REPAIR-PARTS MANUAL

MANUAL NUMBER X024616 | REVISION A | ENGLISH (US)

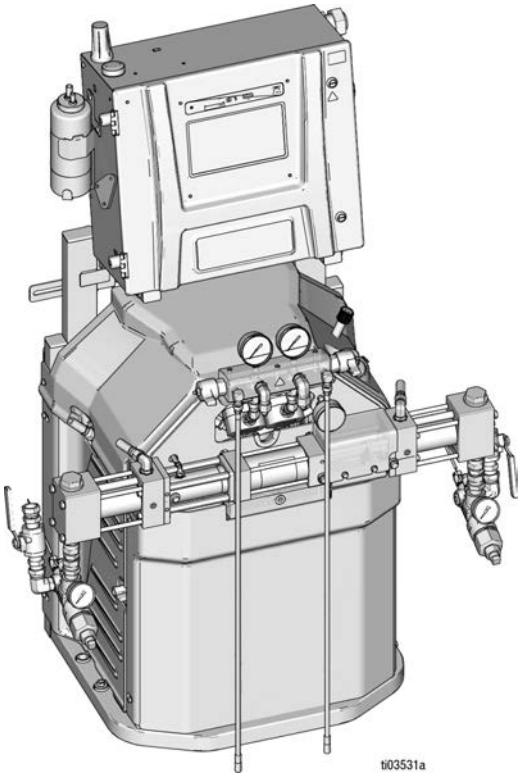
Reactor® 3 Hydraulic Proportioning Systems

Hydraulic, heated, plural component proportioner for spraying polyurethane foam and polyurea coatings. Only use with Reactor 3 heated hoses. For indoor use only. For professional use only.

Not approved for use in explosive atmospheres or hazardous (classified) locations.

Important Safety Instructions

Read all warnings and instructions in this manual and in related manuals before using the equipment. Be familiar with the proper control and usage of the equipment. Save these instructions.



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CONTENTS

RELATED MANUALS

Find English manuals and any available translations at www.graco.com.

ENGLISH MANUAL NUMBER	DESCRIPTION
X021141EN	Reactor® 3 Proportioner, Operation
Feed System Manuals	
309852	Circulation and Return Tube Kit, Instructions-Parts
3A8502	T4 3:1 Pneumatic Transfer Pump, Operation and Parts
3A8503	CORE® Transfer Pump, Operation and Parts
309577	Displacement Pump, Instructions
Proportioning Pumps Manual	
3A3085	Proportioning Pumps, Repair-Parts
Spray Gun Manuals	
309550	Fusion® AP Spray Gun, Instructions
3A7314	Fusion PC Spray Gun, Instructions
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3A9329	Fusion FX Gun, Instructions
313213	Probler® P2 Gun, Instructions
Reactor Connect Manual	
3A8504	Reactor Connect, Instructions
Heated Hose Manual	
3A7683	Reactor Heated Hose (Reactor 3), Instructions

SUPPLIED MANUALS

The following manuals and quick guides are shipped with the Reactor. Refer to these manuals and quick guides for detailed equipment information.

Manuals are also available at www.graco.com.

ENGLISH MANUAL NUMBER	DESCRIPTION
X021141EN	Reactor® 3 Proportioner, Operation
3B0421	Reactor 3 Startup Quick Guide
3B0422	Reactor 3 Shutdown QuickGuide

MODELS

REACTOR H-30

	MODEL		H-30 PRO 15 KW (27R355)	H-30 ELITE 15 KW (27R357)
Technical Information	Maximum Working Pressure		2000 psi (14 MPa, 140 bar)	2000 psi (14 MPa, 140 bar)
	Approximate Output / Cycle A + B		0.074 gal (0.28 L)	0.074 gal (0.28 L)
	Maximum Flow (60 Hz)		31 lb/min (14.1 kg/min)	31 lb/min (14.1 kg/min)
	Max Heated Hose Length Supported		320 ft (97 m)	320 ft (97 m)
	Total System Load		23,260 Watts	23,260 Watts
	Primary Heater Load		14.4 kW	14.4 kW
	Full Load Peak Current 50/60 Hz	200-240 VAC 1Ø	100 Amps	100 Amps
		200-240 VAC 3Ø △	59 Amps	59 Amps
		350-415 VAC 3Ø Y	35 Amps	35 Amps
System Features	Ratio Monitoring		- - -	✓
	Reactor Connect		✓	✓
	Software includes auto pressure balancing and power management		✓	✓
	Large Inlet Strainer with Gauge, Pressure, and Temperature Sensors		- - -	✓
	Large Inlet Strainer with Gauge		✓	- - -
	Electronic Pressure Control		- - -	✓
Packages	Externally Heated Hose Package, 1 x 50 ft (15.24 m)		ESR355	ESR357
	Externally Heated Hose Package, 4 x 50 ft (15.24 m)		EHR355	EHR357
	Internally Heated Hose Package, 1 x 50 ft (15.24 m)		ISR355	ISR357
	Internally Heated Hose Package, 2 x 100 ft (30.48 m)		IHR355	IHR357
	CORE Transfer Pump with Internally Heated Hose Package, 1 x 50 ft (15.24 m)		- - -	CSR357
	CORE Transfer Pump with Internally Heated Hose Package, 2 x 100 ft (30.48 m)		- - -	CHR357

REACTOR H-30 (50 HZ)

	MODEL		H-30 PRO 15 KW, 50 HZ (27R389)	H-30 ELITE 15 KW, 50 HZ (27R390)
Technical Information	Maximum Working Pressure		2000 psi (14 MPa, 140 bar)	2000 psi (14 MPa, 140 bar)
	Approximate Output / Cycle A + B		0.074 gal (0.28 L)	0.074 gal (0.28 L)
	Maximum Flow (50 Hz)		31 lb/min (14.1 kg/min)	31 lb/min (14.1 kg/min)
	Max Heated Hose Length Supported		320 ft (97 m)	320 ft (97 m)
	Total System Load		23,260 Watts	23,260 Watts
	Primary Heater Load		14.4 kW	14.4 kW
	Full Load Peak Current 50 Hz	350-415 VAC 3Ø Y	35 Amps	35 Amps
System Features	Ratio Monitoring		- - -	✓
	Reactor Connect		✓	✓
	Software includes auto pressure balancing and power management		✓	✓
	Large Inlet Strainer with Gauge, Pressure, and Temperature Sensors		- - -	✓
	Large Inlet Strainer with Gauge		✓	- - -
	Electronic Pressure Control		- - -	✓
Packages	Externally Heated Hose Package, 1 x 50 ft (15.24 m)		ESR389	ESR390
	Externally Heated Hose Package, 4 x 50 ft (15.24 m)		EHR389	EHR390
	Internally Heated Hose Package, 1 x 50 ft (15.24 m)		ISR389	ISR390
	Internally Heated Hose Package, 2 x 100 ft (30.48 m)		IHR389	IHR390
	CORE Transfer Pump with Internally Heated Hose Package, 1 x 50 ft (15.24 m)		- - -	CSR390
	CORE Transfer Pump with Internally Heated Hose Package, 2 x 100 ft (30.48 m)		- - -	CHR390

REACTOR H-50

	MODEL		H-50 PRO 20 KW, 230 V (27R375)	H-50 ELITE 20 KW, 230 V (27R377)
Technical Information	Maximum Working Pressure		2000 psi (14 MPa, 140 bar)	2000 psi (14 MPa, 140 bar)
	Approximate Output / Cycle A + B		0.074 gal (0.28 L)	0.074 gal (0.28 L)
	Maximum Flow		53 lb/min (24 kg/min)	53 lb/min (24 kg/min)
	Max Heated Hose Length Supported		420 ft (128 m)	420 ft (128 m)
	Total System Load		31,700 Watts	31,700 Watts
	Primary Heater Load		20.4 kW	20.4 kW
	Full Load Peak Current 50/60 Hz	200-240 VAC 3Ø △	95 Amps	95 Amps
System Features	Ratio Monitoring		- - -	✓
	Reactor Connect		✓	✓
	Software includes auto pressure balancing and power management		✓	✓
	Large Inlet Strainer with Gauge, Pressure, and Temperature Sensors		- - -	✓
	Large Inlet Strainer with Gauge		✓	- - -
	Electronic Pressure Control		- - -	✓
Packages	Externally Heated Hose Package, 1 x 50 ft (15.24 m)		ESR375	ESR377
	Externally Heated Hose Package, 6 x 50 ft (15.24 m)		EHR375	EHR377
	Internally Heated Hose Package, 1 x 50 ft (15.24 m)		ISR375	ISR377
	Internally Heated Hose Package, 3 x 100 ft (30.48 m)		IHR375	IHR377
	CORE Transfer Pump with Internally Heated Hose Package, 1 x 50 ft (15.24 m)		- - -	CSR377
	CORE Transfer Pump with Internally Heated Hose Package, 3 x 100 ft (30.48 m)		- - -	CHR377

REACTOR H-50

	MODEL		H-50 PRO 20 KW, 400 V (27R376)	H-50 ELITE 20 KW, 400 V (27R378)
Technical Information	Maximum Working Pressure		2000 psi (14 MPa, 140 bar)	2000 psi (14 MPa, 140 bar)
	Approximate Output / Cycle A + B		0.074 gal (0.28 L)	0.074 gal (0.28 L)
	Maximum Flow		53 lb/min (24 kg/min)	53 lb/min (24 kg/min)
	Max Heated Hose Length Supported		420 ft (128 m)	420 ft (128 m)
	Total System Load		31,700 Watts	31,700 Watts
	Primary Heater Load		20.4 kW	20.4 kW
	Full Load Peak Current 50/60 Hz	350-415 VAC 3Ø Y	52 Amps	52 Amps
System Features	Ratio Monitoring		- - -	✓
	Reactor Connect		✓	✓
	Software includes auto pressure balancing and power management		✓	✓
	Large Inlet Strainer with Gauge, Pressure, and Temperature Sensors		- - -	✓
	Large Inlet Strainer with Gauge		✓	- - -
	Electronic Pressure Control		- - -	✓
Packages	Externally Heated Hose Package, 1 x 50 ft (15.24 m)		ESR376	ESR378
	Externally Heated Hose Package, 6 x 50 ft (15.24 m)		EHR376	EHR378
	Internally Heated Hose Package, 1 x 50 ft (15.24 m)		ISR376	ISR378
	Internally Heated Hose Package, 3 x 100 ft (30.48 m)		IHR376	IHR378
	CORE Transfer Pump with Internally Heated Hose Package, 1 x 50 ft (15.24 m)		- - -	CSR378
	CORE Transfer Pump with Internally Heated Hose Package, 3 x 100 ft (30.48 m)		- - -	CHR378

REACTOR H-XP2

	MODEL		H-XP2 PRO 15 KW (27R365)	H-XP2 ELITE 15 KW (27R367)
Technical Information	Maximum Working Pressure		3500 psi (24.1 MPa, 241 bar)	3500 psi (24.1 MPa, 241 bar)
	Approximate Output / Cycle A + B		0.042 gal (0.16 L)	0.042 gal (0.16 L)
	Maximum Flow (60 Hz)		1.8 gpm (6.8 lpm)	1.8 gpm (6.8 lpm)
	Max Heated Hose Length Supported		320 ft (97 m)	320 ft (97 m)
	Total System Load		23,260 Watts	23,260 Watts
	Primary Heater Load		14.4 kW	14.4 kW
	Full Load Peak Current 50/60 Hz	200-240 VAC 1Ø	100 Amps	100 Amps
		200-240 VAC 3Ø △	59 Amps	59 Amps
		350-415 VAC 3Ø Y	35 Amps	35 Amps
System Features	Ratio Monitoring		- - -	✓
	Reactor Connect		✓	✓
	Software includes auto pressure balancing and power management		✓	✓
	Large Inlet Strainer with Gauge, Pressure, and Temperature Sensors		- - -	✓
	Large Inlet Strainer with Gauge		✓	- - -
	Electronic Pressure Control		- - -	✓
Packages	Externally Heated Hose Package, 1 x 50 ft (15.24 m)		ESR365	ESR367
	Externally Heated Hose Package, 4 x 50 ft (15.24 m)		EHR365	EHR367
	Internally Heated Hose Package, 1 x 50 ft (15.24 m)		ISR365	ISR367
	Internally Heated Hose Package, 2 x 100 ft (30.48 m)		IHR365	IHR367
	CORE Transfer Pump with Internally Heated Hose Package, 1 x 50 ft (15.24 m)		- - -	CSR367
	CORE Transfer Pump with Internally Heated Hose Package, 2 x 100 ft (30.48 m)		- - -	CHR367

REACTOR H-XP2 (50 HZ)

	MODEL		H-XP2 PRO 15 KW, 50 HZ (27R391)	H-XP2 ELITE 15 KW, 50 HZ (27R392)
Technical Information	Maximum Working Pressure		3500 psi (24.1 MPa, 241 bar)	3500 psi (24.1 MPa, 241 bar)
	Approximate Output / Cycle A + B		0.042 gal (0.16 L)	0.042 gal (0.16 L)
	Maximum Flow (50 Hz)		1.8 gpm (6.8 lpm)	1.8 gpm (6.8 lpm)
	Max Heated Hose Length Supported		320 ft (97 m)	320 ft (97 m)
	Total System Load		23,260 Watts	23,260 Watts
	Primary Heater Load		14.4 kW	14.4 kW
	Full Load Peak Current 50 Hz	350-415 VAC 3Ø Y	35 Amps	35 Amps
System Features	Ratio Monitoring		- - -	✓
	Reactor Connect		✓	✓
	Software includes auto pressure balancing and power management		✓	✓
	Large Inlet Strainer with Gauge, Pressure, and Temperature Sensors		- - -	✓
	Large Inlet Strainer with Gauge		✓	- - -
	Electronic Pressure Control		- - -	✓
Packages	Externally Heated Hose Package, 1 x 50 ft (15.24 m)		ESR391	ESR392
	Externally Heated Hose Package, 4 x 50 ft (15.24 m)		EHR391	EHR392
	Internally Heated Hose Package, 1 x 50 ft (15.24 m)		ISR391	ISR392
	Internally Heated Hose Package, 2 x 100 ft (30.48 m)		IHR391	IHR392
	CORE Transfer Pump with Internally Heated Hose Package, 1 x 50 ft (15.24 m)		- - -	CSR392
	CORE Transfer Pump with Internally Heated Hose Package, 2 x 100 ft (30.48 m)		- - -	CHR392

REACTOR H-XP3

	MODEL		H-XP3 PRO 20 KW, 230 V (27R385)	H-XP3 ELITE 20 KW, 230 V (27R387)
Technical Information	Maximum Working Pressure		3500 psi (24.1 MPa, 241 bar)	3500 psi (24.1 MPa, 241 bar)
	Approximate Output / Cycle A + B		0.042 gal (0.16 L)	0.042 gal (0.16 L)
	Maximum Flow		3.0 gpm (11.4 lpm)	3.0 gpm (11.4 lpm)
	Max Heated Hose Length Supported		420 ft (128 m)	420 ft (128 m)
	Total System Load		31,700 Watts	31,700 Watts
	Primary Heater Load		20.4 kW	20.4 kW
	Full Load Peak Current 50/60 Hz	200-240 VAC 3Ø △	95 Amps	95 Amps
System Features	Ratio Monitoring		- - -	✓
	Reactor Connect		✓	✓
	Software includes auto pressure balancing and power management		✓	✓
	Large Inlet Strainer with Gauge, Pressure, and Temperature Sensors		- - -	✓
	Large Inlet Strainer with Gauge		✓	- - -
	Electronic Pressure Control		- - -	✓
Packages	Externally Heated Hose Package, 1 x 50 ft (15.24 m)		ESR385	ESR387
	Externally Heated Hose Package, 6 x 50 ft (15.24 m)		EHR385	EHR387
	Internally Heated Hose Package, 1 x 50 ft (15.24 m)		ISR385	ISR387
	Internally Heated Hose Package, 3 x 100 ft (30.48 m)		IHR385	IHR387
	CORE Transfer Pump with Internally Heated Hose Package, 1 x 50 ft (15.24 m)		- - -	CSR387
	CORE Transfer Pump with Internally Heated Hose Package, 3 x 100 ft (30.48 m)		- - -	CHR387

REACTOR H-XP3

	MODEL		H-XP3 PRO 20 KW, 400 V (27R386)	H-XP3 ELITE 20 KW, 400 V (27R388)
Technical Information	Maximum Working Pressure		3500 psi (24.1 MPa, 241 bar)	3500 psi (24.1 MPa, 241 bar)
	Approximate Output / Cycle A + B		0.042 gal (0.16 L)	0.042 gal (0.16 L)
	Maximum Flow		3.0 gpm (11.4 lpm)	3.0 gpm (11.4 lpm)
	Max Heated Hose Length Supported		420 ft (128 m)	420 ft (128 m)
	Total System Load		31,700 Watts	31,700 Watts
	Primary Heater Load		20.4 kW	20.4 kW
	Full Load Peak Current 50/60 Hz	350-415 VAC 3Ø Y	52 Amps	52 Amps
System Features	Ratio Monitoring		- - -	✓
	Reactor Connect		✓	✓
	Software includes auto pressure balancing and power management		✓	✓
	Large Inlet Strainer with Gauge, Pressure, and Temperature Sensors		- - -	✓
	Large Inlet Strainer with Gauge		✓	- - -
	Electronic Pressure Control		- - -	✓
Packages	Externally Heated Hose Package, 1 x 50 ft (15.24 m)		ESR386	ESR388
	Externally Heated Hose Package, 6 x 50 ft (15.24 m)		EHR386	EHR388
	Internally Heated Hose Package, 1 x 50 ft (15.24 m)		ISR386	ISR388
	Internally Heated Hose Package, 3 x 100 ft (30.48 m)		IHR386	IHR388
	CORE Transfer Pump with Internally Heated Hose Package, 1 x 50 ft (15.24 m)		- - -	CSR388
	CORE Transfer Pump with Internally Heated Hose Package, 3 x 100 ft (30.48 m)		- - -	CHR388

APPROVALS

Intertek approvals apply to proportioners without hoses.

<table>
<tr><th>PART NUMBER</th><th>MODEL</th><th>SERIES</th><th colspan="2">APPROVALS</th></tr>
<tr><td>27R355</td><td rowspan="2">H-30 (60 Hz)</td><td>Pro</td><td rowspan="8"></td><td rowspan="16">C ETL US LISTED
Intertek
5024314
Conforms to ANS/UL Std. 499
Certified to CAN/CSA Std. C22.2 No. 88</td></tr>
<tr><td>27R357</td><td>Elite</td></tr>
<tr><td>27R375</td><td rowspan="2">H-50 (230 V)</td><td>Pro</td></tr>
<tr><td>27R377</td><td>Elite</td></tr>
<tr><td>27R365</td><td rowspan="2">H-XP2 (60 Hz)</td><td>Pro</td></tr>
<tr><td>27R367</td><td>Elite</td></tr>
<tr><td>27R385</td><td rowspan="2">H-XP3 (230 V)</td><td>Pro</td></tr>
<tr><td>27R387</td><td>Elite</td></tr>
<tr><td>27R389</td><td rowspan="2">H-30 (50 Hz)</td><td>Pro</td><td rowspan="8">CE
  </td></tr>
<tr><td>27R390</td><td>Elite</td></tr>
<tr><td>27R376</td><td rowspan="2">H-50 (400 V)</td><td>Pro</td></tr>
<tr><td>27R378</td><td>Elite</td></tr>
<tr><td>27R391</td><td rowspan="2">H-XP2 (50 Hz)</td><td>Pro</td></tr>
<tr><td>27R392</td><td>Elite</td></tr>
<tr><td>27R386</td><td rowspan="2">H-XP3 (400 V)</td><td>Pro</td></tr>
<tr><td>27R388</td><td>Elite</td></tr>
</table>

ACCESSORIES

KIT NUMBER	DESCRIPTION
20A677	Engine CAN Kits
24M174	Drum Level Sticks
20A676	Light Tower Kit
18E154	Air Manifold Kit
18E211	Cellular Mobile Remote Mouting Kit
2010517	MPR to EPR Conversion H-30/H-XP2 (60 Hz)
2010519	MPR to EPR Conversion H-50/H-XP3 (60 Hz)
2010518	MPR to EPR Conversion H-30/H-XP2 (50 Hz)
2010520	MPR to EPR Conversion H-50/H-XP3 (50 Hz)

SAFETY SYMBOLS

The following safety symbols appear throughout this manual and on warning labels. Read the table below to understand what each symbol means.

SYMBOL	MEANING
	Burn Hazard
	Crush Hazard
	Electric Shock Hazard
	Equipment Misuse Hazard
	Fire and Explosion Hazard
	Moving Parts Hazard
	Skin Injection Hazard
	Skin Injection Hazard
	Splash Hazard
	Toxic Fluid or Fumes Hazard

SYMBOL	MEANING
	Eliminate Ignition Sources
	Do Not Stop Leaks with Hand, Body, Glove or Rag
	Do Not Place Hands or Other Body Parts Near Fluid Outlet
	Ground Equipment
	Read Manual
	Follow Pressure Relief Procedure
	Ventilate Work Area
	Wear Personal Protective Equipment

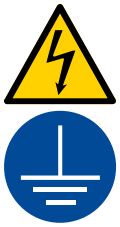
Safety Alert Symbol

This symbol indicates: Attention! Become Alert! Look for this symbol throughout the manual to indicate important safety messages.

GENERAL WARNINGS FOR REACTOR® 3 HYDRAULIC PROPORTIONING SYSTEMS

The following warnings apply throughout this manual. Read, understand, and follow the warnings before using this equipment. Failure to follow these warnings can result in serious injury.

⚠ DANGER



SEVERE ELECTRIC SHOCK HAZARD

This equipment is powered by more than 240 V. Contact with this voltage will cause death or serious injury.

- Turn off and disconnect all power before disconnecting any cables and before servicing equipment.
- This equipment must be grounded. Connect only to grounded power source.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.

⚠ WARNING

TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled or swallowed.

- 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.

PERSONAL PROTECTIVE EQUIPMENT

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:

- 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.

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.**

- Do not spray without tip guard and trigger guard installed.
- 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.

⚠ WARNING

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.

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.

PRESSURIZED ALUMINUM PARTS HAZARD

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

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

⚠ 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 Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** 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.

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.
- Equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

BURN HAZARD

Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.

IMPORTANT ISOCYANATE (ISO) INFORMATION

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

ISOCYANATE CONDITIONS

⚠ WARNING



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: _____

KEEP COMPONENTS A AND B SEPARATE

⚠ WARNING


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

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

MOISTURE SENSITIVITY OF ISOCYANATES

Exposure to moisture (such as humidity) will cause ISO to partially cure, forming small, hard, abrasive crystal that 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.

- 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.

CHANGING MATERIALS

NOTICE

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

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

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.

MATERIAL SELF-IGNITION

⚠ WARNING

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

MOISTURE SENSITIVITY OF ISOCYANATES: REACTOR 3 PROCEDURES

For Reactor 3 Hydraulic Proportioning Systems, performing the correct procedures before storage can prevent ISO from partially curing in the equipment.

NOTICE

- To prevent damage, cycle material through the Reactor at least once per week when wetted and sitting idle. Use the A-side transfer pump to flush material through the A-side outlet manifold recirculation fitting. See **Flush the Equipment**.
- The Reactor should not be stored after ingesting air or running out of material. Prior to storage, follow the Purge Air procedure in your operation manual.

TECHNICAL SPECIFICATIONS

The table provides important information related to the Reactor® 3 Hydraulic Proportioning Systems, including product attributes, measurements, and performance characteristics that support the use of the equipment.

Table 9-1: Technical Specifications for Reactor® 3 Proportioning Systems, H-30

H-30	US	METRIC
Maximum fluid working pressure	2000 psi	1.4 MPa, 14 bar
Maximum fluid temperature	180°F	82.2°C
Maximum flow rate	31 lb/min	14.1 kg/min
Maximum heated hose length	320 ft	97 m
Approximate Output per cycle (A + B)	0.074 gal	0.28 L
Operating ambient temperature range	20°F to 120°F	-7°C to 49°C
Fluid inlets	3/4 npt(f)	
Fluid outlet - A	#8 (1/2 in.) JIC, with #5 (5/16 in.) JIC adapter	
Fluid outlet - B	#10 (5/8 in.) JIC, with #6 (3/8 in.) JIC adapter	
Fluid circulation port size	1/4 nps(m)	
Fluid Circulation port maximum pressure	250 psi	1.7 MPa, 17 bar
Maximum fluid inlet pressure	600 psi	4.14 MPa, 41.4 bar
Sound Pressure (Measured per ISO 3744)		
Measured from 3.1 ft (1 m) @ 1050 psi (7.2 MPa, 72.3 bar), 31 lbs/min (13.6 kg/min)	81.4 dBA	
Sound Power		
Measured from 3.1 ft (1 m) @ 1050 psi (7.2 MPa, 72.3 bra), 31 lbs/min (13.6 kg/min)	96.9 dBA	
Dimensions		
Width	36.5 in.	93 cm
Depth	24.6 in.	62 cm
Height	60.2 in.	153 cm
Weight	612 lbs	278 kg

Table 9-2: Technical Specifications for Reactor® 3 Proportioning Systems, H-50

H-50	US	METRIC
Maximum fluid working pressure	2000 psi	1.4 MPa, 14 bar
Maximum fluid temperature	180°F	82.2°C
Maximum flow rate	53 lb/min	24 kg/min
Maximum heated hose length	420 ft	128 m
Approximate Output per cycle (A + B)	0.074 gal	0.28 L
Operating ambient temperature range	20°F to 120°F	-7°C to 49°C
Fluid inlets	3/4 npt(f)	
Fluid outlet - A	#8 (1/2 in.) JIC, with #5 (5/16 in.) JIC adapter	
Fluid outlet - B	#10 (5/8 in.) JIC, with #6 (3/8 in.) JIC adapter	
Fluid circulation port size	1/4 nps(m)	
Fluid Circulation port maximum pressure	250 psi	1.7 MPa, 17 bar
Maximum fluid inlet pressure	600 psi	4.14 MPa, 41.4 bar
Sound Pressure (Measured per ISO 3744)		
Measured from 3.1 ft (1 m) @ 1050 psi (7.2 MPa, 72.3 bar), 31 lbs/min (13.6 kg/min)	81.4 dBA	
Sound Power		
Measured from 3.1 ft (1 m) @ 1050 psi (7.2 MPa, 72.3 bra), 31 lbs/min (13.6 kg/min)	96.9 dBA	
Dimensions		
Width	36.5 in.	93 cm
Depth	24.6 in.	62 cm
Height	60.2 in.	153 cm
Weight	612 lbs	278 kg

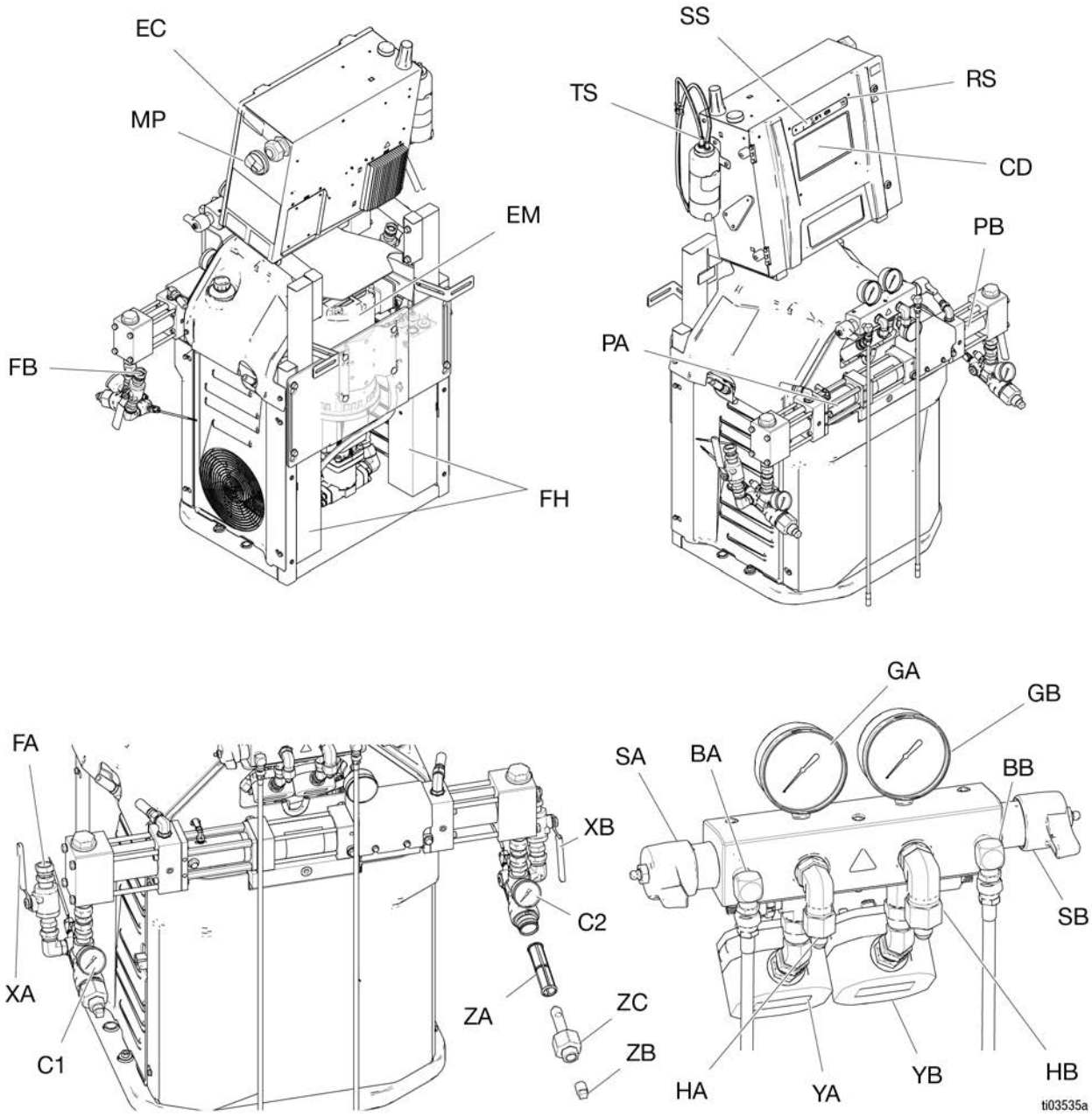
Table 9-3: Technical Specifications for Reactor® 3 Proportioning Systems, H-XP2

H-XP2	US	METRIC
Maximum fluid working pressure	3500 psi	24.1 MPa, 241 bar
Maximum fluid temperature	180°F	82.2°C
Maximum flow rate	1.8 gpm	6.8 lpm
Maximum heated hose length	320 ft	97 m
Approximate Output per cycle (A + B)	0.042 gal	0.16 L
Operating ambient temperature range	20°F to 120°F	-7°C to 49°C
Fluid inlets	3/4 npt(f)	
Fluid outlet - A	#8 (1/2 in.) JIC, with #5 (5/16 in.) JIC adapter	
Fluid outlet - B	#10 (5/8 in.) JIC, with #6 (3/8 in.) JIC adapter	
Fluid circulation port size	1/4 nps(m)	
Fluid Circulation port maximum pressure	250 psi	1.7 MPa, 17 bar
Maximum fluid inlet pressure	600 psi	4.14 MPa, 41.4 bar
Sound Pressure (Measured per ISO 3744)		
Measured from 3.1 ft (1 m) @ 1050 psi (7.2 MPa, 72.3 bar), 31 lbs/min (13.6 kg/min)	81.4 dBA	
Sound Power		
Measured from 3.1 ft (1 m) @ 1050 psi (7.2 MPa, 72.3 bra), 31 lbs/min (13.6 kg/min)	96.9 dBA	
Dimensions		
Width	36.5 in.	93 cm
Depth	24.6 in.	62 cm
Height	60.2 in.	153 cm
Weight	612 lbs	278 kg

