Installation-Parts

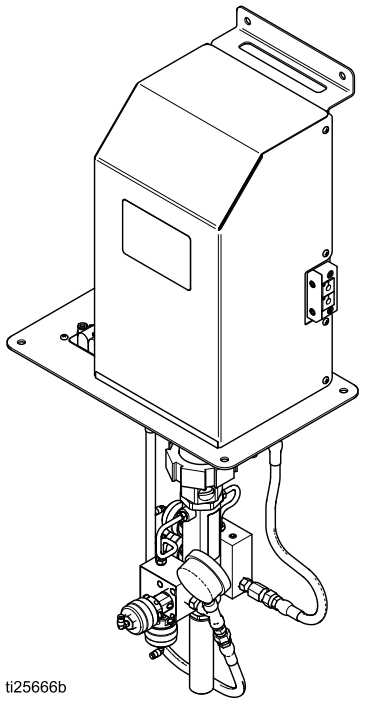
Isolated Pump Expansion Kits

334512C
EN

For use with a ProMix® MC0500 Proportioner to pump color, catalyst, and solvent. For professional use only.

Important Safety Instructions
Read all warnings and instructions in this manual and in your PD2K Installation, Operation, and Repair manuals.
Save these instructions.

See page 3 for model part numbers and approvals information.



ti25666b

PROVEN QUALITY. LEADING TECHNOLOGY.

Contents

Related Manuals

Manual No.	Description
3A2800	PD2K Proportioner Repair-Parts Manual, Manual Systems
332457	PD2K Proportioner Installation Manual
332562	PD2K Proportioner Operation Manual, Manual Systems
3A2801	Mix Manifold Instructions-Parts Manual

Manual No.	Description
332339	Pump Repair-Parts Manual
332454	Color Change Valve Repair-Parts Manual
332455	Color Change Kits Instructions-Parts Manual
332456	Pump Expansion Kits Installation-Parts Manual

Models

Kit Part No.	Pump Used	Description	Maximum Fluid Working Pressure
24W159	24W273♦	35 cc Low Pressure Color or Catalyst Pump Kit (Isolated)	300 psi (2.068 MPa, 20.68 bar)
24W160	24W274♦	70 cc Low Pressure Color Pump Kit (Isolated)	300 psi (2.068 MPa, 20.68 bar)
24W277	24W303♦	35 cc High Pressure Color or Catalyst Pump Kit (Isolated)	1500 psi (10.34 MPa, 103.4 bar)
24W278	24W304♦	70 cc High Pressure Color Pump Kit (Isolated)	1500 psi (10.34 MPa, 103.4 bar)

♦ The fluid section of these pumps is approved for placement in the hazardous area. The mounting plate is an approved partition between the hazardous and non-hazardous areas.

II 2 G Ex h IIB T3

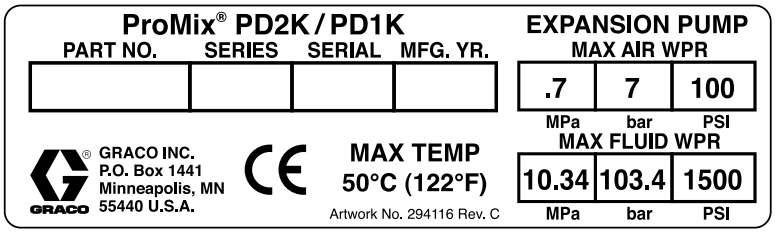


Figure 1 . Pump Expansion Kit Identification Label

Warnings

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

WARNING

FIRE AND EXPLOSION HAZARD

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

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic 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.

ELECTRIC SHOCK HAZARD

This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.

- Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment.
- 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



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/dispensing 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.


MOVING PARTS HAZARD

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

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


TOXIC FLUID OR FUMES

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

- Read MSDSs to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
- Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

WARNING

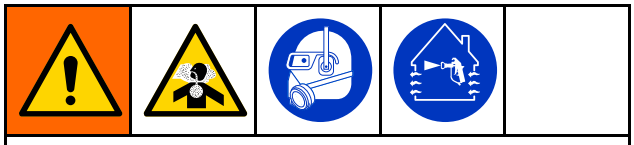
EQUIPMENT MISUSE HAZARD
Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. 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.

Important Isocyanate (ISO) Information

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

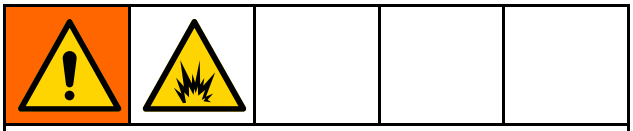
Isocyanate Conditions



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

- Read and understand the fluid manufacturer's warnings and Safety Data Sheet (SDS) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with the equipment unless you are trained, qualified, and have read and understood the information in this manuals and in the fluid manufacturer's application instructions and SDS.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocynate 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 SDS.
- Avoid all skin contact with iscocyanates. 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.

Material Self-ignition



Some materials may become self-igniting if applied too thick. Read material manufacturer's warnings and material MSDS.

Keep Components A and B Separate

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

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

Moisture Sensitivity of Isocyanates

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

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

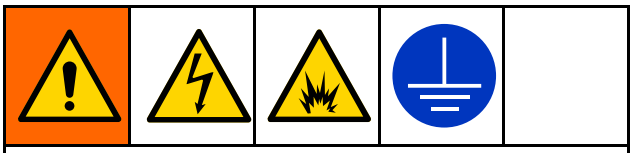
NOTICE

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 A (resin) side.

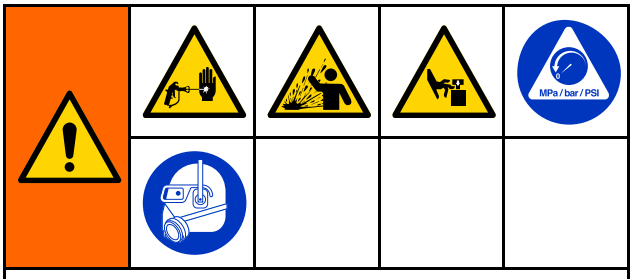
Installation

Before Installing the Kit



- Servicing the electrical control box exposes you to high voltage. To avoid electric shock, turn off power at the main circuit breaker before opening the enclosure.
- All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.
- This equipment must be grounded to reduce the risk of static sparking and electric shock, which could cause fumes to ignite or explode. See Grounding, page 16.

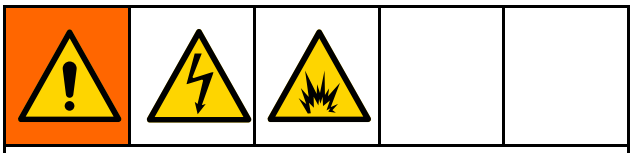
Follow the Pressure Relief Procedure in your PD2K manual whenever you see this symbol.



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

1. Flush the system as explained in your PD2K Operation Manual. Follow the Pressure Relief Procedure in your PD2K manual.
2. Close the main air shutoff valve on the air supply line.
3. Remove electrical power from the system.

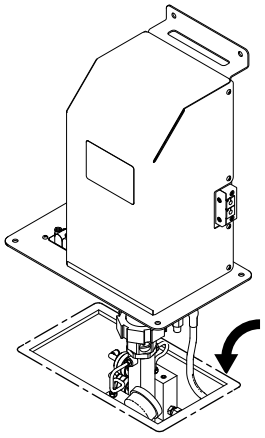
Install the Pump



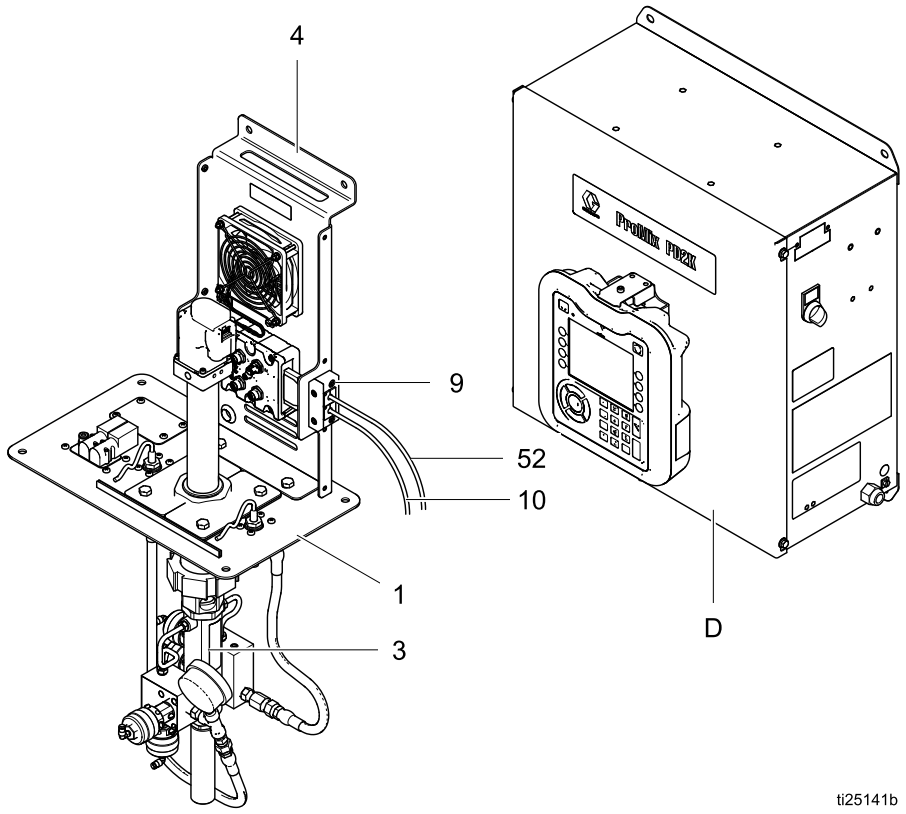
The electronic portion of the pump kit must remain outside the hazardous location. See Figure 2.

1. Follow the steps in **Before Installing the Kit,** in the previous section.
2. Plan your installation so that all pumps are located within 6 ft. of the PD2K electrical control box (D). Each multi-conductor cable (10) must be able to reach from the dual cable grommet (9) to one of the ports on the control box. See Electrical Connections, page 14. See also Figure 2.

