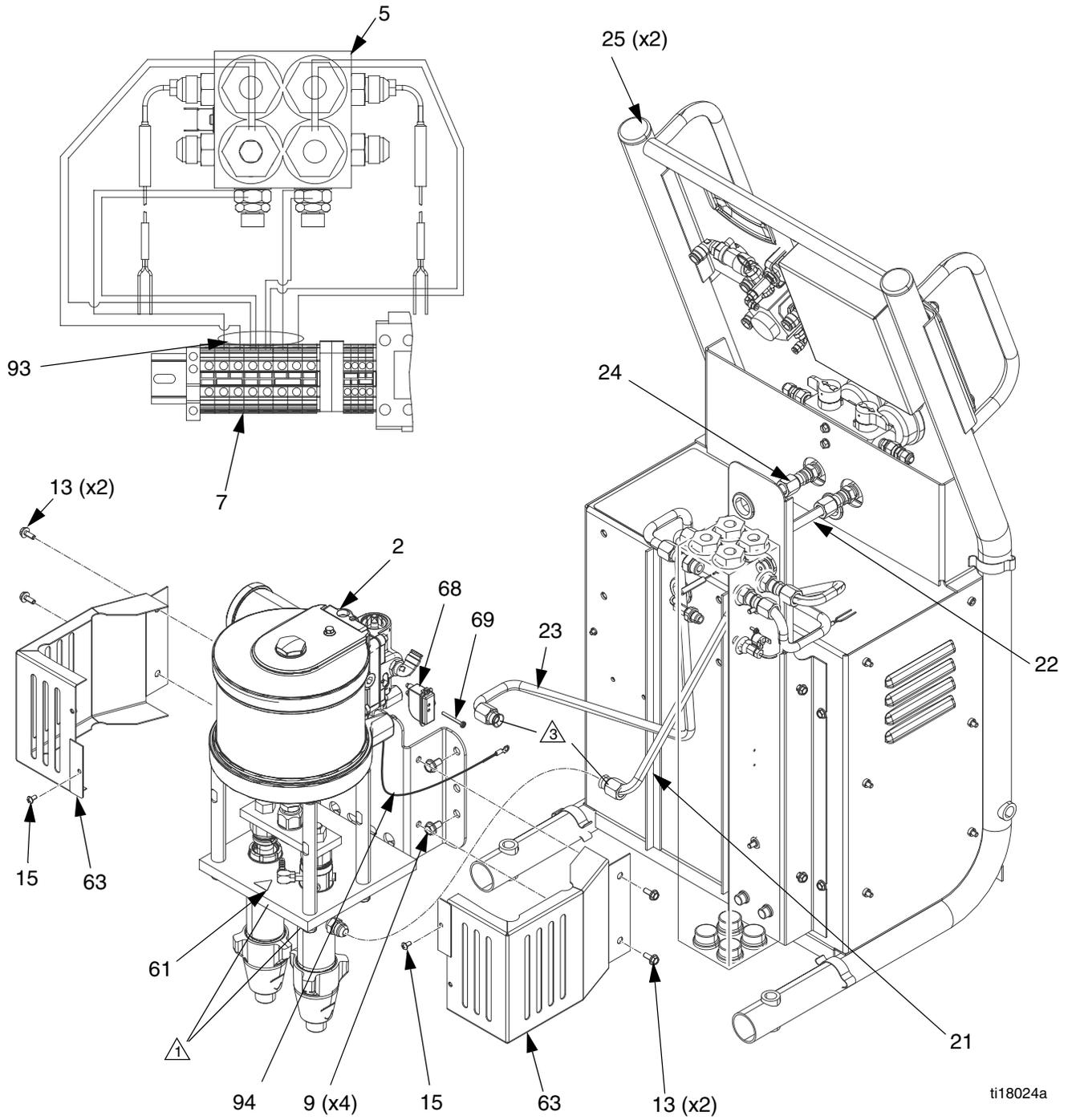
# Parts

262572, Bare Reactor A-25

262614, Reactor A-25 with DataTrak and Wheels

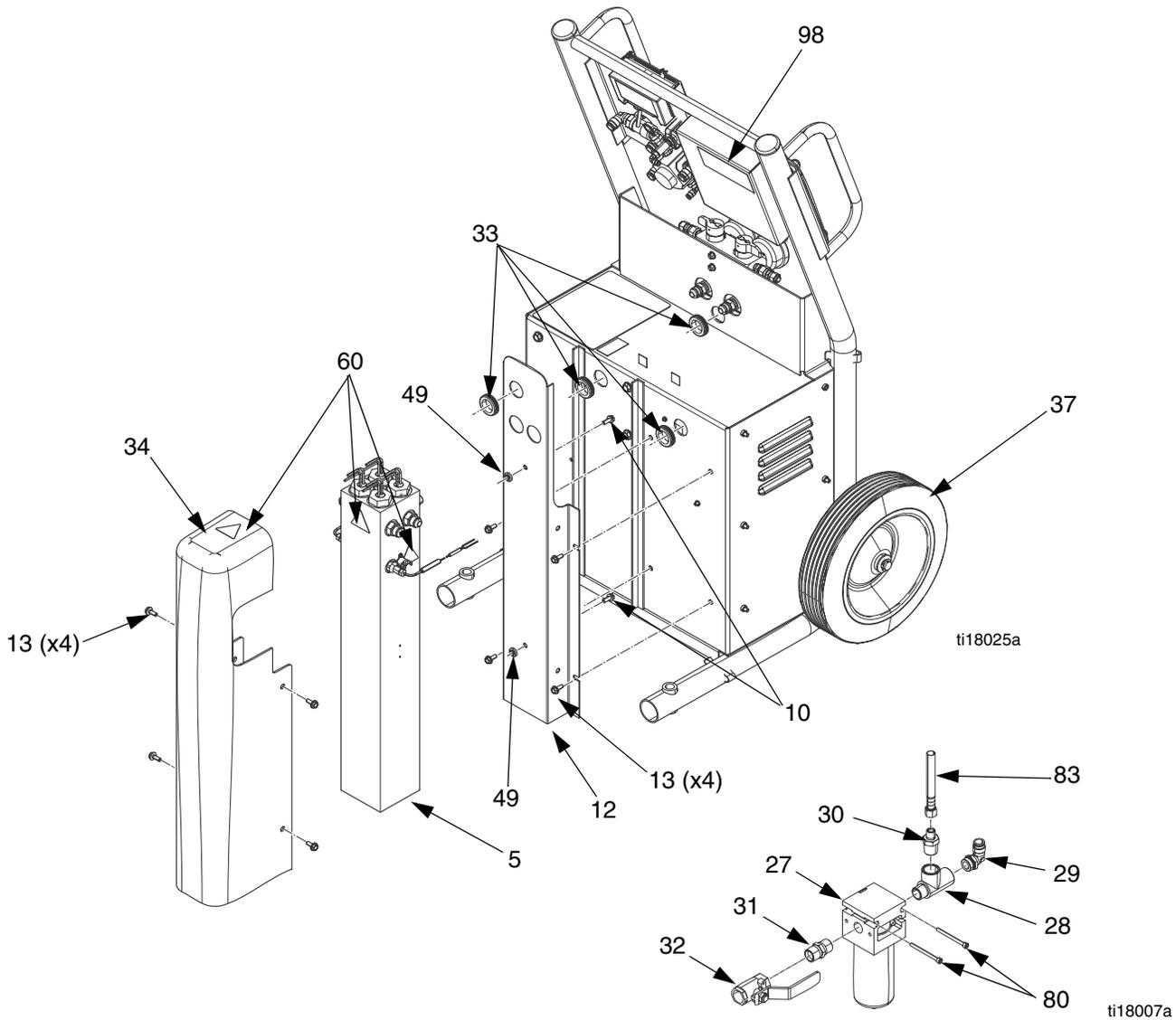


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- ⚠**1** Torque pump locking nuts to 66-74 ft-lbs (90-100 N•m).
- ⚠**2** Apply anaerobic polyacrylate pipe sealant to all non-swiveling pipe threads.
- ⚠**3** Torque tube ends to 212-265 in-lbs (24-30 N•m).
- ⚠**4** Connect ground wire (94) from motor lug to ground lug in cabinet.



**262572, Bare Reactor A-25**  
**262614, Reactor A-25 with DataTrak and Wheels**

Ref	Part	Description	Qty.
1	---	CART	1
2	262573	PUMP; see page 48	1
3	262577	MANIFOLD, relief; see page 46	1
4	---	PANEL, control, heater; see page 45	1
5	24J788	HEATER, system, (6.0kw, 230v); see page 47	1
6	262575	PANEL, control; see page 44	1
7	262576	MODULE, breaker; see page 50	1
8	24M177	TRANSFORMER, 2790va, 230/62	1
9	111799	SCREW, cap, hex hd; M8 x 1.25	8
10	108296	SCREW, mach, hex wash hd; 1/4-20 UNC-2A	4
11	125621	SCREW, machine, hex washer, hd; M6 x 1	6
12	16G917	BRACKET, heater	1
13	114182	SCREW, mach, hex flange; M6 x 1	13
14	117623	NUT, cap, 3/8-16	4
15	106084	SCREW, mach, pan hd; M5 x 0.8	2
16	117682	BUSHING, strain relief	1

17	123970	SWITCH, disconnect, 40a	1	69†*	---	FASTENER, screw, pan head, m4 x 35mm	1
18	123971	KNOB, disconnect, operator	1				
19	123972	SWITCH, fourth pole	1	79	262581	COVER, electrical, assembly	1
20	205447	COUPLING, hose	2	80	---	SCREW, shcs, m5x60	2
21	16G921	TUBE, fluid, A, heater, inlet	1	83	248208	HOSE, coupled, 4 feet	1
22	16G922	TUBE, fluid, A, heater, outlet	1	82‡	15H187	WIRE, jumper, w/quick disconnect	1
23	16G923	TUBE, fluid, B, heater, inlet	1				
24	16G924	TUBE, fluid, B, heater, outlet	1	84	---	LABEL, product	1
25	112125	PLUG, tube	2	85▲	16J808	LABEL, warning, disconnect wiring	1
26	117666	TERMINAL, ground	1	88	195874	SCREW, phillips, pan hd; M4 x 8	1
