



ProMix® PD2K Electronic Proportioner

3A2800K
EN

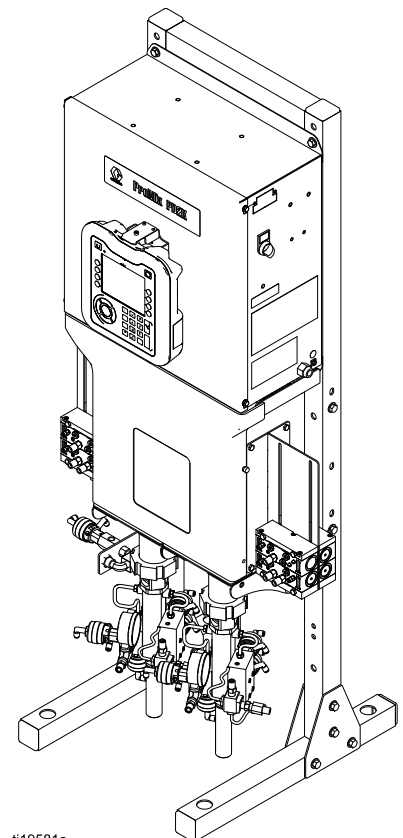
Electronic positive displacement proportioner for 2-component materials. Manual system with Advanced Display Module. For professional use only.



Important Safety Instructions

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

See page 3 for model part numbers and approvals information.

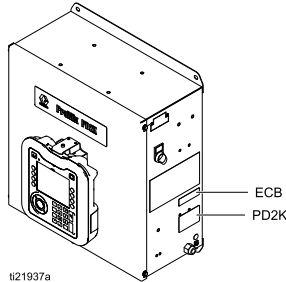


Contents

Models.....	3	Repair.....	48
Related Manuals	6	Before Servicing	48
Warnings	7	Pressure Relief Procedure.....	49
Important Isocyanate (ISO) Information.....	10	Repairing the Advanced Display Module (ADM).....	50
Important Acid Catalyst Information	12	Servicing the Control Box	51
Acid Catalyst Conditions.....	12	Servicing the Fluid Section	60
Moisture Sensitivity of Acid Catalysts	12	Parts.....	64
Troubleshooting.....	13	Proportioner Parts (Standard Models)	64
System Troubleshooting.....	13	Proportioner Parts (Dual Panel Models).....	67
Error Code Troubleshooting.....	14	Control Box Parts (Standard Models)	70
Booth Control Troubleshooting.....	27	Control Box Parts (Dual Panel Models)	73
Power Barrier Board Troubleshooting.....	28	Solenoid Manifold Parts.....	76
Isolation Board Troubleshooting.....	29	Repair Kits and Accessories.....	77
Enhanced Fluid Control Module Troubleshooting.....	30	Hose Bundles	77
Pump Module Troubleshooting	31	Mix At Belt Manifold Kits	78
Advanced Display Module Troubleshooting.....	32	IS Remote Color Change Kits	78
Electrical Schematics.....	33	Color and Catalyst Change Kits	79
Standard Models (MC1000, MC2000, MC3000, MC4000)	33	Spray Guns	79
Dual Panel Models (MC1002, MC2002, MC3002, MC4002)	40	Pump Expansion Kits	80
Optional Cables and Modules	46	Communication Kits	80
Communications Options (for PLC and AWI)	47	Upgrade Kits.....	80
		Technical Specifications.....	81


Models

See Figs. 1–7 for component identification labels, including approval information and certification.


Part No.	Series	Maximum Air Working Pressure	Maximum Fluid Working Pressure	Location of PD2K and Electrical Control Box (ECB) Labels
MC0500 MC0502	A	100 psi (0.7 MPa, 7.0 bar)	With low-pressure pumps: 300 psi (2.068 MPa, 20.68 bar) With high-pressure pumps: 1500 psi (10.34 MPa, 103.4 bar)	 <p>ECB PD2K</p> <p>tt21937a</p>
MC1000 MC1002	A	100 psi (0.7 MPa, 7.0 bar)	300 psi (2.068 MPa, 20.68 bar)	
MC3000 Acid-based Material				
MC2000 MC2002	A	100 psi (0.7 MPa, 7.0 bar)	1500 psi (10.34 MPa, 103.4 bar)	
MC4000 MC4002 Acid-based Material				




**ProMix® PD
Electronic Proportioner**

 **CE** 0359

II 2 G
Ex ia IIA T3
FM13 ATEX 0026
IECEX FMG 13.0011



 APPROVED

FM16US0241
FM16CA0129
Intrinsically safe
equipment for Class I,
Div 1, Group D, T3
Ta = 2°C to 50°C

Intrinsically Safe (IS) System. Install per IS Control Drawing No. 16P577. Control Box IS Associated Apparatus for use in non hazardous location, with IS Connection to color change and booth control modules Apparatus for use in: Class I, Division 1, Group D T3 Hazardous Locations

Read Instruction Manual
Warning: Substitution of components may impair intrinsic safety.

MAX AIR WPR

.7	7	100
MPa	bar	PSI

MAX FLUID WPR


2.068	20.68	300
MPa	bar	PSI

MAX TEMP 50°C (122°F)

Artwork No. 294021 Rev. G

PART NO.	SERIES	SERIAL

MFG. YR.



GRACO INC.
P.O. Box 1441
Minneapolis, MN
55440 U.S.A.

Figure 1 Model MC1000, MC1002, & MC3000 (Low Pressure) Identification Label

Continued on the next page.

ProMix® PD			POWER REQUIREMENTS	
PART NO.	SERIES NO.	MFG. YR.	VOLTS	90-250 ~
[]	[]	[]	AMPS	7 AMPS MAX
			50/60 Hz	
GRACO INC. P.O. Box 1441 Minneapolis, MN 55440 U.S.A.		APPROVED FM16US0241 FM16CA0129	Intrinsic safe connections for Class I, Div 1, Group D Ta = 2°C to 50°C Install per 16P577 Um: 250 V	
		II (2) G [Ex ia] IIA Gb FM13 ATEX 0026 IECEx FMG 13.0011	0359	

Figure 2 24M672 & 26A188 Control Box Identification Label

ProMix® PD			Electronic Proportioner	
II 2 G Ex ia IIA T3 FM13 ATEX 0026 IECEx FMG 13.0011	0359	APPROVED FM16US0241 FM16CA0129	Intrinsic safe connections for Class I, Div 1, Group D Ta = 2°C to 50°C Install per 16P577	
Intrinsic safe equipment for Class I, Div 1, Group D, T3 Ta = 2°C to 50°C		Intrinsic safe connections for Class I, Div 1, Group D, T3 Ta = 2°C to 50°C		
MAX AIR WPR				
.7	7	100		
MPa	bar	PSI		
MAX FLUID WPR				
10.34	103.4	1500		
MPa	bar	PSI		
MAX TEMP 50°C (122°F)				
			Intrinsic Safe (IS) System. Install per IS Control Drawing No. 16P577. Control Box IS Associated Apparatus for use in non hazardous location, with IS Connection to color change and booth control modules Apparatus for use in: Class I, Division 1, Group D T3 Hazardous Locations Read Instruction Manual Warning: Substitution of components may impair intrinsic safety.	
PART NO.		SERIES		SERIAL
[]		[]		[]
MFG. YR.				
[]		GRACO INC. P.O. Box 1441 Minneapolis, MN 55440 U.S.A.		

Figure 3 Model MC2000 & MC2002 (High Pressure) Identification Label

ProMix® PD				COLOR CHANGE CONTROL		
PART NO.	SERIES	SERIAL	MFG. YR.	MAX AIR WPR		
[]	[]	[]	[]	.7	7	100
				MPa	bar	PSI
GRACO INC. P.O. Box 1441 Minneapolis, MN 55440 U.S.A.				294057d		

Figure 4 Non-Intrinsically Safe Color Change Control (Accessory) Identification Label

ProMix® PD				COLOR CHANGE CONTROL		
PART NO.	SERIES	SERIAL	MFG. YR.	MAX AIR WPR		
[]	[]	[]	[]	.7	7	100
				MPa	bar	PSI
APPROVED FM16US0241 FM16CA0129		Intrinsic safe equipment for Class I, Div 1, Group D, T3 Ta = 2°C to 50°C Install per 16P577		II 2 G Ex ia IIA T3 Gb FM13 ATEX 0026 IECEx FMG 13.0011		0359
				GRACO INC. P.O. Box 1441 Minneapolis, MN 55440 U.S.A.		

Figure 5 Intrinsically Safe Color Change Control (Accessory) Identification Label

Continued on the next page.

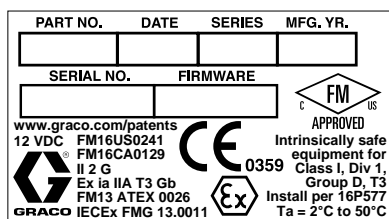


Figure 6 Booth Control Identification Label

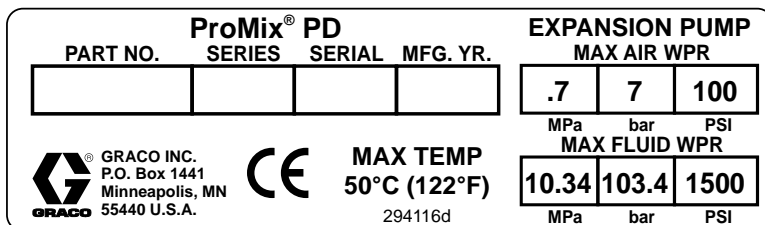


Figure 7 Pump Expansion Kit (Accessory) Identification Label








Related Manuals

Manual No.	Description
332457	PD2K Proportioner Installation Manual, Manual Systems
332562	PD2K Proportioner Operation Manual, Manual Systems
3A4186	PD2K Dual Panel Proportioner Operation Manual, Manual Systems
3A2801	Mix Module Instructions-Parts Manual
3A6237	ProMix PD3K+ Electronic Proportioner Operation Manual
332339	Pump Repair-Parts Manual

Manual No.	Description
332454	Color Change Valve Repair-Parts Manual
332455	Color Change Kits Instructions-Parts Manual
332456	3rd and 4th Pump Kits Instructions-Parts Manual
334512	PD1K Pump Expansion Kits Instructions-Parts Manual
3A4497	Air Control Module Kit Instructions Manual











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 symbol refers 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.

 <h2 style="margin: 0;">WARNING</h2>	
   	<p>FIRE AND EXPLOSION HAZARD</p> <p>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:</p> <ul style="list-style-type: none"> • 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). • 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 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.
 	<p>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power 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

  	<p>INTRINSIC SAFETY</p> <p>Intrinsically safe equipment that is installed improperly or connected to non-intrinsically safe equipment will create a hazardous condition and can cause fire, explosion, or electric shock. Follow local regulations and the following safety requirements.</p> <ul style="list-style-type: none"> • Be sure your installation complies with national, state, and local codes for the installation of electrical apparatus in a Class I, Group D, Division 1 (North America) or Class I, Zones 1 and 2 (Europe) Hazardous Location, including all of the local safety fire codes (for example, NFPA 33, NEC 500 and 516, OSHA 1910.107, etc.). • To help prevent fire and explosion: <ul style="list-style-type: none"> • Do not install equipment approved only for a non-hazardous location in a hazardous location. See model ID label for the intrinsic safety rating of your model. • Do not substitute system components as this may impair intrinsic safety. • Equipment that comes in contact with the intrinsically safe terminals must be rated for Intrinsic Safety. This includes DC voltage meters, ohmmeters, cables, and connections. Remove the unit from the hazardous area when troubleshooting.
    	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • 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.
 	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> • Keep clear of moving parts. • Do not operate equipment with protective guards or covers removed. • Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.



WARNING



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 Safety Data Sheet (SDS) 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 reactions; 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.



EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.




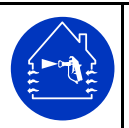


- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request SDS 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 manual 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 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 SDS.
- 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.

Material Self-ignition

				
---	--	--	--	--

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

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

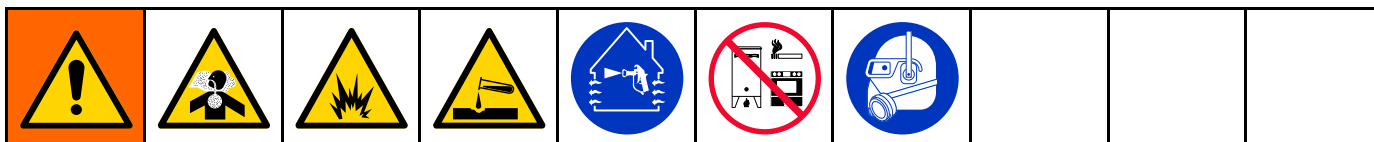
Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

- 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.

Important Acid Catalyst Information

The PD2K MC3000 and MC4000 Proportioner is designed for acid catalysts (“acid”) currently used in two-component, wood-finishing materials. Current acids in use (with pH levels as low as 1) are more corrosive than earlier acids. More corrosion-resistant wetted materials of construction are required, and must be used without substitution, to withstand the increased corrosive properties of these acids.

Acid Catalyst Conditions



Acid is flammable, and spraying or dispensing acid creates potentially harmful mists, vapors, and atomized particulates. To help prevent fire and explosion and serious injury:

- Read and understand the acid manufacturer’s warnings and Safety Data Sheet (SDS) to know specific hazards and precautions related to the acid.
- Use only genuine, manufacturer’s recommended acid-compatible parts in the catalyst system (hoses, fittings, etc). A reaction may occur between any substituted parts and the acid.
- To prevent inhalation of acid 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 acid manufacturer’s SDS.
- Avoid all skin contact with acid. Everyone in the work area must wear chemically impermeable gloves, protective clothing, foot coverings, aprons, and face shields as recommended by the acid manufacturer and local regulatory authority. Follow all acid manufacturer recommendations, including those regarding handling of contaminated clothing. Wash hands and face before eating or drinking.
- Regularly inspect equipment for potential leaks and remove spills promptly and completely to avoid direct contact or inhalation of the acid and its vapors.
- Keep acid away from heat, sparks, and open flames. Do not smoke in the work area. Eliminate all ignition sources.
- Store acid in the original container in a cool, dry, and well-ventilated area away from direct sunlight and away from other chemicals in accordance with acid manufacturer’s recommendations. To avoid corrosion of containers, do not store acid in substitute containers. Reseal the original container to prevent vapors from contaminating the storage space and surrounding facility.

Moisture Sensitivity of Acid Catalysts

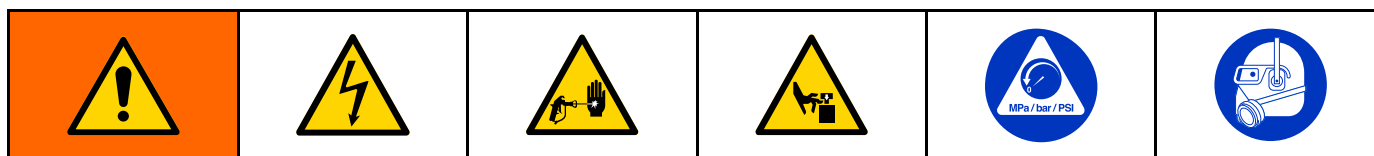
Acid catalysts can be sensitive to atmospheric moisture and other contaminants. It is recommended the catalyst pump and valve seal areas exposed to atmosphere are flooded with ISO oil, TSL, or other compatible material to prevent acid build-up and premature seal damage and failure.

NOTICE

Acid build-up will damage the valve seals and reduce the performance and life of the catalyst pump. To prevent exposing acid to moisture:

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. Never store acids in an open container.
- Keep the catalyst pump and the valve seals filled with the appropriate lubricant. The lubricant creates a barrier between the acid and the atmosphere.
- Use only moisture-proof hoses compatible with acids.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

Troubleshooting



NOTE: Check all possible remedies before disassembling the system.

System Troubleshooting

Problem	Cause	Solution
Unit will not operate.	Inadequate power supply.	See Technical Specifications, page 81.
	Power switch is off.	Turn switch on.
	Main power is shut off.	Turn main power switch on.
	Exhausted fluid supply.	Refill and reprime pump.
	Clogged fluid outlet line, valves, etc.	Clear.
	Fluid dried on piston rod.	Disassemble and clean pump. See pump manual. In future, stop pump at bottom of stroke.
Pump output low on both strokes.	Inadequate power supply.	See Technical Specifications, page 81.
	Exhausted fluid supply.	Refill and reprime pump.
	Clogged fluid outlet line, valves, etc.	Clear.
	Worn piston packings.	Replace. See pump manual.
Pump output low on only one stroke.	Held open or worn dosing valves.	Check and repair. See valve manual.
	Worn piston packing.	Replace. See pump manual.
No output.	Improperly installed dosing valves.	Check solenoid connections to valves. See pump manual.
Pump operates erratically.	Exhausted fluid supply.	Refill and reprime pump.
	Held open or worn dosing valves.	Check and repair. See pump manual.
	Worn piston packing.	Replace. See pump manual.

Error Code Troubleshooting

System errors alert you of a problem and help prevent off-ratio spraying. There are three types: Advisory, Deviation, and Alarm.

NOTE: ProMix Dual Mix Systems (MC0502, MC1002, MC2002, MC3002, and MC4002) as well as ProMix PD3K+ Systems, have most of the same error codes as the ProMix PD2K. However, there are some unique codes that apply to each system, and in the case of Dual Mix, codes are specific to one of two mix units. Refer to the ProMix Dual Mix Operation Manual or PD3K+ Operation Manual for a complete list of error codes. See [Related Manuals, page 6](#).

An **Advisory** records an event in the system, and will clear itself after 60 seconds. The four-digit error code will be followed by “-V”.

A **Deviation** records an error in the system but does not shut down the equipment. The deviation must be acknowledged by the user. The four-digit error code will be followed by “-D”.

If an **Alarm** occurs, operation stops. The four-digit error code will be followed by “-A”.

If any of the three system error types occur:

- Alarm buzzer sounds (unless in silent mode).
- Alarm popup screen shows the active alarm code.
- Status bar on the Advanced Display Module shows the active alarm code.
- Alarm is saved in the date/time stamped log.


NOTE: A **Record** saves relevant system events in the background. These are informational only and can be reviewed on the Events screen, which displays the 200 most recent events, with date, time, and description.

NOTE: When an error occurs be sure to determine the code before resetting it. If you forget which code occurred, the Errors screen displays the 200 most recent errors, with date, time, and description.

NOTE: In some error codes listed below, a # symbol is shown as the last digit. This symbol represents the applicable pump number, which can vary. The unit’s display will show the applicable pump number as the last digit in the code.

On-Screen Help

When a system alarm occurs, a help screen is available to provide timely and relevant troubleshooting information for the user. On the

alarm popup screen, press  to access the help screens. The help screens may also be accessed at any time by going to the Errors Screen and selecting an alarm in the log.

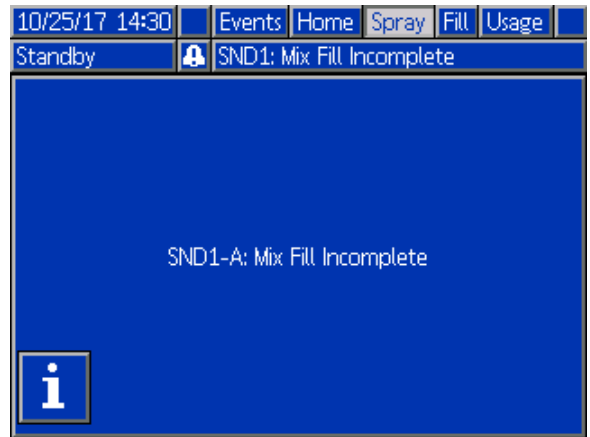



Figure 8 Alarm Popup Screen

All alarms have a QR code screen. A mobile device with internet access and a QR reader may use the QR code to access additional information on a webpage hosted by help.graco.com.



Figure 9 Error QR Code Screen

A number of the alarms that are most likely to be encountered during typical operation have detailed troubleshooting information screens. The troubleshooting screens will replace the QR code screen, though the QR code may still be accessed by

pressing .

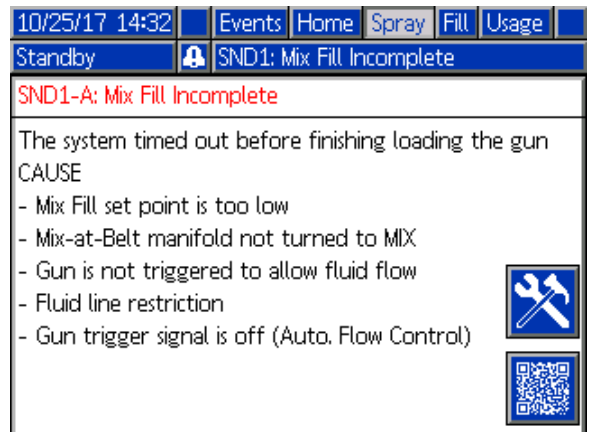


Figure 10 Error Troubleshooting Screen

Purge Errors

Code	Type	Description	Problem	Cause	Solution
ETD1	Deviation	Autodump Color (A) Passed	System has completed an auto dump of the contents from the pump all the way out to the gun.	Potlife time has expired and the system was not purged, so the system refilled with color.	No action required.
ETE0	Record	Purge Not Complete	The system was unable to complete a purge sequence.	An indication that the system either could not complete or was interrupted before completing a gun purge.	No action required.
ET01	Alarm	Autodump Failed	Potlife time has expired and the system attempted to flush the mixed material contents out of the gun. The solvent flow meter or solvent flow switch did no indicate any flow taking place during the attempted purge.	Solvent flow switch not working.	Replace the switch.
				Gun is not in gun flush box.	Ensure the gun is replaced in the gun flush box and cover is closed when not in use.
ETS1	Deviation	Autodump Solvent Passed	System has completed an auto dump of the gun contents only.	Potlife time has expired and the system was not purged, so the system performed an autodump with solvent.	No action required.
F7P1	Alarm	Air Flow Switch On	The air flow switch is indicating unexpected atomizing air flow.	Air flow switch is stuck in flow position.	Clean or replace switch.
				Leak downstream in air line or fitting.	Check for leaks and tighten fittings.
				Air supply pressure fluctuation.	Eliminate pressure fluctuations.
SGD1	Alarm	Gun Flush Box Open	GFB was left open when the system was trying to attempt a purge.	Gun is not in gun flush box.	Ensure the gun is replaced in the gun flush box and cover is closed when not in use.
				GFB pressure switch not wired/working.	Double check that the pressure switch is wired properly to the EFCM.
SPD1	Alarm	Gun Purge Incomplete	The system timed out without reaching the user-specified volume of solvent for a purge.	Solvent flow switch not working.	Replace switch.
				Solvent flow is too low to actuate the solvent switch.	Increase solvent pressure to drive a high purge flow rate
				Gun is not triggered.	Operator must continue flushing for configured time, until the booth control indicates purge is completed.
				Mix manifold was not set to flush position, blocking solvent flow to the spray gun.	Set manifold to flush position.

Mix Errors

Code	Type	Description	Problem	Cause	Solution
F7S1	Alarm	Flow Detected Solvent Gun	The solvent flow switch is indicating unexpected solvent flow.	Solvent flow switch is stuck in flow position.	Clean or replace switch.
				There is a leak through the solvent cutoff valve.	Check for leaks and repair valve.
F7S2	Alarm	Flow Detected Solvent Mix	The solvent flow switches indicate that both are flowing solvent at the same time. *This only applies to systems with mix-at-wall.	One or both solvent flow switches are stuck in flow position.	Clean or replace the switch(es).
				There is a leak through one or both of the solvent cutoff valves.	Check for leaks and repair valve(s).
QPD1	Alarm, then Deviation	Potlife Expired	Potlife time has expired before the system has moved the required amount of material (potlife volume) through the mixed material line.	Purge process was not completed.	Make sure purge process is completed.
				Solvent supply shut off or empty.	Verify solvent supply is available and on, supply valves are open.
QP##	Deviation	Potlife Expired Recipe ##	Potlife time has expired before the system has moved the required amount of material (potlife volume) through the mixed material line in an inactive gun loaded with recipe ##. *This only applies to systems with multiple guns.	An inactive gun has mixed material for recipe ## loaded and has not dispensed enough material in the required amount of time.	Purge the inactive gun.
SND1	Alarm	Mix Fill Incomplete	The system timed out before the mix fill cycle loaded the gun with mixed material.	Mix manifold not set to spray position.	Set manifold to spray.
				Spray gun was not triggered.	Allow flow through gun during fill process until the fill complete LED stops flashing.
				Restrictions in mixer, manifold, or spray gun.	Fix restrictions.

Pumping Errors

NOTE: In some error codes listed below, a # symbol is shown as the last digit. This symbol represents the applicable component number, which can vary. The unit's display will show the applicable number as the last digit in the code. For example, the F1S# code listed in this table will be displayed as F1S1 if the affected component is pump 1, F1S2 for pump 2, and so on.