Table 9-4: Technical Specifications for Reactor® 3 Proportioning Systems, H-XP3

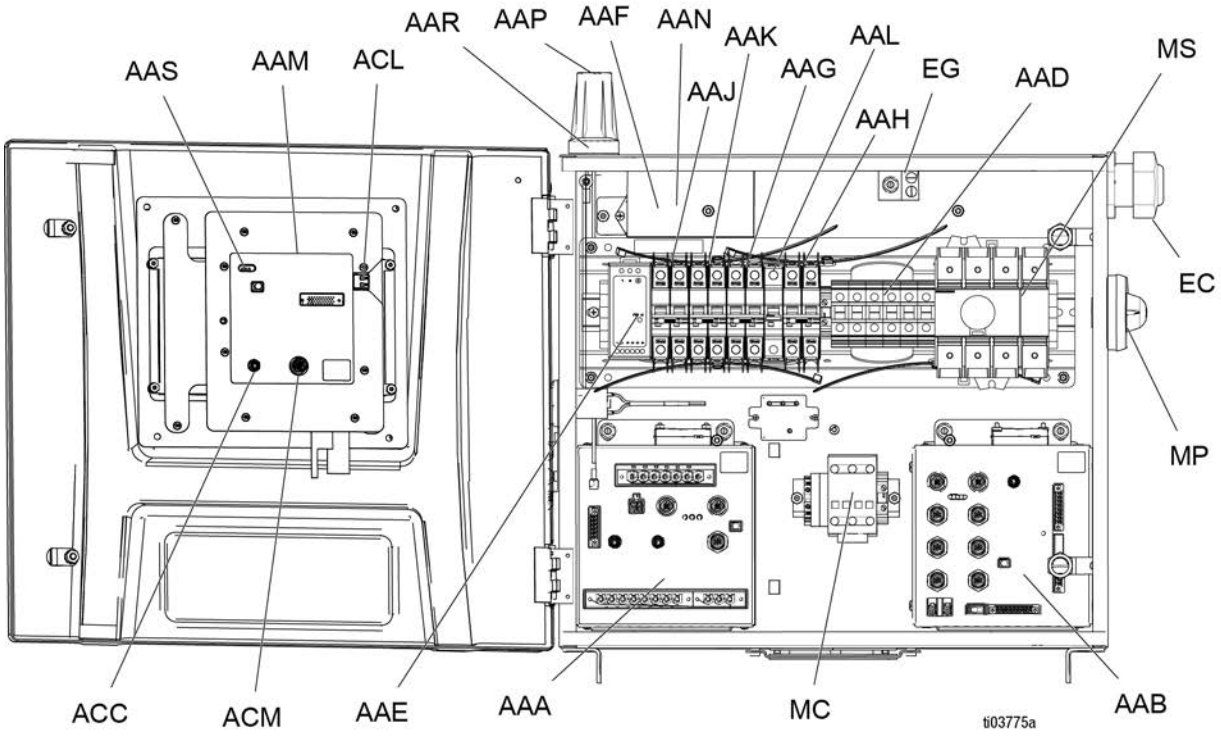
H-XP3	US	METRIC
Maximum fluid working pressure	3500 psi	24.1 MPa, 241 bar
Maximum fluid temperature	180°F	82.2°C
Maximum flow rate	3.0 gpm	11.4 lpm
Maximum heated hose length	420 ft	128 m
Approximate Output per cycle (A + B)	0.042 gal	0.16 L
Operating ambient temperature range	20°F to 120°F	-7°C to 49°C
Fluid inlets	3/4 npt(f)	
Fluid outlet - A	#8 (1/2 in.) JIC, with #5 (5/16 in.) JIC adapter	
Fluid outlet - B	#10 (5/8 in.) JIC, with #6 (3/8 in.) JIC adapter	
Fluid circulation port size	1/4 nps(m)	
Fluid Circulation port maximum pressure	250 psi	1.7 MPa, 17 bar
Maximum fluid inlet pressure	600 psi	4.14 MPa, 41.4 bar
Sound Pressure (Measured per ISO 3744)		
Measured from 3.1 ft (1 m) @ 1050 psi (7.2 MPa, 72.3 bar), 31 lbs/min (13.6 kg/min)	81.4 dBA	
Sound Power		
Measured from 3.1 ft (1 m) @ 1050 psi (7.2 MPa, 72.3 bra), 31 lbs/min (13.6 kg/min)	96.9 dBA	
Dimensions		
Width	36.5 in.	93 cm
Depth	24.6 in.	62 cm
Height	60.2 in.	153 cm
Weight	612 lbs	278 kg

PROPORTIONER



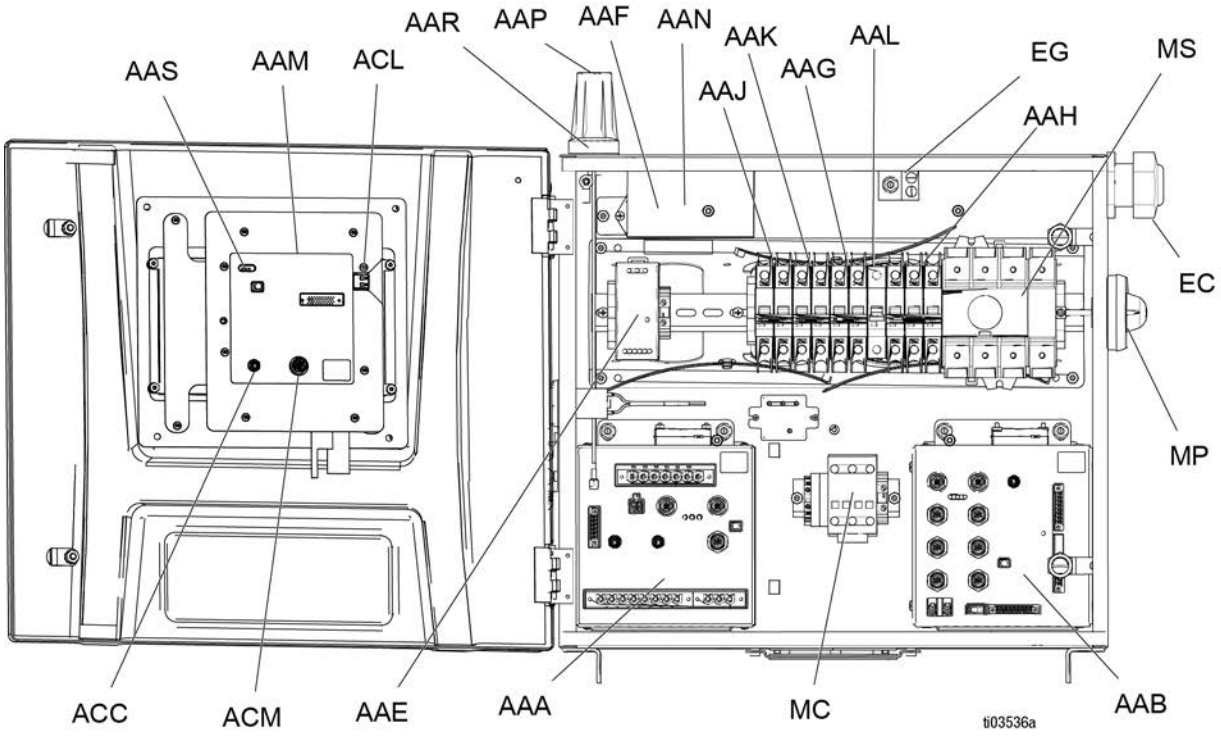
KEY	
BA	ISO Side Pressure Relief Outlet
BB	RES Side Pressure Relief Outlet
C1	ISO Side Inlet Pressure Gauge
C2	RES Side Inlet Pressure Gauge
CD	Advanced Display Module (ADM)
EC	Electrical Cord Strain Relief
EM	Electric Motor
FA	ISO Side Inlet Fitting
FB	RES Side Inlet Fitting
FH	Fluid Heaters
GA	ISO Side Pressure Gauge
GB	RES Side Pressure Gauge
HA	ISO Side Hose Connection
HB	RES Side Hose Connection
MP	Main Power Switch
PA	ISO Side Pump
PB	RES Side Pump
RS	Red Stop Button
SA	ISO Side Pressure Relief/Spray Valve
SB	RES Side Pressure Relief/Spray Valve
SS	System LED Status Light
TS	ISO Lubrication Reservoir
XA	ISO Side Fluid Inlet Valve
XB	RES Side Fluid Inlet Valve
YA	Flow Meter (ISO side, Elite models only)
YB	Flow Meter (RES side, Elite models only)
ZA	Inlet Strainer Screen
ZB	Inlet Strainer Drain Plug
ZC	Inlet Strainer Cap

ELECTRICAL ENCLOSURE (REACTOR H-30/H-XP2)



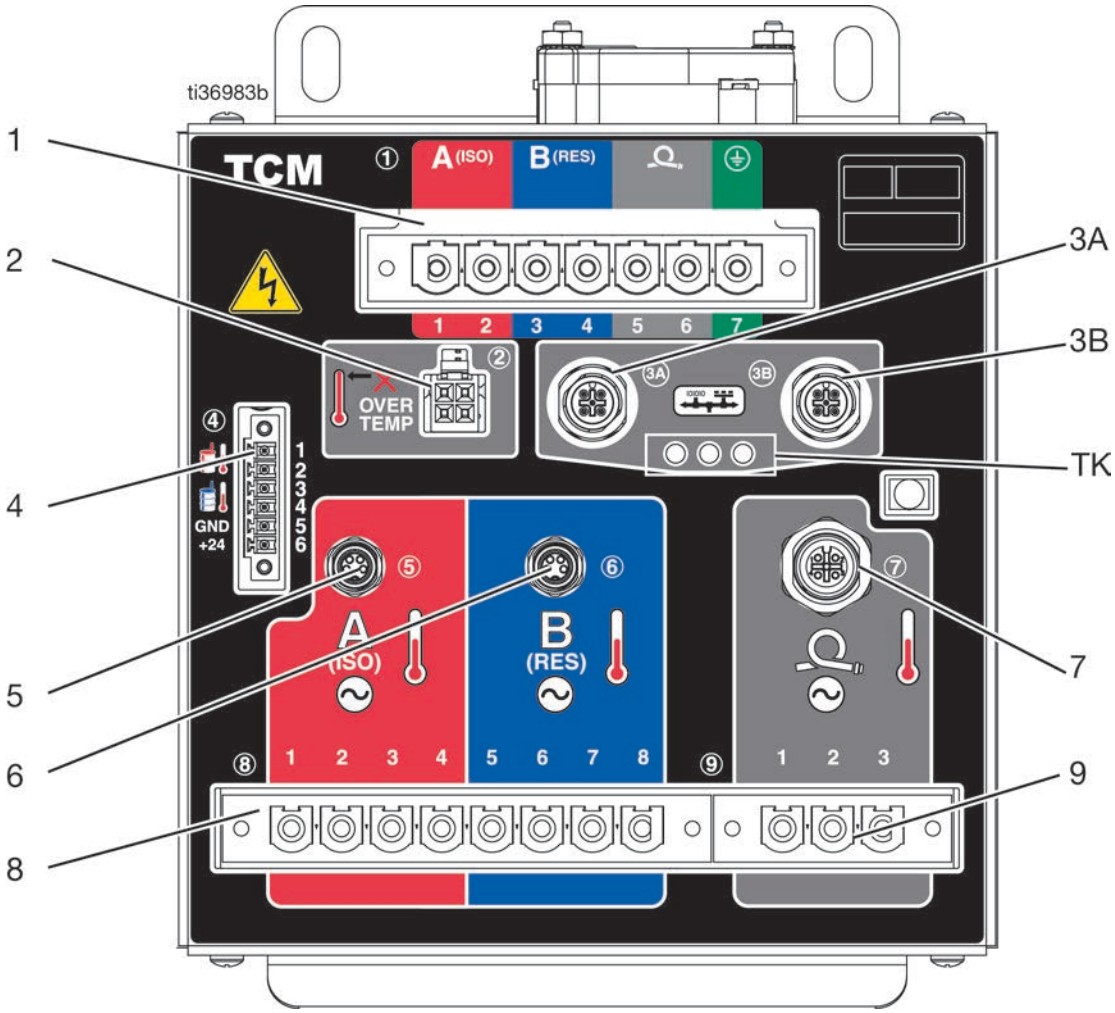
KEY	
AAA	Temperature Control Module (TCM)
AAB	Hydraulic Control Module (HCM)
AAD	Wiring Terminal Blocks
AAE	24V Power Supply
AAF	Surge Protector
AAG	Transformer Breaker
AAH	Motor Breaker
AAJ	A-Side Heat Breaker
AAK	B-Side Heat Breaker
AAL	Hose Breaker
AAM	Advanced Display Module (ADM)
AAN	Reactor Connect App Module
AAP	Cellular Antenna
AAR	GPS Antenna
AAS	ADM LED Status Lights
ACC	Reactor Connect Module Cable Connection
ACL	ADM USB Port
ACM	ADM CAN Cable Connection
EC	Incoming Power Cord Strain Relief
EG	Incoming Power Ground Terminal
MC	Motor Contactor
MP	Main Power Disconnect Knob
MS	Main Power Disconnect Switch

ELECTRICAL ENCLOSURE (REACTOR H-50/H-XP3)



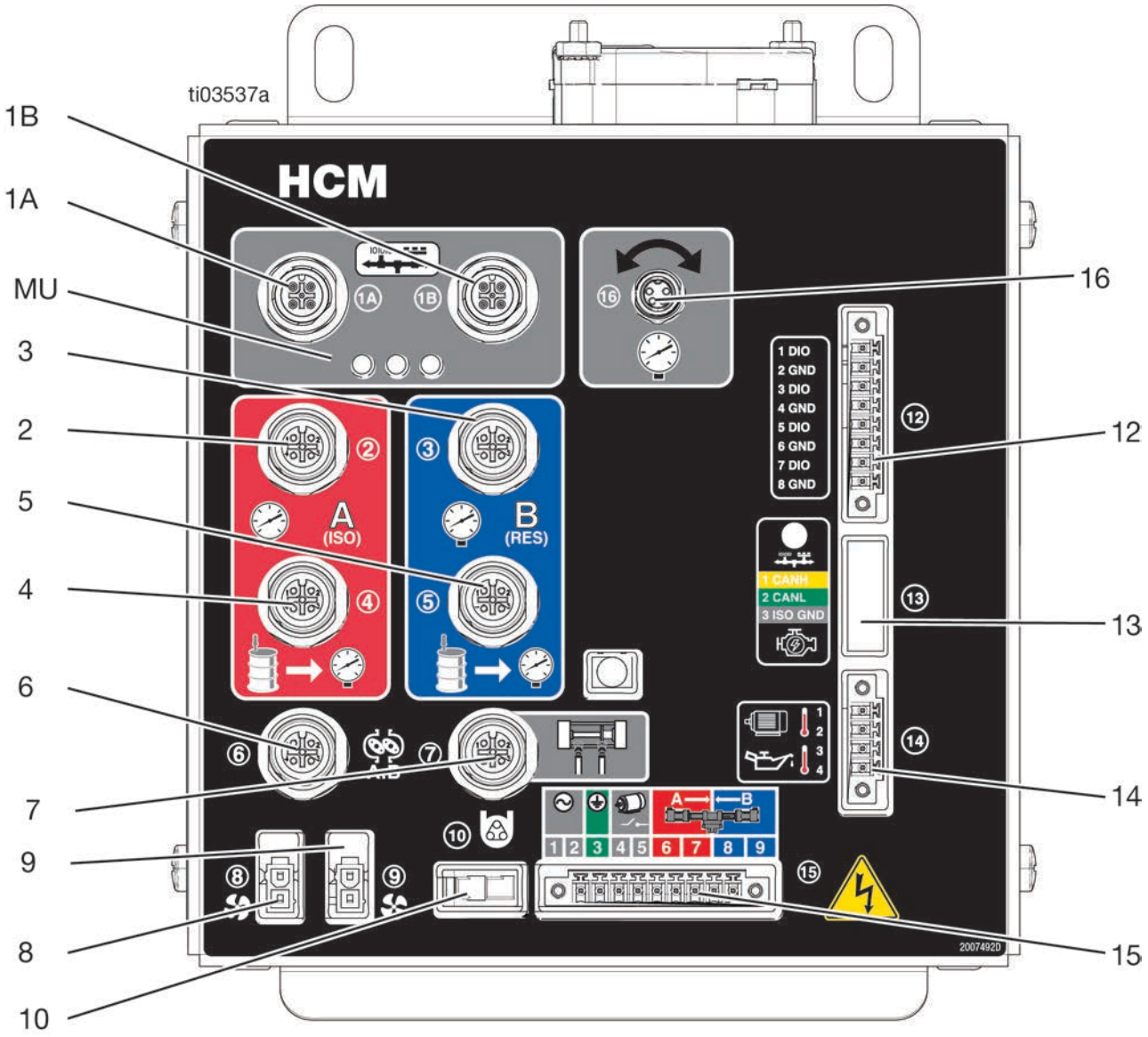
KEY	
AAA	Temperature Control Module (TCM)
AAB	Hydraulic Control Module (HCM)
AAE	24V Power Supply
AAF	Surge Protector
AAG	Transformer Breaker
AAH	Motor Breaker
AAJ	A-Side Heat Breaker
AAK	B-Side Heat Breaker
AAL	Hose Breaker
AAM	Advanced Display Module (ADM)
AAN	Reactor Connect App Module
AAP	Cellular Antenna
AAR	GPS Antenna
AAS	ADM LED Status Light
ACC	Reactor Connect Module Cable Connection
ACL	ADM USB Port
ACM	ADM CAN Cable Connection
EC	Incoming Power Cord Strain Relief
EG	Incoming Power Ground Terminal
MC	Motor Contactor
MP	Main Power Disconnect Knob
MS	Main Power Disconnect Switch

TEMPERATURE CONTROL MODULE (TCM)



KEY	
1	Main Power Input
2	Heater Over-Temperature Inputs
3A 3B	CAN Communications Connections
4	A/B Inlet Temperatures and 24 VDC Power Supply Input
5	A Heater Temperature Input
6	B Heater Temperature Input
7	A/B Hose Temperature Inputs
8	A/B Heater Power Outputs
9	A/B Hose Power Outputs
TK	TCM LED Status Lights

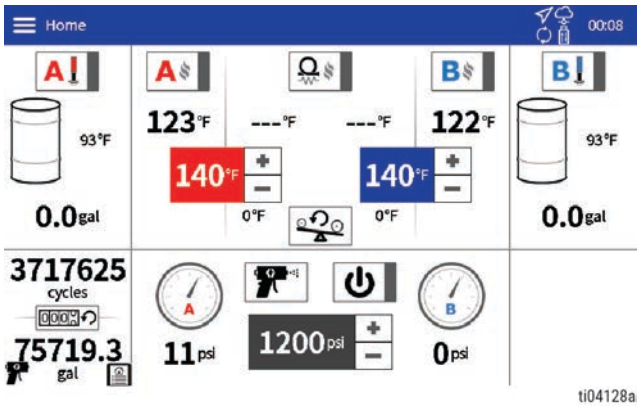
HYDRAULIC CONTROL MODULE (HCM)



KEY	
1A 1B	CAN Communication Connections
2	A-Side Pump Outlet Pressure
3	B-Side Pump Outlet Pressure
4	A-Side Pump Inlet Pressure
5	B-Side Pump Inlet Pressure
6	Flow Meter Inputs
7	Pump Position Switches
8	Transformer Fan
9	Motor Fan
10	ISO Lube Pump Output
12	Digital Inputs/Outputs
13	Engine J1939 CAN Connection
14	Motor Temperature and Hydraulic Oil Temperature
15	Motor Contactor and Solenoids
16	Electronic Pressure Control Output
MU	HCM LED Status Lights

ADVANCED DISPLAY MODULE (ADM)

The ADM display shows graphical and text information related to setup and spray operations.



ADM KEYS AND INDICATORS

Press Red Stop Button (RS) to stop all proportioner processes. This is not safety or emergency stop.

NOTE:

For complete description of the ADM icons and screens, refer to your Reactor 3 operation manual.

Follow the Pressure Relief Procedure whenever you see this symbol.

⚠ WARNING

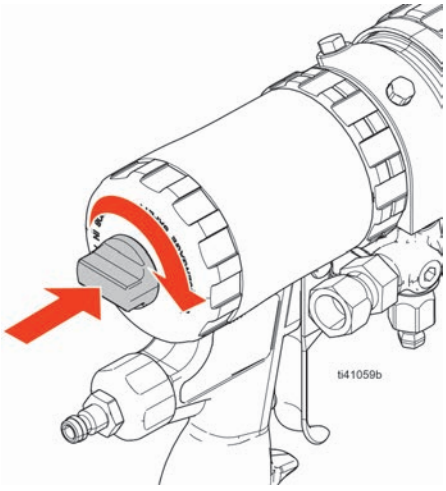
This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Tap ⏻ to turn the motor **OFF**.

   NOTE:

   Electric transfer pumps will automatically turn off with the motor.

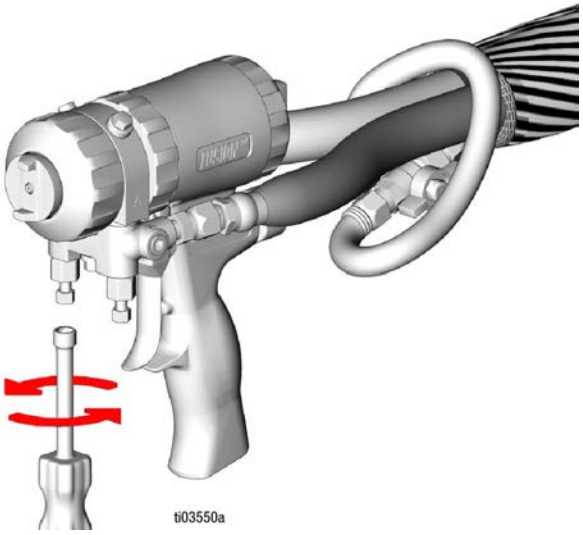
2. Tap A, B, and Ω to turn **OFF** all heat zones.
3. Follow the **Pressure Relief Prcedure** in your gun manual.
4. Engage the gun piston safety lock.



   NOTE:

   The Fusion AP gun is shown.

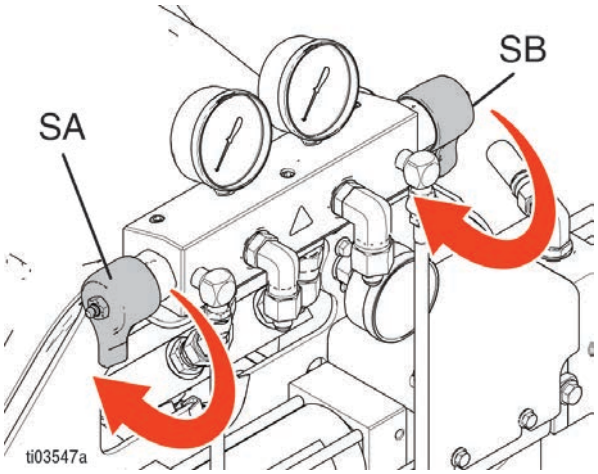
5. Close the gun fluid inlet valves A and B.



   NOTE:

   The Fusion AP gun is shown.

6. Shut off the transfer pumps and agitator, if used. For pneumatic transfer pumps and agitators, refer to your component manuals. For electric transfer pumps (if necessary), tap A! to turn **OFF** the A-side transfer pump power, and B! to turn **OFF** the B-side transfer pump power.
7. Make sure the bleed or circulation lines are connected and routed to waste containers or supply tanks. Turn the pressure relief/spray valves (SA, SB) to pressure relief/circulation. Ensure gauges drop to 0 psi.



NOTICE

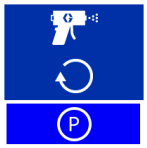
Proper system setup, startup, and shutdown procedures are critical to electrical equipment reliability. The following procedures ensure steady voltage. Failure to follow these procedures will cause voltage fluctuations that can damage electrical equipment and void the warranty.

1. If using pneumatic transfer pumps, turn air pressure to the transfer pumps **OFF**. Refer to your pump manual; see **Related Manuals**.
2. Tap  to turn the motor **OFF**.

   NOTE:

   Electric transfer pumps will automatically turn off with the motor.

3. Tap  ,  , and  to turn **OFF** all heat zones.
4. Follow the **Pressure Relief Procedure**.
5. Tap the **Pump Mode** button  .
6. Select the **Park Mode** icon from the drop down menu.

   The **Park Mode** icon will flash red while the park operation is in progress. The park operation is complete when the motor and transfer pumps are off, and a green check appears next to the **Park Mode** icon  . Verify the park operation is complete before moving to the next step.

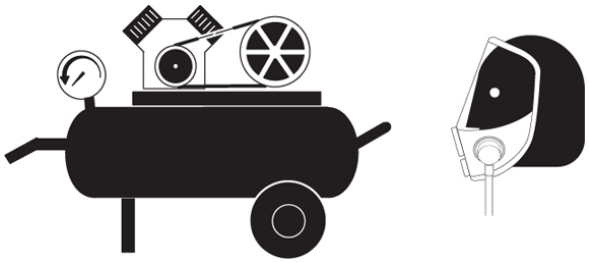
   NOTE:

   Pressure relief valves must be set to pressure/ circulation to complete park operation.

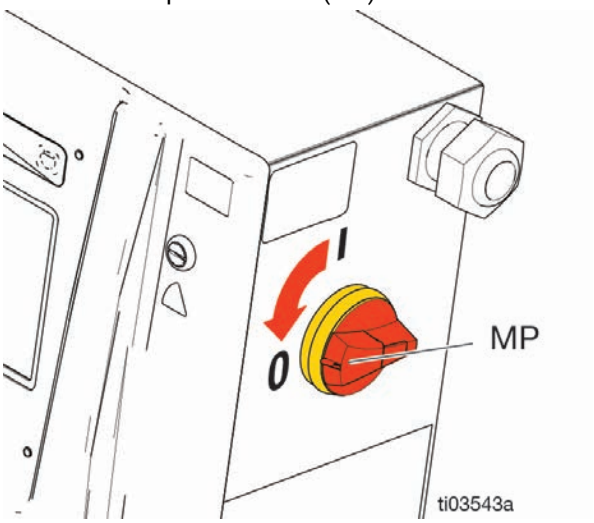
   NOTE:

   Electric transfer pumps will automatically park at the bottom of their stroke when the system is in **Park Mode**.

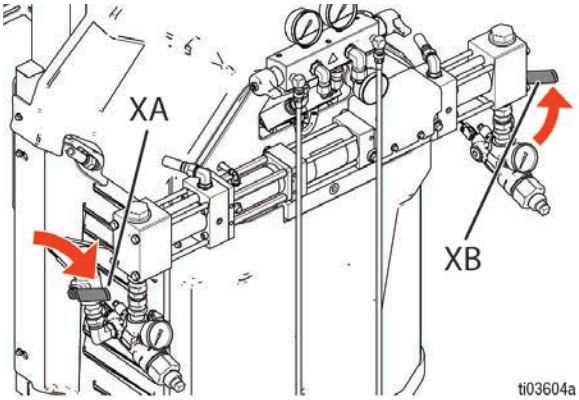
7. Turn **OFF** the air compressor, air dryer, and breathing air.



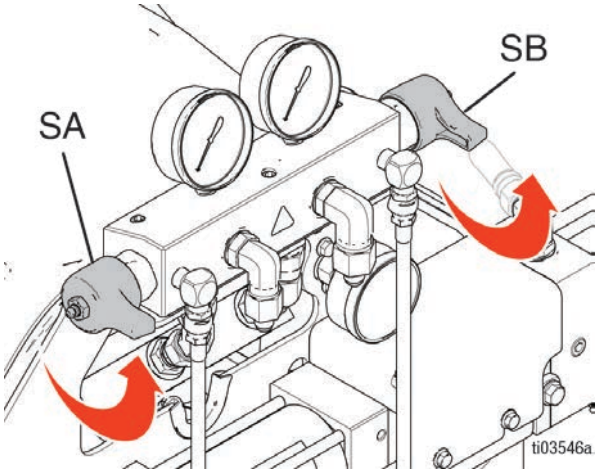
8. Turn the main power switch (MP) **OFF.**



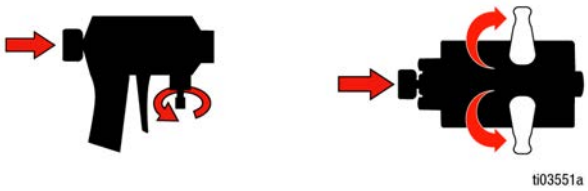
9. Close all fluid supply valves (XA, XB).



10. Set the pressure relief/spray valves (SA, SB) to spray  to seal out moisture from the drain line.



11. Engage the gun safety lock then close fluid manifold valves A and B.



Fusion **Probler**

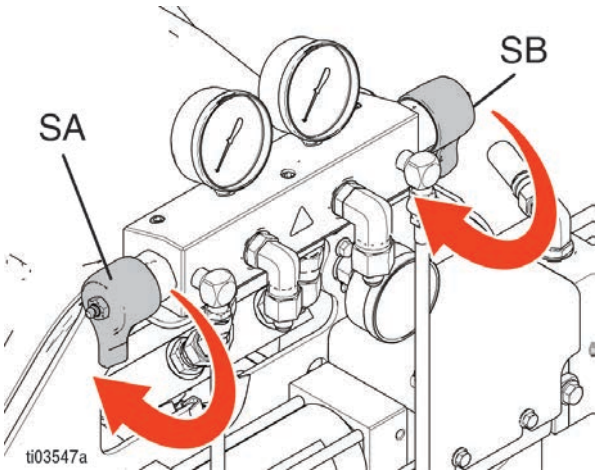
⚠ WARNING

To prevent fire and explosion:

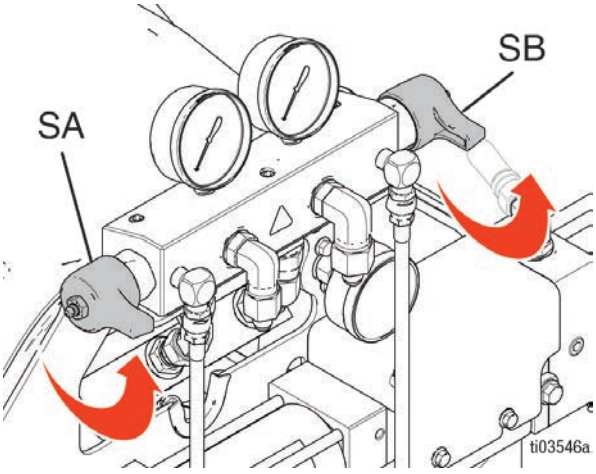
- Flush the equipment only in a well-ventilated area.
- Do not spray flammable fluids.
- Do not turn on heaters while flushing with flammable solvents.
- Always ground equipment and waste container.
- Flush out old fluid with new fluid, or flush out old fluid with a compatible solvent before introducing new fluid.
- Use the lowest possible pressure when flushing.
- All wetted parts are compatible with common solvents. Use only moisture-free solvents.

To flush the fluid supply lines, pumps, heaters, hose, and the gun manifold:

1. Install bleed lines between the outlet manifold recirculation fitting and a grounded metal waste container.
2. Route the circulation lines back to respective A or B supply, or grounded metal waste containers.
3. Set the pressure relief/spray valves (SA, SB) to pressure relief/circulation .



4. Use jog mode to circulate fluid. Reactor systems allow the entire system to be in jog mode, or A and B-side transfer pumps to be put into jog mode separately. See **Jog Mode**. Circulate fluid until only solvent comes from the bleed lines. The Reactor feed hoses, pumps, and heaters are now flushed.
5. Set the pressure relief/spray valve (SA, SB) to spray .



6. Hold the gun fluid manifold over two grounded waste containers. Open fluid valves until only solvent comes from the valves. Close the valves. The Reactor hose and gun manifold are now flushed.
7. **Optional:** Use accessory circulation kit to circulate fluid through the gun manifold.

CIRCULATION KIT	GUN	MANUAL IN ENGLISH
246362	Fusion AP, PC, MP	309818
256566	Fusion CS	313058
2002324	Fusion FX	3B0000

NOTICE

To prevent moisture from reacting with isocyanate, always leave the system filled with a moisture-free plasticizer or oil. Do not use water. Never leave the system dry. See **Important Isocyanate Information**.

⚠ WARNING

Repairing this equipment requires access to parts that may cause electric shock if work is not performed properly. Shut off all power to equipment before repairing.

BEFORE BEGINNING REPAIR

NOTICE

Proper system setup, startup, and shutdown procedures are critical to electrical equipment reliability. The following procedures ensure steady voltage. Failure to follow these procedures will cause voltage fluctuations that can damage electrical equipment and void the warranty.

1. Flush if necessary. Follow **Flush the Equipment** procedure.
2. Follow the **Shutdown** procedure.

FLUSH INLET STRAINER SCREEN

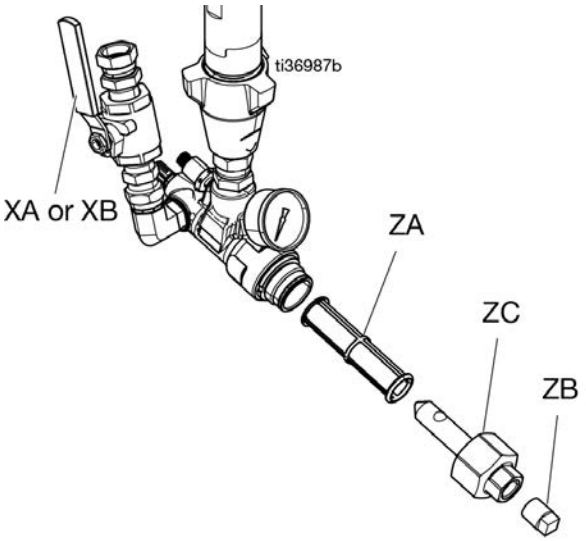
⚠ WARNING

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.