27	15D795	FILTER, air, 40 micron	1	89	16K669	FILTER, electrical	3
28	107128	TEE, service	1	90	115266	SCREW, cap, socket hd; M5 x 10	6
29	114110	ELBOW, male, swivel	1				
30	162449	NIPPLE, reducing	1	91	---	SCREW, pan hd; M5 x 16	1
31	158491	NIPPLE	1	92	---	WASHER, #10, external tooth lock	1
32	262660	VALVE, ball, 1/2 npt x 1/2 npt	1				
33	114269	GROMMET, rubber	4	93	---	TUBE, pe, spiral, wrapping; 1.2 ft (0.4 m)	1
34	16G918	COVER, heater	1				
35	246995	BOTTLE, assembly, complete	1	94	16M086	WIRE, ground, pump	1
36	234366	KIT, fluid inlet, pair; see page 46	1	95‡	114601	CONDUIT, flexible, non-metallic	1
37†	262695	KIT, wheel; see page 51	2	96‡	---	SLEEVE, heat-shrink, 2:1; 0.75 ft, 1/2 in. ID, 1/4 in. OD	1
38	16M152	BRACKET, lube, reservoir	1				
44‡	247791	HARNESS, wire, hose	1	97‡	120573	BRIDGE, plug-in, jumper	4
45‡	261669	KIT, fluid temp sensor, coupler	1	98	16M088	LABEL, error codes	1
49	167002	INSULATOR, heat	2	99‡	114958	STAP, tie	10
50	16J433	HARNESS, wire, display, ext.	1	100	105676	SCREW, pan hd	4
51	16J434	HARNESS, over temp, a-side, b-side	1				
52	261821	CONNECTOR, wire, 6awg	1				
53‡	---	FLUID, oxide inhibitor	1				
54‡	206994	FLUID, TSL, 8 oz. bottle	1				
55‡	206995	FLUID, TSL, 1 qt.	1				
56	186494	CLIP, spring	4				
57	---	HOSE, PTFE; 5 ft (1.5 m), 0.25 in. (6.35 mm) ID	1				
58▲	15G280	LABEL, warning	1				
59▲	189930	LABEL, caution	1				
60▲	189285	LABEL, caution	3				
61▲	15H108	LABEL, pinch point	1				
62	15B380	CABLE, hose, control	1				
63	16G952	COVER, pump	2				
64	---	TUBE, polyethylene, rnd; 3/4 OD; 0.75 ft (0.2 m); see page 49	1				
65	---	TUBE, polyurethane, rnd, black; 5.12 ft (1.56 m); see page 49	1				
66★	---	INSERT, control panel	2				
67†	24B563	KIT, DataTrak	1				
68†*	24B659	SWITCH, reed assy	1				

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

† Only used with 262614.