Code	Type	Description	Problem	Cause	Solution
DA0#	Alarm	Exceeded Maximum Flow Pump #	Pump was driven to its maximum allowed speed.	System has a leak or open valve that is allowing unrestricted flow.	Inspect system for leaks.
				Pump is cavitating, cycling without restriction.	Verify that the pump is being supplied with material.
				Viscosity of material is too thin for nozzle size.	Reduce nozzle size to create more restriction. Reduce paint pressure to lower the flow rate.
				System pressure or Flow Setpoint is too high (causing the pump to work too hard).	Reduce the pressure or the Flow Setpoint.
DE0#	Alarm	Leak Detected Pump #	This is a manual stall test failure when the pump cannot build pressure to the target "Stall Test Pressure." Will fault after 30 seconds.	No material in the pump or line.	Make sure the pump and down stream color line are loaded with material.
				Leak in the system.	Determine if leak is external or internal by visually inspecting the system for fluid leakage. Fix all loose or worn hoses, fittings, and seals. Inspect all valve seats and needles for wear, and replace worn piston or throat seals.
DF0#	Alarm	No Stall Up Pump #	Pump failed the stall test; did not stall on the upstroke.	Valve failure, seal failure, worn rod or cylinder.	Replace inlet and outlet valve and seal for up stroke. Replace piston and throat seals. Replace rod and cylinder as necessary.
DG0#	Alarm	No Stall Down Pump #	Pump failed the stall test; did not stall on the downstroke.	Valve failure, seal failure, worn rod or cylinder.	Replace inlet and outlet valve and seal for down stroke. Replace piston and throat seals. Replace rod and cylinder as necessary.
DH0#	Alarm	No Stall Pump #	Pump failed the stall test; did not stall on either the upstroke or the downstroke.	Valve failure, seal failure, worn rod or cylinder.	Replace inlet and outlet valve and seal for up and down strokes. Replace piston and throat seals. Replace rod and cylinder as necessary.

Troubleshooting

Code	Type	Description	Problem	Cause	Solution
DKD#	Alarm	Position Failed Pump #	Pump was unable to reach it's drive position.	Not enough air is supplied to the dosing valves.	Ensure that at least 85 PSI is being supplied to the dosing valves.
				The pressure at the pump outlet is too high.	Check for an obstruction downstream of the pump that would increase pressure. Ensure the feed pressure is within 1/2 – 1/3 of the target pressure.
DKF#	Alarm	Position Overspeed Pump #	Pump moved beyond it's drive position.	The pump was knocked out of position.	There is no fluid pressure at the outlet of the pump, run the pump at a lower pressure to fill the lines. Check that the feed pressure is not more than 1/2 – 1/3 greater than the target pressure.
EBH#	Record	Home Complete Pump #	Record of pump homing is complete.	An indication on the display that the pump completed the home function	No action required.
EF0#	Alarm	Timeout Startup Pump #	Pump tried but was not able to move to the home position within a specified amount of time.	Pump dose valves did not actuate.	Verify air pressure to solenoid valves. Verify the valves are actuating.
				Motor could not drive pumps and linear actuator.	Verify motor is driving the pump.
				Pump stroke length is shortened by mechanical system tolerance.	Verify correct assembly of linear actuator and pump piston rods. See pump manual.
EF1#	Alarm	Timeout Shutdown Pump #	Pump tried but was not able to move to the park position within a specified amount of time.	Pump dose valves did not actuate.	Visually inspect valves to ensure they are operating properly; verify they have air pressure above 85 psi (0.6 MPa, 6.0 bar).
				Pump is filled with thick paint and could not drive piston to end of stroke. Motor or drive is worn or damaged.	Observe motor and drive assembly to verify that the motor is generating force.
ETD#	Record	Auto Pressure Relief Pump #	Record of pump completing an auto pressure relief.	Pump outlet pressure exceeded relief threshold.	No action required.
F1D#	Alarm	Flow Low Mix Pump #	The pump was unable to maintain it's target flow rate.	There is a restriction in the hose or gun that is preventing the pump from dispensing at it's target rate.	Check that the gun is triggered and for restrictions in the hose.

Code	Type	Description	Problem	Cause	Solution
F1F#	Alarm	Flow Low Fill Pump #	There has been no flow or low flow during a pump fill operation.	There is a restriction on the outlet side of the pump or color stack.	Make sure there are no restrictions in the color stack and that the dump valve is actuating.
				Thick viscosity paint requires more pressure to pump.	Increase non-mix pressure if necessary to create flow during the fill function.
				The pumps do not have to move for the system to build enough pressure to meet the setpoint.	Increase non-mix pressure if necessary to create flow during the fill function.
F1S#	Alarm	Flow Low Purge Pump #	There has been no flow or low flow during a pump purge operation.	Restriction in the outlet side of the pump or color stack resulting in the solvent flow being too low.	Make sure there are no restrictions in the system. Increase non-mix pressure if necessary to create flow during the purge function.
F7D#	Alarm	Flow Detected Pump #	The pump flow exceeded 20 cc/min flow coming into Idle mode.	There is a leak in the system or the gun was open when the system went into Idle mode.	Verify there are no leaks in the system. Make sure the air flow switch is actuating properly. Do not trigger the gun without atomizing air.
F8D1	Alarm	Flow Not Detected	No flow while mixing.	Restriction in the outlet side of the pump or color stack.	Make sure there are no restrictions in the system.
F9D#	Alarm	Flow Unstable Pump #	The pump flow rate did not stabilize while entering Idle mode.	Potential leak in the system.	Check the system for leaks and run manual stall test.
SAD1	Alarm	Atomizing Solvent	Air flow switch is active while solvent, diluted material, or an unknown material is in the gun.	Atomizing air supply was not shut off before purging or filling spray gun.	Make sure atomizing air is shut off before purging or filling the spray gun. Use an AA cutoff valve on the atomizing air supply.

Pressure Errors

NOTE: In some error codes listed below, a # symbol is shown as the last digit. This symbol represents the applicable component number, which can vary. The unit's display will show the applicable number as the last digit in the code. For example, the P6F# code listed in this table will be displayed as P6F1 if the affected component is pump 1, P6F2 for pump 2, and so on.

Code	Type	Description	Problem	Cause	Solution
P1F#	Alarm	Pressure Low Inlet Pump #	The inlet pressure on pump # is less than the user-entered alarm limit.		Increase inlet pressure.
P2F#	Deviation	Pressure Low Inlet Pump #	The inlet pressure on pump # is less than the user-entered deviation limit.		Increase inlet pressure.
P3D#	Deviation	Pressure High Outlet Pump #	The outlet pressure on pump # is greater than the user entered deviation limit.		Relieve system pressure.
P3F#	Deviation	Pressure High Inlet Pump #	The inlet pressure on pump # is greater than the user-entered deviation limit.		Decrease inlet pressure.
P4D#	Alarm	Pressure High Outlet Pump #	The outlet pressure on pump # is greater than the user entered alarm limit.		Relieve system pressure.
P4F#	Alarm	Pressure High Inlet Pump #	The inlet pressure on pump # is greater than the user-entered alarm limit.		Decrease inlet pressure.
P4P#	Alarm	Pressure High Supply Pump #	The supply pump fluid pressure for pump # is greater than 90% of the user-entered Stall Test Pressure.	The supply pump pressure is too high.	Check supply for pump #, decrease supply pressure.
P6D#	Alarm	Press. Sens. Removed Outlet #	No outlet pressure transducer is detected when the system is expecting one.	Disconnected transducer.	Verify transducer is connected properly. Replace if reconnecting does not eliminate the alarm.
P6F#	Alarm	Press. Sens. Removed Inlet #	No inlet pressure transducer is detected when the system is expecting one.	Disconnected transducer.	Verify transducer is connected properly. Replace if reconnecting does not eliminate the alarm.
P9D#	Alarm	Press. Sens. Failed Outlet #	Outlet pressure transducer has failed.	Outlet pressure transducer has failed or the pressure is above the readable range.	Relieve system pressure. Verify connections, or replace if reconnecting does not eliminate the alarm.
P9F#	Alarm	Press. Sens. Failed Inlet #	Inlet pressure transducer has failed.	Inlet pressure transducer has failed or the pressure is above the readable range.	Relieve system pressure. Verify connections, or replace if reconnecting does not eliminate the alarm.

Code	Type	Description	Problem	Cause	Solution
QADX	Alarm	Differential Pressure A Over B	Low differential pressure. This alarm is active only during Mix mode.	There is a leak on the B side.	Check the system for internal and external leaks on all catalyst manifolds and plumbing.
				The B side pump is cavitating.	Check paint supply on the B side, increase paint supply pressure.
QBDX	Alarm	Differential Pressure B Over A	High differential pressure. This alarm is active only during Mix mode.	There is a leak on the A side.	Check the system for internal and external leaks on all color manifolds and plumbing.
				The A side pump is cavitating.	Check paint supply on the A side, increase paint supply pressure.

System Errors

Code	Type	Description	Problem	Cause	Solution
EB00	Record	Stop Button Pressed	Record of a stop button press.	Indicates system stop key on ADM was pressed.	n/a
EBIX	Record	Pumps Off Button Pressed	Record of a pump power off button press.	Indicates pump power key o ADM pressed to power down pumps.	n/a
EC00	Record	Setup Value(s) Changed	Record of changing setup variables.	Indicates date and time when setup values were changed.	n/a
EL00	Record	System Power On	Record of power cycle (ON).	Indicates date and time when system was started.	n/a
EM00	Record	System Power Off	Record of power cycle (OFF).	Indicates date and time when system was turned off.	n/a
EMIX	Advisory	Pump Off	The pumps are not powered and are unable to move.	Pump power was turned off or an error occurred.	Start pumps by pressing pump start key on Advanced Display module.
EP0X	Record	Auto Pump Parked	Record of pumps being auto parked.	The auto park operation was completed.	No action required.
ES00	Advisory	Factory Defaults	Record of defaults being loaded.		n/a
WSN1	Alarm	Config Error Color	A color defined for the system is not assigned to any gun. *This only applies to systems with multiple guns.	One or more colors is missing a valid gun assignment.	Ensure all colors for all color pumps have a gun assigned to them on Pump Screen 4.
WSN2	Alarm	Config Error Catalyst	A catalyst defined for the system has an invalid gun assignment. *This only applies to systems with multiple guns.	One or more catalyst is missing a valid gun assignment.	Ensure all catalysts for all catalyst pumps have a gun assigned to them on Pump Screen 4.
				Too many catalyst gun assignments exist.	The total number of catalyst gun assignments for the system may not exceed four.

Communication Errors

NOTE: In some error codes listed below, a # symbol is shown as the last digit. This symbol represents the applicable component number, which can vary. The unit's display will show the applicable number as the last digit in the code. For example, the CAC# code listed in this table will be displayed as CAC1 if the affected component is color change board 1, CAC2 for board 2, and so on.

Code	Type	Description	Problem	Cause	Solution
CA0X	Alarm	Comm. Error ADM	System does not detect the Advanced Display Module (ADM).	This communication error indicates that the Network has lost communication with the Advanced Display Module.	Check CAN cable connecting ADM to the EFCM.
CAC#	Alarm	Comm. Error Color Change #	System does not detect the Color Change Module #.	This communication error indicates that the network has lost communication with the Color Change Module #.	Check CAN cable connections to the Color Change Module # and any interconnected modules.
CADX	Alarm	Comm. Error Fluid Module	System does not see the Enhanced Fluid Control Module (EFCM).	This communication error indicates that the Network has lost communication with the EFCM.	Check CAN cables connecting ADM to the EFCM. Replace Cable or EFCM as necessary.
CAGX	Alarm	Comm. Error Gateway	System does not detect a CGM that was registered as being connected at power up.		
CAG#	Alarm	Comm. Error Modbus Gateway	System does not detect a Modbus CGM that was registered as being connected at power up.	The Modbus CGM address dial was changed while the system was powered up.	Unplug the Modbus CGM from the CAN network and re-plug it back in so that it re-registers with the new address.
				The Modbus CGM is not connected/failed.	Check that the Modbus CGM is properly connected to the CAN network and it's LEDs indicate it is powered.
CANX	Alarm	Comm. Error Booth Control	System does not detect the Booth Control Module.	This communication error indicates that the network has lost communication with the Booth Control.	Check CAN cable connecting the Booth Control to the network.
CDC#	Alarm	Duplicate Color Change #	System detects two or more identical Color Change Modules.	More than one Color Change Module with the same address is connected in the system .	Check the system and remove the extra color change module.
CDDX	Alarm	Duplicate Fluid Module	System sees two or more identical Enhanced Fluid Control Modules (EFCM).	More than one EFCM is connected in the system.	Check the system and remove the extra EFCM.
CDNX	Alarm	Duplicate Booth Control	System detects two or more identical Booth Control Modules.	More than one Booth Control Module is connected in the system.	Remove the extra Booth Control Module.

USB Errors

Code	Type	Description	Problem	Cause	Solution
EAUX	Advisory	USB Busy	USB drive is inserted, download is in progress.	Indicates USB port is uploading or downloading data.	Wait for USB Idle.
EBUX	Record	USB Drive Removed	USB drive was removed while downloading or uploading.	Downloading/uploading data on USB was interrupted by the USB device being removed.	Replace the USB device and begin process again.
EQU0	Advisory	USB Idle	USB download completed, drive may be removed.	Data transfer is completed to the USB device.	Remove USB device from ADM.
EQU1	Record	USB Sys. Settings Downloaded	Settings were downloaded to USB drive.	User installed USB device in ADM USB port.	n/a
EQU2	Record	USB Sys. Settings Uploaded	Settings were uploaded from USB drive.	User installed USB device in ADM USB port.	n/a
EQU3	Record	USB Custom Lang. Downloaded	Custom language was downloaded to USB drive.	User installed USB device in ADM USB port.	n/a
EQU4	Record	USB Custom Lang. Uploaded	Custom language was uploaded from USB drive.	User installed USB device in ADM USB port.	n/a
EQU5	Record	USB Logs Downloaded	Data logs were downloaded to USB drive.	User installed USB device in ADM USB port.	n/a
EVUX	Advisory	USB Disabled	USB drive has been inserted, downloading is disabled.	Configuration of system is blocking data transfer.	Change configuration to enable USB download function.
MMUX	Advisory	Maint. USB Logs Full	USB memory is more than 90% full.	Configuration parameter on system is enabled to generate this advisory.	Complete download to ensure no data is lost.
WSUX	Advisory	USB Config. Err.	USB configuration file does not match expected; checked on startup.	A software update was not completed successfully.	Reinstall software.
WXUD	Advisory	USB Download Err.	An error occurred while downloading to the USB drive.	User installed incompatible USB device in ADM USB port.	Repeat process with compatible USB device.
WXUU	Advisory	USB Upload Err.	An error occurred while uploading from the USB drive.	User installed incompatible USB device in ADM USB port.	Repeat process with compatible USB device.

Miscellaneous Errors

NOTE: In some error codes listed below, a # symbol is shown as the last digit. This symbol represents the applicable component number, which can vary. The unit's display will show the applicable number as the last digit in the code. For example, the B9D# code listed in this table will be displayed as B9D1 if the affected component is pump 1, B9D2 for pump 2, and so on.

Code	Type	Description	Problem	Cause	Solution
B9A0	Advisory	Volume Rollover A Current	Batch counter for material A rolled over.	The totalizer has reached maximum capable value and started over at zero.	n/a
B9AX	Advisory	Volume Rollover A Lifetime	Grand total counter for material A rolled over.	The totalizer has reached maximum capable value and started over at zero.	n/a
B9B0	Advisory	Volume Rollover B Current	Batch counter for material B rolled over.	The totalizer has reached maximum capable value and started over at zero.	n/a
B9BX	Advisory	Volume Rollover B Lifetime	Grand total counter for material B rolled over.	The totalizer has reached maximum capable value and started over at zero.	n/a
B9D#	Advisory	Volume Rollover Pump #	Grand total counter for pump # rolled over.	The totalizer has reached maximum capable value and started over at zero.	n/a
B9S0	Advisory	Volume Rollover Solvent Current	Batch counter for solvent rolled over.	The totalizer has reached maximum capable value and started over at zero.	n/a
B9SX	Advisory	Volume Rollover Solvent Lifetime	Grand total counter for solvent rolled over.	The totalizer has reached maximum capable value and started over at zero.	n/a
WX00	Alarm	Software Errors	An unexpected software error has occurred.		Call Graco technical support.

Calibration Errors

NOTE: In some error codes listed below, a # symbol is shown as the last digit. This symbol represents the applicable component number, which can vary. The unit's display will show the applicable number as the last digit in the code. For example, the ENT# code listed in this table will be displayed as ENT1 if the affected component is pump 1, ENT2 for pump 2, and so on.

Code	Type	Name	Description
END#	Record	Calibration Pump #	A calibration test was run on the pump.
ENS0	Record	Calibration Solvent Meter	A calibration test was run on the solvent meter.
ENT#	Record	Calibration Stall Test Pump #	A stall test was completed successfully on pump #.

Maintenance Errors

NOTE: In some error codes listed below, a # symbol is shown as the last digit. This symbol represents the applicable component number, which can vary. For example, the MAD# code listed in this table will be displayed as MAD1 if the affected component is pump 1, MAD2 for pump 2, and so on.

Because some components are assigned a 2–digit number, the last digit of the code is displayed as an alphanumeric character. The second table below correlates the alphanumeric digit to its component number. For example, code MEDZ represents outlet valve 30.

Code	Type	Name	Description
MAD#	Advisory	Maint. Outlet Pump #	Maintenance is due on pump.
MAT#	Advisory	Maint. Stall Test Pump #	Maintenance stall test is due on pump.
MEB#	Advisory	Maint. Valve Catalyst (B) #	Maintenance is due on catalyst valve.
MED#	Advisory	Maint. Valve Outlet #	Maintenance is due on outlet valve.
MEF#	Advisory	Maint. Valve Inlet #	Maintenance is due on inlet valve.
MEG#	Advisory	Maint. Valve Gun #	Maintenance is due on gun valve.
MEN#	Advisory	Maint. Valve Auxiliary	Maintenance is due on auxiliary valve.
MES#	Advisory	Maint. Valve Solvent #	Maintenance is due on solvent valve.
MFF#	Advisory	Maint. Meter Flow #	Maintenance is due on flow meter.
MFS0	Advisory	Maint. Meter Solvent	Maintenance stall test is due on solvent meter.
MGH0	Advisory	Maint. Filter Fluid	Maintenance is due on fluid filter.
MGP0	Advisory	Maint. Filter Air	Maintenance is due on air filter.
MJP#	Advisory	Maint. Valve Air	Maintenance is due on air valve.

Alphanumeric Last Digits

Alphanumeric Digit	Component Number
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
A	10
B	11
C	12
D	13
E	14
F	15

Alphanumeric Digit	Component Number
G	16
H	17
J	18
K	19
L	20
M	21
N	22
P	23
R	24
T	25
U	26
V	27
W	28
Y	29
Z	30

Booth Control Troubleshooting

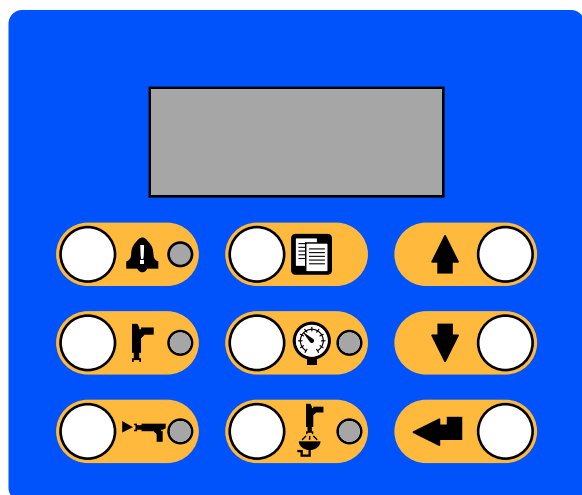


Figure 11 Booth Control

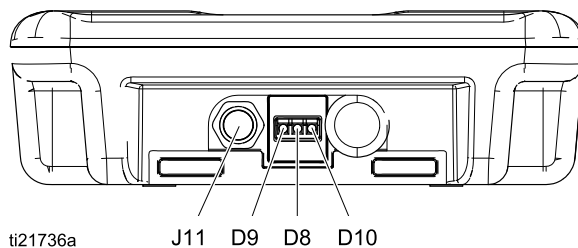


Figure 12 Bottom View of Booth Control

Table 1 . Booth Control Diagnostics

Indicator	Description	Diagnosis
	Mix Mode (green)	LED is on when in Mix mode. LED blinks when in Mix Fill mode. Also blinks in Mix Idle mode (together with Standby LED).
	Purge Mode (green)	LED is on when in Purge mode. LED blinks when a purge is needed.
	Pressure Change Mode (green)	LED blinks when in Pressure Change mode.
	Alarm (red)	LED is on steady when any event has been acknowledged. LED blinks when any event has not been acknowledged. LED turns off after the event is cleared.
	Standby Mode (green)	LED is on steady when in Standby mode. LED blinks when in Color Change, Startup, Shutdown, Prime Pump, Fill, Calibration, Maintenance, and during Pump Pressure Check. Also blinks in Mix Idle mode (together with Mix LED).
D8	Heartbeat (green)	LED blinks during normal operation.
D9	Communication (yellow)	LED turns on when board is communicating with isolation board in electronic control.
D10	Power (green)	LED turns on when power is supplied to the board (connector J11).
J11	Connector	Power/CAN connector.

Power Barrier Board Troubleshooting

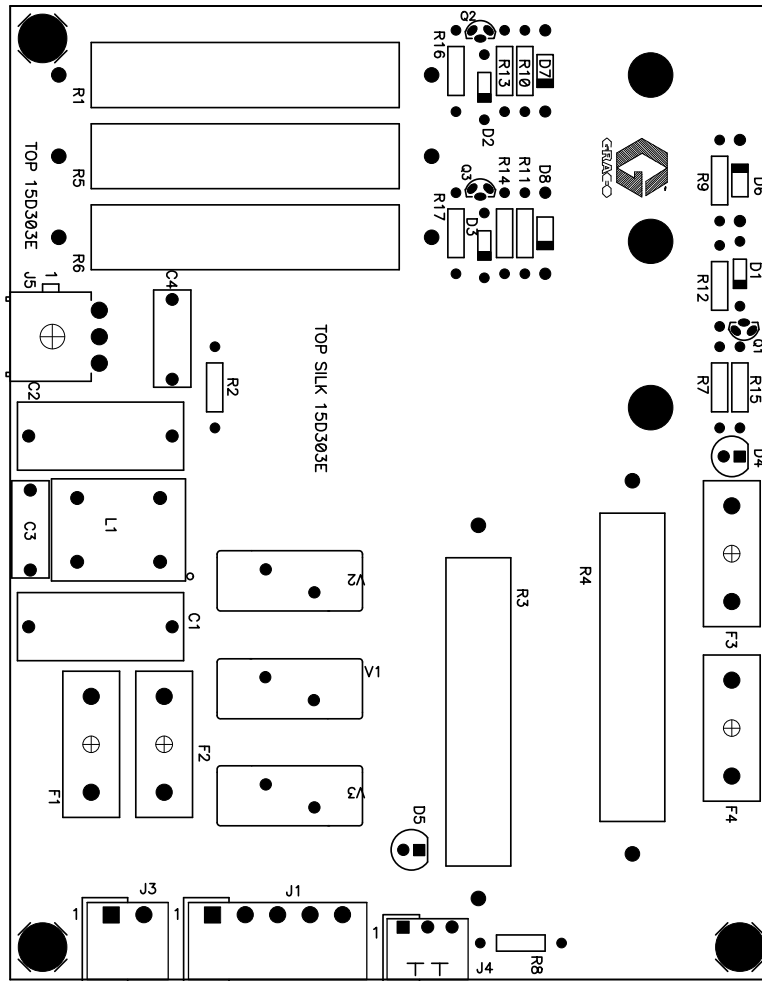


Figure 13 Power Barrier Board

Table 2 . Power Barrier Board Diagnostics

Component or Indicator	Description	Diagnosis
D4	LED (green)	IS Power
D5	LED (green)	Power
F3	Fuse, 400 mA, 250 V	If either F3 or F4 is blown, there is no power to the IS location. D4 is out.
F4	Fuse, 400 mA, 250 V	
J4	Connector	24 Vdc power input
J5	Connector	+12 Vdc intrinsically safe power output

Isolation Board Troubleshooting

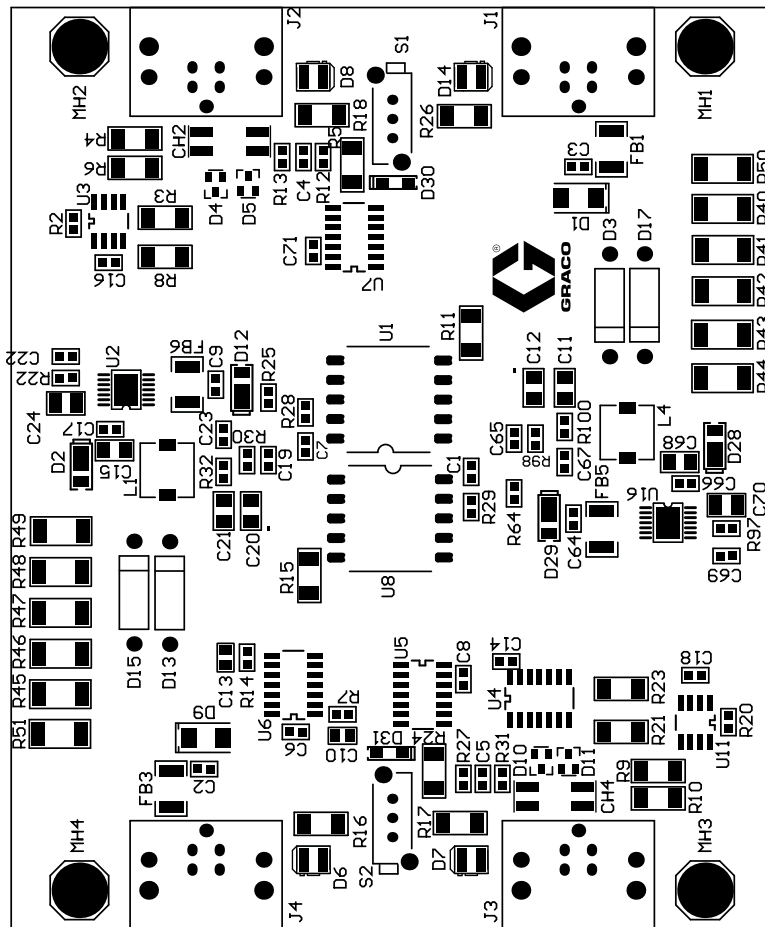
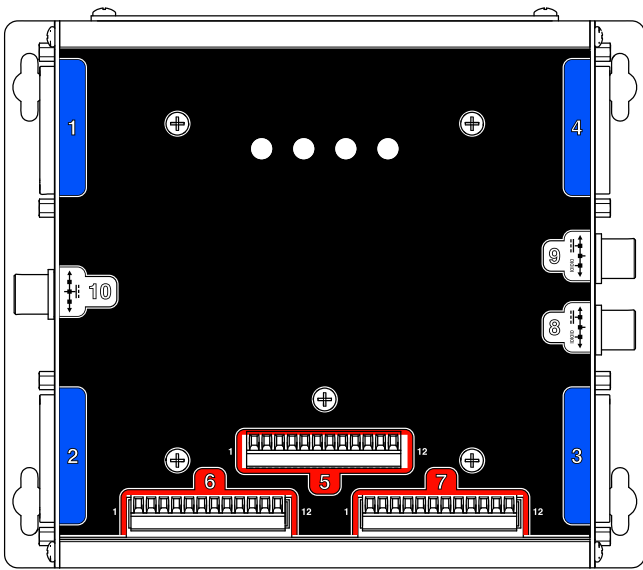


Figure 14 Isolation Board

Table 3 . Isolation Board Diagnostics

Component or Indicator	Description	Diagnosis
D6	LED (yellow)	IS Communication
D7	LED (green)	IS Power
D8	LED (green)	Non-IS Power
D14	LED (yellow)	Non-IS Communication
J1	Connector	Non-IS, Optional Gateway
J2	Connector	Non-IS, Optional Color Change Module
J3	Connector	Intrinsically Safe, Barrier Board
J4	Connector	Intrinsically Safe, Optional Color Change Module
S1	Pushbutton Switch	For Non IS connectors. If switch S1 is off, yellow LED (D14) is steady on. Push switch to turn switch on.
S2	Pushbutton Switch	For Intrinsically Safe connectors. If switch S2 is off, yellow LED (D6) is steady on. Push switch to turn switch on.