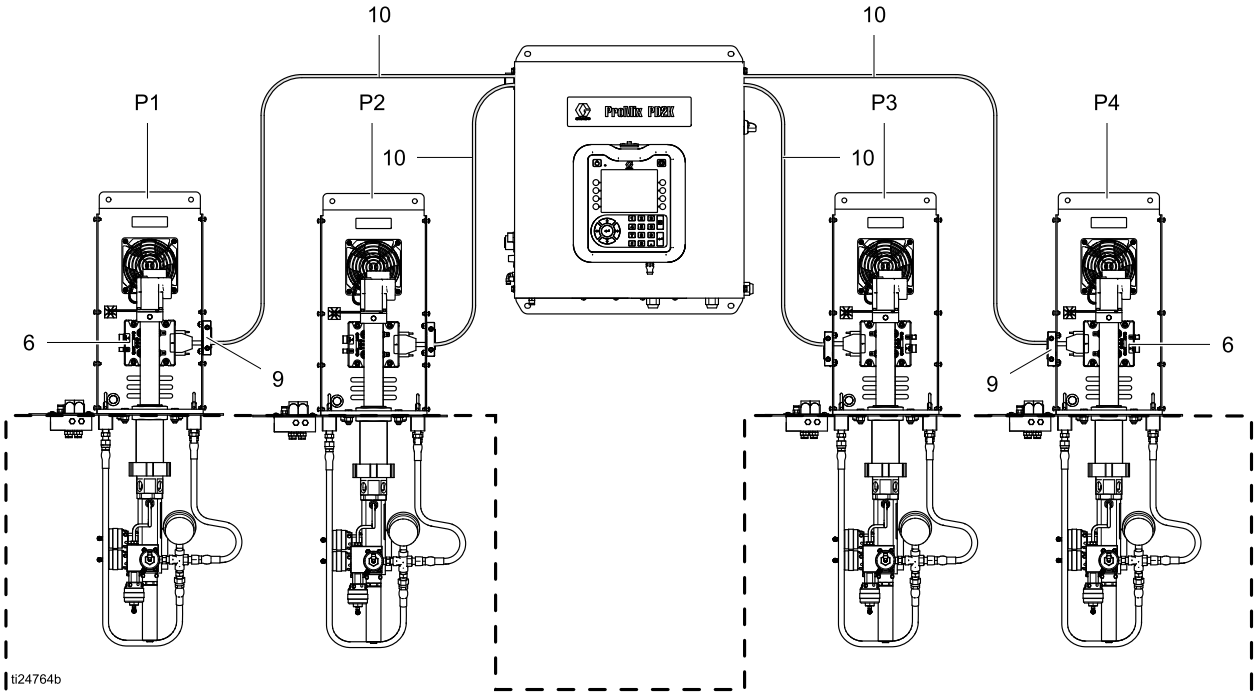
   NOTE: To mount pumps on both sides of the control box, turn the pump control module (6) over, and connect the dual cable grommet (9) on the other side of the rear mounting bracket.
3. Install the pump assembly securely by bolting the rear mounting bracket (4) to desired wall or sturdy surface. See Dimensions, page 32.
4. Apply approved fireproof sealant to the mating surface of the mounting plate (1), to ensure an airtight seal. Mount the plate on the horizontal surface that is the barrier between the hazardous and non-hazardous areas. See Dimensions, page 32.



ti25669a



Non-Hazardous Location



Hazardous Location **Hazardous Location**

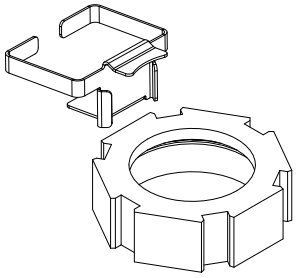
Figure 2

TSL Cup Kit

Throat Seal Liquid (TSL) lubricates the pump throat packings and dosing valves. The TSL Cup Kit supplies TSL to the upper and lower throat cartridges of the pump, and to the four pump dosing valves.

NOTE: TSL must be ordered separately. Order Part No. 206995, 1 quart (0.95 liter).

1. Slide the kit mounting bracket onto any side of the pump's hex nut.



2. Place the TSL cup (51) into the bracket (51a). Routing of the throat seal tubing (51c) should **always** slope up to the reservoir.

   NOTE: The pump's upper throat cartridge has three ports (two are plugged). Install the barbed fitting (51b) in the port closest to the TSL cup, by moving a plug if necessary.

3. Check that the o-ring is in place on the barbed fitting (51b). Apply low strength thread adhesive and install the fitting in the upper throat cartridge port.

4. Repeat for the lower throat cartridge.

5. If you are lubricating the dosing valves, remove the plug and gasket from the valve port closest to the TSL cup. Check that the o-ring is in place on the barbed fitting (51b). Apply low strength thread adhesive and install the fitting in the valve port.

   NOTE: If you are not lubricating the dosing valves, remove the unused barbed fittings (51b) from the bottom of the TSL cup (51). Apply low strength thread adhesive and install the plugs and gaskets supplied with the kit.

6. Cut the tubing (51c) to length as required. Connect the TSL cup fittings to the fittings on the pump and valves. TSL is gravity-fed from the cup to the pump and valves; position the fittings and tubing to prevent kinks and enable the TSL to flow freely.

7. Fill the cup with TSL.

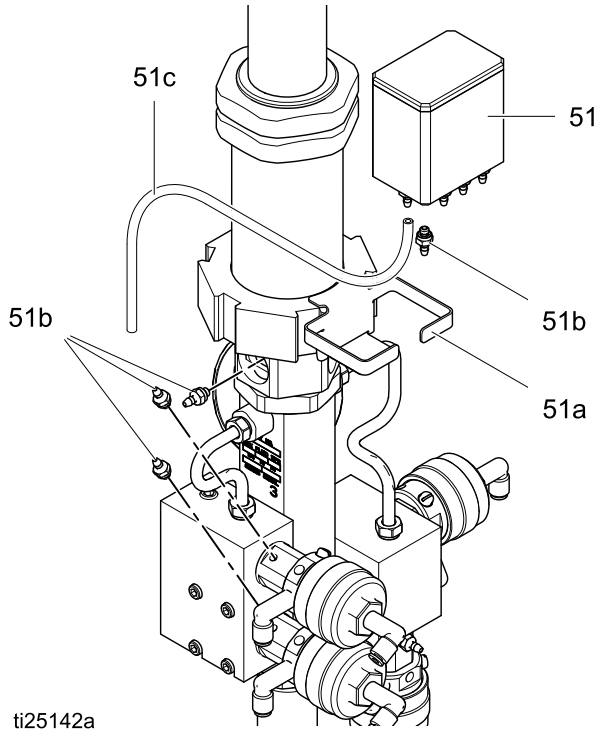


Figure 3 Install TSL Cup Kit

Air Connections

Connect the main air supply line to the air inlet of the solenoid manifold (40).

NOTE: A 6 ft (1.83 m) length of 1/4 in. (6 mm) OD polyethylene tubing (35) is supplied with the kit to supply air to the expansion pump's solenoid manifold (40).

1. Cut the air supply tubing that leads into the electrical control box (D).
2. Install the Y-fitting (55) supplied in the kit to restore air supply to the electrical control box (D).
3. Connect the supplied 1/4 in. (6 mm) OD tubing (35) between the open branch of the Y-fitting (55) and the air inlet of the solenoid manifold (40). This line supplies air to the expansion pump solenoid manifold, as shown in the illustration.

   NOTE: If you are installing a second, third, or fourth pump, make additional splices in the main air supply line and connect in same manner.

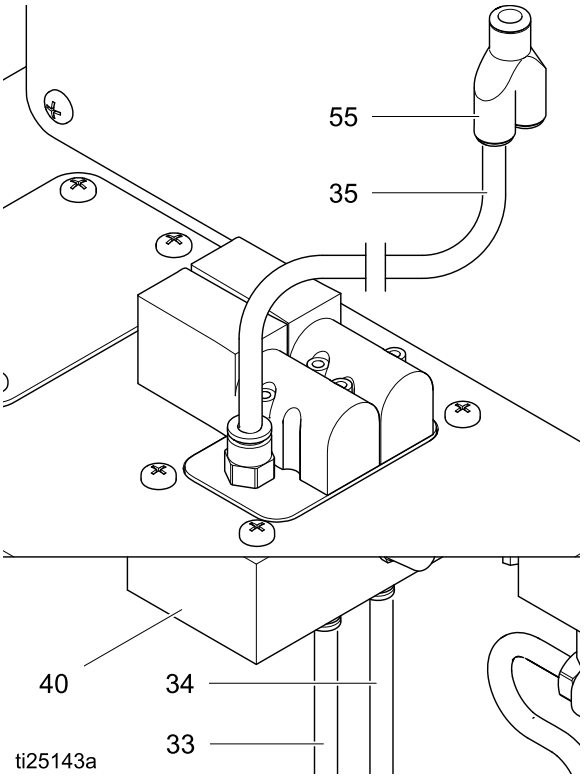


Figure 4 Supplying Air to the Expansion Pump Solenoid Manifold

Fluid Connections

1. Connect a 1/4 npt(f) fluid hose from the fluid source to the pump's fluid inlet fitting (S).
2. Connect a 1/4 npt(f) fluid outlet hose from the pump's fluid outlet fitting (R) to the gun's fluid supply.