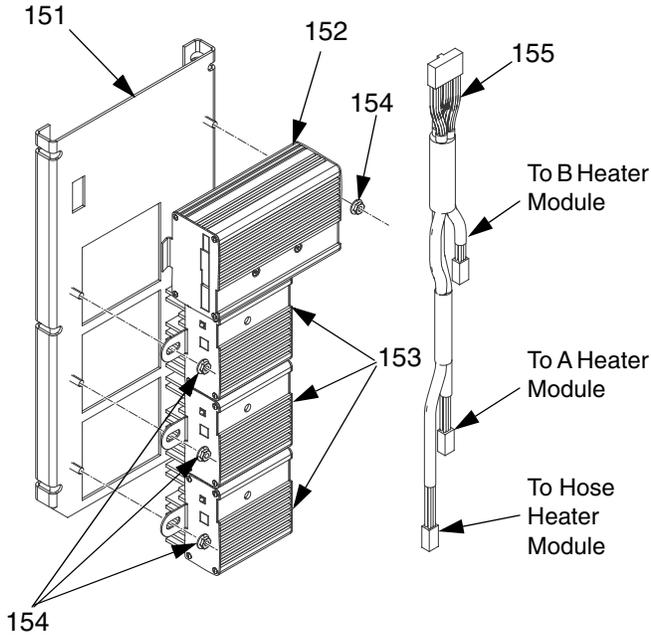
★ Only used with 262572.

\* Included in Reed Switch Kit 24B659.

‡ Not shown.

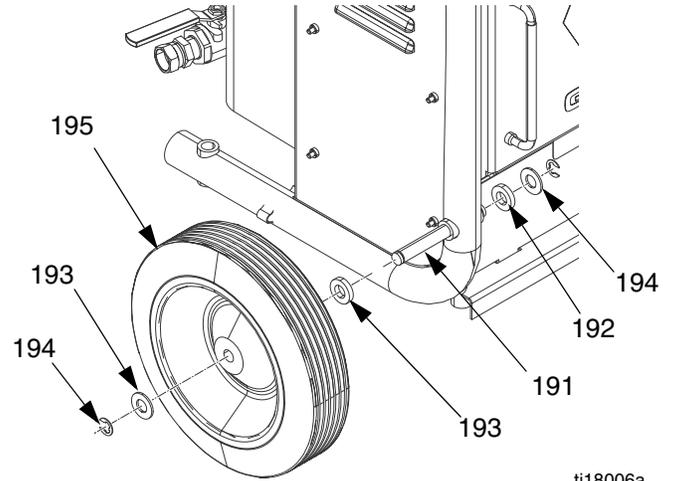


## Temperature Control



Ref. Part	Description	Qty.
151	16G925 PANEL, pod, mounting	1
152	247827 MODULE, heater control	1
153	247828 MODULE, heater	3
154	114183 NUT, hex, flanged, serrated	4
155	247801 CABLE, communication	1

## Wheel Kit, 262695

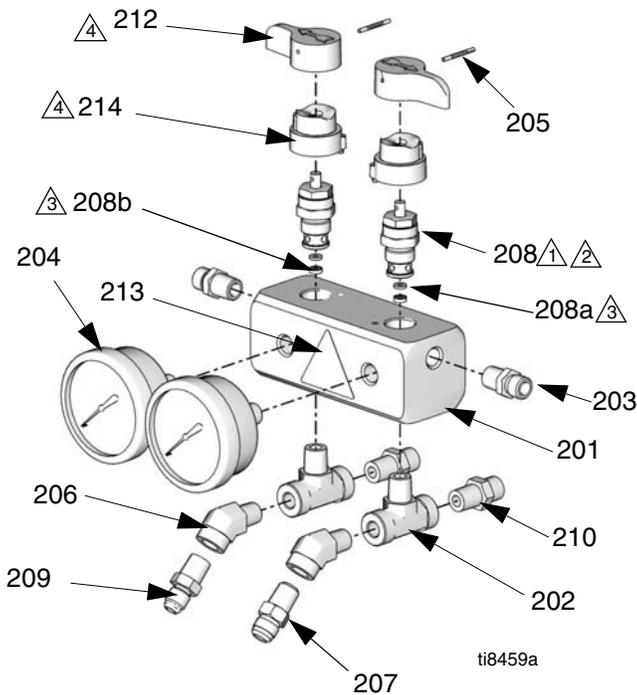


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Ref. Part	Description	Qty.
191 †	16H182 AXLE, wheel	2
192 †	111841 WASHER, plain 5/8	4
193 †	191824 WASHER, space	4
194 †	101242 RING, retaining, ext.	4
195 †	16G920 WHEEL, semi pneumatic, offset	2

† Only used with 262614. Available as add on wheel kit 262695.

## Fluid Manifold

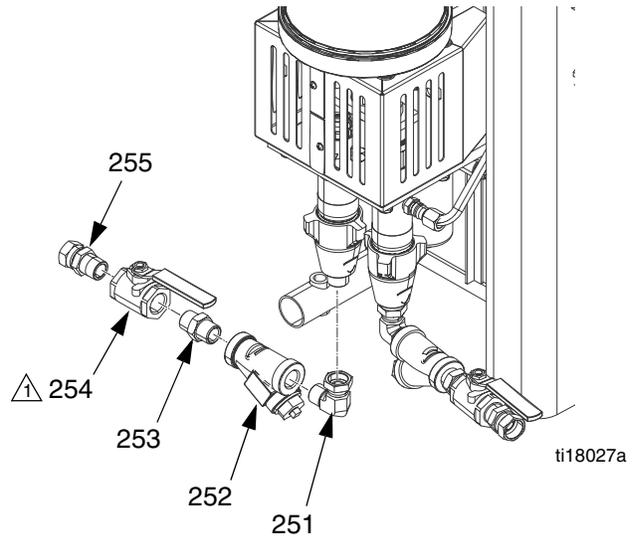


- ① Apply sealant and torque to 250 in-lbs (28 N•m).
- ② Use blue thread lock on valve cartridge threads into manifold.
- ③ Part of item 208.
- ④ Apply lubricant to mating surfaces.
- ⑤ Apply pipe sealant to all NPT threads.