Enhanced Fluid Control Module Troubleshooting



ti21742a

Figure 15 Enhanced Fluid Control Module

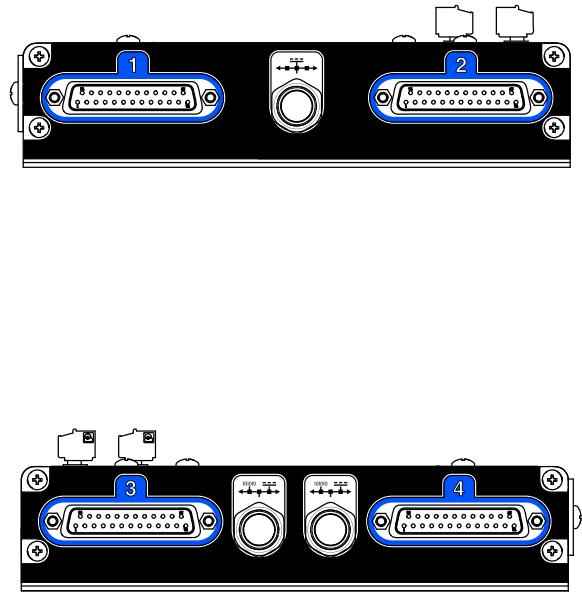


Table 4 . Enhanced Fluid Control Module Diagnostics

Connector or Indicator	Description	Diagnosis
1	25 pin connector	Pump 1 Module
2	25 pin connector	Pump 2 Module
3	25 pin connector	Pump 3 Module (accessory)
4	25 pin connector	Pump 4 Module (accessory)
5	12 pin connector	Multiple purpose I/O
6	12 pin connector	Multiple purpose I/O
7	12 pin connector	Multiple purpose I/O
8	5 pin connector	24 Vdc Power/CAN (Communication Barrier)
9	5 pin connector	Advanced Display Module
10	5 pin connector	24 Vdc Input
CPLD (D37)	LED (orange)	Heartbeat
POW (D19)	LED (green)	Power
CAN (D69)	LED (yellow)	Communication.
ERR (D38)	LED (red)	Blinks an error code. If the LED is on steady, the system is down. Cycle power.

Pump Module Troubleshooting

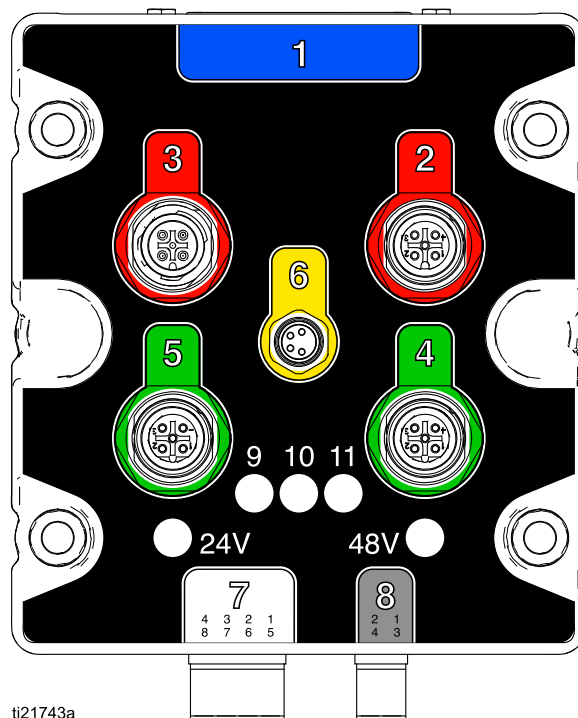
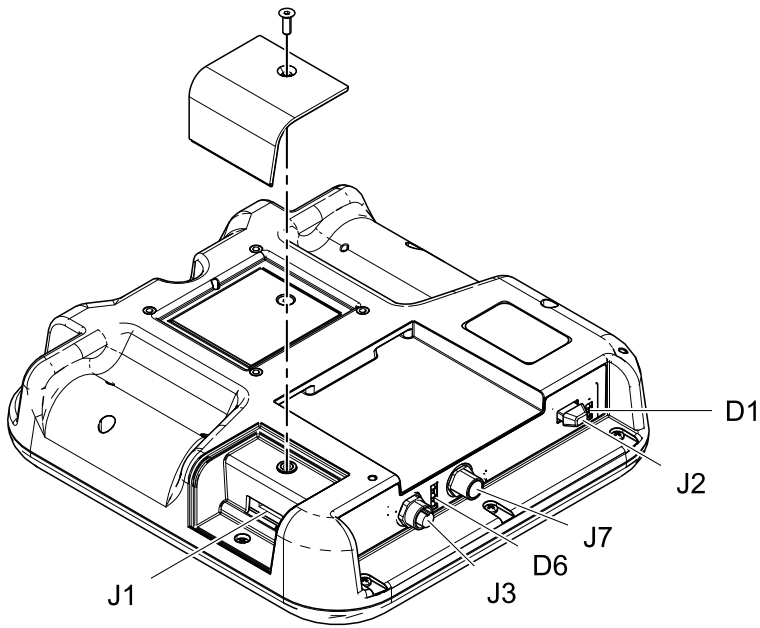


Figure 16 Pump Module

Table 5 . Pump Module Diagnostics

Component or Indicator	Description	Diagnosis
1	25 pin connector	Input from EFCM
2	5 pin connector	Pump connection
3	5 pin connector	Encoder connection
4	5 pin connector	Pump Inlet Transducer
5	5 pin connector	Pump Outlet Transducer
6	4 pin connector	Dual Panel System: Motor Power Control
7	8 pin connector	Dose Valve Solenoids
8	4 pin connector	48 Vdc Input Power and fan connection
9	LED (red)	Pump Up Valve Output
10	LED (red)	Pump Down Valve Output
11	LED (red)	Not used
24V	LED (green)	24 Vdc power supplied
48V	LED (green)	48 Vdc power supplied

Advanced Display Module Troubleshooting



ti21939a

Figure 17 Advanced Display Module

Table 6 . Advanced Display Module Diagnostics

Connector or Indicator	Description	Diagnosis
D1	LED (yellow/green)	Green: USB inserted Yellow: USB communication
D6	LED (red/yellow/green)	Green: Power Yellow: Communication Red: Error
J1	8 pin connector	Token port
J2	8 pin connector	USB port
J3	5 pin connector	Light tower (accessory)
J7	5 pin connector	CAN power/communication port

Electrical Schematics

Standard Models (MC1000, MC2000, MC3000, MC4000)

NOTE: The electrical schematic illustrates all possible wiring expansions in a ProMix PD2K system; models MC1000, MC2000, and MC4000. Some components shown are not included with all systems.

NOTE: See [Optional Cables and Modules](#), page 46 for a list of cable options.

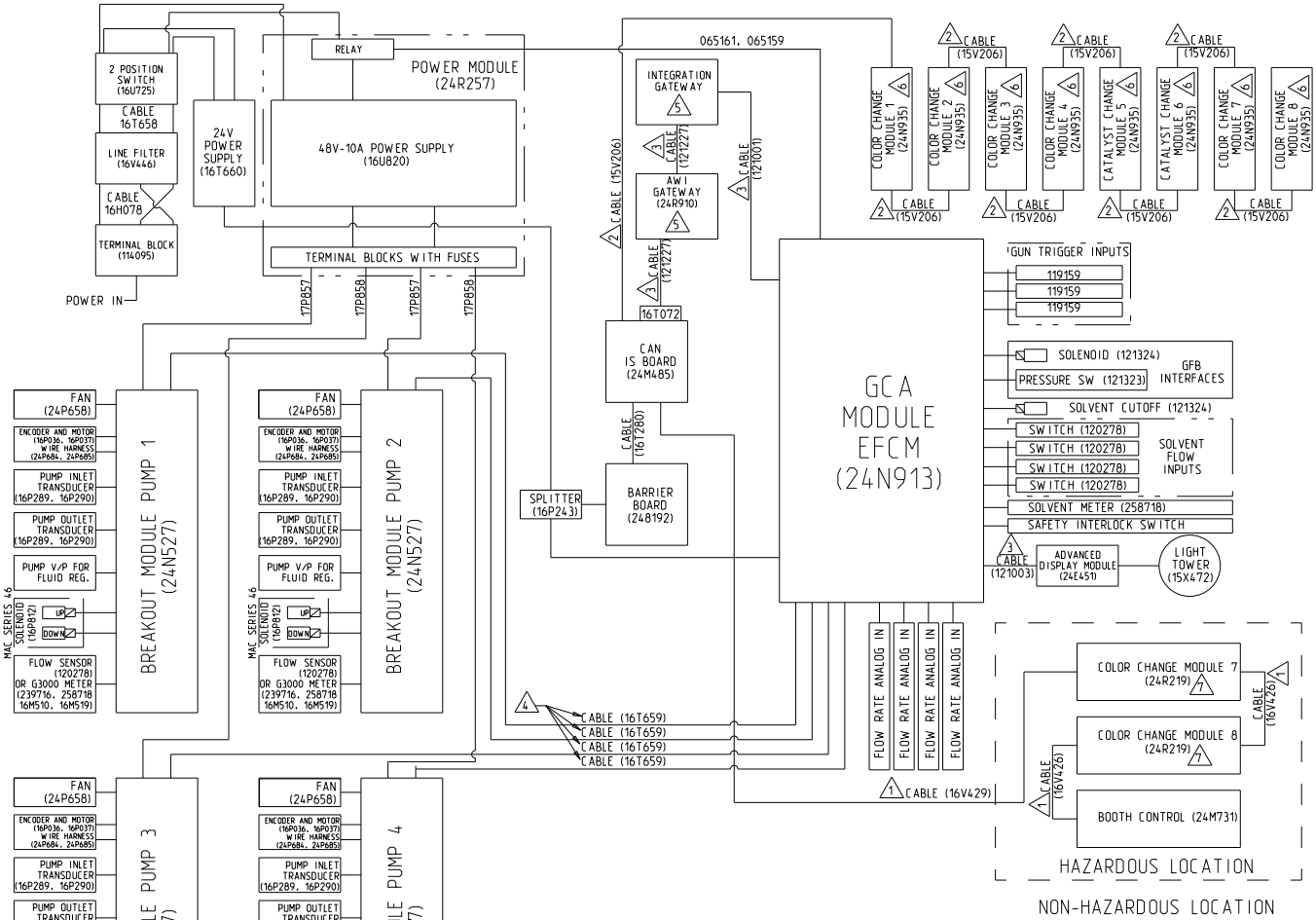


Figure 18 Electrical Schematic, Sheet 1

CONTINUED ON THE NEXT PAGE

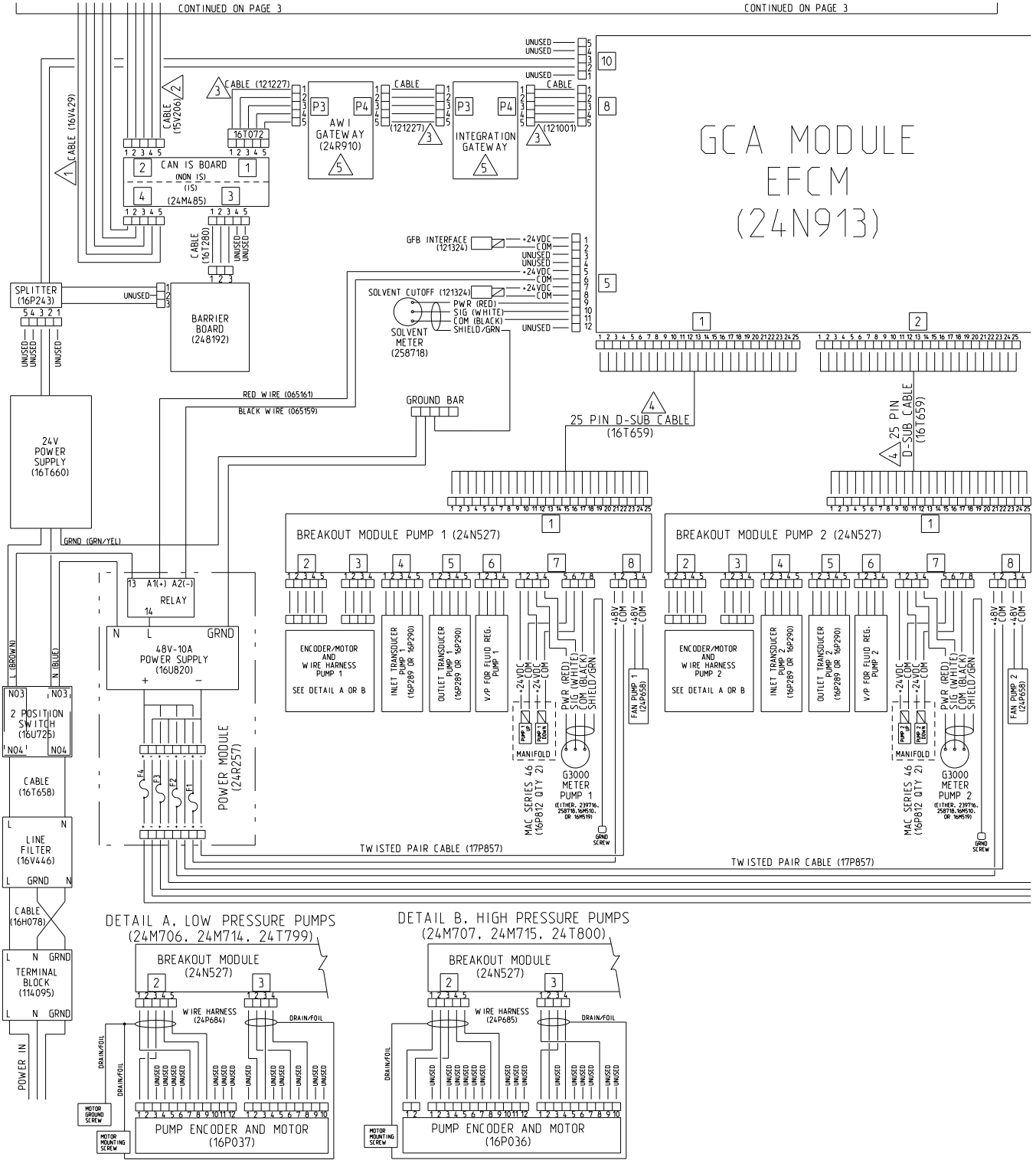


Figure 19 Electrical Schematic, Sheet 2, Part 1

CONTINUED ON THE NEXT PAGE

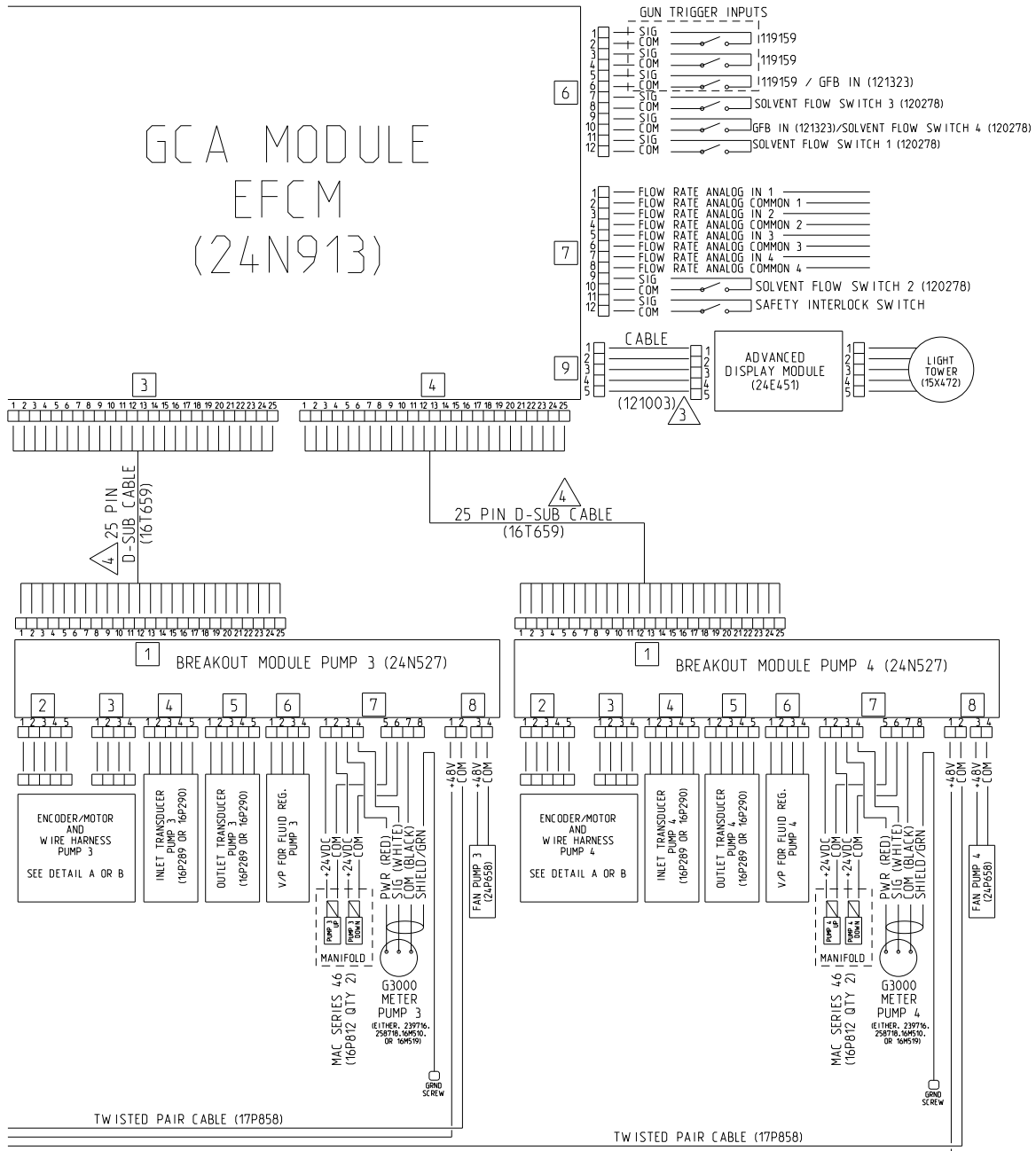


Figure 20 Electrical Schematic, Sheet 2, Part 2

CONTINUED ON THE NEXT PAGE

Electrical Schematics

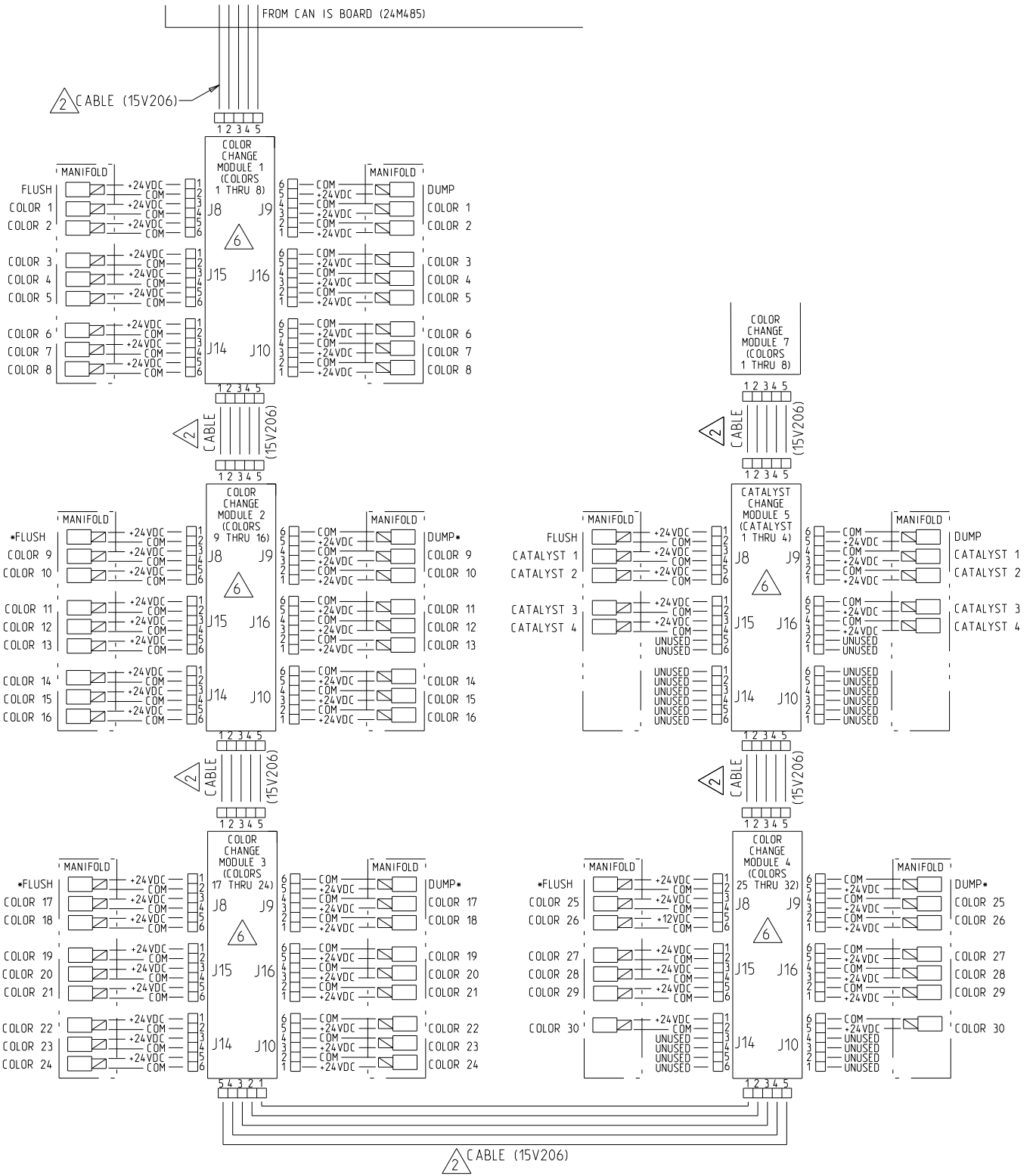
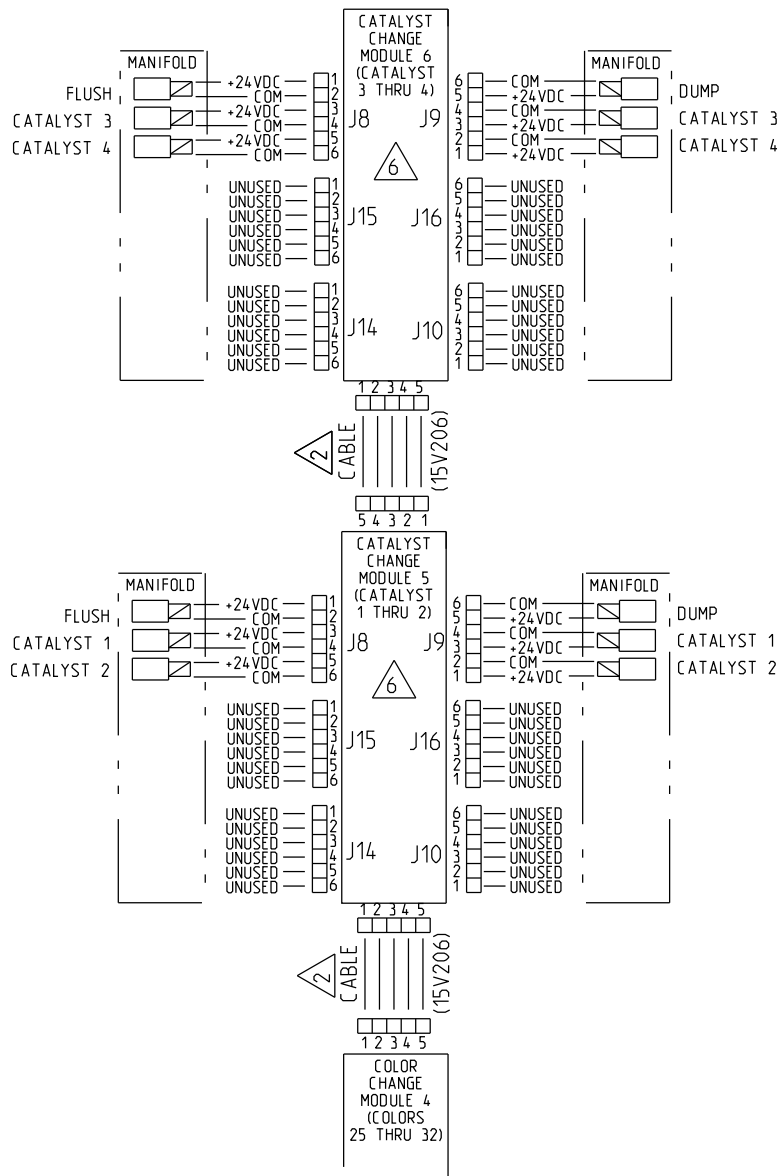


Figure 21 Electrical Schematic, Sheet 3

* May be unused in some configurations.