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. Follow the **Pressure Relief Procedure**.
2. Close the fluid inlet valve (XA) at the pump inlet. This prevents material from being pumped while cleaning the screen.
3. Place a container under the strainer base to catch fluid when removing the strainer drain plug (ZB).
4. After the fluid has drained, remove inlet cap (ZC) and inlet strainer screen (ZA) 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 and replace as required.
5. Install the strainer plug (ZB) with the screen (ZA).
6. Open the fluid inlet valve (XA), ensure there are no leaks, then wipe the equipment clean. Proceed with operation.



CHANGE ISO PUMP THROAT SEAL LUBRICANT (TSL™) FLUID

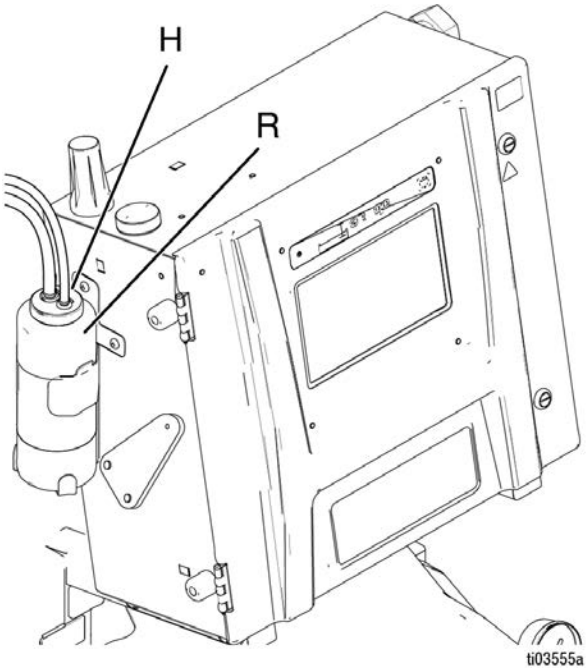
Check the condition of the TSL fluid daily. Change the TSL fluid if it becomes a gel, its color darkens, or it becomes diluted with isocyanate.

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

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

TO CHANGE TSL FLUID:

1. Follow the **Pressure Relief Procedure**.
2. Lift the TSL fluid reservoir out of the bracket and remove the reservoir from the cap. Hold the cap over a suitable waste container and flush contaminated fluid out of the lines by placing the strainer in the new fluid and dispense contaminated fluid through the return line into waste container.
3. Drain the reservoir and flush it with clean TSL fluid or replace it with a new reservoir.
4. When the TSL fluid system is flushed clean, fill it with fresh TSL fluid.
5. Thread the reservoir (R) onto the cap (H) assembly and place it in the bracket.



6. Verify the TSL fluid pump is operating correctly by feeling the pulsation in the return hose during normal proportioner pump operation.

CHANGE HYDRAULIC FLUID AND FILTER

NOTE:

Change break-in oil in a new system after the first 250 hours of operation or within 3 months, whichever comes first.

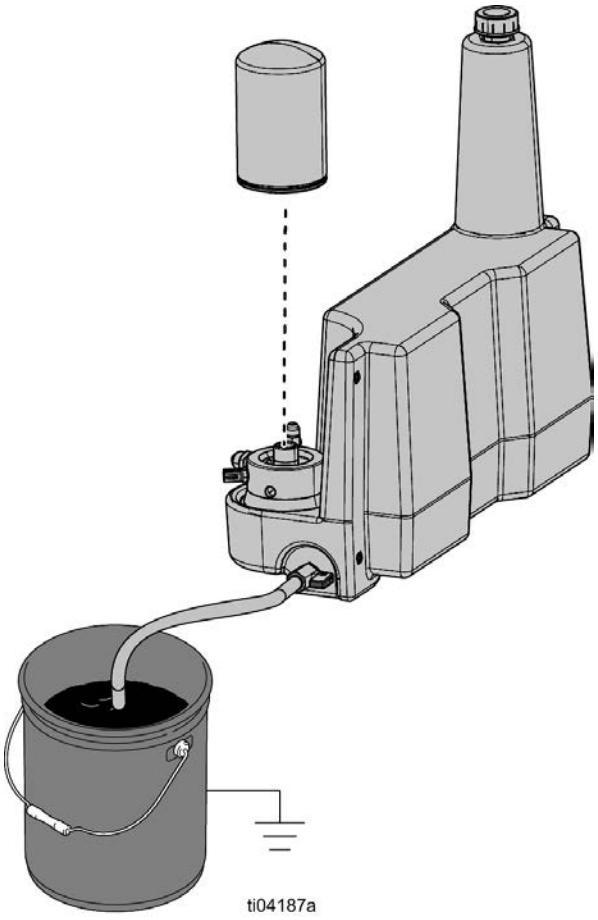
Table 14-1: Frequency of Oil Change

AMBIENT TEMPERATURE	RECOMMENDED FREQUENCY
0 to 90°F (-17 to 32°C)	1000 hours or 12 months, whichever comes first
90°F and above (32°C and above)	500 hours or 6 months, whichever comes first

1. Follow **Pressure Relief Procedure**.
2. Turn the main power switch (MP) **OFF**.
3. Allow hydraulic fluid to cool.
4. Place a bucket or pan under the reservoir drain plug to catch oil.

NOTE:

Recommend using a 3/8" barbed NPT fitting with a 3/8" ID x 1/2" OD hose when draining the oil.



5. Open ball valve.
6. Place a rag around base of oil filter to prevent oil from spilling. Unscrew filter 1/4-3/4 turn to break air lock in filter. Wait five minutes to allow oil in filter to drain back into reservoir. Unscrew filter and remove.
7. Close ball valve.
8. Replace filter:
   a. Coat filter seal with fresh oil.
   b. Screw filter on snug, then an additional 1/4 turn.
   c. Refill reservoir with apporved hydraulic fluid. See table.

d. Proceed with normal operation.

NOTE:

Upon starting motor, hydraulic pump may make a screeching noise until primed. If this noise continues for more than 30 seconds, switch off motor control.

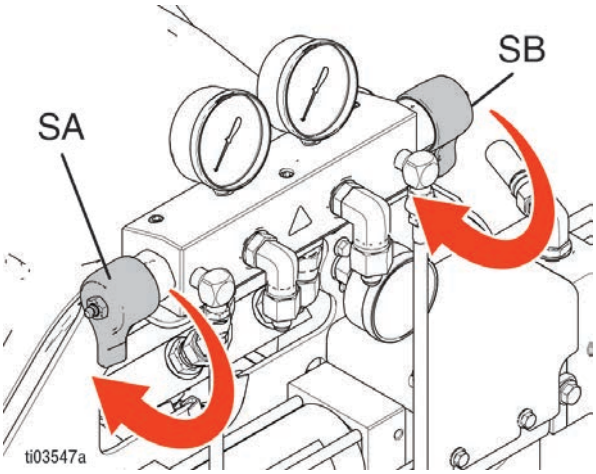
Table 14-2: Approved Anti-Wear (AW) Hydraulic Oils

SUPPLIER	NAME
Citgo	A/W ISO Grade 46
Amsoil	AWI ISO Grade 46 (synthetic*)
BP Oil International	Energol® HLP-HM, ISO Grade 46
Carl Bechem GmbH	Staroil HVI 46
Castrol	Hyspin AWS 46
Chevron	Rykon® AW, ISO 46
Exxon	Humble Hydraulic H, ISO Grade 46
Mobil	Mobil DTE 25, ISO Grade 46
Shell	Shell Tellus, ISO Grade 46
Texaco	Texaco AW Hydraulic, ISO Grade 46
*Do not mix mineral-based and synthetic hydraulic oils. Completely drain oil from reservoir and pump prior to converting between oils.	
If the approved oils are not available in your area, use an alternative hydraulic oil meeting the following requirements: **Oil Type:** Anti-Wear (AW) Hydraulic **ISO Grade:** 46 **Viscosity, cSt at 40°C:** 43.0-47.0 **VIscosity, cSt at 100°C:** 6.5-9.0 **Pour Point, ASTM D 97:** -15°F (-26°C) or lower **Other essential properties:** Formulated for anti-wear, anti-foaming, oxidation stability, corrosion protection, and water separation.	

REPAIR PROPORTIONING PUMPS

⚠ WARNING

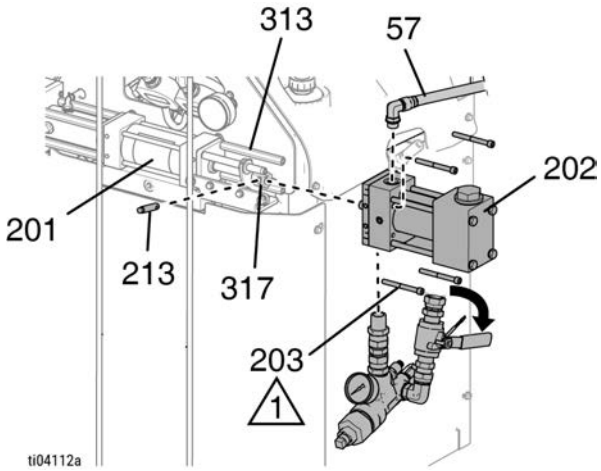
1. Follow **Before Beginning Repair**.
2. Turn both pressure relief/spray valves (SA, SB) to pressure relief/circulation. Route fluid to waste containers or supply tanks. Ensure gauges drop to 0 psi.



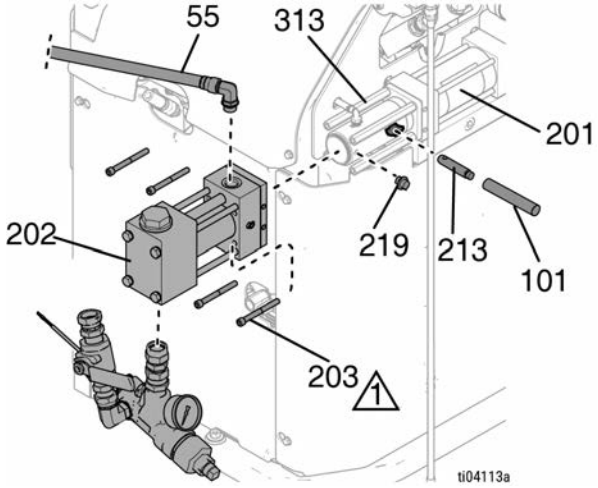
NOTE:

Use drop cloth or rags to protect the Reactor and surrounding area from spills.

3. Disconnect the B (Resin) side pump inlet line, the inlet y-strainer, and braided steel (57). Remove the pin (213) from the clevis (317) to disconnect the pump from the hydraulic cylinder (201). Remove the four screws (203) holding the pump to the spacers (313) of the cylinder. Take the pump assembly to a workbench.



4. Disconnect the A (ISO) side pump inlet line, the inlet y-strainer, and braided steel (55). Use the pin extractor tool (101) to remove the pin (213), which disconnects the pump from the hydraulic cylinder (201). Remove the four screws (203) holding the pump to the spacers (313) of the cylinder. Take the pump assembly to a workbench.

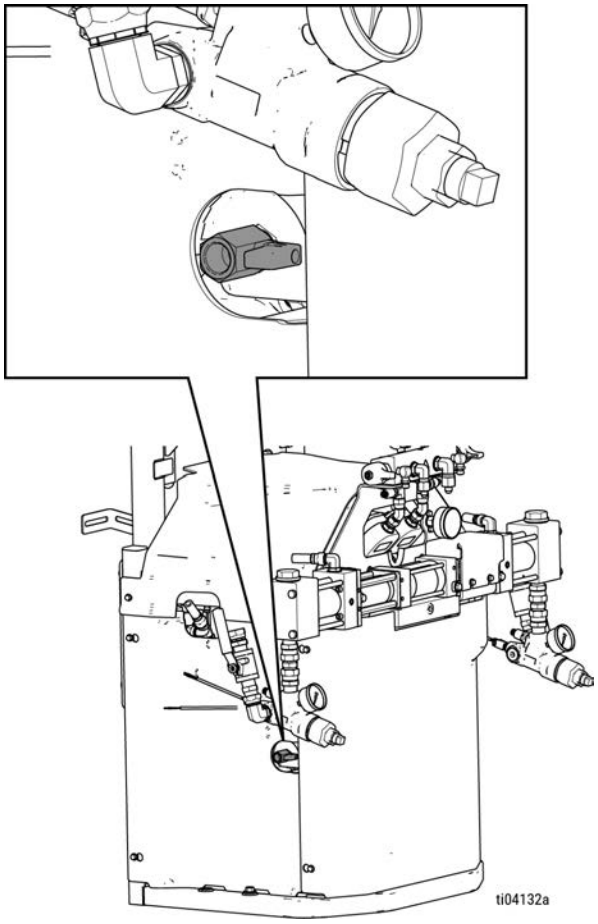


5. See the Proportioning Pumps manual for repair instructions.
6. Reconnect the pump in reverse order.

1 Torque to 200 in-lb (22.6 N·m)

REPLACE HYDRAULIC PUMP

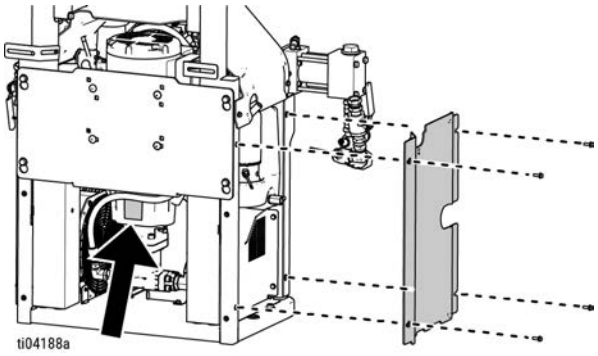
1. Follow the **Shutdown** procedure.
2. Drain hydraulic tank.



3. Remove right-side shroud for better visibility.

NOTE:

Access to the back of the machine is needed. Make sure the back of the machine is clear of obstructions. The orange cover on the coupler should be visible.

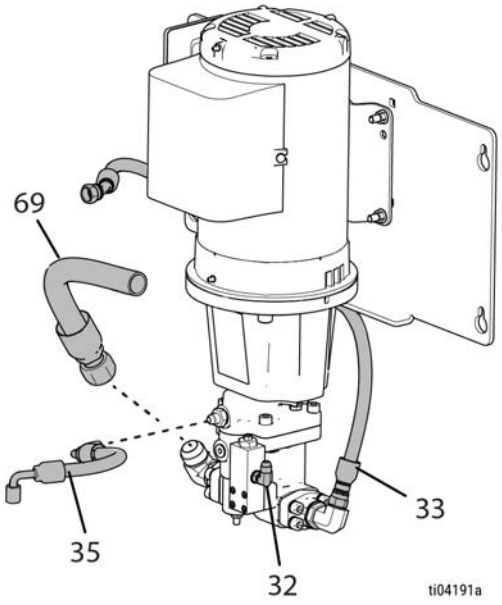


4. Using a 7/8” wrench, remove hose (33) from fitting on the hydraulic pump fitting.

NOTE:

Removing any hose will still cause some residual hydraulic fluid to leak. Place a shallow catch pan or absorbent material under the hydraulic pump to catch leaks.

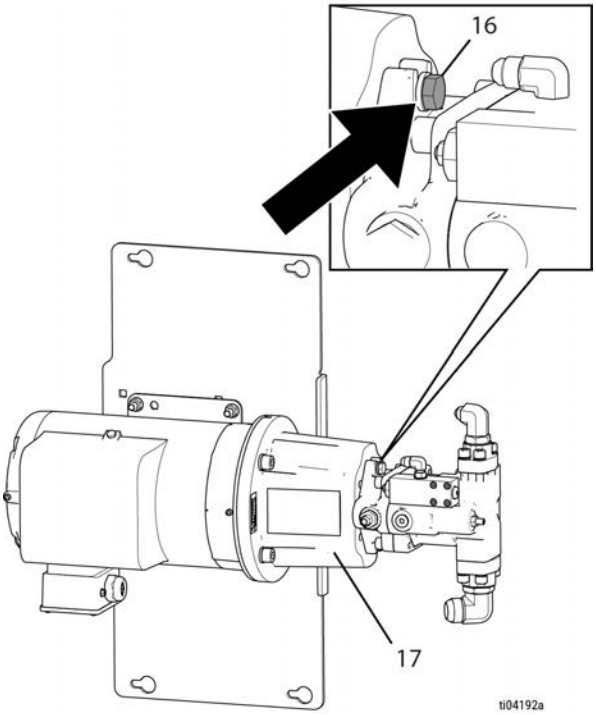
5. Using a 1-1/2” wrench, remove hose (69) from hydraulic pump fitting.



6. **For Elite models only**: Use a 3/4” wrench to remove hose (32) from the hydraulic pump fitting.
7. Using a 11/16” wrench, remove hose (35) from the hydraulic pump fitting.
8. Using a 9/16” wrench, remove the two bolts (16) on the hydraulic pump end of the pump/motor coupler (17).

NOTE:

When the last bolt is removed the hydraulic pump may drop quickly.



9. Note the position of the coupler on the hydraulic pump shaft. Using a 5/32” hex, loosen the set screws and remove the coupler (1) from the hydraulic pump.
10. On the new hydraulic pump, replace the coupler approximately at the same location as it was on the old hydraulic pump shaft.
11. Using a 5/32” hex, tighten the set screws down on the hydraulic pump shaft.
12. Remove fittings, inlet flange, and outlet flange from old hydraulic pump and replace them in the same location on the new one. Replace the O-rings on the inlet and outlet flange before reinstalling on the new pump.
13. Place the pump on a flat surface so that the drain is facing up, pour hydraulic oil into the pump case through either of the drain holes until the oil becomes visible inside the pump.

14. Making sure that the spider coupler (18) is in place between the motor and hydraulic pump coupler, line up the two couplers and seat them together.

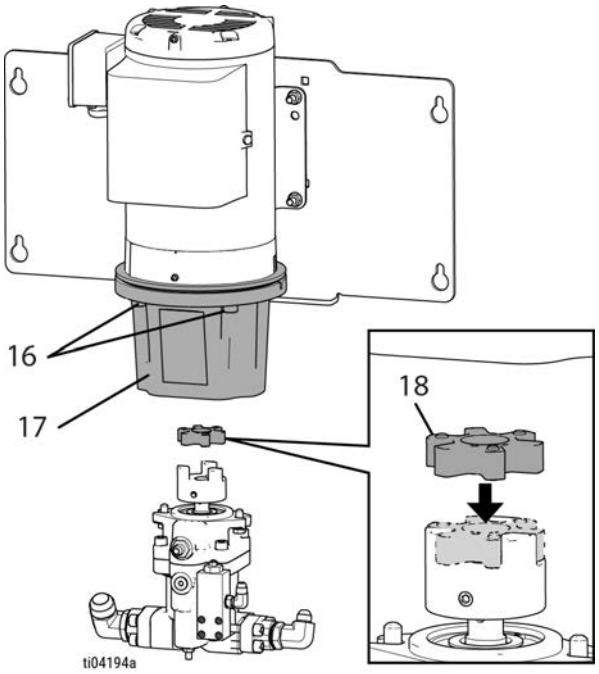
NOTE:

The motor shaft will move freely for easy alignment between couplers.

NOTE:

A wedge is helpful but not necessary to hold the hydraulic pump in place for the next step.

15. Replace bolts (16) in the pump/motor coupler (17) to secure the hydraulic pump. Use the center holes of the bolt pattern so that the pump's drain plug is facing toward the front of the machine.



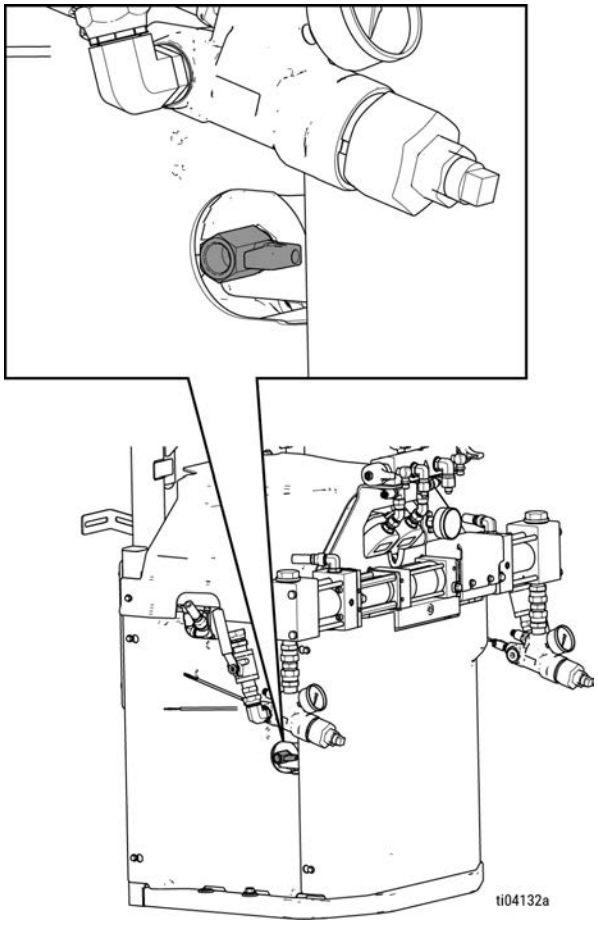
16. Reconnect hoses to pump fittings.
17. Refill the reservoir with hydraulic oil before starting machine again.
18. Start the machine and run in recirculation mode for 5 minutes. Check the oil level again and add oil as needed. Continue this step until the oil level remains the same after two consecutive checks.

NOTE:

Noise coming from the hydraulic pump on first-time startup is normal.

REPLACE MOTOR

1. Perform **Pressure Relief Procedure**.
2. Turn the main power switch (MP) **OFF**.
3. Using a screwdriver, remove the motor wires from contactor (2T1, 4T2 and 6T3 [3 Phase motors only]).
4. Remove motor over-temperature sensor wires from connector 14 on HCM using a thin flat head screwdriver.
5. Cut all zip ties holding the motor harness.
6. Drain hydraulic tank.

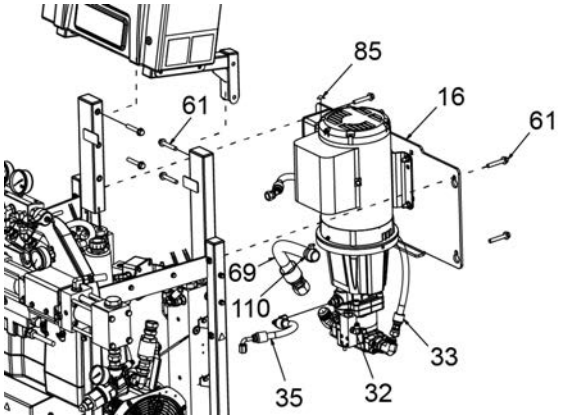


7. Using a 7/8" wrench, remove hose (33) from fitting on the hydraulic pump.

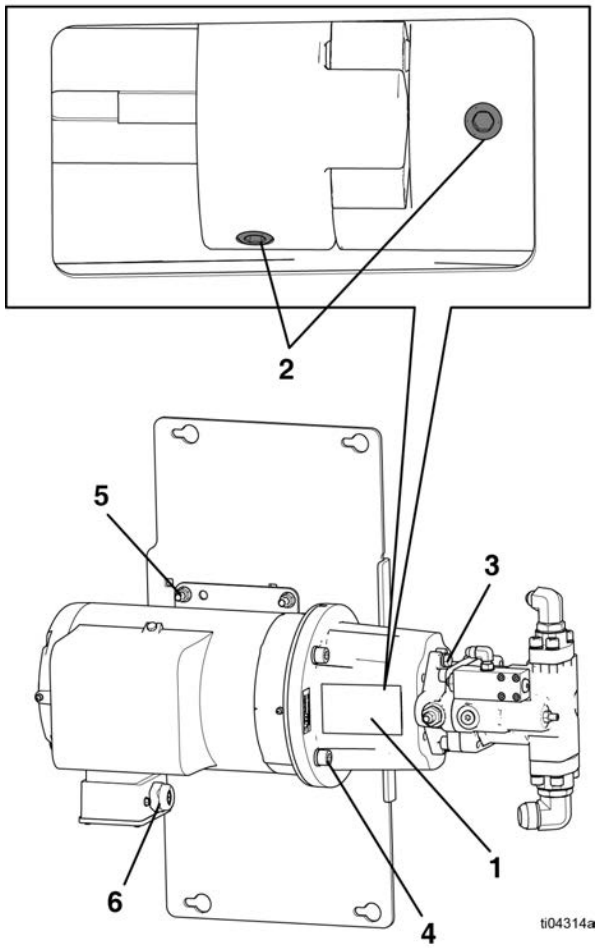
NOTE:

Removing any hose will still cause some residual hydraulic fluid to leak. Place a flat plate or absorbent under the hydraulic pump to catch leaks.

8. Using 1-1/2" wrench, remove hose (69) from hydraulic pump.
9. **For Elite models only:** Use a 3/4" wrench to remove hose (32) from the hydraulic fitting.
10. Using a 11/16" wrench, remove hose (35) from the hydraulic pump fitting.
11. Using proper lifting equipment, like a sling, place straps around the motor between the motor and the motor bracket. Hook up the sling to a crane and apply lifting force.
12. Using a 9/16" socket, back off the bolts (61) holding the motor bracket (16). Do not loosen completely.



13. Lift the motor/hydraulic pump assembly and place it on a work bench.
14. Remove plastic cover (1) on the motor/hydraulic pump adapter.
15. Using a 5/32" hex wrench, loosen the set screws (2) on the motor shaft coupler and the hydraulic shaft coupler.
16. Using a 9/16" wrench, loosen the screw (3) holding the hydraulic pump to the motor/hydraulic pump adapter then remove the hydraulic pump.
17. Using a 3/8" hex wrench, remove four screws (4) on the motor/hydraulic pump adapter then remove the adapter.
18. Using a 9/16" wrench, remove the four nuts (5) holding the motor to the motor bracket.
19. Remove the wire harness (6) from the motor.



20. Install the new motor in reverse order.

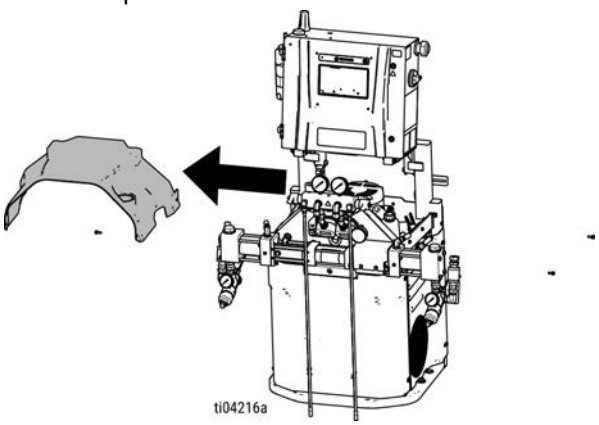
REPLACE THE ELECTRONIC PRESSURE REGULATOR CONTROLLER (EDX)

The EDX electronically controls the hydraulic pressure of the unit.

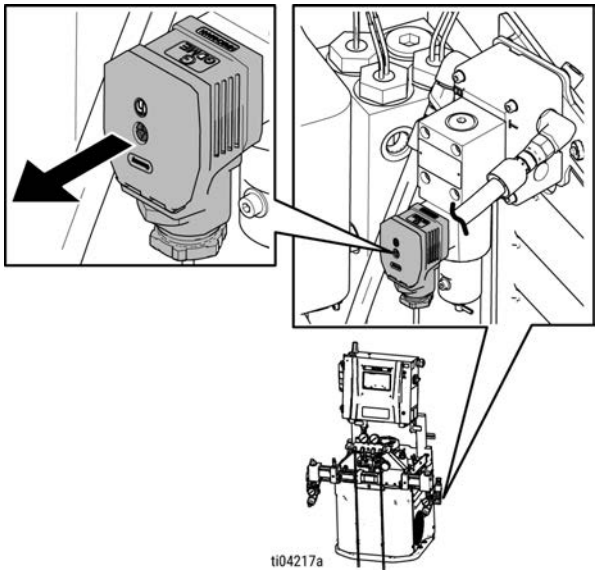
NOTE:

EDX is on Elite models only.

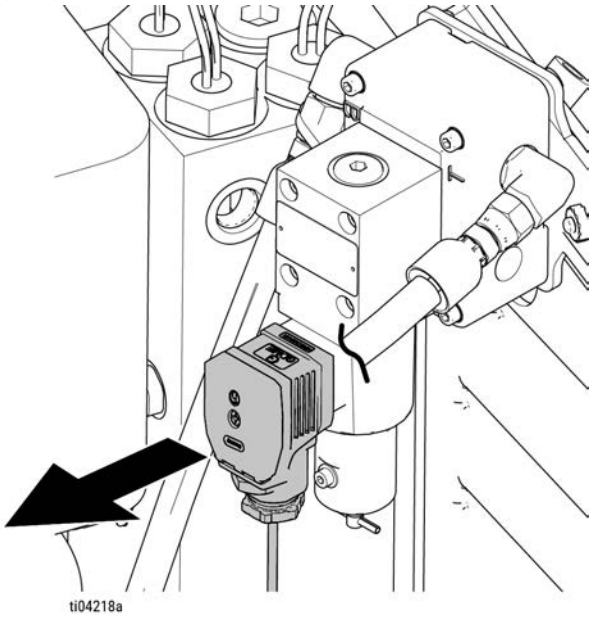
1. Follow the **Shutdown** procedure.
2. Remove top cover.



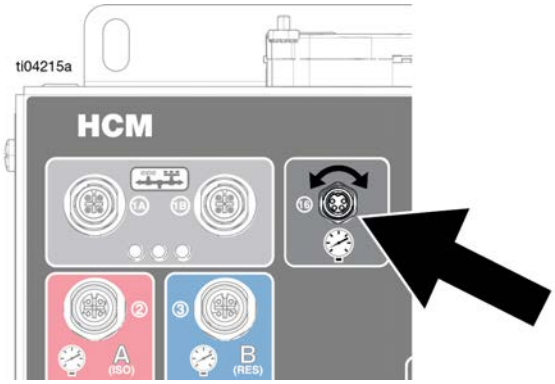
3. Remove screw from middle of EDX using a Phillips head screwdriver.



4. Detach EDX from the Electronic Pressure Regulator (EPR).



5. Disconnect EDX from connector 16 on HCM.

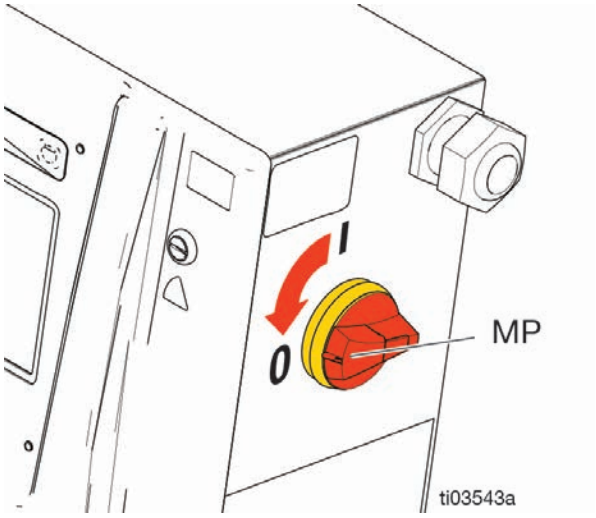


6. Install new EDX in reverse order.

REPLACE CIRCUIT BREAKER

⚠ WARNING

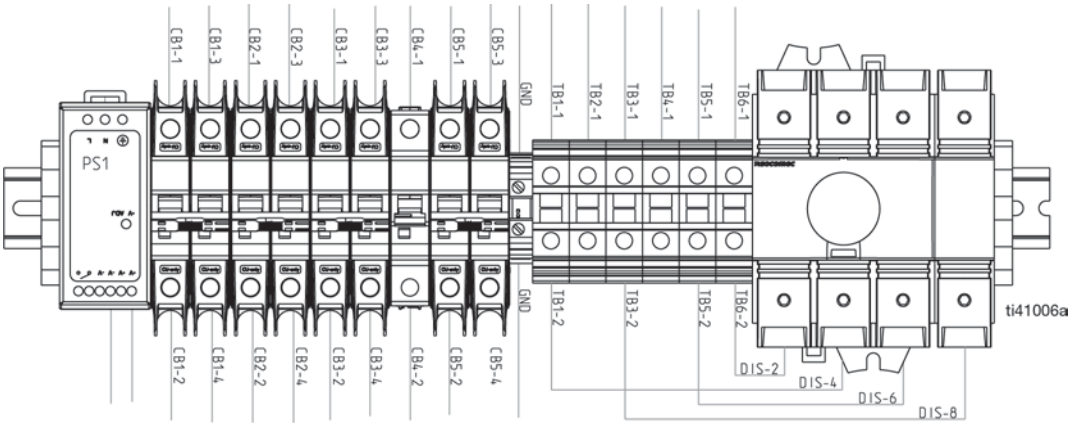
1. Follow **Before Beginning Repair**.
2. Turn the main power (MP) switch **OFF**.