Ref.	Part	Description	Qty.
201	24K993	MANIFOLD, recirculation	1
202	108638	FITTING, pipe, tee	2
203	162453	FITTING, (1/4 npsm x 1/4 npt)	2
204	113641	GAUGE, pressure, fluid, SST	2
205	111600	PIN, grooved	2
206	119789	FITTING, elbow, street, 45 deg,	2
207	116704	ADAPTER, 3/8 JIC x 1/4 npt	1
208	239914	VALVE, drain; includes 208a, 208b	2
208a	---	SEAT	2
208b	---	GASKET	2
209	119998	ADAPTER, 5/16 JIC x 1/4 npt	1
210	116702	FITTING, union, 1/4 npt x 3/8 JIC	2
212	187625	HANDLE, valve, drain	2
213▲	189285	LABEL, caution	1
214	224807	BASE, valve	2

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

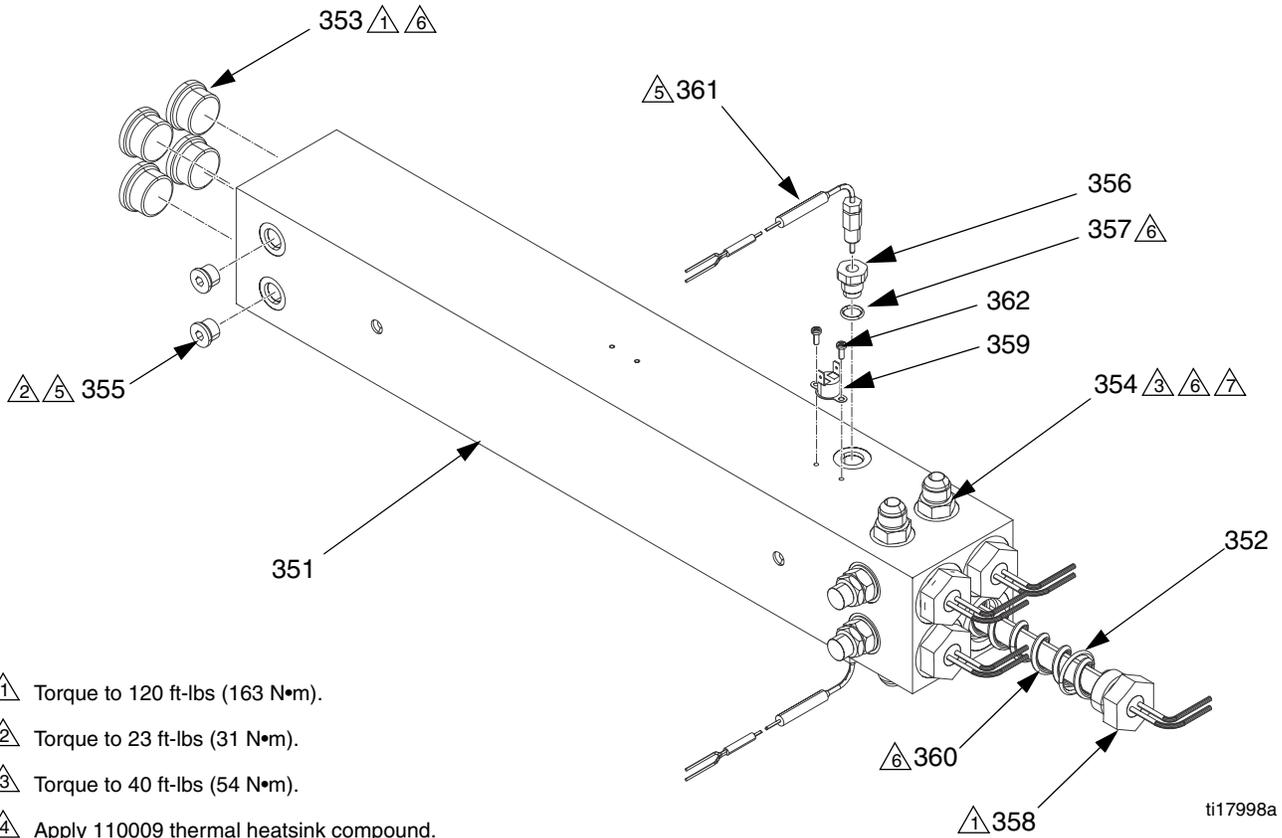
## Fluid Inlet Kit, 262695



- ① Assemble ball valves in orientation shown.
- ② Apply anaerobic polyacrylate pipe sealant to all NPT connections.

Ref.	Part	Description	Qty.
251	160327	UNION, adapter, 90°; 3/4 npt(m) x 3/4-14 npt(f)	2
252	101078	Y-STRAINER; 20 m screen	2
253	C20487	NIPPLE, 3/4 npt	2
254	109077	VALVE, ball; 3/4 npt (fbe)	2
255	118459	UNION, swivel; 3/4-14 npt(m)x 3/4-14 npt(f)	2
256	180199	ELEMENT, 20 mesh	2

# 6 kw Dual Zone Heater, 24J788

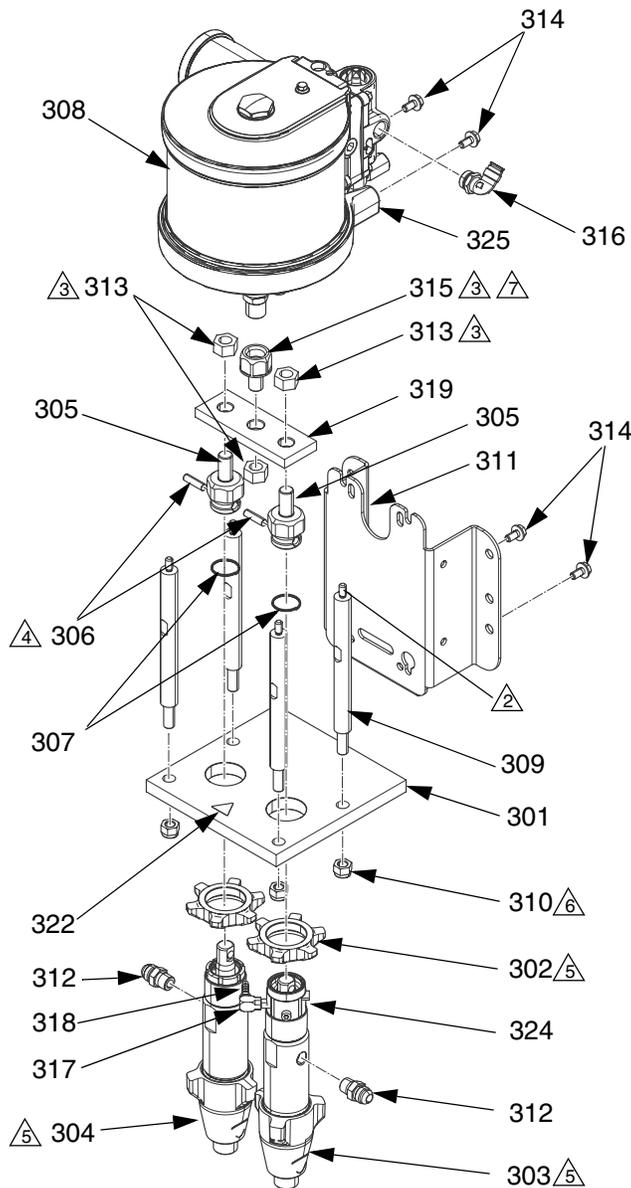


- 1 Torque to 120 ft-lbs (163 N•m).
- 2 Torque to 23 ft-lbs (31 N•m).
- 3 Torque to 40 ft-lbs (54 N•m).
- 4 Apply 110009 thermal heatsink compound.
- 5 Apply sealant and PTFE tape to all non swiveling and threads without o-rings.
- 6 Apply lubricant to o-rings.
- 7 Orient rupture disc housing (369) with exhaust hole pointing towards the bottom of the heater.