CONTINUED ON THE NEXT PAGE



ALTERNATE CONFIGURATION
FOR CATALYST CHANGE CONTROL

Figure 22 Electrical Schematic, Sheet 3, Alternate Configuration for Catalyst Change Control

CONTINUED ON THE NEXT PAGE

Electrical Schematics

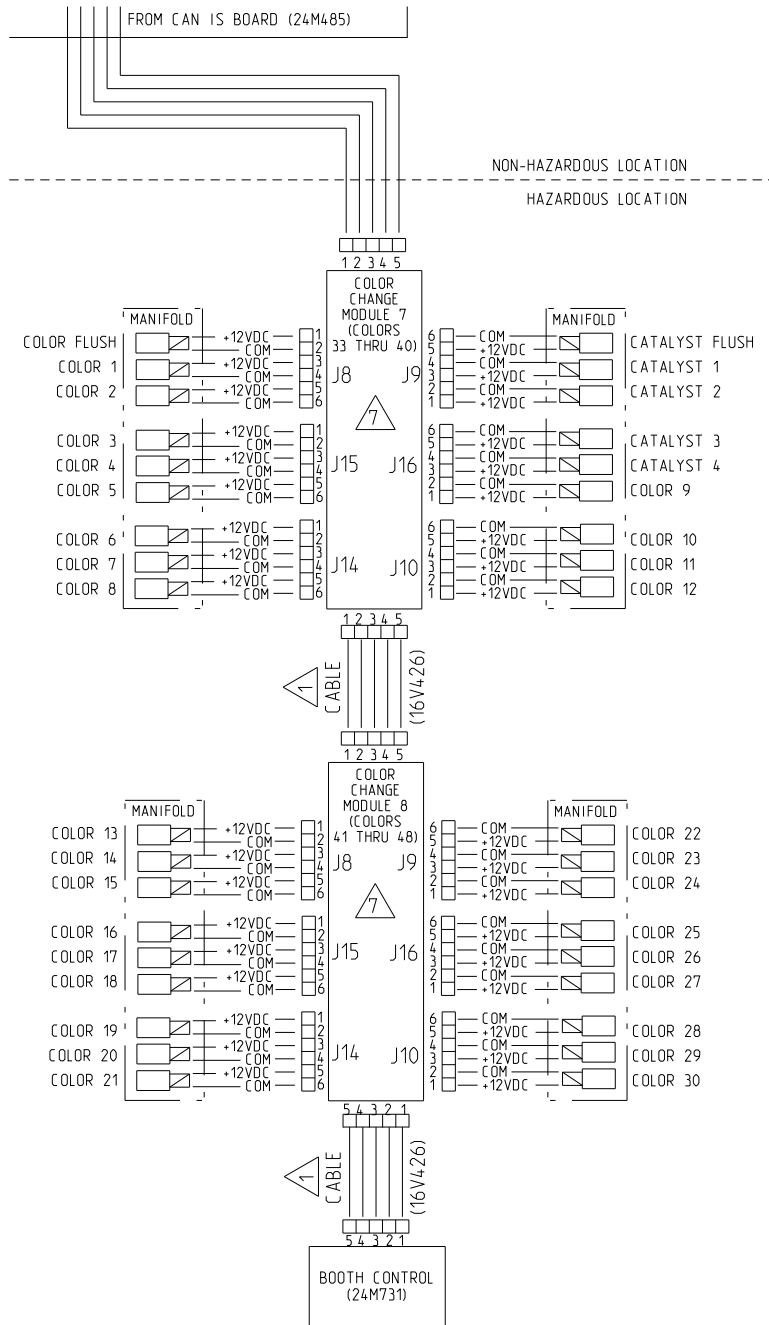


Figure 23 Electrical Schematic, Sheet 3, Hazardous Location

CONTINUED ON THE NEXT PAGE

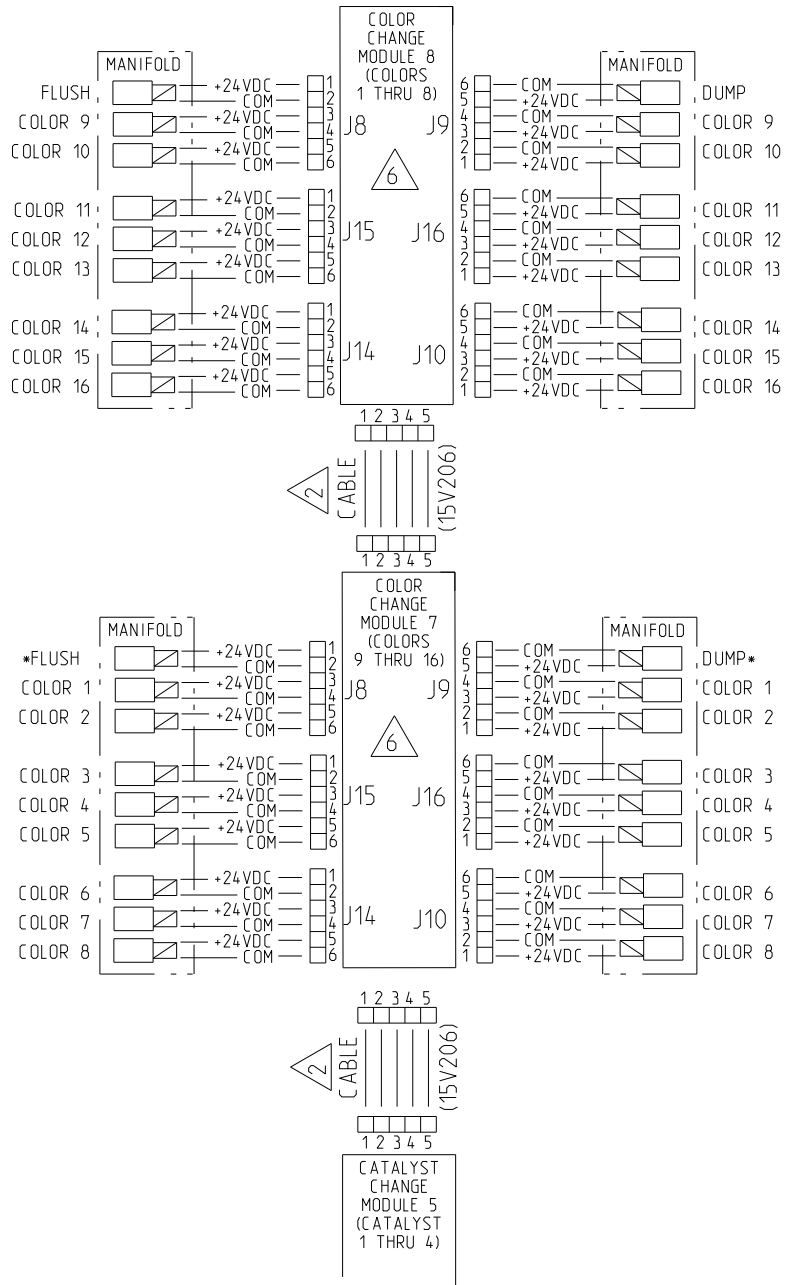


Figure 24 Electrical Schematic, Sheet 4

Dual Panel Models (MC1002, MC2002, MC3002, MC4002)

NOTE:The electrical schematic illustrates all possible wiring expansions in a ProMix PD2K system; models MC1002, MC2002, MC3002, and MC4002. Some components shown are not included with all systems.

NOTE: See [Optional Cables and Modules, page 46](#) for a list of cable options.

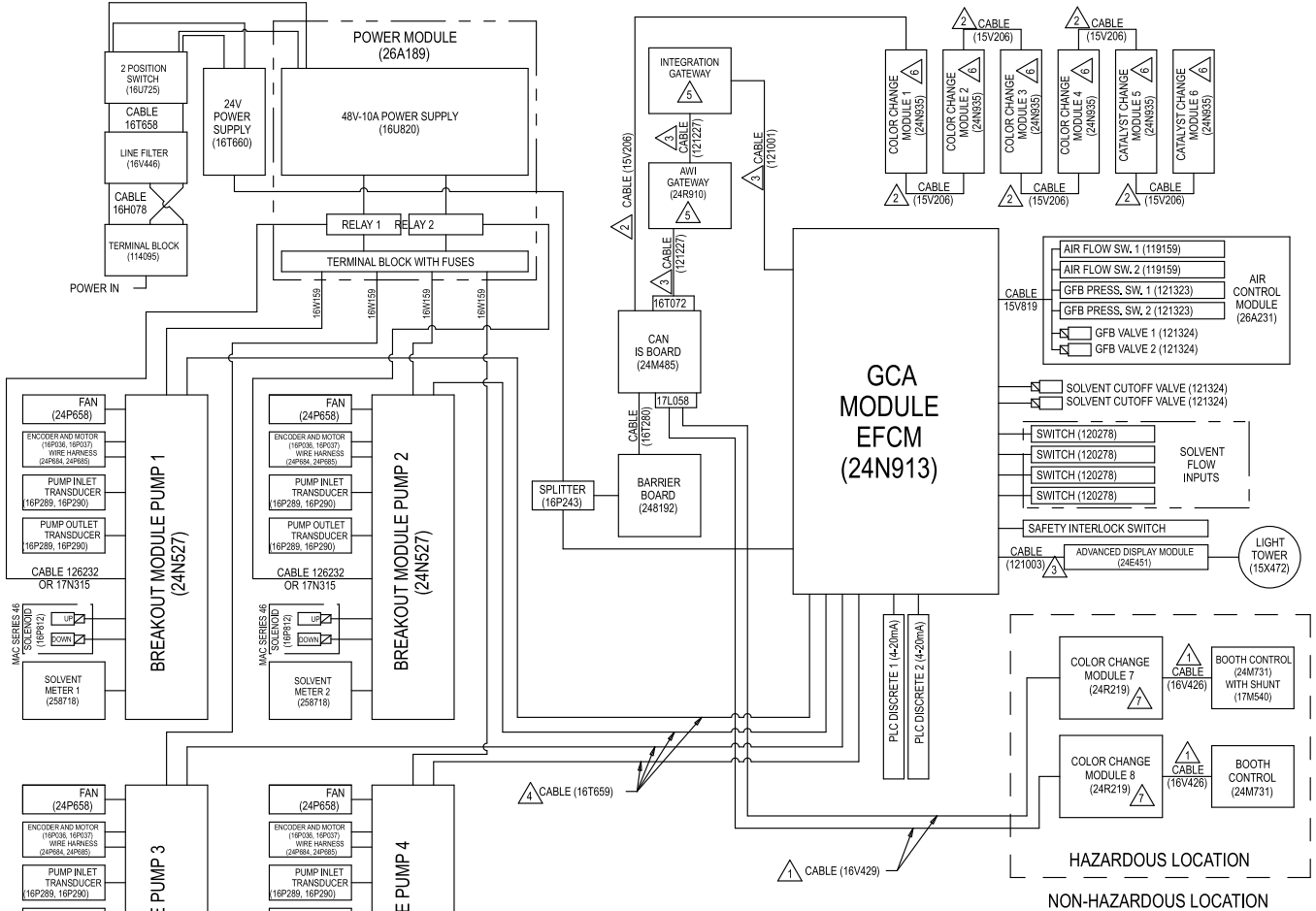


Figure 25 Electrical Schematic, Sheet 1

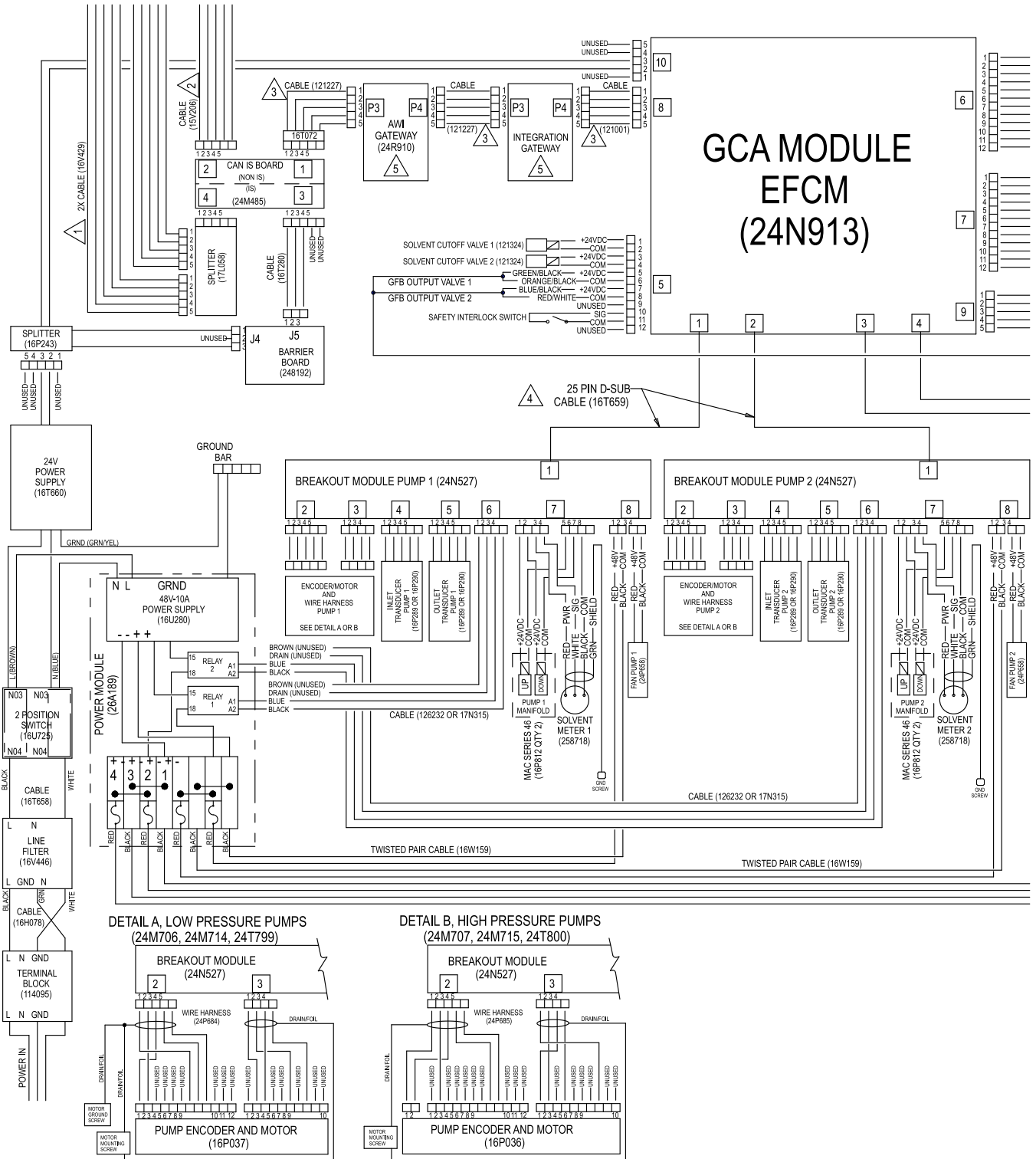


Figure 26 Electrical Schematic, Sheet 2, Part 1

CONTINUED ON THE NEXT PAGE

Electrical Schematics

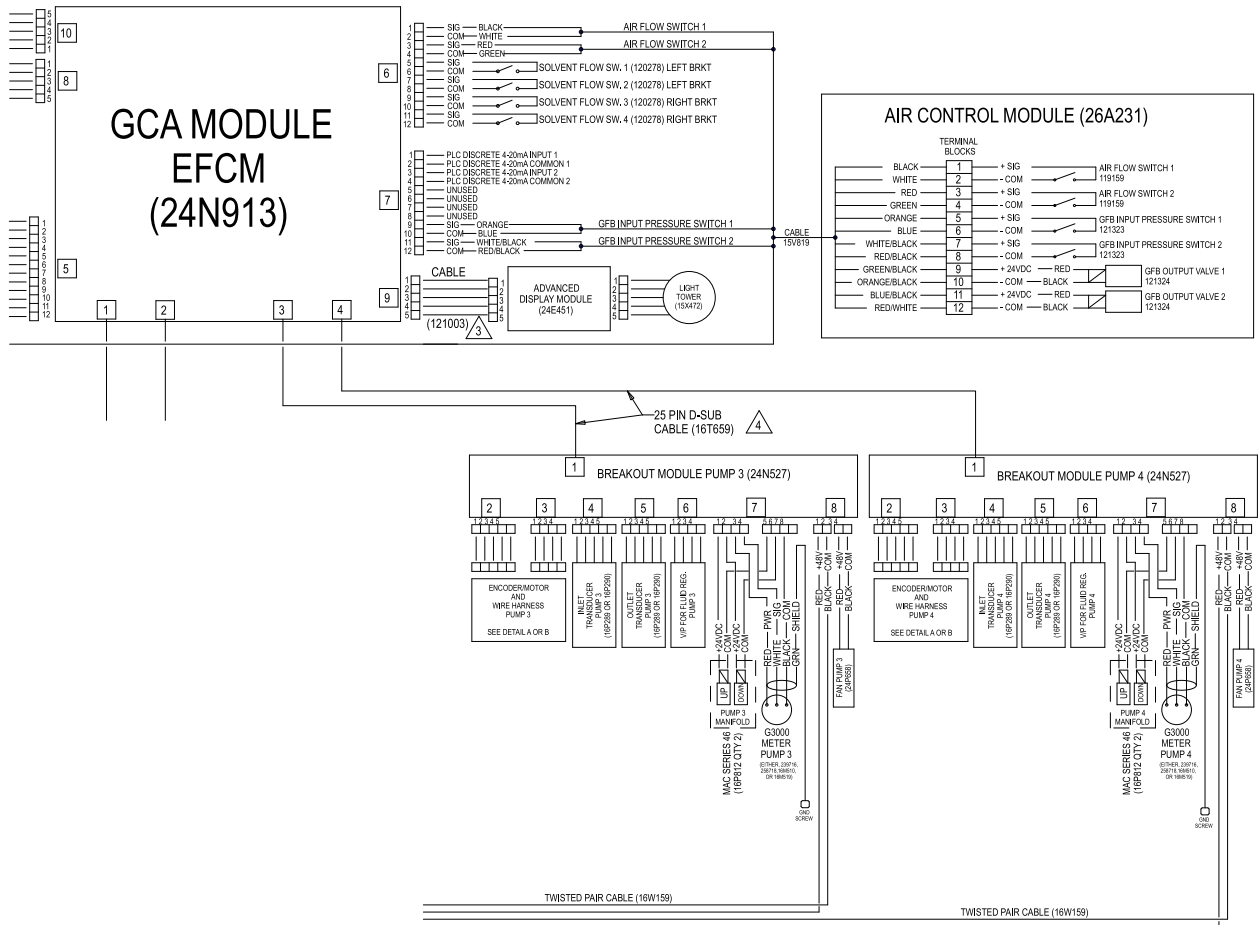


Figure 27 Electrical Schematic, Sheet 2, Part 2

CONTINUED ON THE NEXT PAGE

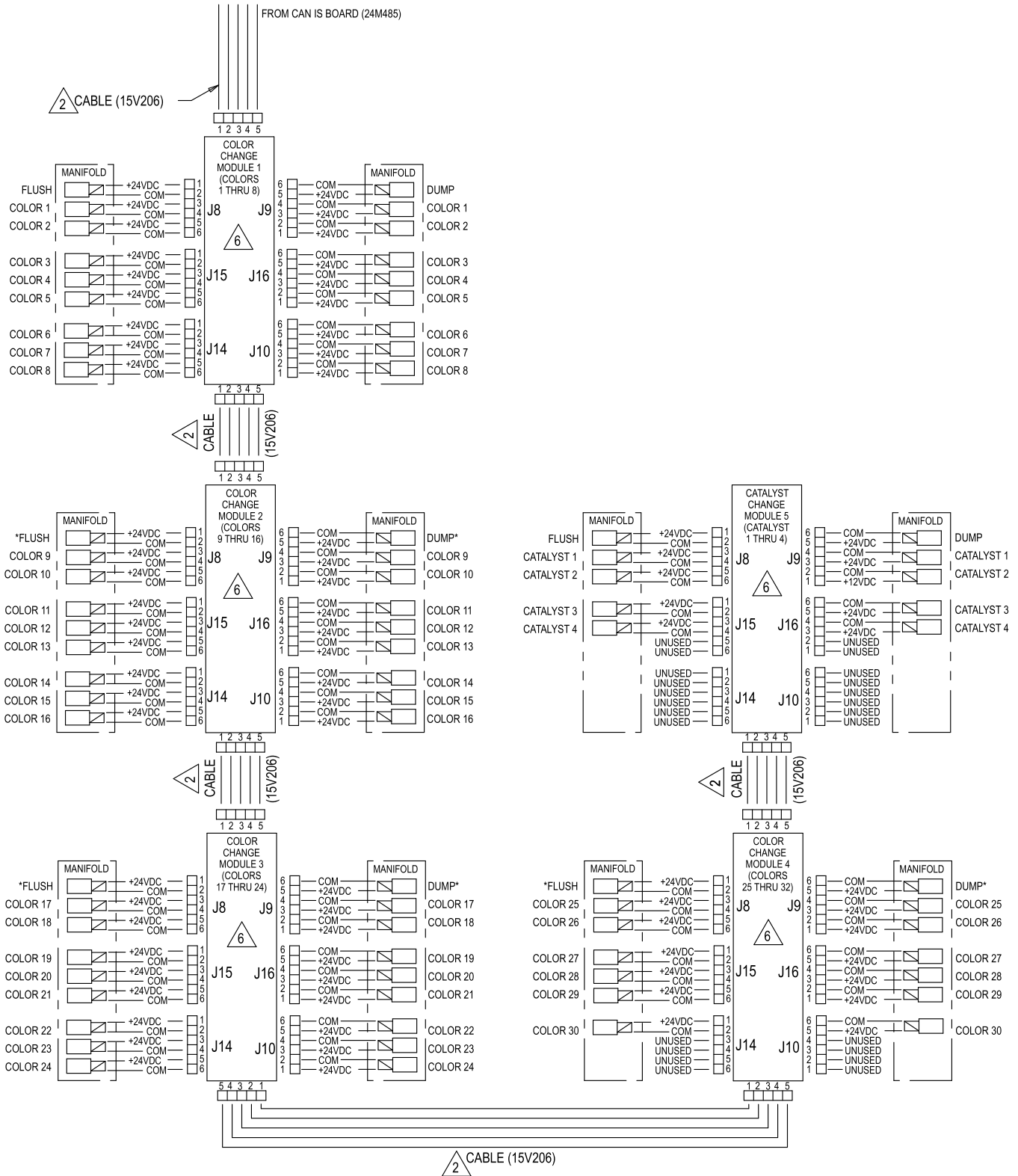


Figure 28 Electrical Schematic, Sheet 3, Part 1

* May be unused in some configurations.