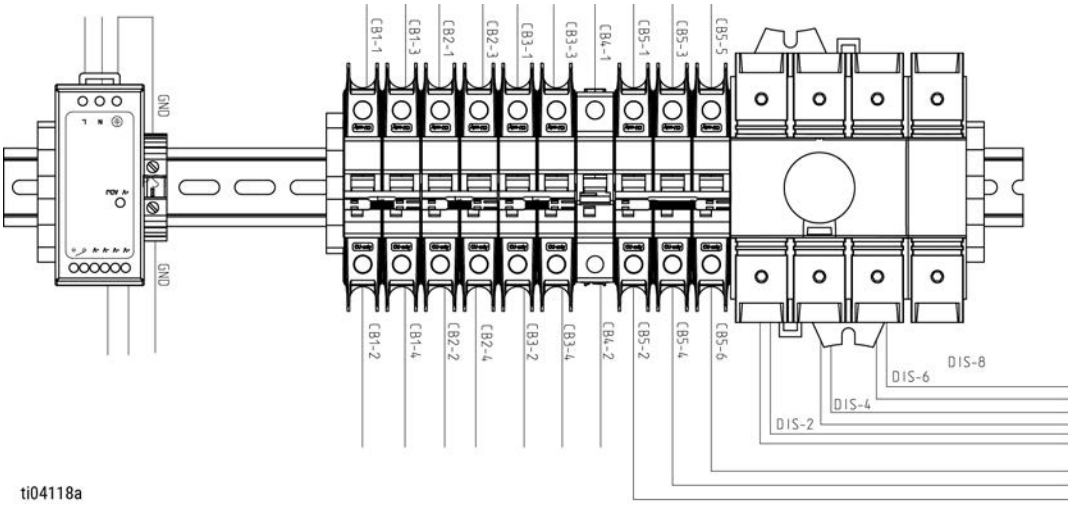
3. Use an ohmmeter to check continuity across the circuit breaker (top to bottom). If there is no continuity, switch off the breaker, then reset and retest it. If there is still no continuity, replace the breaker:
   a. Refer to the circuit breaker table in **Electrical Schematics**.
   b. Loosen the two screws connecting the wires and bus bar to the circuit breaker that will be replaced, then disconnect the wires.
   c. Pull the locking tab out 1/4 in. (6 mm) and pull the circuit breaker away from the din rail. Install the new circuit breaker. Insert the wires and tighten down all screws.

CIRCUIT BREAKERS		
REF.	**SIZE**	**COMPONENT**
CB1	40A	A (ISO) Heat
CB2	40A	B (RES) Heat
CB3	40A	Hose Transformer Primary
CB4	50A	Hose Heat
CB5	20A	Motor

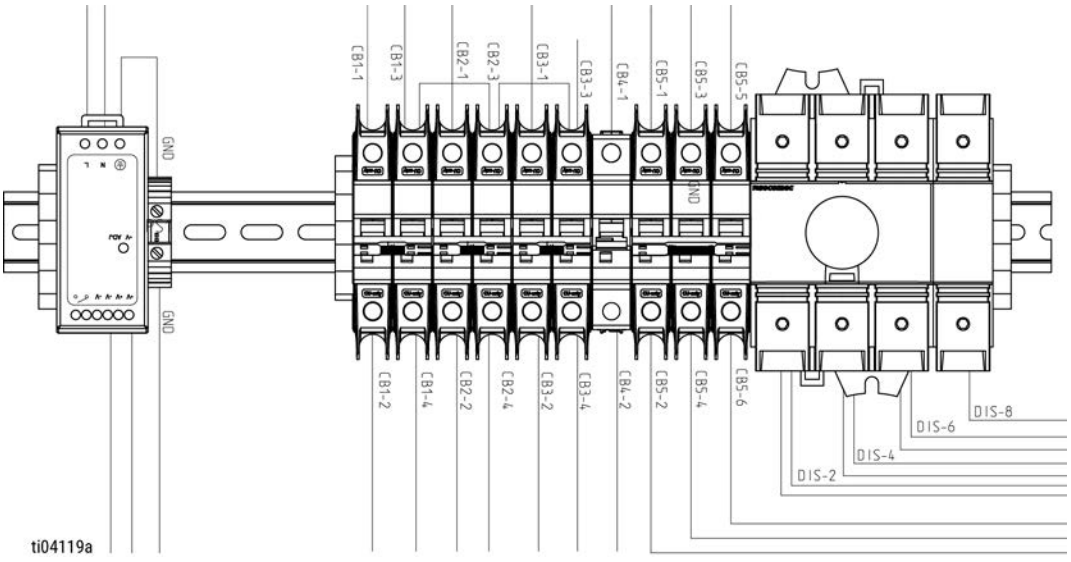
H-30 AND H-XP2 (60 HZ / 230 V)



H-50 AND H-XP3 (60 HZ / 230 V)



H-30, H-50, H-XP2 AND H-XP3 (50 HZ / 400 V)



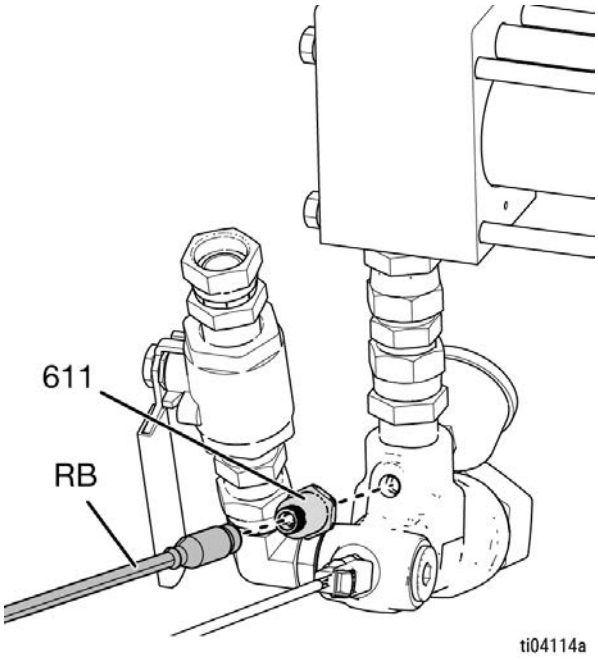
REPLACE INLET PRESSURE TRANSDUCER

⚠ WARNING


NOTE:

For Elite models only.

1. Follow the **Shutdown** procedure.
2. Disconnect the inlet pressure transducer cable (RB) from the fluid inlet assembly. Inspect the cable for damage and replace if necessary. See **Electrical Schematics**.



3. Replace the inlet pressure transducer cable:
   a. Open the wire bundle and remove the inlet pressure transducer cable.
   b. Cut any wire ties and disconnect from the HCM. See **Electrical Schematics**.

NOTICE

To prevent cable damage, route and secure cable in the wire bundle with wire ties.

4. Replace inlet pressure transducer (611).
5. Connect the A-side inlet pressure transducer cable to HCM port #4. Connect the B-side inlet pressure transducer cable to HCM port #5.

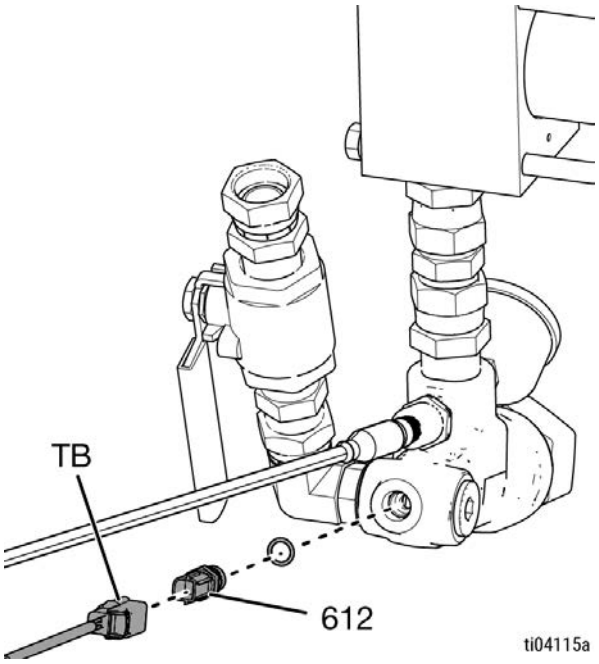
REPLACE INLET TEMPERATURE SENSOR

⚠ WARNING


NOTE:

For Elite models only.

1. Follow the **Shutdown** procedure.
2. Disconnect the inlet temperature sensor cable (TB) from the fluid inlet assembly. Pull the tab to release the lock prior to removing the cable. Inspect cable for damage and replace if necessary. See **Electrical Schematics**.



3. Replace the inlet temperature sensor cable:
   a. Open the wire bundle and remove the inlet temperature sensor cable.
   b. Cut any wire ties and disconnect from the TCM. See **Electrical Schematics**.

NOTICE

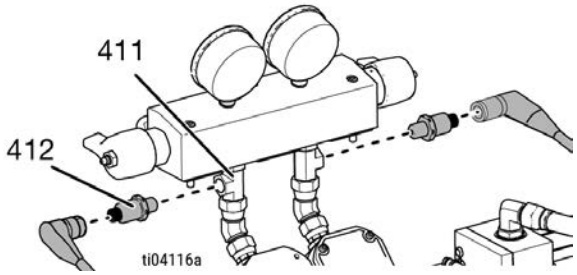
To prevent cable damage, route and secure cable in the wire bundle with wire ties.

4. Replace inlet temperature sensor (612).
5. Connect the A-side inlet temperature sensor cable to TCM port #4, pins #1 and #2. Connect the B-side inlet temperature sensor cable to TCM port #4, pins #3 and #4.

REPLACE OUTLET PRESSURE TRANSDUCERS

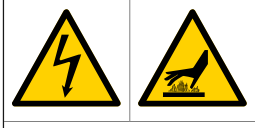
⚠ WARNING


1. Follow the **Shutdown** procedure.
2. Disconnect outlet pressure transducer cables from #2 and #3 connectors on the HCM.
3. Remove wire ties constraining the outlet pressure transducer cables and remove the cables from the cabinet.
4. Apply thread sealant and install the new outlet pressure transducer (412).
5. Install the outlet pressure transducers into the manifold. Mark the end of the cable with tape (red = transducer A, blue = transducer B).
6. Route the new outlet pressure cables into the cabinet and rethread and cable into the bundle. Reattach the cable ties to the bundle.
7. Connect the A-side outlet pressure transducer cable to HCM port #2. Connect the B-side outlet pressure transducer cable to HCM port #3.



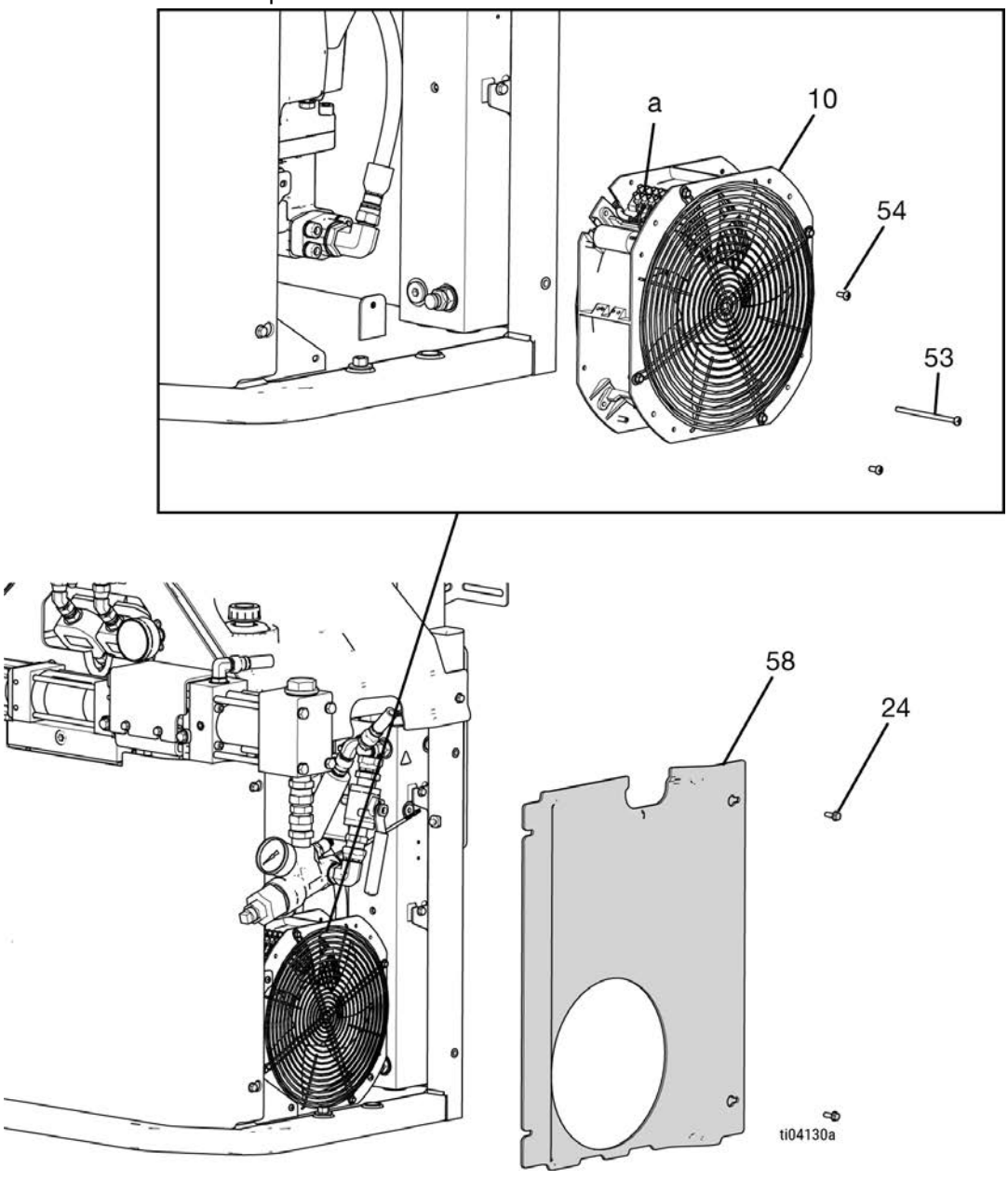
REPLACE COOLING FAN

⚠ WARNING



Shutdown the system to avoid injury from electric shock. To avoid burns, do not perform maintenance on the fan until the system has reached ambient temperature.

1. Follow the **Shutdown** procedure.
2. Remove bolts (24) and cover (58).
3. Disconnect the transformer fan cable (a) and remove the wire tie.
4. Remove two screws (54) and screw (53) to remove the fan (10).
5. Install the new fan in reverse order, then secure the fan and replace the covers.



REPLACE FLOW METER

⚠ WARNING

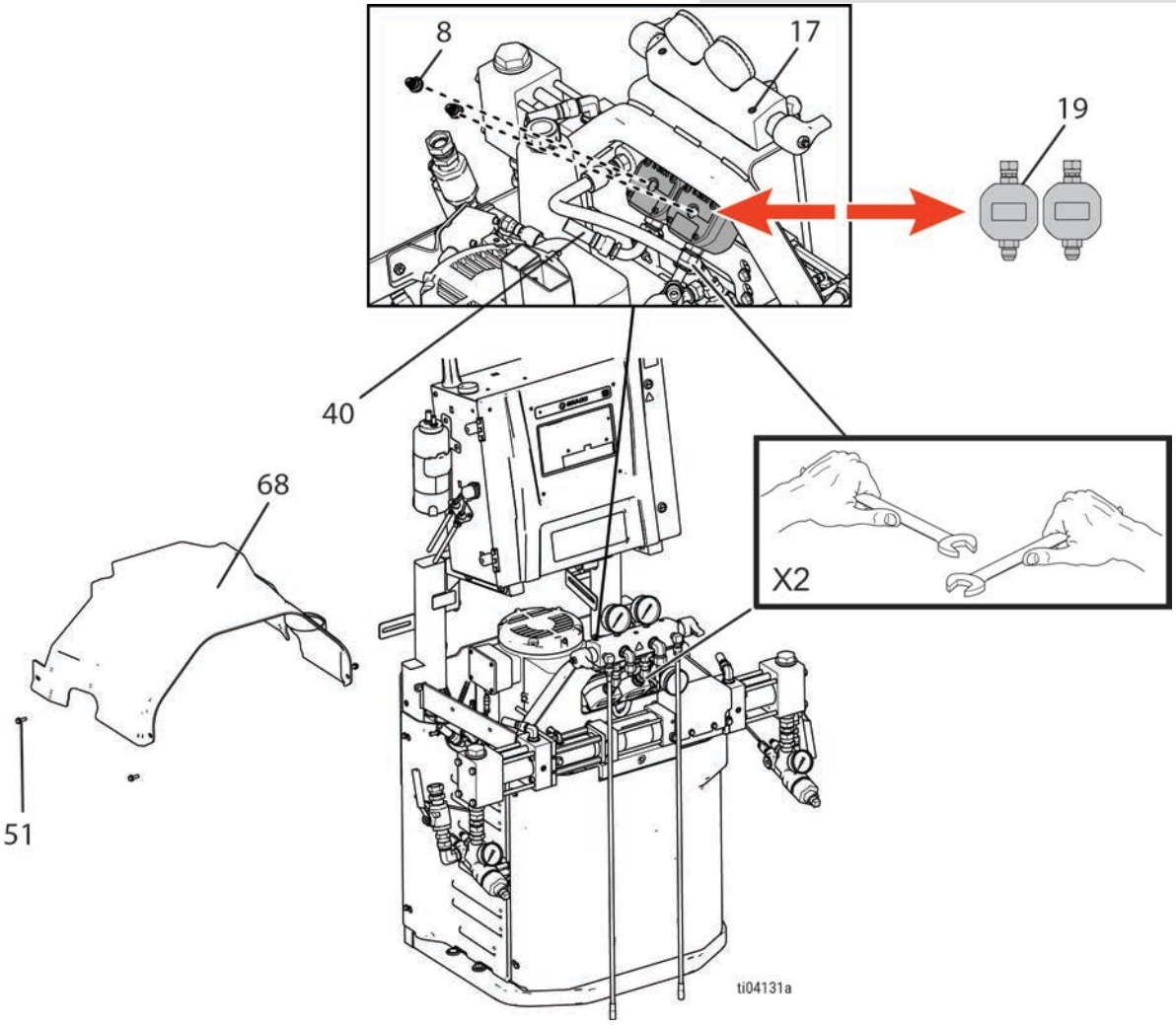
NOTE:

For Elite models only.

1. Follow the **Shutdown** procedure.
2. Using a 3/8" socket, remove four bolts to remove the top cover (57).
3. Disconnect the flow meter cables.
4. Use two wrenches to disconnect hoses (40), then remove the flow meter (19) from the manifold (17).
5. Install the new flow meter and reconnect the hose.
6. Reconnect the flow meter cable.
7. Enter the K-factor on the pressure/flow setup screen in the ADM. Refer to **Setup Screen** in your Reactor 3 operation manual.

NOTE:

The K-factor is printed on the flow meter label.



REPAIR PRIMARY HEATER

⚠ WARNING

REPLACE HEATER ELEMENT

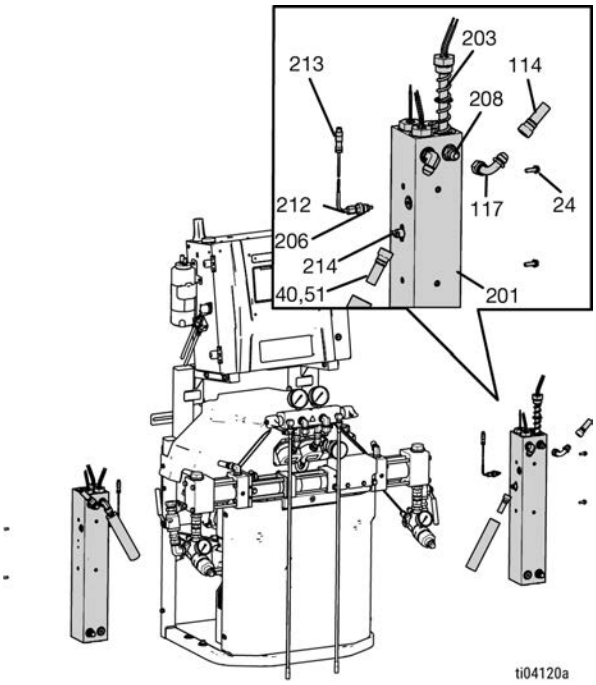
⚠ WARNING

1. Follow **Flush the Equipment** procedure.
2. Follow the **Shutdown** procedure.
3. Wait for the heater to cool.
4. Remove the heater and RTC wires as needed from the TCM inside the enclosure and pull the wires through. See **Electrical Schematics**.

   NOTE:

   The RTD should be replaced whenever replacing the outbound heater rod.

5. Use an ohmmeter to test the heater wires. See **Electrical Schematics.**
6. Disconnect over-temperature switch (214) from the cable.
7. Loosen ferrule nut (N).
8. Remove RTD (212) from the heater housing. Do not remove adapter (206) unless necessary. If the adapter must be removed, make sure the mixer (210†) does not interfere when replacing the adapter.
9. Disconnect the inlet and outlet hoses from the heater and from the outlet manifold.
10. Remove two bolts (24) and lift the heater over the transformer.
11. Place the heater block (201) in a vise. Use a wrench to remove the heater element (203).
12. Inspect the heater element. It should be relatively smooth and shiny. Replace the element if there is a crusted, burnt, ash-like material adhered to the element, or if the sheath shows pitting marks.
13. Install the new heater element (203) while holding the mixer (210†) so it does not interfere with the RTD port.
14. Secure the heater to the frame with bolts (24).
15. Reinstall the RTD (212) in the heater block. See **Replace RTD** procedure.
16. Reconnect cable to the over-temperature switches (214).
17. Reconnect wires in electrical enclosure. See **Electrical Schematics**.



† See **Replace RTS** to view the mixer (210).

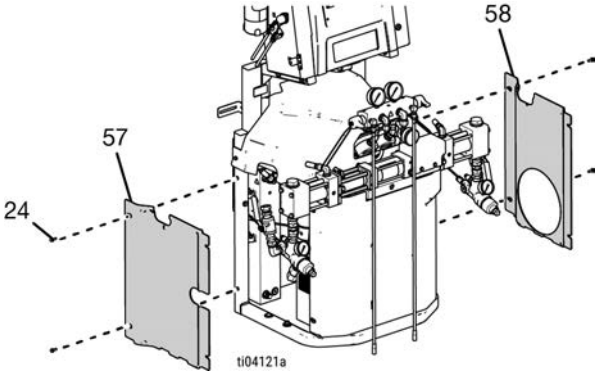
NOTE:

The heater outputs its rated wattage at 240 VAC. Low line voltage will reduce the power available. When this occurs, the heater will not perform at full capacity.

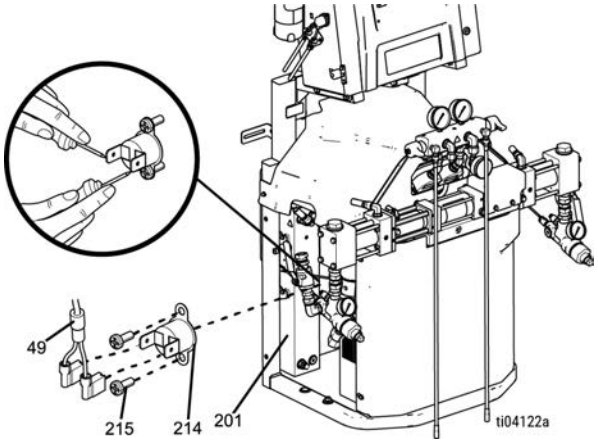
REPLACE OVER-TEMPERATURE SWITCH

⚠ WARNING

1. Follow the **Shutdown** procedure.
2. Wait for the heaters to cool.
3. Remove four bolts (24) then remove the lower covers (57, 58).



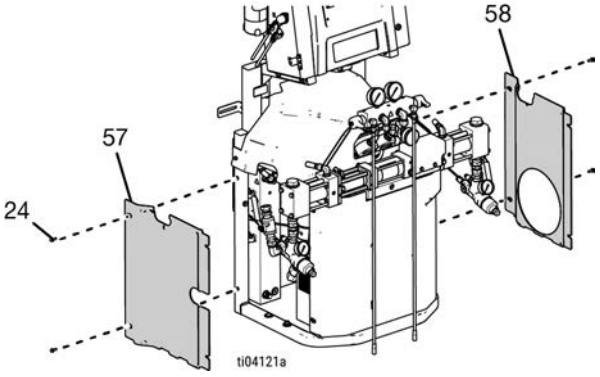
4. Disconnect over-temperature switches (214) from cable. Test across the spade terminals with an ohmmeter.
   a. If the resistance is not approximately 0 ohms, the over-temperature switch needs to be replaced. Proceed to step 5.
   b. If the resistance is approximately 0 ohms, inspect cable (49) to make sure it is not cut or open. Reconnect the over-temperature switch (214) and cable (49). Disconnect the cable from the TCM. Test from pin 1 to pin 2 and pin 3 to pin 4. See **Electrical Schematics**. If resistance is not approximately 0 and switches are 0, replace the original cable with a new cable.
5. If the over-temperature switch fails the test, remove screws (215) and discard the failed switch (214). Apply a thin layer of thermal compound 110009, then install a new switch in the same location on housing (201). Secure with screws (215) and reconnect the cables (49).



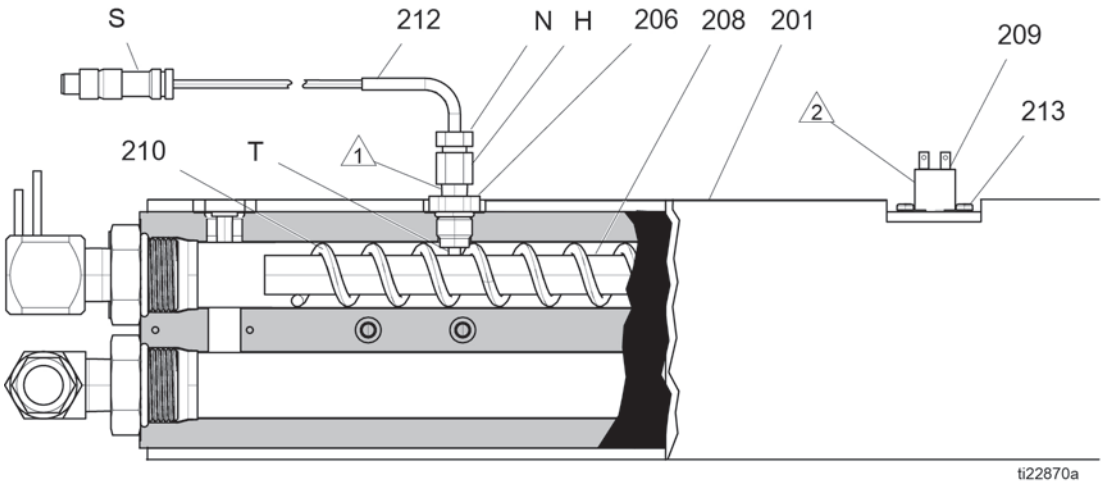
REPLACE RTD

⚠ WARNING


1. Follow the **Shutdown** procedure.
2. Wait for heaters to cool.
3. Remove four bolts (24) then remove the lower covers (57, 58).



4. Cut the cable ties from around the woven srap with the RTD cable (212).
5. Disconnect RTD cable (212) from TCM (453).
6. Loosen ferrule nut (N). Remove RTD (212) from RTD housing (H), then remove RTD housing (H). Do not remove the adapter (206) unless necessary. If the adapter must be removed, make sure the mixer (210) does not interfere replacing the adapter.
7. Remove the RTD cable (212) from the woven wrap.
8. Replace RTD (212):
   a. Apply PTFE tape and thread sealant to the male pipe threads and tighten RTD housing (H) into the adapter (206).
   b. Push in RTD (212) so the tip contacts the heater element (208).
   c. Holding RTD (212) against the heater element, tighten the ferrule nut (N) 3/4 of a turn past finger-tight.
9. Route the wires as before through the woven wrap and reconnect the RTD cable (212) to the TCM.
10. Replace lower covers (57, 58) with four bolts (24).
11. Follow the Startup instructions in the operation manual. Turn on A-side and B-side heat simultaneously to test. Temperatures should rise at the same rate. If one is low, loosen ferrule nut (N) and lightly tighten RTD housing (H) to make sure the RTD tip contacts the element (212) when ferrule nut (N) is retightened.



TROUBLESHOOT HEATED HOSE

⚠ WARNING


Refer to your heated hose manual for replacement hose parts.

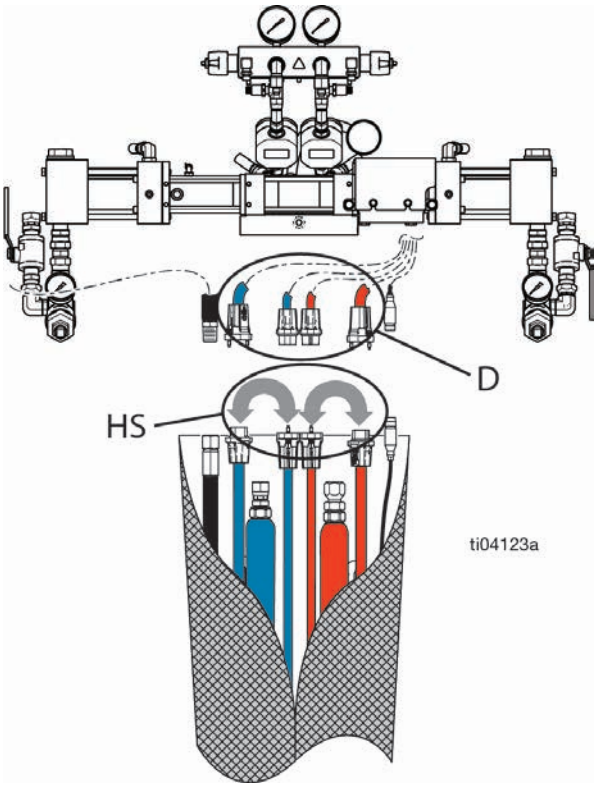
CHECK HOSE WIRES FOR CONTINUITY

1. Follow the **Shutdown** procedure.

   NOTE:

   The whip hoses must be connected, otherwise the hose connectors at the end of the hose must be connected to each other.

2. Disconnect hose electrical connectors (D) at the Reactor.



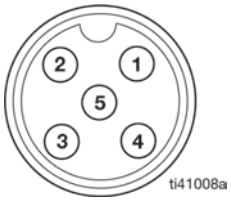
3. Test continuity between both sets (HS).
4. Use an ohmeter to check between the hose wires. There should be continuity between both A (red) connectors and continuity between both B (blue) connectors.
5. If the hose fails the test, retest at each length of hose from the system out of the gun including whip hose, until the failure is isolated.
6. Replace the broken section of hose.

CHECK HOSE RTD CABLES AND FTS

1. Follow the **Shutdown** procedure.
2. Disconnect RTD cable (212) at the Reactor.
3. Test with an ohmmeter between the pins of cable connector.

   NOTE:

   Do not touch the outer ring with the test probe.

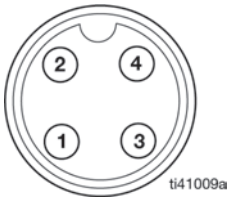


PINS	RESULTS
1 to 3 and 4 to 3	See **RTD Resistance vs. Temperature** table. A-side
1 to 5 and 4 to 5	See **RTD vs. Temperature** table. B-side.
1 to 4	0.2 - 0.4 ohms at the FTS (each 50 ft cable adds 0.75 ohms)
2 to any	Infinity (open)

4. Retest each length of hose, including whip hose, until the failure is located.
5. If the FTS is not reading properly at the end of the hose, connect the FTS with the splitter directly to the RTD cable (212) connected to the Reactor.