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Ref	Part	Description	Qty.
351	---	HEATER, dual zone	1
352	124132	O-RING	4
353	15H305	FITTING, plug hollow hex 1-3/16 sae	4
354	121309	FITTING, adapter, sae-orb x jic	4
355	15H304	FITTING, plug 9/16 sae	2
356	15H306	ADAPTER, thermocouple, 9/16 x 1/8	2
357	120336	O-RING, packing	2
358	16A112	HEATER, immersion, (1500w, 230v)	4
	359	15B137 SWITCH, over temperature	1
	360	15B135 MIXER, immersion heater	4
	361	117484 SENSOR	2
	362	--- SCREW, mach, pnh	2
	369	247520 KIT, rupture disc	2

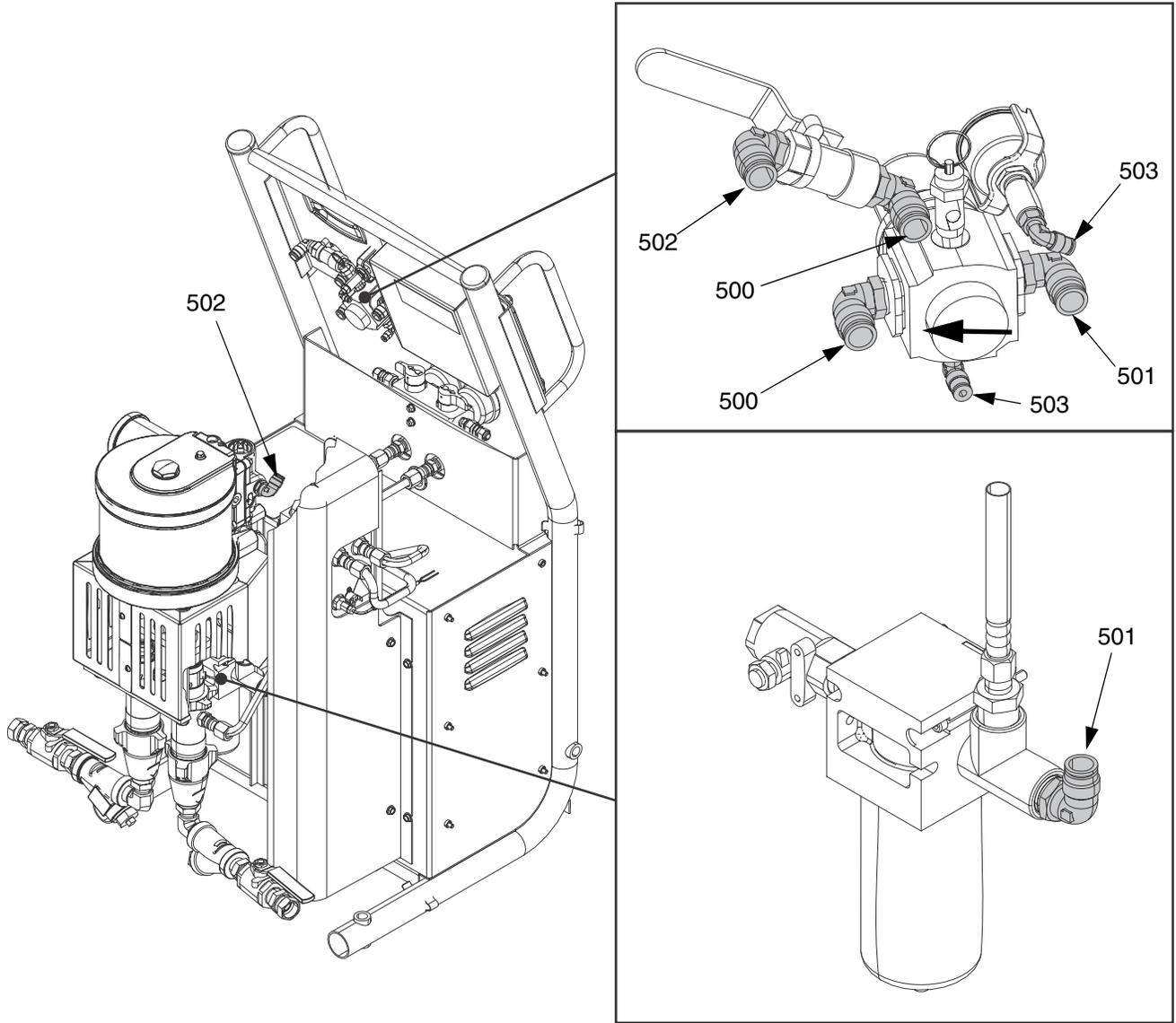
# A-25 Air Motor Pump Assembly, 262573



Ref	Part	Description	Qty.
301	16G915	PLATE, Mounting, Cylinder	1
302	193031	NUT, retaining	2
303	262647	PUMP, displacement, w/lube; iso	1
304	262648	PUMP, displacement; resin	1
305	15J132	LINK, connecting	2
306	183210	PIN, str, hdls	2
307	183169	SPRING, retaining	2
308	M12LP0	MOTOR, air, NXT, 6 in., cycle only; see manual 312796	1
309	16G929	ROD, tie	4
310	125266	NUT, lock, nylon, m12	4
311	16G926	BRACKET, pump mounting	1
312	117833	ADAPTER, 3/4-16 JIC x 3/8 NPT	2
313	120553	NUT, center lock, 5/8-18	3
314	111799	SCREW, cap, hex hd	4
315	16G914	ADAPTER, rod	1
316	114110	ELBOW, male, swivel	1
317	15K783	ELBOW, street, 90°	1
318	116746	FITTING, barbed, plated	2
319	16G916	PLATE, yoke, pump	1
322	15H108	LABEL, pinch point	1
324	100139	PLUG, PIPE	2
325	15B565	VALVE, 1/4 npt, park	1