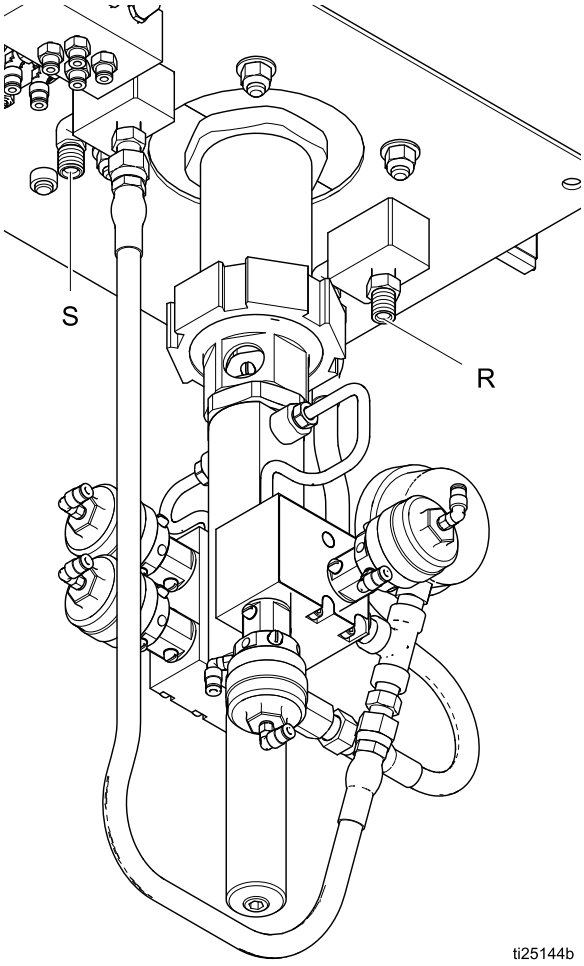


Figure 5 Pump Fluid Connections

Electrical Connections

NOTICE

To avoid electrical component damage, remove all system power before plugging any connectors.

NOTE: See the Electrical Schematics, page 22.

1. Verify that electrical power is removed from the system.
2. Remove the cover from the electrical control box.
3. Remove the knockout (K) from the side of the electrical control box.
4. Thread the cable into the electrical control box and connect to the appropriate connection port on the enhanced fluid control module (Pump 1 to P1, Pump 2 to P2, Pump 3 to P3, and Pump 4 to P4).

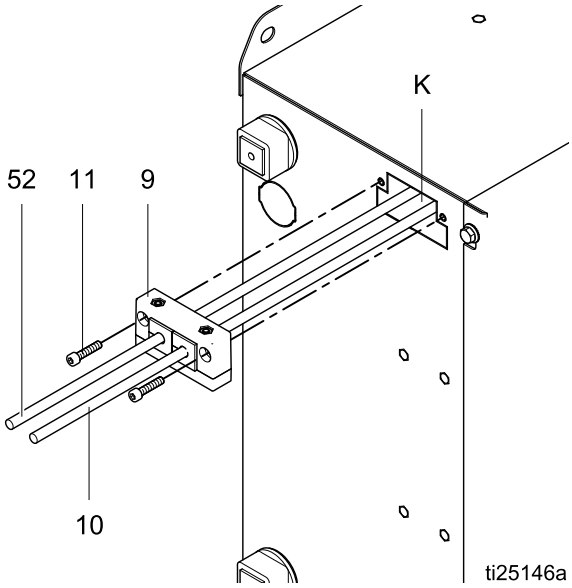


Figure 6 Install Grommet in Electrical Control Box

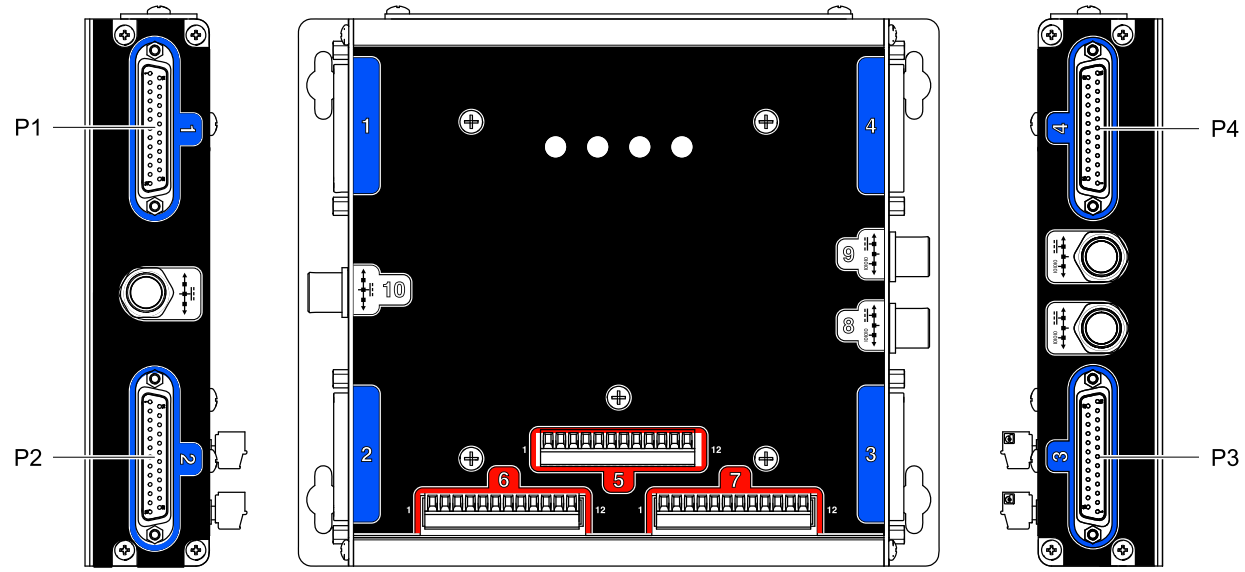


Figure 7 Enhanced Fluid Control Module Connection Points

5. Thread the 2–wire cable (52) up into the electrical box through an existing grommet and the wireway. Connect the cable (52) to the appropriate terminals on the top of the 48 Vdc power supply (P1 for pump 1, P2 for pump 2, P3 for pump 3, P4 for pump 4); red wire to + terminal, black wire to - terminal.

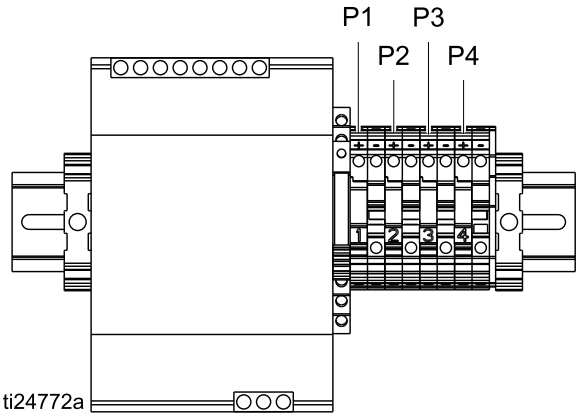
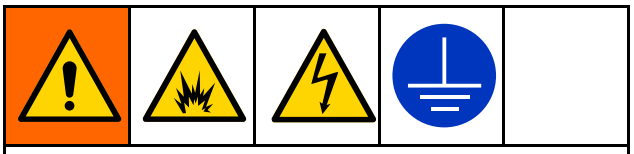


Figure 8 48 Vdc Power Supply Connection Points

6. Install the dual grommet (9, shipped loose) on the free end of the D-SUB cable (10).
7. Fasten the grommet (9) to the side of the electrical control box, using two screws (11).
8. Reinstall the cover on the electrical control box.

Grounding



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

1. Verify that the base unit is properly grounded. See the PD2K installation manual for complete grounding instructions.
2. Ground the expansion kit pump(s) as follows:
   a. Connect a ground wire to the ground screw (8) on the added pump kit's back panel (4). Connect the other end of the ground wire to the **same** true earth ground that the main unit is connected to. Verify that the added pump is grounded by taking a resistance reading from the ground screw (8) on the added pump kit's back panel (4) to the system's true earth ground. Resistance must be less than 1 ohm.

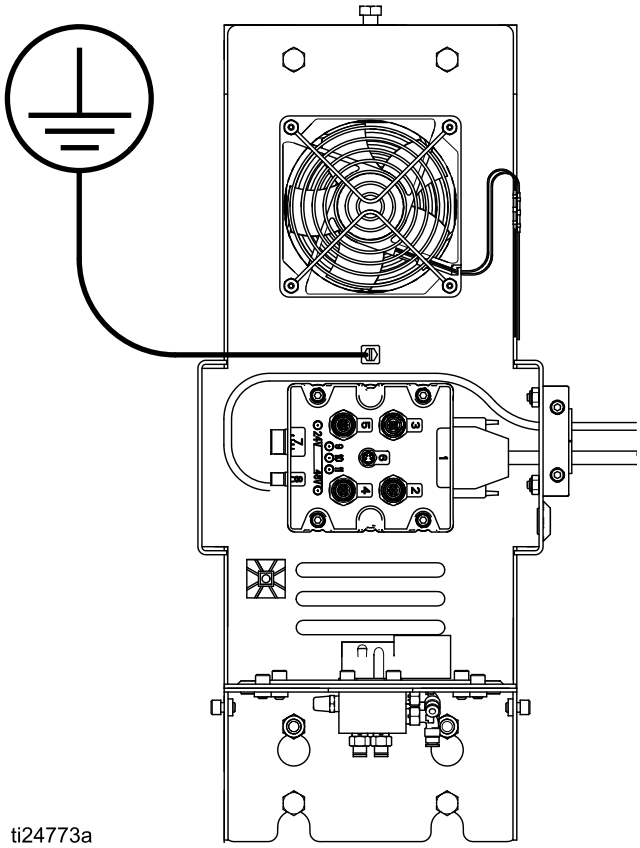


Figure 9 Grounding the Pump Expansion Kit

Complete the Installation

1. Install the cover (29) on the expansion kit, using the screw (31).

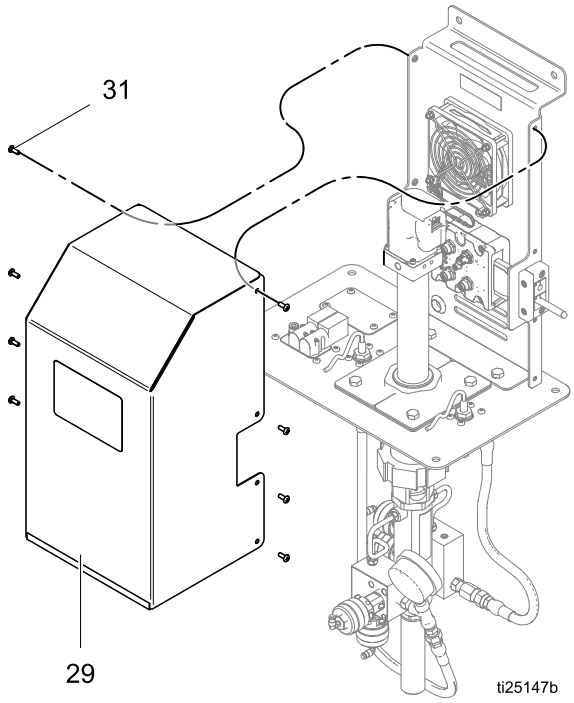


Figure 10 Install Expansion Kit Cover

2. Restore electrical power.
3. Turn on the control box power switch.
4. Press  and navigate to System Screen 1 on the Advanced Display Module. Change the number of Color Pumps and Catalyst Pumps as needed, based on the kit installation.