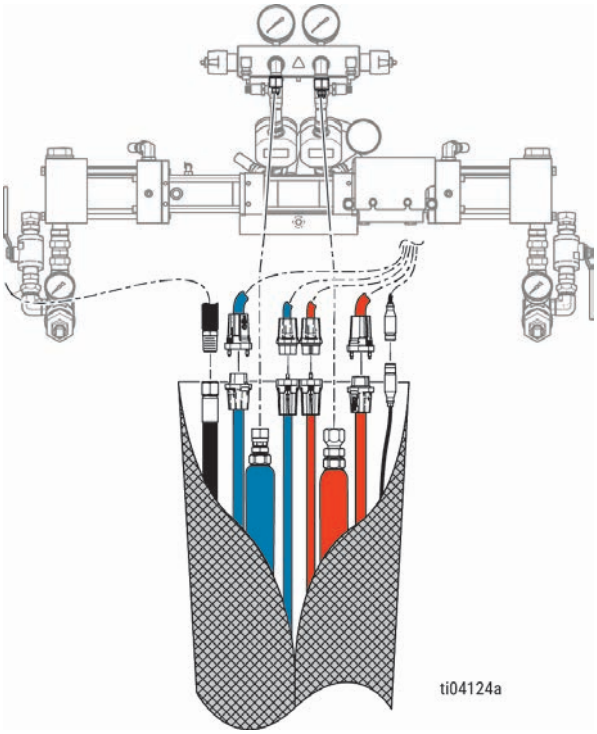
   NOTE:

   You can also check each FTS independently with an ohmmeter between pins as shown below.



PINS	RESULTS
1 to 3	See **RTD Resistance vs. Temperature** table. A-side
4 to 3	See **RTD Resistance vs. Temperature** table. B-side.
1 to 4	0.2 - 0.4 ohms at the FTS
2 to any	Infinity (open)

6. If the FTS reads properly at the Reactor but not at the end of the hose, check cable connections. Verify the connections are tight.



NOTE:

To assist in taking readings, order RTD Test Kit 18E258. The kit includes two cables: one cable with a compatible female connector and another cable with a male connector. Both cables have stripped wire at the other end for easy test probe access. See the RTD Test Kit Wire Reference table.

RTD TEST KIT WIRE REFERENCE

PINS	WIRE COLOR
1	Brown
2	Bare
3	Blue
4	Black
5	White

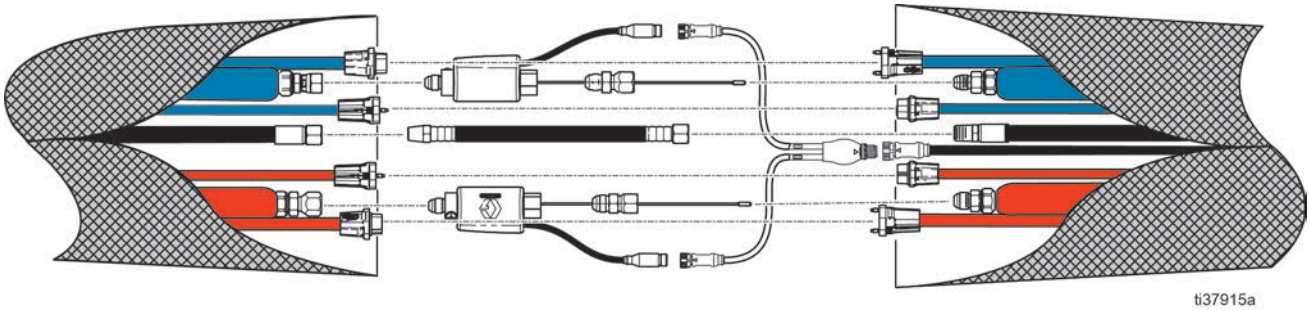
RTD RESISTANCE VS. TEMPERATURE

RTD OR FTS RESISTANCE OHMS	RTD OR FTS TEMPERATURE °C (°F)
843	-40 (-40)
882	-30 (-22)
922	-20 (-4)
961	-10 (14)
1000	0 (32)
1039	10 (50)
1078	20 (68)
1117	30 (86)
1155	40 (104)
1194	50 (122)
1232	60 (140)
1271	70 (158)
1309	80 (176)
1347	90 (194)
1385	100 (212)

REPAIR FLUID TEMPERATURE SENSOR (FTS)

INSTALLATION

The fluid temperature sensor (FTS) is an optional accessory. Install the FTS between two sections of hose, ideally at the furthest point between the last hose and the whip hose. See your heated hose manual for details.



TEST/REMOVAL

⚠ WARNING

1. Follow the **Shutdown** procedure.
2. Remove tape and protective covering from the FTS. Disconnect hose cable (F).
3. If the FTS is not reading properly at the end of the hose, see **Check Hose RTD Cables and FTS**.
4. If the FTS fails, replace the FTS or run it in resistance mode:
   a. Disconnect air hoses (C, L) and electrical connection (D).
   b. Disconnect A-side FTS fluid fittings from whip hose (W) and main hose (M).
   c. Remove FTS probe (H) from the hose.
   d. Repeat for B-side (RES).

CALIBRATION PROCEDURE

NOTICE

To prevent damage to the heated hose, a hose calibration is required if any of the following conditions are true.

- The hose has never been calibrated before
- A section of hose has been replaced
- A section of hose has been added
- A section of hose has been removed

NOTE:

The Reactor and heated hose must be at the same ambient temperature to get the most accurate calibration. Perform calibration at the beginning of the day before any material has been heated.

See your Hydraulic Reactor 3 operation manual for instructions on how to perform the calibration procedure.

TRANSFORMER CHECK

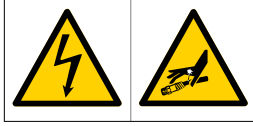
See **Electrical Schematics** for reference.

1. Follow the **Shutdown** procedure.
2. Check the transformer primary wires:
   a. Open circuit breaker CB3 to turn the color indicator on the circuit breaker green.
   b. Use an ohmmeter to test for continuity between the primary transformer wires in CB3-2 and CB3-4 (there should be continuity).
   c. Close circuit breaker CB3 after the test.
3. Check the transformer secondary wires:
   a. Disconnect the 7-pin green connector (P1-TCM) from the TCM.
   b. Use an ohmmeter to test for continuity between terminals 5 and 6 on the TCM 7-pin green connector. There should be continuity. If there is no continuity, check the transformer.
   c. Reconnect the 7-pin green connector to the TCM.
4. Check the transformer:
   a. Apply incoming power to the system.
   b. To verify voltage on the secondary leads of the transformer, measure between terminals 5 and 6 on the TCM 7-pin green connector. Verify voltage is approximately 90 VAC (H-30 and H-XP2) or 120 VAC (H-50/H-XP3) for 240 VAC input.
   c. See the diagnostics Run Screen on the ADM. The diagnostic run screen displays the incoming voltage to the TCM under "Voltages".

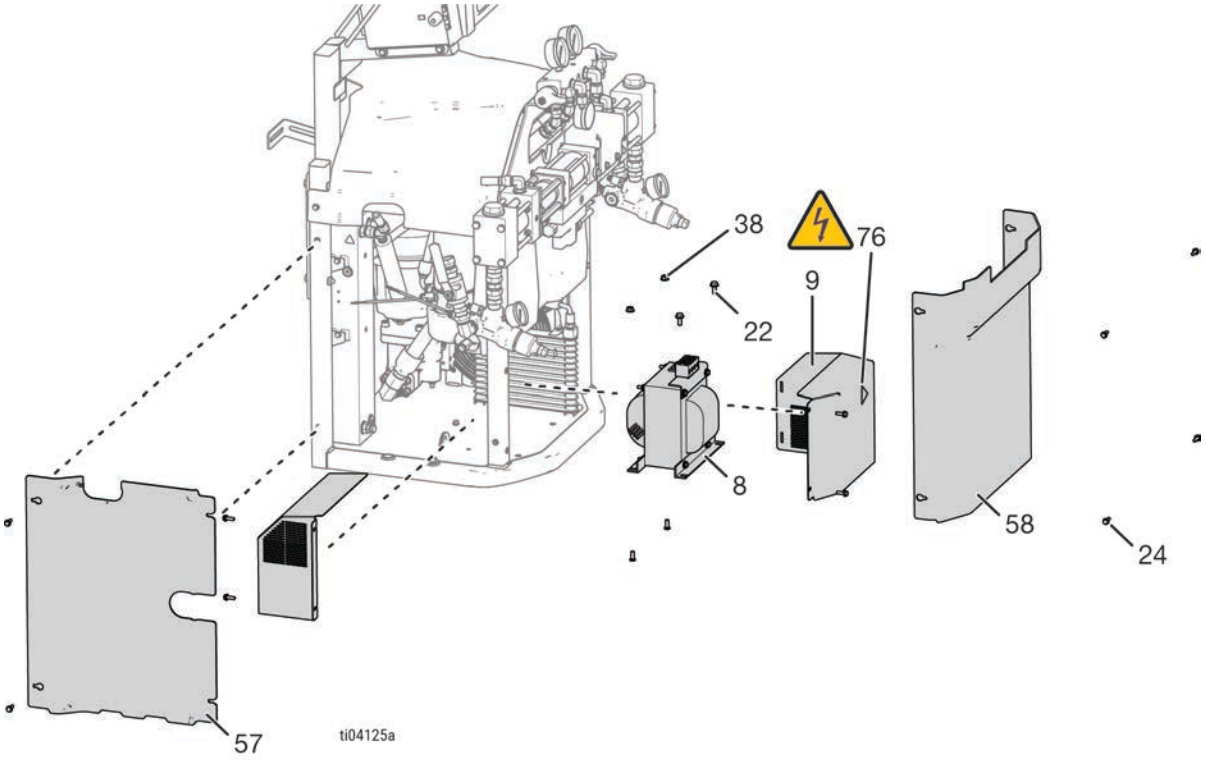
   d. If the hose current is zero (0) when heating the hose (see "Currents" and "Hose" on the diagnostic screen). Make sure breaker CB4 is not tripped.

REPLACE TRANSFORMER

⚠ WARNING



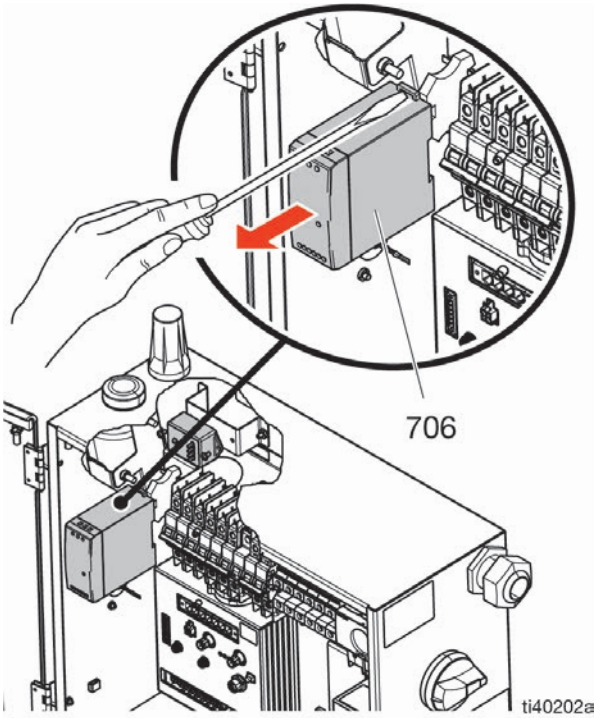
1. Follow the **Shutdown** procedure.
2. Remove bolts (24) and covers (57, 58).
3. Remove transformer cover (9).
4. Disconnect transformer connections from terminal blocks. Connections are labeled: 1, 2, 3, and 4.
5. Remove transformer (8).
6. Install transformer (8) in reverse order.



REPLACE POWER SUPPLY

⚠ WARNING

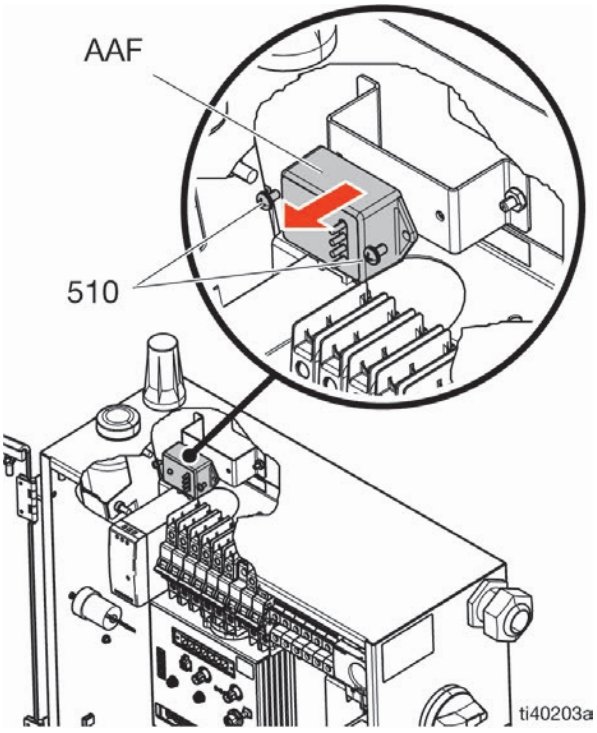
1. Follow the **Shutdown** procedure.
2. Disconnect input and output cables from both sides of the power suply. See **Electrical Schematics**.
3. Insert a flathead screwdriver in the mouting tab on the power supply to remove from the din rail.
4. Install new power power supply (706) in reverse order.



REPLACE SURGE PROTECTOR

⚠ WARNING

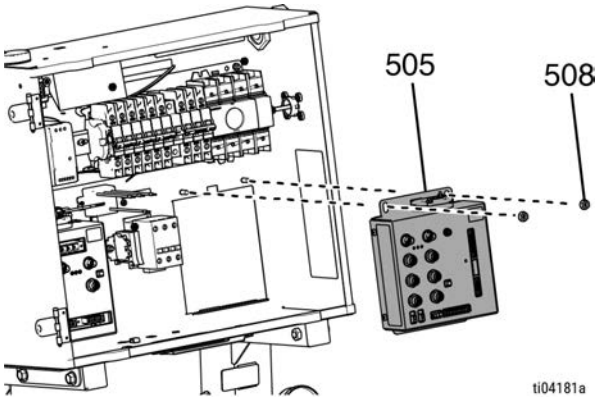
1. Follow the **Shutdown** procedure.
2. Loosen connections on terminals 1 and 3 on CB3. See **Electrical Schematics**.
3. Loosen connections on input to power supply (706) on N and L connectoins. See **Electrical Schematics**.
4. Remove two screws (510) and the surge protector (AAF) from the enclosure.
5. Install the new surge protector (AAF) in reverse order.



REPLACE HYDRAULIC CONTROL MODULE (HCM)

⚠ WARNING

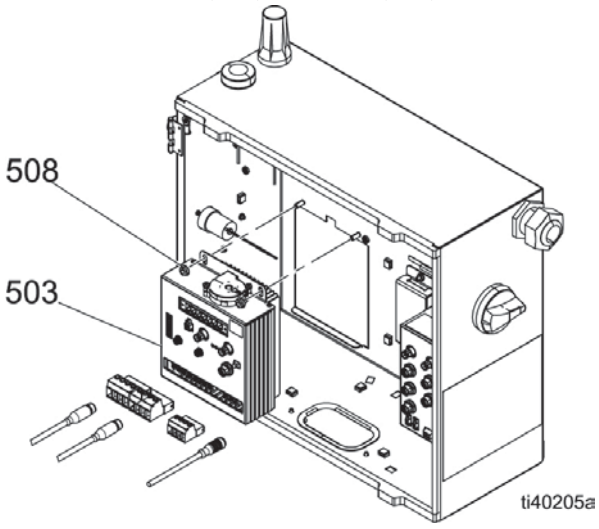
1. Follow the **Shutdown** procedure.
2. Disconnect connectors from HCM (505). Disconnect two power cables. See **Electrical Schematics**.
3. Remove nuts (508) and HCM (505).
4. Replace HCM in the enclosure.
5. Connect the cables to the HCM. See **Electrical Schematics**.



REPLACE TEMPERATURE CONTROL MODULE (TCM)

⚠ WARNING

1. Follow the **Shutdown** procedure.
2. Disconnect all connections from the TCM (503). See **Electrical Schematics**.
3. Remove two nuts (508) and TCM (503).

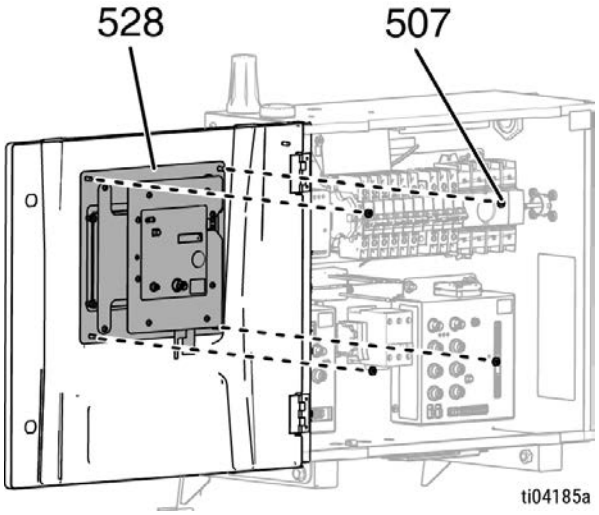


4. Replace the TCM in the enclosure.
5. Connect cables to the TCM. See **Electrical Schematics**.

REPLACE ADVANCED DISPLAY MODULE (ADM)

⚠ WARNING

1. Follow the **Shutdown** procedure.
2. Disconnect the CAN cable and callular cable. See **Electrical Schematics**.
3. Loosen four screws (507) on the inside of the electrical enclosure door. Remove ADM (528).
4. Replace the ADM in the enclosure door.



5. Connect the CAN cable and cellular cable. See **Electrical Schematics**.
6. If necessary, update the software by installing a USB drive with the latest software into the ADM. Follow the **Software Update Procedure USB**.

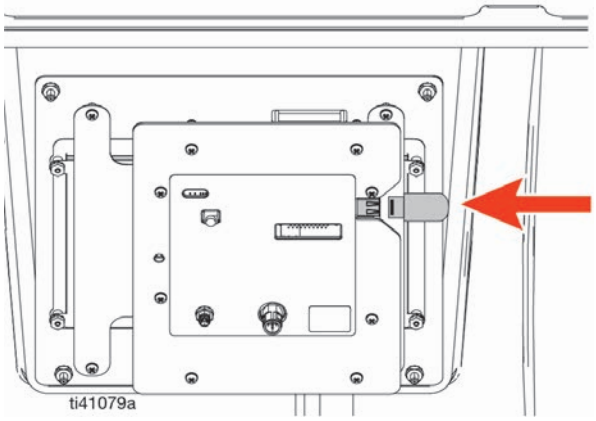
SOFTWARE UPDATE PROCEDURE

ADM repair kit modules are shipped pre-programmed and with update USB drive number 15N423. If the software version upgrade is necessary, follow the **Software Update Procedure USB**.

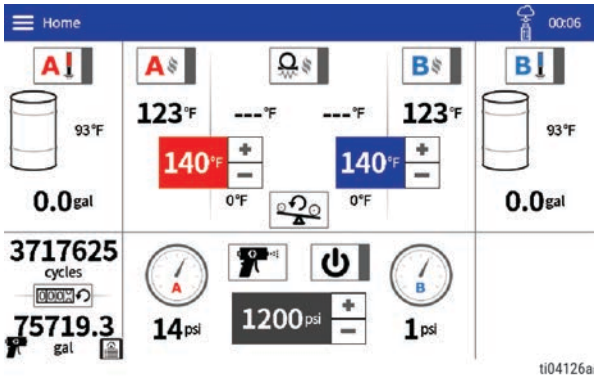
SOFTWARE UPDATE PROCEDURE USB

⚠ WARNING

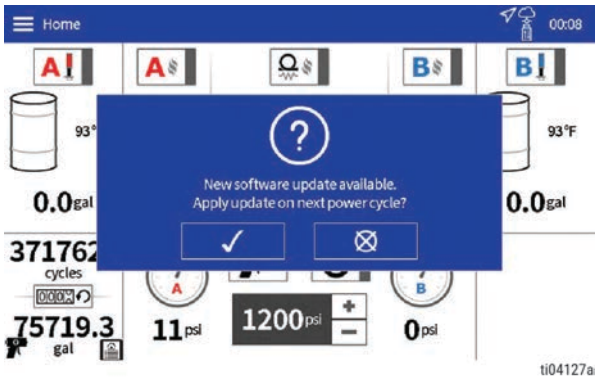
1. Download the latest software into the top directory of a USB drive. The software can be downloaded from help.graco.com
2. Follow the **Shutdown** procedure, or turn off main disconnect switch. Insert the USB, then close the enclosure door. Turn on main disconnect switch.



3. The home screen will load and show the USB icon in the top right corner.

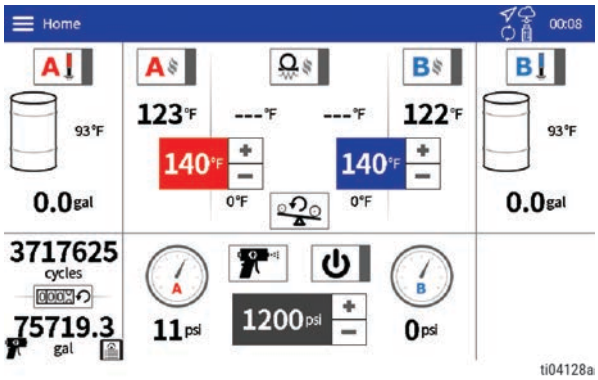


4. After the .GTI file has downloaded to the Reactor, a prompt will appear asking to apply the update on the next power cycle.



5. Press the check mark and wait for the on-screen propt to prepare the Reactor for the update on the next power cycle.

6. After step 5 is complete, the home screen will show a circle with arrows in the right corner of the menu bar. This indicates that the software will be updated on the next power cycle.



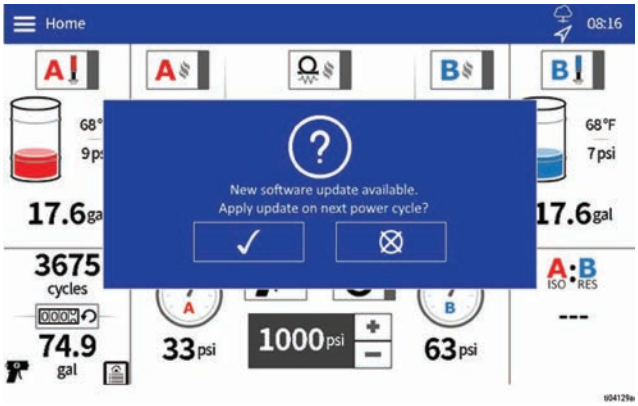
7. Cycle the power by turning the disconnect switch off then back on. Wait for the update to complete. Confirm the software update is complete by pressing the check mark.

8. The Software Update Complete screen will appear. Use the QR code displayed on the screen to access the software release notes. Otherwise, press the mark to return to the home screen. Follow the **Shutdown** procedure, or turn off main disconnect swich, remove USB, then close the enclosure door. Turn on the main disconnect switch to continue operation.

OVER-THE-AIR SOFTWARE UPDATES

Models with cellular modules installed have the ability to perform software updates wirelessly. If this feature is desired, the Enable Cellular Software Update setting on the ADM must be selected. This setting is available on the Advanced > Software screen. See your Hydraulic Reactor 3 operation manual for a description of ADM settings.

New software will download in the background when available. Once the download is complete, a prompt to update software on the next power cycle will appear.



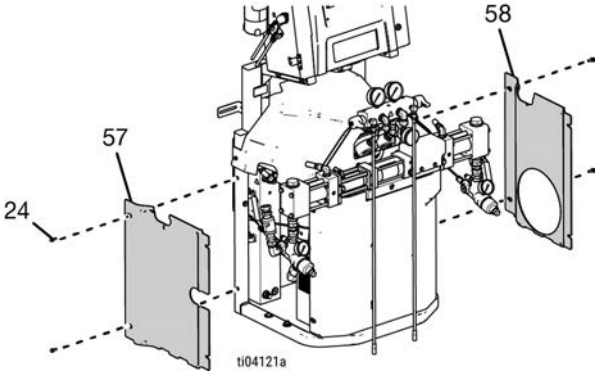
Press the check mark and the update will be applied on the next power cycle.

REPLACE FLUID OUTLET MANIFOLD

⚠ WARNING

The fluid outlet manifold is the assembly where the heated hoses connect to the unit. The assembly contains pressure gauges as well as pressure transducers and dump valves on either side in order to circulate material back to the drums.

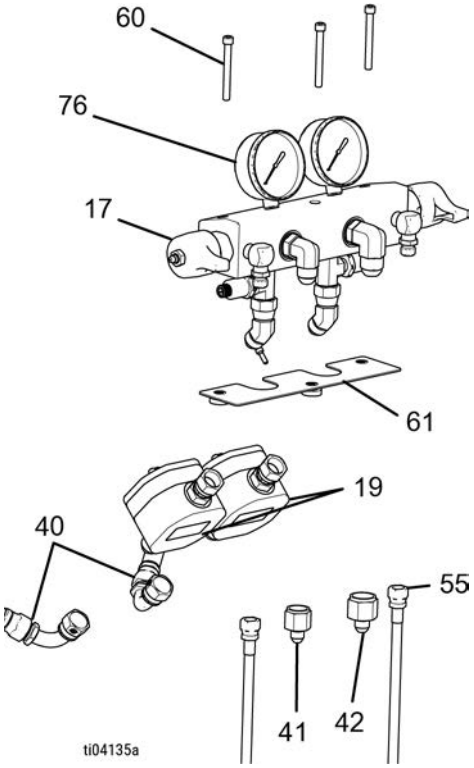
1. Follow the **Shutdown** procedure.
2. Remove four bolts (24) then remove the lower covers (57, 58).



NOTICE

To prevent a short circuit or lowering the transformer life, do not splash fluid on the transformer. Cover the transformer with a plastic sheet or piece of cardboard.

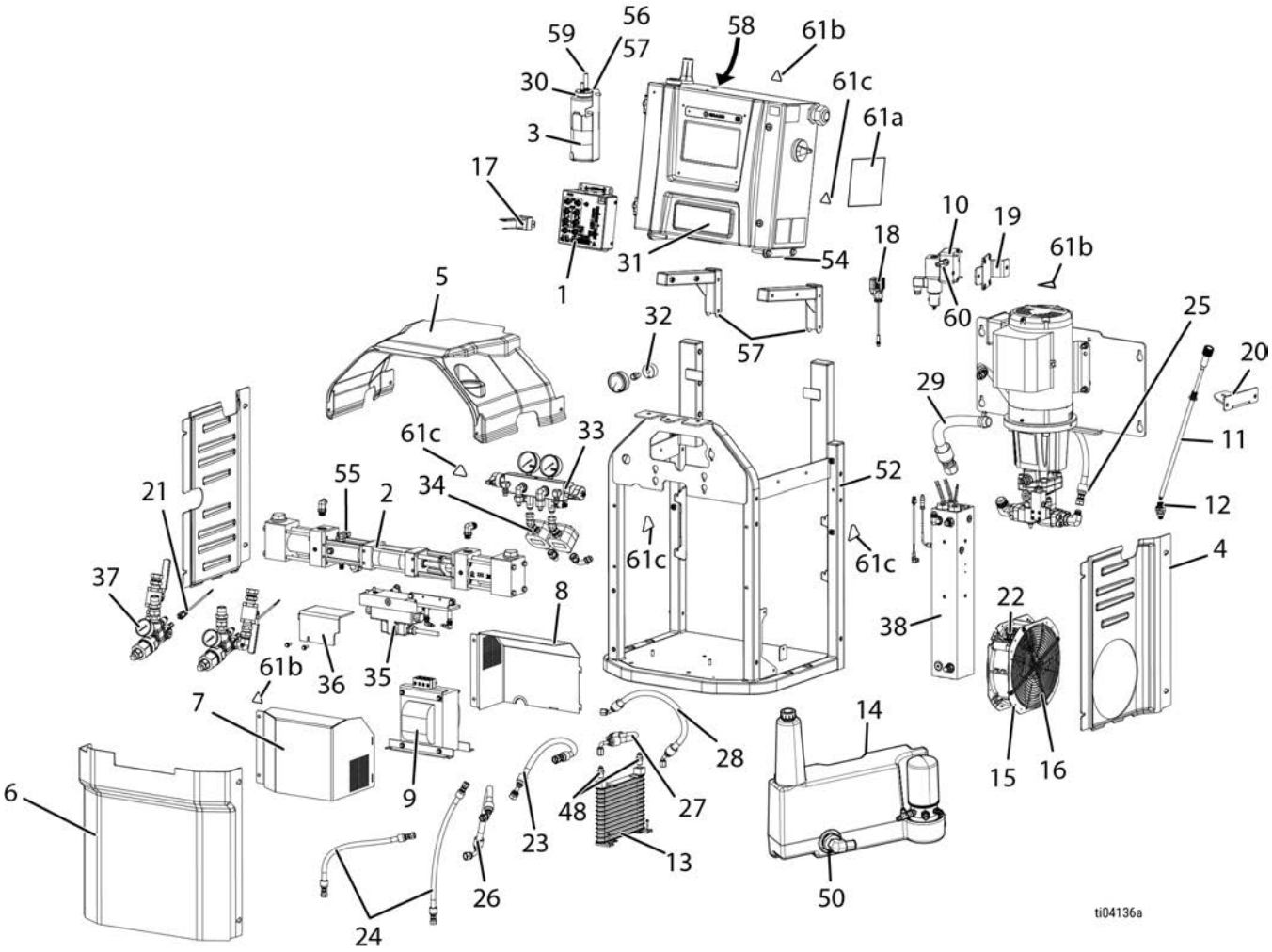
3. Disconnect fluid lines (40) (or flow meters on Elite models), heated hoses, and recirculation lines (55) from the outlet manifold (17).
4. Disconnect the outlet pressure transducer cables from transducers.
5. Use a 3/16 in. hex key to remove screws (60), then remove the manifold (17).



6. When installing the new manifold, place the gasket (61) in approximately the same location on the motor frame. Use the mounting holes to align, then place the new manifold on top and re-install the screws (60).
7. Reconnect fluid lines (40) and recirculation lines (55) to corresponding fittings and outlet pressure transducer cables to the transducers.
8. Replace lower covers (57, 58) with four bolts (24).

TOP LEVEL PARTS

The parts illustration and list shows the components of the Reactor® 3 Hydraulic and their connections that are required for assembly, repair, and maintenance.