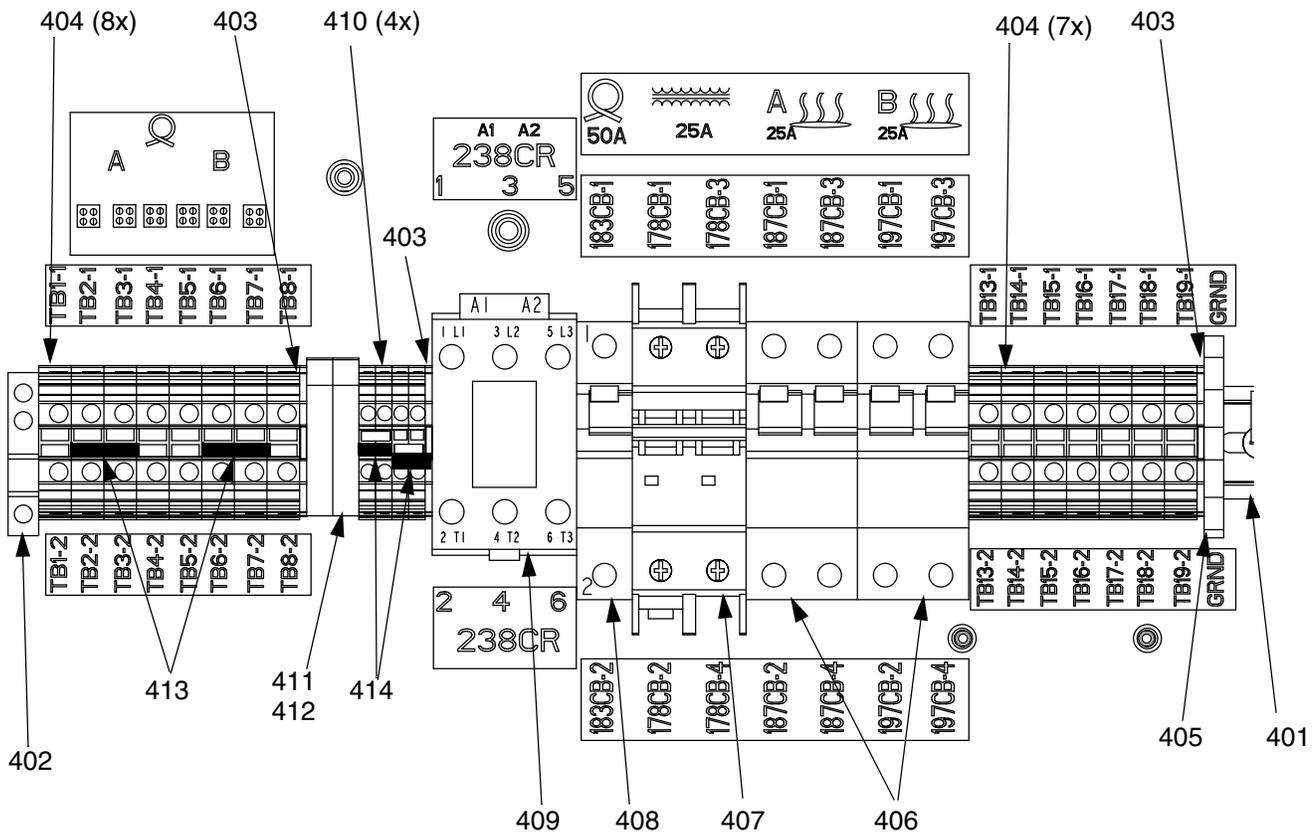
- 1 Apply PTFE tape and sealant to non-swiveling pipe threads.
- 2 Torque to 88.5-124 in.-lbs (10-14 N•m).
- 3 Torque to 32-38 ft-lbs (43-51 N•m). Torque nut (313) after assembly of item pin (306) and spring (307).
- 4 Install adapters so that pins (306) will be in-line with each other.
- 5 Lubricate threads of pump cylinders (303, 304) and plate (301) with lubricant prior to assembly into mounting plate. Assemble pump cylinder 1/2 thread above flush to one and one half thread above flush of mounting pate surface.
- 6 Torque to 27-32 ft-lbs (37-43 N•m).
- 7 Use blue thread lock (medium).

# Air Tubing Connections



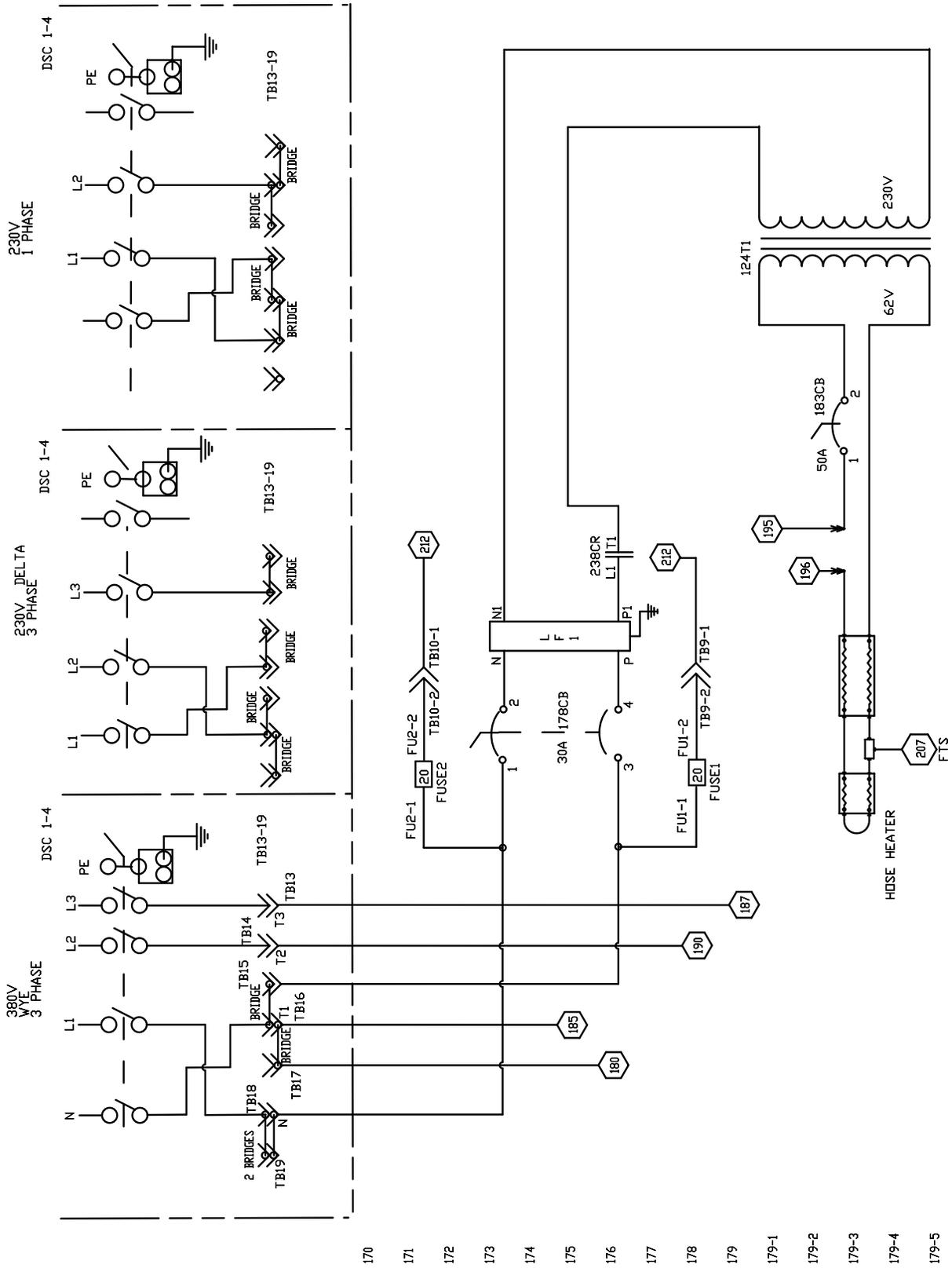
Ref.	Length ft (m)	Connection		Material	Color	Outside Diameter
		From	To			
64	0.75 ft (0.23 m)	503	503	UHMWPE	Black	5/32 in. (4 mm)
65	2.66 ft (0.8 m)	501	501	Urethane	Black	1/2 in. (12.7 mm)
65	1.66 ft (0.5 m)	502	502	Urethane	Black	1/2 in. (12.7 mm)
65	0.75 ft (0.23 m)	500	500	Urethane	Black	1/2 in. (12.7 mm)