CONTINUED ON THE NEXT PAGE

Electrical Schematics

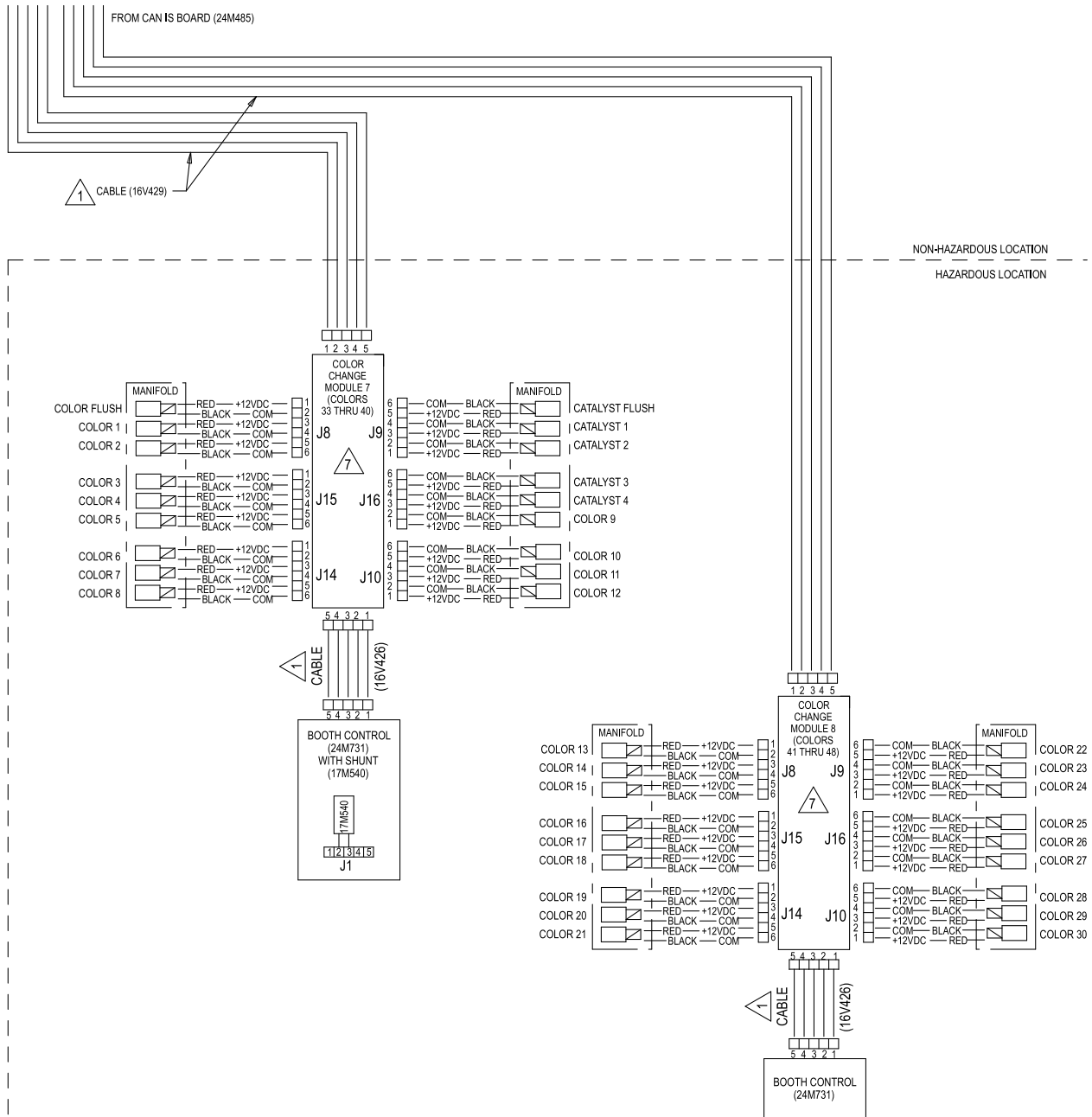
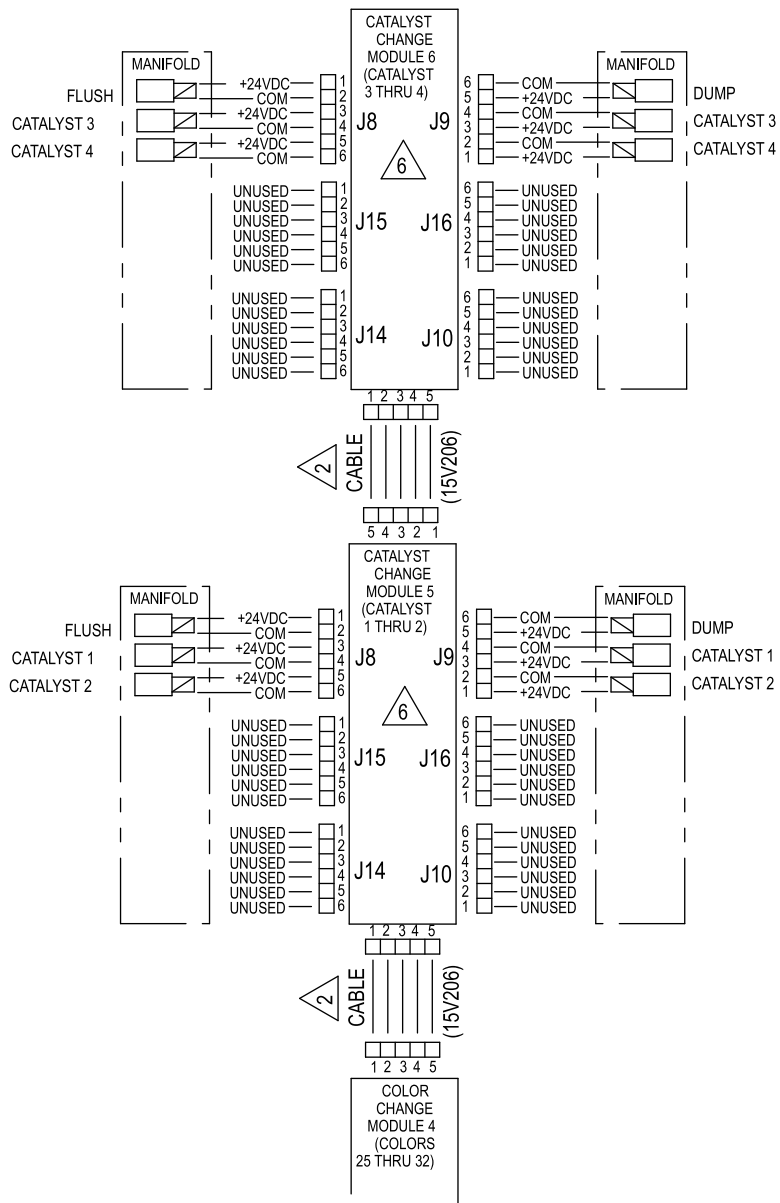


Figure 29 Electrical Schematic, Sheet 3, Part 2

CONTINUED ON THE NEXT PAGE



ALTERNATE CONFIGURATION
FOR CATALYST CHANGE CONTROL
IN NON-HAZARDOUS LOCATION

Figure 30 Electrical Schematic, Sheet 4, Alternate Configuration for Catalyst Change Control

Optional Cables and Modules

NOTE: The total length of all cable used in the system must not exceed 150 ft (45 m). See the [Electrical Schematics, page 33](#).

Accessory Tool Kit	
Part No.	Description
25D980	ProMix PD Tool Kit

1 **M12 CAN Cables, for Hazardous Locations**
NOTE: The total length of cable used in the hazardous location must not exceed 120 ft (36 m).

Cable Part No.	Length ft (m)
16V423	2.0 (0.6)
16V424	3.0 (1.0)
16V425	6.0 (2.0)
16V426	10.0 (3.0)
16V427	15.0 (5.0)
16V428	25.0 (8.0)
16V429	50.0 (16.0)
16V430	100.0 (32.0)

2 **M12 CAN Cables, for Non-Hazardous Locations Only**

15U531	2.0 (0.6)
15U532	3.0 (1.0)
15V205	6.0 (2.0)
15V206	10.0 (3.0)
15V207	15.0 (5.0)
15V208	25.0 (8.0)
15U533	50.0 (16.0)
15V213	100.0 (32.0)

3 **CAN Cables, for Non-Hazardous Locations Only**

Cable Part No.	Length ft (m)
125306	1.0 (0.3)
123422	1.3 (0.4)
121000	1.6 (0.5)
121227	2.0 (0.6)

121001	3.0 (1.0)
121002	5.0 (1.5)
121003	10.0 (3.0)
120952	13.0 (4.0)
121201	20.0 (6.0)
121004	25.0 (8.0)
121228	50.0 (15.0)

4 **25 Pin D-SUB Cables, for Non-Hazardous Locations Only**

16T659	2.5 (0.8)
16V659	6.0 (1.8)

6 **Alternates for Color Change Modules by Part Number (Factory Configuration), for Non-Hazardous Locations Only**

Module Part No.	Description
24T557	2 color/2 catalyst
24T558	4 color/4 catalyst
24T559	6 color/6 catalyst
24T560	8 color/8 catalyst

7 **Alternates for Color Change Modules by Part Number (Factory Configuration), for Hazardous Locations Only**

24T571	2 color/2 catalyst
24T572	4 color/2 catalyst
24T573	6 color/2 catalyst
24T574	8 color/2 catalyst, 13–24 color
24T774	12 color/2 catalyst
24T775	4 color/4 catalyst
24T776	6 color/4 catalyst
24T777	8 color/4 catalyst
24T778	12 color/4 catalyst, 13–30 color
24T779	13–18 color

Communications Options (for PLC and AWI)

1. If you are upgrading to an automatic system:
 - a. 24T803, Automatic Upgrade Kit
 - b. CGMEP0, Ethernet IP
CGMDN0, DeviceNet
CGMPN0, ProfiNet
24W462, Modbus TCP
2. If you are upgrading to an automatic system AND AWI:
 - a. 24W829, CGM Kit for PD2K
 - b. 24W462, Modbus TCP
3. If your application requires ONLY AWI:
 - a. 15V337, AWI Module
 - b. 24T805, AWI Kit

Repair

Before Servicing



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.
- Do not substitute or modify system components as this may impair intrinsic safety.

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Flush the system as explained in your PD2K Operation Manual if service time may exceed pot life time. Follow the [Pressure Relief Procedure, page 49](#) before servicing fluid components.
2. Close the main air shutoff valve on the air supply line.
3. Shut off the power switch (P) at the electrical control box.
4. If servicing the electrical control box, shut off power at the main circuit breaker before opening the enclosure.

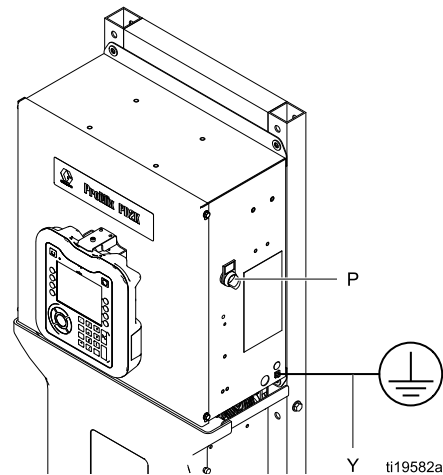


Figure 31 Control Box Power Switch

Pressure Relief Procedure



Follow the **Pressure Relief Procedure** whenever you see this symbol.

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

Without Color Change

NOTE: The following procedure relieves all fluid and air pressure in the system.

1. Turn off the supply pumps. Open the drain valve on the supply line fluid filter to relieve pressure in the supply line.

NOTE: If your system does not include a drain valve on the supply line, set the mix manifold to

SPRAY and press . Cycle the dosing pumps a couple of times to drain the pumps.

2. Press Standby . Trigger the gun to relieve pressure.

3. Set the mix manifold to FLUSH. Flush the mix manifold and gun. See Flush Mixed Material in the PD2K Operation Manual.

4. Shut off the solvent supply pump. To relieve pressure, press Purge and trigger the gun. Press Standby when pressure is relieved, to avoid getting a Purge Incomplete alarm.

5. **Dual Panel Systems:** Repeat for Mix Unit #2.

NOTE: If pressure remains in the solvent line between the solvent supply pump and the solvent valve, VERY SLOWLY loosen a fitting to relieve pressure gradually.

With Color Change

NOTE: The following procedure relieves all fluid and air pressure in the system.

1. Turn off the supply pumps. Open the drain valve on the supply line fluid filter to relieve pressure in the supply lines. Do this for each color.

NOTE: If your system does not include a drain valve on the supply line, set the mix manifold to

SPRAY and press . Cycle the dosing pumps a couple of times to drain the pumps. Repeat for each color.

2. If you are using a high pressure gun, engage the trigger lock. Remove the spray tip and clean it separately.

3. If using an electrostatic gun, shut off the electrostatics before flushing the gun.

--	--	--	--	--

To help prevent fire and explosion, shut off electrostatics before flushing.

4. Set the mix manifold to SPRAY. Trigger the gun to relieve pressure. Repeat for each color.

5. Press Purge . Repeat for each color. Hold the gun trigger open after the solvent valve shuts off to relieve all pressure.

6. Set the system to Recipe 0 to flush the system from the pumps to the gun. When flushing is complete the system will go to Standby.

7. Shut off the solvent supply pump. To relieve pressure, press Purge and trigger the gun. Press Standby when pressure is relieved, to avoid getting a Purge Incomplete alarm.

8. **Dual Panel Systems:** Repeat for Mix Unit #2.

NOTE: If pressure remains in the solvent line between the solvent supply pump and the solvent valve, VERY SLOWLY loosen a fitting to relieve pressure gradually.

Repairing the Advanced Display Module (ADM)

To replace the Advanced Display Module, disconnect the cable from the module and remove the module from the bracket. Install the new module on the bracket and attach the cable.

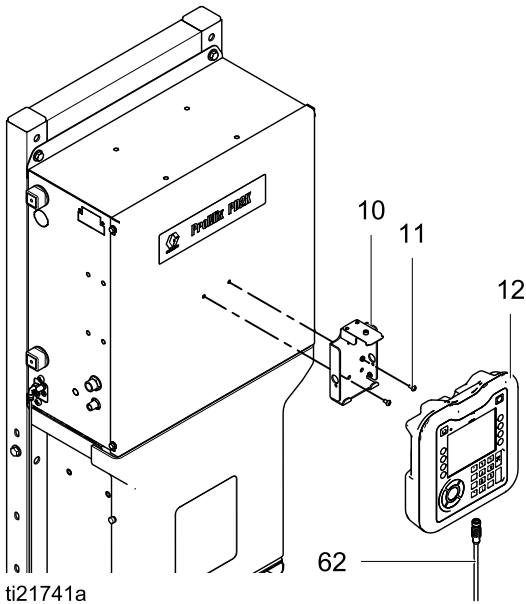


Figure 32 Replace the Advanced Display Module

Install Key Token or Upgrade Token

1. Shut off the ProMix PD power switch.
2. Remove the token access panel.

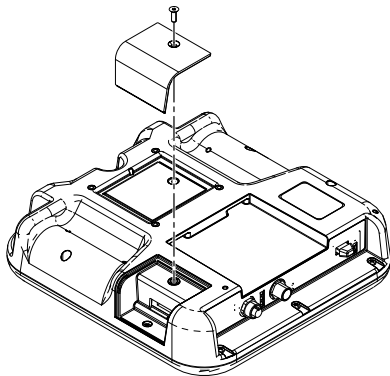


Figure 33 Remove Token Access Panel

3. Insert and press token (T) firmly into slot.

NOTE: There is no preferred orientation of the token.

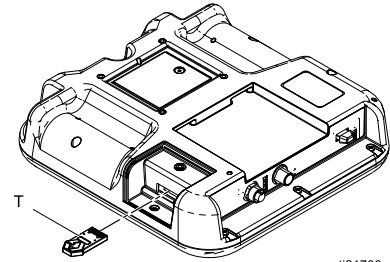


Figure 34 Insert Token

4. Turn the power switch back on. The red indicator light (L) will flash until the new firmware is completely loaded.
5. Remove the token (T).
6. Replace the token access panel.

Replace the Battery

A lithium battery maintains the ADM clock when the power is not connected.

<p>Sparking can occur when changing the battery. To reduce the risk of fire and explosion, replace the battery only in a non-hazardous location, away from flammable fluid or fumes.</p>				

1. Turn off the ProMix PD power switch.
2. Remove the rear access panel.

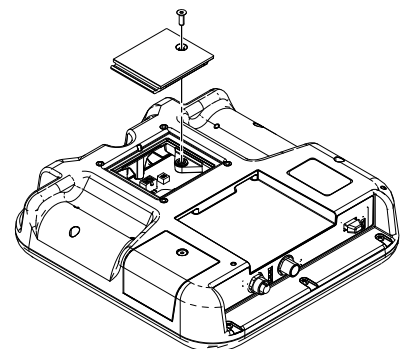


Figure 35 Remove Battery Panel

3. Remove the old battery and replace with a new CR2032 battery.
4. Replace the rear access panel.
5. Turn the power switch on.
6. Dispose of the old battery according to your federal, state, and local waste regulations.

Servicing the Control Box

Replacing the Isolation Board

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Loosen the screws (124) and remove the enclosure cover (117).
3. Note the position of the isolation board cables. See the following table and [Electrical Schematics, page 33](#). Disconnect the cables from the isolation board (111). Remove the brackets (110).

Isolation Board Connector	Cable Destination
J1 (non-intrinsically safe)	EFCM
J2 (non-intrinsically safe)	Optional Color Change Module
J3 (intrinsically safe)	Barrier Board
J4 (intrinsically safe)	Booth Control

4. Remove the screws (128) holding the isolation board (111) to the barrier cover (107). Remove the isolation board.
5. Install the new isolation board, using the screws (128).
6. Install the brackets (110). Reconnect the cables to the positions as noted above.
7. Turn on power at the main circuit breaker.
8. Turn on the control box power switch. Check that the two green LEDs (D7, D8) and two yellow LEDs (D6, D14) are on.
9. Reinstall the cover (117) and tighten the screws (124).

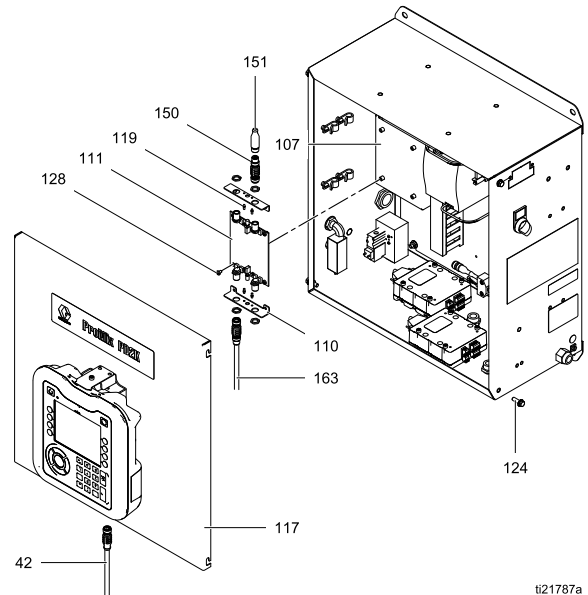


Figure 36 Replacing the Isolation Board

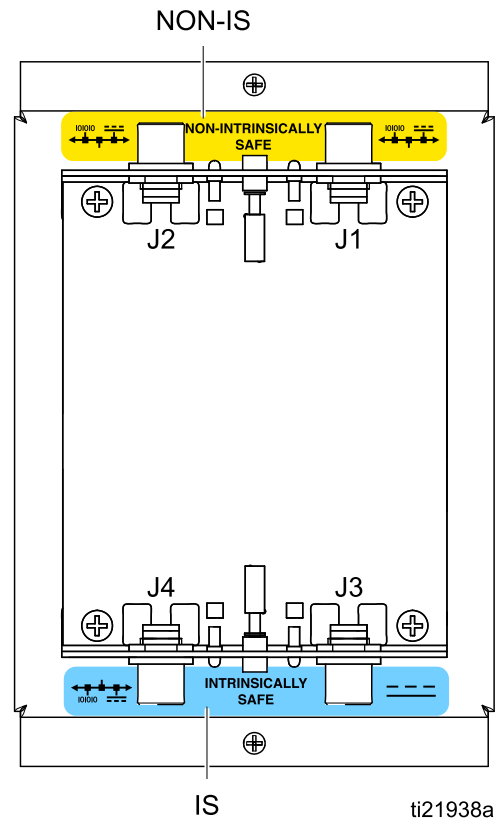
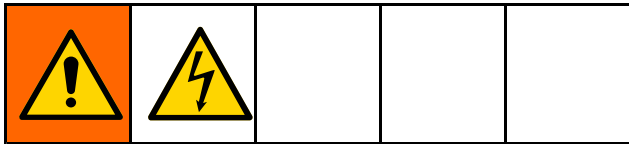


Figure 37 Detail of Isolation Board Cable Connections

Replacing the Barrier Board



NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Loosen the screws (124) and remove the enclosure cover (117).
3. Loosen the screws (125) and remove the barrier cover (107), leaving the isolation board (111) attached to the cover.
4. Note the position of the barrier board input and output cables. See [Electrical Schematics, page 33](#). Disconnect the cables from the barrier board (106).
5. Remove the two screws (108), and the three screws (109), spacers (105), and lockwashers (104). Remove the barrier board (106).
6. Install the new barrier board, using the screws, spacers, and lockwashers.
7. Reconnect the cables to the barrier board, as noted above.
8. Install the barrier cover (107) and isolation board (111).
9. Turn on power at the main circuit breaker.
10. Turn on the control box power switch. Check that the system is operating.

NOTE: The two green LEDs (D4, D5) on the barrier board will light if the board has power.

11. Reinstall the cover (117) and tighten the screws (124).

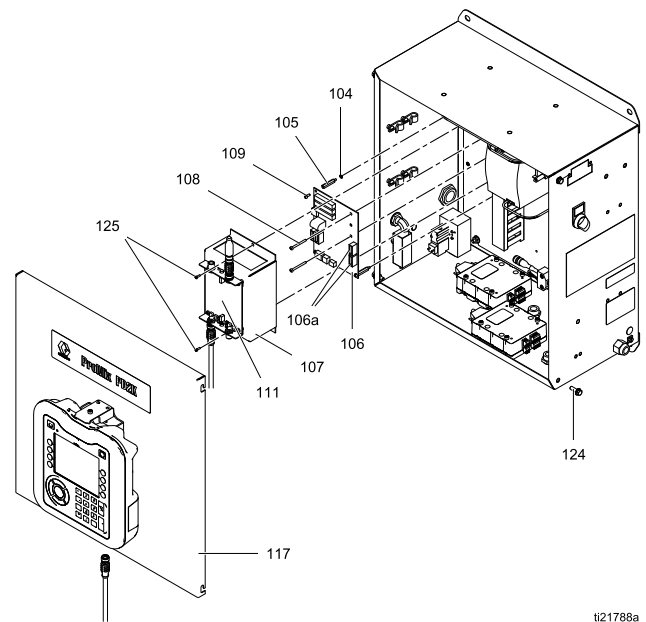


Figure 38 Replacing the Barrier Board

t121788a

Replacing the Barrier Board Fuses

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow steps 1–4 under [Replacing the Barrier Board, page 52](#).
2. Remove the fuse (F3 or F4) from its fuseholder.
3. Snap the new fuse into the fuseholder.
4. Follow steps 7–11 under [Replacing the Barrier Board, page 52](#).

Replacing the EFCM Control Module

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Loosen the screws (124) and remove the enclosure cover (117, not shown).
3. Note the position of the EFCM input and output cables. See [Electrical Schematics, page 33](#). Disconnect the cables from the EFCM (139).
4. Loosen the screws (142) holding the EFCM to the enclosure. Remove the module.
5. Install the new EFCM, using the screws (142).
6. Reconnect the cables to the positions as noted above.
7. Turn on power at the main circuit breaker.

8. Load the software. See [Install Key Token or Upgrade Token, page 50](#).
9. Turn on the control box power switch. Check that the green is on, the orange and yellow LEDs are blinking, and the red LED is off.
10. Reinstall the cover (117) and tighten the screws (124).

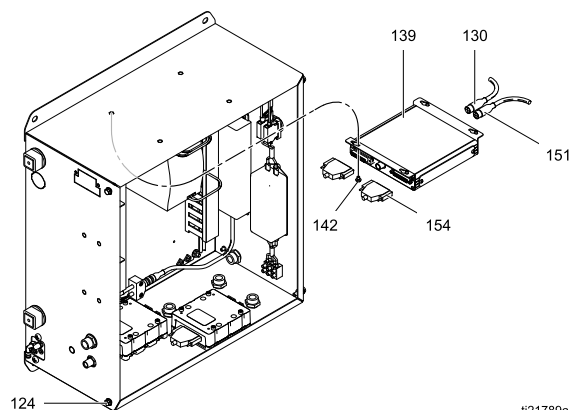


Figure 39 Replacing the EFCM Control Module

Replacing the 24 VDC Power Supply

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Loosen the screws (124) and remove the enclosure cover (117, not shown).
3. Note the position of the power supply input and output wires. See [Electrical Schematics, page 33](#). Disconnect the wires from the power supply (120).
4. Remove the screws (129) holding the power supply to the side of the enclosure. Remove the power supply.
5. Install the new power supply, using the screws (129).
6. Reconnect the wires to the positions as noted above.
7. Reinstall the cover (117) and tighten the screws (124).
8. Turn on power at the main circuit breaker.

9. Turn on the control box power switch.

NOTE: The green LED on the barrier board (106), the green power LED on the EFCM module (139), and the 24V green LED on each of the pump control modules (132) will light when operating.