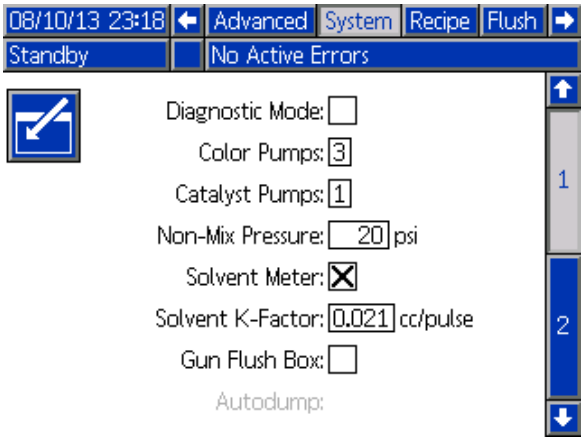


Figure 11 System Screen 1

5. Go to the Pump Screens. The menu bar at the top of the screen will now show separate tabs for all installed pumps. Each pump has three screens. Enter the required information, as explained in the PD2K Operation Manual.

   NOTE: At a minimum, you must enter the Pump Size on Pump Screen 1 and transducer calibration data “Outlet Offset Factor” and “Outlet Sensitivity Factor” on Pump Screen 2 (see your PD2K Operation Manual). Also, create a recipe using the new material number, which can be found on Pump Screen 1 under Available Colors (or Catalysts).

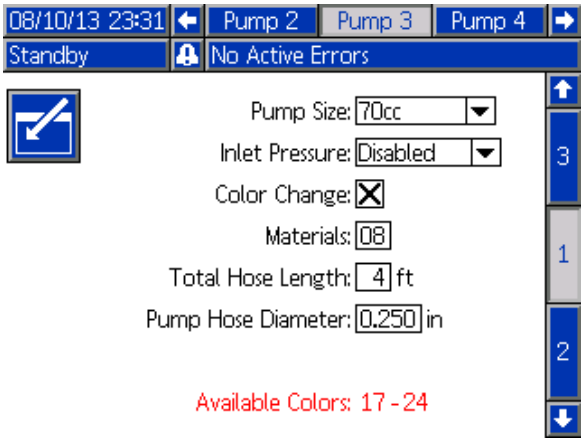


Figure 12 Third (Color) Pump Screen

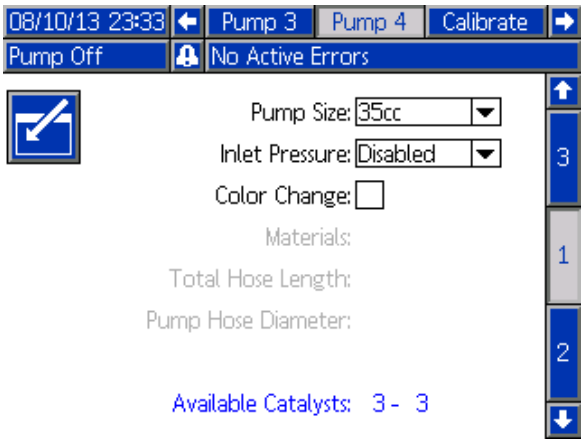


Figure 13 Fourth (Catalyst) Pump Screen

6. The Home Screen will now show animations and information for the added pumps.

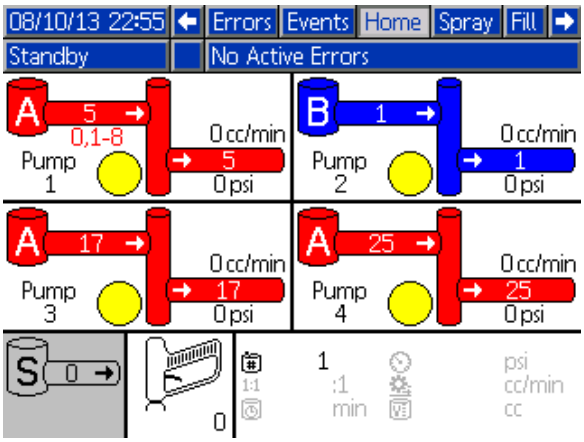


Figure 14 PD2K Home Screen (Advanced Display Module)

7. See the PD2K Operation Manual to return the system to service.

Repair

Dose Valve Tubing Connections

NOTE: 5/32 in. (4 mm) tubing connects the solenoid manifold to the pump's dosing valves. See the Pump Tubing Schematic on the next page. Tubing lengths must be 18 in. ± 1/2 in. (457 mm ± 13 mm) for all connections. Always use equal lengths of tubing, to balance the timing of the valves. Lengths longer than 18 in. (457 mm) will increase valve response time.

1. On the bottom of the solenoid manifold are four ports with tube fittings: UP OPEN, UP CLOSED, DOWN OPEN, and DOWN CLOSED. These ports provide air to open and close the pump's inlet dosing valves.

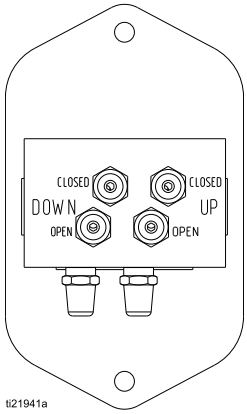


Figure 15 Tubing Connections at Solenoid Manifold, to Pump Inlet Manifold

   a. Connect green tubing (G) from the UP OPEN fitting to the 90° tube fitting on the side of the INLET UP dosing valve.

   b. Connect red tubing (R) from the UP CLOSED fitting to the 90° tube fitting on the end of the INLET UP dosing valve.

   c. Connect black tubing (K) from the DOWN OPEN fitting to the 90° tube fitting on the side of the INLET DOWN dosing valve.

   d. Connect red tubing (R) from the DOWN CLOSED fitting to the 90° tube fitting on the end of the INLET DOWN dosing valve.

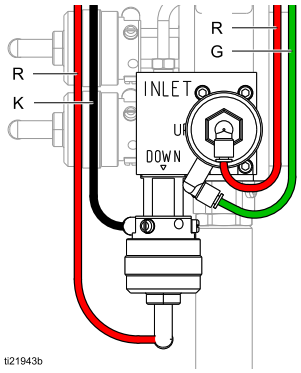


Figure 16 Inlet Manifold Tubing Connections

2. On the side of the solenoid manifold are four ports with 90° tube fittings (not shown): UP OPEN, UP CLOSED, DOWN OPEN, and DOWN CLOSED. These ports provide air to open and close the pump's outlet dosing valves.

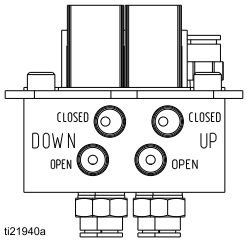


Figure 17 Tubing Connections at Solenoid Manifold, to Pump Outlet Manifold

   a. Connect blue tubing (B) from the UP OPEN fitting to the 90° tube fitting on the side of the OUTLET UP dosing valve.

   b. Connect red tubing (R) from the UP CLOSED fitting to the 90° tube fitting on the end of the OUTLET UP dosing valve.

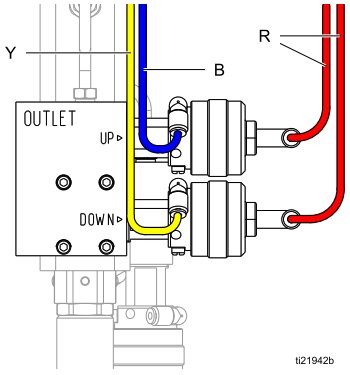


Figure 18 Outlet Manifold Tubing Connections

c. Connect yellow tubing (Y) from the DOWN OPEN fitting to the 90° tube fitting on the side of the OUTLET DOWN dosing valve.

d. Connect red tubing (R) from the DOWN CLOSED fitting to the 90° tube fitting on the end of the OUTLET DOWN dosing valve.

3. Repeat these steps for each pump in your system.

See the following table to understand the relationship between pump stroke and dose valve actuation.

Table 1 Dose Valve Actuation

Pump Stroke	Up Inlet Valve	Down Inlet Valve	Up Outlet Valve	Down Outlet Valve
Up	Open	Closed	Open	Closed
Down	Closed	Open	Closed	Open