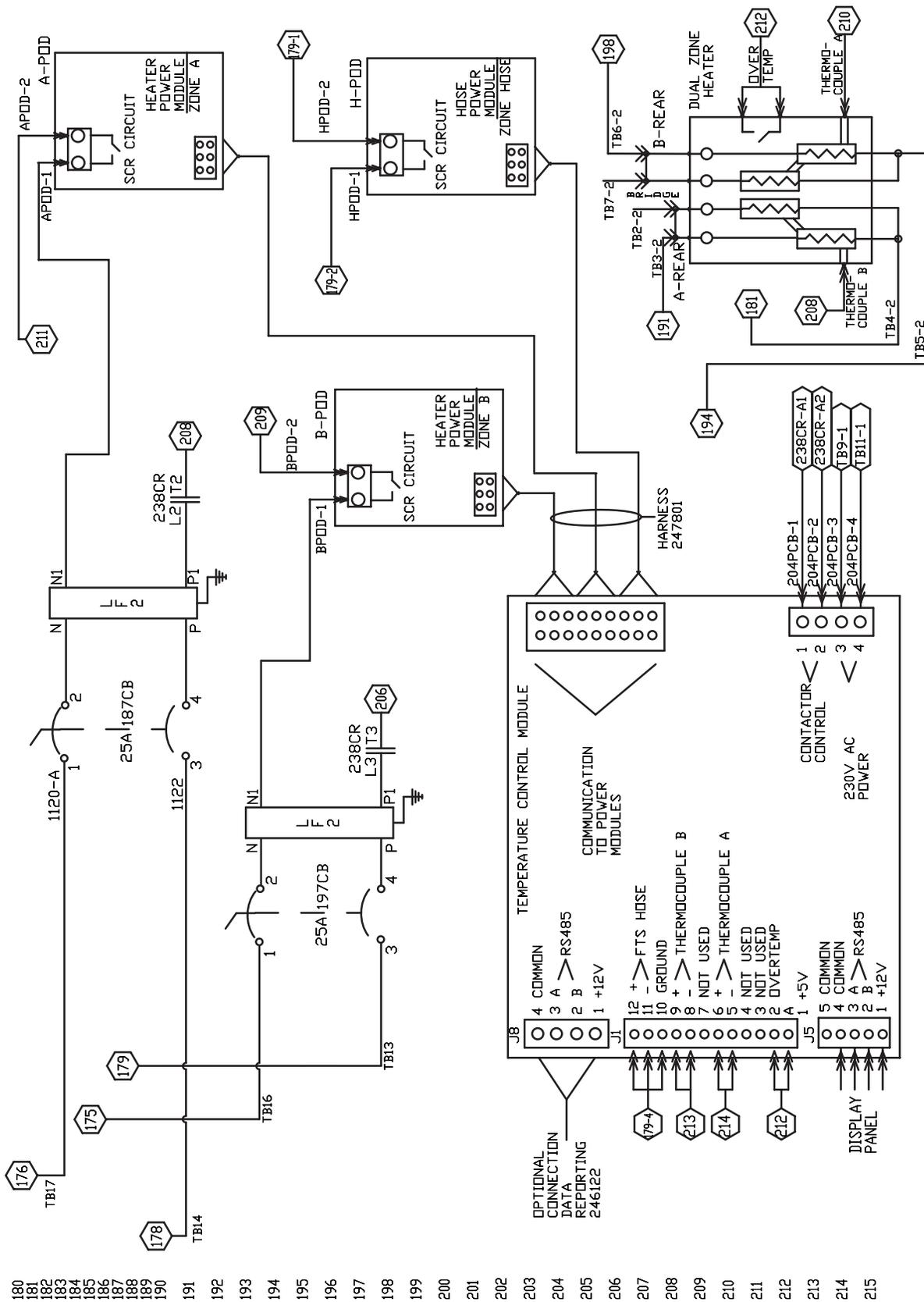
# Breaker Module, 262576



Ref.	Part	Description	Qty.
401	16H309	RAIL, mounting	1
402	112446	BLOCK, clamp end	1
403	120490	COVER, end	3
404	120570	BLOCK, terminal	15
405	255046	BLOCK, terminal ground	1
406	255050	CIRCUIT BREAKER, 25a, 2p	2
407	24M176	CIRCUIT BREAKER, 30a, 2p	1
408	255026	CIRCUIT BREAKER, 1 pole, 50a, c curve	1
409	255022	RELAY, contactor, 65a, 3p	1
410	120491	BLOCK, terminal	4
411	255043	HOLDER, fuse term.block 5x20mm	2
412	255023	FUSE, 5a, 5x20mm	2
413	120573	BRIDGE, plug-in, (jumper)	2
414	120485	BRIDGE, plug-in, (jumper)	2
415	16J534	HARNES, wiring	1