PARTS LIST

REF.	PART	DESCRIPTION	QTY.
1	2010146	Kit, module, HCM2	1
2	2010490	Kit, pump, hydraulic with ISO and Resin 80	1
	2010491	Kit, pump, hydraulic with ISO and Resin 120	1
	2010492	Kit, pump, hydraulic with ISO and Resin 140	1
	2010493	Kit, pump, hydraulic with ISO and Resin 120/88	1
3	2010494	Kit, TSL, system	1
4	2010495	Kit, covers, bottom, left and right	1
	113796	Screw, flanged, hex hd, 1/4"-20 x 0.75"	8
5	2010496	Kit, cover, top, elite	1
	113796	Screw, flanged, hex hd, 1/4"-20 x 0.75"	4
	2010497	Kit, cover, top, pro	1
	113796	Screw, flanged, hex hd, 1/4"-20 x 0.75"	4
6	2010498	Kit, cover, bottom, front	1
	113796	Screw, flanged, hex hd, 1/4"-20 x 0.75"	4
7	2010499	Kit, cover, transformer, front	1
8	2010500	Kit, cover, transformer, rear	1
9	2010501	Kit, transformer, 5400 VA, 230/120	1
10❖★△*	2010502	Kit, valve, Electronic Pressure Regulator (EPR)	1
10a	2010681	Fitting, elbow, 90, -6 JIC x -6 BSPT	2
11	2010503	Kit, upper, MPR	1
12‡	2010504	Kit, lower, MPR	1

REF.	PART	DESCRIPTION	QTY.
13	2010513	Kit, radiator	1
13a	2010681	Fitting, elbow, 90, -6 JIC x -6 BSPT	2
13b	112598	Screw, machine truss HD, 8-32 x 0.75"	2
14	2010514	Kit, reservoir	1
14a	110982	Screw, cap, hex hd, 1/4-20 x 2"	4
14b	100016	Washer, lock, 1/4"	4
14c	100086	Washer, plain, 3/16"	4
15	2010515	Kit, fan	1
15a	110037	Screw, mach, pan head, 10-24 x 0.5"	4
15b	112381	Screw, mach, pan head, 10-24 x 3.5"	1
16	2010516	Kit, guard, fan	1
	114000	Screw, mach, hex wash hd, 10-14 x 0.5"	4
17	2010528	Kit, module, EMI filter	1
18	2010529	Kit, Electronic Pressure Regulator Controller (EDX)	1
19△	2010530	Kit, bracket, EPR	1
20	2010531	Kit, bracket, MPR	1
21	2010534	Kit, cable, thermistor	1
22	2010535	Kit, harness, fan	1
23	2010560	Kit, hose, gauge, pressure	1
24❖★△*	2010561	Kit, hose, hydraulic, supply, EPR	2
25	2010562	Kit, hose, hydraulic, supply, pump outlet	1
26	2010563	Kit, hose, hydraulic supply, tank inlet	1

REF.	PART	DESCRIPTION	QTY.
27	2010564	Kit, hose, hydraulic, cooler, inlet	1
28	2010565	Kit, hose, hydraulic, cooler, outlet	1
29	2010566	Kit, hose, coupled, pump inlet	1
30	2010566	Kit, cap, bottle, TSL	1
30a	2009261	Grommet, 1/2 ID	1
30b	2009844	Grommet, 3/8 ID	1
31	2008926	Label, branding, H-30 Elite	1
	2008925	Label, branding, H-30 Pro	1
	2008930	Label, branding, H-50 Elite	1
	2008929	Label, branding, H-50 Pro	1
	2008932	Label, branding, H-XP2 Elite	1
	2008931	Label, branding, H-XP2 Pro	1
	2008934	Label, branding, H-XP3 Elite	1
	2008933	Label, branding, H-XP3 Pro	1
32	17V497	Kit, adapter, hydro gauge	1
33	18E207	Kit, repair, outlet manifold	1
	C19817	Screw, cap, socket head, 1/4-20 x 2.25"	3
34	18E136	Kit, meter, flow	2
35	17G531	Kit, manifold, hydraulid	1
36	17V459	Kit, cover, hydro pump, clear	1
37	18E247	Kit, strainer, pair, elite	2
38	18E143	Kit, heater, 1-zone, A, 9.6 KW (Models H50 and H-XP3)	1
	18E144	Kit, heater, 1-zone, B, 9.6 KW (Models H50 and H-XP3)	1
	18E145	Kit, heater, 1-zone, A, 7.2 KW (Models H30 and H-XP2)	1
	18E146	Kit, heater, 1-zone, B, 7.2 KW (Models H30 and H-XP2)	1
48	2010669	Kit, fitting, straight, -6 JIC x -6 BSPT	2
50	2010671	Kit, strainer, suction, 1-1/2 NPT x 3/4 NPT	1
51	2010672	Kit, bracket, pivot, left and right	1
52	2010673	Kit, frame, painted	1
53	2010674	Kit, cap, breather, filler	1
54	2010675	Kit, shim, enclosure	2
55	2010676	Kit, valve, check	2
56✿	2010677	Kit, grommet, 3/8 ID	1
57✿	2010678	Kit, grommet, 1/2 ID	1
58	2010679	Kit, clip, snap in	1
59	2010680	Kit, tube, 3/8 OD, TSL	1
60†◆	2010681	Kit, fitting, elbow, -6 JIC x -6 BSPT	1
61▲	25T998	Label, safety, *includes 61a, 61b, 61c and 61d*	1
61a▲		Label, danger, warning	1
61b▲		Label, shock, warning	3
61c▲		Label, hot surface, warning	7
61d▲		See **Electrical Enclosure Parts**	1

❖ *Included in MPR to EPR Conversion Kit 2010517 (H-30/H-XP2 60 Hz).*

★ *Included in MPR to EPR Conversion Kit 2010518 (H-30/H-XP2 50 Hz).*

△ *Included in MPR to EPR Conversion Kit 2010519 (H-50/H-XP3 230V).*

* *Included in MPR to EPR Conversion Kit 2010520 (H-50/H-XP3 400V).*

‡ *Included in Pro Pump Kit 2010509 (H-30/H-XP2 50 Hz).*

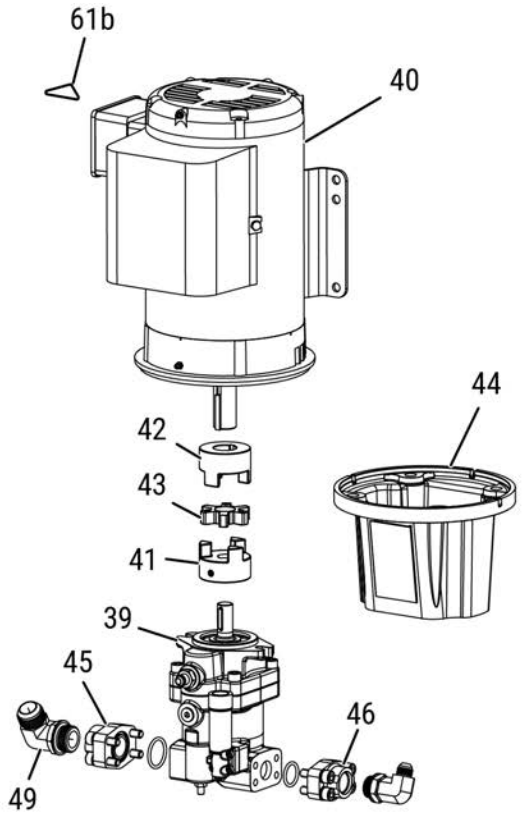
✿ *Included in TSL System Kit 2010494.*

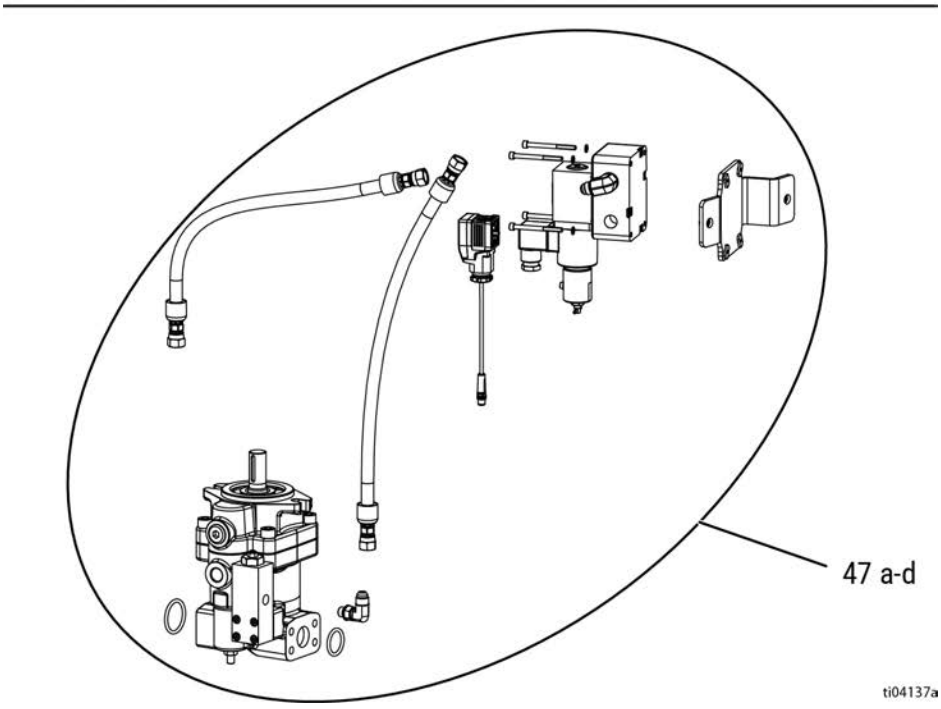
† *Included in EPR Valve Kit 2010502.*

◆ *Included in Radiator Kit 2010513.*

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

DRIVER PARTS / MPR TO EPR PARTS





PARTS LIST

REF.	PART	DESCRIPTION	QTY.
39❖ ★△ *	2010505	Kit, pump, elite, H-30/H-XP2 60 Hz	1
	2010506	Kit, pump, elite, H-30/H-XP2 50 Hz	1
	2010507	Kit, pump, elite, H-50/H-XP3 230V	1
	2010508	Kit, pump, elite, H-50/H-XP3 400V	1
	2010509	Kit, pump, pro, H-30/H-XP2 60 Hz	1
	2010510	Kit, pump, pro, H-30/H-XP2 50 Hz	1
	2010511	Kit, pump, pro, H-50/H-XP3 230V	1
	2010512	Kit, pump, pro, H-50/H-XP3 400V	1
40†	2010521	Kit, motor, 4HP, 60 Hz	1
	2010522	Kit, motor, 4HP, 50 Hz	1
	2010523	Kit, motor, 7.5HP	1
41	2010524	Kit, coupler, 3/4", keyed	1
42	2010525	Kit, couplet, 1-1/8", keyed	1
43	2010526	Kit, spider	1
44	2010527	Kit, coupler, motor/pump adapter	1
	100018	Lockwasher, 0.5"	4
45	2010532	Kit, flange, pump inlet	1
46	2010533	Kit, flange, pump outlet	1
47a	2010517	Kit, MPR to EPR conversion, H-30/H-XP2	1
	2010505	Kit, pump, elite, H-30/H-XP2, 60Hz	1
	2010530	Kit, bracket, EPR	1
	2010502	Kit, valve, EPR	1
	C19988	Screw, cap, socket hd, 10-24 x 2.25"	4
47b	2010518	Kit, MPR to EPR conversion, H-130/H-XP2, 50 Hz	1
	2010506	Kit, pump, elite, H-30/H-XP2, 50Hz	1
	2010530	Kit, bracket, EPR	1
	2010502	Kit, valve, EPR	1
	C19988	Screw, cap, socket hd, 10-24 x 2.25"	4
47c	2010519	Kit, MPR to EPR conversion, H-50/H-XP3, 230V	1
	2010507	Kit, pump, elite, H-50/H-XP3, 230V	1
	2010530	Kit, bracket, EPR	1
	2010502	Kit, valve, EPR	1
	C19988	Screw, cap, socket hd, 10-24 x 2.25"	4
47d	2010520	Kit, MPR to EPR conversion, H-50/H-XP3, 400V	1
	2010508	Kit, pump, elite, H-50/H-XP3, 400V	1
	2010530	Kit, bracket, EPR	1
	2010502	Kit, valve, EPR	1
	C19988	Screw, cap, socket hd, 10-24 x 2.25"	4
49	2010670	Kit, fitting, elbow, -16 JIC x -16 ORB	1
61b ▲	25T998	Label, shock, warning	1

❖ *Included in MPR to EPR Conversion Kit 2010517 (H-30/H-XP2 60Hz).*

★ *Included in MPR to EPR Conversion Kit 2010518 (H-30/H-XP2 50 Hz).*

△ *Included in MPR to EPR Conversion Kit 2010519 (H-50/H-XP3 230V).*

* *Included in MPR to EPR Conversion Kit 2010520 (H-50/H-XP3 400V).*

† *Kits include necessary hardware:*

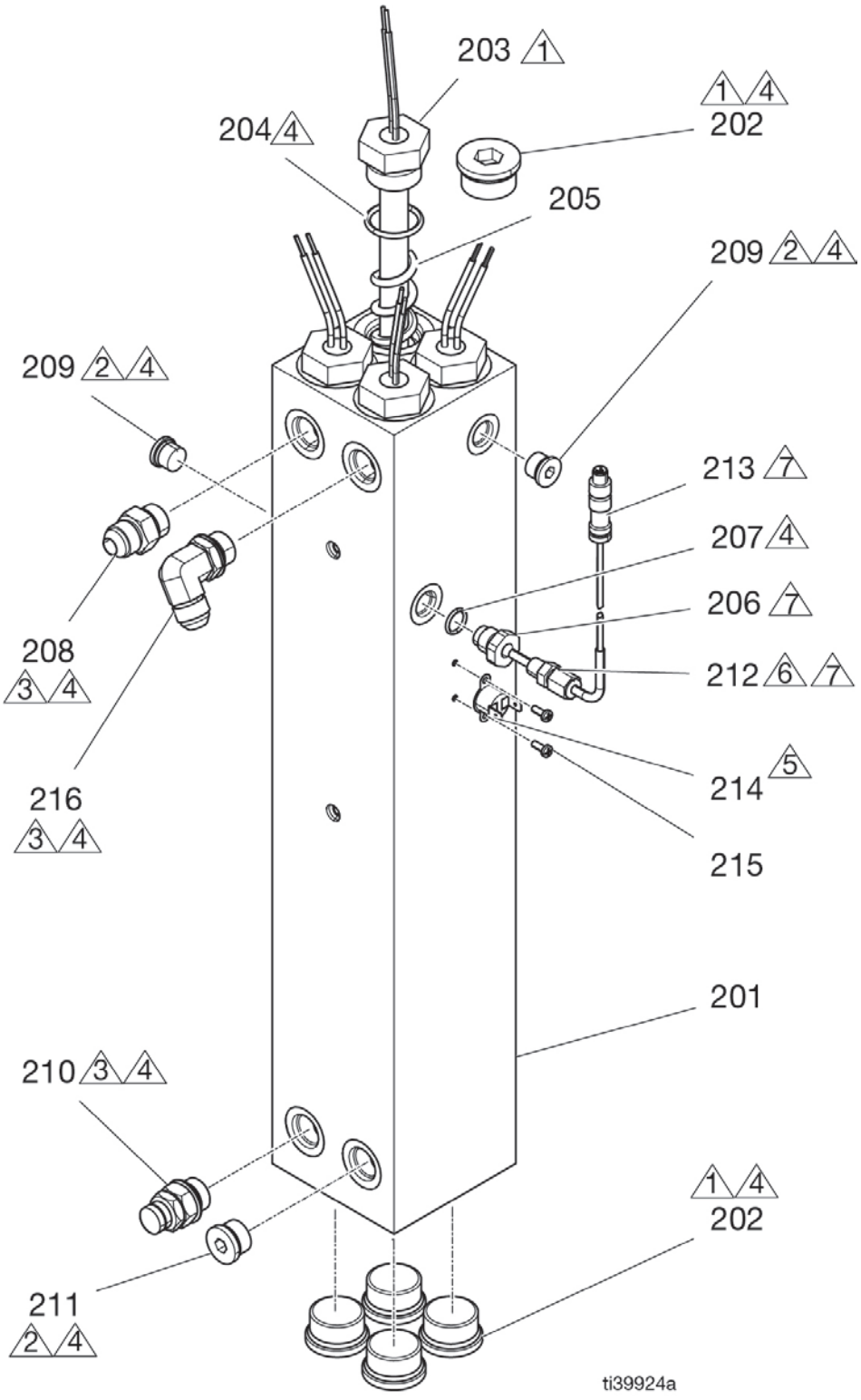
- Bolt, carriage, 3/8-16 x 1.25" (404533)

- Nut, hex head flange with serrated face flange base, 3/8-16 UNC-2B (112958)

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

HEATER PARTS

18E143, 18E144 (H30/HXP2) AND 18E145, 18E146 (H50/HXP3) PARTS



1 Torque to 120 ft-lb (162.3 N·m).

2 Torque to 23 ft-lb (31.2 N·m).

3 Torque to 40 ft-lb (54.2 N·m).

4 Apply lubricant to o-rings before assembling.

5 Apply thermal paste to base of switch.

6 Apply sealant and tape to all non-swiveling and non-drying threads.

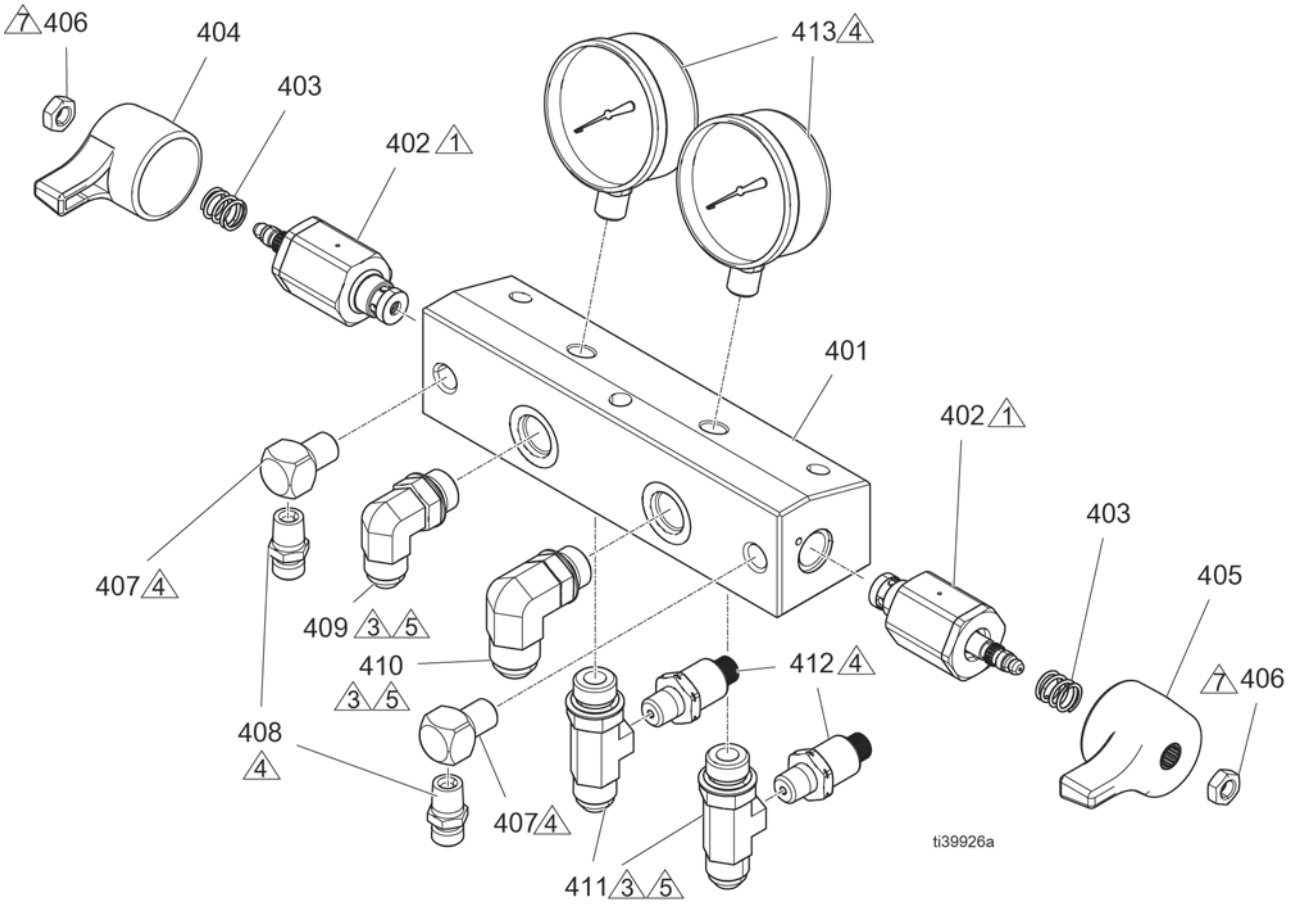
7 Assemble compression fitting into adapter and tighten to 17 ft-lb (23 N·m). Insert sensor into compression fitting, then tighten compression nut to 21 ± 2 ft-lb (28 ± 2.7 N·m). While holding the sensor against the heater rod, hold the npt portion of the compression fitting while tightening to prevent rotation of the fitting body.

PARTS LIST

REF.	PART	DESCRIPTION	QTY.			
			18E143 (ZONE A, 9.6 KW)	18E144 (ZONE B, 9.6 KW)	18E145 (ZONE A, 7.2 KW)	18E146 (ZONE B, 7.2 KW)
201	- - - -	Block, heater, machined, dual	1	1	1	1
202	15H305	Fitting, plug hollow hex 1-3/16 sae	4	4	5	5
203	18C668	Heater, immersion, 2400W, 230V	4	4	3	3
204	124132	O-ring	4	4	3	3
205	18B279	Spring, mixer, heater	4	4	3	3
206	15H306	Adapter, thermosouple, 9/16 x 1/8	1	1	1	1
207	120336	O-ring, packing	1	1	1	1
208	121309	Fitting, adapter, sae-prb x jic	1	1	1	1
209	15H304	Fitting, plug 9/16 sae	2	2	2	2
210	15M178	Housing, rupture disc	1	1	1	1
211	295607	Plug, hex	1	1	1	1
213	123325	Sensor, rtd, 1k ohm, 90 deg, 4 pin, tip	1	1	1	1
214	15B137	Switch, over-temperature	1	1	1	1
215	15B137	Screw, mach, pnh	1	1	1	1
216	124131	Fitting, elbow, sae x jic	2	2	2	2
217	121312	Fitting, elbow, sae x jic	1	1	1	1
218	- - - -	Lubricant, temporary assembly	1	1	1	1
219	- - - -	Sealant, pipe, sst	1	1	1	1
220	- - - -	Lubricant, thermal	1	1	1	1

MANIFOLD PARTS

18E207



1 Apply sealant to threads and torque to 372 ± 24 in-lb (42 ± 2.7 N·m).

3 Apply lubricant to o-rings before assembly.

4 Apply tape and sealant to all non-swiveling pipe threads.

5 Verify installation of o-ring before installing the fitting.

7 Apply sealant to threads.

PARTS LIST

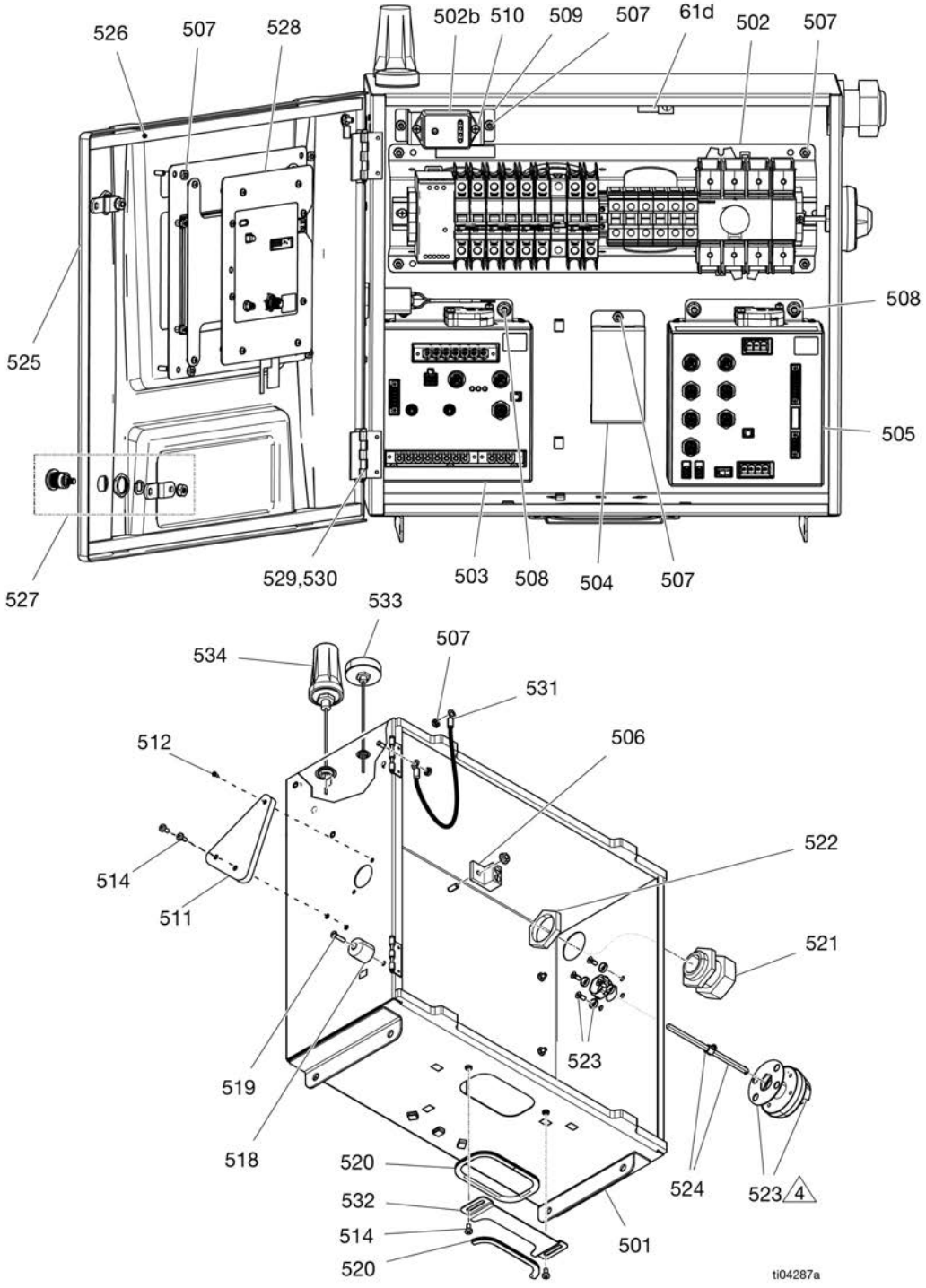
REF.	PART	DESCRIPTION	QTY.
401	- - - -	Housing, outlet	1
402† ‡★	247824	Valve, drain	2
403† ‡★	150829	Spring, compression	2
404† ‡	15J915	Handle, red	1
405† ★	15J916	Handle, blue	1
406† ‡★	112309	Nut, hex, jam	2
407	100840	Fitting, elbow, street	2
408	162453	Fitting, 1/4 npsm x 1/4 npt	2
409	132443	Fitting, elbow, jic-8 x orb-8	1
410	132513	Fitting, elbow, jic-10 x orb-8	1
411	132173	Fitting, tee, orb-8, jic-8, 1/4-npt	2
412	18B074PKG	Trasnducer, pressure, 5000 psi	2
413	102814	Gauge, press, fluid	2
414	- - - -	Lubricant, grease (not shown)	1
415	070274	Tape, tfe, sealant (not shown)	1
416	- - - -	Sealant, pipe, sst (not shown)	1
417	- - - -	Sealant, anaerobic, blue (not shown)	1

† *Included in Drain Valve Set Kit 255148.*

‡ *Included in ISO Drain Valve Kit 255149.*

★ *Included in RESIN Drain Valve Kit 255150.*

ELECTRICAL ENCLOSURE PARTS



4 Orient shaft with shaft pin in the vertical position. Assemble and orient knob with the off position to the front of the enclosure.

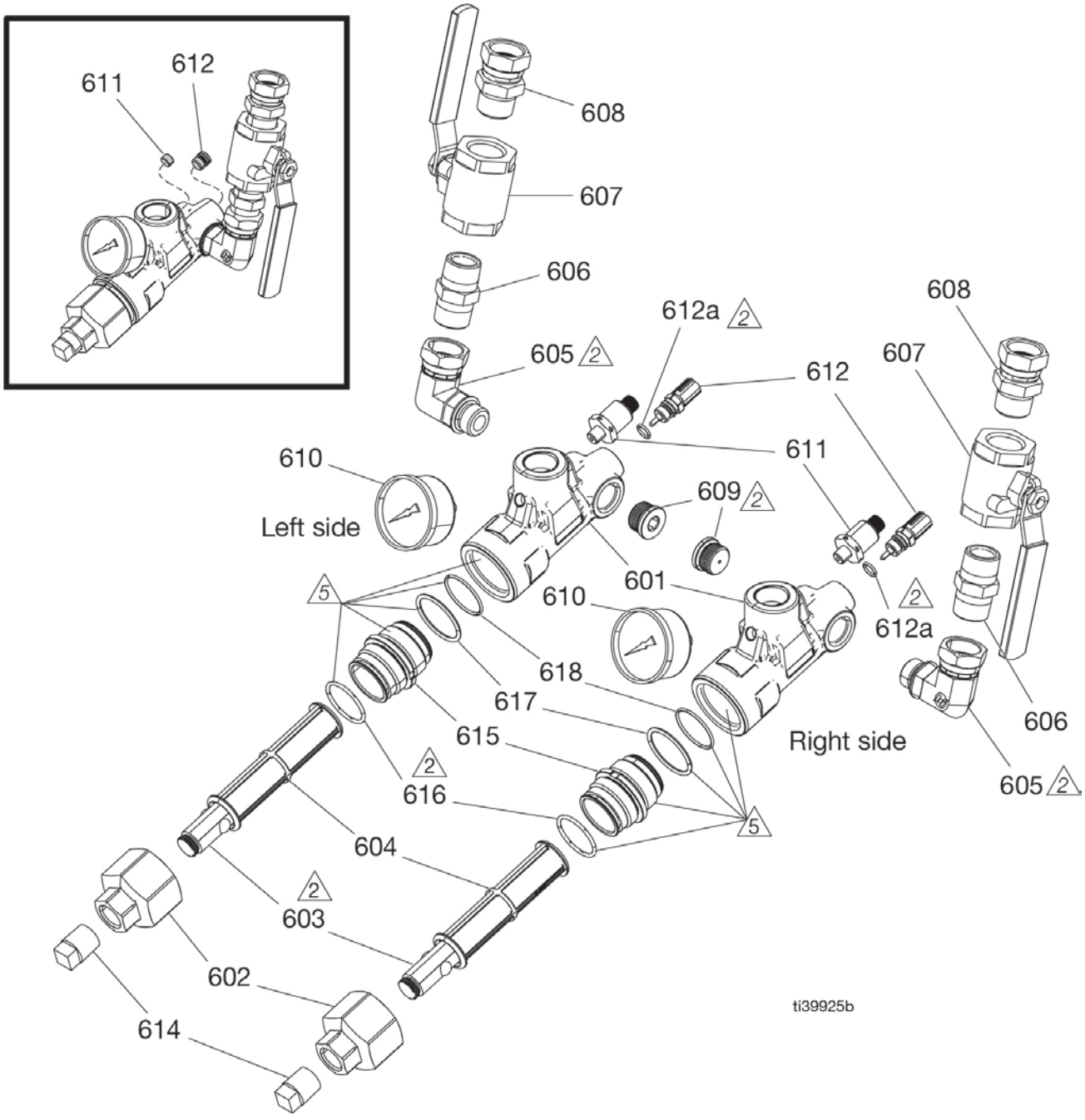
PARTS LIST

REF.	PART	DESCRIPTION	QTY.
61d ▲	25T998	Label, ground, warning	1
501	- - - -	Enclosure, weldment, painted	1
502	- - - -	Module, din rail	1
503	25P036	Module, GCA, TCM	1
504	- - - -	Label, installation	1
505	2010146	Kit, module, HCM2	1
506	117666	Terminal, ground	1
507	113505	Nut, keps, hex hd, 10-24	14
508	115942	Nut, hex, flange head	5
509	- - - -	Bracket, MOV	1
510	114331	Screw, mach, pan head, #6-32 x 3/8"	2
511	- - - -	Plate, cover, painted	1
512	107388	Screw, mach, pan head, #4-40 x 3/8"	3
514	110637	Screw, mach, pan head, #10-24 x 3/8"	4
518	18C189	Bumper, enclosure door	1
519	102790	Screw, mach, pan, #10-24 x 3/4"	2
520	114225	Trim, edge protection (1.6 ft)	1
521	120858	Bushing, strain relief, M40 thread	1
522	120859	Nut, strain relief, M40 thread	1
523	18B671	Knob, door interlocked	1
524	18B672	Shaft, door interlocked	1
525	- - - -	Door, stamped, painted	1
526	- - - -	Foam, enlcosure	2
527	16W596	Latch, door	2
528	18E139	Kit, module, GCA, ADM, 9 inch	1
529	- - - -	Pin, weld hinge	2
530	- - - -	Ring, retaining, e-ring, 9/64"	2
531	194337	Wire, grounding, door	1
532	- - - -	Plate, enclosure guard	1
533	132949	Antenna, GPS	1
534	132948	Antenna, cellular	1
535	18D084	Cable, can, female/female 0.9m (not shown)	1
536	- - - -	Cable, can, female/female 0.6m (not shown)	1
537	18E184	Electrical connectors (not shown)	1
538			1
539			1
540			1
544	18D295	Cable, 4 pin, male/90 degree female 1.0m (not shown)	1
MC	- - - -	Motor contactor (see **Component Identification** for location)	1