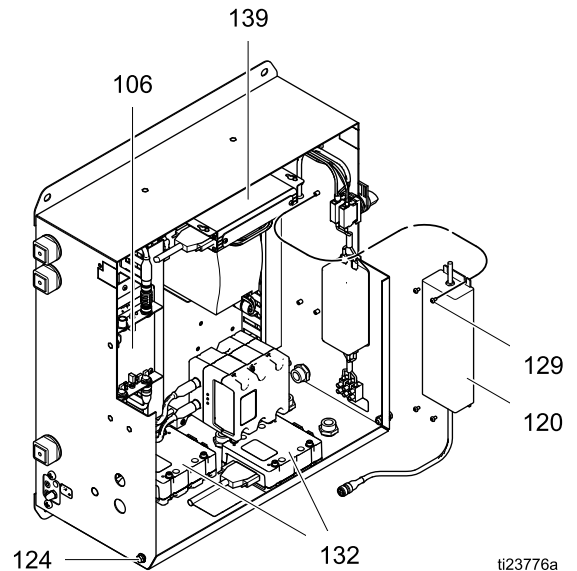


Figure 40 Replacing the 24 Vdc Power Supply

Replacing the 48 VDC Pump Power Supply

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Loosen the screws (124) and remove the enclosure cover (117).
3. Note the position of the power supply input and output wires. See [Electrical Schematics, page 33](#). Disconnect the wires from the power supply (103).
4. Remove the screws (128) holding the power supply din rail to the enclosure. Remove the entire assembly, mounted to the din rail.
5. Install the new power supply assembly, using the screws (128).
6. Reconnect the wires to the positions as noted above.
7. Reinstall the cover (117) and tighten the screws (124).
8. Turn on power at the main circuit breaker.

9. Turn on the control box power switch. Press



to turn pump power on.

NOTE: The 48V green LED on each of the pump control modules (132) will light when operating.

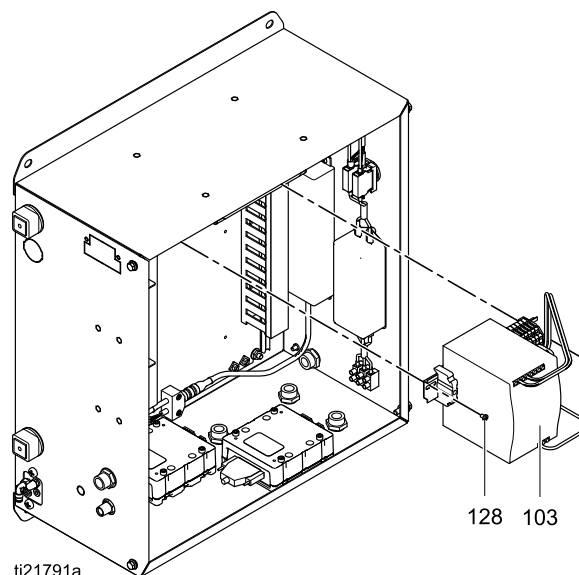


Figure 41 Replacing the 48 Vdc Power Supply

Replacing a Pump Control Module

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Loosen the screws (124) and remove the enclosure cover (117).
3. Note the position of the pump control module input and output cables. See [Electrical Schematics, page 33](#). Disconnect the cables from the pump control module (132).
4. Remove the screws (143) holding the pump control module to the enclosure. Remove the pump control module.
5. Install the new pump control module, using the screws (143).
6. Reconnect the cables to the positions as noted above.
7. Turn on power at the main circuit breaker.
8. Turn on the control box power switch. Check that the 48V green LED and the 24V green LED on each of the pump control modules (132) are on.

9. Reinstall the cover (117) and tighten the screws (124).

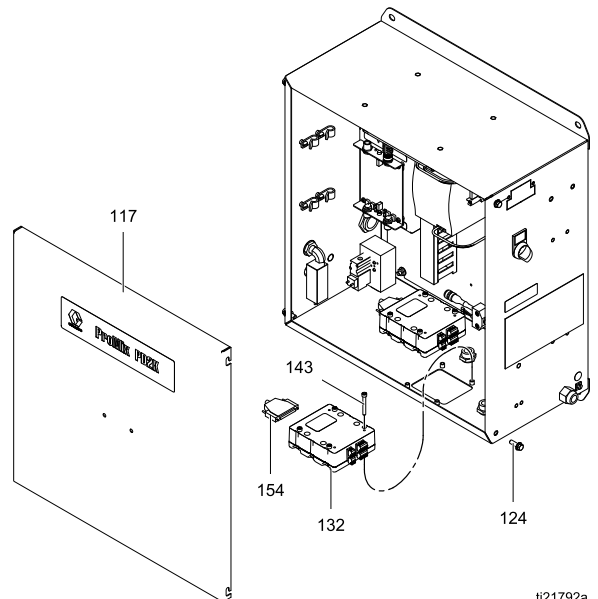


Figure 42 Replacing a Pump Control Module

Replacing the Line Filter

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Loosen the screws (124) and remove the enclosure cover (117).
3. Note the position of the line filter input and output wires. See [Electrical Schematics, page 33](#). Disconnect the wires from the line filter (115).
4. Remove the screws (142) holding the line filter to the enclosure. Remove the line filter.
5. Install the new line filter, using the screws (142).
6. Reconnect the wires to the positions as noted above.
7. Reinstall the cover (117) and tighten the screws (124).
8. Turn on power at the main circuit breaker.

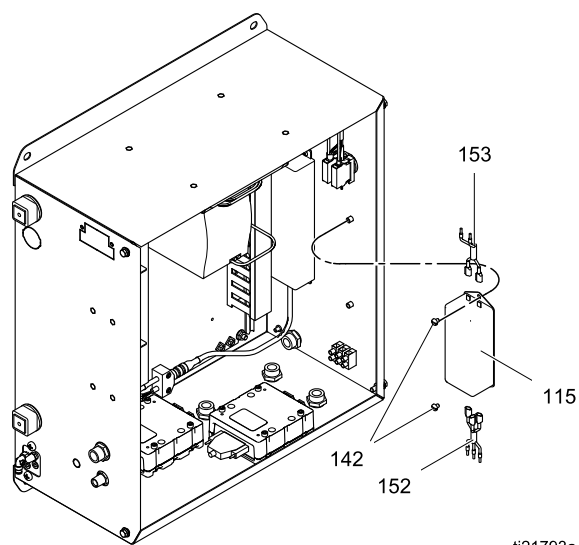


Figure 43 Replacing the Line Filter

ti21793a

Replacing the Power Switch

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Loosen the screws (124) and remove the enclosure cover (117).
3. Note the position of the power switch input and output wires. See [Electrical Schematics, page 33](#). Disconnect the wires from the power switch (112).
4. Remove the switch terminal blocks, unscrew the retaining nut, and remove the switch.
5. Install the new switch.
6. Reconnect the wires to the positions as noted above.

7. Reinstall the cover (117) and tighten the screws (124).
8. Turn on power at the main circuit breaker.

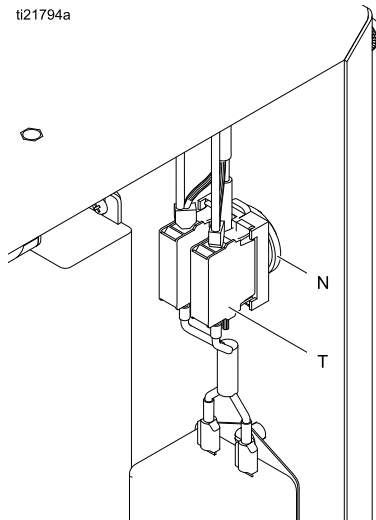


Figure 44 Replacing the Power Switch

Replacing the Air Flow Switch

NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Loosen the screws (124) and remove the enclosure cover (117).
3. Disconnect the air flow switch wires from J6 pins 1–2 on the EFCM. See [Electrical Schematics, page 33](#).
4. Disconnect the air lines.
5. Remove the air flow switch (159) and attaching hardware from the side of the control box.
6. Install a new air flow switch. Connect the wires to J6 pins 1–2. Reconnect the air lines.
7. Reinstall the cover (117) and tighten the screws (124).

8. Turn on power at the main circuit breaker.
9. Turn on the control box power switch.

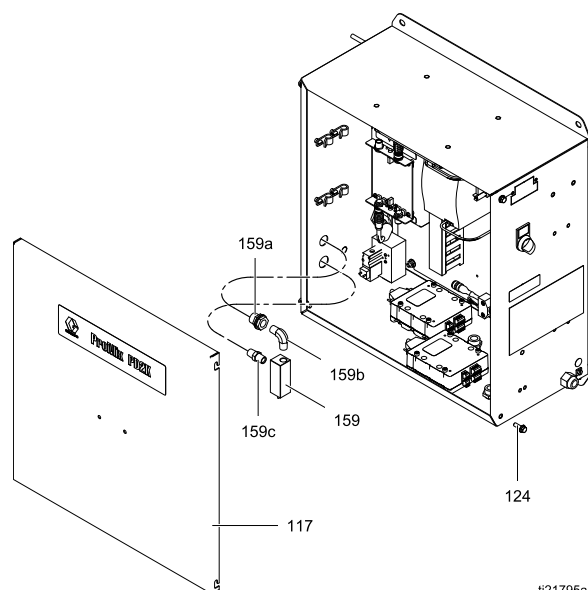
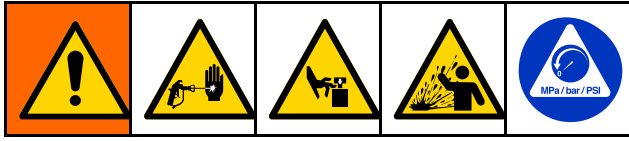


Figure 45 Replacing the Air Flow Switch

Servicing the Fluid Section

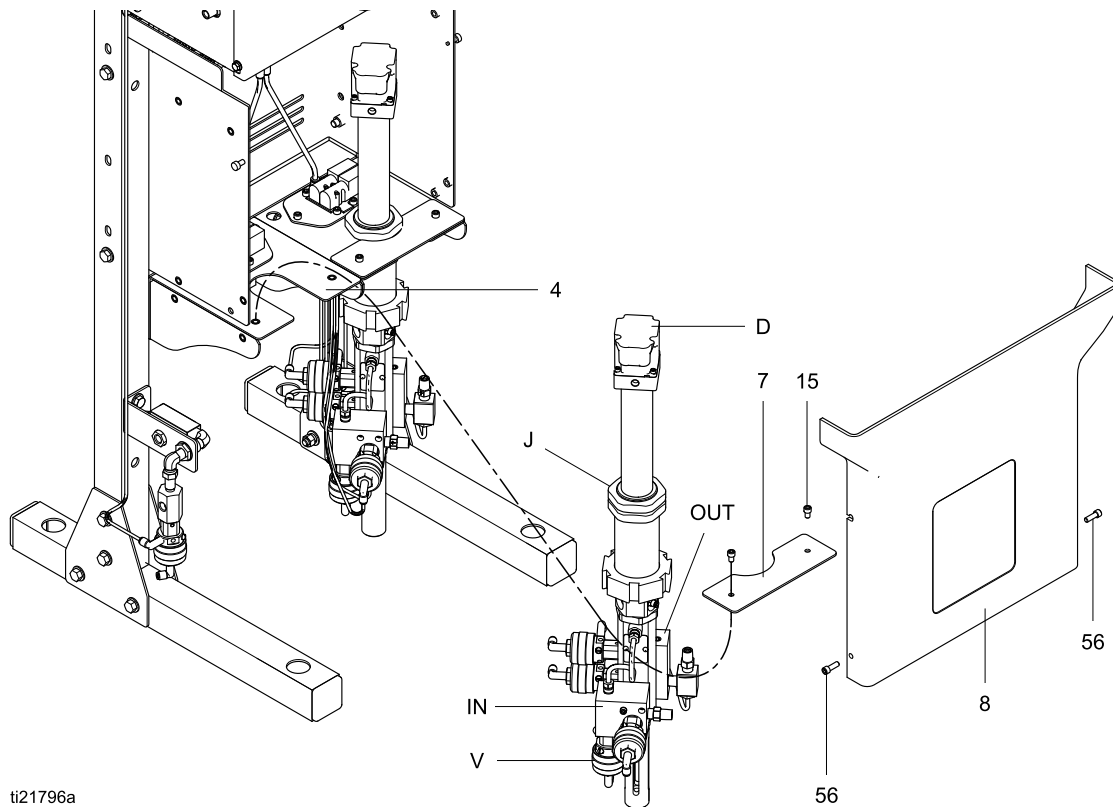
Removing a Pump



1. Follow the steps in [Before Servicing, page 48](#).
2. Remove the screws (56) holding the cover (8) to the front of the unit.
3. Disconnect the cable from the pump driver (101).
4. Disconnect the air lines from the dosing valves (V).
5. Disconnect the fluid inlet and outlet lines from the pump manifolds (IN, OUT).
6. Remove the screws (15) and pump bracket (7).
7. Loosen the jam nuts holding the pump to the mounting bracket (4). Remove the pump.
8. See manual 332339 to repair the pump.

Installing a Pump

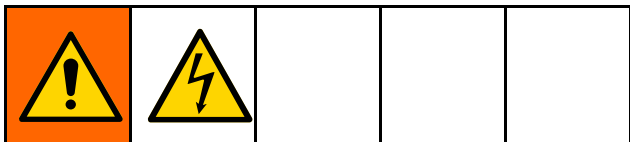
1. Slide the pump into the mounting bracket (4). Tighten the jam nuts to secure.
2. Install the pump bracket (7) and screws (15).
3. Connect the fluid inlet and outlet lines to the pump manifolds (IN, OUT).
4. Connect the air lines to the dosing valves (V).
5. Connect the cable to the pump driver (101).
6. Install the cover (8) to the front of the unit with the screws (56).
7. Open the main air shutoff valve on the air supply line.
8. Restore power to the unit. Turn on the power switch at the electrical control box.



ti21796a

Figure 46 Installing a Pump

Replacing a Solenoid

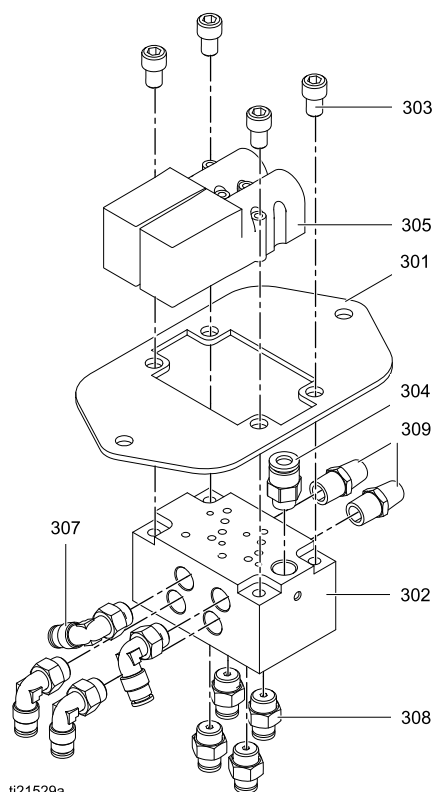


NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

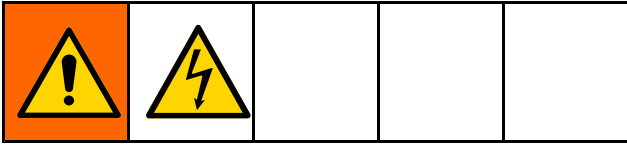
To avoid electrical component damage, remove all system power before plugging any connectors.

1. Follow the steps in [Before Servicing, page 48](#).
2. Remove the screws (56) holding the cover (8) to the front of the unit.
3. Loosen the screws (124) and remove the enclosure cover (117).
4. Disconnect the 2 solenoid wires from J1 on the pump control module. See [Electrical Schematics, page 33](#).
5. Remove 2 screws (303) and the solenoid (305).
6. Install the new solenoid (305) with the screws (303).
7. Connect the 2 solenoid wires to J1 on the pump control module. See [Electrical Schematics, page 33](#).
8. Replace the covers (8, 117).



ti21529a
Figure 47 Solenoid Replacement

Replacing a Fan

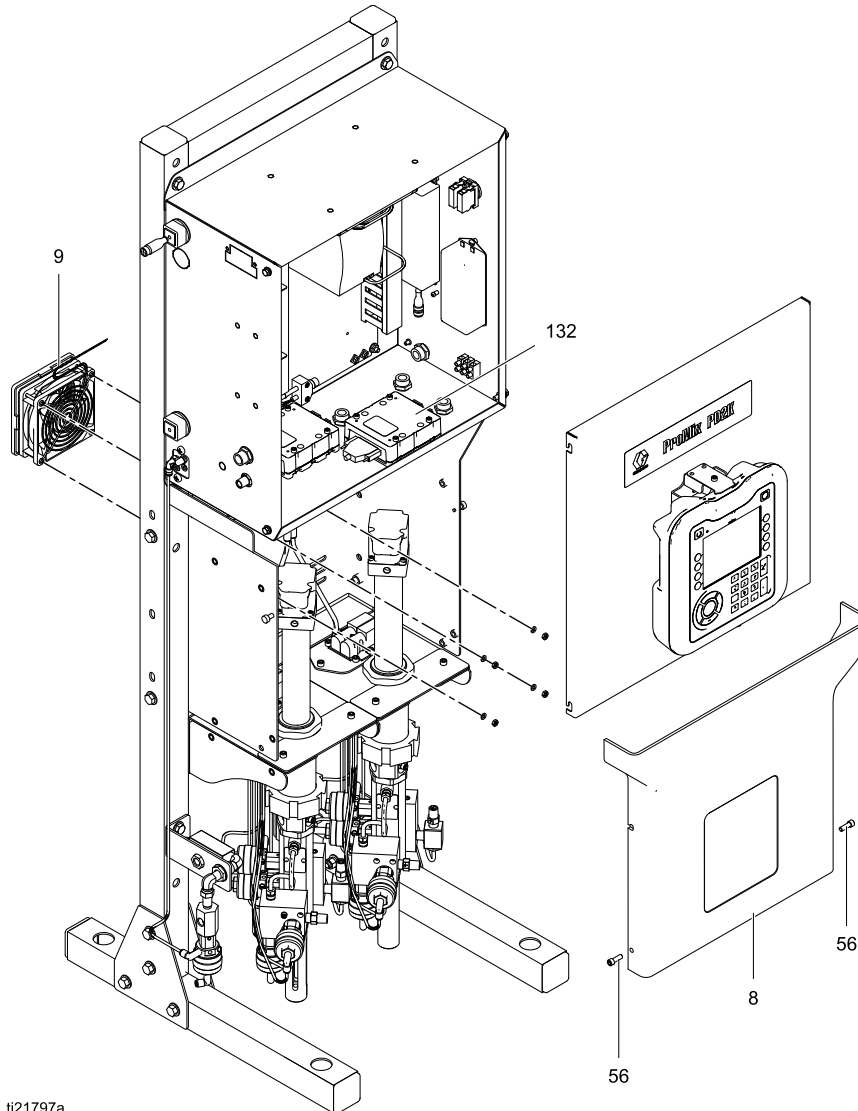


NOTICE

To avoid damaging the circuit boards when servicing the control box, wear Part No. 112190 grounding strap on your wrist and ground appropriately.

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

1. Follow the steps in [Before Servicing, page 48](#).
2. Remove the screws (56) holding the cover (8) to the front of the unit.
3. Loosen the screws (124) and remove the enclosure cover (117).
4. Disconnect the 2 fan wires from the pump control module. See [Electrical Schematics, page 33](#).
5. Remove the 4 screws, nuts, and washers.
6. Install the new fan and attaching hardware.
7. Connect the 2 fan wires to the pump control module. See [Electrical Schematics, page 33](#).
8. Replace the covers (8, 117).



ti21797a

Figure 48 Replacing a Fan

Replacing the Solvent Flow Switch

1. Follow the steps in [Before Servicing, page 48](#).
2. Remove the screws (56) holding the cover (8) to the front of the unit.
3. Disconnect the solvent flow switch wires from J6 pins 11–12 on the EFCM. See [Electrical Schematics, page 33](#).*
4. Disconnect the solvent lines.
5. Unscrew the adapter (45) from the solvent flow switch (19).
6. Unscrew the solvent flow switch from the elbow (18).
7. Remove the solvent flow switch (159).
8. Screw the new solvent flow switch onto the elbow (18).
9. Screw the adapter (45) into the solvent flow switch (19).
10. Connect the wires to J6 pins 11–12. Reconnect the solvent lines.*
11. Install the cover (8) to the front of the unit with the screws (56).
12. Open the main air shutoff valve on the air supply line.
13. Restore power to the unit. Turn on the power switch (P) at the electrical control box.

* If your system has mix-at-wall, and two solvent switches; the second solvent flow switch wires are connected to J7 pins 9–10.

Table 7 Dual Panel Systems Solvent Flow Switches

Solvent Flow Switch 1: Mix Unit #1	EFCM Connector J6 Pins 5–6
Solvent Flow Switch 2: Mix Unit #1 w/ mix-at-wall	EFCM Connector J6 Pins 7–8
Solvent Flow Switch 3: Mix Unit #2	EFCM Connector J6 Pins 9–10
Solvent Flow Switch 4: Mix Unit #2 w/ mix-at-wall	EFCM Connector J6 Pins 11–12

NOTE: A ProMix PD3K+ system may have a combination of mix manifolds (mix-at-wall and/or mix-at-belt) which require different solvent connections. For one or more mix-at-belt manifolds, branch the solvent to each manifold from the outlet of the solvent flow switch and valve as shown in [Replacing the Solvent Valve, page 63](#). Wire this solvent flow switch into Solvent Flow Switch 4 on the EFCM.

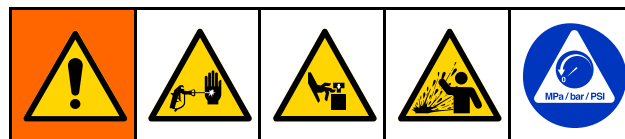
For mix-at-wall manifolds, solvent should be plumbed through a unique solvent flow switch and into the remote solvent valve for each component. See the table below for the appropriate wiring terminals on

the EFCM of each remote solvent flow switch.

Table 8 PD3K+ Solvent Flow Switches

Solvent Flow Switch 1: Component A Remote Solvent	EFCM Connector J6 Pins 11–12
Solvent Flow Switch 2: Component B Remote Solvent	EFCM Connector J7 Pins 9–10
Solvent Flow Switch 3: Component C Remote Solvent	EFCM Connector J6 Pins 7–8
Solvent Flow Switch 4: Mix-at-Belt Solvent/Component D Remote Solvent	EFCM Connector J6 Pins 9–10

Replacing the Solvent Valve



1. Follow the steps in [Before Servicing, page 48](#).
2. Disconnect the air lines from the solvent valve (25).
3. Disconnect the solvent inlet and outlet lines.
4. Unscrew the solvent valve (25) from the adapter (21).
5. Remove the seat (23) and o-rings (22, 24).
6. See manual 312782 to repair the valve.
7. Reassemble in the reverse order.