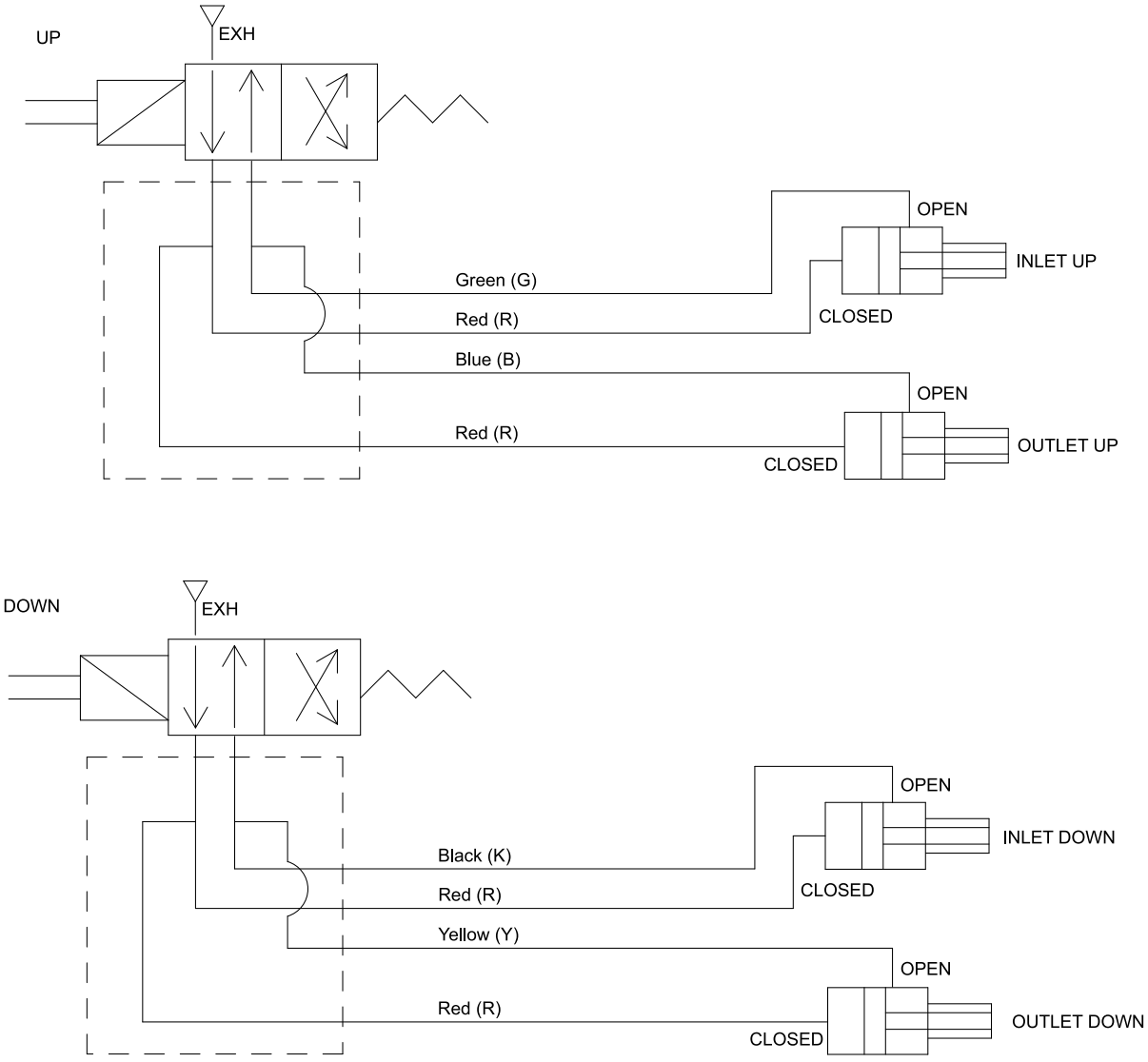


Figure 19 Pump Tubing Schematic

Replace Pump Control Module

If the pump control module needs replacement, install a new module as follows.

NOTICE

To avoid electrical component damage, remove all system power before plugging any connectors.

NOTE: See the Electrical Schematics, page 22.

1. Connect the motor cable connectors (56) to connection ports 2 and 3 on the pump control module (6) and to the pump motor (N).

   NOTE: The wire harness has two cables, one for the motor control and the other for encoder feedback. The connectors are keyed differently to ensure correct installation. Attach the two ground wires to the ground screw on the pump motor (N).

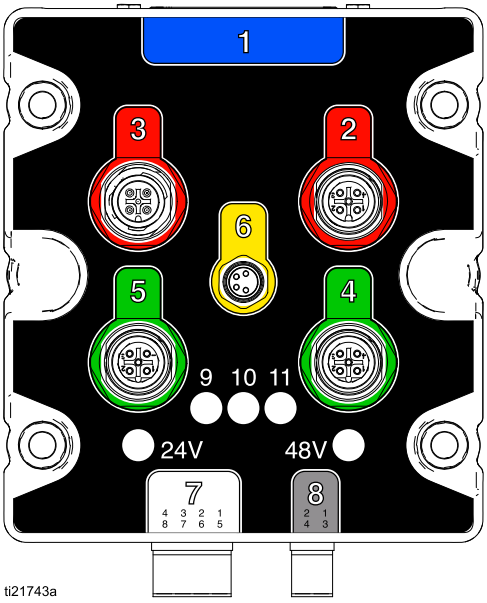


Figure 20 Pump Control Module Connection Points

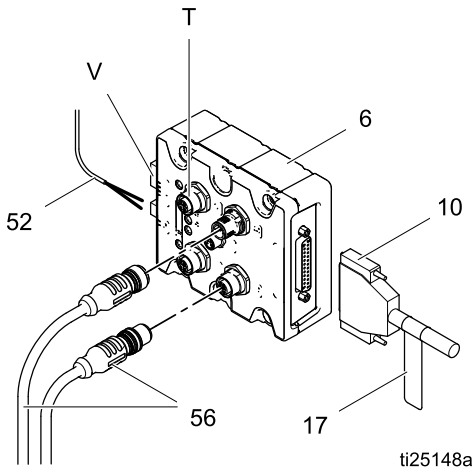


Figure 21 Pump Control Module Connections

2. Connect the 2–wire cable (52) to connection port 8 on the pump control module (6); red wire to pin 1 and black wire to pin 2.
3. Ensure that the pre-installed D-SUB Cable (10) is securely attached to connection port 1 on the pump control module (6).
4. Connect the pump's outlet pressure transducer (T) to port 5.
5. Connect the inlet pressure transducer to port 4.
6. Install the valve wiring (V) in port 7. See Electrical Schematics, page 22.

Electrical Schematics

NOTE: The electrical schematic illustrates all possible wiring expansions in a ProMix PD2K system. Some components shown are not included with all systems.