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

INLET STRAINERS PARTS

18E247 AND 18E246 PARTS



1 Apply sealant to all non-swivel pipe threads.

2 Apply lubricant to o-rings.

5 Apply adhesive to mating surfaces. Do not apply adhesive to inside bores of insert (615) or housing (601).

PARTS LIST

REF.	PART	DESCRIPTION	QTY.	
			18E247	18E246
601	18D179	Strainer, housing, machined	2	2
602	18E271	Cap, strainer	2	2
603	15E288	Insert, manifold	2	2
604*‡	132675	Filter, fluid, 30 mesh	2	2
605	132437	Fitting, elbow, orb-10 x 3/4 npsm	2	2
606	119992	Fitting, pipe, nipple, 3/4 x 3/4 npt	2	2
607	109077	Valve, ball 3/4 npt	2	2
608	118459	Fitting, union, swivel, 3/4 in.	2	2
609	556424	Plug, pipe stl rd 7/8-14 saw mg	2	2
610	18E272	Gauge, pressure, 500 psi	2	2
611	18B075PKG	Transducer, pressure, 1000 psi	2	- - - -
	104765	Plug, temp sensor	- - - -	2
612	20B457	Sensor, temperature	2	- - - -
	18D158	Plug, pipe	- - - -	2
612a	106555	Packing, o-ring	2	2
614	100737	Plug, pipe	2	2
615	133171	Insert, thread, cap, strainer	2	2
616◆‡	132444	O-ring, 125, fx75	2	2
617	107067	Packing, o-ring	2	2
618	C24035	Packing, o-ring	2	2
619	- - - -	Sealant, pipe, sst (not shown)	1	1
620	- - - -	Lubricant, grease (not shown)	1	1
621	- - - -	Adhesive, epoxy, gray (not shown)	1	1

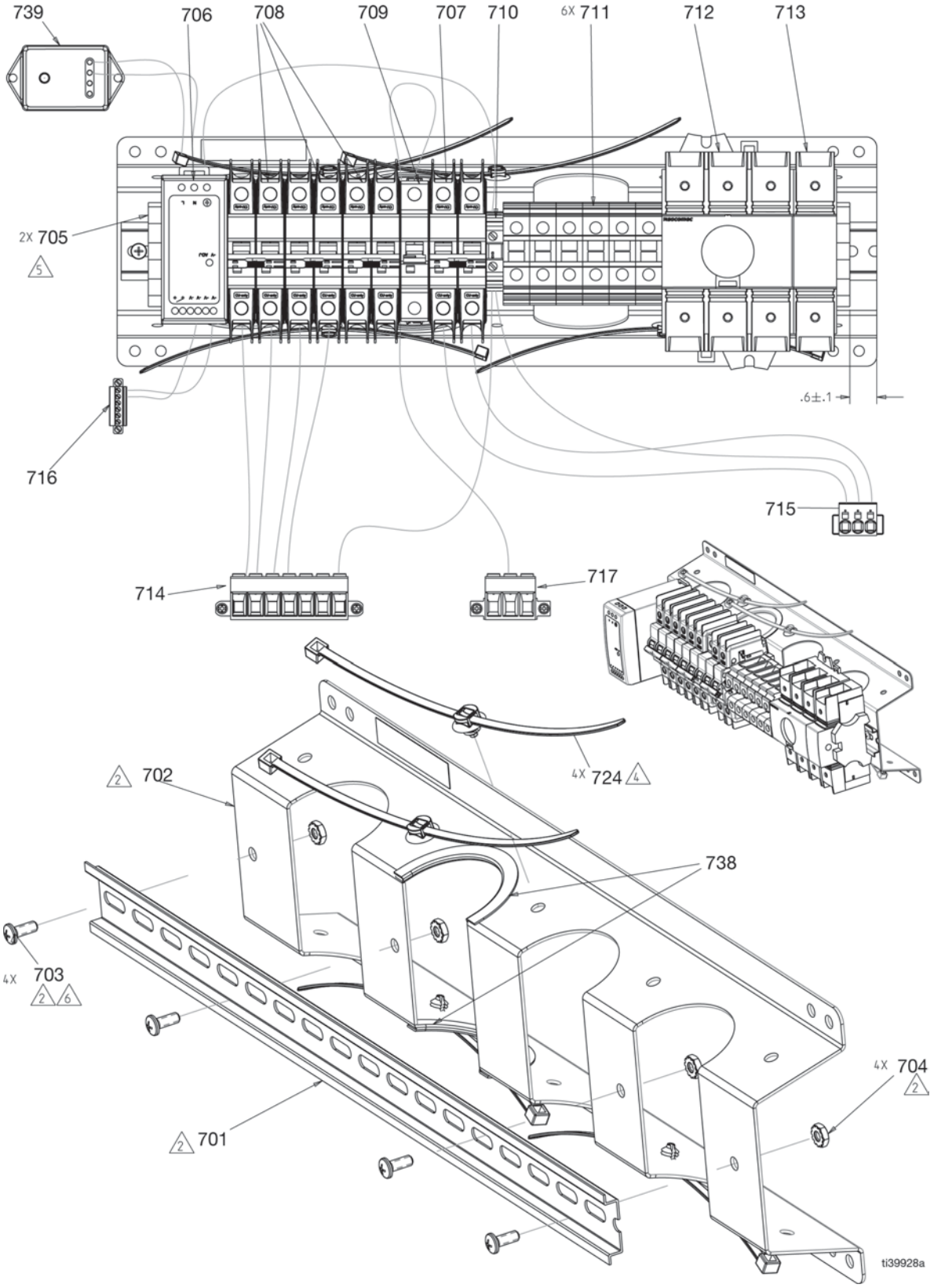
** Included in 18E252 Inlet Strainer Filter Kit (2-pack) and 18E253 Inlet Strainer Filter Kit (10-pack).*

◆ *Included in 18E251 Filter Cap O-ring Kit (10-pack).*

‡ *Included in 18E254 O-ring and Filter Kit (single).*

RAIL MODULE PARTS

H30 AND H-XP2



2 Install din rail (701) to mounting bracket (702) before installing components.

4 Install cable ties (724) into mounting bracket (702).

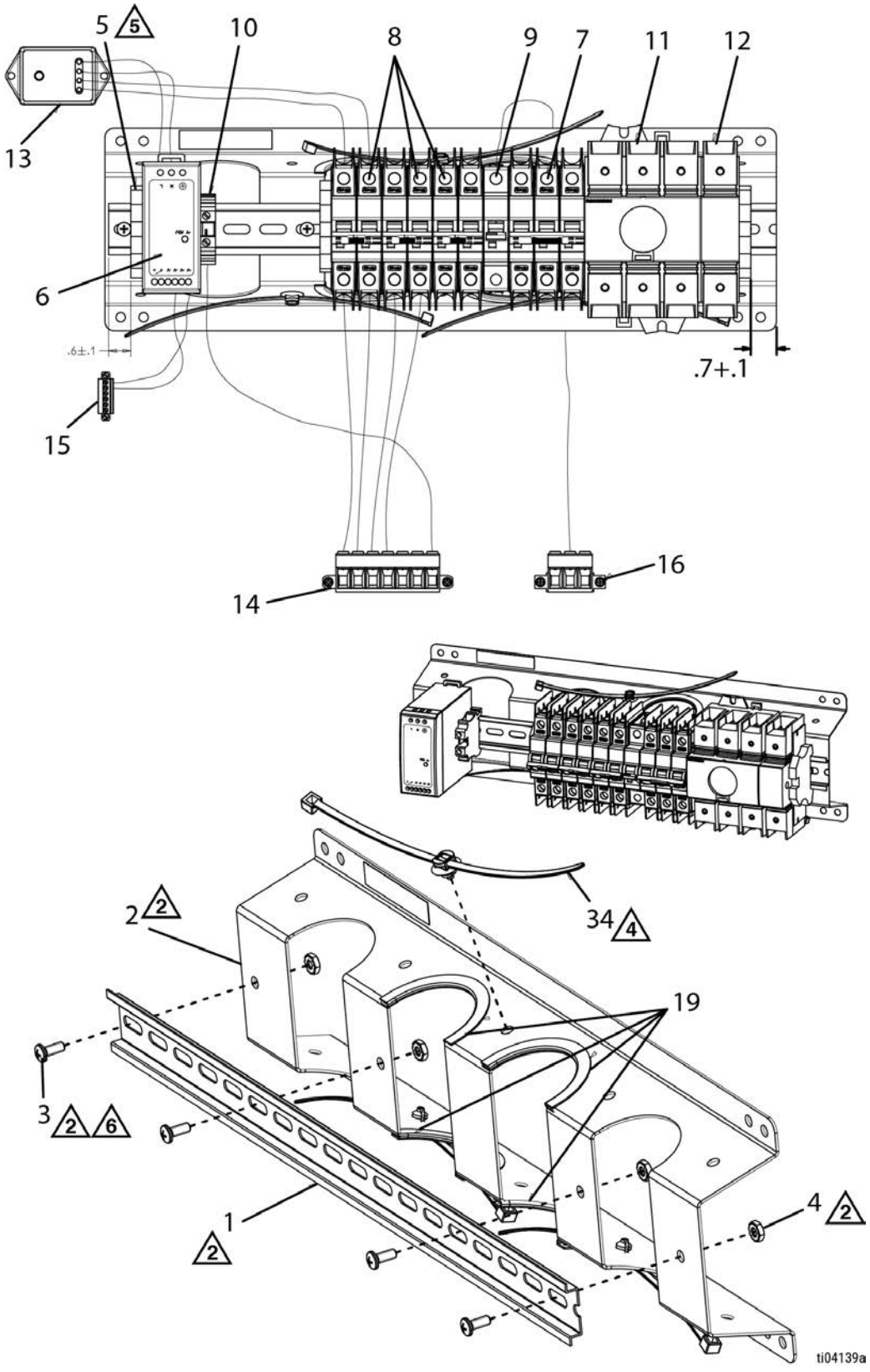
5 Torque to 14 in-lb (1.5 N·m).

6 Torque to 45 in-lb (5.2 N·m).

PARTS LIST

REF.	PART	DESCRIPTION	QTY.
701	- - - -	Rail, mount, 18mm slot	1
702	- - - -	Bracket, din rail	1
703	116610	Screw, mach, phil, pan, #10	4
704	113505	Nut, keps, hex hd	4
705	120838	Block, clamp end	2
706	126453	Power supply, 24V	1
707	17A314	Circuit, breaker, 2p, 20a, ul489, ab	1
708	17A317	Circuit, breaker, 2p, 40a, ul489, ab	3
709	17A319	Circuit, breaker, 1p, 50a, ul1077, ab	1
710	132931	Block, ground, terminal	1
711	24R724	Block, terminal, ut35	6
712	132801	Switch, rotary disconnect, 3p, 100a	1
713	132802	Switch, fourth pole, 100a, ul98	1
714	133472PKG	7-PIN connector, TCM	1
715	133471PKG	3-PIN connector, HCM	1
716	133470PKG	6-PIN connector, TCM	1
717	133469PKG	3-PIN connector, TCM	1
724	125625	Tie, cable, fir tree	4
725	- - - -	Sleeve, split, wire, 1.00 id (not shown)	1
729	128036	Sleeve, split, wire, 0.63 id (not shown)	1
736	- - - -	Contact, connector, pin, size 8 (not shown)	2
737	- - - -	Contact, connector, socket, size 8 (not shown)	2
738	114225	Trim, edge protection	1
739	16U530	Module, sys srg prot	1

H-50 AND H-XP3



△2 Install din rail (701) to mounting bracket (702) before installing components.

△4 Install cable ties (724) into mounting bracket (702).

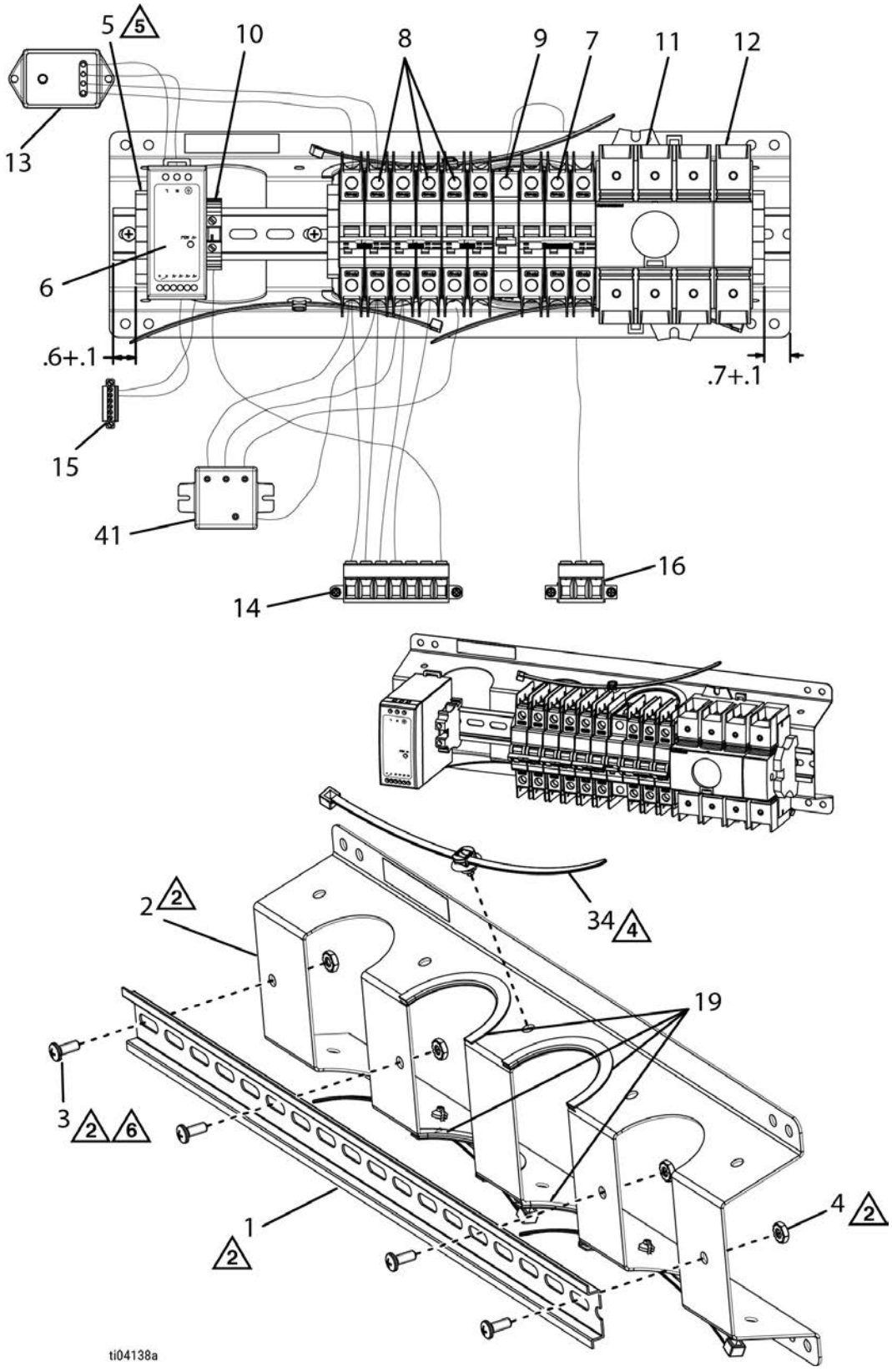
△5 Torque to 14 in-lb (1.5 N·m).

△6 Torque to 45 in-lb (5.2 N·m).

PARTS LIST

REF.	PART	DESCRIPTION	QTY.
1	18D004	Rail, mount	1
2	18D005	Bracket, din rail	1
3	116610	Screw, mach, phil, pan, #10	4
4	113505	Nut, keps, hex hd	4
5	120838	Block, clamp end	3
6	126453	Power supply, 24 V, 2.5A, 60W	1
7	17B544	Circuit, breaker, 3p, 20a, ul489, ab	1
8	17A317	Circuit, breaker, 2p, 40a, ul489, ab	3
9	17A319	Circuit, breaker, 1p, 50a, ul1077, ab	1
10	132931	Block, terminal, ground	1
11	132801	Switch, rotary disconnect	1
12	132802	Switch, fourth-pole	1
13	16U530	Module, sys srg prot	1
14	133472	7-PIN connector, TCM	1
15	133470	6-PIN connector, TCM	1
16	133469	3-PIN connector, TCM	1
19	114225	Trim, edge protection	1
34	125625	Tie, cable, fir tree	3

H-30, H-XP2, H-50 AND H-XP3 (50 HZ)



2 Install din rail (701) to mounting bracket (702) before installing components.

4 Install cable ties (724) into mounting bracket (702).

5 Torque to 14 in-lb (1.5 N·m).

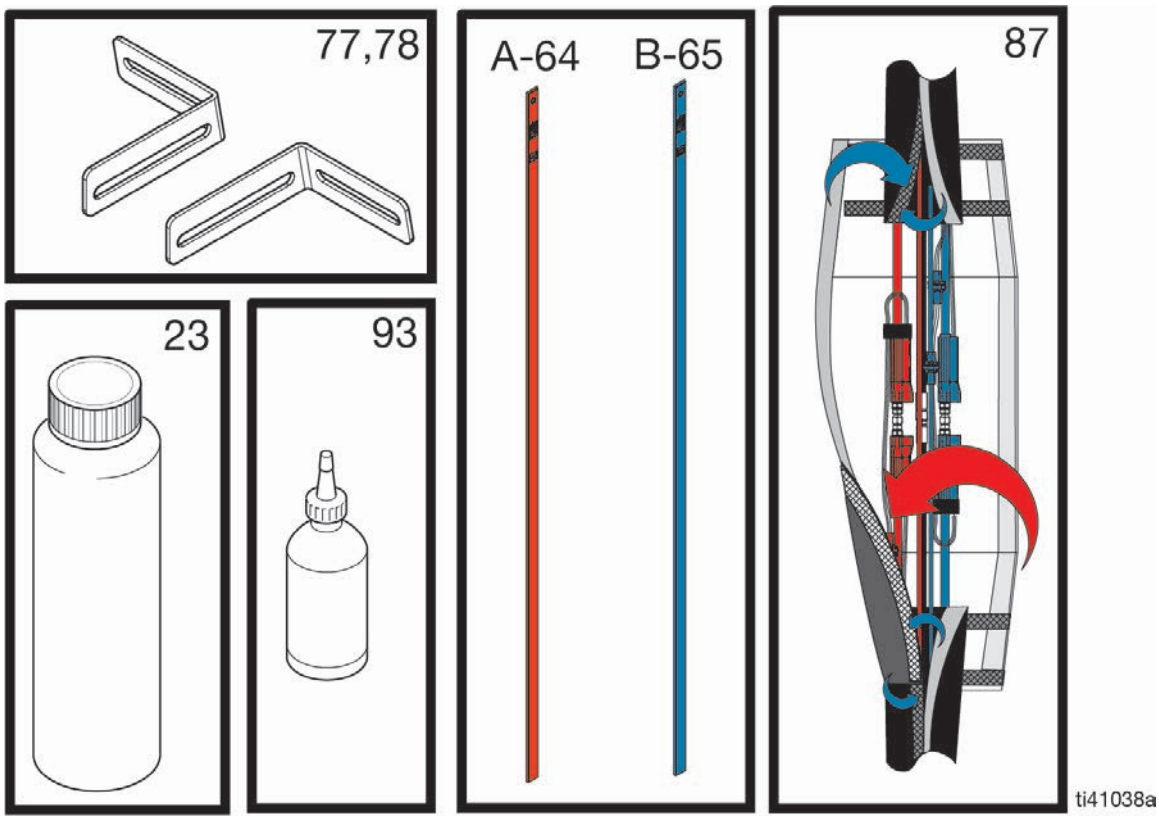
6 Torque to 45 in-lb (5.2 N·m).

PARTS LIST

REF.	PART	DESCRIPTION	QTY.
1	18D004	Rail, mount	1
2	18D005	Bracket, din rail	1
3	116610	Screw, mach, phil, pan, #10	4
4	113505	Nut, keps, hex hd	4
5	120838	Block, clamp end	3
6	126453	Power supply, 24 V, 2.5A, 60W	1
7	17B544	Circuit, breaker, 3p, 20a, ul489, ab	1
8	17A317	Circuit, breaker, 2p, 40a, ul489, ab	3
9	17A319	Circuit, breaker, 1p, 50a, ul1077, ab	1

REF.	PART	DESCRIPTION	QTY.
10	132931	Block, terminal, ground	1
11	132801	Switch, rotary disconnect	1
12	132802	Switch, fourth-pole	1
13	16U530	Module, sys srg prot	1
14	133472	7-PIN connector, TCM	1
15	133470	6-PIN connector, TCM	1
16	133469	3-PIN connector, TCM	1
19	114225	Trim, edge protection	1
34	125625	Tie, cable, fir tree	3
41	2009324	Module, EMI filter 3p wye with neutral	1

SHIP LOOSE PARTS



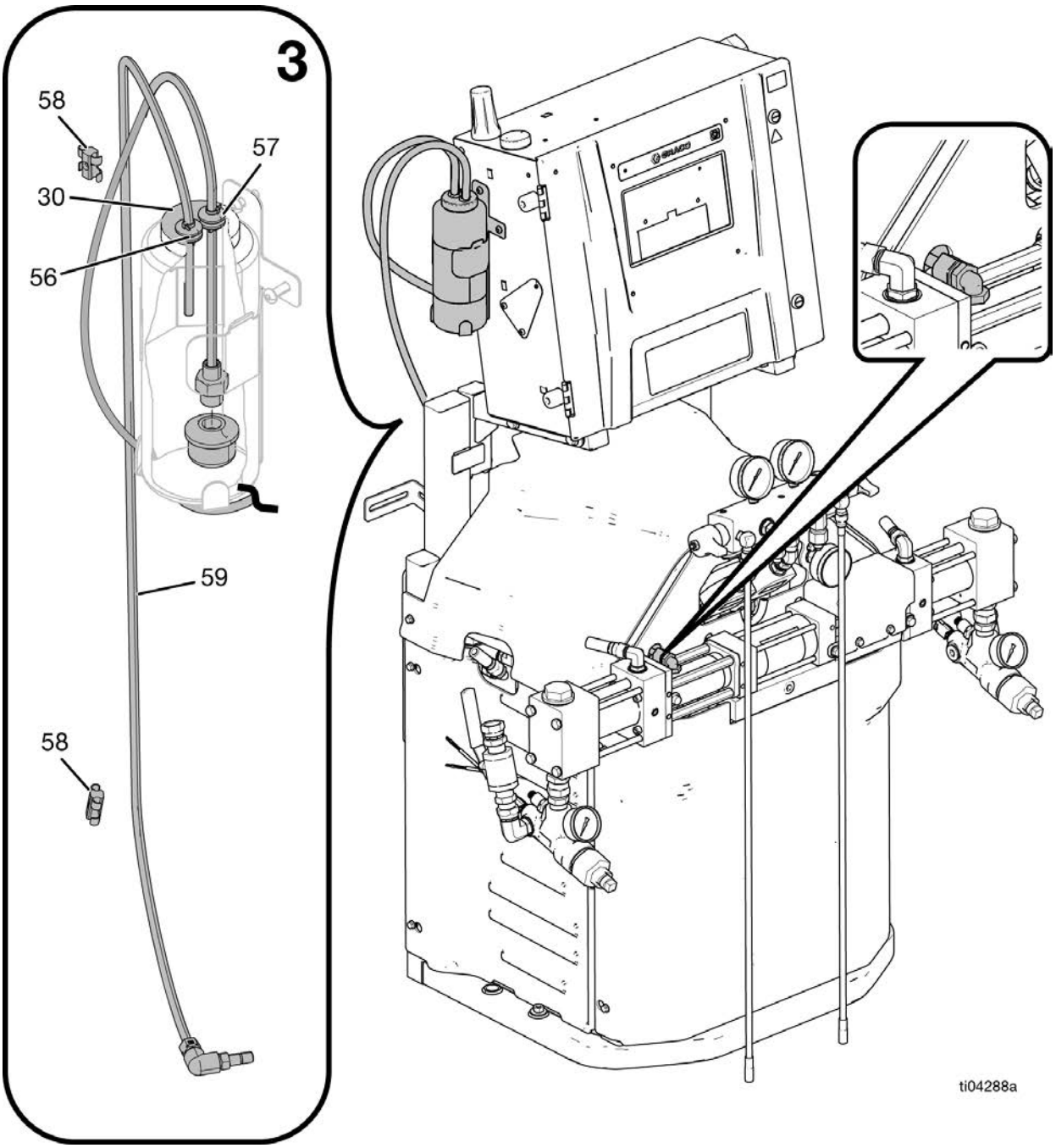
PARTS LIST

REF.	PART	DESCRIPTION	QTY.
23	25T859	Fluid, TSL, 32 oz bottle	2
64†	24M174	Bar, 55 gallon chemical measure, A side	1
65†		Bar, 55 gallon chemical measure, B side	1
77	18E266	Bracket, wall mount, left	1
78		Bracket, wall mount, right	1
87	18D240PKG	Jacket, scuff, machine joint	1
93	206994	Fluid, TSL, 8 oz bottle	1

† *Pro and Elite systems only.*

REPAIR KITS

TSL SYSTEM KIT

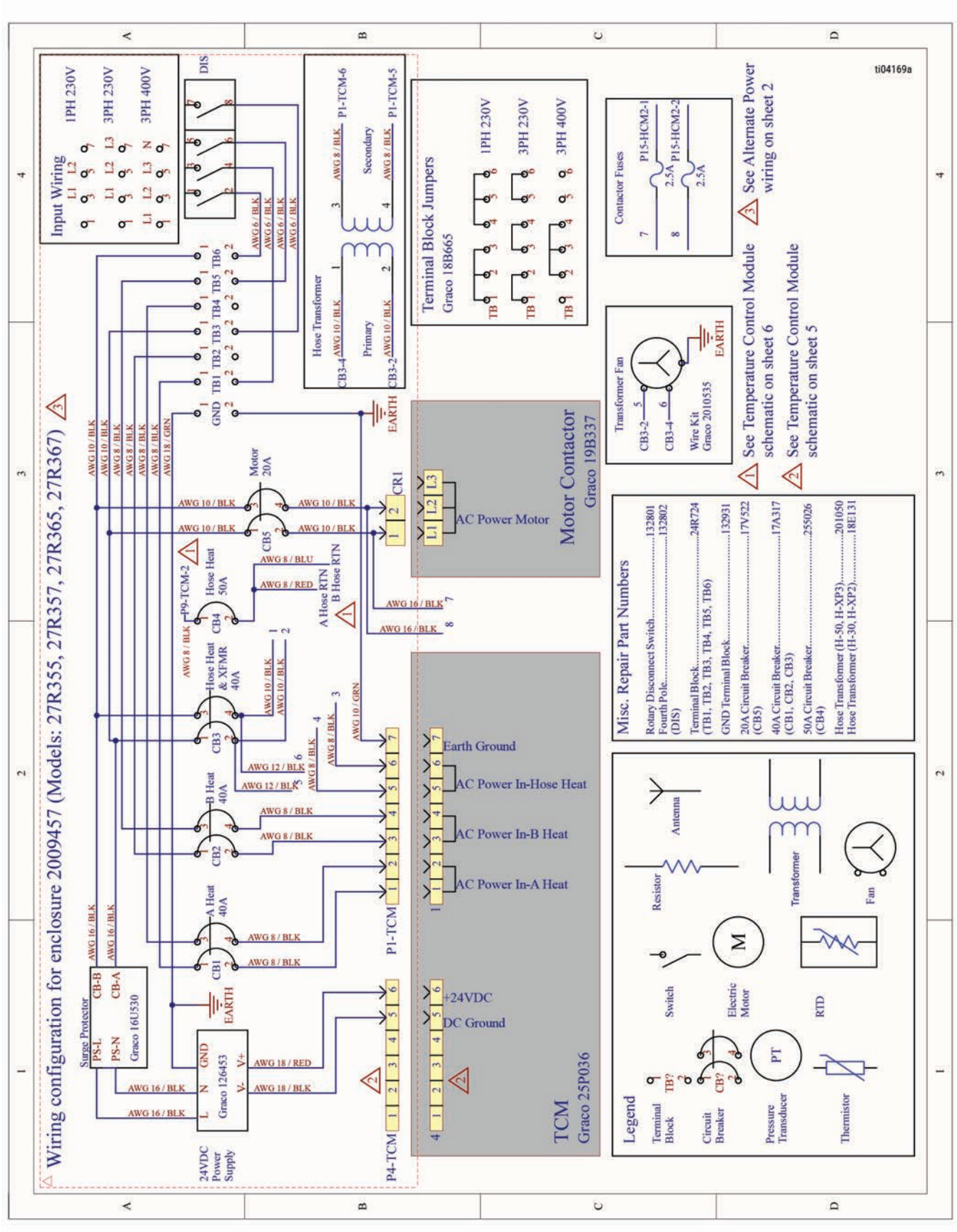


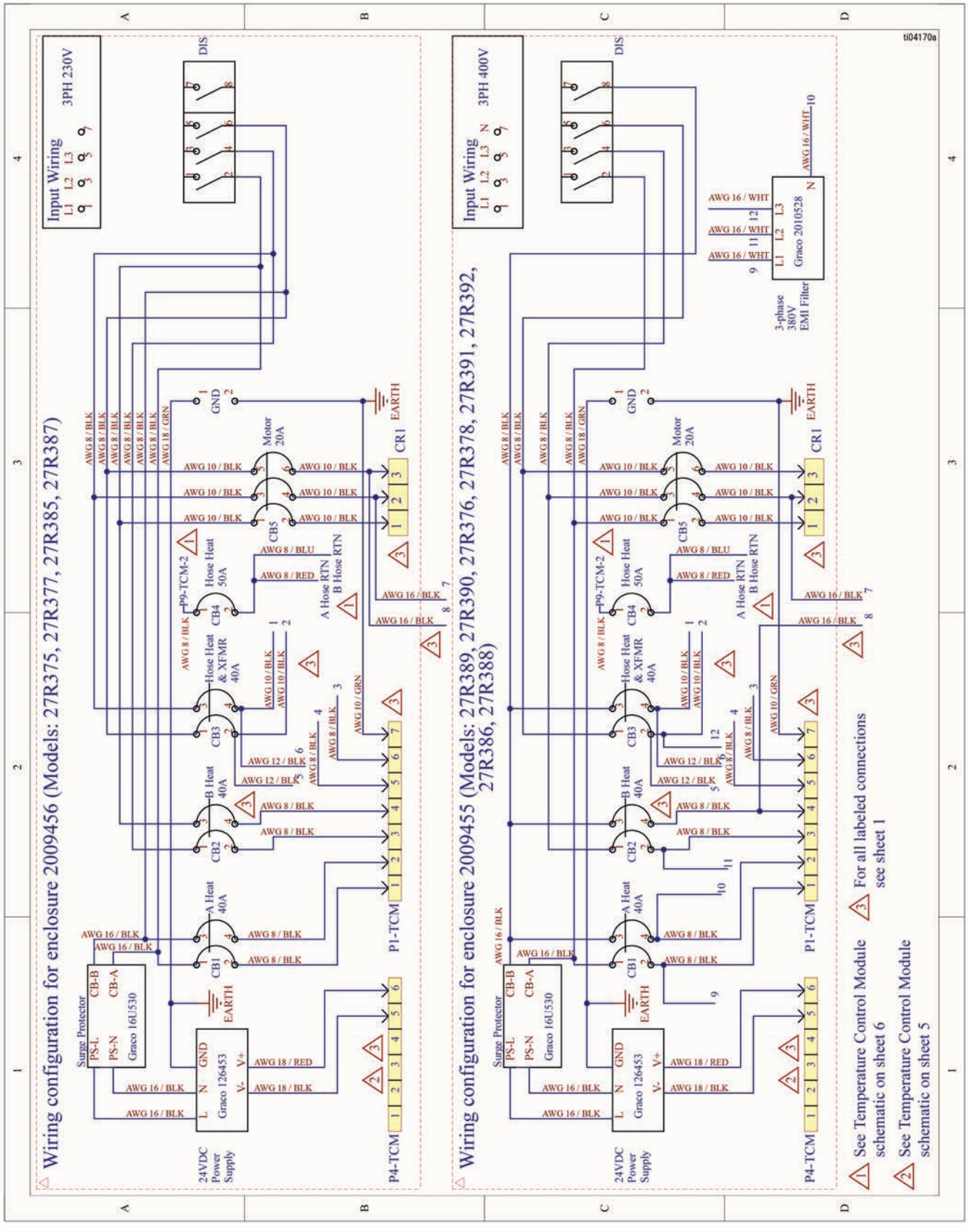
PARTS LIST

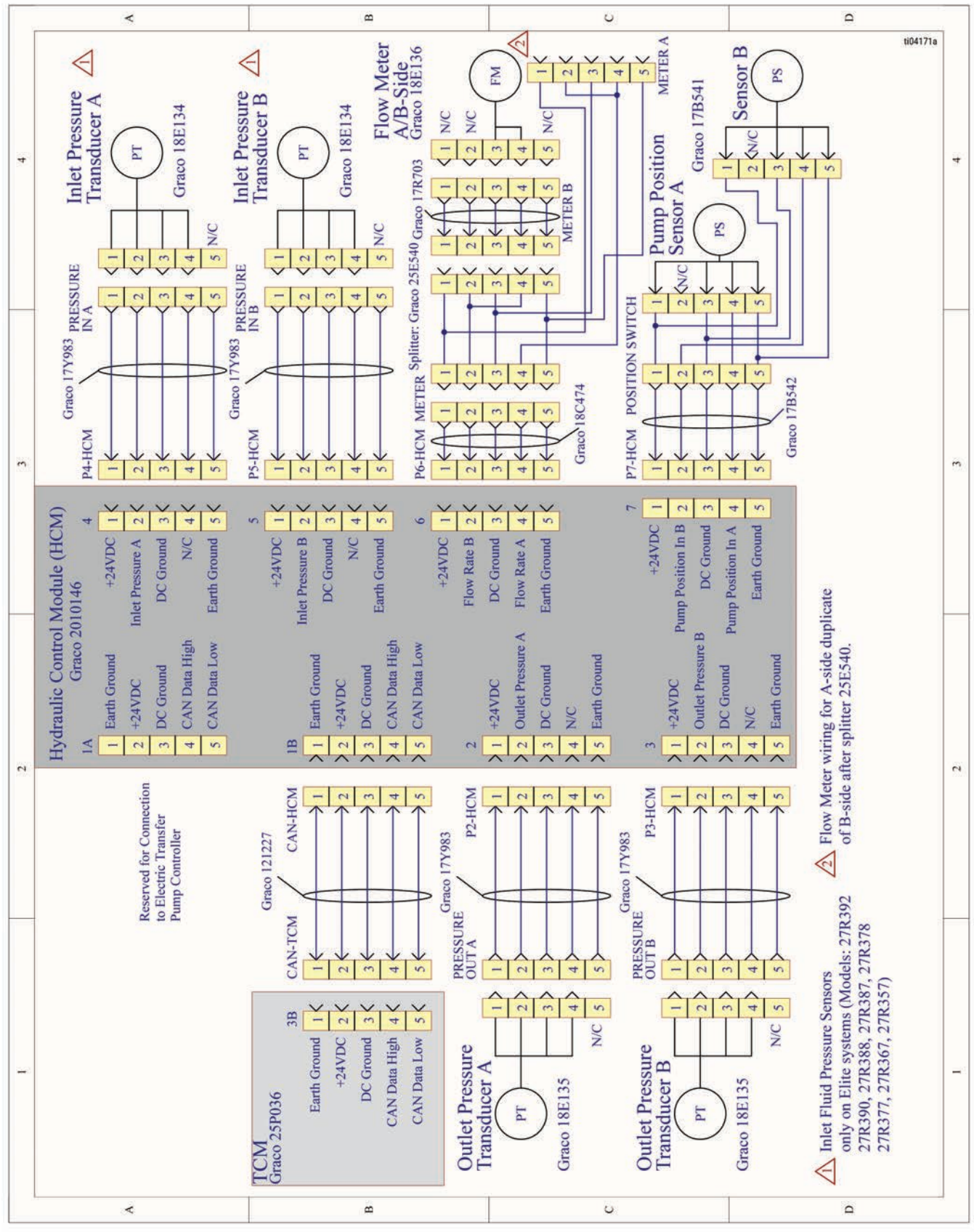
REF.	PART	DESCRIPTION	QTY.
3	2010494	Kit, TSL, system	1
30*	2010568	Kit, cap, bottle, TSL	1
56*†	2010677	Kit, grommet, 3/8 ID	1
57*†	2010678	Kit, grommet, 1/2 ID	1
58	2010679	Kit, clip, snap in	1
59	2010680	Kit, tube, 3/8 OD, TSL	1