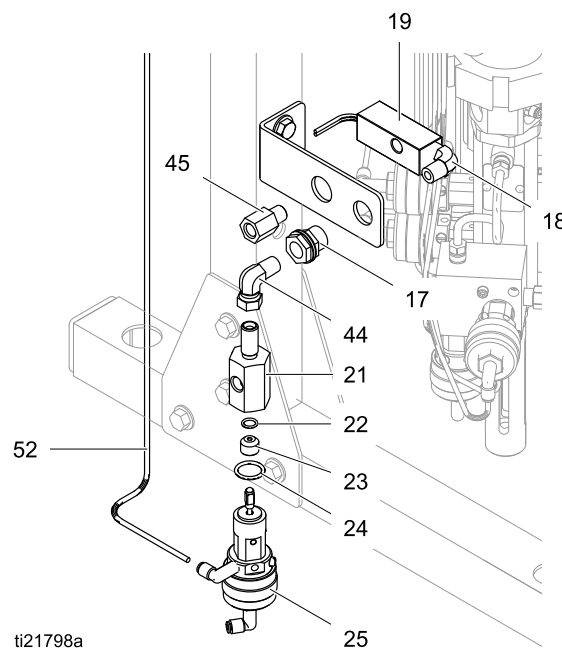


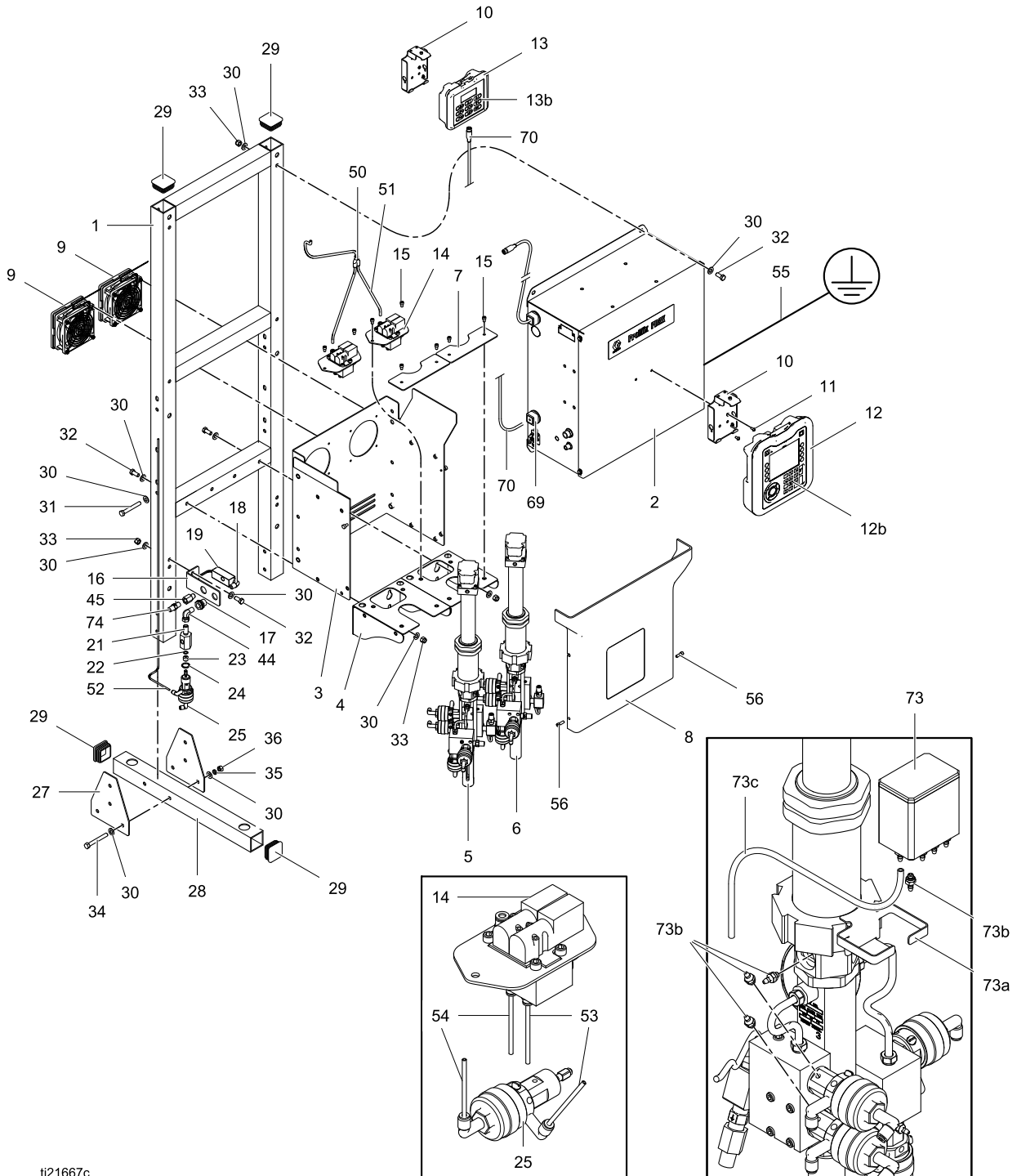
Figure 49 Solvent Valve and Solvent Flow Switch

Parts

Proportioner Parts (Standard Models)

Part No. MC1000 Low Pressure Proportioner
Part No. MC2000 High Pressure Proportioner

Part No. MC3000 Acid Low Pressure Proportioner
Part No. MC4000 Acid High Pressure Proportioner



ti21667c

Part No. MC1000 Low Pressure Proportioner
 Part No. MC2000 High Pressure Proportioner
 Part No. MC3000 Acid Low Pressure Proportioner
 Part No. MC4000 Acid High Pressure Proportioner

Ref	Part	Description	Qty	Ref	Part	Description	Qty
1	— — —	FRAME	1	12a	16X039	TOKEN; latest version of software for the Advanced Display Module; not shown	1
2	— — —	CONTROL BOX, electrical; see Control Box Parts (Standard Models), page 70	1		26C283	TOKEN; latest version of PD3K software; not shown	1
3	— — —	PANEL, fluid	1	12b	24X183	KIT, membrane repair	1
4	— — —	BRACKET, mounting	2	13	24M731	MODULE, booth control	1
5	24T790	PUMP, 70 cc, A side, low pressure; for Model MC1000; see manual 332339	1	13b	26A312	KIT, membrane repair	1
	24T791	PUMP, 70 cc, A side, high pressure; for Models MC2000 and MC4000; see manual 332339	1	14	24T772	MANIFOLD, solenoid; see Solenoid Manifold Parts, page 76	2
6	24T788	PUMP, 35 cc, B side, low pressure; for Model MC1000 and MC3000; see manual 332339	1	15	C19798	SCREW, cap, socket head; 1/4–20 x 3/8 in. (10 mm)	8
	24T789	PUMP, 35 cc, B side, high pressure; for Model MC2000; see manual 332339	1	16	16U655	BRACKET, mounting, valve	1
	24T819	PUMP, 35 cc, B side, high pressure; for Model MC4000 Acid; see manual 332339	1	17	104641	FITTING, bulkhead	1
	24T818	PUMP, 35 cc, B side, low pressure; for Model MC3000 Acid; see manual 332339.	1	18	114342	ELBOW; 1/4 npt (mbe)	1
7	— — —	BRACKET, mounting, pump	2	19	24T787	SWITCH, solvent flow; 1/4 npt(f) ports	1
8	24T771	COVER; includes (2) of item 56	1	21	15T717	ADAPTER, solvent valve (Acid)	1
9	24T770	KIT, fan	2		17X718	ADAPTER, solvent valve	
10	277853	BRACKET, mounting	2	22	111457	O-RING; ptfe	1
11	— — —	SCREW, machine, pan head; M5 x 0.8; 10 mm	2	23	15T725	RETAINER, seat, solvent valve	1
12	24U602	MODULE, display, advanced; includes item 12a	1	24	15Y627	O-RING; ptfe	1
				25	15X303	VALVE, solvent; see manual 312782	1
				27	— — —	GUSSET	4
				28	— — —	LEG, floor stand	2
				29	— — —	PLUG, tube, square	6

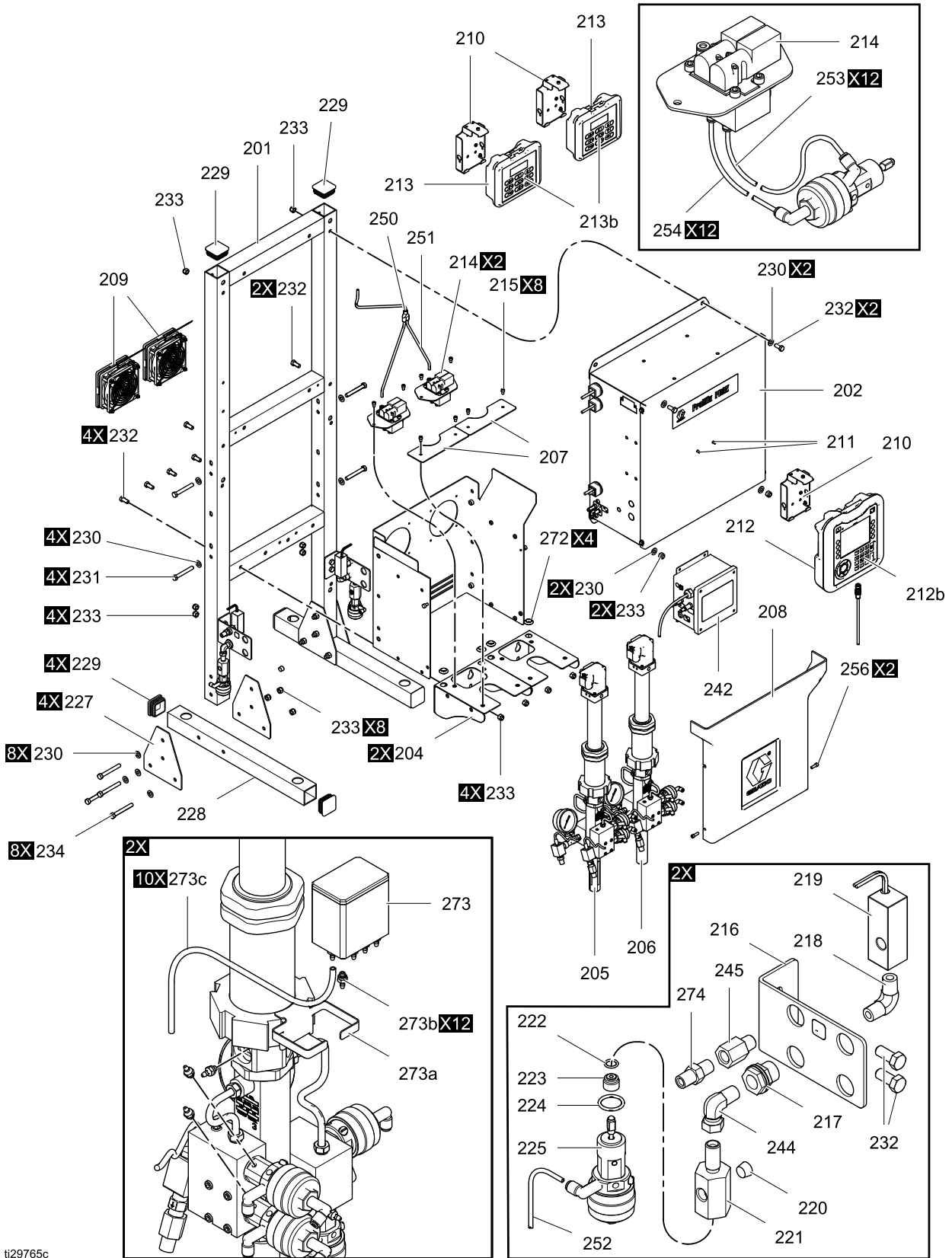
Parts

Ref	Part	Description	Qty	Ref	Part	Description	Qty
30	— — —	WASHER; 3/8	40	54	— — —	TUBE, nylon, red; for control air to turn valves off; 5/32 in. (4 mm) OD x 20 ft (cut to length required)	A/R
31	— — —	SCREW, cap, hex head; 3/8-16 x 2.75 in. (70 mm)	4				
32	— — —	SCREW, cap, hex head; 3/8-16 x 7/8 in. (22 mm)	10	55	223547	GROUND WIRE	1
33	— — —	NUT, lock; 3/8-16	10	56	— — —	SCREW, cap, socket head; 1/4-20 x 3/4 in. (19 mm)	2
34	— — —	SCREW, cap, hex head; 3/8-16 x 3 in. (76 mm)	8	69	— — —	GROMMET, cable	1
35	— — —	WASHER, lock; 3/8	8	70	16V429	CABLE, CAN, intrinsically safe, 5 pin; for booth control; fbe; 50 ft (15 m)	1
36	— — —	NUT, hex; 3/8-16	8				
43	— — —	WIRE HARNESS; for Model MC1000 (not shown)	2	73	24T302	KIT, cup, TSL; includes items 73a-73e	2
	— — —	WIRE HARNESS; for Model MC2000 (not shown)	2	73a	— — —	BRACKET	1
44	17R502	SWIVEL, 90°; 1/4 npt(m) x 1/4 npsm(f)	1	73b	24U617	KIT, barbed fittings; includes o-rings; package of 12	1
45	17A106	FITTING, adapter; 1/4 npt(m) x 1/4 npt(f)	1	73c	— — —	TUBE, polyurethane; 1/4 in. (6 mm) OD; 10 ft (3.05 m); cut to fit	1
50	115287	FITTING, Y-tube; for 1/4 in. (6 mm) OD tubing	1	73d	— — —	PLUG, screw; 10-32; to replace unused item 73b at TSL cup; not shown	4
51	— — —	TUBE, polyethylene; 1/4 in. (6 mm) OD x 3 ft	A/R	73e	— — —	GASKET; for item 73d; not shown	4
52	— — —	TUBE, nylon; 5/32 in. (4 mm) OD x 3.5 ft	A/R	74	166421	NIPPLE, pipe; 1/4 npt	1
53	— — —	TUBE, nylon, green; for control air to turn valves on; 5/32 in. (4 mm) OD x 20 ft (cut to length required)	A/R				

Items marked — — — are not available separately.

Proportioner Parts (Dual Panel Models)

Part No. MC1002 Low Pressure Proportioner
 Part No. MC2002 High Pressure Proportioner
 Part No. MC4002 Acid High Pressure Proportioner



ti29765c

Parts

Part No. MC1002 Low Pressure Proportioner

Part No. MC2002 High Pressure Proportioner

Part No. MC4002 Acid High Pressure Proportioner

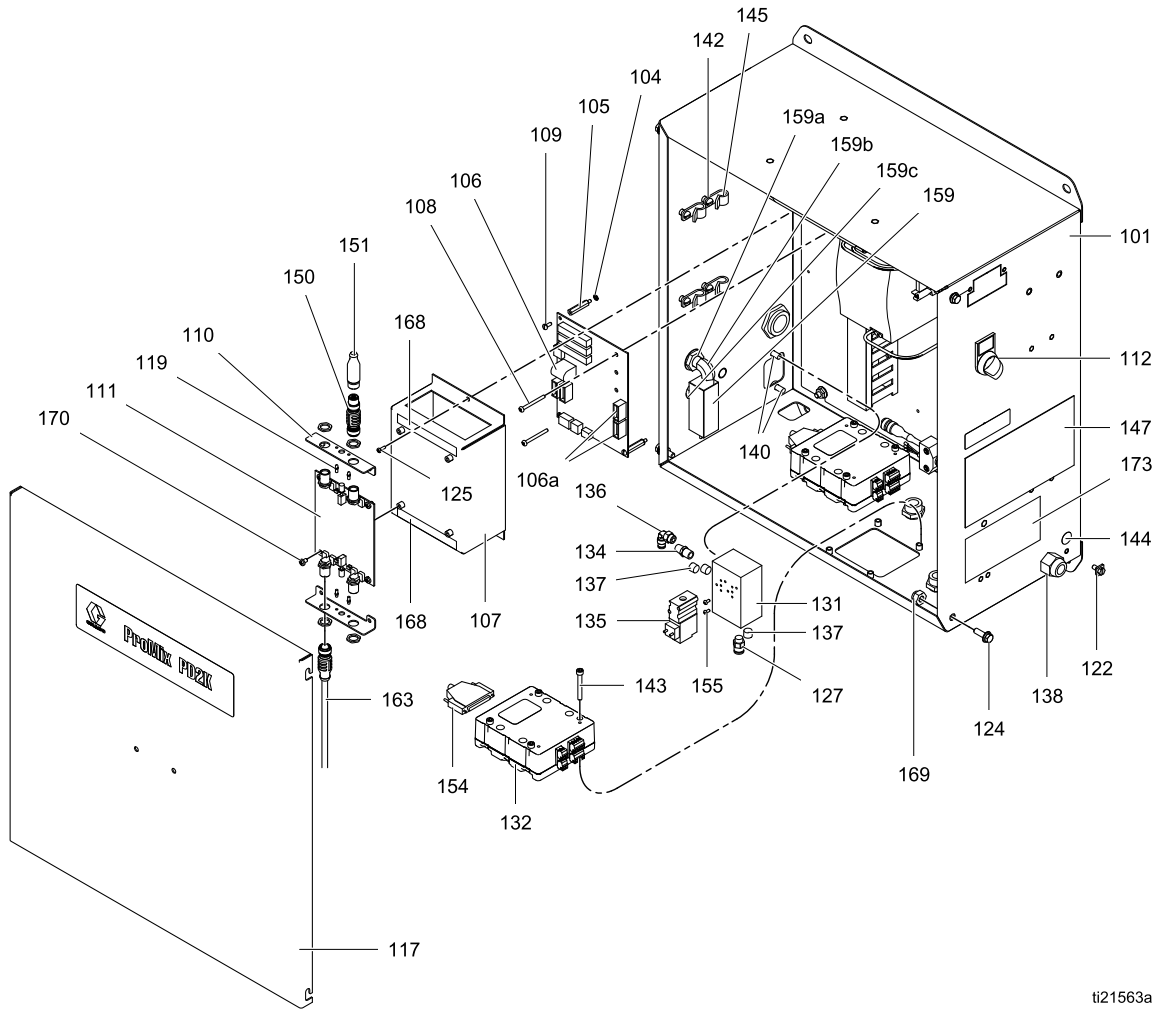
Ref	Part	Description	Qty	Ref	Part	Description	Qty
201	— — —	FRAME	1	212a	17N631	TOKEN; latest version of software for the Advanced Display Module; not shown	1
202	— — —	CONTROL BOX, electrical; see Control Box Parts (Standard Models), page 70	1	212b	24X183	KIT, membrane repair	1
203	— — —	PANEL, fluid	1	213	24M731	MODULE, booth control	2
204	— — —	BRACKET, mounting	2	213b	26A312	KIT, membrane repair	2
205	24T790	PUMP, 70 cc, A side, low pressure; for Model MC1000; see manual 332339	1	214	24T772	MANIFOLD, solenoid; see Solenoid Manifold Parts, page 76	2
	24T791	PUMP, 70 cc, A side, high pressure; for Models MC2000 and MC4000; see manual 332339	1	215	C19798	SCREW, cap, socket head; 1/4–20 x 3/8 in. (10 mm)	8
206	24T788	PUMP, 35 cc, B side, low pressure; for Model MC1000; see manual 332339	1	216	16U655	BRACKET, mounting, valve	1
	24T789	PUMP, 35 cc, B side, high pressure; for Model MC2000; see manual 332339	1	217	104641	FITTING, bulkhead	1
	24T819	PUMP, 35 cc, B side, high pressure; for Model MC4000 Acid; see manual 332339	1	218	114342	ELBOW; 1/4 npt (mbe)	1
207	— — —	BRACKET, mounting, pump	2	219	24T787	SWITCH, solvent flow; 1/4 npt(f) ports	1
208	24T771	COVER; includes (2) of item 56	1	221	15T717	ADAPTER, solvent valve (Acid)	1
209	24T770	KIT, fan	2		17X718	ADAPTER, solvent valve	1
210	277853	BRACKET, mounting	2	222	111457	O-RING; ptfе	1
211	— — —	SCREW, machine, pan head; M5 x 0.8; 10 mm	2	223	15T725	RETAINER, seat, solvent valve	1
212	24U602	MODULE, display, advanced; includes item 12a	1	224	15Y627	O-RING; ptfе	1
				225	15X303	VALVE, solvent; see manual 312782	1
				227	— — —	GUSSET	4
				228	— — —	LEG, floor stand	2
				229	— — —	PLUG, tube, square	6

Ref	Part	Description	Qty	Ref	Part	Description	Qty
230	— — —	WASHER; 3/8	40	254	— — —	TUBE, nylon, red; for control air to turn valves off; 5/32 in. (4 mm) OD x 20 ft (cut to length required)	A/R
231	— — —	SCREW, cap, hex head; 3/8-16 x 2.75 in. (70 mm)	4				
232	— — —	SCREW, cap, hex head; 3/8-16 x 7/8 in. (22 mm)	10	255	223547	GROUND WIRE	1
233	— — —	NUT, lock; 3/8-16	10	256	— — —	SCREW, cap, socket head; 1/4-20 x 3/4 in. (19 mm)	2
234	— — —	SCREW, cap, hex head; 3/8-16 x 3 in. (76 mm)	8	269	— — —	GROMMET, cable	1
235	— — —	WASHER, lock; 3/8	8	270	16V429	CABLE, CAN, intrinsically safe, 5 pin; for booth control; fbe; 50 ft (15 m)	1
236	— — —	NUT, hex; 3/8-16	8				
243	— — —	WIRE HARNESS; for Model MC1000 (not shown)	2	273	24T302	KIT, cup, TSL; includes items 73a-73e	2
	— — —	WIRE HARNESS; for Model MC2000 (not shown)	2	273a	— — —	BRACKET	1
244	17R502	SWIVEL, 90°; 1/4 npt(m) x 1/4 npsm(f)	1	273b	24U617	KIT, barbed fittings; includes o-rings; package of 12	1
245	17A106	FITTING, adapter; 1/4 npt(m) x 1/4 npt(f)	1	273c	— — —	TUBE, polyurethane; 1/4 in. (6 mm) OD; 10 ft (3.05 m); cut to fit	1
250	115287	FITTING, Y-tube; for 1/4 in. (6 mm) OD tubing	1	273d	— — —	PLUG, screw; 10-32; to replace unused item 73b at TSL cup; not shown	4
251	— — —	TUBE, polyethylene; 1/4 in. (6 mm) OD x 3 ft	A/R	273e	— — —	GASKET; for item 73d; not shown	4
252	— — —	TUBE, nylon; 5/32 in. (4 mm) OD x 3.5 ft	A/R	274	166421	NIPPLE, pipe; 1/4 npt	1
253	— — —	TUBE, nylon, green; for control air to turn valves on; 5/32 in. (4 mm) OD x 20 ft (cut to length required)	A/R				

Items marked — — — are not available separately.

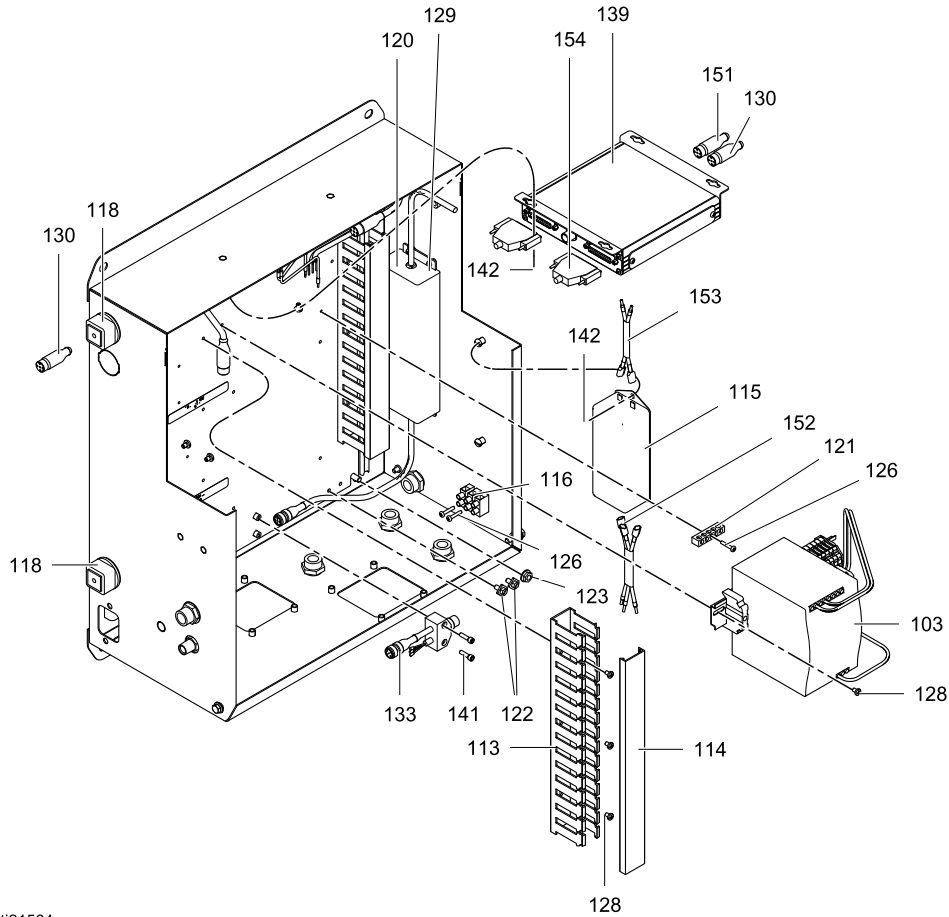
Control Box Parts (Standard Models)

Electrical Control Box



ti21563a

Electrical Control Box (continued)



ti21564a

Ref	Part	Description	Qty	Ref	Part	Description	Qty
101	---	ENCLOSURE	1	110	---	BRACKET, board	2
102	---	PANEL, back	1	111	24M485	BOARD, isolation, IS	1
103	24T769	POWER SUPPLY; 48 Vdc; 10 A; 480 W	1	112	16U725	SWITCH, selector, 2 position	1
104	---	WASHER, lock; no. 6	3	113	---	DUCT, wire	1
105	---	SPACER, standoff	3	114	---	COVER, duct	2
106	255786	BOARD, barrier; includes item 106a	1	115	16V446	FILTER, line; 10A	1
106a	15D979	FUSE; 400 mA, quick acting	2	116	---	BLOCK, terminal	1
107	---	COVER, barrier	1	117	---	COVER, enclosure	1
108	---	SCREW, machine, pan head; 6-32 x 1.5 in. (38 mm)	2	118	---	GROMMET	2
109	---	SCREW, machine, pan head; 6-32 x 0.375 in. (10 mm)	3	119	---	LIGHT	4
				120	16T660	POWER SUPPLY; 24 Vdc, 4 A, 96 W	1