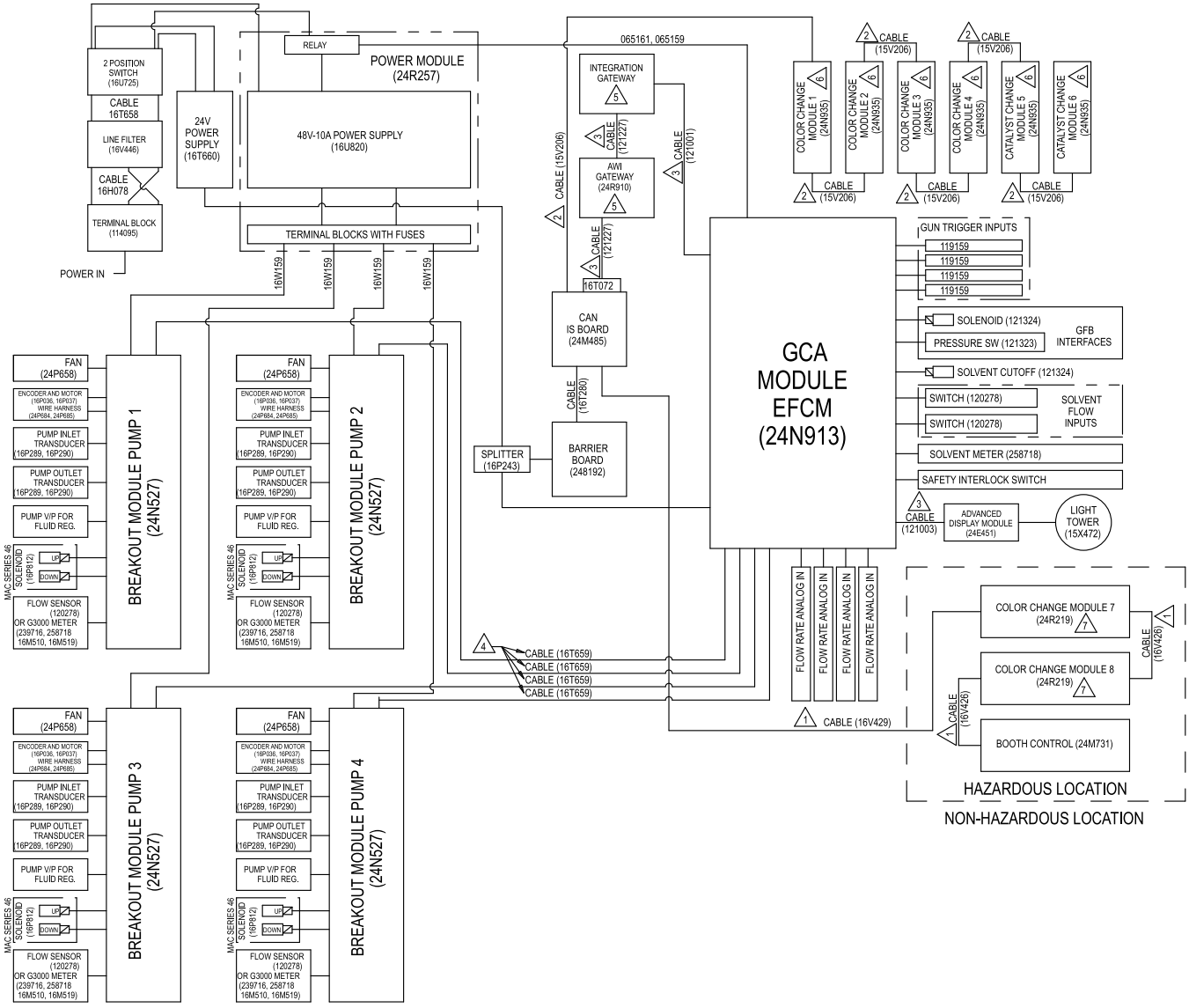


Figure 22 Electrical Schematic, Sheet 1

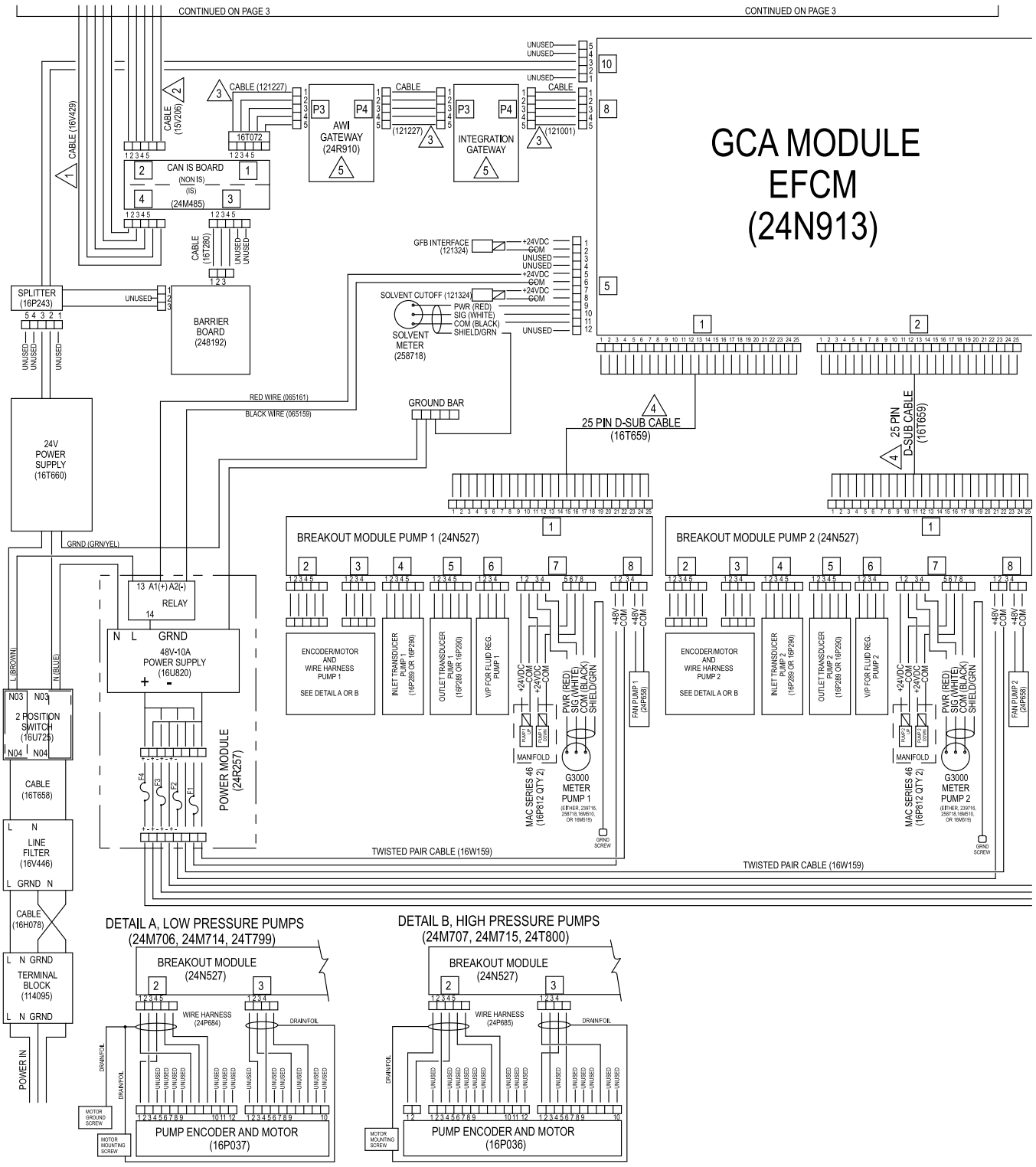


Figure 23 Electrical Schematic, Sheet 2, Part 1

CONTINUED ON THE NEXT PAGE

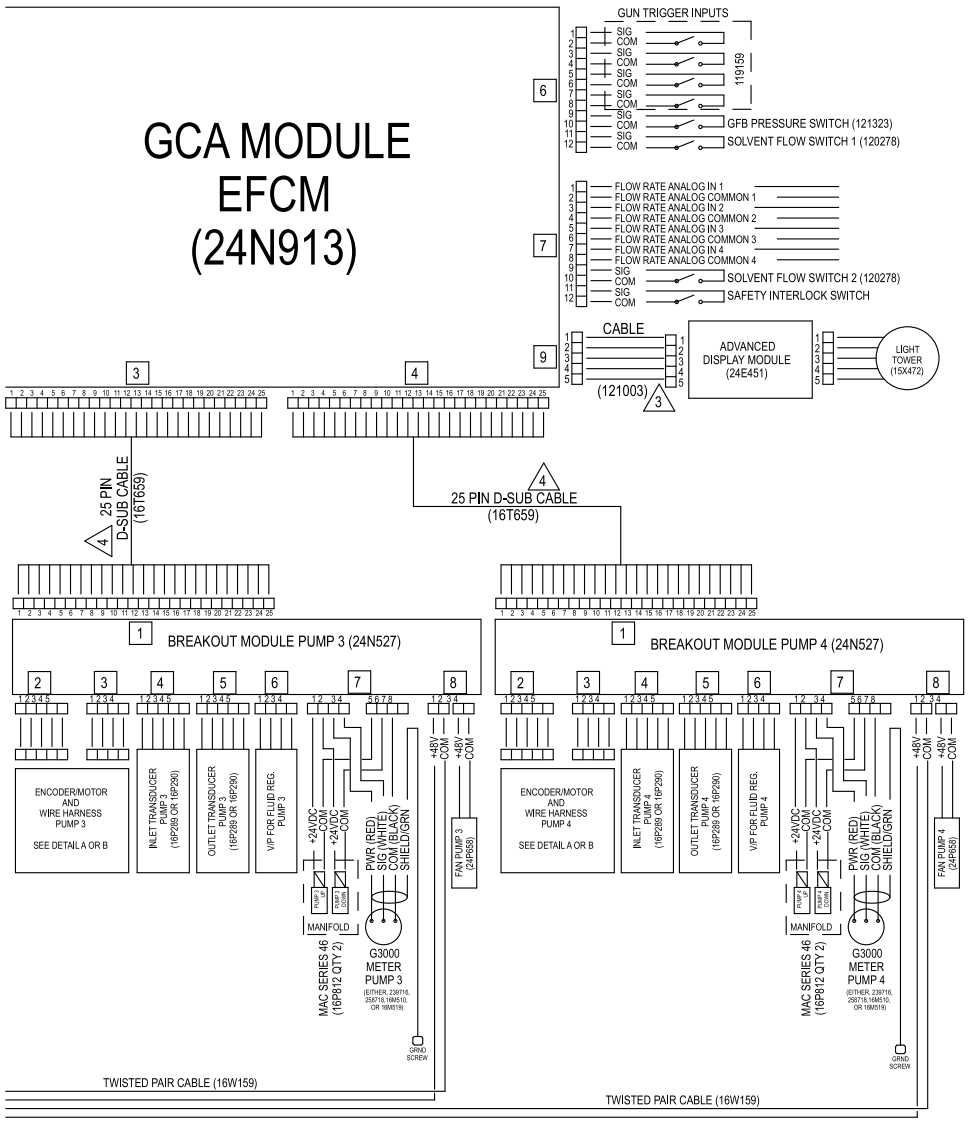


Figure 24 Electrical Schematic, Sheet 2, Part 2

CONTINUED ON THE NEXT PAGE

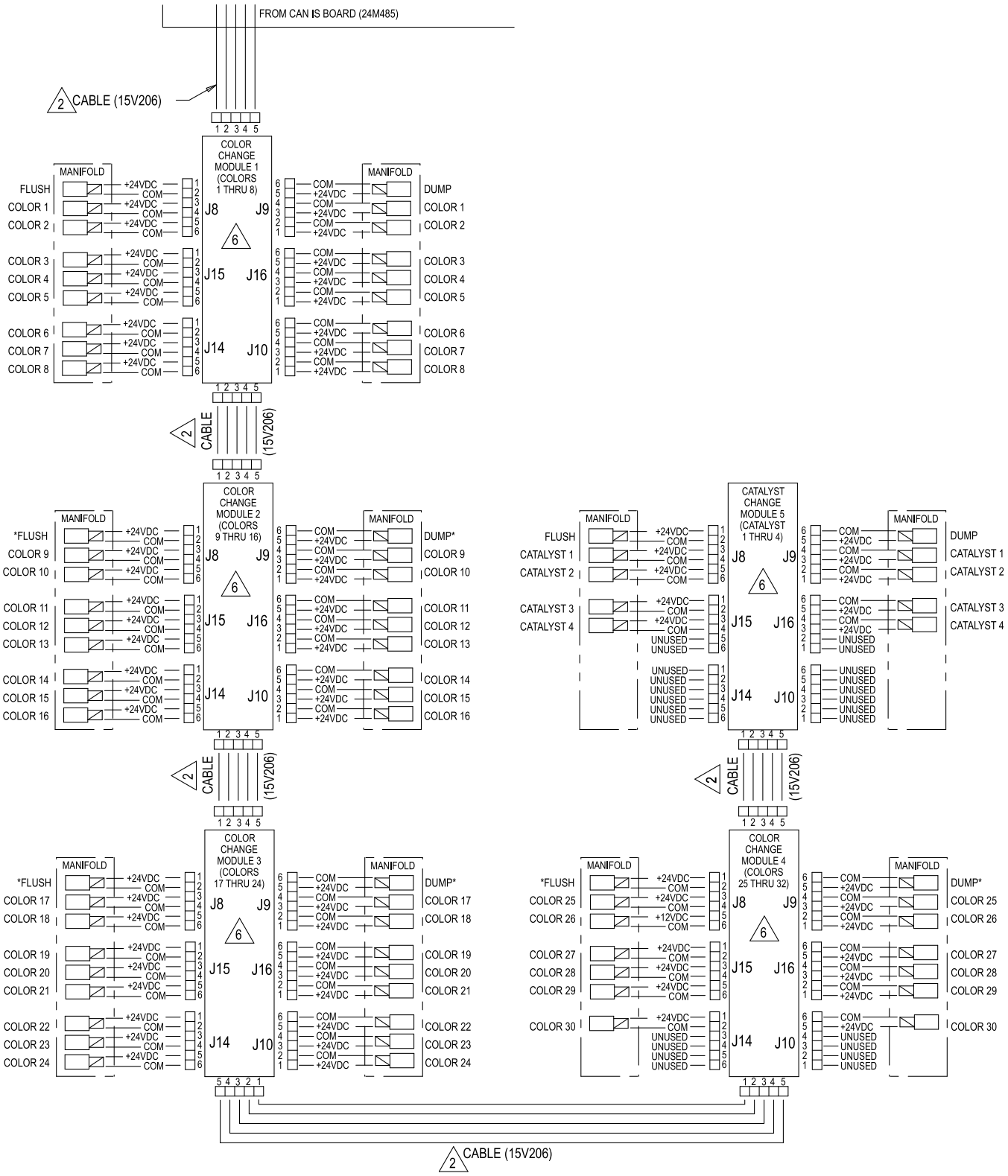
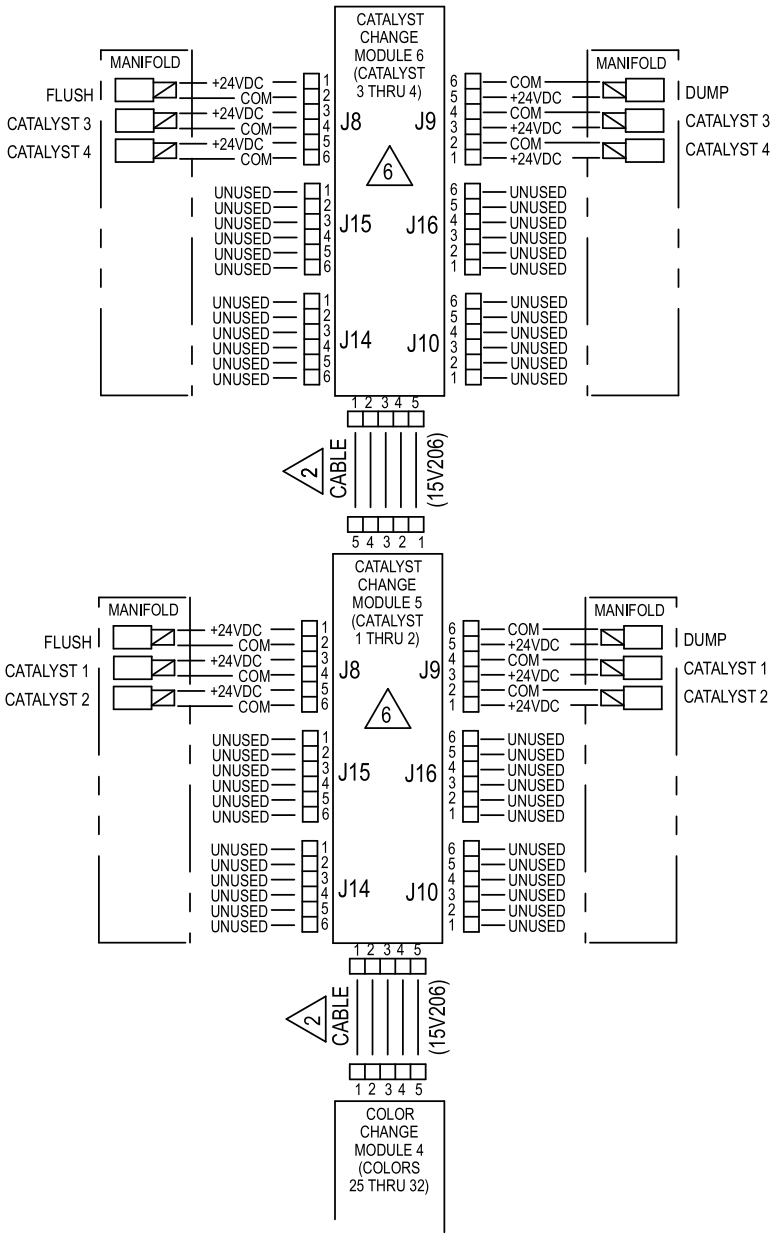