# Reactor A-25 Wiring Schematic

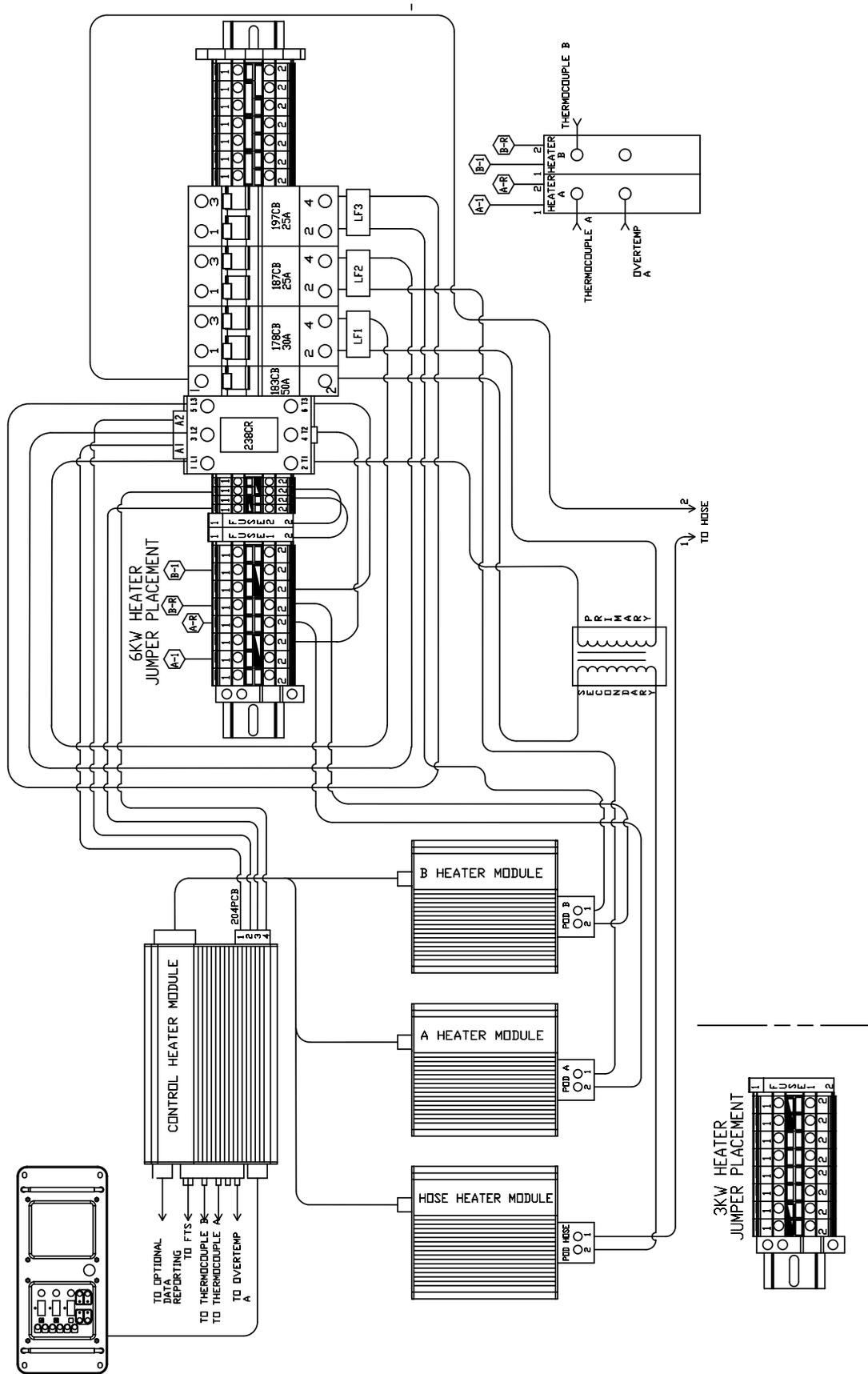




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Simplified Schematic, Heater Controls



# Technical Data

Category	Data
Maximum Fluid Working Pressure	2000 psi (14 MPa, 138 bar)
Maximum Air Supply Pressure	125 psi (0.9 MPa, 9 bar)
Maximum Air Working Pressure	80 psi (550 kPa, 5.5 bar)
Pressure Ratio	25:1
Air consumption with 02 tip at 1500 psi stall pressure	28 scfm (0.8m <sup>3</sup> /min)
Machine Maximum Power with hose	9000 Watts
Voltage Requirement (50/60 Hz) (230 V Nominal: 195-253 VAC) (380 V Nominal: 338-457 VAC)	230 V, 1 Phase 230 V, 3 Phase (Delta) 380 V, 3 Phase (WYE 220 V to Neutral)
Amperage Requirement (Full Load Peak)*	40 amps @ 230 V, 1 Phase 32 amps @ 230 V, 3 Phase 18.5 amps @ 380 V, 3 Phase
Maximum Heater Fluid Temperature	190 °F (88 °C)
Maximum Hose Fluid Temperature	180 °F (82 °C)
Maximum Ambient Temperature	120 °F (49 °C)
Maximum Output	25 lb/min. (11.4 kg/min.)
Output Per Cycle (A and B)	0.025 gal/cycle (0.095 ltr/cycle)
Heater Power	6000 Watts
Hose Power	2790 Watts
Sound Pressure (see NXT air motor manual)	70.2 dB(A)
Sound Power (see NXT air motor manual)	80.1 dB(A)
Viscosity Range	250-1500 centipoise (typical)
Maximum Fluid Inlet Pressure	300 psi (2.1 MPa, 21 bar) or 15% of output pressure
Fluid Inlet/Strainer Filter	20 mesh standard
Air inlet Filter Mesh	40 Micron
Component B (Resin) Inlet	3/4 npt(f) swivel
Component A (Isocyanate) Inlet	3/4 npt(f) swivel
Recirculation/Block Hose Connections	Iso (A) side: #5 JIC (m); Resin (B) side: #6 JIC (m)
Maximum Heated Hose Length***	210 ft of 3/8 ID
Weight	310 lb (140.6 kg)
Wetted Parts	Carbon steel, stainless steel, chrome, aluminum, Fluoroelastomer, PTFE, nylon

\*Full load amps with all devices operating at maximum capabilities with 210 ft (64.1 m) of hose.

\*\*\*210 ft (64 m) of heated hose will produce the maximum allowable heat capacity. 310 ft (94 m) of heated hose may be used, but will have 25% less heat capacity.

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Original instructions. This manual contains English. MM 3A1750

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