Parts

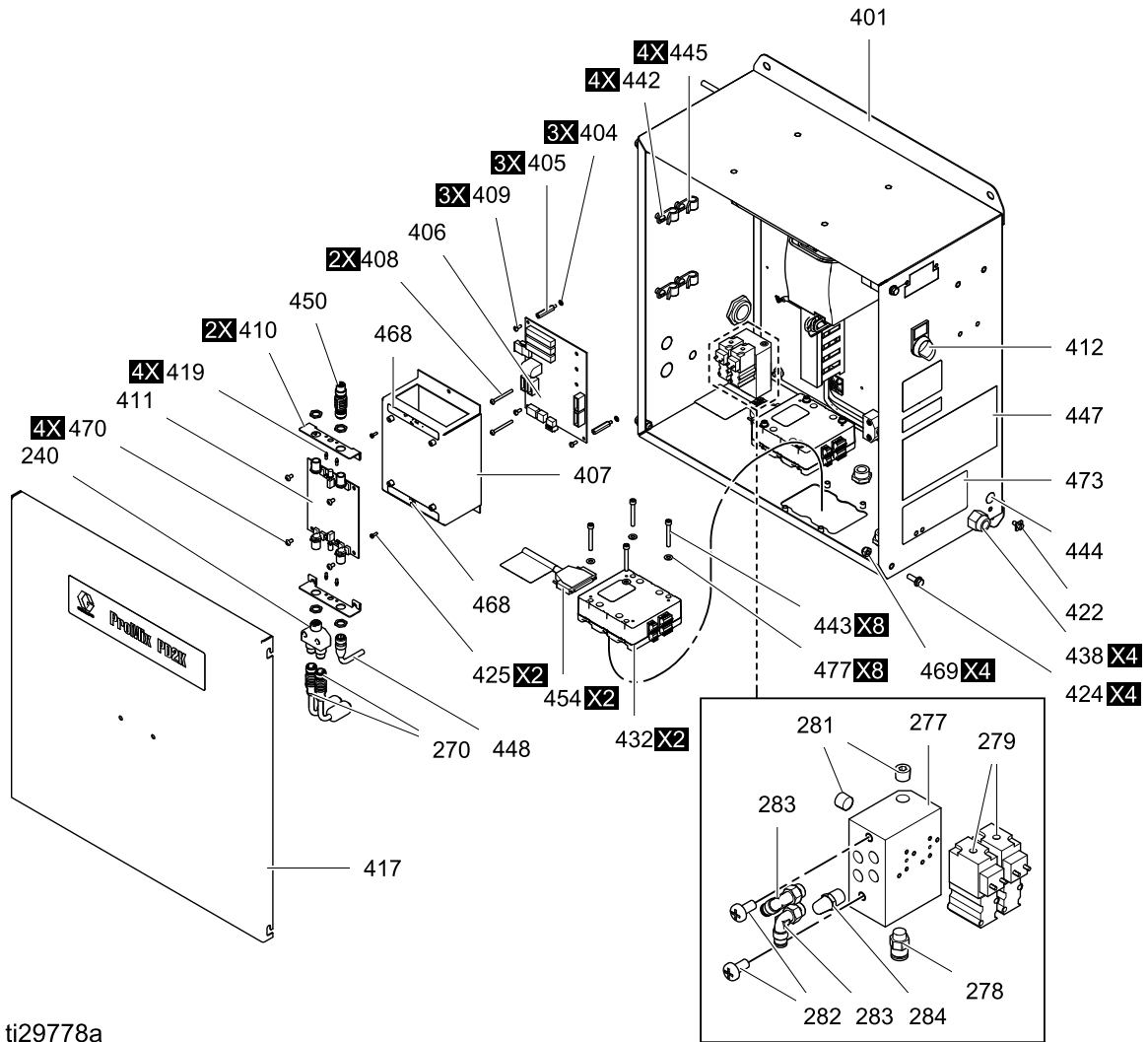
Ref	Part	Description	Qty	Ref	Part	Description	Qty
121	— — —	CONNECTOR, bar, ground	1	142	— — —	SCREW, machine, pan head; 10–32 x 0.25 in. (6 mm)	10
122	— — —	SCREW, ground; M5 x 0.8	3	143	— — —	SCREW, machine, pan head; 10–32 x 1.5 in. (38 mm)	8
123	— — —	NUT, hex, flange head; 1/4–20	4	144▲	172953	LABEL, ground symbol	1
124	— — —	SCREW, flanged, hex head; 1/4–20 x 0.75 in. (19 mm)	4	145	— — —	CLAMP; for 3/8 in. (10 mm) OD cable	4
125	— — —	SCREW, machine, pan head; 10–24 x 0.375 in. (10 mm)	2	147▲	15W598	LABEL, warning	1
126	— — —	SCREW, machine, pan head; 10–32 x 0.75 in. (19 mm)	3	148	— — —	HARNESS, CAN isolation, power (not shown)	1
127	— — —	FITTING, connector; 1/8 npt(m) x 1/4 in. (6 mm) OD tube	1	150	16T072	ADAPTER, CAN cable, IS to non-IS	1
128	— — —	SCREW, machine, pan head; 8–32 x 0.25 in. (6 mm)	8	151	121227	CABLE, CAN; fbe; 0.6 m	1
129	— — —	SCREW, machine, binding head; 6–32 x 0.25 in. (6 mm)	4	152	— — —	HARNESS, 3–wire	1
130	121003	CABLE, CAN; fbe; 3.0 m	1	153	— — —	HARNESS, 2–wire	1
131	— — —	MANIFOLD, air	1	154	16T659	CABLE, D-SUB, 25 pin, 2.5 ft	2
132	24N527	MODULE, control, pump	2	155	— — —	SCREW, self sealing	2
133	16P243	CABLE, splitter	1	159	15T632	KIT, air flow switch; includes items 159a-159c	1
134	— — —	MUFFLER	1	159a	104641	FITTING, bulkhead	1
135	121324	VALVE, solenoid; 3–way	1	159b	111763	ELBOW; 1/4 npt (mbe)	1
136	— — —	ELBOW, swivel; 1/8 npt(m) x 5/32 in. (4 mm) OD tube	1	159c	113029	NIPPLE; 1/4 npt	1
137	— — —	PLUG, pipe; 1/8 npt(m)	3	163	16V429	CABLE, CAN, I.S.; fbe; 50 ft. 15.25 m)	1
138	— — —	STRAIN RELIEF, cord	4	168▲	16U600	LABEL, isolation board	1
139	24T773	MODULE, control, enhanced fluid	1	169	— — —	NUT, hex, self-locking; 1/4–20	4
140	— — —	SCREW, machine, pan head; 1/4–20 x 0.5 in. (13 mm)	2	170	— — —	SCREW, machine, pan head; 8–32 x 0.312 in. (8 mm)	4
141	— — —	SCREW, cap, socket head; 8–32 x 0.625 in. (16 mm)	2	173▲	15W776	LABEL, warning	1

Items marked — — — are not available separately.

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

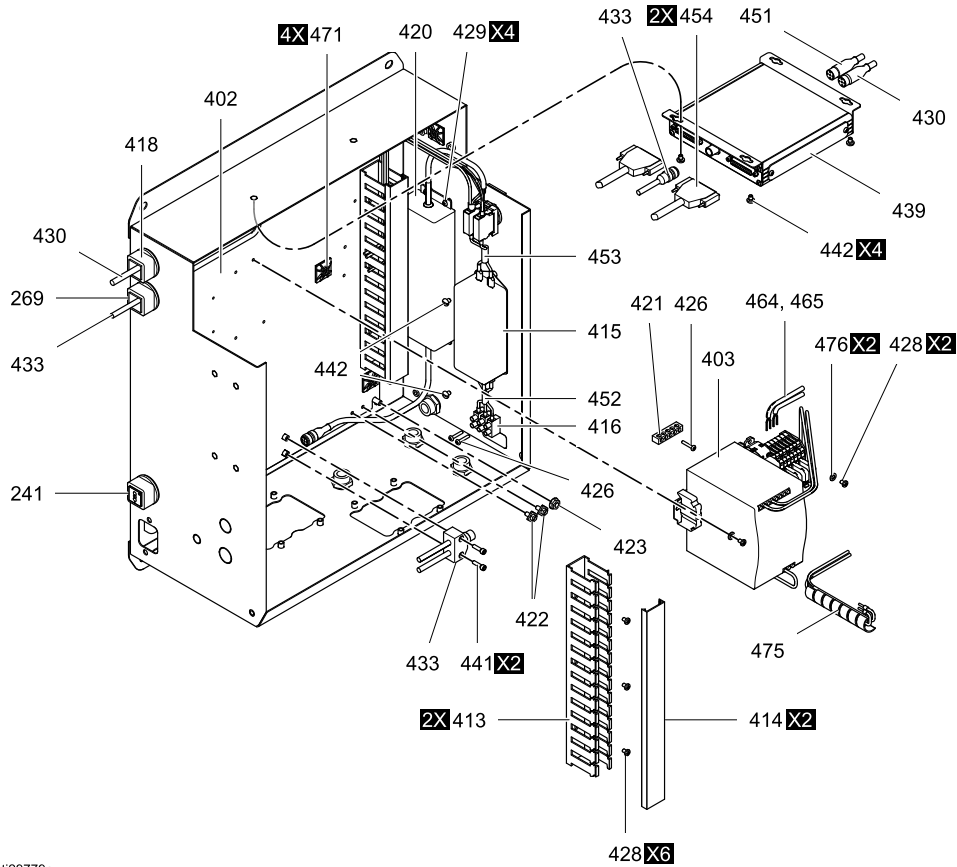
Control Box Parts (Dual Panel Models)

Electrical Control Box



ti29778a

Electrical Control Box (continued)



ti29779a

Ref	Part	Description	Qty	Ref	Part	Description	Qty
401	---	ENCLOSURE	1	410	---	BRACKET, board	2
402	---	PANEL, back	1	411	24M485	BOARD, isolation, IS	1
403	26A189	POWER SUPPLY; 48 Vdc; 10 A; 480 W	1	412	16U725	SWITCH, selector, 2 position	1
404	---	WASHER, lock; no. 6	3	413	---	DUCT, wire	1
405	---	SPACER, standoff	3	414	---	COVER, duct	2
406	255786	BOARD, barrier; includes item 106a	1	415	16V446	FILTER, line; 10A	1
406a	15D979	FUSE; 400 mA, quick acting	2	416	---	BLOCK, terminal	1
407	---	COVER, barrier	1	417	---	COVER, enclosure	1
408	---	SCREW, machine, pan head; 6-32 x 1.5 in. (38 mm)	2	418	---	GROMMET	2
409	---	SCREW, machine, pan head; 6-32 x 0.375 in. (10 mm)	3	419	---	LIGHT	4
				420	16T660	POWER SUPPLY; 24 Vdc, 4 A, 96 W	1

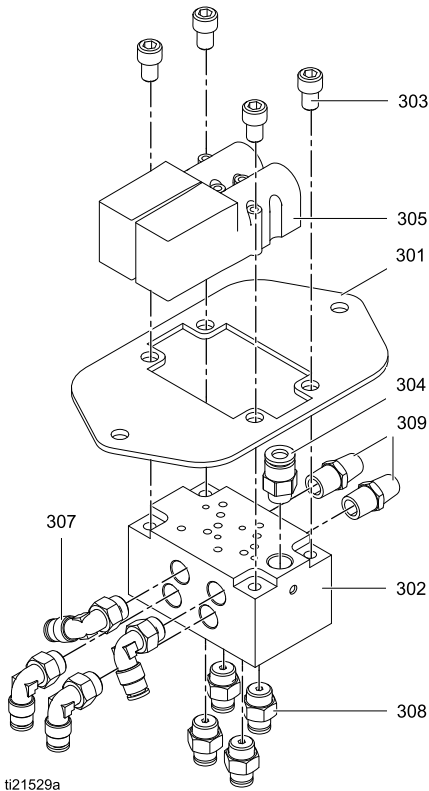
Ref	Part	Description	Qty	Ref	Part	Description	Qty
421	— — —	CONNECTOR, bar, ground	1	442	— — —	SCREW, machine, pan head; 10–32 x 0.25 in. (6 mm)	10
422	— — —	SCREW, ground; M5 x 0.8	3	443	— — —	SCREW, machine, pan head; 10–32 x 1.5 in. (38 mm)	8
423	— — —	NUT, hex, flange head; 1/4–20	4	444▲	172953	LABEL, ground symbol	1
424	— — —	SCREW, flanged, hex head; 1/4–20 x 0.75 in. (19 mm)	4	445	— — —	CLAMP; for 3/8 in. (10 mm) OD cable	4
425	— — —	SCREW, machine, pan head; 10–24 x 0.375 in. (10 mm)	2	447▲	15W598	LABEL, warning	1
426	— — —	SCREW, machine, pan head; 10–32 x 0.75 in. (19 mm)	3	448	— — —	HARNESS, CAN isolation, power (not shown)	1
427	— — —	FITTING, connector; 1/8 npt(m) x 1/4 in. (6 mm) OD tube	1	450	16T072	ADAPTER, CAN cable, IS to non-IS	1
428	— — —	SCREW, machine, pan head; 8–32 x 0.25 in. (6 mm)	8	451	121227	CABLE, CAN; fbe; 0.6 m	1
429	— — —	SCREW, machine, binding head; 6–32 x 0.25 in. (6 mm)	4	452	— — —	HARNESS, 3–wire	1
430	121003	CABLE, CAN; fbe; 3.0 m	1	453	— — —	HARNESS, 2–wire	1
431	— — —	MANIFOLD, air	1	454	16T659	CABLE, D-SUB, 25 pin, 2.5 ft	2
432	24N527	MODULE, control, pump	2	455	— — —	SCREW, self sealing	2
433	16P243	CABLE, splitter	1	459	15T632	KIT, air flow switch; includes items 159a-159c	1
434	— — —	MUFFLER	1	459a	104641	FITTING, bulkhead	1
435	121324	VALVE, solenoid; 3–way	1	459b	111763	ELBOW; 1/4 npt (mbe)	1
436	— — —	ELBOW, swivel; 1/8 npt(m) x 5/32 in. (4 mm) OD tube	1	459c	113029	NIPPLE; 1/4 npt	1
437	— — —	PLUG, pipe; 1/8 npt(m)	3	463	16V429	CABLE, CAN, I.S.; fbe; 50 ft. 15.25 m)	1
438	— — —	STRAIN RELIEF, cord	4	468▲	16U600	LABEL, isolation board	1
439	24T773	MODULE, control, enhanced fluid	1	469	— — —	NUT, hex, self-locking; 1/4–20	4
440	— — —	SCREW, machine, pan head; 1/4–20 x 0.5 in. (13 mm)	2	470	— — —	SCREW, machine, pan head; 8–32 x 0.312 in. (8 mm)	4
441	— — —	SCREW, cap, socket head; 8–32 x 0.625 in. (16 mm)	2	473▲	15W776	LABEL, warning	1

Items marked — — — are not available separately.

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

Solenoid Manifold Parts

Part No. 24T772 Solenoid Manifold



Ref	Part	Description	Qty
301	— — —	PLATE	1
302	— — —	MANIFOLD	1
303	— — —	SCREW, cap, socket head; 1/4-20 x 0.375 in. (10 mm)	4
304	115671	CONNECTOR; 1/8 npt(m) x 1/4 in. (6 mm) OD tube	1
305	16P812	VALVE, solenoid	2
307	114151	FITTING, elbow, swivel; 1/8 npt(m) x 5/32 in. (4 mm) OD tube	4
308	114263	FITTING, straight; 1/8 npt(m) x 5/32 in. (4 mm) OD tube	4
309	C06061	MUFFLER	2

Items marked — — — are not available separately.

Repair Kits and Accessories

Hose Bundles

1/4 in. (6 mm) ID Hose Bundles

Select a hose bundle from the following table. Always use Graco hoses.

Application	Hose Bundle Part No.	Length	Material and Description	Maximum Fluid Working Pressure
Low Pressure Conventional Air Spray	24T140	25 ft (7.6 m)	Nylon (A side and Solvent, both are white/translucent, solvent is marked with a band of black tape), Moisture Guard (B side, red), Air Hose	225 psi (1.6 MPa, 16 bar)
	24T141	50 ft (15.2 m)		
Low Pressure Electrostatic Air Spray*	24T138	25 ft (7.6 m)	Nylon (A side and Solvent, both are white/translucent, solvent is marked with a band of black tape), Moisture Guard (B side; red), Grounded Air Hose with left-hand thread	225 psi (1.6 MPa, 16 bar)
	24T139	50 ft (15.2 m)		
High Pressure Conventional Air-Assisted Spray	24T247	25 ft (7.6 m)	Nylon (A side and Solvent, both are blue, solvent is marked with a band of black tape), Moisture Guard (B side, red), Air Hose	2000 psi (13.8 MPa, 138 bar)
	25A524**			
	24T248 25A525**	50 ft (15.2 m)		
High Pressure Electrostatic Air-Assisted Spray*	24T245	25 ft (7.6 m)	Nylon (A side and Solvent, both are blue, solvent is marked with a band of black tape), Moisture Guard (B side, red), Grounded Air Hose with left-hand thread	2000 psi (13.8 MPa, 138 bar)
	25A522**			
	24T246 25A523**	50 ft (15.2 m)		

* To use a quick disconnect on an existing electrostatic air hose, see instructions in Electrostatic Air Hose Quick Disconnect Kit 24S004.

** Has PTFE and SST catalyst hose for acid applications.

3/8 in. (10 mm) ID Fluid Hoses

If 3/8 in. (10 mm) fluid hose is required for your application, order one of the following to replace the 1/4 in. hose in your hose bundle. Always use Graco hoses.

Application	Hose Part No.	Length	Material	Maximum Fluid Working Pressure
Low Pressure Air Spray	24T763	25 ft (7.6 m)	Nylon	200 psi (1.4 MPa, 13.8 bar)
	24T764	50 ft (15.2 m)		

Fluid Whip Hoses

Select a fluid whip hose from the following table. Always use Graco hoses.

Application	Hose Part No.	Hose I.D.	Length	Material	Maximum Fluid Working Pressure
Low Pressure	24N641	0.125 in. (3 mm)	6 ft (1.8 m)	Nylon	3200 psi (22 MPa, 220 bar)
	24N305	0.25 in. (6 mm)	6 ft (1.8 m)	Nylon	225 psi (1.6 MPa, 16 bar)
High Pressure	24N641	0.125 in. (3 mm)	6 ft (1.8 m)	Nylon	3200 psi (22 MPa, 220 bar)
	24N348	0.25 in. (6 mm)	6 ft (1.8 m)	PTFE	3000 psi (20.7 MPa, 207 bar)

Mix At Belt Manifold Kits

Mix Manifold	Description	Maximum Fluid Working Pressure
24R991	Low pressure mix manifold	300 psi (2.1 MPa, 21 bar)
24R992	High pressure mix manifold	1500 psi (10.5 MPa, 105 bar)
24T273	High pressure mix manifold, for acid-compatible materials	1500 psi (10.5 MPa, 105 bar)

See manual 3A2801 for more information.

IS Remote Color Change Kits

Table 9 . Low Pressure, Non-Circulating Remote Color Change Manifold Kits (300 psi [2.068 MPa, 20.68 bar])

Number of Color + Solvent Valves	Number of Catalyst + Solvent Valves		
	1	2	4
1	24V157		
2	24V158	24V331	
4	24V159	24V332	24V343
6	24V160	24V333	24V344
8	24V161	24V334	24V345
12	24V162	24V335	24V346
13–18	24V163		
13–24	24V164		
13–30	24V165		

Table 11 . High-Pressure, Non-Circulating Remote Color Change Manifold Kits (1500 psi [10.34 MPa, 103.4 bar])

Number of Color + Solvent Valves	Number of Catalyst + Solvent Valves		
	1	2	4
1	24V359		
2	24V360	24V381	
4	24V361	24V382	24V396
6	24V362	24V383	24V397
8	24V363	24V384	24V398
12	24V364	24V385	24V399
13–18	24V365		
13–24	24V366		
13–30	24V367		

Table 10 . Low Pressure, Circulating Remote Color Change Manifold Kits (300 psi [2.068 MPa, 20.68 bar])

Number of Color + Solvent Valves	Number of Catalyst + Solvent Valves		
	1	2	4
1	24V166		
2	24V167	24V336	
4	24V308	24V337	24V347
6	24V309	24V338	24V348
8	24V326	24V339	24V349
12	24V327	24V340	24V350
13–18	24V328		
13–24	24V329		
13–30	24V330		

Table 12 . High-Pressure, Circulating Remote Color Change Manifold Kits (1500 psi [10.34 MPa, 103.4 bar])

Number of Color + Solvent Valves	Number of Catalyst + Solvent Valves		
	1	2	4
1	24V369		
2	24V370	24V389	
4	24V371	24V390	24V402
6	24V372	24V391	24V403
8	24V373	24V392	24V404
12	24V374	24V393	24V405
13–18	24V375		
13–24	24V376		
13–30	24V377		

See manual 333282 for more information.

Color and Catalyst Change Kits

Table 13 . Low Pressure Color/Catalyst Change Kits (300 psi [2.068 MPa, 20.68 bar])

Kit Part No.	Kit Description
Low Pressure Non-Circulating Kits	
24X316	1 color or 1 catalyst change valve
24R915	2 color or 2 catalyst change valves
24R916	4 color or 4 catalyst change valves
24R917	6 color change valves
24R918	8 color change valves
Low Pressure Circulating Kits	
24X317	1 color or 1 catalyst change valve
24R919	2 color or 2 catalyst change valves
24R920	4 color or 4 catalyst change valves
24R921	6 color change valves
24R922	8 color change valves

See manual 332455 for more information.

Table 14 . High Pressure Color/Catalyst Change Kits (1500 psi [10.34 MPa, 103.4 bar])

Kit Part No.	Kit Description
High Pressure Non-Circulating Kits	
24X318	1 color or 1 catalyst change valve
24R959	2 color or 2 catalyst change valves
24R960	4 color or 4 catalyst change valves
24R961	6 color change valves
24R962	8 color change valves
High Pressure Acid-Compatible Non-Circulating Kits	
24T579	2 catalyst change valves
24T580	4 catalyst change valves
High Pressure Circulating Kits	
24X319	1 color or 1 catalyst change valve
24R963	2 color or 2 catalyst change valves
24R964	4 color or 4 catalyst change valves
24R965	6 color change valves
24R966	8 color change valves

Spray Guns

Application	Gun Model	Gun Manual No.	Maximum Fluid Working Pressure
Conventional Air Spray	AirPro	312414	300 psi (2.1 MPa, 21 bar)
Electrostatic Air Spray	Pro Xp	3A2494	100 psi (0.7 MPa, 7 bar)
Conventional Air-Assisted Spray	G15	3A0149	1500 psi (10.5 MPa, 105 bar)
Electrostatic Air-Assisted Spray	Pro Xp AA	3A2495	3000 psi (21 MPa, 210 bar)

Pump Expansion Kits

Kit Part No.	Kit Description
Low Pressure Pumps (300 psi [2.068 MPa, 20.68 bar])	
24R968	Low pressure resin 70cc pump
24R970	Low pressure catalyst 35cc pump
High Pressure Pumps (1500 psi [10.34 MPa, 103.4 bar])	
24R969	High pressure resin 70cc pump
24R971	High pressure catalyst 35cc pump
26A048	High pressure catalyst 35cc acid compatible

NOTE: These are not required for acid systems which only use a single catalyst, or dual panel systems which already include four pumps.

See manual 332456 for more information.

Communication Kits

Kit Part No.	Kit Description
24T805	AWI Kit for PD2K
15V337	AWI Module

Upgrade Kits

Kit Part No.	Kit Description
26C416	PD3K+ Upgrade Kit

Technical Specifications

Positive Displacement Proportioner	U.S.	Metric
Maximum fluid working pressure:		
MC0500 and MC0502 Systems with Low-Pressure Pumps	300 psi	2.1 MPa, 21 bar
MC0500 and MC0502 Systems with High-Pressure Pumps	1500 psi	10.5 MPa, 105 bar
MC1000, MC1002, and MC3000 Air Spray System	300 psi	2.1 MPa, 21 bar
MC2000, MC2002, MC4000, and MC4002 Air-Assisted Spray Systems	1500 psi	10.5 MPa, 105 bar
Maximum working air pressure:	100 psi	0.7 MPa, 7.0 bar
Air supply:	85–100 psi	0.6–0.7 MPa, 6.0–7.0 bar)
Air filter inlet size:	3/8 npt(f)	
Air filtration for air logic (user-supplied):	5 micron (minimum) filtration required; clean and dry air	
Air filtration for atomizing air (user-supplied):	30 micron (minimum) filtration required; clean and dry air	
Mixing ratio range:	0.1:1 — 50:1, ±1%	
Fluids handled:	one or two component: <ul style="list-style-type: none"> • solvent and waterborne paints • polyurethanes • epoxies • acid catalyzed varnishes • moisture sensitive isocyanates 	
Viscosity range of fluid:	20–5000 centipoise	
Fluid filtration (user-supplied):	100 mesh minimum	
Maximum fluid flow:	800 cc/minute (depending on material viscosity)	
Fluid outlet size:	1/4 npt(m)	
External power supply requirements:	90 - 250 Vac, 50/60 Hz, 7 amps maximum draw 15 amp maximum circuit breaker required 8 to 14 AWG power supply wire gauge	
Operating temperature range:	36 to 122°F	2 to 50°C
Storage temperature range:	-4 to 158°F	-20 to 70°C
Weight (approximate):	195 lb	88 kg
Sound data:	Less than 75 dB(A)	
Wetted parts:		
MC0500 and MC0502	Pumps sold separately; see selected pump manual for wetted parts information.	
MC1000, MC1002, MC2000, and MC2002	17–4PH, 303, 304 SST, Tungsten carbide (with nickel binder), perfluoroelastomer; PTFE, PPS, UHMWPE	
MC4000, MC3000, and MC4002	316 SST, 17–4PH SST, PEEK, perfluoroelastomer; PTFE, PPS, UHMWPE	

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

All written and visual data contained in this document reflects the latest product information available at the time of publication.

Graco reserves the right to make changes at any time without notice.

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

Original Instructions. This manual contains English. MM 3A2800

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

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

Copyright 2013, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.

www.graco.com

Revision J, August 2018