Figure 25 Electrical Schematic, Sheet 3

* May be unused in some configurations.

CONTINUED ON THE NEXT PAGE



ALTERNATE CONFIGURATION
FOR CATALYST CHANGE CONTROL

Figure 26 Electrical Schematic, Sheet 3, Alternate Configuration for Catalyst Change Control

CONTINUED ON THE NEXT PAGE

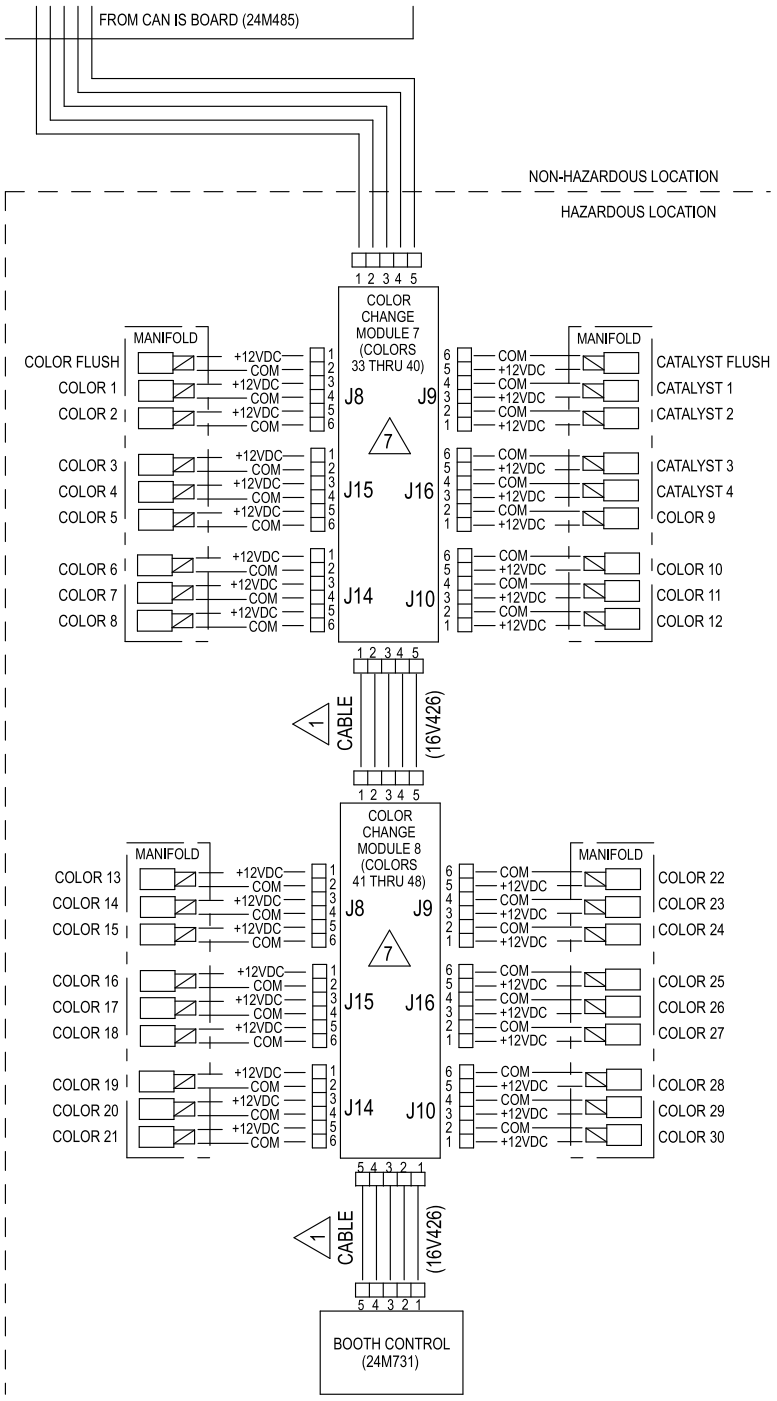
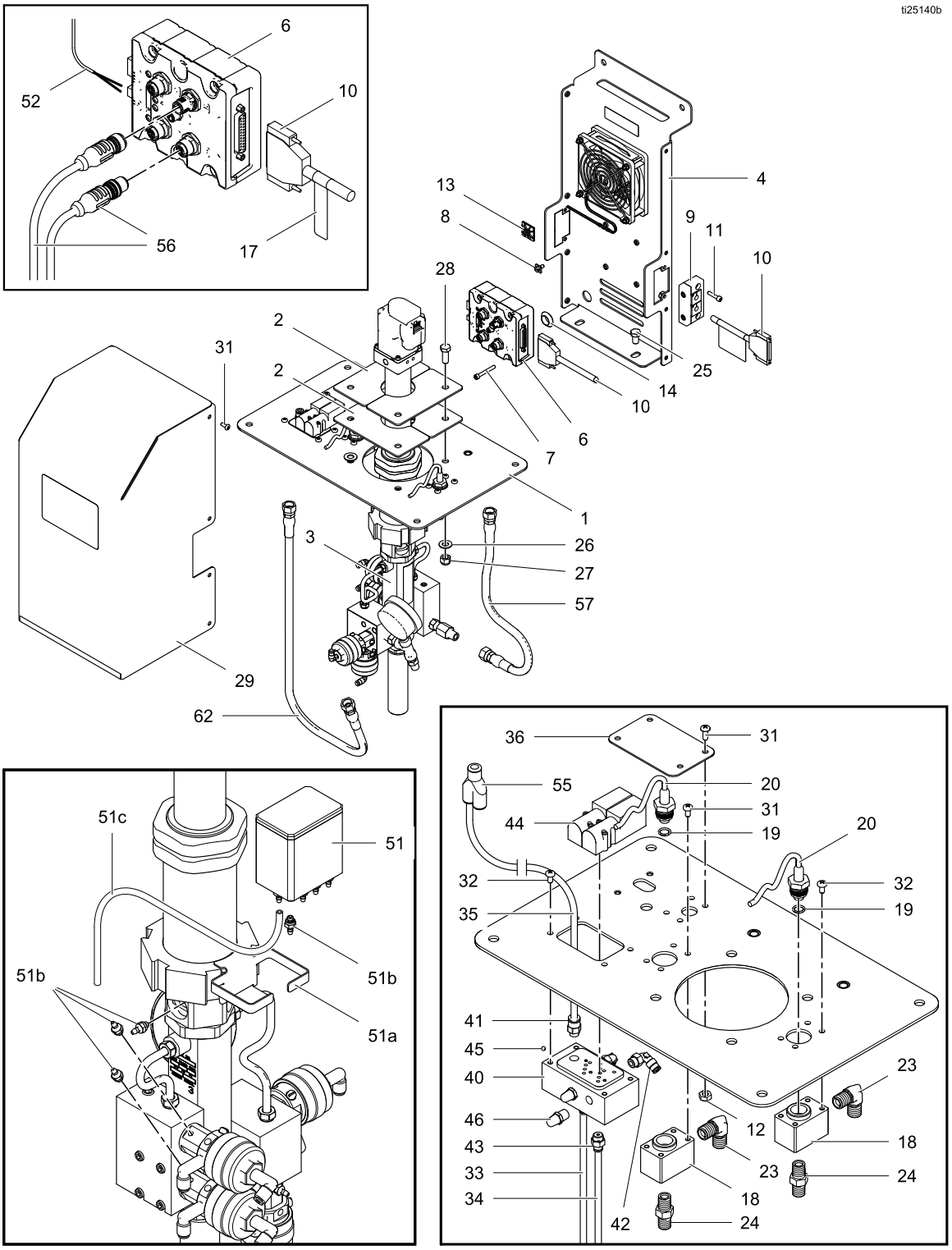