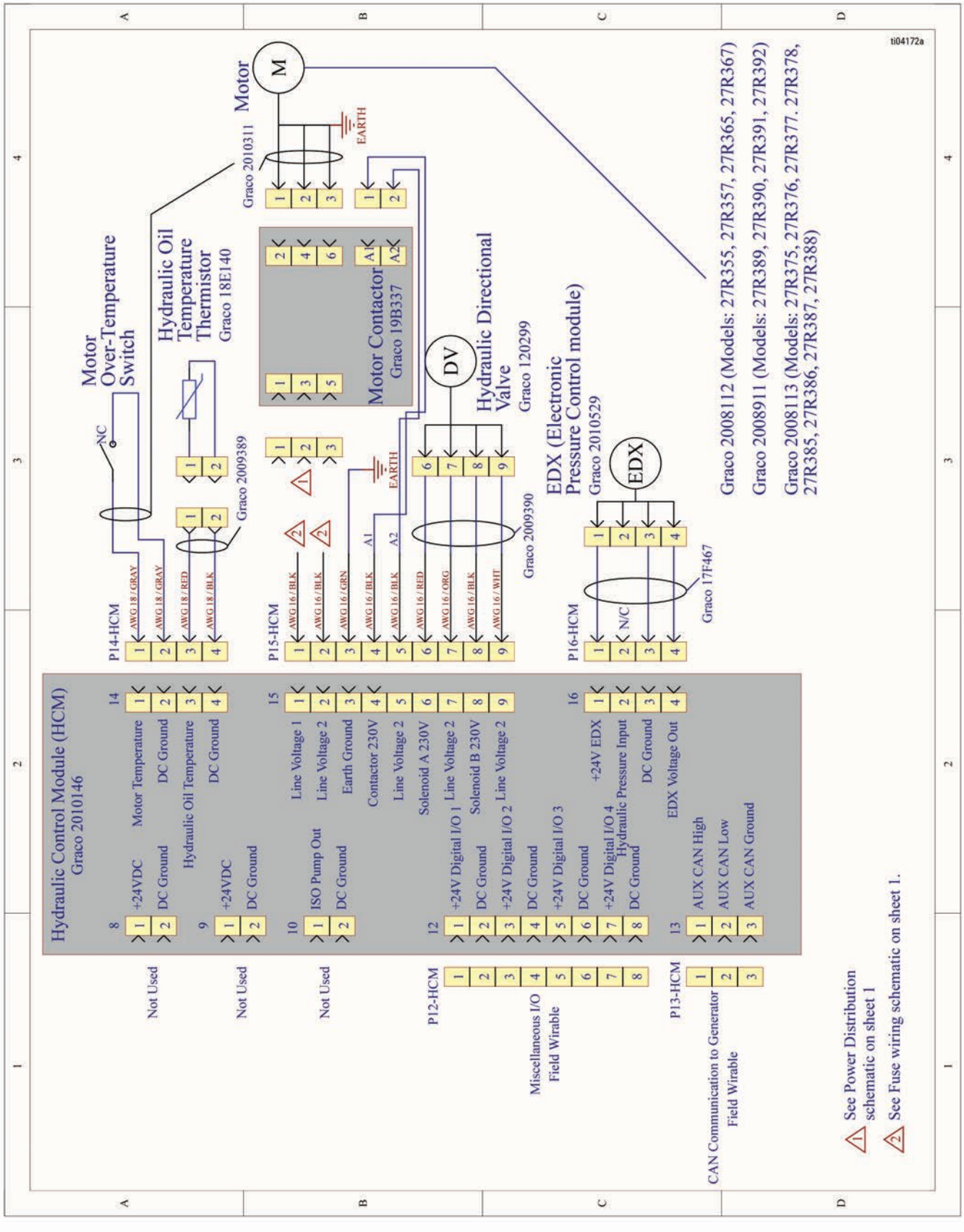
** Included in TSL System Kit 2010494.*

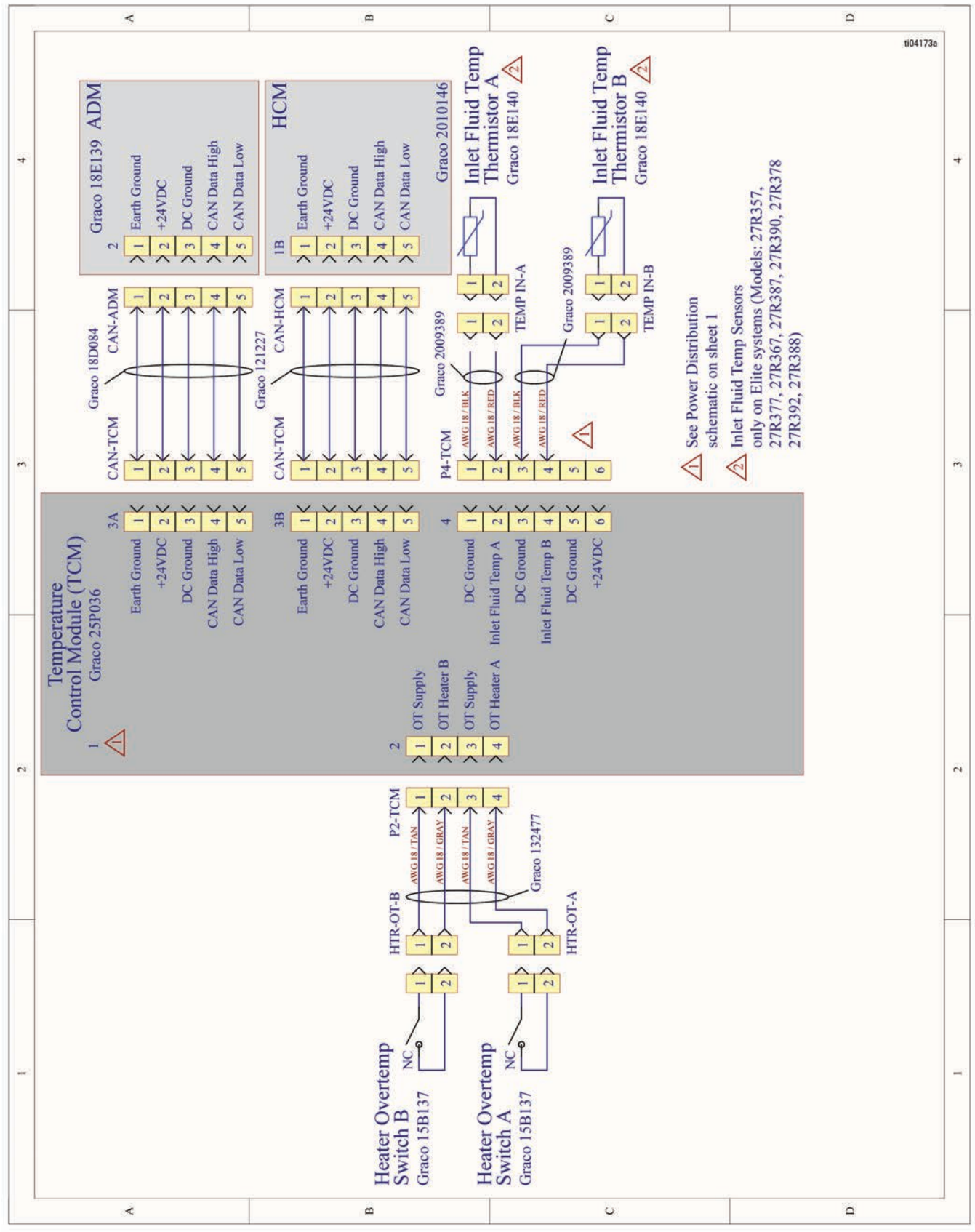
† Included in TSL Bottle Cap Kit 2010568.

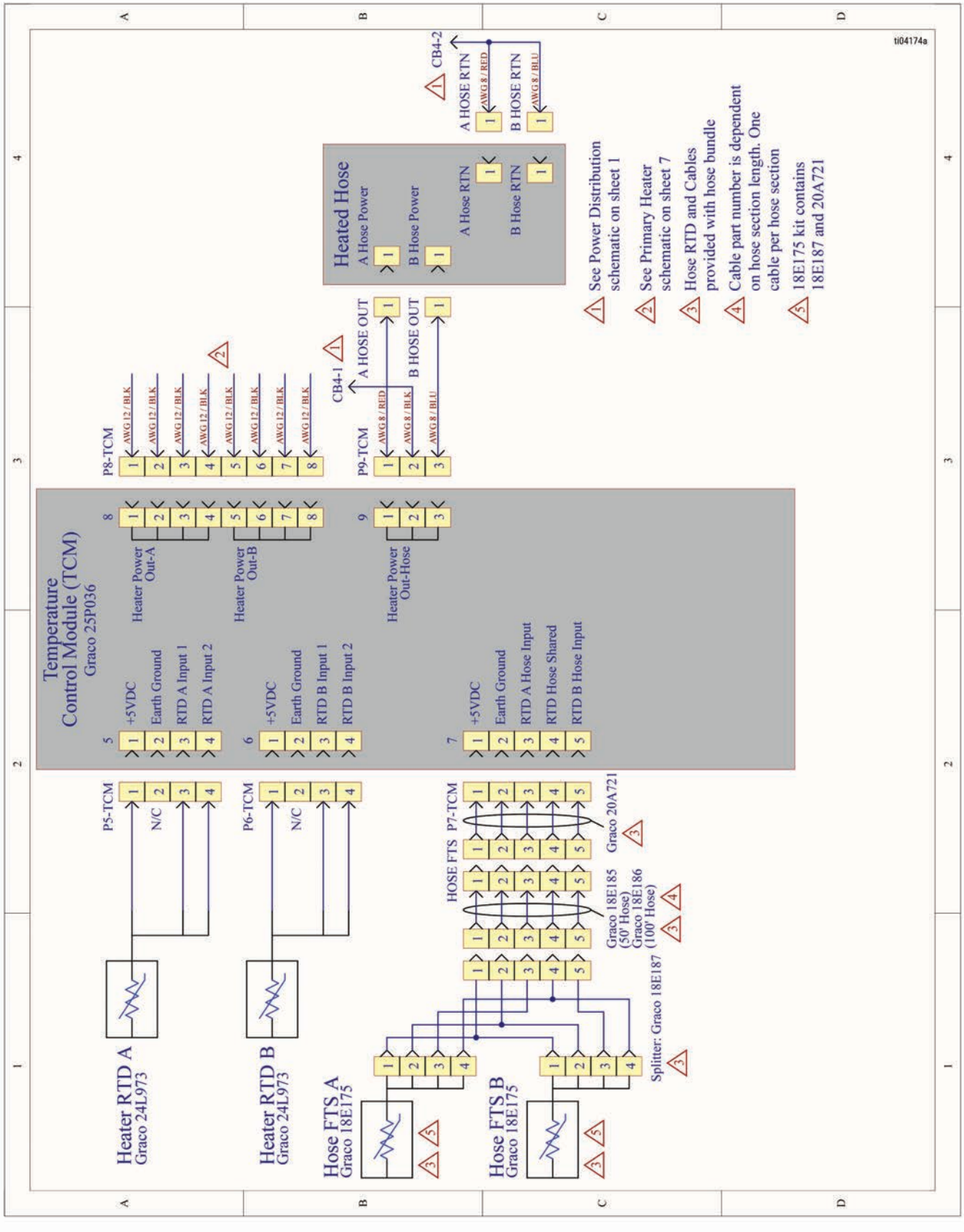

Wiring configuration for enclosure 2009457 (Models: 27R355, 27R357, 27R365, 27R367)
ti04169a
Input Wiring
1PH 230V
3PH 230V
3PH 400V
DIS
Hose Transformer
Primary
Secondary
P1-TCM-6
P1-TCM-5
Terminal Block Jumpers
Graco 18B665
Contactor Fuses
P15-HCM2-1
P15-HCM2-2
2.5A
Transformer Fan
Wire Kit
Graco 2010535
EARTH
See Temperature Control Module schematic on sheet 6
See Temperature Control Module schematic on sheet 5
See Alternate Power wiring on sheet 2
Motor Contactor
Graco 19B337
AC Power Motor
CR1
Motor 20A
Hose Heat 50A
Hose Heat & XFMR 40A
A Heat 40A
B Heat 40A
CB1
CB2
CB3
CB4
CB5
P9-TCM-2
A Hose RTN
B Hose RTN
Earth Ground
AC Power In-Hose Heat
AC Power In-B Heat
AC Power In-A Heat
P1-TCM
TCM
Graco 25P036
+24VDC
DC Ground
P4-TCM
Surge Protector
Graco 16U530
24VDC Power Supply
Graco 126453
Misc. Repair Part Numbers
Rotary Disconnect Switch....132801
Fourth Pole....132802
(DIS)
Terminal Block....24R724
(TB1, TB2, TB3, TB4, TB5, TB6)
GND Terminal Block....132931
20A Circuit Breaker....17V522
(CB5)
40A Circuit Breaker....17A317
(CB1, CB2, CB3)
50A Circuit Breaker....255026
(CB4)
Hose Transformer (H-50, H-XP3)....201050
Hose Transformer (H-30, H-XP2)....18E131
Legend
Terminal Block
Circuit Breaker
Pressure Transducer
Thermistor
Switch
Electric Motor
RTD
Resistor
Antenna
Transformer
Fan

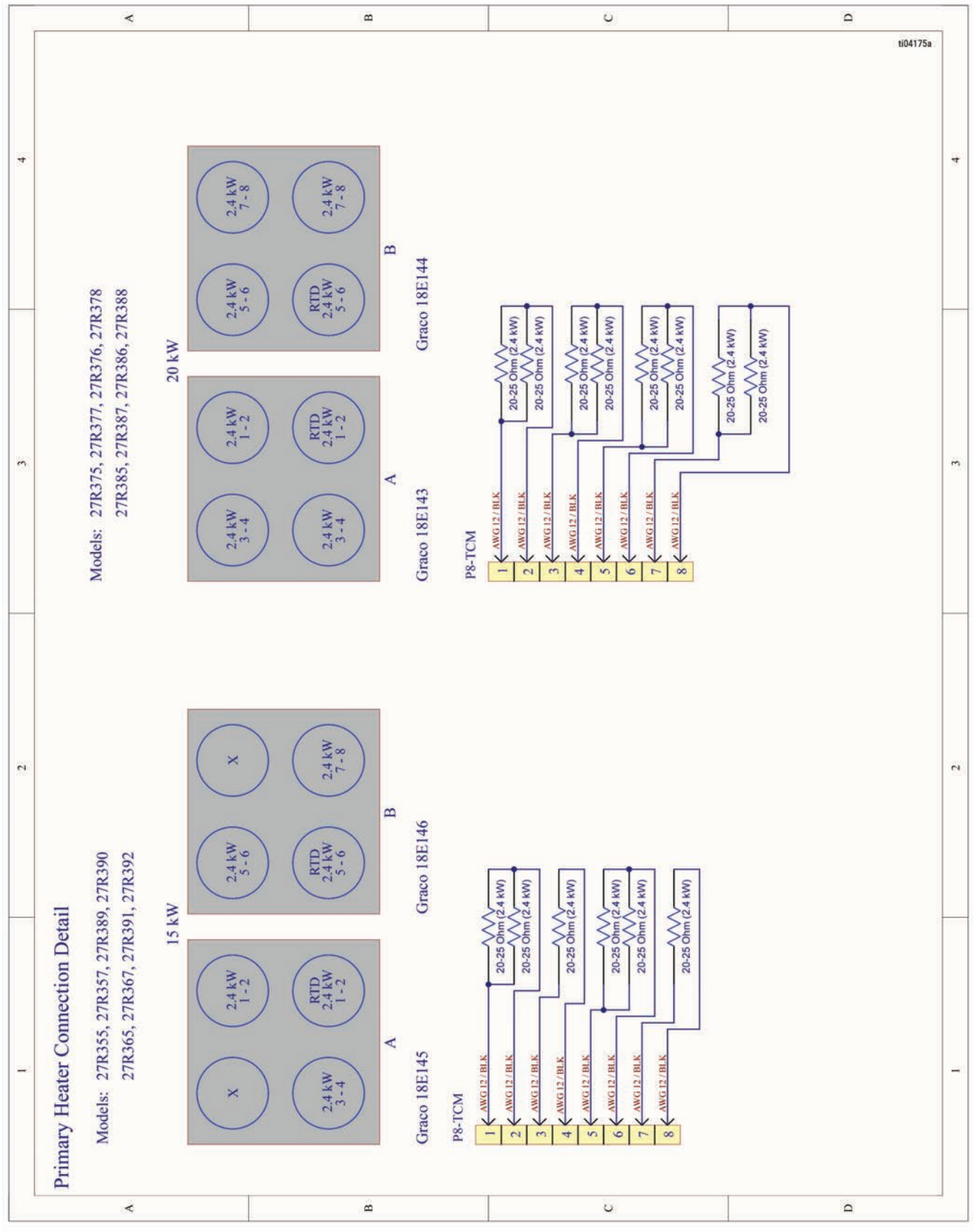

Wiring configuration for enclosure 2009456 (Models: 27R375, 27R377, 27R385, 27R387)
Wiring configuration for enclosure 2009455 (Models: 27R389, 27R390, 27R376, 27R378, 27R391, 27R392, 27R386, 27R388)
Input Wiring
3PH 230V
3PH 400V
DIS
Surge Protector
Graco 16U530
24VDC Power Supply
Graco 126453
P1-TCM
P4-TCM
P9-TCM-2
CR1
EARTH
GND
Motor 20A
A Heat 40A
B Heat 40A
Hose Heat & XFMR 40A
Hose Heat 50A
A Hose RTN
B Hose RTN
3-phase 380V EMI Filter
Graco 2010528
ti04170a
See Temperature Control Module schematic on sheet 6
See Temperature Control Module schematic on sheet 5
For all labeled connections see sheet 1

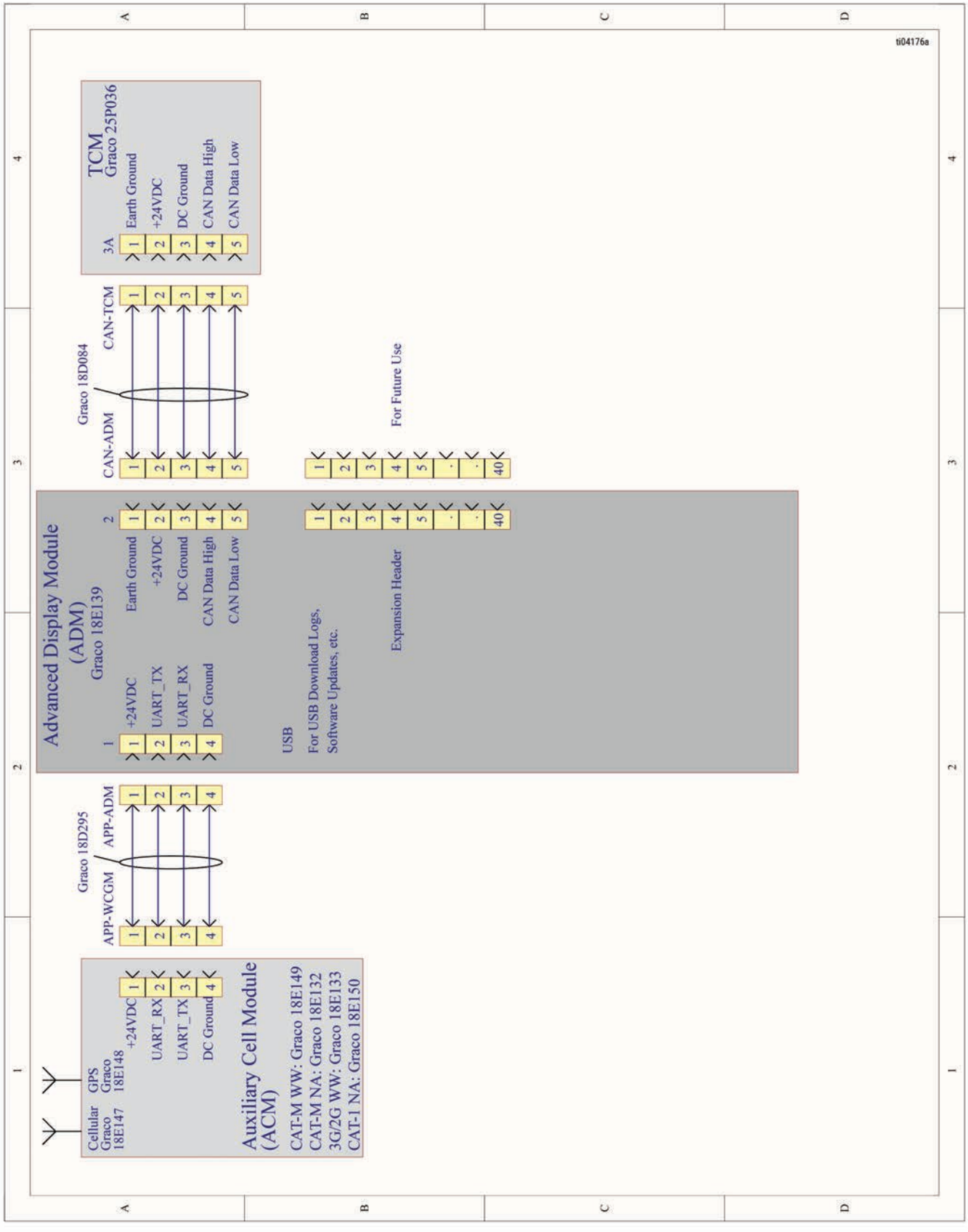

ti04171a
Hydraulic Control Module (HCM)
Graco 2010146
1A
1B
2
3
4
5
6
7
Earth Ground
+24VDC
DC Ground
CAN Data High
CAN Data Low
Inlet Pressure A
Inlet Pressure B
Outlet Pressure A
Outlet Pressure B
Flow Rate A
Flow Rate B
Pump Position In A
Pump Position In B
N/C
Earth Ground
Inlet Pressure Transducer A
Inlet Pressure Transducer B
Graco 18E134
PT
P4-HCM
P5-HCM
Graco 17Y983
PRESSURE IN A
PRESSURE IN B
Flow Meter A/B-Side
Graco 18E136
FM
P6-HCM
METER
Splitter: Graco 25E540
Graco 17R703
METER B
Graco 18C474
P7-HCM
POSITION SWITCH
Pump Position Sensor A
METER A
Graco 17B541
PS
Sensor B
Graco 17B542
Reserved for Connection to Electric Transfer Pump Controller
TCM
Graco 25P036
3B
CAN-TCM
CAN-HCM
Graco 121227
P2-HCM
P3-HCM
PRESSURE OUT A
PRESSURE OUT B
Outlet Pressure Transducer A
Outlet Pressure Transducer B
Graco 18E135
1 Inlet Fluid Pressure Sensors only on Elite systems (Models: 27R392 27R390, 27R388, 27R387, 27R378 27R377, 27R367, 27R357)
2 Flow Meter wiring for A-side duplicate of B-side after splitter 25E540.


ti04172a
Hydraulic Control Module (HCM)
Graco 2010146
P14-HCM
P15-HCM
P16-HCM
P12-HCM
P13-HCM
Motor
Graco 2010311
Motor Over-Temperature Switch
Hydraulic Oil Temperature Thermistor
Graco 18E140
Graco 2009389
Motor Contactor
Graco 19B337
Hydraulic Directional Valve
Graco 120299
Graco 2009390
EDX (Electronic Pressure Control module)
Graco 2010529
Graco 17F467
EARTH
Not Used
Miscellaneous I/O
Field Wirable
CAN Communication to Generator
Field Wirable
+24VDC
DC Ground
Motor Temperature
Hydraulic Oil Temperature
ISO Pump Out
Line Voltage 1
Line Voltage 2
Earth Ground
Contactor 230V
Solenoid A 230V
Solenoid B 230V
+24V Digital I/O 1
+24V Digital I/O 2
+24V Digital I/O 3
+24V Digital I/O 4
+24V EDX
Hydraulic Pressure Input
EDX Voltage Out
AUX CAN High
AUX CAN Low
AUX CAN Ground
Graco 2008112 (Models: 27R355, 27R357, 27R365, 27R367)
Graco 2008911 (Models: 27R389, 27R390, 27R391, 27R392)
Graco 2008113 (Models: 27R375, 27R376, 27R377. 27R378, 27R385, 27R386, 27R387, 27R388)
See Power Distribution schematic on sheet 1
See Fuse wiring schematic on sheet 1.


ti04173a
Temperature Control Module (TCM)
Graco 25P036
Graco 18E139 ADM
Graco 2010146 HCM
Graco 18D084
Graco 121227
CAN-TCM
CAN-ADM
CAN-HCM
Earth Ground
+24VDC
DC Ground
CAN Data High
CAN Data Low
P4-TCM
Graco 2009389
AWG 18 / BLK
AWG 18 / RED
Inlet Fluid Temp Thermistor A
Graco 18E140
Inlet Fluid Temp Thermistor B
Graco 18E140
TEMP IN-A
TEMP IN-B
OT Supply
OT Heater B
OT Heater A
Inlet Fluid Temp A
Inlet Fluid Temp B
P2-TCM
AWG 18 / TAN
AWG 18 / GRAY
HTR-OT-B
HTR-OT-A
Graco 132477
Heater Overtemp Switch B
Graco 15B137
Heater Overtemp Switch A
Graco 15B137
NC
See Power Distribution schematic on sheet 1
Inlet Fluid Temp Sensors only on Elite systems (Models: 27R357, 27R377, 27R367, 27R387, 27R390, 27R378 27R392, 27R388)


ti04174a
Temperature Control Module (TCM)
Graco 25P036
+5VDC
Earth Ground
RTD A Input 1
RTD A Input 2
Heater Power Out-A
Heater Power Out-B
RTD B Input 1
RTD B Input 2
Heater Power Out-Hose
RTD A Hose Input
RTD Hose Shared
RTD B Hose Input
P8-TCM
P9-TCM
P5-TCM
P6-TCM
P7-TCM
AWG 12 / BLK
AWG 8 / RED
AWG 8 / BLK
AWG 8 / BLU
CB4-1
CB4-2
A HOSE OUT
B HOSE OUT
A HOSE RTN
B HOSE RTN
Heated Hose
A Hose Power
B Hose Power
A Hose RTN
B Hose RTN
N/C
Heater RTD A
Graco 24L973
Heater RTD B
Graco 24L973
Hose FTS A
Graco 18E175
Hose FTS B
Graco 18E175
HOSE FTS
Graco 18E185 (50' Hose)
Graco 18E186 (100' Hose)
Graco 20A721
Splitter: Graco 18E187
1 See Power Distribution schematic on sheet 1
2 See Primary Heater schematic on sheet 7
3 Hose RTD and Cables provided with hose bundle
4 Cable part number is dependent on hose section length. One cable per hose section
5 18E175 kit contains 18E187 and 20A721


ti04175a
Primary Heater Connection Detail
Models: 27R355, 27R357, 27R389, 27R390
27R365, 27R367, 27R391, 27R392
15 kW
X
2.4 kW 1 - 2
2.4 kW 3 - 4
RTD 2.4 kW 1 - 2
2.4 kW 5 - 6
RTD 2.4 kW 5 - 6
2.4 kW 7 - 8
X
A
B
Graco 18E145
Graco 18E146
P8-TCM
AWG 12 / BLK
20-25 Ohm (2.4 kW)
Models: 27R375, 27R377, 27R376, 27R378
27R385, 27R387, 27R386, 27R388
20 kW
2.4 kW 1 - 2
2.4 kW 3 - 4
RTD 2.4 kW 1 - 2
2.4 kW 5 - 6
RTD 2.4 kW 5 - 6
2.4 kW 7 - 8
A
B
Graco 18E143
Graco 18E144
P8-TCM
AWG 12 / BLK
20-25 Ohm (2.4 kW)


ti04176a
TCM
Graco 25P036
3A
Earth Ground
+24VDC
DC Ground
CAN Data High
CAN Data Low
Graco 18D084
CAN-ADM
CAN-TCM
For Future Use
Advanced Display Module
(ADM)
Graco 18E139
+24VDC
UART_TX
UART_RX
DC Ground
Earth Ground
+24VDC
DC Ground
CAN Data High
CAN Data Low
USB
For USB Download Logs,
Software Updates, etc.
Expansion Header
Graco 18D295
APP-WCGM
APP-ADM
Cellular
Graco
18E147
GPS
Graco
18E148
+24VDC
UART_RX
UART_TX
DC Ground
Auxiliary Cell Module
(ACM)
CAT-M WW: Graco 18E149
CAT-M NA: Graco 18E132
3G/2G WW: Graco 18E133
CAT-1 NA: Graco 18E150

CALIFORNIA PROPOSITION 65

CALIFORNIA RESIDENTS

⚠**WARNING** Cancer and reproductive harm — www.P65warnings.ca.gov.

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This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

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