Figure 27 Electrical Schematic, Sheet 3, Hazardous Location

Pump Expansion Kit Parts



Kit 24W159, 35 cc Low Pressure Catalyst Pump (Isolated)

Kit 24W160, 70 cc Low Pressure Color Pump (Isolated)

Kit 24W277, 35 High Pressure Catalyst Pump (Isolated)

Kit 24W278, 70 cc High Pressure Color Pump (Isolated)

Ref	Part	Description	Qty
1	— — —	PLATE, isolation, pump	1
2	— — —	BRACKET, mounting	4
3	24W273	PUMP, 35 cc, B side, low pressure; for Kit 24W159; see manual 332339	1
	24W274	PUMP, 70 cc, A side, low pressure; for Kit 24W160; see manual 332339	
	24W303	PUMP, 35 cc, B side, high pressure; for Kit 24W277; see manual 332339	
	24W304	PUMP, 70 cc, A side, high pressure; for Kit 24W278; see manual 332339	
4	— — —	BRACKET, mounting, rear	1
5	24T770	KIT, fan	1
6	24N527	MODULE, control, pump	1
7	514237	SCREW, cap, socket head; 10–32 x 1.5 in. (38 mm)	4
8	— — —	SCREW, ground; M5 x 0.8	1
9	— — —	GROMMET, dual cable	2
10	16V659	CABLE, D-SUB; 25 pin; 6 ft (1.83 m)	1
11	105209	SCREW, cap, socket head; 10–32 x 7/8 in. (22 mm)	4
12	114231	NUT, lock; 10–32	4
14	121487	GROMMET, electrical, 3/4 in.	1
17	16X048	LABEL, warning	1
18	17B863	ADAPTER, bulkhead, transducer	2
19	121399	O-RING, 012, FX75	2
20		SENSOR, pressure, fluid outlet	2
	24T786	for Models 24W159 and 24W160	
	24T809	for Models 24W277 and 24W278	
23	114342	ELBOW, 1/4–18 npt(f)	2
24	121907	FITTING, nipple, 1/4 npt	2
25	100575	SCREW, cap, hex head, 3/8–16 x 5/8 in. (16 mm)	2
26	100731	WASHER, 3/8 in., stainless steel	4
27	101566	NUT, lock; 3/8–16	4
28	100101	SCREW, cap, hex head, 3/8–16 x 1 in. (25 mm)	4
29	- — — —	COVER, pump	1
31	112948	SCREW, #10–32 x 0.5 in. (13 mm)	12
32	103833	SCREW, #10–32 x 3/4 in. (19 mm)	12
33	— — —	TUBE, nylon, red; 5/32 in (4 mm) OD x 18 in. (457 mm)	6
34	- — —	TUBE, nylon, green; 5/32 in. (4 mm) OD x 18 (457 mm)	6
35	— — —	TUBE, polyethylene; 1/4 in. (6 mm) OD x 6 ft (1.83 m)	A/R
36	— — —	PLATE, cover, switch	1
40	17B861	MANIFOLD, solenoid	1
41	115671	CONNECTOR	1
42	114151	ELBOW	4
43	114263	CONNECTOR	4
44	16P812	VALVE, solenoid	2
46	C06061	MUFFLER	1
51	24T302	KIT, TSL CUP; includes 51a-51e	1
51a	— — —	BRACKET	1
51b	24U617	KIT, barbed fittings; includes o-rings; package of 12	1
51c	— — —	TUBE, polyurethane; 1/4 in. (6 mm) OD; 10 ft (3.05 m); cut to fit	1
51d	— — —	PLUG, screw; 10–32; to replace unused item 73b at TSL cup; not shown	8
51e	— — —	GASKET; for item 73d; not shown	8
52	— — —	CABLE, 2–wire	6
55	115287	Y-FITTING; 1/4 in. (6 mm) OD tubing	1
56		WIRE HARNESS	1
	24P684	for Kits 24W159 and 24W160	
	24P685	for Kits 24W277 and 24W278	

Ref	Part	Description	Qty
57	24N345	HOSE, coupled, 1.5 ft.	1
62	24N346	HOSE, coupled, 2.5 ft.	1

Items marked — — — are not available separately.

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

Notes

Dimensions

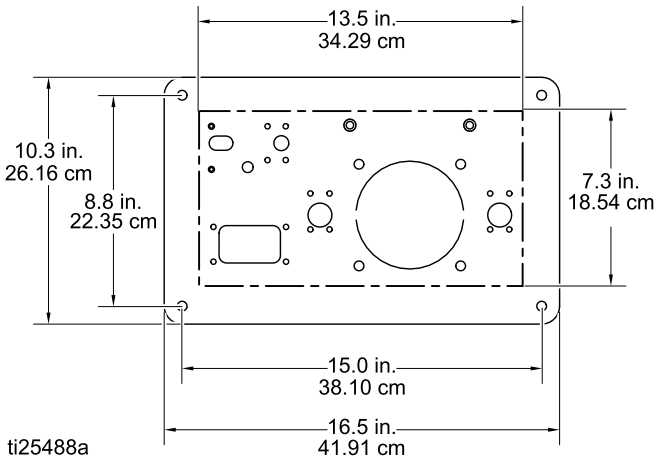


Figure 28

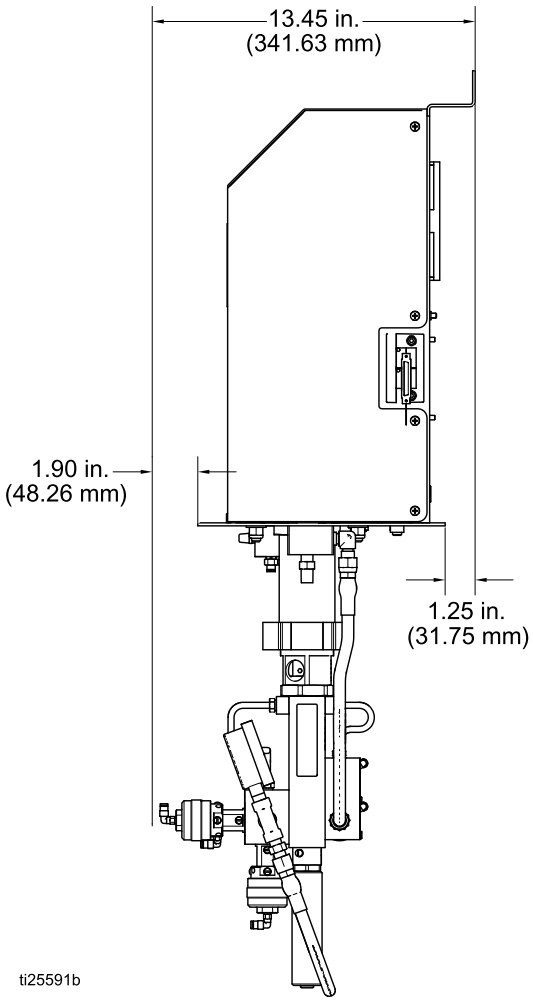


Figure 30

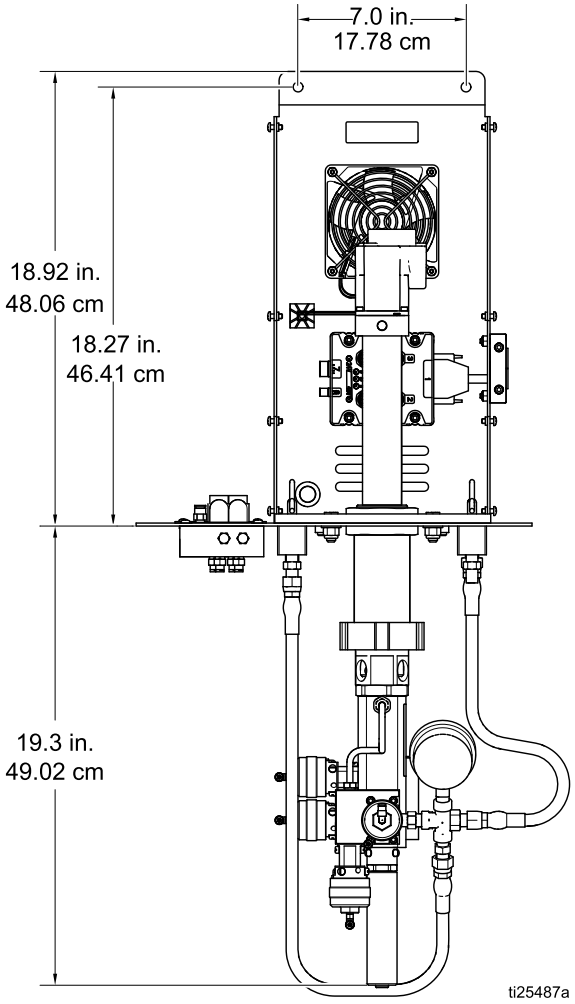


Figure 29

Technical Data

Pump Expansion Kit	U.S.	Metric
Maximum fluid working pressure:		
Kits 24W159 and 24W160	300 psi	2.1 MPa, 21 bar
Kits 24W277 and 24W278	1500 psi	10.5 MPa, 105 bar
Maximum working air pressure:	100 psi	0.7 MPa, 7.0 bar
Wetted parts:	See Pump manual 332339.	

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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

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

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.

To place an order, contact your Graco Distributor or call to identify the nearest distributor.

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

Original Instructions. This manual contains English. MM 334512

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

www.graco.com

Revision C, June 2018